



# **Business Requirements Specification**

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## **Local Market Power Mitigation Enhancements (LMPME)**

Document Version: 1

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# 1 Introduction

## 1.1 Purpose

The purpose of this document is to capture and record a description of what the Users and Business Stakeholders of the project wish to obtain by providing high-level business requirements. This document establishes the basis for the agreement between the initiators and implementers of the project. The information in this document serves as input to determining the scope of projects and to all Business Process Modeling and System Requirements Specifications efforts.

Business requirements are what must be delivered to provide value for the Users and Business Stakeholders. Systems, software, and processes are the ways (how) to delivery, satisfy or meet the business requirements (what). The Initial BRS will provide sufficient information to determine the scope of the project and will provide the functional business requirements so that the Architecture Decision can be made. Following the Architecture Decision, the remaining non-functional business requirements, such as data, performance, web services, and security can be added to complete the Final BRS.

This project includes four elements to address cases of mitigation. The mitigation framework enhancements introduce an optional rule for EIM BAAs to limit transfer quantities or avoid cases of economic displacement. Further modifications include modifying the mitigation framework to eliminate the balance of the Fifteen Minute Market (FMM) and balance of the hour mitigation, with reexamination and application of the competitive LMP at every interval. The project includes the creation of a new default energy bid for hydro resources with storage capability. The project also makes changes to the reference level adjustment process originally established within the Commitment Cost Default Energy Bid Enhancements (CCDEBE) initiative. Lastly, the project will make enhancements to the gas price indices used for Mondays.

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## 2 Business Impacts

### 2.1 High Level Description of Business Process

| <b>Related Business Process<br/>(Level II)</b>                                      |
|---|
| Facilitate SC & CRR Holder Maintenance (MMR LII)                                    |
| Manual Consultation – existing process revision that relates to CCDEBE process work |
| Hydro DEB – Validation of Power Hubs and Storage Horizon                            |
| Manage Day Ahead Market (MMG LII)   |

### 2.2 Business Practice Manual (BPM)

| <b>BPM</b>                         | <b>Description of Impact(s)</b>  |
|------------------------------------|--|
| <b>Managing Full Network Model</b> | N/A  |
| <b>Congestion Revenue Rights</b>   | N/A  |
| <b>Market Instruments</b>          | <b>Yes.</b><br>New DEB methodology for hydro resources. Reference level adjustment and reasonableness threshold updates. |
| <b>Outage Management</b>           | N/A  |
| <b>Reliability Requirement</b>     | N/A  |
| <b>Market Operations</b>           | <b>Yes.</b>  |

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| BPM   | Description of Impact(s)  |
|---|---|
|   | Reflect consolidation of the gas price indices used to calculate the resource reference levels. MPM and competitive LMP sections must be updated. |
| <b>Compliance Monitoring</b>  | N/A   |
| <b>Metering</b>   | N/A   |
| <b>Scheduling Coordinator Certification &amp; Termination</b>             | N/A   |
| <b>Rules of Conduct Administration</b>                                    | N/A   |
| <b>BPM Change Management</b>  | N/A   |
| <b>Definitions &amp; Acronyms</b>   | N/A   |
| <b>Settlements &amp; Billing</b>  | N/A   |
| <b>Credit Management</b>  | N/A   |
| <b>Candidate CRR Holder</b>   | N/A   |
| <b>Transmission Planning Process</b>                                      | N/A   |
| <b>Direct Telemetry</b>   | N/A   |
| <b>Distributed Generation for Deliverability</b>                          | N/A   |
| <b>Energy Imbalance Market (EIM)</b>                                      | <b>Yes.</b><br>Flow reversal and economic displacement will need to be spelled out.   |
| <b>Generator Interconnection Procedure (GIP)</b>                          | N/A   |
| <b>Generator Interconnection and Deliverability Allocation Procedures</b> | N/A   |
| <b>Generator Management</b>   | N/A   |
| <b>Managing Full Network Model</b>  | N/A   |

