Business Requirements Specification

Bidding Rules Enhancements - Generator Commitment Cost Improvements

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Bidding Rules Enhancements - Generator Commitment Cost Improvements **Business Requirements Specification - Planning**		**Date Created:**	**1/13/2017**

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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).

This initiative increases the flexibility of registering fuel regions, improves formulation of fuel regions and facilitates the inclusion of resource start-up electricity costs in proxy costs based on wholesale projected electricity price.

2. Details of Business Need/Problem

2.1 Description

This initiative is revisiting commitment costs for gas-fired resources to address through long-term market design changes the ability to allow for commitment cost caps, and commitment cost bids, to provide sufficient cost recovery.

A summary of the issues and CAISO proposal to address them are listed below:

No.	Issue	Proposal
1	Gas price index may not reflect resource-specific gas transportation costs.	Increase the flexibility of registering fuel regions and allow for cap-and-trade credits to the base gas transportation rates for resources with GHG compliance costs within these fuel regions.
2	Gas price index does not reflect base gas transportation credits for resources with GHG compliance costs within these fuel regions.	Improve formulation of fuel region where each fuel region reflects a unique combination of commodity price, base gas transportation costs, and base gas transportation cap-and-trade credits.
3	Electricity price index may not reflect resource-specific start-up electricity costs.	Include resource-specific start-up electricity costs in proxy costs based on wholesale projected electricity price (estimate of auxiliary energy costs based on monthly GPI for unit with a heat rate of 10,000 Btu/KWh) unless resource verifies costs incurred are retail rates.

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: General

3.1.1 Business Requirements

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
BREB-BRQ010	**Request Submission of Creation of New Fuel Region :** SC shall have the ability to submit request to create new fuel region to ISO. The SC shall provide the following supporting documentation, for example: • Current pipeline map with resource designation (pricing hub) to support commodity hub in new fuel region definition. • Natural gas transportation schedule and pricing tariff schedule (i.e. rate schedule) to support transportation rate and fuel reimbursement rate in new fuel region definition. • Identification of natural gas transportation schedule is CPUC jurisdictional. • Identification of any additional miscellaneous costs. **Note:** This request to create a new fuel region shall include a description of the reason for the request. The process to create a new fuel region can be requested for the purpose of selecting it for the fuel region as well as for selecting it for the electric region, under wholesale option.	- Core - BPM (Market Instruments)	
BREB-BRQ030	**Creation of New Fuel Region Approval:** ISO shall determine if it will approve the request for a new fuel region by manually reviewing the request for whether the request is reasonable as follows:	Core	- ISO Internal Application

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
	• Validate if commodity price is feasible as a market price for the commodity hub being used as source for fuel procurement. • Validate if the gas transportation company could feasibly provide gas pipeline transportation services for delivering fuel to the resource's location. • Validate whether the gas transportation company is CPUC jurisdictional whereby its base gas transportation rates would include cap-and-trade credits for covered entities. If a resource is covered entity it will be listed on Air Resources Board (ARB) list. **Note:** ISO will have flexibility to reject a request for creating a new fuel region. One reason it could reject a request is if there is a concern that gas transportation company is not a viable shipper and only requested to exercise market power through higher rates.		
BREB-BRQ040	**Creation of New Fuel Region:** • If in the approval process, ISO validates that the requested gas pipeline company is CPUC jurisdictional, two new fuel regions shall be created, if approved, one for covered entity (including the Cap-and-Trade credit) and another for non-covered entity (with zero Cap-and-Trade credit). Otherwise, one fuel region shall be created for non-covered entity (with zero Cap-and-Trade credit). • There shall be a way for ISO to identify in the fuel region definition which fuel region is corresponding to covered entity or not.	Core	ISO Internal Application
BREB-BRQ060	**GPI (For Delivered Price Estimate) Calculations:** For each fuel region, the Gas Price Index (GPI_{FR}) shall be calculated as: Commodity Price *(existing)* + Base Gas Transportation Rate *(existing)* + Gas Transportation Shrinkage Allowance (modified)	Core	ISO Internal Application

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
	+ Base Gas Transportation Cap-and-Trade Credit *(new)* + Miscellaneous Costs *(new)* **Note:** • If a fuel region is not a covered entity, Base Gas Transportation Cap-and-trade credit shall be set to 0. • Miscellaneous cost could include taxes for any county, as applicable. **Notes:** • This applies to ISO BAA and EIM resources. • The above formula shall be used for all GPI calculations (daily as well as monthly (future gas)).		

