

*The Brattle Group*

**Seams Cost Allocation:  
A Flexible Framework to Support  
Interregional Transmission Planning  
(Summary of Final Report)**

Presented at:  
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Presented by:  
**Johannes Pfeifenberger  
Delphine Hou**

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# Presentation Content

**Overview of Final Report**

**Implementation of Proposed Cost Allocation Framework**

**Required and Optional Provisions of Proposed Framework**

**Conclusions and Next Steps**

**Appendix: Summary of Key Seams Cost Allocation Building Blocks**

# Overview of Final Report

**Our report is organized as follows:**

## **Executive Summary**

### **I. Background**

### **II. Barriers to Interregional Planning and Cost Allocation**

### **III. Review of SPP's Draft Seams Cost Allocation Whitepaper**

### **IV. Efforts at Interregional Planning and Cost Allocation Elsewhere**

- Summarizes 9 examples of successful or promising practices from RTO and non-RTO regions in the U.S. and Europe
- Examples address cost allocation principles, seams planning processes, and benefit measurements as applied to a variety of project types such as reliability, economic, and public policy upgrades

### **V. FERC Order 1000 Requirements**

### **VI. Framework for Interregional Planning and Cost Allocation**

- Summarizes Acadiana Load Pocket “case study” and lessons learned as an example of successful multi-party seams cost allocation.
- Presents our **framework comprised of seven “building blocks”**

# Section VI: Framework for Interregional Planning & Cost Allocation

1. Regular interregional planning meetings

*Leverage existing JOAs and expand*

2. Regular exchange of planning data

3. Process to propose and analyze seams projects

*Building blocks most closely related to seams cost allocation: largely missing from or underspecified in current JOAs*

4. Evaluation criteria and benefit metrics

5. Seams cost allocation principles and guidelines

*Discussed in Sections VII through X of our report (see also Appendix to this presentation)*

6. Payment mechanisms and transmission rights

7. Integration with internal planning and cost allocation

*Leverage existing JOAs and expand*

OPTIONAL: Pre-specified formulaic evaluation and cost allocation methodology

*Optional building block – may be added as experience is gained over time*

# Overview of Final Report (cont'd)

**Sections VII through X present key cost allocation aspects of our proposed framework:**

## **VII. Process to Propose and Analyze Seams Projects (B. Block No. 3)**

- Discusses process to unilaterally or jointly propose seams projects

## **VIII. Evaluation Criteria and Benefit Metrics (Building Block No. 4)**

- Presents benefit principles applicable to seams projects
- Specifies (required and optional) benefits and metrics to be used by each seams entity

## **IX. Seams Cost Allocation Principles and Guidelines (B. Block No. 5)**

- Presents cost allocation principles, including FERC Order 1000 principles
- Specifies cost allocation guidelines, including illustrative examples for how cost allocations may be implemented

## **X. Payment Mechanisms (Building Block No. 6)**

- Discusses payment mechanisms to implement cost allocations, including physical ownership and financial transfers
- Recommends awarding transmission rights consistent with cost allocation

# Overview of Final Report (cont'd)

**The remainder of the report is organized as follows:**

## **XI. Optional Building Block: Pre-Specified Formulaic Evaluation and Cost Allocation**

- Provides for optional formulaic approaches once experience with specific types of seams projects is gained (e.g., similar to PJM-MISO cross border reliability and market efficiency cost allocation).

## **XII. Case Studies: Qualitative Application of Framework to Candidate Seams Projects**

- Illustrative application of the proposed framework to three seams projects: ALP, Branson Area Project (with AECI), and Quarry Project (with ETR).

## **XIII. Conclusions** (including next steps)

## **Appendices**

# Overview of Final Report (cont'd)

## The appendices to our report include:

**Appendix A** – Copy of the SPP RSC Draft Cost Allocation Principles for Seams Transmission Expansion Projects (“Draft Seams Cost Allocation Whitepaper”)

**Appendix B** – Copies of key documents on interregional cost allocation and seams issues in other markets

**Appendix C** – Provides illustrative tariff language for interregional planning and cost allocation provisions in SPP’s existing JOAs

**C1.** Illustrative redline of Article VII of JOA (Coordinated Interregional Transmission Planning and Cost Allocation)

**C2.** Illustrative JOA inserts for evaluation criteria and benefit metrics (BB No. 4), seams cost allocation principles and guidelines (BB No. 5) and payment mechanisms and transmission rights (BB No. 6)