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## 2.3 System:

| System Impact:             | Description:   |
|----------------------------|--|
| <b>RTM</b>                 | <p><b>Scope item 1 - Flow Reversal:</b></p> <ul style="list-style-type: none"> <li>○ Fifteen minute market (FMM): MPM shall be applied independently to each 15 minute interval and the mitigated bid shall not persist to the end of the hour.</li> <li>○ Five minute market (RTD): There is no MPM pass, however, its advisory interval is mitigated for the next RTD run independently.</li> <li>○ The Competitive LMP plus a small configurable tolerance shall be used for energy bid mitigation above that level.<br/>Mitigated bid = Min [submitted bid, MAX (DEB, Competitive LMP + \$0.xx tolerance)]</li> </ul> <p><b>Scope item 1 - Economic Displacement:</b></p> <p>After the bids for all resource within a group of EIM BAAs are mitigated in MPM or RTD advisory due to import transfer congestion, the export net transfer out of that BAA is limited in the FMM or the next RTD run to the greater of the net export transfer in the MPM pass or the previous RTD advisory, or the base net export transfer for that EIM BAA and interval, plus the flexible up requirement for that BAA and interval.</p> |
| <b>SIBR</b>                | <p><b>Scope item 3 – Reference level adjustment:</b></p> <p>SIBR must have the ability to calculate reasonableness threshold commitment costs after receipt of new payload using updated gas price indices.</p>  |
| <b>Internal ISO System</b> | <p><b>Scope item 2 – New DEB:</b></p> <p>DEB calculation must be updated to include new DEB option. System must show new DEB option, power price hubs (four hubs), and storage horizon.</p>  |

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|--------------------|--|
|                    | <p><b>Scope item 3 – Reference level adjustment:</b></p> <p>Internal ISO system will need to consider the updated gas prices and recalculate reasonableness threshold for energy bids and publish to SIBR. Internal ISO system will also need to publish updated gas price indices to SIBR for the calculation of commitment cost reasonableness thresholds.</p> <p><b>Scope item 4 – Gas price indices:</b></p> <p>Update system to use a minimum of one gas price to determine the blended gas price used in the CAISO market.</p> |
| <b>Master File</b> | <p><b>Scope item 1 - Economic Displacement:</b></p> <p>Master file option to limiting transfer per a defined rule.</p>   |
| <b>OASIS</b>       | <p><b>Scope item 1 - Economic Displacement:</b></p> <p>OASIS report impact.</p>  |
| <b>CMRI</b>        | <p><b>Scope item 2 – New DEB:</b></p> <p>CMRI will need to display a new DEB type [existing report – Default Energy Bid].</p>  |

## 2.4 Other

| Impact:                       | Description: (optional) |
|-------------------------------|-------------------------|
| Market Simulation             | Yes                     |
| Market Participant Impact     | Yes                     |
| User Acceptance Testing (UAT) | Yes                     |
| Internal Training             | Yes                     |
| External Training             | Yes                     |
| Policy Initiative             | Yes                     |
| Vendor                        | Yes - Siemens           |

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## 3 Business Requirements

The sections below describe the Business Processes and the associated Business Requirements involved in the project. These may represent high level functional, non-functional, reporting, and/or infrastructure requirements. These business requirements directly relate to the high level scope items determined for the project.

### 3.1 Business Process: Manage Markets & Grid (MMG)

The requirements in this section pertain to the Prevention of Flow Reversal and Economic Displacement.

#### 3.1.1 Business Requirements

| ID#          | Business Feature   | Requirement Type | Potential Application (s)<br>Impacted |
|--------------|--|------------------|---------------------------------------|
| LMPME-BRQ001 | Market Power Mitigation (MPM) in RTUC (FMM/STUC/HASP) shall be applied independently to each 15 minute interval and the mitigated bid shall not persist to the end of the hour.  | Core             | RTM (RTUC)                            |
| LMPME-BRQ002 | Market Power Mitigation in RTD shall be applied independently to each 5 minute interval and the mitigated bid shall not persist to the end of the hour.  | Core             | RTM (RTD)                             |
| LMPME-BRQ003 | There is no MPM pass, however, each advisory interval in the current RTD run shall be mitigated independently for the next RTD run.  | Core             | RTM (RTD)                             |
| LMPME-BRQ004 | If the last five minute RTD interval(s) does (or do) not have mitigation because it was not present in the previous RTD run, there will be no mitigation for these intervals in the current RTD run. However, they will be evaluated and used in the next RTD run. | Core             | RTM (RTD)                             |
| LMPME-BRQ005 | System shall publish the mitigated bid for each fifteen minute interval of the second hour in HASP.  | Core             | RTM (HASP)                            |
| LMPME-BRQ006 | System shall receive and publish externally the mitigated bid for each fifteen minute interval of the second hour in HASP.   | Core             | CMRI                                  |

