### 8.2.1.3 SIBR Generated Bid (Physical Bids only)

In the event that SIBR must generate a Bid or Bid component to comply with Tariff requirements, SIBR will generate a Bid or Bid component for the resource. There is a series of processing rules that are executed to establish the Start-Up and Minimum Load Cost in SIBR to generate the Bid with the proper Start-Up and Minimum Load costs based on the resource's election of either the Proxy Cost Option or the Registered Cost Option , and if it is a Natural Gas resource or Non-Natural Gas resource.  Registered Cost resources use the values provided for the resource that are in the Master File.

~~Resources that are subject to CAISO Tariff Appendix II must select the Proxy Cost Option for Start-Up and Minimum Load costs~~.  The SIBR Rules (Appendix A) sections 411xx (Generating Resource Start-Up Bid Component Processing) and 412xx ( Generating Resource Minimum Load Cost Bid Component Processing) detail the generation of these costs.

### Start-Up Bid Component

If the Registered Cost Option is selected, which is only available to resources that meet the definition of "Use-Limited" and have fewer than 12 months of LMP data, a Registered Start-Up Cost will be generated.  See Attachment G for details.

If the Proxy Cost Option is selected, the following two curves will be generated for a Start-Up Bid component if the Scheduling Coordinator has not submitted a Start-Up Bid component, or if the submitted Start-Up Bid component is higher than the proxy cost:

1. The Start-Up Time Bid Curve - this is the registered value retrieved from Master File for the resource and most current Trading Day.

2. The Start-Up Cost Curve - this is calculated using the following information:

    a. Start-Up Energy Cost Curve (registered Start-Up Energy * Energy Price Index).

    b. Start-Up Fuel Cost Curve (registered Start-Up Fuel * Gas Price Index).

    c. Greenhouse Gas Start-Up Cost Allowance Curve (if applicable – see Attachment K for details).

    d. Major Maintenance Start-Up Cost Adder (if applicable – see Attachment L for details).

    e. Grid Management Charge (GMC) Start-Up Cost Adder (Minimum Load * GMC Adder * (shortest Start-Up Time/60) * .5).  The GMC Adder is made up of the Market Services Charge and System Operations Charge components.

    f. ~~Relative Proxy Start-Up Cost Ceiling (125%) – for validation of submitted Start-Up Bid Component.~~

Generated Start-Up Cost Curve = Start-Up Energy Cost Curve + Start-Up Fuel Cost Curve + Greenhouse Gas Start-Up Cost Allowance Curve + Major Maintenance Start-Up Cost Adder + GMC Start-Up Cost Adder.

For examples of a Start-Up Bid component calculation, see Attachment G.

**Minimum Load Cost Component**

If the Registered Cost Option is applicableselected, a Registered Minimum Load Cost will be generated.  See Attachment G for details.

If the Proxy Cost Option is selected, the Minimum Load Cost is generated using the following information if the Scheduling Coordinator has not submitted a Minimum Load Cost bid, or if the submitted Minimum Load Cost bid is higher than the proxy cost:

1. Minimum Load Fuel Cost – the product of the Minimum Load Heat Rate, the Minimum Load, and the daily Gas Price Index.

2. Operation and Maintenance Minimum Load Cost - the product of the registered Operation and Maintenance Cost and the registered Minimum Load.  Alternatively, a custom O&M adder may be negotiated with the CAISO or the Independent Entity.

3. Greenhouse Gas Allowance Minimum Load Cost - the product of the Greenhouse Gas Minimum Load Cost Allowance and the registered Minimum Load (if applicable – see Attachment K for details).

4. Major Maintenance Minimum Load Cost Adder (if applicable – see Attachment L for details).

5. Grid Management Charge (GMC) Minimum Load Cost Adder - product of the GMC Minimum Load Cost Adder and the registered Minimum Load.  The GMC Minimum Load Cost Adder is made up of the Market Services Charge and System Operations Charge components and a third value representing the Bid Segment Fee component divided by the resource Pmin.

6. Relative Proxy Minimum Load Cost Ceiling (125%) – for validation of submitted Minimum Load Bid Component.

Generated Minimum Load Cost = Minimum Load Fuel Cost + Operation and Maintenance Minimum Load Cost + Greenhouse Gas Allowance Minimum Load Cost + Major Maintenance Minimum Load Cost Adder + GMC Minimum Load Cost Adder.

For examples of a Minimum Load Cost Component calculation, see Attachment G.

**Energy Bid Component**

An Energy Bid will be generated as provided in accordance with the CAISO's SIBR rules using the following information if the Scheduling Coordinator has not submitted an Energy Bid:

1. Energy cost curve – product of the incremental heat rate curve multiplied by the Gas Price Index.

2. Operation and Maintenance (O&M) cost - specified in Exhibit 4-2. Alternatively, a custom O&M adder may be negotiated with the CAISO or the Independent Entity.

3. Grid Management Charge (GMC) adder - made up of the Market Services Charge and System Operations Charge components and a third value representing the Bid Segment Fee component divided by the bid segment MW size.

3.4. Variable Energy Opportunity Cost (Variable Energy OC adder), if applicable. See Attachment N of Market Instruments BPM for details on the establishment of Opportunity Cost values for registered energy use limitations.