BREB-BRQ080	**GPI (For Delivered Price Estimate) Calculations:**
	 An ISO internal application shall calculate:
	 Gas Transportation Shrinkage Allowance =
	      Commodity Price *
	      Fuel Reimbursement Rate /
	      (1 – Fuel Reimbursement Rate)
	
	 Notes:
	 • This applies to ISO BAA (new functionality) and EIM resources (existing functionality).
		Core	ISO Internal Application

BREB-BRQ090	**GPI (For Delivered Price Estimate) Calculations:** • An ISO internal application shall calculate daily GPI as well as monthly future GPI for each fuel region. • The GPI functionality shall be enhanced to pull Gas Commodity Price every day, no matter if it is a holiday or not. If Gas Commodity Price is not available, for any reason, the latest available data shall be used.	Core	ISO Internal Application

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BREB-BRQ120	**Fuel Region WebICE DA Morning Process:** All new (as well as existing) fuel regions that are within CISO jurisdiction shall be part of the webICE DA morning process. **Note:** The WebICE DA morning process is a temporarily Aliso Canyon process that is currently set to expire on Nov 30, 2017.	Core	ISO Internal Application
BREB-BRQ130	**Resource Fuel Region and Electric Region Selection:** • SC shall have the ability to submit a request to select or change fuel region and electric region (if applicable) for a resource at the same time. • GRDT shall display Fuel Region, Electric Region (new) but this field shall not be modifiable by SC's.	Core	MF
BREB-BRQ140	**Resource Selection of Fuel Region :** SC shall have the ability to submit a request to select a fuel region in the MF for that resource. The SC shall provide the following supporting documentation, for example: • Gas procurements to support selected commodity price, • Natural gas transportation invoice, • Supporting documentation for miscellaneous costs as defined in fuel region, • Supporting documentation for ARB opt-in, if applicable.	- Core - BPM (Market Instruments)	MF
BREB-BRQ170	**Resource Fuel Region Selection/Validation:** • ISO shall manually validate the following, upon any relevant data change. • When applicable, validate that the selection is resource appropriate through reviewing supporting documentation for (Refer to BREB-BRQ140): o If resource can support its gas procurements are consistent with the selected commodity price (may refer to submitted invoices or trade records),	Core	MF

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
	o If resource can support its gas pipeline shipments are being delivered or expected to be delivered on the selected gas pipeline transportation company and its selected transportation rate (will refer to natural gas transportation company's invoice), o If the resource is determined to be a covered or non-covered entity and has selected the appropriate fuel region as described in the fuel region definition, which will now include whether the fuel region is a covered entity or non-covered entity fuel region. This shall be done utilizing GHG flag. o If the resource can support it incurs the defined miscellaneous costs as described in the fuel region definition.		
BREB-BRQ180	**Resource GHG Flag Selection/Validation:** ISO shall manually validate whether the GHG flag selection is appropriate through reviewing public or submitted supporting documentation (Refer to BREB-BRQ140), as follows: • If a resource is covered entity (listed on ARB covered entities list), it must be designated as having GHG obligation (MF GHG flag is selected). • If a resource expects that it will have GHG obligation, and opts in to ARB compliance program (ARB opt-in supporting documentation, if applicable), it must be designated as having GHG obligation (MF GHG flag is selected). **Note:** The ISO requires this discretion in order to accommodate resources that opted in to the program since they would certainly have an emissions obligation but aren't on the ARB list yet (e.g. brand new gas 500+ MW gas resource). • Otherwise, the resource must be designated as not having GHG obligation (MF GHG flag is not selected).	Core	MF
BREB-BRQ190	**Resource Fuel Region Validation:** The manual validation for resource fuel regions shall be performed, initial sweep. The validation shall include, but not limited to: • Selected FR shall be one of regions on the FR list. • All required documentations are complete and up to date.	Core	MF

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
BREB-BRQ210	**Fuel Region Reporting:** • OASIS shall publish hourly GPI's for newly (as well as existing) added fuel regions (hourly value is same as daily GPI value). (existing functionality) • OASIS shall publish hourly GPI's for new fuel regions as soon as the new fuel region is approved by ISO (without waiting for a resource to be associated with the new fuel region in MF). **Note:** Minimum BAA-level GPI calculation shall stay the same as existing (new fuel region GPI will be included in the calculation even without any resources associated with it).	Core	OASIS
BREB-BRQ220	**GPI Reporting for Registered Cost Use:** • ISO shall only publish total monthly fuel region GPI (existing) and eliminate publishing the monthly fuel region GPI components on CAISO public website as PDF file.	Core	MF
BREB-BRQ260	**Request Submission of Creation of New Electric Region:** • SC shall have the ability to submit a request to create new electric region. • The selection process shall follow same procedure as those for requesting creation of new fuel regions. • SC can submit request to add an electric region with an electric retail rate. If done, the SC shall provide the following supporting documentation, for example: o Invoices or service agreements from an electric retail company showing auxiliary electric energy settled at retail rate within a specific retail electric region, if the resource is opting for Retail electric region type. **Notes:** • ER ID/name designation shall be unique irrespective of ER type.	- Core - BPM (Market Instruments)	

