

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

DOCKET NO. UE-20 _____

EXH. SJK-8

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REPRESENTING AVISTA CORPORATION



EIM Human Resource Plan

Program Name: Energy Imbalance Market

Program Manager: Kelly Dengel

Business Case Name: Energy Imbalance Market

Expenditure Request (ER): 7141 – Energy Imbalance Market

Submit Date: 06.17.2020

1 Key Roles & Program Information

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3 Executive Summary

In preparation for Avista to enter the Western Energy Imbalance Market (EIM), it's imperative to discuss the needed roles and teams required for a successful market entry and on-going operations. This document reflects the resources identified for the program implementation and the post-implementation phases, with a proposal for 17 incremental full-time employees (FTE). It includes justification for each position, an explanation of job functions as they relate to EIM and associated risks if the position isn't approved for hire. After reviewing the program implementation schedule, and accommodating a timeline for resources to participate in the software implementation phases, a preferred hire date was developed. This preferred hire date, along with an estimation of time allocated to EIM capital activities and expense activities, provided input for a 2020-2023 annual financial estimate, with 2023 representing a full-year of operations and maintenance (O&M) expense activities. In 2018, Avista originally estimated annual O&M expense at \$3.5 - \$4.0 million, with \$2.5 million attributed to the original labor estimate of 11-13 incremental EIM FTEs. The revised estimate of 17 EIM FTEs increases the annual labor estimate to \$3.2 million (system loaded). The need for the additional 4 FTEs (17 vs. 13), was determined through staffing conversations with other EIM entities, who indicated lean staffing levels at the time of market entry have hindered operational performance. Avista believes the 17 FTEs represents a mature workforce needed to fully support EIM operations at market entry. Any additional EIM roles Avista may need will be assessed after Avista has gained experience operating in the market.

This document represents Avista's desired human resource plan based on all information currently available. Elements of the plan will be progressively reviewed, and approved or denied, as new and additional information is presented and business conditions are assessed throughout the 2020-2021 time frame. Although this document calls for a formal approval with associated financials by the Director and Executive Steering Committees, it will not substitute for the individual review and approval of each position prior to job posting. At the timing of this document's approval, future positions will be reviewed and approved at the Director and Executive Steering Committee meetings to ensure the position, timing of the hire and associated financials are acceptable. Where possible, Avista leadership will review new EIM roles and responsibilities in light of existing employees that can assume additional duties, without backfilling the original position. In order for Avista to have trained personnel that are ready to engage in the mandated EIM testing phases six months prior to market entry, all EIM FTEs must be onboarded by September 2021.

4 Background

In 2018, Avista developed its initial Western EIM costs estimates in partnership with Utilicast, taking into consideration what resources would be needed to prepare for market entry, and including those needed to operate effectively and efficiently in the market. This included an estimate of resources needed to establish an EIM Program during the implementation phase and an estimate of new EIM-related employees needed post-implementation, with associated costs. This also included estimates for when the new positions should be hired within the implementation phase to support software projects, learn the market design and prepare Avista for EIM operations as the Company transitioned to market go-live in April 2022.

Throughout most of the evaluation, it was assumed existing Avista resources would be adequate to perform various meter and control upgrades, software implementations and learn market requirements during the implementation phase. However, some additional roles were identified for program implementation, including an EIM Program Manager, Organization Change Management Specialist and a temporary Substation Engineer. These temporary roles were planned for the implementation phase, without an expectation of transitioning to an EIM-related (FTE) role post market entry.

As Avista considered new EIM-related employees after committing to join the market in April 2019, the Company sought input from other EIM participating utilities, including Portland General Electric, Idaho Power Company, Arizona Public Service and PacifiCorp. Avista met with these utilities to discuss the roles and responsibilities needed to successfully operate in the market post go-live. These utilities indicated that a separate EIM specific operating desk was required to interact with the CAISO and ensure reliable market operations. The utilities also shared that they hired new employees to support settlement activities, data collection and review, network model maintenance, system operations support, resource bidding strategies, and new application technology support. After collecting this information, Avista consulted



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with Utilicast regarding the new job responsibilities and functions to get input based on their knowledge and experience with CAISO EIM requirements and integrating other EIM participating utilities.

Avista didn't anticipate eliminating any current positions based on new EIM requirements, and remains open to repurposing employees, if existing work processes can be supported and maintained. The estimated resource plan was developed based on expected new market operational work requirements. It may be possible to spread some new expected work across existing employees, but only if it supplements current job responsibilities and doesn't introduce additional burden beyond employee capacity.

5 Implementation Resources

5.1 Incremental FTE Summary

These temporary roles were planned for the EIM Program implementation phase to establish the program and address gaps that existed based on existing resources and Avista priorities outside the EIM Program. It was assumed the substation engineer and change management specialist roles would terminate near the market entry timeframe, while the program manager role would transition to an operations stabilization role through the end of 2022.

Chart 1 – Implementation Temporary FTE Summary

Role*	Department	Position	Quantity	EIM Process
1	Power Supply	EIM Program Manager	1	Overall program/project management
2	Power Supply	Organizational Change Management Specialist	1	Lead Avista through operational changes due to EIM entry
3	Substation Engineering	Substation Engineer	1	Metering upgrades for interchange locations, third-party generation sites
Original Estimated Totals			3	

*See Appendix C for Role designation.

5.1.1 Role: EIM Program Manager (1 FTE)

This was the first role hired for Avista's EIM Program with the intent to lead the development and implementation of the program from inception to completion – managing the scope, schedule and cost. This role was planned to work closely with business partners in Power Supply, System Operations, Generation and Substation Support, Substation Engineering and Enterprise Technology to develop the strategy, business case objectives and project plans to support a successful implementation. The EIM Program manager was responsible for establishing a program/project structure, establishing a project document governance plan and creating a communication plan to stakeholders. Ultimately, this role is responsible for delivering the EIM project implementation on time.

5.1.1.1 Key Attributes

- Required Timing: Q1 2019
- Reporting Structure: Director of Power Supply
- Other Considerations: Must possess the ability to learn organized market design and Avista's resource operating characteristics.
- Essential Functions:
 - Responsible for overall coordination, status reporting and stability of the EIM integration project including; scope, scheduling, resource requirements, staffing, budgeting and customer satisfaction
 - Communicates with all areas of the company that impact scope, budget, risk and resources of the assigned project(s). Manages communication activities to ensure consistency with company guidelines, policies and procedures.



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- Manages and facilitates understanding of budget issues within business units. Ensures that internal controls are adequate and documented. Directs the analysis and reporting of performance indicators that best support management decision making.
- Tracks key milestones and adjusts project plans and/or resources to meet the needs of the involved business units. Provides timely and accurate information and status updates to project sponsors, end users and management.
- Responsible for program level documentation creation and approval, and provides guidance on all project-level documentation and approval levels.
- Responsible for management and interaction with the implementation consultant, Utilicast.

5.1.2 Role: Organization Change Management Specialist (1 FTE)

Joining an organized market brings significant change to an organization and the Organizational Change Management (OCM) Specialist is a key role in helping the EIM Program meet business and schedule objectives. Avista's OCM Specialist will have an emphasis on the people side of change – including changes to business processes, systems and technology, job roles and organizational structure across all impacted business units. A primary focus of the OCM Specialist will be to create and implement change management plans that minimize employee resistance and maximize employee engagement. The OCM Specialist will work to drive faster adoption, greater utilization of EIM systems and higher proficiency on the changes impacting employees in the organization such that business results are achieved.

5.1.2.1 Key Attributes

- Required Timing: Q3 2020
- Reporting Structure: EIM Program Manager
- Other Considerations: Prior OCM experience on a large-scale program is desired.
- Essential Functions:
 - Responsible for creating and implementing complete Change Management Plans for change initiatives, incorporating communication and training plans that minimize employee resistance and maximize employee engagement.
 - Work with project stakeholders to identify potential risks and anticipated points of resistance and develop specific plans to mitigate.
 - Develop and implement a set of actionable and targeted change management plans which include: communication, sponsor roadmap, coaching plan, training plan and resistance management plan.
 - Be an active and visible coach to executive leaders who are change sponsors, members of the project team and end-users to encourage adoption of new operations/processes.
 - Work with project manager to integrate change and management activities into the overall project plan.
 - Coordinate with training development personnel in the formulation and delivery of training plans and activities in support of project implementation.

5.1.3 Substation Engineer (1 FTE)

In order to perform metering upgrades at various Avista substation interchange locations and third-party generation sites, Avista needed a Senior Electrical Engineering to design metering solutions to meet EIM requirements. This role will be responsible for creating new designs or making modifications to existing electrical distribution and transmission substations interchanges designs, including the physical, electrical and control designs. They will also assist in the development, evaluation and selection of station layout options, and be responsible for the all drawings and specifications used for construction, including drawings that must be submitted to CAISO for Settlement Quality Meter Data plans. In April 2020, this role was converted from a temporary position to full time employee. It's anticipated that EIM metering upgrades will be the primary focus for the position through the end of 2020, with 2021 representing an estimated time allocation of 30% on EIM projects and 70% other substation engineering projects.

5.1.3.1 Key Attributes

- Required Timing: Q1 2020
- Reporting Structure: Substation Engineering Manager
- Other Considerations:



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- Approximately 8 years of experience in Substation Engineering, using engineering principles to produce drawings for substation engineering construction. Professional Engineer's License is preferred.
- Able to demonstrate proficiency in all analytical tools specific to Substation Engineering.
- Must have a positive level of recognition within the engineering community regarding their work ethic, expertise and interpersonal skills, and recognition of their expertise by outside groups is an added attribute.
- Experience working in teams and the ability to collaborate with a wide group of stakeholders is essential.

6 Post Implementation Resources – Original Estimates

6.1 Estimated Incremental FTE Summary

These EIM-related FTE resources were part of the original program estimates in 2018. Of the original \$3.5-\$4M annual estimated O&M impact, \$2.5M was estimated (assumed 60% loading rate) for 11-13 incremental FTEs.

Table 2 – Original Avista FTE Estimates

Department	Position	Quantity	EIM Process
Power Supply	Analyst	1	Market bids analysis, settlement analysis
System Operations	Network Model Tech	1	Support network model operations
System Operations	SCADA Tech	1	Support SCADA operations
System Operations	EIM BA Desk	5	EIM BA operations
TBD	Settlement Analyst	1	EIM settlements
TBD	Data Management Operator	1	EIM meter data submittal to CAISO
TBD	Compliance	0 or 1	FERC EQR or greenhouse gas reporting
Enterprise Technology	IT Analyst	1 or 2	EIM Applications support
Original Estimated Totals		11 to 13	

6.2 Discovery & Analysis

In order to determine an appropriate and successful EIM operational course, Utilicast led Avista through conversations regarding the structure and components of the EIM Settlements team and the EIM Balancing Authority (BA) Desk. These discussions were supplemented by conversations with other EIM utilities on topics including: team responsibilities, management expectations, and integration of EIM functions with existing teams and business processes. The current EIM utilities shared that they have modified their structure, focus and number of employees to support settlement activities after gaining operating experience in the market. The result of these conversations led to the creation of two Key Decision Documents to outline the roles, responsibilities and the advantages/disadvantages of how to approach a particular model. A summarized highlight of these Key Decision Documents are listed below, with the full documents provided in the appendix.

6.2.1 EIM Settlements Team Evaluation & Recommendation

The management and understanding of EIM settlements is a key component of identifying and analyzing business and technical decisions for conformance to market design principles and market operations to ensure maximum performance in the market. Avista recommends pursuing a hybrid structure with both centralized and distributed components – a centralized Settlements Team that handles shadow settlements for both the Merchant and the Balancing Authority, also known as the EIM Entity (Entity), with a separate analyst role embedded in the Merchant and Entity that coordinate with the Settlements Team and conducts deeper market analysis. This centralized Settlements Team supports Merchant and Entity settlements, promotes expansion of settlement specific skill sets and ensures the timely analysis and appropriate priority is given to settlements. This centralized team will have visibility to the financial

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results for both the Merchant and Entity, so cost benefit studies and overall market performance can be more easily evaluated and assembled.

The primary functions of the Settlements Team include: daily generation and interchange meter validation and processing, daily settlement processing, sub allocation of transmission customer charges, market analytics, financial reporting, and cost benefit analysis. The distributed analyst roles in the Merchant and Entity, along with the Settlements Team, will analyze both individual business unit performance and Avista's overall market performance. This hybrid structure will facilitate deep analytical capabilities through direct links with the Merchant and Entity analysts, while also supporting the myriad of daily shadow settlement processing tasks.

To best support EIM functions, Avista recommends a Settlements Team of five total individuals – four analysts with shared responsibilities and a Settlement Manager. The Settlement Manager will also perform analytic activities. This team will report to the Director of Accounting.

