PJM Market Efficiency Long Term Window Overview

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Planning Committee Meeting
November 3, 2016
Agenda

• Overview

• Market Efficiency Selection Process Guidelines

• Examples

• Appendix – References
Overview

• Objective –
  – Initial read of Market Efficiency Selection Process guidelines

• Key Takeaways –
  – Special PC sessions were conducted to develop guidelines
  – Goal is to conclude the effort by mid November
  – Verbal and written feedback is welcome
  – Targeting to post the guidelines document by early December
Guidelines – OA Schedule 6 “Bright Line” Primary Criteria

• Congestion Mitigation –
  – Market Efficiency proposal shall relieve one or more economic constraints(s)
    • Economic constraints are capacity and energy constraints

• Benefit/Cost (B/C) –
  – B/C ratio threshold of at least 1.25:1

• Cost Estimate Review–
  – If a proposal costs in excess of $50 million, an independent review of such costs will be performed
Guidelines – “Bright Line” Criteria Caveats

• When a proposal does not meet the B/C test –
  – Proposal will not proceed further to address the driver
  – The proposal may be combined with another proposal

• When a proposal meet the B/C test but does not address the driver –
  – Proposal will not be necessarily rejected
    • Technicality
    • May relieve a different driver in the system
Guidelines – “Other” Secondary Criteria

• Other secondary criteria is necessary when -
  – Proposals do not provide obvious benefits
  – Further analysis is required to evaluate constructability and reliability

• Zonal/Total Savings –
  – Production cost
  – Load payment (net and gross)
  – System congestion
  – Capacity
Guidelines – “Other” Secondary Criteria

• Risk Evaluation –
  – Cost Escalation
  – Schedule
  – Development (Siting and Permitting)

• Cost Containment –
  – May address cost escalation risks
  – PJM will evaluate risk mitigation via a subjective analysis
  – If the analysis confirms mitigation risks, containment will be factored in
Guidelines – “Other” Secondary Criteria

• Sensitivity Evaluation –
  – Load Forecast
  – Fuel Cost Variations
  – Generator Variations
  – Transfer Variations

• Reliability Impact –
  – Analyze the need for upgrades to address reliability limitations
  – Upgrades are added costs to the proposal
  – Will trigger B/C test
Guidelines – “Other” Secondary Criteria

• Outage Impact –
  – Certain proposals may result in outage related congestion
  – Such congestion shall not be included in the B/C test
  – Such congestion shall be included as an ancillary cost to develop the proposal
  – Shall be considered in the overall project selection process
Appendix 1 – Examples
Example 1 – Large vs Small Proposals

- Proposals
- costs more than $50M
- Small proposal - costs less than $50M

<table>
<thead>
<tr>
<th>Type</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>➢ Relieves congestion driver significantly</td>
<td>➢ Cost and schedule risks</td>
</tr>
<tr>
<td></td>
<td>➢ Relieves additional system congestion</td>
<td>➢ Outcome of sensitivities need to verify robustness</td>
</tr>
<tr>
<td>Small</td>
<td>➢ Minimum cost and schedule risks</td>
<td>➢ Less relief on congestion driver</td>
</tr>
<tr>
<td></td>
<td>➢ Sensitivities is a plus</td>
<td>➢ No additional system congestion relief</td>
</tr>
</tbody>
</table>
Example 2 – Greenfield vs Upgrade Proposals

- Likely factors that may influence the selection:

<table>
<thead>
<tr>
<th>Type</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenfield</td>
<td>- Minimum outage related congestion</td>
<td>- Siting, permitting and scheduling risks</td>
</tr>
<tr>
<td>Upgrade</td>
<td>- Minimum siting, permitting and scheduling risks</td>
<td>- Outage related congestion</td>
</tr>
</tbody>
</table>
Appendix 2 – Decision Tree Diagrams
Market Efficiency Project Selection – Single Proposal per Congestion Driver

Start

Review proposals

Perform B/C

Does project pass B/C?

Yes

No

Not Recommended

Does project reduce or fix congestion driver?

Yes

No

Not Recommended based on congestion driver, Hold for other consideration

Does project cause additional unacceptable congestion?

Yes

No

Further analysis is required

Sensitivity Analysis

Other Factors considered*

Yes

No

May be Recommended

Does project require additional upgrades?

Yes

No

Finish

Project Recommended

* Other factors considered such as PJM Overall Production Cost, load Payments, and congestion

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Does project reduce or fix congestion driver?

Yes

No

Not Recommended based on congestion driver, Hold for other consideration

Does project cause additional unacceptable congestion?

Yes

Further Analysis is required

No

Sensitivity Analysis Other Factors considered*

Yes

No

May be Recommended

No

Project Not Recommended

Does project require additional upgrades?

Yes

No

Project Not Recommended

Does Reliability and Constructability Analysis (if necessary) require additional changes?

Yes

No

Finish

Is the project competitive?

Yes

No

Project Not Recommended
Appendix 3 – Operating Agreement & Manual References
• Scope, PJM requirements & Member requirements
  • http://www.pjm.com/about-pjm/member-services.aspx

• PJM Manual 14B, Section 2.6:
  http://www.pjm.com/~/media/documents/manuals/m14b.ashx

• PJM Operating Agreement, Schedule 6, Section 1.5.7:

• PJM Market Efficiency Practices