



Black Start Compensation Recommendations

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April 30, 2012

Insight in Economics[™]

Goals of NERA Advice



- Identify a standardized Black Start compensation structure that NYISO could implement for NYC Black Start providers
- Provide a proposal that is ready to implement, without detailed studies that would take substantial additional time to complete
- Proposal must have a sound rationale as a just and reasonable approach

Additionally the Proposal Should Promote the Following



- Continued interest by existing Black Start providers to supply the service
- Interest by new entrants to offer the service
- A compensation framework that does not depend upon or require detailed FERC rate cases
- Payments by load that are reasonable for the services received
- Suppliers should be fully compensated for their costs

Two "Proxy-Cost" Models were found - PJM



PJM

Black Start capital payments under Schedule 6A's Base Formula Rate vary according to fuel type

- Hydro: 1% of Net CONE x unit's capacity
- Diesel or CT: 2% of Net CONE x unit's capacity
- According to PJM, payment applies to capacity of the starting equipment not total plant capacity, although documents are not clear

PJM recently rejected refurbishment proposals that would have involved RFPs conducted by the Transmission Owner if a unit needed to refurbish its Black Start equipment, if a unit needed a major investment to avoid retirement or if a new unit was needed to provide Black Start

Two "Proxy Cost" Models were Found – ISO-NE



ISO-NE

- Recently established proxy Black Start Payments for capital and O&M applicable to hydro or fossil units
- Payments based on a engineering cost study of incremental equipment and incremental O&M costs needed to provide Black Start service using today's technologies (CC and CT only) and assuming different starting unit sizes
- Like in PJM, a generator required to provide Black Start Service can still file a cost-based rate at FERC if proxy costs are non-compensatory

NERA recommends the ISO-NE approach



- The ISO-NE approach essentially represents a measure of the "Long Run Incremental Cost" (LRIC) of providing Black Start service, an economic concept with theoretical justification and a regulatory history
- The ISO-NE approach can be easily translated to NYC
- Unable to find justification for the CONE approach of PJM

Reviewing Rationale for LRIC



- LRIC or Total Service LRIC (TS-LRIC) is mostly used in TELCOM Regulation for Access Pricing and it reflects the forward-looking costs of providing a service using the most efficient technology available today
- "Long run" implies that all inputs are variable, i.e., capital equipment can vary to meet an increment in demand of the service
- Main argument for LRIC-based network access prices in TELCOM is to ensure that new service providers enter the market only if it is economically efficient to do so
- Just as important, LRIC approach retains incentives for incumbents to upgrade or extend the existing network when new technology is available.
- These arguments also apply to Black Start services which could be provided by both entrants and incumbents, and in offering entrantbased prices, incumbents will be induced to offer the service if economic.

Example: ISO-NE Standard Capital Payments



	Station-level Standard	Additional Resource Standard
Designated Blackstart	Blackstart Capital Payment	Blackstart Capital Payment
Resource ("DBR") Type	(\$/year for the first DBR)	(\$/year for each additional DBR)
Fossil Resources:		
MVA ≤ 10	\$16,000	\$8,000
$10 < MVA \le 60$	\$158,100	\$8,000
$60 < MVA \le 90$	\$183,100	\$8,000
$90 < MVA \le 300$, Small Starting Requirement	\$305,700	\$8,000
90 < MVA ≤ 300, Medium Starting Requirement	\$705,800	\$8,000
90 < MVA ≤ 300, Large Starting Requirement	\$1,315,200	\$8,000
300 < MVA Large Starting Requirement	\$1,351,100	\$24,100
Hydroelectric Resources:		
MVA ≤ 60	\$158,100	\$8,000
60 < MVA	\$183,100	\$8,000

Table 2 - Standard Blackstart Capital Payments ⁽¹⁾

Note: These are 2011 dollars. All payments will be adjusted by Handy Whitman Index on January 1 every year. These are annualized values and investments are approximately ten times higher.

Example: ISO-NE Standard O&M Payments



Table 1 - Blackstart O&M Payments

	Station-level	Additional Resource	
Designated Blackstart	Blackstart O&M Payment	Blackstart O&M Payment	
Resource ("DBR") Type	(\$/year for the first DBR)	(\$/year for each additional DBR)	
Fossil Resources:			
MVA ≤ 10	\$13,500	\$4,400	
$10 < MVA \le 60$	\$39,100	\$5,400	
$60 < MVA \le 90$	\$46,900	\$6,300	
$90 < MVA \le 300$, Small Starting Requirement	\$99,400	\$17,200	
$90 < MVA \le 300$, Medium Starting Requirement	\$227,700	\$32,000	
$90 < MVA \le 300$, Large Starting Requirement	\$397,200	\$32,100	
300 < MVA Large Starting Requirement	\$415,400	\$40,700	
Hydroelectric Resources:			
MVA ≤ 60	\$31,000	\$5,000	
60 < MVA	\$33,500	\$5,800	

Note 1: Note: These are 2011 dollars. All payments will be adjusted by Handy Whitman Index on January 1 every year.