Table 3 - Summary of Settlement Staffing Requirements

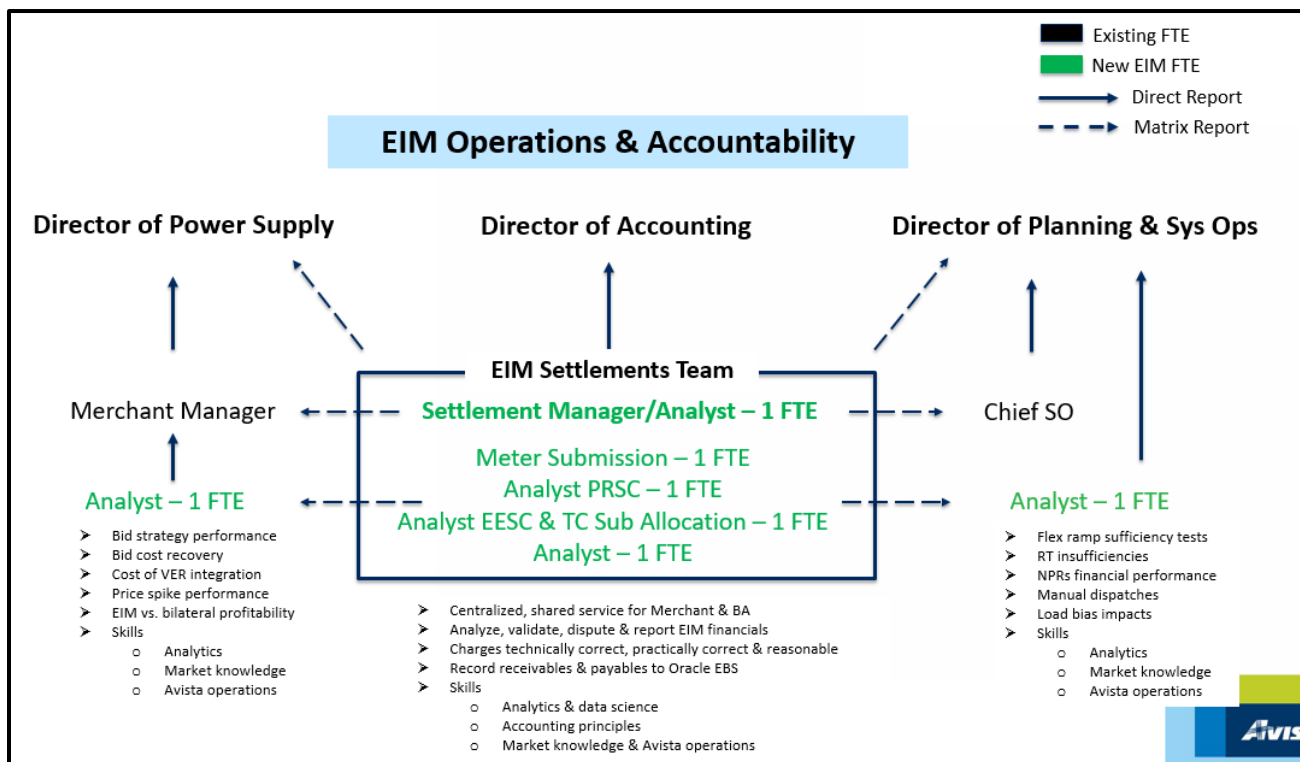
Role / Allocation	Reports to:	Resides within:
Settlements Team		
Settlement Manager / 1 FTE	Director of Accounting	Accounting
Meter Processing		
Meter Analyst / 1 FTE	Settlement Manager	Accounting
Shadow Settlement		
Settlement Analyst / 1 FTE	Settlement Manager	Accounting
Settlement Analyst / 1 FTE	Settlement Manager	Accounting
Settlement Analyst / 1 FTE	Settlement Manager	Accounting
Market Analytics		
Market Analyst / 1 FTE	Manager Preschedule & Real Time	Power Supply/Merchant
Market Analyst / 1 FTE	Director of System Ops & Planning	BA Entity

Within the settlement functions, it is possible some of the duties may be performed by existing employees without the need to backfill roles. Avista leadership will conduct further evaluation to assess the resource need as the EIM Program progresses and business processes are refined.

For details on the settlement structure see Appendix A - "EIM Key Decision – Settlement, Bill & Analytics Roles"

Chart 1 – EIM Settlements Team Structure

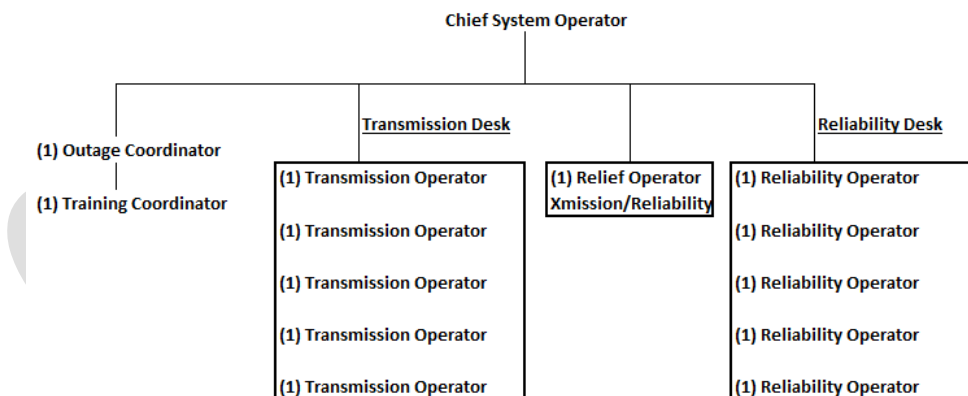
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6.2.2 EIM Real Time Operator Roles Evaluation & Recommendation

Transmission System Operations currently has two 24x7 desks – the Reliability Desk and the Transmission System Operator Desk. The below chart explains how System Operations is currently organized pre-EIM entry.

Chart 2 – Transmission System Operations Pre EIM



The organizational structure required to perform all existing functions and accommodate new EIM functions can take several forms. A common approach to EIM functions includes adjusting existing desk processes/responsibilities and adding an EIM Desk to focus solely on pre-operating hour EIM operations. Through discussions with Utilicast, Avista identified which tasks would reside with the Merchant and which tasks would reside with the Entity. The results included: shared generation management tasks between the Merchant and Reliability Operators, new EIM tasks for the Reliability & Transmission Desks, and a full set of tasks for the new EIM Desk.

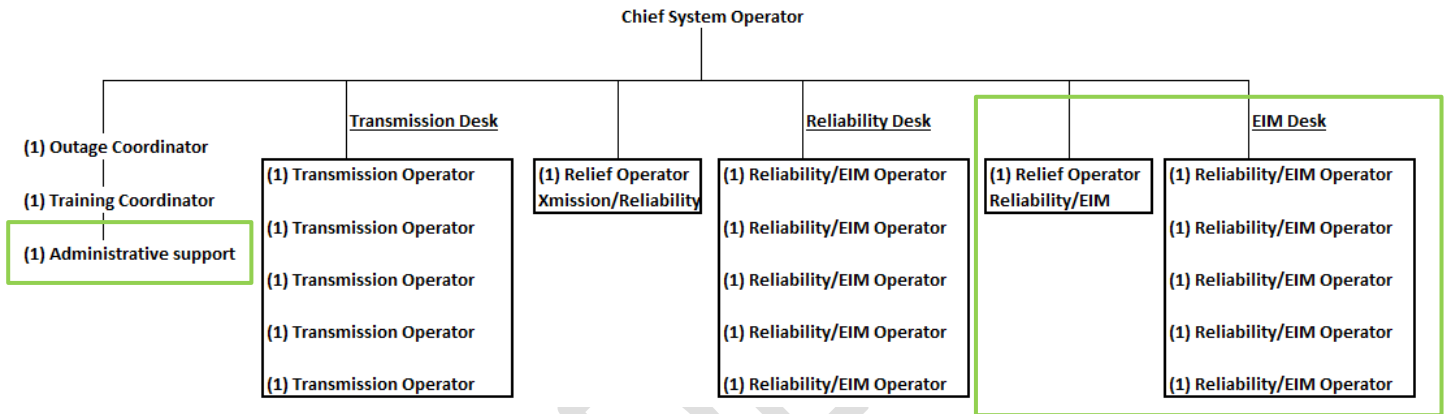


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In order to provide continuity amongst all the operators and an environment for cross-functional desk qualifications, Avista recommends NERC certification for the EIM Desk operators. This would entail all of the System Operators obtaining NERC certification and qualifying on their respective desks with the Reliability Operators and EIM Operators being qualified on both desks. This will allow greater flexibility for covering shifts during emergency conditions, training, vacations and unexpected absences. NERC certification will require the EIM Operators to be hired at least 12-16 months in advance to allow time to become NERC certified and learn the job function. Future plans include training the operators to be qualified to work all three desks in System Operations.

Following input from Utilicast and other EIM entities, Avista recommends adding a third 24x7 desk focusing on EIM operations with five operators, and one relief operator to manage EIM real-time operations and a training administrator to help with additional operator training requirements.

Chart 3 – Transmission System Operations Post EIM



For details on the EIM BA operator role see the Appendix B - "EIM Key Decision – RT Operator Functional Role Evaluation"

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7 Post Implementation Resources – Updated Estimates

7.1 Proposed Incremental FTE Summary (17 FTEs)

After evaluation and review amongst stakeholders, directors and executives, Avista recommends the following incremental full-time employees to support Avista EIM operations. Through conversations with Utilicast and other EIM entities, it's common for utilities to re-evaluate their EIM structure and resource allocation post-EIM entry and make changes in terms of reporting structure or number of employees supporting EIM operations. Avista will evaluate the operating structure and implement adjustments as necessary to ensure successful EIM operations.

Table 4 – Incremental FTE Summary

Role*	Department	Position	Original	Proposed	EIM Process
4	Power Supply	Analyst	1	1	Market bids & settlement analysis
5	System Operations	Analyst	0	1	BA EIM operations analysis
6	System Operations	EMS Modeling Engineer	1	1	Support network model operations
	System Operations	SCADA Tech	1	0	Support SCADA operations
7	System Operations	EIM BA Desk Operator	5	6	EIM BA operations
8	System Operations	Training Administrator	0	1	Support NERC Training Coordinator
9	Accounting	Settlement Manager	0	1	EIM settlements & analysis
10	Accounting	Settlement Analyst	1	3	EIM settlements & analysis
11	Accounting	Meter Analyst	1	1	EIM meter data submittal to CAISO
	TBD	Compliance	0 or 1	0	FERC EQR/Green House Gas Reporting
12	Enterprise Tech	Technical System Analyst	1 or 2	1	EIM applications operations support
13	Enterprise Tech	Ops Technical Lead	0	1	EIM applications operations support
Totals			11 to 13	17	

*See Appendix C for Role designation.

7.2 Department: Power Supply Operations (1 FTE)

7.2.1 Role: Power Supply Analyst (1 FTE)

The EIM is a complex market design requiring comprehensive, precise and timely analysis of processes along with operational and settlement data to ensure business decisions are achieving the desired results. In the EIM the merchant is the Participating Resource Scheduling Coordinator (PRSC). Avista's PRSC manages all of the base schedule and bid curve submittals for all of the participating generation resources. These resources are dispatched by the Market Operator (CAISO) based off of submitted bid curves and the market solution's Locational Marginal Prices (LMP's). The market solutions have reliability and economic affects that are substantial. It is incumbent upon every EIM PRSC to have a detailed knowledge of the market design and evaluate their business decisions, operational performance, settlement and analytical implications and results made from bidding in participating resources. The analyst will need to inform and create ongoing bid strategy and assist in the development of the EIM benefits summary.

The EIM Power Supply Analyst position will report to the Manager of Preschedule and Real Time and work closely with the Preschedule, Real Time, Generation Production Substation and Support, Enterprise Technology and the Settlements Team. This position will require a deep knowledge of organized market designs, knowledge of the western Bulk Electric System, generation resource characteristics and operations, and a thorough knowledge and use of data and visual analytical tools. This position will require excellent communication and collaboration skills to reach across business units to push and pull information and data informing and recommending business strategies for optimal market participation.



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The position is also expected to monitor market stakeholder initiatives and track implementation of future EIM enhancements such as EIM Day Ahead Market (EDAM) and enhancements to the existing Day Ahead Market.

