Cost Containment Status and Next Steps

Mark Sims
Manager, Infrastructure Coordination
Planning Committee
June 13, 2019
Proposal Fee Structure Review
• “Flat Fee” based on proposing entity project cost estimate

• All proposals, upgrade and greenfield solutions, submitted for consideration in any RTEP Proposal Window are subject to a proposal fee based on the following fee structure:

<table>
<thead>
<tr>
<th>Proposal Cost Estimate</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;$20M</td>
<td>$0</td>
</tr>
<tr>
<td>$20M-$100M</td>
<td>$5k</td>
</tr>
<tr>
<td>&gt;$100M</td>
<td>$30k</td>
</tr>
</tbody>
</table>
Additional Costs Associated With Comparative Framework Approach

**Independent Consultant Review**
- # of consultants depends on scope of work
- Look at more projects, earlier
- Cost up to ~ $50k per project proposal

**Financial Review**
- Single consultant
- Cost very dependent on window and cost containment
- Overall cost somewhat dependent on volume

**Legal Review**
- Evaluate the cost containment legal language

**Comparative Framework**
- Side-by-side comparison of estimated costs, cost containment information, risk profiles, measurements and observations
Enhancements to Cost Evaluation Paradigm

• Previous Cost Evaluation Paradigm
  – Reliability and Benefit analysis performed first
  – Constructability analysis typically only performed on a subset of “finalists” that demonstrate good performance
  – Majority of work in serial, next evaluation steps dependent on completion of previous

• Future Cost Evaluation Comparative Framework
  – Bottom line: more studies
  – Parallel analysis
  – Increased volume of constructability analysis
  – Full Financial Analysis
### Average Collected Fees vs. Average Evaluation Expense Per Project

- **2016 RTEP Proposal Window 1**
- **2016 RTEP Proposal Window 2**
- **2016 RTEP Proposal Window 3**
- **2016 RTEP Proposal Window 3 Addendum 1**
- **2016/17 RTEP Long Term Proposal Window**
- **2016/17 RTEP Long Term Proposal Window 1A**
- **2017 RTEP Proposal Window 1**
- **2018 RTEP Proposal Window 1**
- **2018/19 RTEP Long Term Proposal Window**

**Collected Fees vs. Needed Expense Per Project**

- **Surplus**
- **Shortfall**

**Detailed Cost Containment Evaluations**
Proposed Fee Structure - Drivers

- Financial consultant analysis
  - New cost associated with cost containment evaluations and constructability/risk evaluations
  - Anticipate a single consultant performing an analysis of an entire window
  - $300k anticipated price for average sized window
    - Startup cost
    - Preparing and compare risk-adjusted revenue requirements
    - Revenue requirement analysis
    - Cost containment and risk analysis
    - Results review
    - Documentation and reporting

- Constructability Analysis
  - Multiple consultants working in parallel
  - $15-50k anticipated costs per proposal submission, dependent on complexity of project proposal and corresponding required work

- Example cost estimate per window:
  - (PJM Labor) + ($200-400k financial analysis) + ($15-50k X Number of Proposals)
Proposed Fee Structure

- Proposed approach: Flat Fee + Detailed Study Costs
  - Flat Fee structure = see table
    - Non-refundable, due at close of window
    - Intent is to cover general costs for every project submission associated with administering the process
  - Detailed Study Costs = the actual itemized evaluation expenses incurred for detailed study of project proposals
    - Intent is to bill the projects that incurred the expense
    - Anticipate a refundable deposit, amount TBD, due date under TBD – under review
    - Overflow evaluation expense beyond deposit due within standard PJM billing cycle

<table>
<thead>
<tr>
<th>Proposal Cost Estimate</th>
<th>Existing Flat Fee</th>
<th>Proposed Flat Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;$20M</td>
<td>$0</td>
<td>$X thousand</td>
</tr>
<tr>
<td>$20M-$100M</td>
<td>$5k</td>
<td></td>
</tr>
<tr>
<td>&gt;$100M</td>
<td>$30k</td>
<td></td>
</tr>
</tbody>
</table>
Additional Costs Associated With Comparative Framework Approach

- **Next Steps**
  - Finalize review of anticipated additional costs
  - Finalize new structure to address additional cost

