

Scenario Task Force Presentation to the SSC

Recommendations on Scenario
Selection Objective, Process and Criteria

July 28, 2011

Progress to date

- Held three calls since May SSC meeting
- Developed recommendations on:
 - Main objectives of scenario selection
 - Process for developing/selecting scenarios
 - Criteria for scenario selection

Objective for scenario selection

- **See a range of transmission build-outs that reflect distinct policy scenarios of interest to stakeholders.**
 - Transmission build-outs needed to support various policy futures
 - Policies that can be accommodated by various transmission build-outs
 - Scenarios are mostly defined by policy drivers

Key criterion for scenario selection

- Given this objective, the key criterion for scenario selection is whether scenarios achieve that objective, and involve the appropriate **variation across the three scenarios**, in terms of policy drivers, expected transmission build-outs, and other variables of interest to stakeholders.
 - The process outlined on the next few slides is designed to help the SSC select three scenarios that meet this criterion, as well as other criteria discussed later in this presentation.

Process for scenario selection

- **Combination of “bookends” and “clustering”**
 - **Bookends**
 - First, roughly define the desired “balanced set” of three policy-driven scenarios and their expected transmission build-outs; then select future/sensitivity runs that best represent those three.
 - A top-down approach – decide on framework, pick scenarios that fit the framework).

Process for scenario selection

- **Combination of “bookends” and “clustering”**
 - **Clustering**
 - First, compare the future/sensitivity runs based on the variables of greatest interest to stakeholders, then see what “clusters” form around one or two key variables for which stakeholders want to see variation/balance.
 - A bottom-up approach – let the “balanced set” of three scenarios emerge from the SSC’s review of Phase 1 results.

Recommended Process for scenario selection

- Combination of “bookends” and “clustering”
 - Task force and SSC will take both approaches simultaneously, then compare and evaluate results against SSC-approved criteria.

Process: July SSC meeting

- SSC should preliminarily decide on the following:
 - **Key criteria to consider in** selecting scenarios.
 - **Other criteria to consider** in selecting scenarios.
 - **List of future/scenario variables** that matter the most, for comparing future/sensitivity runs for clustering analysis, and for achieving variation across the three final scenarios.
 - **Comparison chart or other mechanism** for using these variables to compare future/sensitivity results for clustering analysis.
 - **General description of two bookend scenarios and third scenario** – Identify key variable(s) that will define the spectrum for the three scenarios and roughly describe the desired three scenarios in terms of those key variables.

Process: September SSC meeting

At the September SSC meeting:

- Consider results of clustering analysis and identify three preferred clusters, and the corresponding three scenarios that should represent those clusters.
- Review results of bookends and clustering approaches and determine how these results should be utilized for the selection of the three scenarios.
- Reach general/high-level agreement on the three scenarios, ensuring they meet the objectives and criteria decided upon at this (July) meeting.
- Determine whether additional sensitivity runs are needed to develop scenario inputs.

Process: Early-November SSC meeting

- Reach agreement on the specific inputs for the three scenarios
 - Generation amount/type/location over time at 5 year intervals
 - Load amount/type/location over time at 5 year intervals
 - Other inputs as required

Key criterion for scenario selection:

- Meeting the objective of **variation across the three scenarios**, in terms of policy drivers, expected transmission build-outs, and other variables of interest to stakeholders.
 - Additional variables and criteria for selecting scenarios are shown on the following slides

List of Key Variables/Factors for comparing futures and choosing scenarios

- Policy drivers/goals (national carbon reduction, high EE/DR, etc.)

(This is the most important consideration.)

- Whether different policies result in “clusters” of similar generation and/or expected transmission
- Policy Implementation approach (state-focused/regional/super-regional/EI-wide)

Other Important Variables for comparing futures/scenarios

- Load growth patterns (high, low, etc.)
- Gas prices
- Emission reductions in the Phase I modeling outputs
- Generation type (high natural gas, high wind, etc.)
- Generation location
- Generation costs (high, low, etc.)
- Possible transmission built-out type
- Transfer limits/transfer limit increases
- Total energy transfers
- High-Level transmission cost estimates (high, low, etc.)