7.2.1.1 Risk Considerations

As noted above, it is of the utmost importance that business decisions and market interaction strategies conform to Avista's specific resource characteristics, technology integrations and human performance. It is incumbent on Avista to carefully analyze the business decisions and market interactions to ensure maximum market benefits. If this position is not filled, Avista will be exposed to market settlements that could be detrimental to Avista's monetary benefit in the EIM, with little to no feedback loop on performance to the merchant group. This type of analytical neglect could lead to long periods of time with unsatisfactory market strategy submissions before errors or faulty business logic are rectified.

7.2.1.2 Key Attributes

- Required Timing: Q3 2021
- Reporting Structure: Manager of Preschedule & Real Time
- Other Considerations: In depth knowledge of data analytics and the ability to learn organized market design and resource operating characteristics. This position should be posted internal and external.
- Essential Functions:
 - Evaluate bid strategy performance
 - Evaluate bid cost recovery performance
 - Evaluate the cost of Variable Energy Resource (VER) integration
 - Evaluate generation availability and performance
 - Evaluate EIM vs. bilateral market profitability
 - Help determine EIM benefits calculations logic and counter-factual calculations
 - Manage Generation Resource Data Template (GRDT) inputs and Masterfile information
 - Evaluate market design impacts to the business
 - Work with the Settlements Team to ensure accurate settlement data and overall market performance

7.3 Department: Transmission System Operations (9 FTE)

7.3.1 Role: EIM BA Analyst (1 FTE)

The EIM is a complex market design requiring comprehensive, precise and timely analysis of processes along with operational and settlement data to ensure business decisions are achieving the expected results. In the EIM, the BA is the EIM Entity Scheduling Coordinator (EESC). As a complement to the Power Supply Analyst and EIM Settlements Team who will commit to robust economic analysis, the Entity BA also needs to commit to understanding the BA's financial impact on market performance and the settlement impacts to its third party transmission service customers. In the EIM, the System Operator's actions can have a significant impact on Avista's overall performance and financial benefit in the market. These Operators are responsible for the final resource balancing process each hour, self-scheduling non-participating resources, entering manual dispatches, ensuring the BA is meeting its performance standards, and ensuring both physical and scheduling constraints are maintained by the market dispatch. The operators will also review the dispatch instructions and start-up instructions received from CAISO and ensure the plants perform to those instructions. It is important for the System Operators, whose primary objective is to maintain the reliability of the Avista transmission system, to also understand the financial consequences of market transactions where reliability may not be a primary driver.

The BA Analyst will review Avista's market performance and evaluate impacts to system reliability and transmission service. This analysis will help drive overall System Operator process improvements and decision making consistency across the various System Operator functions. In addition, the BA Analyst will review the load, interchange transactions and third-party resource settlements which will be part of the overall EIM benefits and impacts summaries. The position is also expected to monitor market stakeholder initiatives and track implementation of future EIM enhancements such as EIM Day Ahead Market (EDAM) and enhancements to the existing Day Ahead Market.



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The EIM BA Analyst position will report to the Director of Planning and System Operations, and work closely with the Chief System Operator, System Operators, the Enterprise Technology department, the Settlements Team. This position will require a deep knowledge of organized market designs, knowledge of the western Bulk Electric System, transmission service administration, scheduling, transmission constraints and a thorough knowledge and use of data and visual analytical tools. This position will require excellent communication and collaboration skills to reach across business units to push and pull data and make process improvement recommendations to System Operations for optimal market participation.

7.3.1.1 Risk Considerations

If this position isn't filled, market feedback to the EIM Operator about the effectiveness of their decisions will be delayed and it will be difficult to research and identify the financial impacts of operator decisions. There will also be reduced financial analysis of the third-party settlements, load and interchange transactions which are a part of the EIM Entity Scheduling Coordinator settlement (EESC) process. Without this role, the Chief System Operator and other support personnel, will need to identify operation process improvement recommendations and training needs in addition to their existing operational job tasks. The Avista EIM BA Operator needs to be proficient and consistent in their actions, while understanding the financial impact of their action. The existing Operator roles are also affected by this new paradigm of operation under EIM. Timely feedback for improvements will be important. This role serves this need, and provides market insight and influence for developing System Operations' training and data materials.

7.3.1.2 Key Attributes

- Required Timing: Q3 2021
- Reporting Structure: Director of Transmission System Operations & Planning
- Other Considerations: In depth knowledge of data analytics and the ability to learn organized market design and Avista's resource operating characteristics. This position should be posted internal and external.
- Essential Functions:
 - Evaluate sufficiency test performance
 - Analyze manual dispatch and load bias impacts to price volatility and infeasibilities
 - Evaluate resource performance to Dispatch Operating Targets (DOTS)
 - Evaluate market impacts to Critical Performance Standards (CPS) and NERC Balancing Authority Ace Limit (BAAL) standards for compliance
 - Analyze impacts of third-party changes to generation or interchange schedules
 - Analyze EIM Transfer System Resource (ETSR) and intertie constraint strategies
 - Help determine EIM benefits calculations and counter-factual calculations logic
 - Update intertie resource configurations in the EIM Entity Scheduling Coordinator (EESC) application
 - Manage Intertie Resource Data Template definitions (IRDT) and Masterfile information
 - Evaluate market design impacts to system operations
 - Work with the Settlements Team to ensure accurate settlement data and overall market performance

7.3.2 Role: EMS Modeling Engineer – SCADA (1 FTE)

This position will work under the technical guidance of the SCADA/EMS Manager and will be responsible for supporting ongoing maintenance of the Avista's electrical transmission network model. The network model is an integral part of the reliability monitoring of Avista's electrical transmission system, and is crucial to Avista's participation in the Western EIM. The responsibilities of this position include the maintenance of an Energy Management System (EMS) Network, SCADA and Alarm models, the real-time ICCP measurements, and the EMS displays used to provide an accurate representation of the state of the Avista's portion of the Bulk Electric System (BES). This position will be responsible for exchanging accurate network model with neighboring utilities, the Reliability Coordinator (RC West), and the Western EIM. This position will be assisting with all technical details of the network modeling effort in formats and exports for planning, EMS, and network applications purposes. This position includes a close working relationship with other SCADA/EMS engineers, Avista engineering and operations personnel, vendors, and neighboring utilities. Since this position supports the network model for both RC West requirements and the EIM, it is anticipated that fifty percent of



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this positions time will be allocated to each function. The allocation of work time will be adjusted after market experience is gained.

7.3.2.1 Risk Considerations

Management of a real-time network model of Avista's electrical system is an entirely new body of work for Avista. Prior to EIM entry, it was sufficient to let the Reliability Coordinator (Peak Reliability) manage the real-time model of Avista's electrical network. When errors or inconsistencies were present, System Operations engineers resolved them in real time and there was little reliability or financial risk.

With the change of Reliability Coordinator responsibilities shifting to the RC West, pending EIM entry and recent changes to NERC reliability standards, it is crucial that Avista take responsibility for managing its own network model. Avista has learned from other EIM participants that incorrect modeling of the electrical network will result in the EIM market algorithm non-optimally dispatching resources, and even dispatching units out of the market. CAISO considers the accuracy of the model to be Avista's responsibility. Any EIM dispatch risk due to modeling errors will be Avista's obligation to manage.

Management and maintenance of the real-time network model is required, regardless of whether this position is approved. Should this position not be filled, Avista will need to contract external resources for ongoing management of the model.

7.3.2.2 Key Attributes

- Required Timing: Q2 2020.
- Reporting Structure: Manager of SCADA/EMS
- Essential Functions
 - Implement, enhance and resolve issues of modeling the Western Interconnection, including, but not limited to, updating the Avista EMS Network, SCADA, Alarm, and ICCP models.
 - Implement, enhance, and resolve issues associated with EMS overview and substation displays which are used by the Avista System Operators to maintain real-time situational awareness.
 - Work closely with Balancing Authority, Transmission Operations, and Energy Imbalance Market teams, vendors, and support personnel to resolve issues.
 - Work closely with Transmission Operations Engineers and the SCADA/EMS engineering team to provide support pertaining to the maintenance and enhancement of the EMS models to better meet the needs and functionality of Avista's reliability functions.
 - Recommend creative and innovative information systems solutions to various business or technical problems. Ensure work is technically sound and in compliance with established standards, codes, and regulations.
 - Be involved in the modification, integration and migration of EMS systems to new software versions.
 - Plan and coordinate database and display changes to reflect the true and ever-changing configuration of the transmission system to correct problems and to meet user needs, requests, and schedules.
 - Exchanging accurate network model information with neighboring utilities, the Reliability Coordinator (RC West), and the CAISO Western EIM.

7.3.3 Role: EIM BA Operator (6 FTE: 5 EIM Operators and 1 Relief Operator)

The EIM BA Desk operators will staff a new 24x7 hour operating desk in Transmission System Operations. The five new EIM operators will conduct the final balancing process and data checks for market base schedule submission prior to each operating hour. As part of the overall base schedule process, the EIM BA Operator will also be responsible for providing generator information to the CAISO for any non-participating generation resources not managed by the Merchant, including any third-party resources within the Balancing Authority Area (BAA). The EIM BA Operator will have oversight of the automated processes in the EESC application that determine the intertie resource base schedules and real-time values being submitted to CAISO to ensure they align with the BAA scheduled interchange. The EIM Operator will also oversee ETSR and Intertie Constraint (ITC) limits, overriding limits if necessary or locking EIM transfer capacity.



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The EIM BA Operator will cross-train for certification as a Reliability Operator as well. The Reliability Operator is responsible for many of the transmission service management and scheduling activities, ensuring the BA performance criteria are met, generation adjustments for transmission reliability issues, implementing schedule curtailments when necessary, approving and submitting outages to the Reliability Coordinator, updating outages on OASIS and initiating or responding to NWPP reserve sharing events. Operating under EIM will also bring more real-time activities to this role including the review of generation dispatch and start-up instructions, manual dispatch process and load bias processes.

System Operators have the primary responsibility of maintaining the reliability of the Avista transmission system. They will also have significant real-time interaction with the Market Systems and Market Operator for things that are not necessarily reliability related. Their actions will have economic impacts to the overall performance of Avista in the EIM. It will be important for the System Operators to understand the EIM market design, how it impacts and can improve reliability and also understand the financial consequences of market constraints if they are not managed properly.

7.3.3.1 Risk Considerations

If the EIM BA Operator team is not approved, these new EIM functions would be added to the Reliability Operator role causing an unmanageable workload and priority conflict. Risk would include an inability to adequately and consistently pass hourly market requirements, failure to perform additional intra-hour tasks and ultimately cause a degradation in maintaining reliability. During contingency events, conflicting obligations between reliability and EIM priorities could cause Avista to reduce market effectiveness and cause potential reliability issues. Reliability tasks could even be missed, resulting in non-compliance and subject to punitive regulatory action. Ultimately, if the two desks were to be combined, there is a risk to operator retention and recruiting due to unmanageable work load and tasks.

Based on the importance of the Reliability and EIM Operators and the significant overlap of functions, there is a need to consider hiring an additional Operator to serve as a relief position for both desks.

The current Relief Operator provides coverage at a 1:10 Operator ratio, covering both the Transmission Reliability Desks. The addition of the EIM Desk would increase the Relief Operator's coverage to a 1:15 ratio, with support of all three desks. This would be a 150% increase in the number of Operators to support, in addition to staying proficient on the existing desks, while learning additional duties and skills for the EIM Desk. Existing standards require a substantial amount of annual training, and the additional EIM desk will significantly increase those annual training requirements, which must be completed while maintaining adequate desk coverage.

The Relief Operator is critical for maintaining coverage for sick leave, vacations, jury duty, and unplanned absences. The risk of inadequate coverage to support desk operations in the event an Operator has to, or elects to, suddenly leave System Operations or the Company should also be considered. In the long term, these unplanned vacancies take a toll on System Operations, as it takes six months for a System Operator to complete NERC certification and adequately train on systems and procedures required to work the desk independently. Without the presence of an additional Relief Operator, these unplanned or long-term vacancies require the existing Operators to cover shifts through overtime, working a shift during their training week or postponing planned vacations.

Requiring an Operator to work his/her training week to cover a shift presents a risk. System Operators must complete more than 200 hours of required training to maintain NERC certification. These training weeks are critical for the Operators to ensure their understanding of Avista's infrastructure and supporting systems, and to ensure job effectiveness. Avista's System Operators are highly experienced and have significant amounts of One Leave. The Relief Operator allows for better planning of shift schedules. Overall, it's not reasonable to expect one Relief Operator to provide adequate coverage for the EIM, Reliability, and Transmission Desks.

7.3.3.2 Key Attributes

- Required Timing: Progressive hires from Q1 2020 – Q1 2021
- Reporting Structure: Chief System Operator
- Other Considerations: Experience in Power Supply and electric markets, Real-Time Transmission or Distribution Operations, Operations Engineering or Transmission System Field work with the ability to learn organized



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market design. NERC Reliability Coordinator certification will be required. This position should be posted internal and external.