- The comparative framework will add cost to the evaluation process

- Fee structure filed at FERC
  - will need to be updated

- Propose PJM Manual 14F Attachment C
  - Anticipate July 1st read and August request for endorsement
Anticipated Schedule for FERC 1000 Cost Containment Framework

- **2018**
  - Develop initial Construction Cost Comparative Framework by 9/1/2019

- **2019**
  - Implement initial Framework by 1/1/2020
  - Reliability Window (60 days)
  - Market Efficiency Window (120 days)

- **2020**
  - Implement additional ROE Framework by 5/1/2020
  - Reliability Window (60 days)
  - ME Window

Dec 2019 Vote

MRC

May 2020 Vote

MRC
• PJM & IMM Meetings
  – 2018
    • June, July, September
    • November (Joint PJM / IMM / Independent Cost Consultant conference)
  – 2019
    • January
    • February
    • June
    • Upcoming meetings
Cost Containment - Past Milestones

• May 2018 MRC Cost Containment Motion
  – Development process and initial schedule initiated, Manual language
    • https://pjm.com/-/media/committees-groups/committees/mrc/20180524/20180524-item-03c-cost-containment-is-power-alternative-motion-with-friendly-amendment.ashx
  – Project proposal templates approved
    • https://pjm.com/-/media/committees-groups/committees/mrc/20180524/20180524-item-03b-pjm-enhanced-project-proposal-template.ashx
  – OA Language
    • https://pjm.com/-/media/committees-groups/committees/mrc/20180524/20180524-item-03c-cost-containment-is-power-alternative-motion-oa-language.ashx

• September 2018 MRC
  – Schedule modified, process otherwise unchanged
    • https://pjm.com/-/media/committees-groups/committees/mrc/20180823/20180823-item-04-order-1000-transmission-project-cost-containment-motion-to-delay.ashx
Cost Containment - Progress to Date
Presentations to PJM PC

• May 2018
  – MRC motions initiating the cost containment effort approved (and Aug 2018 motion to delay schedule)
• 2Q and 3Q 2019
  – Timeline and overall conceptual approach updates
• January 2019
  – Overview of major components and overall approach
• February 2019
  – Additional detail of overall approach
• March 2019
  – Additional detail and example data visualization
• April 2019
  – Examples of what output to expect from the cost containment process
• May 2019
  – High level example and discussion of process implementation
  – Proposal fee restructure discussion
Cost Containment and Proposal Fee Effort Timeline Moving Forward

• (Today) June 2019 PC
  – Review of cost containment evaluation approach and next steps
    • See today’s presentation Appendix: Materials Presented at Previous Meetings
  – Review of Proposal Fee re-structure

• July 2019 PC and MRC
  – 1st read of M14F language to support cost containment
  – 1st read of OA and M14F language to support proposal fee modifications

• August 2019 PC and MRC
  – 2nd read and request for endorsement of M14F language to support cost containment
  – 2nd read and request for endorsement of OA and M14F language to support proposal fee modifications

• September 2019
  – File OA language to support cost containment evaluation with FERC
Appendix: Cost Containment Development Materials Presented at Previous PC Meetings
Anticipated Schedule for FERC 1000 Cost Containment Framework

- **2018**
  - Reliability Window (60 days)
  - Market Efficiency Window (120 days)

- **2019**
  - Develop initial Construction Cost Comparative Framework by 9/1/2019
  - Reliability Window (60 days)

- **2020**
  - Implement initial Framework by 1/1/2020
  - Reliability Window (60 days)
  - Implement additional ROE Framework by 5/1/2020
  - Market Efficiency Window

- **2021**
  - Continue Development of additional ROE Framework

**MRC**
- Dec 2019 Vote
- May 2020 Vote
Major Components of Cost Containment Evaluation

1. Proposal Submission
2. Independent Consultant Review and Analysis
3. Calculations Evaluation Data Analysis Risk Assessment

- Comparative Matrix is input to overall solution recommendation
- Comparative Matrix – Compare Across Proposals
Process complete and in place

Provides the key input parameters used for the next steps in the overall evaluation
PROCESS UNDER ACTIVE DEVELOPMENT

- PJM & IMM
- Completed PJM / IMM / Consultant conference on Nov. 15, 2018
Initial work beginning in parallel with the other steps to ensure compatibility and integration with the overall RTEP decisional process.
Comparative Framework – Analytical Steps