**Appendix D** – Summary of five candidate seams projects suggested by stakeholders (three of which were chosen as illustrative case studies)

# Implementation of Proposed Framework

**With some modifications, clarifications, and expansion, the existing JOAs can serve as a foundation to implement Building Blocks Nos. 1, 2, and 7 of the proposed interregional planning and cost allocation framework. (See Appendix C1 for illustrative tariff language)**

	<u>Existing</u>	<u>To add</u>
1. Regular interregional planning meetings	Regular meetings to develop Joint and Coordinated System Plan	More explicit state regulatory involvement, perhaps via IPSAC
2. Regular exchange of planning data	Detailed data list exists	Jointly develop and validate load flow and other planning models for combined footprint
7. Integration with internal planning and cost allocation	Each party is required to conduct regional planning and notify the seams neighbor of any approved local and regional upgrade and TSRs and GI requests	Include public policy requirements; validate consistency in modeling assumptions; specify how seams projects can be proposed; consider synergies with transmission service and generation interconnection requests

# Implementation of Proposed Framework

**Need to add Building Blocks Nos. 3, 4, 5, and 6 as they are most closely related to seams allocation but either missing or largely unspecified in the current JOAs. (See Appendix C for illustrative tariff language)**

	<u>Existing</u>	<u>To add</u>
3. Process to propose and analyze seams projects	Focused on projects that are identified in Joint & Coordinated System Plan	Add project qualification criteria and more flexible process with commitment to jointly analyze
4. Evaluation criteria and benefit metrics	Broad reliability and economic considerations	Add new section on internally-used plus seams-specific benefits and metrics
5. Seams cost allocation principles and guidelines	Case-by-case review	Add new section
6. Payment mechanisms and transmission rights	Does not exist	Add new section
OPTIONAL: Pre-specified formulaic evaluation and cost allocation methodology	Does not exist	Possibly add new section if parties can agree to formulaic methodology

# Required and Optional Provisions of Framework

**The proposed framework attempts to balance (1) the need for flexibility in the evaluation and cost allocation of seams projects with (2) the need for actionable methodology based on clearly-identified, transparent principles and metrics:**

- ◆ Specifies requirements for key elements, such as:
  - Regular planning meetings with state regulatory involvement
  - Jointly developed and validated planning models for combined footprint
  - Pre-specified seams project proposal and evaluation process
  - Pre-specified benefit and cost allocation principles
  - Each entity is required to consider all benefits and metrics used internally
    - Recognition that seams projects offer unique benefits (such as wheeling out revenue and the avoided costs of internal projects)
    - Share of benefits and allocated cost must meet internal B/C criteria
  - Pre-specified options to derive and implement cost allocations
  - Integration with each seams entity's internal planning and cost allocation processes
  - Must meet or exceed interregional requirements of Order 1000

# Required and Optional Provisions of Framework (cont'd)

## Balancing flexibility with specificity needed to be actionable (cont'd)

- ◆ The framework also provides for flexibility as to:
  - The type of seams neighbors (RTOs, non-RTO, non-jurisdictional)
  - Different types and combinations of seams projects
  - The type and combination of benefits that may accrue differently to the seam neighbors
  - Joint or unilateral proposal of seams projects
  - Seams entities' ability to use different sets of benefits and metrics, consistent with their internal project evaluation processes
  - Optional consideration of additional benefits (e.g., based on experience gained in the evaluation of seams projects)
  - Alternative mechanisms to derive cost allocation shares
  - Alternative payment mechanisms to implement cost allocation
  - The option to add formulaic evaluation and cost allocation provisions for specific types of seams projects over time

# Conclusions and Next Steps

## Conclusions

- ◆ The proposed framework is based on reviews of: barriers to seams planning and cost allocation, SPP's ongoing efforts, FERC Order 1000 requirements, project case studies, and experiences from other U.S. and European markets
  - The framework was validated by qualitatively "testing" it on the Acadiana Load Pocket Project, the Branson Area Project, and the Quarry Project
- ◆ We believe it strikes the proper balance between (1) a methodology that is sufficiently well-specified to be actionable and (2) the flexibility needed for successful application to a wide range of seams projects and seams entities