- Essential Functions:
 - Create and submit third-party Non-Participating Resource (NPR) base schedules prior to T-75, T-55, T-40 operating hour
 - Finalize contingency and regulating reserves for EIM prior to T-40 operating hour
 - Review and respond to sufficiency test failures (Capacity, Balance, Flex Ramp) for the BAA prior to T-40
 - Balance and submit all final generation resource base schedules prior to T-40 (in coordination with Merchant)
 - Submit real-time (RT) Variable Energy Resource (VER) forecasts to CAISO (automated)
 - Create and submit aggregated intertie base schedules for each intertie location prior to T-75, T-55, T-40 (automated)
 - Determine EIM transfer limits for each intertie to another EIM participant and submit to BAAOP continuously (automated but with override capability)
 - Provide a rolling five hour forecast or ramped interchange for each intertie at a 5-minute granularity, refreshed every 5 minutes (automated)
 - Single point of contact for CAISO RT Market Operator
 - Coordinate shutdown of Avista generation (shared)
 - Submit After the Fact (ATF) RT interchange schedules to CAISO (Automated)

7.3.4 Role: Training Administrator (1 FTE)

In order to have competent proficient operators that are able to understand and function in the EIM, and manage Avista's system in the most reliable and efficient way, they must have a training program that is robust and keeps their skills and knowledge at the highest level.

The System Operator positions require 200 Continuing Education Hours (CEH) of training every 3 years in order maintain their NERC credentials and to be able to perform their Reliability Related Tasks (RRT). The EIM BA Operator and the BA System Operator will both perform some of these tasks. The training for these positions is developed, delivered and documented in house and must be specific to the system they operate. Generic operator training does not meet compliance standards. At present, there is one trainer that fulfills this role for the current 13 NERC certified personnel in System Operations. With the addition of the EIM BA desk, there will be up to 19 NERC certified personnel in System Operations. Other EIM entities have a training staff to operator ratio of between 1:6 and 1:8. Avista operates with a 1:13 ratio today. With the added EIM BA desk personnel, that ratio would increase to 1:19. After this training administrator is added to support the training coordinator, the ratio would decrease to 1:9.5.

To accommodate this increased training demand, it is necessary to add either a second trainer or a training admin role. The training admin position will assist the Training Coordinator with the increased administrative work caused by the increase in NERC certified System Operators, and will aid the trainer in the documentation, scheduling and logistics processes.

7.3.4.1 Risk Considerations

In order to support the increase operator-to-training coordinator ratio, while not decreasing training performance or compliance obligations, Avista supports hiring a Training Administrator to assist with training goals and objectives. This allows the Training Coordinator to embrace the market complexity and build more robust EIM training, while maintaining current reliability training compliance objectives. If this role is not approved, the Training Coordinator may be unable to develop new training materials to ensure operator proficiency, or identify and address operator learning deficiencies in a timely manner. This increase in operator training will require additional documentation and maintenance, which if not addressed will likely cause audit deficiencies and a reduction in training quality.

7.3.4.2 Key Attributes

- Required Timing: Q1 2022

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- Reporting Structure: Chief System Operator
- Essential Functions:
 - Prepare individual documents for required training courses.
 - In conjunction with Trainer develop, update and maintain training schedule for 19 certified operators.
 - Maintain all compliance required documentation using QTD, SOCCED, CATSWEB and Source Training.
 - Input completed training documents into electronic format.
 - Assist Trainer in developing and documenting individual training plans.
 - Work with Trainer to assess effectiveness of training by evaluating completed assessments and course evaluations.
 - Assist Trainer with budget and keep accounting records for training budget.
 - Assist Trainer in maintaining simulator updates by tracking system changes.
 - Administer operator competency assessments and compile data to help identify training deficiencies.
 - Complete other administrative work as directed by Chief and Trainer.

7.4 Department: Finance (5 FTE)

7.4.1 Role: Settlement Manager (1 FTE)

In Avista's proposed Settlement Team structure, the Settlement Manager would lead a group of four analysts by monitoring, guiding and directly supporting meter data verification and submittal, statement and invoice processing, shadow verification, sub allocation, and troubleshooting of daily activity corresponding to Trade Dates in the T+3B, T+12B and T+55B CAISO settlement timeline, which may span up to 8 or more cycles and as many as 36 months of history. Other matrixed analysts (2) embedded within the Merchant and BA organizations will collaborate closely with and use software tools of the Settlement Team to perform deep-end financial and strategic analyses. The Settlement Manager is also expected to participate in and contribute to weekly BA performance reviews with CAISO staff, monitor market stakeholder initiatives and track implementation of future EIM enhancements such as EIM Day Ahead Market (eDAM) and enhancements to the existing Day Ahead Market.

7.4.1.1 Risk Considerations

A less-than-fully-staffed settlement team would generally be deficient in its capability to identify:

- Settlement calculations errors due to mishandling of input data on CAISO's part,
- Data submission problems related to Avista software or processes
- Operational behavior patterns resulting in suboptimal settlement and financial results
- Capture benefits through dispute resolution or educating others on the settlement consequences of operational decisions.

The Settlement Manager will prioritize the processing and analytical activities of the group to focus on those which will provide the most value. He or she will also provide the leadership necessary to properly anticipate market enhancements, voice Avista's position in proposed CAISO rule changes and manage evolution of the EIM Entity commercial model.

7.4.1.2 Key Attributes

- Required Timing: Q3 2020
- Reporting Structure: Director of Accounting
- Other Considerations: Well qualified candidates should possess a working knowledge of Avista's metering portfolio and generation operational characteristics, familiarity with MV-90, PI and Nucleus and their integrations with the Energy Accounting system, intimate understanding of the CAISO meter submittal timeline and a basic awareness of EIM settlement calculations and market operations, as well as the ability to handle and analyze large data sets.
- Essential Functions:
 - Troubleshoot interruptions in acquisition of data from upstream system
 - Acknowledge, analyze and respond appropriately to validation messages generated by the Energy Accounting system



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- Validate calculations in the Energy Accounting system to aggregate, net, profile or prorate raw metering to achieve CAISO resource ID net high-side data submittals
- Verify timely submission to the CAISO Market Results Interface – Settlements (MRI-S) application
- Reconcile submittals against downloads from CAISO
- Support analysis of unit performance related to Uninstructed Imbalance Energy
- Manage Energy Accounting system configuration for modeling and metering changes
- Support the annual Self-Audit Attestation and biannual Audit & Testing of Metered Facilities required of EIM Bas
- Ensure Merchant and EIM Entity analysts have adequate information to evaluate market performance

7.4.2 Role: Meter Analyst (1 FTE)

Responsibility of the EIM Meter Data Analyst starts after generation and interchange meter data that has been collected by MV-90, PI or Nucleus and interfaced to the new EIM application called Energy Accounting. Validation, Estimation and Editing (VEE) occurs within the system as raw data is transformed to resource identification level, with net high-side meter values submitted to CAISO. Submittals are expected by eight business days after the trade or operating date with provision for a true-up by 48 days following the trade date. This processing is entirely subject to the availability and quality of data from upstream systems and requires the analyst monitor it continuously for omissions and warning flags. The Avista meter model for EIM is not static – modifications of physical equipment and inclusion of additional resources will require updates to software and processes. The Meter Analyst is expected to work with other groups to ensure adaptation of these changes is well anticipated and seamlessly executed.

7.4.2.1 Risk Considerations

Without dedicating a stand-alone resource to the task of processing and analyzing metering, which is eventually submitted to CAISO for EIM settlement calculations, the job would have to be shared among others either in the settlements group or prior to settlements, among staff primarily focused on physical metering or the MV-90 system. As one of only two or three principle billing determinants over which Avista will actually have control, metering collection and verification represents an extremely important input to settlement calculations. Ensuring submitted values start with complete and accurate raw data, are validated for known anomalies and are properly transformed through algorithms performing aggregation, netting, proration or profiling to the CAISO resource identification level is required.

Timely data submission has a high impact on successful settlement results and will help prevent unnecessary work. Analysts in the settlement group are tasked with interpreting CAISO calculations and results, so transitioning between metering and settlement concerns would surely diminish the effectiveness of their efforts. Likewise, to expect that staff previously obligated to manage installation, testing and maintenance of all metering devices or responsible for troubleshooting data collection from all equipment in the field on a daily basis, would not provide sufficient attention to the VEE processes and data submittal functions.

7.4.2.2 Key Attributes

- Required Timing: Q2 2021
- Reporting Structure: Settlement Manager
- Other Considerations: Well qualified candidates should possess a working knowledge of Avista's metering portfolio and generation operational characteristics, familiarity with MV-90, PI and Nucleus and their integrations with the Energy Accounting system, intimate understanding of the CAISO meter submittal timeline and a basic awareness of EIM settlement calculations as well as the ability to handle and analyze large data sets.
- Essential Functions:
 - Troubleshoot interruptions in acquisition of data from upstream systems
 - Acknowledge, analyze and respond appropriately to validation messages generated by the Energy Accounting system
 - Validate calculations in the Energy Accounting system to aggregate, net, profile or prorate raw metering to achieve CAISO resource ID net high-side submittals
 - Verify timely submission to CAISO MRI-S
 - Reconcile submittals against downloads from CAISO

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- Support analysis of unit performance related to Uninstructed Imbalance Energy
- Manage Energy Accounting system configuration for modeling / metering changes
- Support the annual Self-Audit Attestation and biannual Audit & Testing of Metered Facilities required of EIM BAs
- Assist field personnel with meter data collection issues

7.4.3 Role: Settlement Analyst (3 FTE)

Under the direction of the Settlement Manager, Settlement Analysts will oversee the processing of daily settlement statements to ensure accuracy of the results, agreement with shadow calculations, isolate the root cause of any variances and communicate issues with operational groups or create CAISO disputes when necessary as well as reconcile weekly CAISO invoices with daily settlement results.

7.4.3.1 Risk Considerations

While dispute resolution may be infrequent, the potential financial impact when extrapolated over 288 intervals per Trade Date and 75-100 resource locations is significant. Unfortunately, there is no way for a Settlement Analyst to predict exactly when or where the settlement may produce a favorable financial outcome. Only heightened software business intelligence tools and diligent review of their indications will yield consistent results. It is a job that has to be done thoroughly for each Trade Date and every subsequent settlement update from CAISO. While it certainly is possible to simply accept CAISO results, a slim settlement team will miss the opportunity to reclaim, through dispute resolution, routinely large financial sums due to:

- Settlement calculations errors due to mishandling of input data on CAISO's part
- Data submission problems related to Avista software or processes
- Operational behavior patterns resulting in suboptimal settlement results

Additionally, Avista will send bills to its Transmission Customers representing the suballocation of EIM Entity settlement with CAISO. The process is highly automated, but may require some additional communication with the recipients – particularly with those not already participating in another EIM BA – to understand their content and meaning. Of course every utility wants to be perceived as providing superior customer service, but this does not happen automatically. A settlement team taxed with simply processing its own settlement artifacts from CAISO will undoubtedly sacrifice the customer service it could perhaps otherwise provide its own Transmission Customers.

7.4.3.2 Key Attributes

- Required Timing: Q2 – Q3 2021
- Reporting Structure: Settlement Manager
- Other Considerations: Candidates should demonstrate a basic understanding of EIM economic and operational concepts, knowledge/understanding of CAISO charge code calculations, Open Access Transmission Tariff (OATT) provisions and the ability to work with settlement software to manage processing of settlement information in an effective and timely manner.
- Essential Functions:
 - Awareness of the status of daily trade date processing corresponding to the current calendar day and week while maintaining synchronicity with the CAISO settlement timeline
 - Ability to detect processing disruptions and “kick start” the system manually (i.e. reacquire quantities or prices from upstream systems) when required
 - Ability to compare daily CAISO settlement results with:
 - those from a previous iteration of the settlement cycle
 - those calculated within the shadow system using statement inputs
 - those calculated within the shadow system using first principle inputs
 ... and address variances appropriately
 - Validate CAISO invoices and generate AR/AP for transmittal to the financial system upon approval by authorized personnel in the financial system of record.
 - EESC – perform daily suballocation calculations and reconcile with CAISO Entity Charge Code amounts

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- Transmission Customer's suballocation statements are made available daily, while validated invoices are prepared weekly for approval and publication by authorized personnel in Resource Accounting. Accounts Receivable/Accounts Payable are generated as suballocation invoices are validated and made ready for transmittal to the financial system upon approval by authorized Resource Accounting personnel
- PRSC – perform analysis of key performance indicators which may illuminate suboptimal financial positions, flawed bidding strategy for Participating Resources (PRs) or poor generation dispatch following for PRs
- EESC – perform trending analysis of Entity settlement amounts which may reveal Transmission Operation problems, flawed bidding strategy for PRs or poor generation dispatch following for PRs and NPRs

7.5 Department: Enterprise Technology (2 FTE)

7.5.1 EIM Technology Summary

To successfully support the technical aspects of the EIM software application platform and meet the business expectations outlined below, Avista recommends two additional FTEs be hired to join the EIM Program in early 2020. Both FTEs are expected to integrate with the project team to ensure non-functional requirements and automated platform support are delivered, and gain a deep understanding of business workflows and processes. Upon project completion, they will become the primary application support personnel for all aspects of EIM software, MV90, ADSS and Nucleus. They will also be part of the larger EIM support organization as dedicated operations resources.