- Constructability Analysis
- Financial Analysis
- Legal Analysis
• Cost Evaluation – What to expect at TEAC
  – Information – project submittal templates, side-by-side comparisons, PJM and independent consultant cost estimates, observations, risk assessment, visual comparisons
  – No one size fits all approach
    • Use optimal approach given the cluster(s) of projects under evaluation
  – Regular updates
## Project Cost Evaluation

### What to Expect

- **TEAC Review**
- Summarize proposal submissions and PJM findings for TEAC review
- **Cost Containment**

### Project Cost Comparison Overview

<table>
<thead>
<tr>
<th>Example Proposal ID#</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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</thead>
<tbody>
<tr>
<td>150</td>
<td></td>
<td></td>
<td>• Project Descriptions</td>
<td></td>
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<tr>
<td>809</td>
<td></td>
<td></td>
<td>• Proposed Cost Estimate</td>
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<tr>
<td>362</td>
<td></td>
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<td>• PJM Cost Estimates</td>
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<td>783</td>
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<td>• Cost Containment</td>
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<tr>
<td>234</td>
<td></td>
<td></td>
<td>• Other</td>
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</table>
• TEAC Review

• Side-by-side comparison of project details

### Project Cost Comparison Breakdown

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<td>234</td>
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</tbody>
</table>

• See proposal templates
  - Engineering & design, permitting, ROW and land, materials, construction, overhead, contingency, total capex, AFUDC, taxes, ROE cap, capital structure, etc.
  - Assumptions
No one size fits all approach, evaluation categories will be specific to the cluster under study.

Cluster specific observations and factors.

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<td>234</td>
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</tr>
</tbody>
</table>

- Qualitative Observations & Quantitative Factors
  - Pass / Fail
  - Acceptable / Unacceptable
  - Poor / Fair / Good / Better / Best
  - Low / Neutral / High
  - Scales: 1-10, 1-100, percent %, etc.
  - Timing / Duration
  - Project Specific Risks
  - Other
Example Competitive Project Proposals

Key Tasks

Receive Proposals

Initial Triage
- Data Check
- Redaction Normalization

Independent Consultant Review
- Prepare Work Packages
- Project Specific Risk Identification
- Independent Cost Estimates

Financial Review
- Base revenue requirement analysis case
- Normalization & Base Case

Legal Review
- Evaluate the cost containment legal language

Project Cost Evaluation
- Calculations, Observations
- Visualization

Comparative Framework
- Side-by-side comparison of estimated costs, cost containment information, risk profiles, measurements and observations
Example Competitive Project Proposals
Key Task: Proposals Submitted

- Project sponsors submit proposal templates
  - Summary and Description
  - Problems Addressed
  - Project Components
  - Redaction
  - Financials
  - Cost Containment
Example Competitive Project Proposals
Key Task: Triage Proposals

• Template and supporting files data check (PSS/E and Market Simulation Data)

• Redaction review

• Project sponsor outreach

• Place projects into logical group “clusters”
  – Mix of project submissions (e.g. cost containment)
## Example Competitive Project Proposals

### Key Task: Group Competing Proposals

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project 1</th>
<th>Project 2</th>
<th>Project 3</th>
<th>Project 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Name</strong></td>
<td>Vine to Cobbler Reconductor</td>
<td>New Harrison sub, new line Harrison to Jean</td>
<td>New line Falls to West Cooper</td>
<td>New Pine substation, new line to Jean</td>
</tr>
<tr>
<td><strong>Project Description</strong></td>
<td>Reconductor the Vine to Cobbler 500kV 35 mile line.</td>
<td>Build the new Harrison 500/230kV substation interconnecting the Logan and Wade 500kV substations. Construct a new dual circuit 230kV line between the new Harrison substation and the Jean substation.</td>
<td>Build the new 42 mile Falls to West Cooper 500kV line between the existing Falls and West Cooper substations.</td>
<td>Build the new Pine 500/230kV substation interconnecting the Logan and Wade 500kV substations. Construct a new dual circuit 230kV line between the new Pine substation and the Jean substation.</td>
</tr>
</tbody>
</table>
Example Competitive Project Proposals
Key Task: Constructability Analysis