## Next Steps

- ◆ SPP and the SPP RSC will convene a task force to work on implementing interregional planning and cost allocation provisions of Order 1000
- ◆ We believe it is imperative that there be significant coordination between SPP and the RSC
- ◆ We hope that SPP and the RSC will be able to build on our proposed framework (including illustrative JOA language) as the basis for coordinated work to implement Order 1000 requirements



## **Appendix:**

### **Summary of Key Seams Cost Allocation Building Blocks**

# Process to Propose and Analyze Seams Projects

- ◆ As long as the proposed seams project addresses both seams entities' transmission needs and offers benefits to both, the project could be:
  - A single line or several lines that are logically grouped together
  - Crossing seam or (unlike Order 1000) be wholly within one entity's footprint
- ◆ No threshold such as voltage class, total cost, or total benefits
  - Some "small" projects may offer substantial benefits
- ◆ Projects can be proposed unilaterally and must include:
  - A detailed description of the project
  - A qualitative discussion of the project's purpose and benefits to both neighbors (which could differ on either side of the seam)
  - Preliminary analyses (e.g., power flow studies) of the project's benefits to both entities ... documenting results, assumptions, and data consistent with the planning methods and metrics of each entity as specified in the agreement
  - A proposed preliminary cost allocation consistent with specified cost allocation principles and benefits identified in screening analyses
- ◆ Seams entities can agree to jointly propose any seams project(s)
- ◆ Seams entities committed to jointly analyze any proposed project(s)

## Evaluation Criteria and Benefit Metrics

**Interregional cost allocation (e.g., as would be specified in the JOA) should be based on a set of guiding principles such as:**

- ◆ Recognition that seams projects may offer combinations of different types of benefits and entirely different sets of benefits may accrue to each entity;
- ◆ Benefits and metrics used for the evaluation of seams projects by each entity will include all benefits and metrics considered in each entity's internal (local and regional) transmission planning process;
- ◆ Each entity shall have the option, but not the obligation, to consider some or all of the benefits and metrics used by the other entity;
- ◆ Seams projects can offer unique benefits beyond those currently considered in either entity's internal transmission planning process;
- ◆ Additional benefits can be developed and documented as more experience is gained;
- ◆ Seams projects may serve to avoid or delay the cost of (1) transmission projects in existing regional and local transmission plans; (2) transmission upgrades that may be needed in the future to meet local or regional needs; and (3) transmission upgrades needed to satisfy GI and TSRs.

## Building Block No. 4

# Benefit Metrics: SPP

**Evaluation criteria and benefit metrics applied to seams projects should include, at minimum, internally-considered criteria and metrics. Some of SPP's defined benefits and metrics include:**

SPP Internally Used Benefits	Quantitative / Qualitative Metrics
Adjusted production cost savings	Monetized through PROMOD simulations
Ability to replace or delay previously approved projects	Monetized as the avoided cost of previously approved projects
Energy value of reduced transmission losses	Monetized based on quantification through power flow simulations
Capacity value of reduced transmission losses	Monetized as avoided capacity
Value of improved ATC	Quantified as incremental capacity (MW)
Additional robustness metrics	As specified

## Building Block No. 4

# Benefit Metrics: Non-RTO Neighbor Example

**For non-RTO regions, evaluation criteria and benefits metrics may be less formulaic or clearly stated. We provide as an illustrative example below, benefits and metrics based on our interpretation of Western Area Power Administration's 2011 Strategic Plan.**

Illustrative Internally-Used Benefits	Quantitative / Qualitative Metrics
Avoid reliability violations	Quantified as number/duration of violations and monetized as avoided cost of regional/local upgrade
Reduce frequency and cost of supply interruptions during low-hydro years	Quantified as number/duration of likely events and monetized as cost of interruptions or replacement power
Reduce dispatch of high-cost generation needed to serve load in presence of internal transmission congestion or import constraints	Monetized as reduced generation and emission costs
Avoid cost of local transmission upgrades needed to support load growth	Monetized as avoided cost of regional/local upgrade
Reduced transmission losses	Monetized as energy and on-peak capacity savings
Increase ATC (and off-system sales)	Monetized as incremental off-system sales profits and/or transmission rights

## Building Block No. 4

# Benefit Metrics: Additional Benefits of Seams Projects

**In addition to internally-considered benefits and metrics, there are benefits and metrics that are unique to seams projects.**