Avista's proposed support model for EIM is informed by learnings from Avista's Automated Meter Infrastructure (AMI) support model. This model assumes matrix organization accountability, with both dedicated and shared resources from IT and business areas working as a team to provide a holistic EIM support approach. The EIM platform will bring five new hosted applications, three new "hybrid-on-premise" applications, along with heavily integrated on-premise systems (ADSS, MV90). Although some applications are hosted solutions, the EIM applications will have many integration points that will need both traditional and enhanced levels of IT support. Support expectations are near real-time response expectations with quick resolution and 24x7 availability. Operations support for Nucleus and ADSS, primary energy resources software applications, will also be supported by this team.

The two new technology FTEs will provide onsite business hours support alongside of the larger EIM support organization. For after-hours support needs, the Network Operations Center (NOC) analysts will be trained on specific support tasks that can be performed without guidance. For items that the NOC analysts are not trained to support, an on-call schedule will be in place to allow escalation when timely resolutions are needed. Based on conversations with other utilities, two dedicated support team members have been sufficient based on their volume and needs.

7.5.2 EIM Operations Technical Lead (1 FTE)

The first FTE to be hired will be the EIM Operational Technical Lead (OTL). This individual will be considered the Subject Matter Expert on the EIM platform and its accompanying systems.

7.5.2.1 Risk Considerations

Hiring the EIM Operational Technical Lead in the specified timeline allows the individual to participate in project decisions, and have a thorough understanding of why decisions were made. Delaying the start would create knowledge gap, transfer risk and potentially add unnecessary documentation burden. The Operations teams would lack the technical expertise to effectively and efficiently address complex system issues, which could lead to delivery resources being on-call and performing operations work. Additional risks associated with not hiring a dedicated EIM OTL include:

- During the lifecycle of the product(s), critical EIM project resources may be reprioritized to work high level system outages and failure
- Projected O&M costs would still remain, but would be performed by Delivery resources
- Delivery resources would need to be on-call, resulting in risk to project deadlines



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7.5.2.2 Key Attributes

- Required Timing: Q2 2020
- Reporting Structure: Matrix reporting with a solid line to IT Operations Manager and dotted lines to the EIM support organization's manager or business manager.
- Other Considerations
 - The OTL role requires not only an understanding of how Avista systems are meant to work, but also a sufficient skillset to adjust when they don't function as designed. This individual will partner with Avista's application development teams and business partners, to build, deploy, and support a reliable, resilient, and high performing user and customer experience.
 - The OTL is expected to provide proactive leadership regarding implementation of non-functional requirements and take the technical lead on operational availability, performance and optimization for their respective platforms.
- Essential Functions:
 - Work closely with business partners in a matrix organizational structure
 - Work closely with software development teams and architects to ensure the operational success of production applications and roadmap compliance
 - Lead task forces, comprised of cross-functional disciplines, to troubleshoot resolve complex issues with follow-thru to resolution
 - Identify and develop the automation and software changes needed to address operational issues to reduce manual effort, reduce outages, and enhance scalability and resiliency
 - Resolve production issues, identify root causes, and iterate on improving both production and pre-production environments.
 - Create and maintain operational documentation and runbooks
 - Design, automate, and implement monitoring, metric collection and alerting

7.5.3 EIM Technical Systems Analyst (1 FTE)

The second FTE to be hired will be the Technical Systems Analyst. This individual will primarily focus on user and system support, service order resolution, break-fix, routine maintenance, configuration and utilization of tools to send proactive alerts, creation of error messages that provide actionable information to end users, creation of system design and configuration documentation, development of step-by-step support task documentation for ancillary support groups, and other activities designed to streamline day-to-day operational support.

7.5.3.1 Risk Considerations

Hiring the EIM Technical Systems Analyst in the specified timeline allows the individual to participate in project decisions, and have a thorough understanding of why decisions were made. Delaying the start would create knowledge gap, transfer risk and potentially add unnecessary documentation burden. The Operations teams would lack the technical expertise to effectively and efficiently address complex system issues, which could lead to delivery resources being on-call and performing operations work.

7.5.3.2 Key Attributes

- Required Timing: Q2 2020
- Reporting Structure: Matrix reporting with a solid line to IT Operations Manager and dotted lines to the EIM support organization's manager or business manager.
- Other Considerations:
 - Tier 1 and 2 application support of the EIM platform will be required along with strong communication and analytical skills.
- Essential Functions
 - Holds domain and working knowledge of production system(s)
 - Serves as front line of support for customers and users
 - Monitors for state and health of production assets/systems and addresses all assigned work within appropriate KPI priorities



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- Actively participates in system projects, change planning and execution and executes routine maintenance for EIM technologies
- Documents procedures and maintains knowledge base

8 Idaho Public Utilities Commission – EIM Incremental Expense Deferral

8.1 EIM Deferral Request & Approval

On March 23, 2020, the Idaho Public Utilities Commission (IPUC) issued Order No. 34606 approving Avista's application to defer incremental O&M costs (without a carrying charge), associated with joining the California Independent System Operator's (CAISO) Western Energy Imbalance Market (EIM). Commission Staff comments, filed on March 4, 2020 expressed support of Avista's request to defer its EIM incremental expenses, noting they believe the Company demonstrated it is reasonable for it to join the EIM. Per Order No. 34606, the Company is to cease deferring the incremental implementation costs at the go-live date, and is to file a report after one year of participation, describing the costs and benefits of participation, any other relevant information, including but not limited to the CAISO's quarterly Western EIM Benefits Report. Recovery of any operational cost associated with membership in the EIM after the Company's go-live date would be determined in a future proceeding. At that time, a prudency review would be conducted to determine the reasonableness of recovering the deferrals from Idaho customers.¹

At the time of the filing, the Company expected the annual O&M expense to be approximately \$3.5 - \$4.0 million per year on a system basis, mostly associated with adding 11-13 new employees to facilitate market operations and settlements, and a five-person 24x7 hour EIM operating desk. Idaho's share of these costs is approximately 35% or \$1.2 - \$1.4 million annually. Staff noted the Company's estimated costs appear reasonable and that it is Avista's responsibility to demonstrate these costs are prudent prior to recovery. Staff noted some concern over expected labor costs, when comparing Avista's estimated costs to that of similar utilities, but recognize current cost estimates may change and will be reviewed in detail in future general rate cases.

8.2 Avista's EIM Incremental FTE Guidance

Due to the approval by the IPUC of the Company's accounting petition to defer incremental operating expenses associated with the implementation of EIM, the following guidance will be used to determine what expenditures are incremental. EIM incremental guidance determination:

- All non-labor, including contracted labor, charged to EIM will be considered incremental.
- New positions* which are added specifically for EIM will be considered incremental if they meet one of the following criteria:
 - A new employee is hired into an EIM position.
 - An existing employee is hired into an EIM position and their previous position is backfilled.

* Avista will not account for partial positions (i.e. an employee is working on EIM and non-EIM work) as incremental unless there is a significant impact to the business and there is a determinable way to recognize and document the specific incremental portion of actual work.

9 Implementation & Post-Implementation Resources – Estimated Financials

9.1 Incremental FTE Summary

In order to estimate the financial requirements both during the implementation phase and post-implementation phase, each resource previously discussed was assigned an estimated hire date, annual salary (assumed 78.05% loaded rate) and a breakout of efforts between capital and O&M. These resources were further assigned an estimated annual 3% annual merit increase, and where applicable, incremental step increases based on achieving certain experience levels.

¹ Avista intends to include Washington's share of all incremental EIM capital expenses in future Washington General Rate Cases.



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This framework provided an estimate of annual capital and O&M FTE costs across 2020-2023, with 2022 representing a shift to primarily O&M expenses based on a market go-live date of April 2020. The anticipated annual O&M expense, based on a staggered hiring of the 17 EIM employees, is provided below. This baseline will be updated after FTEs are hired.

Chart 4 – FTE O&M Labor Estimates (in Millions) Including Idaho Commission Deferral

Implementation				Post Go Live	
FTE Labor Estimates	2020	2021	2022 (thru March)	2022 (April-Dec)	2023
O&M	\$0.43	\$1.55	\$0.21	\$2.24	\$3.23
Deferral	\$0.15	\$0.53	\$0.07	\$0	\$0
O&M Less the Deferral	\$0.28	\$1.02	\$0.14	\$2.24	\$3.23

\$ in Millions

- Includes OCM & Prg Manager roles.
- Implementation = 19 FTEs

- OCM excluded in 2022-2023
- Prg Manager thru end of 2022
- 2023 = 17 FTEs

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9.2 FTE Capital & Operating Expense Estimates

Chart 5 – FTE Capital & O&M Expense Estimates (in Millions)

EIM FTE Positions Grouped by New Hire Year	Implementation						Post Go-Live			
	2020		2021		2022 (Jan-March)		2022 (April-December)		2023	
	Capital	O&M	Capital	O&M	Capital	O&M	Capital	O&M	Capital	O&M
New Hires 2019	\$ 0.09	\$ 0.03	\$ 0.08	\$ 0.03	\$ 0.03	\$ 0.01	\$ 0.00	\$ 0.08	\$ 0.00	\$ 0.00
New Hires 2020	\$ 0.29	\$ 0.26	\$ 0.39	\$ 0.44	\$ 0.21	\$ 0.07	\$ 0.00	\$ 0.50	\$ 0.00	\$ 0.77
New Hires 2021	\$ 0.00	\$ 0.00	\$ 0.25	\$ 0.40	\$ 0.28	\$ 0.03	\$ 0.00	\$ 0.63	\$ 0.00	\$ 0.97
New Hires 2022 (Jan - March)	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.01	\$ 0.00	\$ 0.05	\$ 0.00	\$ 0.08
New Hires 2022 (Apr - Dec)	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00
New Hires 2023	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00
Total:	\$ 0.38	\$ 0.29	\$ 0.72	\$ 0.87	\$ 0.52	\$ 0.12	\$ 0.00	\$ 1.26	\$ 0.00	\$ 1.81
Loaded Labor Estimate: 78.05%	\$ 0.68	\$ 0.52	\$ 1.28	\$ 1.55	\$ 0.92	\$ 0.21	\$ 0.00	\$ 2.24	\$ 0.00	\$ 3.23

\$ in Millions

This Excel file is not imbedded in the PDF document, but available as a separate file titled “Confidential – EIM HR Plan Financials – Final 05.20.2020”

10 Recommendation & Approvals

10.1 Director Steering Committee Review

At the March 2020 EIM director steering committee meeting, the proposal of 17 FTE roles was discussed, with emphasis on the Settlement team and EIM BA desk. The directors were in support of proposed Settlement team structure (see Chart 1) and a recommendation was made for the team to report to the Director of Accounting. They also supported a Settlement team of five FTEs, with corresponding analysis outside the Settlement Team within Power Supply and System Operations. A draft version of the document was sent for review and feedback was incorporated.

10.2 Executive Steering Committee Review

At the April 2020 EIM executive steering committee meeting, the proposal of 17 FTE roles was discussed, with emphasis on the Settlement team and EIM BA desk. The executives were in support of proposed Settlement team structure (see Chart 1) and approved the team to report to the Director of Accounting. They also supported a Settlement team of five FTEs, with corresponding analysis outside the Settlement Team within Power Supply and System Operations. A draft version of the document was sent for review and feedback was incorporated.