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| ID#          | Business Feature  | Requirement Type | Potential Application (s) Impacted |
|--------------|---|------------------|------------------------------------|
| LMPME-BRQ007 | System shall mitigate the energy bid in each interval based on the competitive locational marginal price in that interval.  | Core             | RTM (RTD/RTUC)                     |
| LMPME-BRQ008 | A resource mitigated in the FMM shall no longer automatically be mitigated in the five minute real-time dispatch in the corresponding intervals.  | Core             | RTM (RTD)                          |
| LMPME-BRQ009 | <p>The Competitive LMP plus a small configurable tolerance shall be applied to resources assuming the market bid is higher than the default energy bid.</p> <p>Mitigated bid = Min [submitted bid, MAX (DEB, Competitive LMP + \$0.XXX tolerance)]</p> <p>Note: The configurable parameter \$0.XXX shall be initially set at \$0.001.</p> <p>Note: The parameter added to the competitive LMP is nominal used to establish price separation between competitive and non-competitive areas. This price separation will further prevent flow reversal from occurring in cases when a resource is mitigated to either the resource's DEB or competitive LMP.</p> | Core             | RTM (RTD)                          |



|                     |   |           |                                       |                    |  |                   |  |                 |   |         |   |             |                  |
|---------------------|---|-----------|---------------------------------------|--------------------|--|-------------------|--|-----------------|---|---------|---|-------------|------------------|
| <p>LMPME-BRQ010</p> | <p>After the bids for all resource within a group of EIM BAAs are mitigated in MPM or RTD advisory due to import transfer congestion, the net transfer of that BAA is limited in the FMM or the next RTD run to the greater of the net transfer in the MPM pass or the previous RTD advisory, or the base net transfer for that EIM BAA and interval, plus the sum of the flexible ramp up awards in that BAA and interval in excess of the adjusted flexible ramp up requirement in that BAA and interval. The adjustment is for EIM diversity benefit (net import capability) and flexible ramp up demand elasticity.</p> $T_{BAA} \leq \max\left(T_{BAA}^{(Base)}, T_{BAA}^{(MPM)}\right) + \max\left(0, \sum_{i \in BAA} FRU_i^{(MPM)} - FRUR'\right)$ <table border="1" data-bbox="277 968 954 1503"> <tr> <td><math>T_{BAA}</math></td> <td>Net EIM Transfer of the mitigated BAA</td> </tr> <tr> <td><math>T_{BAA}^{(Base)}</math></td> <td>Base net EIM Transfer of the mitigated BAA</td> </tr> <tr> <td><math>T_{BAA}^{(MPM)}</math></td> <td>Pre-mitigation (market power mitigation run) net EIM Transfer of the mitigated BAA (for RTD, the previous RTD run serves as the market power mitigation run)</td> </tr> <tr> <td><math>FRU_i^{(MPM)}</math></td> <td>Flexible ramping up award for resource i (in the MPM run)</td> </tr> <tr> <td><math>FRUR'</math></td> <td>Flexible ramping up requirement for the mitigated BAA, adjusted for EIM diversity and demand elasticity</td> </tr> </table> <p>Note: This rule shall be applied in both the 15-minute market and real-time dispatch, so that every interval is tested separately. In the event the transfer constraint is binding in the pricing run, the congestion rents shall accrue to the source EIM BAA. Upon implementation, the default setting for this rule will be inactive for all EIM BAAs. BAAs that choose to enforce the rule must make appropriate designation within the Master File as part of the normal Master File registration process.</p> | $T_{BAA}$ | Net EIM Transfer of the mitigated BAA | $T_{BAA}^{(Base)}$ | Base net EIM Transfer of the mitigated BAA | $T_{BAA}^{(MPM)}$ | Pre-mitigation (market power mitigation run) net EIM Transfer of the mitigated BAA (for RTD, the previous RTD run serves as the market power mitigation run) | $FRU_i^{(MPM)}$ | Flexible ramping up award for resource i (in the MPM run) | $FRUR'$ | Flexible ramping up requirement for the mitigated BAA, adjusted for EIM diversity and demand elasticity | <p>Core</p> | <p>RTM (RTD)</p> |
| $T_{BAA}$           | Net EIM Transfer of the mitigated BAA   |           |                                       |                    |  |                   |  |                 |   |         |   |             |                  |
| $T_{BAA}^{(Base)}$  | Base net EIM Transfer of the mitigated BAA  |           |                                       |                    |  |                   |  |                 |   |         |   |             |                  |
| $T_{BAA}^{(MPM)}$   | Pre-mitigation (market power mitigation run) net EIM Transfer of the mitigated BAA (for RTD, the previous RTD run serves as the market power mitigation run)  |           |                                       |                    |  |                   |  |                 |   |         |   |             |                  |
| $FRU_i^{(MPM)}$     | Flexible ramping up award for resource i (in the MPM run)   |           |                                       |                    |  |                   |  |                 |   |         |   |             |                  |
| $FRUR'$             | Flexible ramping up requirement for the mitigated BAA, adjusted for EIM diversity and demand elasticity   |           |                                       |                    |  |                   |  |                 |   |         |   |             |                  |