Adjusting ISO-NE Costs to NYC



- We would recommend three adjustments:
 - Adjust capital investment by ratio of building like unit in NYC vs. Lower Hudson Valley (proxy for NE) (adjustment of 1.25 from most recent NYISO Demand Curve reset study)
 - Use carrying charge for 25 year life that reflects NYC 4.69% property taxes (ISO-NE study reflects lower 2% property tax rate)
 - Adjust O&M costs by ratio of fixed O&M for like unit in NYC vs. Lower Hudson Valley (proxy for NE) (approximate adjustment of 2.16 from most recent NYISO Demand Curve reset study)

Standard Black Start Capital Payments Recommended for NYISO



Black Start Resource Type	Station-level Standard Blackstart Capital Payment (\$/year for the first unit)	Additional Resource Standard Blackstart Capital Payment (\$/year for each additional unit)
	(1)	(2)
Fossil Resources:		
MVA ≤ 10	\$28,400	\$14,200
$10 < MVA \le 60$	\$280,000	\$14,200
60 < MVA ≤ 90	\$324,195	\$14,200
90 < MVA ≤ 300, Small Starting Requirement	\$541,480	\$14,200
90 < MVA ≤ 300, Medium Starting Requirement	\$1,249,920	\$14,200
90 < MVA ≤ 300, Large Starting Requirement	\$2,329,225	\$14,200
300 < MVA Large Starting Requirement	\$2,392,735	\$42,600
Hydroelectric Resources:		
MVA ≤ 60	\$280,000	\$14,200
60 < MVA	\$324,195	\$14,200

Note: These are 2011 dollars. All payments would be adjusted by Handy Whitman Index on January 1 every year.

Standard O&M Black Start Payments Recommended for NYISO



	Station-level Blackstart O&M Payment (\$/year for	Additional Resource Blackstart O&M Payment (\$/year for
Black Start Resource Type	the first unit)	each additional unit)
Fossil Resources:		
MVA ≤ 10	\$29,130	\$9,495
10 < MVA ≤ 60	\$84,380	\$11,650
60 < MVA ≤ 90	\$101,210	\$13,595
90 < MVA ≤ 300, Small Starting Requirement	\$214,500	\$37,120
90 < MVA ≤ 300, Medium Starting Requirement	\$491,370	\$69,050
90 < MVA ≤ 300, Large Starting Requirement	\$857,140	\$69,270
300 < MVA Large Starting Requirement	\$896,415	\$87,830
Hydroelectric Resources:		
MVA ≤ 60	\$66,890	\$10,790
60 < MVA	\$72,290	\$12,515

Note: These are 2011 dollars. All payments will be adjusted by Handy Whitman Index on January 1 every year.

Illustration - Results for Hypothetical NYC Black Start Plants



Unit Type	Name plate Capacity of largest unit (MW)	Station Black Start Capital Payment (\$/year)	Station Black Start O&M Payment (\$/year)	Total Black Start Payment (\$/year)
Gas Turbine Station	20	\$308,400	\$107,680	\$416,080
(3 units, 1 common starting facility	()			
Steam plant	350	\$2,435,335	\$984,245	\$3,419,580
(2 units, 1 common starting facility	/)			

Note: The above payments are based on hypothetical plants. As LRIC varies with the number of units at the plant site that share the same starting facility, it will be necessary to consider the specific characteristics of NYC plants. Payments exclude CIP costs.

Additionally, Black Start Suppliers will Incur Incremental CIP Costs



- ISO-NE adopted additional standard capital and O&M payments to recover NERC-related "Critical Infrastructure Protection" (CIP) costs
- ISO-NE CIP standard payment does not appear usable as it attributes all CIP costs to Black Start
 - assuming that if not for Black Start, stations would not face CIP costs
 - Incremental CIP costs associated providing Black Start may be relatively small
- In addition to the generic LRIC-based capital and O&M payments, generators could apply to recover demonstrated incremental CIP costs related to Black Start as validated by NYISO

Recapping the Recommendation



- The ISO-NE approach is an LRIC approach that has an economic basis and is just and reasonable
- The ISO-NE study can be converted to NYC cost levels
- Customers paying LRIC are paying an efficient price
- The LRIC should encourage existing facilities and entrants to provide Black Start services if efficient
- Suppliers have the option to apply to FERC for actual cost recovery if their costs are higher and they are compelled to provide the service

NYISO is Inclined to Implement the Recommendation



- NYISO still has several implementation details to develop:
 - Determine for each plant the units providing Black Start and how many starting facilities are at each plant and may be shared by more than one unit
 - Determine how to convert the plant payments to rates