10.3 Director Approvals



Approve EIM HR Plan Document - Approval Needed by May 29 - Scott Kinney - 06.01.2020.msg

Scott Kinney, Director of Power Supply



Approve EIM HR Plan Document - Approval Needed by May 29 - Andy Vickers - 05.20.2020.msg

Andy Vickers, Director of Generation Production and Substation Support



Approve EIM HR Plan Document - Approval Needed by May 29 - Mike Magruder - 05.29.2020.msg

Mike Magruder, Director of Transmission Operations and System Planning



Approve EIM HR Plan Document - Approval Needed by May 29 - Jim Corder - 06.08.2020.msg

Jim Corder, Director of Information Technology and Security



Approve EIM HR Plan Document - Approval Needed by May 29 - Hossein Nikdel - 05.28.2020.msg

Hossein Nikdel, Director of Applications and System Planning



Approve EIM HR Plan Document - Approval Needed by May 29 - Adam Munson - 06.09.2020.msg

Adam Munson, Director of Accounting



RE EIM HR Plan Document - Approval Needed by May 29 - Pat Ehrbar - 05.28.2020.msg

Pat Ehrbar, Director of Regulatory Affairs

10.4 Executive Approvals



Approve Final EIM HR Plan Document - Approval Needed by June 19 - Jason Thackston - 06.12.2020.msg

Jason Thackston, Senior VP of Energy Resources



Approve Final EIM HR Plan Document - Approval Needed by June 19 - Heather Rosentrater - 06.15.2020.msg

Heather Rosentrater, VP of Energy Delivery



Approve Final EIM HR Plan Document - Approval Needed by June 19 - Kevin Christie - 06.12.2020.msg

Kevin Christie, Sr. VP of External Affairs



Approve Final EIM HR Plan Document - Approval Needed by June 19 - Jim Kensok - 06.11.2020.msg

Jim Kensok, VP Chief Information & Security Officer



Approve Final EIM HR Plan Document - Approval Needed by June 19 - Ryan Krasselt - 06.17.2020.msg

Ryan Krasselt, VP and Controller

11 Appendix

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Appendix A – Settlement, Bill & Analytics Roles

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EIM Key Decision

Settlement, Billing & Analytics Roles

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Revision History	Date	Author
0.0 – First Draft	2/5/2020	kdonald
0.1 – Removing content related to ATF RTIS submittal / verification – responsibility of the RT desk and incorporating kdengel feedback	2/6/2020	kdonald
0.2 – Updating with decision from 2/28/2020 meeting	2/28/2020	kdonald
0.3 – Updated with director edits and comments	04/20/2020	kdengel

Key Decision Topic: *EIM Settlements, Billing & Analytics Roles*Decision: **Approved**

Date: 04/30/2020

Not Approved

Author(s): Ken Donald - Utilicast

Decision Makers: EIM Director Steering Committee

Decision Support: Kelly Dengel, Robert Follini, Xin Shane, Kenny Dillon, Carolyn Groome, Ian McLelland, Lauren Pendergraft

1 Recommendation

A hybrid of centralized and distributed organizational models is proposed to support on-going EIM market operations. This structure will facilitate deep analytical capabilities through matrixed relationships to resources within the Merchant and BA groups, while also supporting flexibility in the application of resources to cover the myriad of daily settlement processing tasks. Because settlement represents such an integral part of successful EIM participation, a strong sense of accountability within this team and among operational groups to this team is necessary. The group is directly tied to leadership at a director position in order to enhance escalation of issues to an appropriate level. To best support EIM functions, the settlement function should be comprised of a centralized Settlement group reporting to the Director of Accounting with indirect ties to analysts in Power Supply and System Operations (Entity/BA) as shown in Table 1 below:

Table 1 - Summary of Settlement Staffing Requirements

Role / Allocation	Reports to:	Resides within:
Settlement Manager / 1 FTE	Director of Accounting	Accounting
Meter Processing (T+8B & T+48B)		
Meter Analyst / 1 FTE	Settlement Manager	Accounting
Shadow Settlement (T+3B, T+12B & T+55B Trade dates - at a minimum)		
Settlement Analyst / 1 FTE	Settlement Manager	Accounting
Settlement Analyst / 1 FTE	Settlement Manager	Accounting
Settlement Analyst / 1 FTE	Settlement Manager	Accounting
Market Analytics (T+3B, T+12B & T+55B Trade dates)		
Market Analyst / 1 FTE (some portion of this FTE is dedicated to other non-settlement Merchant Operations analysis tasks)	Manager Real Time & Day Ahead	Power Supply/Merchant
Market Analyst / 1 FTE (some portion of this FTE is dedicated to other non-settlement Transmission Operations analysis tasks)	Director of System Ops & Planning	BA Entity

2 Background

There is no cookie-cutter template for building an organizational structure to support EIM functions. A recent survey of existing EIM BAs reveals varying approaches dependent on, in no certain order, the size and diversity of the BA footprint, utility culture, experience of existing staff with EIM software products and maturity of pre-EIM functions such as meter data management.

At the root of the problem is the need to answer questions such as: “Should I pay my CAISO bill without any verification of its accuracy?” An only partly facetious answer might be “Sure, CAISO is usually correct.” As a theoretical baseline, it is entirely valid to consider that there is absolutely no requirement for a BA to shadow its settlement artifacts, modify Transmission Customer billing procedures or commit to robust economic analyses in order to join the EIM. However, the effort and expense involved in procuring sophisticated software systems is a good indication that Avista wishes to join as an informed participant.

What is meant for a settlement organization to be an “informed participant” in EIM is that on a daily basis settlement data is analyzed to ensure that charges and credits are:

- Technically Correct – CAISO has accurate data and performs settlement math appropriately
- Practically Correct – Result amounts represent reality
- Reasonable – Results are consistent with expectations

Whereas settlement results from bidding at the CAISO interties in the normal daily and hourly market (Market Redesign and Technology Upgrade or MRTU) are more directly traceable to discreet transactions, the number of moving variables in EIM are increased exponentially and more difficult to understand. It is essential that the analyses consider approximately 100 price points in all 288 intervals of each Trade Date. The value these efforts provide to Avista, in terms of its ability to operate successfully in the EIM, ranges from very concrete near-term effects to more distant and strategic goals.

- Identification of CAISO data handling or calculation errors and disputing unfavorable settlement amounts
 - CAISO is not infallible – notable examples from other EIM Entities where an incorrect price was applied range from hundreds to approaching a million dollars per occurrence
- Isolation of internal system failures which prevent timely and accurate flow of data necessary to ensure economic dispatch by CAISO
 - Most often this occurs with generation Base Schedule and interchange snapshot submittals, but could include outage information, bid data, etc. By performing shadow calculations against First Principle inputs from Avista’s own systems, settlements can determine where CAISO did not have the data necessary to produce the correct result. Often this is the fault of the EIM Entity and not able to be remedied by settlement dispute, but communication with EIM groups upstream of settlements can prevent continued failures.
- Recognition of market power flow patterns and situational awareness of related financial data
 - By combining operational characteristics such as Energy Transfer System Resource (ETSR) flow, application of load bias and CAISO unit commitments with settlement results, patterns will begin to evolve which could be used to guide future bidding behavior. The settlement system acts as a manifold for the universe of market data while “Business Rules” filter it for specific scenarios:

- Are CAISO committed resources being run at minimum and therefore not setting price?
- Is CAISO dispatch respecting modeled limits?
- Are significant number of Avista resources being displaced by cheaper generation from the EIM?
- Does limitation of flow into and out of Avista through ETSR dispatch produce repeatable and predictable impacts on Energy, Congestion and Loss Offset Charge Codes?
- EIM Benefits / counterfactuals
 - The question of whether the decision to participate in EIM was a good one, or how good it was, is inevitable and requires collection and processing of atomic level data well in advance of the question being proposed
 - CAISO will publish EIM benefits quarterly, but these results are no less fallible than the daily settlement artifacts. Robust EIM participation will involve independent verification of the quarterly benefits
 - Not only should the informed EIM BA shadow the CAISO calculations, but may also want to develop and execute its own metrics

In the analysis below the steps required to answer: “Should I pay my CAISO bill?” and other important considerations are categorized; details of the specialized tasks and skills involved in doing so are presented in Table 2.

3 Analysis

Broadly, the key settlement functions can be classified into these groups.

- Meter processing – both physical data and software accuracy. Under EIM, the need to troubleshoot issues and anticipate regular model or equipment changes is underscored by daily acquisition, validation and submission of 5-minute interval data.
- Daily settlement processing – in acquiring First Principle inputs from Avista’s own internal systems the reconciliation of EIM Charge Code amounts involves much more than checking that CAISO’s math is correct. The Merchant and Entity sides perform shadow validation and invoice roll-up calculations independently. The CAISO settlement timeline folds into a business-day calendar and iterates for a single Trade Date at least 3 and possibly up to 8 times as much as 3-years beyond the Trade Date. As a consequence, settlement analysts need to be capable of processing a more than a handful of Trade Dates each day.
- Transmission Customer sub-allocation – Third Party Load, Non-Participating Generation and Interchange Transactions share in the amounts directly charged or credited by CAISO to the EIM Entity. The tools and methods are far less standard than those associated with shadow settlement.
- Market Analytics – Starting with “simple” tasks involved in identifying variances due to input data problems or calculation errors and building up to complex comparison of generation and transmission operational characteristics ensuring consistent modeling and market solutions.
- Financial Reporting and Cost Benefits – Identifying how market results impact overall costs.

- Market Initiatives – Keeping pace with the constant current of market enhancements proposed in CAISO stakeholder forums. Anticipating the changes and managing the necessary software modifications is a key to success in the EIM.

The table below contains some of the key tasks for EIM which fall into the groups identified above. Detail of the specific systems and processes required will be refined during the EIM Implementation with input from vendor functional designs.

Table 2 - Major EIM Settlement Tasks

Task	System	Estimated hours per day
Meter Processing (T+8B & T+48B)		
Obtain/VEE Generation and Interchange Meter Data	Energy Accounting	1 hour
Identify/rectify communication failures from upstream systems	Energy Accounting	1 hour
Process/Submit Generation and Interchange Meter Data (possibly at T+1 for interchange as well)	Energy Accounting	1 hour
Troubleshoot/Calculate/Submit ELAP Load Meter Data	Energy Accounting	1 hour
Obtain/VEE 3 rd party load data	Energy Accounting	0.5 hour
Prepare for meter configuration changes related to new resources or equipment changes*	Energy Accounting	0.5 hour
Analysis & Reporting (T+48B only)	Energy Accounting	0.5 hour
Shadow Settlement (T+3B, T+12B & T+55B Trade dates - at a minimum)		
Process PRSC Market Results and EIM Settlement Statements, identify issues with upstream data, isolate result variances, create disputes	Settlements – Merchant	4 hours
Process EESC Market Results and EIM Settlement Statements, identify issues with upstream data, isolate result variances, create disputes	Settlements - Entity	3 hours
Process sub-allocation statements invoices from other EIM BAs	Settlements – Merchant	0.5 hours
Sub-allocation of Entity settlements to Transmission Customers, Receive/Analyze/Process TC disputes and post disputes to OASIS	Settlements - Entity	2 hours
Reconcile PRSC Invoices – convey AR/AP to FSO** (weekly)	Settlements – Merchant	0.25 hours
Reconcile EESC Invoices – convey AR/AP to FSO** (weekly)	Settlements – Entity	0.25 hours

Task	System	Estimated hours per day
Create, verify & transmit sub-allocation invoices** (weekly or monthly)	Settlements – Entity	0.25 hours
Create EQR reflecting EIM Transactions, combine with bilateral EQR and upload to FERC	Settlements – Merchant	0.25 hours
Process GHG Obligations and Open Positions / Mark to Market	Settlements – Merchant	0.25 hours
Market Analytics (T+3B, T+12B & T+55B Trade dates)		
Merchant P&L analysis (UIE, LMP, BCR, Limit violations etc.)	Visual Analytics - Merchant	4 hours
Entity BA analysis (VERs, UFE, ACE, ETSRs, BCR uplift, Offsets, Load Bias etc.)	Visual Analytics - Entity	2 hours
EIM Benefits / Counterfactual analysis	Visual Analytics - Entity	0.5 hours
Strategic Initiatives (Not tied to Trade dates)		
Review Daily CAISO Market Reports to identify issues	N/A	2 hours
Prepare for and attend CAISO “week in review” meetings covering the impacts of congestion, ETSR flow, transmission constraints etc.	N/A	1 hours
Track progression of market enhancements such as eDAM & DAME	N/A	0.5 hours
Contribute to & attend CAISO stakeholder events	N/A	0.5 hours

*Requires significant collaboration with resources upstream working with field equipment and systems (i.e. MV-90)

**Manage AR/AP & credit not included in settlement tasks

4 Options & Peer Evaluation

Based on previous EIM Entity Implementations, settlement groups have evolved into two distinct patterns with software systems that commonly support both structures – either centralized or decentralized teams. In order to understand the options, Avista spoke with settlement team members at Puget Sound Energy, Portland General Electric, Idaho Power, NV Energy, and Arizona Public Service. Through these conversations, Avista learned it was common for early EIM Entities to take a decentralized team approach, while more recent entrants took the centralized approach. Each Entities' settlement team was structured a little differently within each model, but they all stressed the importance of understanding settlements as a whole and avoiding a model where analysis is separated into work groups which creates several challenges to fully understand overall market performance. They also stressed the importance of strong, cross-functional communications amongst all impacted departments for settlement discrepancy resolution, determining operational impact and making operational decisions to improve performance. This resolution and performance improvement is also aided by the presence of strong analysts in the Merchant and Entity groups that can compare operational decisions against the financial settlements to determine if the group is making sound economical choices for Avista. Based on their feedback, and information shared by Utilicast, Avista recommends pursuing the centralized team structure, with indirect ties to analysts in Power Supply and System Operations (Entity/BA).