- ◆ We propose that the seams entities consider including at minimum the seams-specific metrics listed below in the evaluation process

Seams-Specific Benefits	Quantitative / Qualitative Metrics
Incremental wheeling through and out revenues	Estimates of additional wheeling volumes may be derived from transmission service requests and PROMOD modeling
Benefits from increased reserve sharing capability	Quantified as a reduction in MW of reserve capacity

- ◆ Additional benefits and metrics can be considered on a project-specific basis upon mutual agreement of the seams entities

## Seams Cost Allocation Principles and Guidelines

**The agreement would specify the “general cost allocation principles” that will be applied to seams projects, such as:**

- ◆ Cost allocated should be at least roughly commensurate with total benefits to each entity; neither seams entity shall be allocated cost without receiving benefits
- ◆ Cost allocation methodologies and identification of benefits and beneficiaries must be transparent
- ◆ Different cost allocation methods may be applied to different types or different portions of transmission facilities (e.g., transmission needs driven by reliability, economic, or public policy requirements)
- ◆ The seams entities will quantify and, if possible, monetize benefits; but they will also recognize non-monetized and non-quantified benefits in assessing overall reasonableness of proposed cost allocations
- ◆ Monetized reliability, load serving, or public policy benefits will be at least equal to the avoided cost of achieving the same benefit through local or regional upgrades
- ◆ If minimum benefit-to-cost thresholds are utilized, they should not exceed 1.25
- ◆ The share of benefits to each seams entity should be sufficient to support the seams projects’ approval through each entity’s internal planning process

## Seams Cost Allocation Principles and Guidelines

**The agreement would also pre-specify flexible cost allocation mechanisms. For example, it may specify that cost allocation to each entity should be based on one or a combination of:**

- ◆ The share of seams projects' total benefits received by each entity as a proportion of the sum of the entities' total benefits received (consistent with specified principles and metrics)
- ◆ If shares are reasonably proxies for received benefits or roughly proportionate to benefits received, cost allocation can also be based on:
  - The share of seams projects' physical location in each Party's footprint (e.g., shares of circuit miles or investment dollars)
  - The share of each entity's relative contribution to the need for a project (e.g., power flows that contribute to a reliability-driven upgrade)
  - The share of each entity's projected or allocated usage of the seams projects' transmission capability (e.g., shares of increased flow-gate capacity)

## Payment Mechanisms

**Once a reasonable cost allocation has been determined, the cost allocation shall be implemented consistent with following principles:**

- ◆ To the extent feasible, cost allocation shall be implemented through either
  - Physical ownership of individual segments of a project by the seams entities or their transmission owners such that the cost of each owned portion is consistent with the determined cost allocation; or
  - Co-ownership of the project (or individual segments) where the project (or segment) cannot be divided into fully-owned segments or if a proposed project (or segment) is entirely within the service territory of one of the seams entities
- ◆ Where ownership allocation is not feasible, cost allocation should be implemented through payments (from one entity to the other) that correspond to the obtained physical or financial rights to the projects' transmission capability
- ◆ Each entity will recover allocated costs consistent with cost recovery of local and regional projects within its footprint

**Provision of transmission rights:**

- ◆ To the extent feasible and practical, an entity sharing the cost of seams projects should receive a physical or financial right for a commensurate share of the projects' capability (e.g., a share of increased ATC or flow-gate capacity)

# Pre-specified Formulaic Options

**As more experience with the cost allocation of seams projects is gained, the seams entities may pre-specify cost allocation options.**

- ◆ These pre-specified formulaic cost allocations would be based on (i) specific metrics for the evaluation of the seams project and (ii) a pre-specified cost allocation methodology that formulaically relies on these benefits and metrics
  - Entities that already use similar pre-specified metrics (e.g., use of APC in SPP and MISO) would be more likely to adopt this approach
  - Examples: PJM-MISO interregional evaluation and cost allocation process for reliability and economic projects
  - A less formulaic option (e.g., in an agreement between SPP and AECI) might include a cost allocation in proportion to each entity's avoided costs of implementing their own alternative solutions to the identified reliability problems
- ◆ Different formulas can be applied to specific project types (e.g., reliability, economic, public policy, multi-value)

**Projects that do not fit the pre-specified options would be considered under the general cost allocation principles**