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| <b>ID#</b>   | <b>Business Feature</b>   | <b>Requirement Type</b> | <b>Potential Application (s) Impacted</b> |
|--------------|---|-------------------------|---|
| LMPME-BRQ011 | Energy Imbalance Market (EIM) entities must have the ability to elect to have the constraint.<br>Note: This is a flag at the Balancing Authority Area (BAA).  | Core                    | Master File                               |
| LMPME-BRQ059 | System must publish the net EIM Transfer limit (high/low) by BAA, market (FMM/RTD) and interval (15/5 minute).  | Core                    | Master File                               |
| LMPME-BRQ046 | FMM MPM results report must display the actual interval specific results of the MPM process and show all the mitigations within the given interval.   | Core                    | CMRI                                      |
| LMPME-BRQ047 | RTD MPM results report must display the actual interval specific results of the MPM process with no further translation of data needed to capture all the intervals that were impacted.   | Core                    | CMRI                                      |
| LMPME-BRQ062 | Market systems shall calculate and broadcast the Net EIM Transfer Limits for both the import and export directions, as applicable, with each binding 15-minute and 5-minute market interval.<br><br>"As applicable" will apply to the following conditions:<br>(LMPME future scenario) EIM BAA export transfers are limited for mitigated intervals (RTPD and RTD), occurs only for export direction. | Core                    | RTPD<br>RTD                               |

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## 3.2 Business Process: Hydro DEB – Validation of Power Hubs and Storage Horizon (new business process)

### 3.2.1 Business Requirements

| ID#          | Business Feature  | Requirement Type                             | Potential Application(s) Impacted |
|--------------|---|--|-----------------------------------|
| LMPME-BRQ012 | The new default energy bid (hydro DEB) shall be for any hydro resource in the CAISO or EIM area that has storage available and has the ability to be dispatchable and biddable in the real-time market. The new default energy bid (hydro DEB) shall have a bid curve with only one segment with Pmin as the starting value and Pmax as the ending value. | Core   | Internal ISO System               |
| LMPME-BRQ060 | System must have the ability to manage hydro DEB eligibility at the resource level.   | Core   | Master File                       |
| LMPME-BRQ013 | System must have a field to select and rank the new default energy bid (hydro DEB) option.  | Core   | Master File                       |
| LMPME-BRQ014 | In order to be eligible for the new default energy bid (hydro DEB) the resource owner must submit the resource's maximum storage horizon along with supporting documentation.   | Business Process<br>BPM – Market Instruments | Not applicable                    |

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| ID#          | Business Feature   | Requirement Type | Potential Application(s) Impacted |
|--------------|--|------------------|-----------------------------------|
| LMPME-BRQ015 | System must store the resource's maximum storage horizon.<br>Note: Maximum storage horizon represents the maximum length of storage a hydro resource has when cycling reservoirs during typical hydro year conditions. | Core             | Master File                       |