4.1 Centralized Organization

Characterized by a common group of co-located staff members working strictly within the confines of settlement functions but spanning both Merchant and Entity interaction with CAISO.

4.1.1 Advantages

- Facilitates job sharing between Merchant and Entity activities
- Promotes expansion of settlement specific skills and knowledge within the group
- Settlements tend to be given more timely focus and appropriate priority
- With vision over financial results from both groups, cost benefit studies are more easily assembled

4.1.2 Disadvantages

- A settlement “silo” may not have immediate awareness of operational consideration which manifest in financial results
- Possible Standards of Conduct concerns

4.2 Distributed Organization

Characterized by dedication of certain individuals physically and organizationally within the Merchant and Entity groups to settlement functions separately.

4.2.1 Advantages

- “Shallow” and “Deep end of the pool” analyses reside with the same individuals
- Operational conditions more easily considered in settlement analysis

4.2.2 Disadvantages

- Diminished opportunity to “crossover” with partial FTEs

- Potential of falling behind on daily settlement tasks when local concerns take precedence
- Challenging to see complete financial picture for both Merchant and Entity

5 Approvals

EIM Director Steering Committee Approvals:

Scott Kinney

Date: 04/28/2020



Approve EIM - Settlements Document Approval Due April 30 - Scott Kinney - 4.28.2020.msg

Mike Magruder

Date: 04/30/2020



Approve EIM - Settlements Document Approval Due April 30 - Mike Magruder - 04.30.2020.msg

Hossein Nikdel

Date: 04/23/2020



Approve EIM - Settlements Document Approval Due April 30 - Hossein Nikdel - 04.23.2020.msg

Jim Corder

Date: 04/30/2020



Approve EIM - Settlements Document Approval Due April 30 - Jim Corder - 04.30.2020.msg

Adam Munson

Date: 04/30/2020



Approve EIM - Settlements Document Approval Due April 30 - Adam Munson - 04.30.2020.msg

Pat Ehrbar

Date: 04/23/2020



Approve EIM - Settlements Document Approval Due April 30 - Pat Ehrbar - 04.23.2020.msg

Appendix B – RT Operator Functional Role Evaluation

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EIM Key Decision

Real Time Operator Functional Role Evaluation under EIM

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Key Decision Topic: *RT Operator Functional Role*

Decision: **Approved**

Date: 04/22/2020

Not Approved

Author(s): Jarrett Friddle / Brian Holmes - Utilicast

Decision Makers: Rip Divis, Mike Magruder, Scott Kinney, Robert Follini

Decision Support: Kelly Dengel, Robert Follini, Rip Divis, Mike Magruder, Scott Kinney

1 Background

Joining the Western EIM will require many new tasks to be performed. This summary focuses only on the Real-Time Merchant and Transmission Operations functions. For successful participation, the new tasks and responsibilities need to be aligned in a logical way, supported by the software, workable within CAISO roles and restrictions, and defined in sufficient detail in business processes.

The purpose of this document is to:

1. Document the key Real-Time roles and tasks associated with EIM
2. Provide a framework for the distribution of those tasks to specific Real-Time Desks at Avista
3. Provide a concrete framework for discussing pros, cons and tradeoffs
4. Document the final decision of Avista on the functional tasks of each RT Operator Group

Table 3 lists some of the major Real-Time roles and responsibilities in traditional utility operations which will continue in EIM. They are grouped into major similar categories and may not be grouped the same way that Avista currently accomplishes these tasks. Additional tasks can be added.

Table 4 lists some of the major Real-Time roles and responsibilities in EIM operations. They are grouped into major similar categories and may not be grouped the same way that Avista will accomplish these tasks. Additional tasks can be added.

Table 3 – Major Traditional Real-Time Roles & Responsibilities

Energy Supply and Trading	RT Generation/BAA Management	Transmission Provider	Transmission Operations
<ul style="list-style-type: none"> • Determine optimal unit commitment and Adjust forward Generation Plan • Determine Long / Short Position and purchase or sell energy and capacity bilaterally • Determine optimal Contingency / Regulating reserve placement • Determine and schedule available energy from hydro resources • Tag purchases and sales • System and/or BA Load Forecasting • Hourly VER Forecasting 	<ul style="list-style-type: none"> • Monitor and control Generation to manage ACE / BAAL and follow load intra-hour (Regulation) • Monitor and Maintain Contingency Reserve Levels • Enter Generator Forced Outages into OMS • Ensure Contingency Reserves are responding to events to meet required response times • Activate Reserve Sharing Processes • Adjust generation to manage transmission system overloads • Where applicable, manage Hydro flow / elevation constraints in Real-Time • Adjust Generation to respond to schedule curtailments 	<ul style="list-style-type: none"> • Review and approve e-tags for the BA/TP • Review and approve short-term transmission service • Check out Scheduled Interchange with neighboring BAs. • Calculate operational NSI for AGC • Curtail tags for reliability / to manage transmission system overloads 	<ul style="list-style-type: none"> • Transmission Switching and tag out management • Create or Review and Approve Switching Orders • Enter Forced Transmission Outages into OMS • Perform Contingency Analysis studies • Review Gen Plan for Reliability Impacts • Coordinate with generation management to address transmission system overloads through generation and/or transmission switching. • RAS scheme arming and implementation

Table 4 – Major EIM Operational Roles & Responsibilities

PRSC EIM Bidding/Base Scheduling	EIM Entity Base Scheduling	EIM Generation/BAA Management	EIM Scheduling Management	EIM Transmission Management
<ul style="list-style-type: none"> • Create and Submit Avista Participating Resource Base Schedules prior to T-75 and T-55 • Designate Contingency and Regulating Reserves for EIM prior to T-75 and T-55 • Create and Submit 4-Part Economic Bids to drive Market outcomes • Review / Respond to Sufficiency Test Failures (Capacity, Balance, Flex Ramp) for the PRSC prior to T-55 • Manage Market De-Rates to Resource Availability • Monitor CAISO Dispatches in Real-Time in ADS • Submit Hourly VER Forecasts as part of Base Schedules 	<ul style="list-style-type: none"> • Create and Submit Non-Participating Resource Base Schedules, including 3rd Party • Review / Respond to Sufficiency Test Failures (Capacity, Balance, Flex Ramp) for the BAA by T-40 • Modify and Submit all final Generation Resource Base Schedules prior to T-40 • Finalize Contingency Reserves and Regulating Reserves for EIM Entity Area prior to T-40 • Submit RT VER Forecasts 	<ul style="list-style-type: none"> • Review / approve / block generation dispatches in BAAOP • Activate Contingency Events in BAAOP • Initiate Reserve Sharing with NWPP • Manage EIM through load conformance process (especially during contingency events) in BAAOP • Perform manual dispatch as needed through EIM processes in BAAOP, including shutdowns • SPOC for CAISO for all Generation Outages / Availability, including 3rd Party • Coordinate Market Generation Following / Independent Dispatch with plants and RTMO 	<ul style="list-style-type: none"> • Create and Submit aggregated Intertie Base Schedules for each Intertie Location prior to T-75, T-55, T-40 • Determine EIM Transfer limits for each Intertie to another EIM participant and submit to BAAOP continuously • Provide a rolling five hour forecast or ramped interchange for each Intertie at a 5-minute granularity, refreshed every 5 minutes to BAAOP • Perform ATF interchange checkout for tags and EIM Transfers, update EIM Dynamic ETSR Tags • Submit ATF RTIS 	<ul style="list-style-type: none"> • Review / Respond to Sufficiency Test Failures (Congestion) • Troubleshoot topology errors in BAAOP • SPOC for CAISO all Transmission Outages / Availability • Manage EIM binding constraints (physical) and perform transmission conformance as needed in BAAOP • Verify and confirm transmission outage information

The organizational structure design to perform all existing and the new functions specifically arising from being a participant in EIM can take several forms. A common approach to the general process flow under EIM tends to follow current processes with some adjustments plus the addition of an EIM Desk in Transmission Operations. However, to the extent the Merchant organization is more engaged with RT Generation Management, there has generally been a little more responsibility shift to or sharing with the Transmission Operations side.

Typically, the Merchant will account for the Hydro Resource Plan, Variable Energy Resource forecasts, Load Forecast and Generation Outages to build the DA Plan. Prior to the hour, the input information will be tuned to reflect latest conditions and observations and the Merchant will optimize the remaining fleet along with bilateral trading to meet the expected BAA or net load and to market excess available energy.

Transmission Operations will normally review the plan for reliability impacts and communicate if adjustments need to be made. That process continues up until roughly 60 minutes from the start of each operating hour and then bilateral trading ceases around T-60. All Intertie Resource (Interchange) and Generation Base Schedules are expected to be submitted as final and balanced to the Market Operator by T-55. So it is the functions from T-60 through the end of the operating hour that generally needs some adjustment in most utilities that join EIM.

2 Discussion

Below is a table of the existing setup of Avista and which Real-time functions are performed by each RT Desk.

Table 5: Existing Avista RT Operator Functions

RT Merchant Operators	Reliability Operators	Transmission Operations
<ul style="list-style-type: none"> • Determine Long / Short Position and purchase or sell energy and capacity bilaterally • Determine optimal unit commitment (in coordination with Transmission Operations to meet reliability targets) • Determine optimal Contingency / Regulating reserve placement (in coordination with Transmission Operations to meet reliability targets) • Monitor and control Generation to manage ACE / BAAL and follow load intra-hour • Monitor and Maintain Contingency Reserve Levels 	<ul style="list-style-type: none"> • Review and approve e-tags for the BA/TP • Review and approve short-term transmission service • Check out Scheduled Interchange with neighboring BAs. • Calculate operational NSI for AGC • Curtail tags for reliability / to manage transmission system overloads • Notify RC of Forced Gen and Transmission Outages • Ensure Contingency Reserves are responding to events to meet required response times • Activate Reserve Sharing Processes 	<ul style="list-style-type: none"> • Transmission Switching and tag out management • Create or Review and Approve Switching Orders • Enter Forced Transmission Outages into OMS • Perform Contingency Analysis studies • Coordinate with generation management to address transmission system overloads through generation and/or transmission switching. • RAS scheme arming and implementation

<ul style="list-style-type: none"> • Enter Generator Forced Outages into OMS • Where applicable, manage Hydro flow / elevation constraints in Real-Time • Adjust Generation to respond to schedule curtailments • Determine and schedule available energy from hydro resources • Tag purchases and sales 	<ul style="list-style-type: none"> • Adjust generation to manage transmission system overloads 	
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Here are a few things to consider when determining where some of the RT functions land while operating under EIM.

2.1 Permissions to CAISO Applications

CAISO's access policies to ensure SOC compliance present restrictions to the Merchant employees that would prevent them from performing many of the interactions with the Market system in Real-time.

- The Balancing Authority Area Base Schedule Coordinator role is the only role allowed to update Base Schedules after T-55 for the final binding Sufficiency Tests of the EIM Entity at T-40. This role is not allowed to be assigned to a Merchant Function Employee or system certificate.
- The majority of interaction with the Market Operator and its systems after T-55 is strictly allowed only by the Balancing Authority Operator and is not permitted by Market Function Employees. Most systematic communication of changes in Real-time to the Market Operator is via the CAISO Balancing Authority Area Operations Portal (BAAOP) which is restricted to non-MFE personnel only due to non-public transmission information and 3rd Party generation information that is also available.

2.2 Dispatch in the Market

There should be less interaction from Avista in terms of managing generation to meet load and manage the ACE and congestion in real time. Start Up and Shut Down activities will likely still require communications to the Plants, but the market will also have a big hand in determining those starts and stops beyond the units that are already base scheduled to be online through the Base Schedules.