- Develop work scope packages
  - Including risk factor identification
- Communicate and coordinate with the vendors
- Receive reports
Example Competitive Project Proposals
Key Task: Financial and Legal Analysis

• Main inputs
  – Project submission templates
    • Includes any cost containment information
  – Constructability analysis
    • Including risk factors

• Main Outputs
  – NPV
  – Financial risk factor evaluation
  – Project financial side-by-side cost comparison
  – Legal evaluation
# Example Competitive Project Proposals

## Key Task: Cost Containment Evaluation

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project 1</th>
<th>Project 2</th>
<th>Project 3</th>
<th>Project 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vine to Cobbler Reconductor</td>
<td>NA</td>
<td>110.5</td>
<td>NA</td>
<td>150*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Capital Cost Cap ($ Millions)</th>
<th>NA</th>
<th>110.5</th>
<th>NA</th>
<th>150*</th>
</tr>
</thead>
</table>

| Engineering and Design       | NA                     | Yes                              | NA                                      | Yes                                     |
| Permitting / Routing / Siting| NA                     | Yes                              | NA                                      | Yes                                     |
| ROW / Land Acquisition       | NA                     | Yes                              | NA                                      | Yes                                     |
| Materials and Equipment      | NA                     | Yes                              | NA                                      | Yes                                     |
| Construction and Commissioning| NA                     | Yes                              | NA                                      | Yes                                     |
| Construction Management      | NA                     | Yes                              | NA                                      | Yes                                     |
| Overheads and Misc. Costs    | NA                     | Yes                              | NA                                      | Yes                                     |
| Escalation                   | NA                     | No                               | NA                                      | No                                      |
| AFUDC / CWIP                 | NA                     | No                               | NA                                      | No                                      |
| Taxes                        | NA                     | No                               | NA                                      | No                                      |
| ROE Cap (%)                  | NA                     | 9.5                              | NA                                      | No                                      |
| Capital Structure (Equity %) | NA                     | 45                               | NA                                      | No                                      |

*Rate base cap
Example Competitive Project Proposals
Cost of Capital Scenarios

- Scenarios
  - Project cluster specific
  - Note: PJM adjusted cost incorporates cost cap scenario analysis and individual analysis

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Example Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on Equity High</td>
<td>11.50%</td>
</tr>
<tr>
<td>Return on Equity Low</td>
<td>9.00%</td>
</tr>
<tr>
<td>Debt Cost High</td>
<td>6.00%</td>
</tr>
<tr>
<td>Debt to Equity Ratio Low</td>
<td>45% Equity</td>
</tr>
<tr>
<td>Debt to Equity Ratio High</td>
<td>55% Equity</td>
</tr>
<tr>
<td>Total Construction Cost</td>
<td>High/Low/Etc.</td>
</tr>
<tr>
<td>Project Name</td>
<td>Project 1</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Vine to Cobbler Reconducto</td>
<td>$126.5</td>
</tr>
<tr>
<td>New Harrison sub, new line Harrison to Jean</td>
<td>As received from the project sponsor. May consider cost containment.</td>
</tr>
<tr>
<td>New line Falls to West Cooper</td>
<td></td>
</tr>
<tr>
<td>New Pine substation, new line to Jean</td>
<td></td>
</tr>
<tr>
<td>Project Sponsor Proposed Cost Estimate</td>
<td></td>
</tr>
<tr>
<td>Independent Consultant Cost Estimate</td>
<td>$132</td>
</tr>
<tr>
<td>Independently developed. Does not consider cost containment.</td>
<td></td>
</tr>
<tr>
<td>Cost Containment</td>
<td>No</td>
</tr>
<tr>
<td>PJM Cost Estimate With Cost Containment</td>
<td>These estimates will include consideration of the independent cost estimates, constructability analysis, financial analysis, legal analysis and any other relevant information.</td>
</tr>
</tbody>
</table>
Example Competitive Project Proposals
Key Task: Compare Project Estimates and Risk

- Risk Weighted Expected NPVRR

NPVRR Estimate (millions)

- Project 1
- Project 2
- Project 3
- Project 4
Revision History

- 6/10/2019
  - Original version posted to PJM.com

- 6/12/2019
  - Re-ordered the slides
  - Added detail to slide 12 – Milestones and slide 14 – Timeline and Next Steps
  - Added revision history slide