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| <b>LMPME-BRQ016</b> | <p>The new default energy bid (hydro DEB) shall have the following three components:<br/> <i>Hydro DEB = MAX(Gas Floor, ST Floor, LT Geo Floor)</i><br/>         where:<br/> <i>Gas Floor = (Peaker Heat Rate * GPI<sub>FR</sub>) * 1.1</i><br/> <i>Peaker Heat Rate = Configurable parameter (initially set at 11.176 MMBtu/MWh)</i><br/> <i>GPI<sub>FR</sub> = Gas price of resource fuel region (FR)</i><br/> <i>ST Floor = MAX(DA Index<sub>L</sub>, BOM Index<sub>L</sub>, M Index<sub>L,+1</sub>) * Mult</i><br/> <i>Note: For ST Floor this calculation shall only use local hub prices</i><br/> <i>LT Geo Floor = MAX(LT Floor<sub>L</sub>, LT Geo Floor<sub>A1</sub>, LT Geo Floor<sub>A2</sub>, ..., LT Geo Floor<sub>A4</sub>) * 1.1</i><br/> <i>LT Floor<sub>L</sub> = MAX(M Index<sub>L,+2</sub>, ..., M Index<sub>L,+N</sub>)</i><br/> <i>LT Geo Floor<sub>A1</sub> = MAX(DA Index<sub>A1</sub>, BOM Index<sub>A1</sub>, M Index<sub>A1,+1</sub>, ..., M Index<sub>A1,+N</sub>)</i><br/> <i>Note: For LT Geo Floor this calculation shall use local hub prices as well as additional hubs</i><br/>         Where the M Index values in the long term / geographic (LT Geo) floor term of the calculations would be limited to the number of months within the resource storage horizon.<br/>         - <i>DA Index<sub>L</sub></i> - Day-ahead (DA) power price at local default bilateral hub (L)<br/>         - <i>BOM Index<sub>L</sub></i> - Balance-of-month (BOM) power price index at L<br/>         - <i>M Index<sub>L,+1</sub></i> - Month ahead power price index at L for next future month<br/>         - <i>Mult</i>- A multiplier, specified as 1.4, applied to the short term floor to establish a default energy bid value sufficiently high to not deplete a resource frequently<br/>         - <i>A1-A4</i> - Are the additional hubs that a scheduling coordinator may request. A resource can have a maximum of four additional hubs.<br/>         - <i>L</i> - Local default bilateral trading hub<br/>         - <i>N</i> - Max storage horizon 1 ≤ N ≤ 12<br/>         Note: The inputs listed above for this formula are updated daily to reflect current market conditions.</p> | Core | Internal ISO System |
|---------------------|--|------|---------------------|

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| ID#          | Business Feature  | Requirement Type | Potential Application(s) Impacted |
|--------------|---|------------------|-----------------------------------|
| LMPME-BRQ017 | The new default energy bid (hydro DEB) shall be capped at the market bid cap of \$1,000/MWh.  | Core             | Internal ISO System               |
| LMPME-BRQ018 | The CAISO shall calculate the new default energy bid (hydro DEB) once per trade date per market for each eligible resource.   | Core             | Internal ISO System               |
| LMPME-BRQ019 | The short term floor shall be computed using Default Power Hub prices. A multiplier (set at 1.40) shall be applied to this calculated value so that it can be used to ensure that the DEB is not higher than local EIM prices on a frequent basis. Note: This requirement relates to inputs denoted within BRQ016.  | Core             | Internal ISO System               |
| LMPME-BRQ020 | The gas floor shall be calculated similar to a variable cost DEB for a gas resource. For example, the heat rate for a peaker resource is multiplied by the gas price index for a similar gas resource if it were located in the same fuel region. This calculation shall use a 110% multiplier. Note: This requirement relates to inputs denoted within BRQ016. | Core             | Internal ISO System               |

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| ID#          | Business Feature  | Requirement Type | Potential Application(s) Impacted |
|--------------|---|------------------|-----------------------------------|
| LMPME-BRQ021 | <p>The long term/geographic floor shall be calculated as the maximum of the day-ahead, balance of the month, and month ahead indices for the resource. Resources shall be eligible for future month-ahead power prices, up to the amount of the maximum storage horizon.</p> <p>Example: If a resource has three months of storage, the month ahead index for the successive month, two months in advance, and three months in advance are used.</p> <p>Note: This requirement relates to inputs denoted within BRQ016.</p> | Core             | Internal ISO System               |
| LMPME-BRQ022 | <p>System must have the ability to use hubs in addition to the local hub in the calculation of long term/geographic floor. Resources shall be eligible for future month-ahead power prices, up to the amount of the maximum storage horizon.</p>  | Core             | Internal ISO System               |
| LMPME-BRQ023 | <p>Market Participants shall submit proof of firm transmission rights to additional hubs through a submittal to the CAISO on an annual basis.</p> <p>Note: If firm transmission rights are shown for multiple hubs, a resource shall receive the maximum of these values which will be determined each day.</p>   | Core             | CIDI                              |

