

# Black Start Credits and Charges

MIC - Black Start Make  
Whole Payments  
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Joel Romero Luna



Monitoring Analytics

# Agenda

- **Black Start Service**
- **Black Start Testing**
- **Black Start Make Whole Payments**



# Black Start Service

- **Defined in OATT Schedule 6A**
- **Credits inputs:**
  - **Annual revenue requirement**
- **Charges inputs:**
  - **Annual zone revenue requirement**
  - **Zone peak transmission use (Served in PJM zone)**
  - **Non-zone peak transmission use (Served at a PJM border)**
  - **Participant zone peak transmission use**



# Black Start Service - Example

| Black Start Service  | Inputs             | Charges Calculation      |
|--|--------------------|--------------------------|
| Participant A Revenue Requirement in Zone B                              | \$600,000 per year | \$50,000 per month       |
| Zone B Peak Transmission Use <sup>1</sup>                                | 15,000 MW          | 450,000 MW-day           |
| PJM Zone Peak Transmission Use <sup>2</sup>                              | 90,000 MW          | 2,700,000 MW-day         |
| PJM Non-Zone Peak Transmission Use <sup>3</sup>                          | 10,000 MW          | 300,000 MW-day           |
| PJM Total Peak Transmission Use <sup>4</sup>                             | 100,000 MW         | 3,000,000 MW-day         |
| Participant C Transmission Use in Zone B <sup>5</sup>                    | 1,500 MW           | 45,000 MW-day            |
| Participant C Share Transmission Use in Zone B                           |                    | 10.0%                    |
| PJM Zone Peak Share of Total   |                    | 90.0%                    |
| <b>Participant C Black Start Charge Share of Participant A in Zone B</b> |                    | <b>\$4,500 per month</b> |

<sup>1</sup> Peak of the 12 month period ending Oct 31 of preceding calendar year

<sup>2</sup> Sum of peaks of all PJM zones (not coincident)

<sup>3</sup> Sum of peaks of all non-zones (excluding MISO)

<sup>4</sup> Zone plus non-zone

<sup>5</sup> Coincident with zone peak

# Black Start Testing

- **Defined in: OATT Schedule 6A / Manual 27-28**
- **Traditional and ALR**
- **Credits inputs:**
  - **Production costs during test / Offer**
  - **Energy delivered / Energy not delivered**
  - **RT LMP**
- **Charges Inputs:**
  - **BOR deviation credits by region**
  - **Total deviations by region**
  - **Participant deviations by region**



# Black Start Testing - Examples

| Testing Traditional Black Start                  | Inputs          |
|--|-----------------|
| Unit A Production Costs During Test              | \$50,000        |
| Energy Delivered                                 | 300 MWh         |
| RT LMP   | \$50 per MWh    |
| RT Energy Revenues                               | \$15,000        |
| <b>Black Start Make Whole Payment for Unit A</b> | <b>\$35,000</b> |

|                                      |           |
|--------------------------------------|-----------|
| Total Daily Deviations in Region B   | 5,000 MWh |
| Participant C Deviations in Region B | 1,000 MWh |

|   |                |
|---|----------------|
| <b>Participant C Operating Reserve Deviation Charges attributable to Unit A</b> | <b>\$7,000</b> |
|---|----------------|

| Testing ALR (economic)                       | Inputs         |
|--|----------------|
| Unit A's Offer                               | \$30 per MWh   |
| Energy Not Delivered                         | 300 MWh        |
| RT LMP                                       | \$50 per MWh   |
| <b>Unit A's Lost Opportunity Cost Credit</b> | <b>\$6,000</b> |

|                                      |           |
|--------------------------------------|-----------|
| Total Daily Deviations in Region B   | 5,000 MWh |
| Participant C Deviations in Region B | 1,000 MWh |

|   |                |
|---|----------------|
| <b>Participant C Operating Reserve Deviation Charges attributable to Unit A</b> | <b>\$1,200</b> |
|---|----------------|

# Black Start Make Whole

- **Not defined in rules**
- **Covered by Operating Reserve rules**
- **Paid to ALR units running out of economic merit**
- **Credits Inputs:**
  - **Unit Offer**
  - **Energy Delivered**
  - **RT LMP**
  - **Additional revenues (reactive, synch res, DASR)**
- **Charges Inputs:**
  - **BOR Reliability Credits by Region**
  - **Total RT Load and Exports by Region**
  - **Participant RT Load and Exports by Region**



# Black Start Make Whole - Example

| <b>ALR running noneconomic</b>  | <b>Inputs</b>   |
|---|-----------------|
| Energy Offer  | \$120,000       |
| No Load Cost  | \$36,000        |
| Startup Cost  | \$14,000        |
| Total Offer   | \$170,000       |
| Energy Delivered  | 2,400 MWh       |
| RT LMP  | \$50 per MWh    |
| RT Energy Revenues  | \$120,000       |
| <b>Unit A Bal. Op. Reserve Reliability Credit</b>                                 | <b>\$50,000</b> |
| <br>  |                 |
| Total Daily RT Load and Exports in Region B                                       | 1,000,000 MWh   |
| Participant C Daily RT Load and Exports in Region B                               | 100,000 MWh     |
| <br>  |                 |
| <b>Participant C Operating Reserve Reliability Charges attributable to Unit A</b> | <b>\$5,000</b>  |



**Monitoring Analytics, LLC**  
**2621 Van Buren Avenue**  
**Suite 160**  
**Eagleville, PA**  
**19403**

**(610) 271-8050**

**MA@monitoringanalytics.com**

**www.MonitoringAnalytics.com**

