Black Start Settlement Guide
Effective May, 2020

Introduction

Background
Black Start is a procedure that used to restore power following blackouts, in accordance with CAISO and PTO restoration procedures. In the ISO Balancing Area certain generators are certified to provide this service. These generators can start up without an external source of electricity. It is used to restore power to the ISO Balancing Authority following blackouts.

There are three types of settlements for Scheduling Coordinators (SCs) or Generator Owners (GOs) that have Black Start Generators. This guide describes these settlements as well as the allocations to the Participating Transmission Owners (PTO). Not all Black Start generators are currently eligible for the capability payments and PTB payments identified in this procedure, as these payment terms are not covered in their Black Start agreements.
Monthly Capability Settlement

Introduction
On a monthly basis SCs or GOs for each active Black Start resource will receive a monthly capability payment plus any contractual cost recovery that has been identified. The PTO will be invoiced for this amount. A Black Start Invoice is used for this settlement rather than the standard market invoice.

Black Start Capability Payment, CC 3102
This payment is the sum of the Capability Settlement and any Pass Through Billing (PTB) that may be required.

Capability Settlement – This is an amount identified in the Black Start Service Agreement (BSA) that is in stored in the Master File

Pass Through Billing (PTB) – This is manual payment for cost recovery payment, termination payment or a payment to a GO that is not yet Black Start certified. The ISO’s Regulatory Contract department identifies PTB payment qualifications, in accordance with the Black Start agreement.

This is a monthly settlement.

Black Start Capability Allocation CC 1102
The ISO allocates the Black Start Capability payment amounts from CC 3102 to the PTO associated with the BSA. This is a monthly settlement.

Settlement Example
Black Start Capability Payment Advice

Date: 05-Feb-2020
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Scheduling Coordinator
Street Address
City, State 00000

Invoice #: 0000000001-3000000
Date: 02/05/2020
BAID: 0000
Invoice Month: March 2020
Due Date: 03/00/2020

Please send payment to:
ABA #000001234
000001234
Scheduling Coordinator 000000
FOLSOM

For all inquiries contact:
California ISO Settlements Internal Use Only
250 OUTCROPPING WAY
FOLSOM CA 95630

Comments:

Charges for Bill Period: 03/01/2020 to 03/31/2020

<table>
<thead>
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<th>Charge Code</th>
<th>Description</th>
<th>Current</th>
<th>Previous</th>
<th>Net</th>
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<td>Black Start Capability Settlement</td>
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<td></td>
<td>Black Start Capability Payment Charge Group Total</td>
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<td>Black Start Capability Parent Group Total</td>
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Bill Period Total: ($700.00) $0.00 ($700.00)

Invoice Total: ($700.00)
Black Start Event Settlement

Introduction
When a Black Start Event occurs a PTO will call upon a Black Start Generator to provide Black Start Services. The ISO or PTO operator will provide a “Black Start” type dispatch instruction to the generator. They will record the start and end times of the event which will be used for settlement purposes. Within 7 calendar days from when the Black Start event occurred, the System Operator will create an after the fact exceptional dispatch. The settlements will be reflected on the standard market invoice.

Example Scenario 1 – Black Start Event (Dispatched below Pmin)
Assume Resource A is a certified Black Start Generator with a Pmin of 100 MW.

Black start event occurs.
Resource A receives an 80 MW dispatch instruction from PTO (which was communicated to ISO). The ISO operator will create an after-the-fact exceptional dispatch (BS) instruction equal to the Pmin (100 MW), since dispatch levels below registered Pmin are not supported by ISO systems.

Meter
Resource A’s meter value for this period was 80 MW.

Settlement
The black start energy settles as Real-time Instructed Imbalance Energy in charge code 6470 and Uninstructed Imbalance Energy in charge code 6475.

A. Energy up to Pmin is settled as Real-Time Dispatch Instructed Imbalance Energy
   a. The quantity is the Pmin
   b. The price is an administrative price. This value is determined in accordance with tariff section 7.7.9 – Application of Administration Prices and Use of Prior Market Results
   c. If the SC does not recover all costs as described in the Master File, it may be eligible for bid cost recovery in charge code 6620. If for example the generator’s costs were $1,500 then the SC would be eligible for a payment of $500 in charge code 6620 (unless there were other revenues that covered these costs).
   d. Note that if there are additional costs beyond the amount listed in the Master file, the generator owner can submit an invoice to the ISO for the additional amount. The ISO will review this submission and if accepted will create a Pass Through Bill for the difference in costs. This amount will be reflected in CC 3102 (see the Monthly Capability section of this document for more information about this charge code).
B. The deviation between metered energy and the total expected energy is settled as Uninstructed Imbalance Energy.
   a. The **quantity** is the difference between the meter value and the Pmin.
   b. The **price** is an administrative price. This value is determined in accordance with Tariff section 7.7.9 Application of Administration Prices and Use of Prior Market Results.