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| ID#          | Business Feature  | Requirement Type | Potential Application(s) Impacted |
|--------------|---|------------------|-----------------------------------|
| LMPME-BRQ024 | System must provide the ability for market participants to request changes to additional hubs. These additional hubs must be stored.<br>Note: There shall be an option to select from one default and four additional bilateral energy-trading hubs for hydro resources with the new Hydro DEB option. The bilateral energy-trading hubs shall be limited to Palo Verde, Alberta, Mid-Columbia, north-of-path 15, and south-of-path 15. | Core             | Master File                       |
| LMPME-BRQ061 | System must receive the DEB rankings, default bilateral hub, additional bilateral hubs, and maximum storage horizon.  | Core             | Internal ISO System               |
| LMPME-BRQ026 | The additional bilateral energy-trading hubs shall be included in the long term/geographic floor component of the DEB.  | Core             | Internal ISO System               |
| LMPME-BRQ027 | The default trading hub for a hydro resource with storage shall be determined and stored based on the BAA to default bilateral energy hub mapping.  | Core             | Master File                       |

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| <b>ID#</b>   | <b>Business Feature</b>  | <b>Requirement Type</b>                      | <b>Potential Application(s) Impacted</b> |
|--------------|--|--|--|
| LMPME-BRQ028 | System shall receive the new default energy bid (Hydro DEB) type and include this within the Default Energy Bid report.  | Core   | CMRI                                     |
| LMPME-BRQ029 | System shall publish the new default energy bid (hydro DEB) type in outgoing payload for downstream systems.   | Core   | Internal ISO System                      |
| LMPME-BRQ030 | For resources that are eligible to receive the new default energy bid (hydro DEB), the system shall revert to the hydro DEB used in the same market on the prior day if the DEB calculation fails.   | Core   | Internal ISO System                      |
| LMPME-BRQ034 | The CAISO must have the authority to audit the additional power price hubs, request additional information, and require a resource owner to attest to the correctness of submitted data. If information is found to be inaccurate, eligibility for the use of the new default energy bid (hydro DEB) may be suspended and the resource owner may be referred to FERC.    | Tariff requirement                           | Not applicable                           |
| LMPME-BRQ035 | For a resource with additional approved bilateral hubs, if the scheduling coordinator (SC) changes, the resource shall no longer be eligible to receive the additional bilateral hubs. The new SC must request to receive the additional bilateral hubs with required supporting documentation spelled out within the Market Instruments Business Practice Manual (BPM). | Business Process<br>BPM – Market Instruments | Not applicable                           |

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| ID#          | Business Feature  | Requirement Type | Potential Application(s) Impacted |
|--------------|---|------------------|-----------------------------------|
| LMPME-BRQ050 | System must validate the administrator entered value for the maximum storage horizon. The acceptable value is either null or a whole number between the numbers of 1-12. NULL shall indicate that the resource is not eligible for Hydro DEB. | Core             | Master File                       |

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### 3.3 Business Process: Manage Market & Grid (Gas Price Indices)

#### 3.3.1 Business Requirements

| ID#          | Business Feature   | Requirement Type | Potential Application(s) Impacted |
|--------------|--|------------------|-----------------------------------|
| LMPME-BRQ037 | System must no longer reference ICE gas price data for real-time market gas price indices calculations.<br>Note: The CAISO shall continue to reference S&P Global Platts as a source of gas indices that now contain information about ICE trades.   | Core<br>Tariff   | Internal ISO System               |
| LMPME-BRQ039 | System must use a minimum of one gas index to determine the blended gas price. If no gas price index available, the system shall fallback to the prior real-time market gas price index.<br>Note: The CAISO Tariff and Market Instruments BPM shall be the source for which publications that CAISO shall use. Currently, the CAISO uses Natural Gas Intelligence, SNL Energy/BTU's Daily Gas Wire, and Platt's Gas Daily. | Core<br>Tariff   | Internal ISO System               |
| LMPME-BRQ040 | System shall use ICE's Monday-only index for the real-time market on Mondays depending on availability.  | Core<br>Tariff   | Internal ISO System               |

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### 3.4 Business Process: Market/Business Simulation

This section shall provide a basis for the development of the Market/Business Simulation Structured Scenarios. These requirements will provide guidance on the market participant impacts, inputs into the Structured Scenarios, endpoints to the Structured Scenarios, and reasons for potential Structured Scenarios. The guidance on market participant impacts shall be gathered from the requirements that impact rules, interfaces, applications/reports, new system processes, new/modified data models, and new user roles. The source and sink systems shall be determined through the development of the system context diagram and the web service requirements. The Reason for the Potential Structured Scenario column will be to offer guidance regarding what potential Structured Scenarios, and their context, may be needed for this project. This section applies to all policy development projects, market enhancements, technology enhancements, operation enhancements, Energy Imbalance Market (EIM) implementations, and Reliability Coordination (RC) service implementations.