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
	• Refer to BREB-BRQ300 for validation rules of ER designations.		
BREB-BRQ310	**EPI Input Data:** • If Retail ER type is requested and approved, ISO shall fetch the electric retail rate following the approved submitted documentation by the SC. There shall be retail rate per electric region, subject to modification as applicable. • For example, SC could request an electric region to have the electric retail rate from "PG&E's Standby Service Rate for Transmission Voltage" from the submitted electric retail rate schedules that are in the electric retail provider documentation. • Once electric region is approved and added to the ER list, ISO shall have a manual process to gather the posted electric retail rate schedules and review them for any changes twice a month. • Refer to BREB-BRQ320 for electric retail rate variation variables.	Core	ISO Internal Application

BREB-BRQ320	**EPI Input Data (Electric Retail Rate):**
	
	• The electric retail rate, for each ER with "Retail" type, shall be able to handle variation by:
	    ○ Season (with a defined start and end date)
	    ○ Day Peak Type (on-peak, mid-peak, and off-peak)
	
	• If the electric retail rate does not vary by season, the same electric rate shall be used for all seasons.
	
	• If the electric retail rate does not vary by day peak type, the same electric rate shall be used for all day peak types.
		Core	ISO Internal Application

BREB-BRQ330	**EPI Calculations :** • An ISO internal application shall change its calculations of regional level as well as resource level EPI, which are used in proxy SUC/TC calculations in SIBR, depending on electric region type that is stored in the ISO internal application and the resource to electric region mapping that is selected by the resource in MF:	Core	ISO Internal Application

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted

	• For each applicable electric region (ER):
	
	If electric region type is set to "Wholesale" (i.e. default value):
	
	    Set monthly EPI_{ER} *($/MWH)* = 10 * monthly future GPI_{ER} *($/MMBTU)*.
	
	Else If electric region type is set to "Retail",
	
	    Set monthly EPI_{ER} *($/MWH)* = 1,000 * Electric Retail Rate ($/kwh) for the selected Retail ER (from ER definition). Refer to BREB-BRQ320 for electric retail rate variation variables.
	
	End If
	
	• Calculate monthly EPI_r by mapping resource level monthly EPI_r to regional level monthly EPI_{ER} (calculated above) using resource-to-ER mapping data table.
	
	<u>Notes:</u>
	    - Monthly EPI_{ER} is calculated on daily basis for latest electric regions available on the day of calculation.
	    - For wholesale ER, monthly EPI_{ER} for current month is calculated using monthly future GPI_{ER}. Both are calculated on daily basis:
	           ▪ Monthly EPI_{ER} = 10 * Monthly future GPI_{ER}
	    - For wholesale ER, monthly future GPI_{ER} is calculated as the simple average of daily GPI_{ER} using future gas prices traded daily in the previous month for current month delivery, using latest other data that are available on the day of calculation (including new fuel regions/electric regions).
	    - For retail ER, monthly future GPI_{ER} is calculated on daily basis using latest electric retail rate for the selected retail ER (from ER definition), using latest other data that are available on the day of calculation (including new electric regions). **Note:** Refer to BREB-BRQ320 for electric retail rate variation variables.
	    - <u>Example:</u>		

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted

	o On November 17, 2017, a new fuel region is created.
	
	o The electric region was defaulted to the new fuel region with a wholesale ER type.
	
	o Monthly future GPI_{ER} shall be calculated as simple average of daily GPI_{ER} using future as prices traded daily in the previous month (October 1, 2017 until October 31, 2017) for current month (November 2017) delivery.
	
	o **Note:** For month of November 2017, on daily-basis calculation, calculate monthly future GPI_{ER} as simple average of daily GPI_{ER} using future gas prices traded daily in previous month (October 1, 2017 until October 31, 2017) for all Fuel regions valid on run date (including new fuel region):
	
	    ▪ Trading Dates : Oct 1, 2017 –Oct 31, 2017
	
	    ▪ Strip (Delivery Date) : Nov 1, 2017 – Nov 30, 2017
	
	    ▪ Daily Calculation schedule frequency: Nov 1, 2017 – Nov 30, 2017.
	
	- This applies to ISO BAA and EIM resources.
	
	- Fall Back Rule: If monthly EPI_{ER} is not available for any reason, the last available monthly EPI_{ER} shall be used.
	
	- The daily EPI_r which is sent to SIBR shall be set to the monthly EPI_r, which is calculated on daily-basis.		