Example Scenario 2 – Post Black Start Event (Resource dispatched above Pmin)
Assume Resource A is a certified Black Start Generator with a Pmin of **100 MW**. It is dispatched above its Pmin.

**After a black start event is over.**
Resource A received a **120 MW** black start exceptional dispatch instruction from the ISO after the fact.

**Meter**
Resource A’s meter value for this period was **130 MW**.
Settlement

A. Energy up to the Pmin is settled as real-time instructed imbalance energy.
   a. The quantity is the Pmin.
   b. The price is the LMP or administrative price.

![Diagram of Real Time Dispatch Instructed Imbalance Energy]

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity</td>
<td>Minimum Load Energy</td>
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<tr>
<td>Price</td>
<td>LMP/Administrative Price</td>
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<td>Settlement in CC 6470</td>
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B. Energy above Pmin is settled as Optimal Energy (OE) or Exceptional Dispatch (ED) Energy. It will be paid as follows:
   a. If the energy type is OE, the energy will be settled in CC6470 at the RTD LMP.

![Diagram of Real Time Dispatch Instructed Imbalance Energy (OE Example)]

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
<th>Value</th>
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<td>Quantity</td>
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<td>Price</td>
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<td>Settlement in CC 6470</td>
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b. If the energy type is ED energy with ED type of NONTMOD, the energy will be settled in CC6470 with the greater of the bid, LMP or DEB.
   i. NONTMOD is used to capture any system conditions including threatened or imminent reliability conditions for which the timing of the Real-Time Market optimization and system modeling are either too slow or incapable of bringing the CAISO Controlled Grid back to reliable operations in an appropriate time-frame based on the timing and physical characteristics of available resources to the CAISO – CAISO tariff 34.11.3
   ii. The following example assumes the bid was $40.
c. If the energy type is ED energy with ED type of **TMODEL**, the energy will be settled in CC6470 up to the RTD LMP and the difference between the ED price (their bid) and the LMP will be settled in CC6488 (Exceptional Dispatch Settlement) and

i. **TMODEL** is used for any Transmission-related modeling limitations that arise from transmission maintenance, lack of Voltage Support at proper levels as well as incomplete or incorrect information about the transmission network, for which the Transmission Owners (TO) have primary responsibility – CAISO tariff 34.11.3.

ii. The following example assumes the ED price was $50.

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<table>
<thead>
<tr>
<th>Element</th>
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d. If the energy type is ED energy with ED type of **SYSEMR**, the energy will be settled in CC6470 up to the RTD LMP and the difference between the ED price and the LMP will be settled in CC6482 (Excess Cost Settlement)

i. **SYSEMR** is used to respond to or prevent system emergencies or imminent system emergency. SYSEMR code applies to events beyond the control of the CAISO including generator or transmission resource tripping, disruptive events in other balancing authority areas and captured events or conditions that cannot reasonably of feasibly be modelled or handled through the market and required manual intervention – CAISO tariff 34.11.1.

ii. The following example assumes the ED price was $50.
C. The difference between the metered value and the dispatched amount is settled as Uninstructed Imbalance Energy

Black Start Energy Allocation CC 1353
The ISO allocates the Black Start Energy Dispatch to PTOs based on their Measured Demand.
Black Start Test Settlement

Introduction
Per the tariff, Appendix D, all black start resource must performance tests to demonstrate their capability. Test energy is settled based on the quantity produced and the LMP.

Example Scenario 3 – Test Energy
Assume Resource A is a certified Black Start Generator. It is dispatched for 110 MW of test energy by the ISO.

Meter
Resource A’s meter value for this period was 130 MW.

Settlement
A. Energy is settled as real-time instructed imbalance energy.
   a. The quantity is the total expected energy.
   b. The price is the higher of the LMP or the default energy bid (DEB)
   c. If the SC does not recover all of its costs due to an ISO requested test, it may be eligible for bid cost recovery in charge code 6620. If the test energy is requested by the SC, it is not eligible for bid cost recovery.

B. The difference between the metered value and the dispatched amount is settled as Uninstructed Imbalance Energy.

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### Real Time Dispatch Instructed Imbalance Energy
Charge Code 6470 (TEST)

- **Black Start Test Dispatch**: 110 MW
- **Pmin**: 100 MW

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<tr>
<td>Quantity</td>
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Uninstructed Imbalance Energy
Charge Code 6475

Meter value = 120 MW
Black Start Test Dispatch = 110 MW
$\text{P}_{\text{min}} = 100 \text{ MW}$

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<th>Description</th>
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