Context
The utility industry is experiencing unprecedented changes including renewable generation (primarily Solar and Wind) integration driven by public policy requirements to combat climate change. As a result, use of the transmission system are beginning to change requiring more flexibility on the system than it is designed for. North American utilities follow the criteria contained in the North American Electricity Reliability Corporation (NERC) Standard "Transmission System Planning Performance Requirements" when planning their transmission systems. The current version of this standard is TPL-001-4, and it contains deterministic criteria. That is, it does not explicitly consider the probability of a particular contingency occurring. More cost effective planning could be achieved if the probability of a particular event were to be considered when planning new facilities, alongside applying the criteria contained within TPL-001-4.

Project Description
The CEATI project focuses on many of the areas noted above with an emphasis on asset management and program planning. Tasks include:

1. Review the literature: Review and assess the state of industry practice in probabilistic assessment of transmission systems.
2. Review IEEE Composite System Reliability Task Force: Share knowledge between transmission planners about the effective use of probabilistic planning within the overall transmission planning process.
   a. To summarize findings from IEEE probabilistic practice and Survey on CSR (CSRTF)
   b. Survey conducted with member utilities of CEATI
3. Survey mailed to utilities by CEATI and analyze responses: Recent survey of industry practices in probabilistic assessment and composite system reliability analysis conducted by IEEE Composite System Reliability Task Force
4. Summarize findings: Identify impediments that may be constraining the widespread implementation of transmission probabilistic assessment
5. Identify suitable tools: Identify commercially available tools that facilitate elements of probabilistic planning and list the purpose and data requirements of these tools.

Why It Matters
The fundamental objective of power system planning is to develop the system as economically as possible and maintain a high level of reliability. Utilities across globe primarily use deterministic criteria that show some weaknesses in the planning practice. By taking into account probabilistic elements, the results of this project can be used to identify more effective (and therefore, more cost efficient) transmission options to incorporate into their system.

Goals and Objectives
The goals of this project are to share knowledge between member transmission planners about the effective use of probabilistic planning within the overall transmission planning process and identifying suitable tools for carrying out probabilistic planning.

Deliverables
The deliverables for this project will include a detailed ready-to-publish report. This report will include the knowledge shared between transmission planners about the effective use of probabilistic planning within the overall transmission planning process and identify suitable tools for carrying out probabilistic planning.

Following are the deliverables for the project:
1. Draft report
2. Final report
3. Presentation

The presentation will summarize the findings and propose areas where additional work is needed.
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Start Date:</strong></td>
</tr>
<tr>
<td><strong>Project End Date:</strong></td>
</tr>
</tbody>
</table>

**Links**

- CEATI Power System Planning & Operations (PSPO)

**For More Information Contact:**

**Technology Innovation:**
Cynthia Polsky, Program Manager  
chpolsky@bpa.gov

**BPA Technical Representative:**
Berhanu Tesema – TPPC  
btetesema@bpa.gov

**CEATI Program Contact**
David Vines  
david.vines@ceati.com