- Barring intervention by the BAA, the following things will be true from the Market dispatch.
 - Self-Committed resources designated in the Base Schedule will be dispatched to start by the Market and expected to be on-line for those hours.
 - Within EIM, the generation commitment outside of hours with non-zero base schedules is a function of the Merchant determined 4-part Bids for Participating Resources (locked in at T-75) and the resource's availability submitted for the market clearing process (via OMS).
 - For all non-VER PRs, the real-time dispatch for all committed hours will be determined by the incremental energy bid curves and the resource's availability submitted for the market clearing process (via OMS)

- VERs without Bids will be “dispatched” to their forecasts. If a VER is participating, then it could be dispatched down economically from its forecast based on the bid curve submitted by the Merchant.
- All other Non-participating Resources and Participating Resources with no bid-curve will be dispatched to their hourly base schedule, including ramp impacts across the hour boundary (except when deployed for Available Balancing Capacity based on BAA infeasibility and the Default Energy Bid defined for that NPR).
- The market dispatch will target dispatching the generation and EIM Transfers to optimally meet the net demand forecast and scheduled interchange every 5 minutes.
- Managing the dispatch, under the context of EIM, takes on a slightly different form from today’s operation. To obtain the most benefits from the market, the dispatch should be determined as much as possible through the Market Operator’s Security Constrained Economic Dispatch (i.e. by following the Bids).

2.3 Economics and Reliability

Although the load following and balancing needs are generally met through the Market process, there can be significant interaction between the Market Operator and the EIM Entity. There are legitimate reasons to modify the known input parameters for the resources when the physical or economic circumstances have changed since T-55 or even T-40.

Historically, AVA has had the Merchant function manage most generation decisions in real time. Changes in base points, responses to contingencies, managing plant/unit unavailability issues and other things where economics of the units is the primary driver are under the Merchant’s purview. There are two areas where the Transmission System Operators are involved in the generation movement; 1) ensuring there are resources on AGC control for ACE/BAAL excursions and 2) unit re-dispatch for transmission system reliability.

Given the access restrictions above, however, the System Operators in the Transmission Function side of the house will need to be involved in helping to manage the real-time generation when necessary. All those decisions and actions will have financial implications for Avista. So, it is important that the Transmission side System Operators, who have traditionally been concerned strictly with maintaining reliability, can understand and evaluate the financial consequences when making adjustments in the market. Reliability issues will still trump economics if they are present, but many of actions taken in the market will not be in response to a reliability risk.

There will certainly be times when the reliability indicators are all acceptable, but AVA is being economically harmed by how the resources are performing. The System Operators need to be able to recognize these situations and be part of the solution to ensure all Reliability and Economic goals are achieved as a part of the Energy Imbalance Market. There will need to be coordination and a sharing of responsibilities between the Transmission System Operators and the Real-time Traders to manage manual generation changes while operating in the EIM.

Below is a list of items to consider and activities that have both reliability and economic impacts where the Transmission System Operator will be involved.

- There are not only financial consequences for intentionally moving a unit away from its market dispatch target, but also reliability consequences (and unless done in conjunction with a Load Bias, may not have the intended effect). The market will be assuming the entity to follow its

generation and EIM Transfer dispatch instructions. The EIM Transfer will typically be fully automated and integrated into the scheduled interchange component of the ACE equation. Units not following their DOTs will result in Area Control Error increasing, posing a risk to Control Performance Standards or being outside BAAL requirements unless other units or regulating units are also moving in conjunction, which then puts them off their economically based DOTs.

- Communication of intent to deviate from the submitted bids, availability and base schedules supplied by T-40 is extremely important so that the SCED reflects these modifications and you are not fighting with the CAISO dispatch within the BA.
- The following items that affect the Real-time Market Dispatch are submitted via BAAOP, again only available to the Transmission System Operators
 - Manual Dispatch of an NPR away from its Generator Base Schedule
 - To supply identified contingency reserves during an event
 - Physical Problem at the plant
 - Hydro flow management
 - Correction of localized constraints that cannot be unloaded effectively by re-dispatch of PRs.
 - Generation Testing
 - Manual Dispatch of a PR to a fixed MW quantity (ignores bid curve)
 - To supply identified contingency reserves during an event
 - Physical Problem at the plant
 - Hydro flow management if Market-based dispatch modifies elevations to an unacceptable level.
 - Manual Dispatch change of Pmin and/or Pmax of a PR not reflected through Rerates or Derates in outage records.
 - Physical Problem at the plant
 - Hydro flow management if Market-based Dispatch modifies elevations to an unacceptable level.
 - Submit Load Bias due to a Reserve Sharing activation or to arrest ACE excursions which could be due to the following reasons
 - True Load or VER Forecast Error
 - Resources not following DOTs
 - Mismatches in Scheduled Interchange representations between Avista Scheduling System and that submitted to CAISO as Intertie Resource Schedules
 - The best response to ACE deviations is either:
 - If there are no input data errors, load or VER forecast issues, contingency events, or generation problems, wait until the next market solution.
 - If one of the above is true, use Load Conformance in BAAOP to adjust the market solution target. Adjusting individual generation via manual dispatch will not have an effect, as the market will just dispatch another unit, import or export in the equal and opposite manner to compensate.
 - The ability to block or modify a Dispatch instruction or block a Start-up/Shutdown notice is only available in BAAOP. Although Starts and Stops are available to the Merchant via the ADS instructions, the ability to block them has already passed by the time the

instructions are issued. The time available to block or modify a Dispatch instruction or block a Start-up/Shutdown notice is about 30-90 seconds.

- Changes in Import and Export limits for EIM Transfers are generally managed automatically in the systems once the rules are defined, but manual intervention for these items or locking the ETSRs, which will also have an impact on the RT Dispatch, are also changed in BAAOP.
- Although Avista appears to have limited internal physical transmission constraints, if those need to be activated or have limits adjusted, that activity is only available in BAAOP.
- The exception allowed for direct communication of input data changes to the Market Operator by the Merchant function after T-55 would be for any Generator Availability modifications submitted via the Avista OMS system or for Participating Resources directly in CAISO WebOMS. These are updated continuously.

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3 Proposal to Incorporate EIM tasks at Avista

The table below describes the proposed distribution of tasks including all new EIM related items across the three existing RT Operators plus the new EIM desk. The result is some Shared Generation Management tasks between the Merchant and the Reliability Operator and some EIM tasks added to Reliability and Transmission along with a full set of primarily pre-hour activities for the new EIM Operator.

Table 6: New EIM Desk with Shared Generation Management and some EIM tasks added to Reliability and Transmission

RT Merchant Operator	New EIM Operator	Reliability Operator	Transmission Operator
<ul style="list-style-type: none"> • Determine Long / Short Position and purchase or sell energy and capacity bilaterally • Determine and schedule available energy from hydro resources • Submit Hourly VER Forecasts as part of Base Schedules • Determine optimal unit commitment, Basepoint and Reserve Allocations for all Avista Resources • Submit Base Schedules to EIM by T-75, T-55 • Enter Generator Planned/Forced Outages into OMS (ahead of Real-time) • Tag purchases and sales • Create and Submit 4-Part Economic Bids prior to T-75 to drive Market outcomes • Review / Respond to Sufficiency Test Failures (Capacity, Balance, Flex Ramp) for the PRSC prior to T-55 • Manage Hydro flow / elevation constraints in Real-Time in 	<ul style="list-style-type: none"> • Create and Submit 3rd Party Non-Participating Resource Base Schedules prior to T-75, T-55, T-40 • Finalize Contingency and Regulating Reserves for EIM prior to T-40 • Review / Respond to Sufficiency Test Failures (Capacity, Balance, Flex Ramp) for the BAA prior to T-40 • Balance and Submit all final Generation Resource Base Schedules prior to T-40 (in coordination with Merchant) • Submit RT VER Forecasts • Create and Submit aggregated Intertie Base Schedules for each Intertie Location prior to T-75, T-55, T-40 • Determine EIM Transfer limits for each Intertie to another EIM participant and submit to BAAOP continuously • Provide a rolling five hour forecast or ramped interchange for each Intertie at a 	<ul style="list-style-type: none"> • Review and approve e-tags for the BA/TP • Review and approve short-term transmission service • Calculate operational NSI for AGC • Curtail tags for reliability / to manage transmission system overloads • Approve Gen and Transmission Outages and forward to RC/Market • Update Outages on OASIS • Activate Contingency Events in BAAOP • Initiate Reserve Sharing with NWPP • Manage EIM through load conformance process (especially during contingency events) in BAAOP • Ensure Contingency Reserves are responding to events to meet required response times using BAAOP Manual Dispatches • Adjust generation to manage transmission system overloads • Perform manual dispatch as needed through EIM processes in BAAOP (in coordination with Merchant/Plants/RTMO) and EMS generation dispatch mode • Review / approve / block generation dispatches in BAAOP 	<ul style="list-style-type: none"> • Transmission Switching and tag out management • Create or Review and Approve Switching Orders • Enter Transmission Outages into OMS • Perform Contingency Analysis studies • Coordinate with generation management to address transmission system overloads through generation and/or transmission switching. • RAS scheme arming and implementation • Review / Respond to Sufficiency Test Failures (Congestion) • Troubleshoot topology errors in BAAOP • Manage EIM binding constraints (physical) and perform transmission conformance as needed in BAAOP • Verify and confirm transmission outage information in BAAOP



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<p>coordination with Reliability (shared)</p> <ul style="list-style-type: none"> • Manage Market De-Rates for Resource Availability • Monitor CAISO Commitments & Dispatches in Real-Time in ADS • Coordinate shutdown of Avista Generation (shared) 	<p>5-minute granularity, refreshed every 5 minutes</p> <ul style="list-style-type: none"> • SPOC for CAISO for all RT Market Operator • Coordinate shutdown of Avista Generation (shared) 	<ul style="list-style-type: none"> • Monitor and manage ACE / BAAL • Monitor and Maintain Contingency Reserve Levels (shared) • Manage Hydro flow / elevation constraints in Real-Time in Coordination with Merchant (shared) • Monitor Performance to Dispatch Instructions • Check out Scheduled Interchange with neighboring BAs, including updating tags for Dynamic ETSR Transfers. • Submit ATF RTIS 	
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Legend:

Black: Existing Functions

Red: Existing Function Transferred or Shared responsibility

Blue: EIM Specific

Brown: Existing Function Impacted by EIM

Transitioned Functions: The Reliability Operator will have the responsibility for monitoring and managing ACE and any Balancing Authority ACE Limit (BAAL) issues. As mentioned above, the CAISO Dispatch is designed to achieve a set of DOTs with each dispatch that will zero an EIM Entity Area's ACE every five minutes if followed. This is not always perfect, however. Several factors can lead to ACE reaching levels where action will need to be taken to remain in compliance with Reliability Standards. Although probably not the first option to address this scenario under EIM, if it is necessary to manually move a Resource, the Reliability Operator will coordinate with the Merchant which resource(s) to move.

Shared Functions between Merchant and Reliability: RT Generation Movement within the operating hour make up the areas where there is a sharing between the Reliability Operator and the RT Trader, who has historically managed real-time generation movement. Several possible reasons for Manual Dispatch were listed in the discussion of Section 2. Any of these reasons for Manual Dispatch of Resources should be coordinated with the RT Trader unless necessary for local Transmission Reliability. (Contingency Reserve Dispatch, Availability Issues, Contingency Reserve Recovery, Hydro Level Management, Shutdown, etc.)

Existing Functions Affected by EIM: Curtailing Tags for Reliability at the instruction of the RC or for management of local transmission issues will continue to occur, however, occurrences may be decreased if the constraint is actively monitored and can be managed effectively through the re-dispatch of the Energy Imbalance Market. Any physical constraint should be activated within the Market unless the constraint is only impacted by output of one or two resources. The Outage Management role the Reliability Operator has will be modified slightly with the use of the new AVA Outage Management System, but the RO will be required to actively review and perform the submission to CAISO for most outages.



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The assignment of responsibilities across the Merchant, EIM Operator, Reliability Operator and the Transmission Operator is based on what information is known and understood at the time of the document approval. After Avista has joined the market and has gained operational experience, these responsibilities will be evaluated and re-assigned as needed to meet the business objectives and maintain operational excellence.

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4 Approvals

Rip Divis, Chief System Operator

Date 04.22.2020



Approve EIM RT Operator Functional Roles Doc Approval - Rip Divis - 04.22.2020.msg

Robert Follini, Manager of Real Time & Day Ahead

Date 03.03.2020



Approve EIM RT Operator Functional Roles Doc Approval - Robert Follini - 03.03.2020.msg

Mike Magruder, Director of Trans Planning & System Operations

Date 03.31.2020



Approve EIM RT Operator Functional Roles Doc Approval - Mike Magruder - 03.31.2020.msg

Scott Kinney, Director of Power Supply

Date 03.03.2020



Approve EIM RT Operator Functional Roles Doc Approval - Scott Kinney - 03.03.2020.msg

Appendix C – FTE Capital & Operating Expense Estimates

This Excel file is not imbedded in the PDF document, but available as a separate file titled “Confidential – EIM HR Plan Financials – Final 05.20.2020”



Confidential – EIM
HR Plan Financials – F