Generated Energy Bid Curve = energy cost curve + O&M cost + GMC adder + Variable Energy Opportunity Cost adder.

**Bid Curve Generation Example**

Below is an example of how the Bid is generated for Generating Units and Resource Specific System Resources. Additional examples are contained in Attachment F. For non-Resource Specific System Resources, please see Appendix Attachment I.

The Generating Unit in the following example is registered as a natural gas resource. The following registered Master File data is used in the example. These values are for illustrative purposes only:

| Operating Levels | Average Heat Rate | Gas price index | Operation & Maintenance Cost | Grid Management Charge adder | Variable Energy Opportunity Cost Adder |
|---|---|---|---|---|---|
| 70 | 14440 | $5.5 | $2.80 | $0.50 | $25 |
| 150 | 11960 | | | | |

| 300 | 10909 | | | | |
|---|---|---|---|---|---|
| 485.17 | 10366 | | | | |

### 3) Incremental Fuel Cost Curve Calculation

The Incremental Fuel Cost Curve used to derive the Energy Bid Curve must be calculated as the product of the Incremental Heat Rate Curve and the registered Gas Price Index ($/MMBtu) for that Trading Hour and the Generating Resource specified in that Bid, if that Generating Resource is registered as a Natural Gas Resource for that Trading Hour.

Segment 1 - 9790/1000 * 5.5 = **53.85**

Segment 2 – 9858/1000 * 5.5 = **54.22**

Segment 3 – 9486/1000 * 5.5 = **52.17**

### 4) Incremental Heat Rate Calculation

The Incremental Heat Rate of the Incremental Heat Rate Curve segment between two Operating Levels is calculated as the ratio of the difference between the product of the registered Average Heat Rate at the higher Operating Level times that Operating Level, minus the product of the registered Average Heat Rate at the lower Operating Level times that Operating Level, over the difference between the higher Operating Level and the lower Operating Level

Segment 1 – ((11960 * 150) – (14440 * 70))/(150 – 70) = **9790**

Segment 2 – ((10909*300) – (11960 * 150))/(300-150) = **9858**

Segment 3 – ((10366*485.17) –(10909 * 300))/(485.17 – 300) = **9486**

### 3~~1~~) Generated Energy Curve Calculation

The generated Energy Curve is calculated as the sum of the Incremental Fuel Cost curve ~~(calculated in section 3 and 4 below),~~ the registered Operation and Maintenance Cost ($/MWh), and the GMC adder.

Segment 1 – (**53.85** + 2.80 + 0.50 + $25) = $~~57~~82.15

Segment 2 – (**54.22** + 2.80 + 0.50 + $25) = $~~57~~82.52

Segment 3 – (**52.17** + 2.80 + 0.50) = $~~55~~80.47

The resulting Energy Curve is:

70MW – 150MW @ $~~57~~82.15

150MW – 300MW @ $~~57~~82.52

300MW – 485.17MW @ $~~55~~80.47

The Generated Energy curve must be adjusted to be monotonically increasing.  If a Generated Energy Bid Curve is not monotonically increasing, CAISO adjusts the Energy Bid price of each Energy Bid segment after the first one, to the previous Energy Bid segment, if higher, and the two Energy Bid segments are merged in the Energy Bid Curve

## 4~~2~~) Final Generated Energy Curve

70MW - 150MW @ ~~57~~82.15

150MW – 485.17 MW @ ~~57~~82.52

Note, if the resource is subject to a greenhouse gas compliance obligation as indicated in the Master File, the CAISO will add to this curve an incremental energy curve representing the cost of meeting that obligation.  See Appendix Attachment K for details.

## ~~3) Incremental Fuel Cost Curve Calculation~~

~~The Incremental Fuel Cost Curve used to derive the Energy Bid Curve must be calculated as the product of the Incremental Heat Rate Curve and the registered Gas Price Index ($/MMBtu) for that Trading Hour and the Generating Resource specified in that Bid, if that Generating Resource is registered as a Natural Gas Resource for that Trading Hour.~~

~~Segment 1 - 9790/1000 * 5.5 = 53.85~~

~~Segment 2 - 9858/1000 * 5.5 = 54.22~~

~~Segment 3 - 9486/1000 * 5.5 = 52.17~~

## ~~4) Incremental Heat Rate Calculation~~

~~The Incremental Heat Rate of the Incremental Heat Rate Curve segment between two Operating Levels is calculated as the ratio of the difference between the product of the registered Average Heat Rate at the higher Operating Level times that Operating Level, minus the product of the registered Average Heat Rate at the lower Operating Level times that Operating Level, over the difference between the higher Operating Level and the lower Operating Level~~

~~Segment 1 – ((11960 * 150) – (14440 * 70))/(150 – 70) = 9790~~

Segment 2 – ((10909*300) – (11960 * 150))/(300-150) = **9858**

Segment 3 – ((10366*485.17) – (10909 * 300))/(485.17 – 300) = **9486**

**5) Minimum Load Cost Calculation**

Minimum Load Cost = Minimum Load Fuel Cost + (O&M * Minimum Operating Level) + Greenhouse Gas Allowance Minimum Load Cost + Major Maintenance Minimum Load Cost Adder + GMC Minimum Load Cost Adder

**6) Transition Cost Calculation - See Attachment H of this BPM for details.**