In the Reason for Potential Structured Scenario column, the Business Analyst must select one or more of the following reasons:

- 1. Rule Impacts:** Generalized changes in market rules, bidding rules, settlements rules, market design changes, or other business rules.
- 2. Interface changes:** Changes that impact templates (e.g. the Resource Adequacy (RA) supply plan), user interface (UI), and application programming interface (API) (e.g. retrievals of new shadow settlement data).
- 3. New application/report:** Changes that cause addition/modification of market software or reports, especially when market data input is required by the market participant.
- 4. New system process:** Modification of data flow in systems, especially if the new process requires the market participant to demonstrate proficiency prior to production.
- 5. New/Modified model data:** Addition or substantial modification of model data as a market solution provided by the ISO.
- 6. New user role:** The addition or modification of access permissions for a user role applied to specific business units within an EIM entity or market participant organization (e.g. Load Serving Entity (LSE) as a Local Regulatory Authority (LRA) role). Structured Scenarios would be beneficial for market participants taking on a new function or process within their organization.

#### 3.4.1 Business Requirements

| ID#          | Guidance on Market Participant Impacts   | Source System | Sink System | Reason for Potential Structured Scenario |
|--------------|--|---------------|-------------|--|
| LMPME-BRQ041 | Market participants will have the ability to view the parameters and ranking of an approved Hydro DEB. | CIDI          | Master File | Rule Impacts;<br>Interface Changes       |

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| ID#          | Guidance on Market Participant Impacts  | Source System      | Sink System | Reason for Potential Structured Scenario |
|--------------|---|--------------------|-------------|--|
| LMPME-BRQ042 | Market participants will have the ability to view their Hydro DEB on a daily basis on CMRI.   | Market Participant | CMRI        | Rule Impacts                             |
| LMPME-BRQ043 | Mitigation will be performed on an interval by interval basis.  | Market Participant | CMRI        | Rule Impacts; New application/Report     |
| LMPME-BRQ044 | Market Participants may see a small impact to their mitigated bid due to the tolerance added to the Competitive LMP.  | Market Participant | CMRI        | Rule Impacts                             |
| LMPME-BRQ045 | In the scenario where two EIM BAAs will be mitigated while one exports in the MPM pass to the other, the ISO wants to demonstrate that after the mitigation the exported energy value isn't increasing in the FMM pass. | Market Participant | CMRI        | Rule Impacts                             |

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## 4 Web Services and Data Requirements

### 4.1 Service Artifacts

The tables below define the Data requirements and its respective impacted artifacts. Each Data requirement is assigned a unique ID starting with the system acronym plus a prefix of “DAT” followed by a 3 digit number with leading zeros if necessary.

#### 4.1.1 External Web Services

This table lists the web services between systems external to the CAISO (market participants) and CAISO-based systems:

| Data ID        | Data Set Name     | Description of Data Set/Context of the data set/Use case   | Trigger Event/Frequency                     |
|----------------|-------------------|--|---|
| LMPME - DAT001 | Default Bid Curve | This is an existing XSD in which we will change the enumeration to string for DefaultBidType.  | Existing Event/Frequency (as in production) |
| LMPME - DAT002 | Generator RDT     | Add a new enumeration to the ranking. Created a Hydro DEB curve option. Added maximum storage horizon data element. Created default bilateral hub and alternative trading hub. | Event/Frequency (as in production)          |

### 4.2 System Impact

The tables below map the Data requirements and its respective impact on a system level. Each data requirement must reference at least one Business Requirement, Functional Requirement or Use Case. Requirement(s) ID(s) will be listed in the second left column.

#### 4.2.1 External Web Services

This table identifies the provider and consumer system/s impacted by the data requirement:

| DATA ID      | Data Set Name     | Provider System (Source Application) | Consumer System (Sink Application) |
|--------------|-------------------|--------------------------------------|------------------------------------|
| LMPME-DAT001 | Default Bid Curve | Market Participant                   | CMRI                               |
| LMPME-DAT002 | Generator RDT     | Market Participant                   | Master File                        |