Future/sensitivity comparison chart

- Mechanism for using variables described previously to compare the future/sensitivity runs, conduct clustering analysis, and ensure that the SSC is achieving the desired amount of variation among the final three scenarios.
- Stan Hadley will present some options.

Additional criteria to consider

- **Striking the right balance between plausibility and pushing the envelope** – want to push toward the outer bounds of plausibility, while ensuring that the amount of generation, EE/DR, and transmission in the three scenarios can be reasonably implemented within the study period (*“plausibility” needs to be defined*).
- **Likelihood of reliability in the resulting transmission build-outs** – want to consider whether the anticipated build-outs will be able to meet reliability testing.

Additional criteria to consider (cont'd)

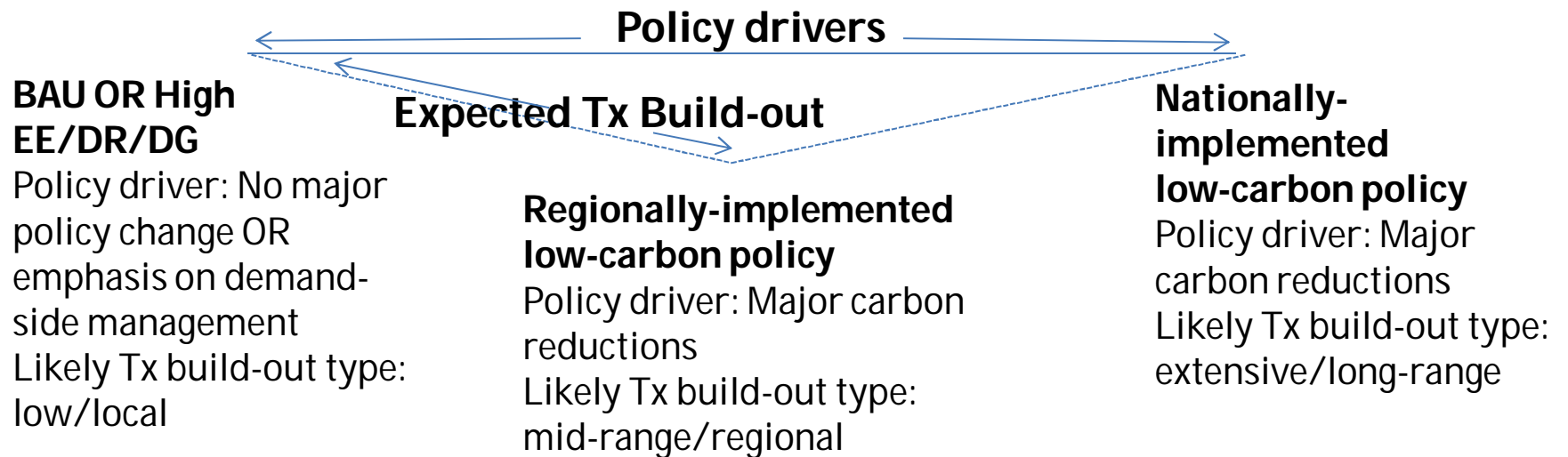
- **Resilience** – consider benefits of selecting scenarios that result in build-outs that can reliably support multiple policy futures/outcomes.
- **Realistic location/clustering of generation** – make sure generation inputs reflect realistic assumptions about when and where generation could develop within the study period.

Generally define bookends

- Task force did not reach a consensus recommendation about the bookends.
- SSC should figure out one or two key variables that will define the spectrum(s), “name” the two bookends and the third scenarios, and describe how one or two other important variables would behave, in order to constitute a balanced set and achieve the desired type of variation between the three scenarios.

Generally define bookends (cont'd)

- Example, for illustrative purposes only (not a consensus recommendation):



Clarifying questions?