BREB-BRQ370	**Resource EPI Reporting:** • Resource level monthly EPI, which is calculated on daily basis, shall be reported accordingly in CMRI report based on Wholesale or Retail ER type.	Core	- CMRI - ISO Internal Application
BREB-BRQ390	**Net Benefit Test (NBT):** • There shall be no change to NBT calculations in this project. **Note:** Currently, ISO Tariff is explicitly identifying two delivery points for NBT:	Core	- ISO Internal Application

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
	- PG&E Citygate - SCE Citygate		
BREB-BRQ240	**Add Resource Electric Region to MF:** New fields shall be added in MF to store: • Resource electric region. **Note:** • Refer to BREB-BRQ300 for validation rules of ER designations. • An ISO internal application shall store and BPM (Market Instruments) shall list Electric Region Type ("Wholesale", or "Retail"), where "Wholesale" indicates projected wholesale electricity prices, and Retail indicates retail electricity prices.	- Core - BPM (Market Instruments)	MF
BREB-BRQ250	**Default Electric Region and Type** • In Initial implementation, MF shall set the resource ER to the following default values : ○ **ER:** Same as selected FR (i.e. Wholesale ER type). **Note:** SC's shall be able to request a change of ER and/or its type following the ER request process (refer to BREB-BRQ260, BREB-BRQ280).	Core	- MF
BREB-BRQ270	**Resource Electric Region Selection:** The MF list of valid resource electric regions shall include all the fuel regions contained in the fuel region list as well as any approved retail electric regions. <u>Clarification:</u> There should be two fields for the user to choose from: one for FR and another for ER which they can be different (even for Wholesale ER type).	Core	- MF - ISO Internal Application

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
	Note: Refer to BREB-BRQ300 for validation rules of ER designations.		

Examples :

Resource	FR	ER	ER Type
R1	PG&E	SCE1	Wholesale

$GPI_{R1} = GPI_{PG\&E}$

$EPI_{R1} = 10 * GPI_{SCE1}$ (if Proxy Cost option)

Resource	FR	ER	ER Type
R2	PG&E	SCE2	Retail

$GPI_{R2} = GPI_{PG\&E}$

$EPI_{R2} = 1000 * SCE2$ Electric Retail Rate ($/kwh) (if Proxy Cost option). Refer to BREB-BRQ320 for electric retail rate variation variables.

Note: The calculation of regional level GPI_{FR} and EPI_{ER} will be calculated in an ISO internal application whereas the resource level GPI_r and EPI_r will be mapped to GPI_{FR} (existing) and EPI_{ER}, respectively, in both MF and the ISO internal application.

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
BREB-BRQ280	**Change of a Resource Association to Existing Electric Region :** SC shall have the ability to submit a request to change association of a resource from existing electric region to another along with its electric region type in the MF. The SC shall provide the following supporting documentation, for example: • Invoices or service agreement from an electric retail company showing auxiliary electric energy settled at retail rate within a specific retail electric region, if changing electric region type to "Retail".	- Core - BPM (Market Instruments)	MF

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
	• Invoices or service agreements showing auxiliary electric energy settled at wholesale price within a specific wholesale electric region, if changing electric region type to "Wholesale" region. **Note:** Refer to BREB-BRQ300 for validation rules of ER designations.		
BREB-BRQ300	**Resource Electric Region Validation:** The manual validation for electric regions and types for resources shall be performed, initial sweep and if any requests are processed by ISO. The validation shall include, but not limited to: • Selected ER shall be one of regions on the ER list. • Validate if the resource can support that the requested electric region reflects likely auxiliary costs based on required documentations. • Validate if documentations are complete and up to date.	Core	MF
BREB-BRQ410	**Project Activation:** • The project is planned to be activated as part of Fall 2017 Release.	Core	- ISO Internal Application - MF

4. Appendices

4.1 Appendix-1: Acronym Definition

Acronym	Definition
API	Application Program Interface
ARB	Air Resources Board
BAA	Balancing Authority Area
BPM	Business Process Manual
BREB	Bidding Rules Enhancement – Part-B
BRS	Business Requirement Specifications
CAISO	California Independent System Operator
CISO	California Independent System Operator
DA	Day-Ahead
DEB	Default Energy Bid
EIM	Energy Imbalance Market
EPI	Electricity Price Index
ER	Electric Region
FR	Fuel Region
GHG	Green House Gas
GPI	Gas Price Index
GRDT	Generators Resource Data Template
ISO	California Independent System Operator
MF	Master File

Acronym	Definition
MLC	Minimum Load Cost
MSG	Multi-Stage Generator
N/A	Not Applicable
NBT	Net Benefit Test
r	Resource
SC	Scheduling Coordinator
SIBR	Scheduling Infrastructure Business Rules
SUC	Start Up Cost
TC	Transition Cost (for MSG units only)

4.2 Appendix-2: Resource Commitment Cost Formulae

Resource Commitment Costs:

- **SUC_r ($/SU):**   **Market Instruments BPM**, section G.2.1.1
- **TC_r ($/Transition):**   **Market Instruments BPM**, section H.1
- **MLC_r ($/H):**   **Market Instruments BPM**, section G.2.1.2