SRSTF – PJM Ideas on Compensation Issues

SRSTF
July 15, 2013
Annual Black Start Service Revenue Requirements

Proposed Annual Revenues Calculated from:

- Traditional Black Start Generator
  \[
  \{(\text{Fixed BSSC}) + (\text{Variable BSSC}) + (\text{Training Costs}) + (\text{Fuel Storage Costs})\} \times (1 + Z) \times (\frac{\text{EAF}_{\text{unit}}}{\text{EAF}_{\text{fleet}}})
  \]

- Automatic Load Rejection (ALR) Black Start Generator
  \[(\text{Training Costs}) \times (1 + Z)\]

- Units with higher costs than described may file for recovery of those costs with FERC
Replace Existing Fixed BSSC (Capital Costs) Rates with a Proxy Black Start Equipment Installation Rate

- Proxy Cost Based on Unit Size (& Type?)
- Annual Compensation based on 20 Year Recovery Period of capital investment
- Use Existing Capital Recovery Factor (CRF = 0.125)
- Units requiring refurbishment only Eligible for Annual Compensation based on Proxy Cost
- All traditional black start units would receive this portion of the proposed payment
Twenty (20) Year CRF = 0.125

– Calculated based on the following Assumptions
  • 12% Internal Rate of Return on Equity
  • 50% Debt / 50% Equity
  • 7% Interest Rate
  • 10 Year Debt Term
  • 15 Year Depreciation
  • 36% Federal Tax Rate
  • 9% State Tax Rate
Variable Black Start Service Costs (Variable BSSC)

Leave Existing Variable Black Start Service Costs As Is

Variable BSSC (O&M Costs) = Black Start Unit O&M * Y

Where

- Black Start Unit O&M = Black Start O&M costs equal to M15 Annual VOM including NERC Reliability Standards Costs
- Y = 0.01 unless a Higher or Lower Value is supported by Documentation (1-Y applied to Black Start VOM on Energy Cost Offer)
- Includes Black Start Fixed O&M
- Variable BSSC = Zero for ALR Units
Revise Training Costs from:

- Training Costs = 50 Staff Hours * $75/Hour = $3,750 per Plant

To Actual Plant Annual Training Costs

- Time Sheet Submittal for Previous Year
Revise Fuel Storage Costs to Include Oil & Propane Carrying Costs

- Black Start Units that use Fuels other than Oil or Propane Calculate Fuel Storage Costs as Zero
- ALR Unit’s Fuel Storage Costs are Zero
Change Incentive Factor (Z) to Time to Start Incentive

- Z applies to all units
- Z = 20% for units that Start in less than 30 Minutes
- Z = 15% for units that Start in 31 to 60 Minutes
- Z = 10% for units that Start in 61 to 90 Minutes
- Z = 0% for units that Start in 91 to 180 Minutes

\[ \left( \text{(Fixed BSSC)} + \text{(Variable BSSC)} + \text{(Training Costs)} + \text{(Fuel Storage Costs)} \right) \times (1 + Z) \times \left( \frac{\text{EAF}_{\text{unit}}}{\text{EAF}_{\text{fleet}}} \right) \]
• Add Equivalent Availability Factor (EAF) Revenue Multiplier: \( \left( \frac{EAF_{\text{unit}}}{EAF_{\text{fleet}}} \right) \)
  • Rewards units with EAF greater than fleet average
  • Use Rolling 3 delivery year EAF
  • Units can Substitute Availability of Non-Compensated Black Start Capable Sister Units at the Site for EAF Calculation
    – Substituted unit must have valid Black Start test
  • Units with Poor EAF are Penalized in Compensation

\[
\{(\text{Fixed BSSC}) + (\text{Variable BSSC}) + (\text{Training Costs}) + (\text{Fuel Storage Costs})\} \times (1 + Z) \times \left( \frac{EAF_{\text{unit}}}{EAF_{\text{fleet}}} \right)
\]
<table>
<thead>
<tr>
<th>Technology</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combined Cycle</td>
<td>88.8%</td>
<td>89.1%</td>
<td>87.8%</td>
<td>85.9%</td>
<td>85.4%</td>
<td>85.4%</td>
</tr>
<tr>
<td>Combustion Turbine</td>
<td>88.9%</td>
<td>89.4%</td>
<td>93.2%</td>
<td>93.1%</td>
<td>91.8%</td>
<td>92.4%</td>
</tr>
<tr>
<td>Diesel</td>
<td>86.5%</td>
<td>86.5%</td>
<td>91.2%</td>
<td>94.1%</td>
<td>94.8%</td>
<td>92.4%</td>
</tr>
<tr>
<td>Hydroelectric</td>
<td>90.7%</td>
<td>89.7%</td>
<td>86.9%</td>
<td>88.8%</td>
<td>84.6%</td>
<td>88.8%</td>
</tr>
<tr>
<td>Nuclear</td>
<td>93.9%</td>
<td>91.4%</td>
<td>90.1%</td>
<td>91.8%</td>
<td>90.1%</td>
<td>91.1%</td>
</tr>
<tr>
<td>Steam</td>
<td>79.2%</td>
<td>79.4%</td>
<td>80.9%</td>
<td>79.0%</td>
<td>78.2%</td>
<td>77.8%</td>
</tr>
<tr>
<td>Total</td>
<td>85.2%</td>
<td>84.8%</td>
<td>85.6%</td>
<td>84.8%</td>
<td>83.7%</td>
<td>84.1%</td>
</tr>
</tbody>
</table>
• Estimated Annual Revenue for a 20 MW Oil Fired Combustion Turbine with 60 Min Start Time, EAF\textsubscript{unit} = 75%, EAF\textsubscript{fleet} = 85%, assuming no fixed O&M for ease
  
  – Fixed BSSC = $1,441,100 * 0.125 = $180,137
  
  – Variable BSSC = $200,000 * 0.01 = $2,000
  
  – Training Costs = 120 * $75/Hour = $9,000
  
  – Fuel Storage = \{2000+[16*1950]\}*(3.0+0.1)*0.05 = $5,146
  
  \text{Times (1+ 10\%) \times (0.75/0.85) = $190,510}