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**CETA Capacity Expansion Study  
Stakeholder Meeting #2 SUMMARY  
Mar. 22, 2024, 10am-Noon MT**

**Materials:**

- [Agenda](#)
- [Presentation](#)
- [Meeting Recording](#)
- [Attendance List](#) - approximately 54 stakeholders representing over 40 organizations

**Meeting Purpose:** to present the proposed study scenarios and seek stakeholder feedback

**Schedule Review, Stakeholder Comments, and Q&A Document**

Gridworks reviewed the study timeline and meeting schedule, noting that this is stakeholder meeting two of four leading up to the draft report due to the Public Utilities Commission by Sept. 1, 2024.

The team reviewed the five sets of stakeholder comments received after meeting #1 (find them [here](#)). Gridworks summarized these comments, identifying six themes:

1. suggestions for scenarios - electrification and load growth, market integration, resource siting preferences, distributed energy resources deployment, extreme weather
2. software, hardware, and systems operation improvements to more efficiently use existing rights-of-way - advanced transmission technology, reconductoring and grid enhancing technologies
3. options that might delay the need for new transmission - storage, distributed energy resources and virtual power plants
4. seams issues - import/export capabilities, interstate constraints, frictions in markets
5. clarifying questions about study assumptions
6. suggestions for additional transmission plans to include in the study review

The team responded to specific questions in a [Q&A doc](#).

**Draft 10-year Transmission Study Results and Conclusions**

Energy Strategies summarized the results and findings from the 10-year study (2035). The goal of this study is to assess the ability of Colorado's planned transmission system to accommodate forecasted levels of load and generation consistent with Colorado utility electric resource plans.

The team tested grid conditions under two cases: reliability case and deliverability. The reliability case suggested overloading in the Denver metro area, Colorado Springs and Pueblo, and the



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San Luis Valley. Xcel Energy is studying the contingency issues in Denver and the other two areas will be explored further in the 20-year study.

In the deliverability case, study results showed overloading in the San Luis Valley, Northeast Colorado, and Southeast Colorado. The team anticipates each of these problems will be further exacerbated in the 20-year study, depending upon the future resource mix, and will explore solutions in the 20-year analysis.

### **Draft 20-Year Reference Case Capacity Expansion Plan**

Energy Strategies then presented the capacity expansion plan for the 20-year study. The team built a resource plan for the state out to 2045, starting with existing, planned, and proposed generation additions from utility electric resource plans and then added additional resources for 2035-2045 suggested by the model (RESOLVE).

Based on a moderate electrification future and assuming future generation will be physically located in Colorado, the study suggested an optimized plan for the state that includes ~14 gigawatts of new resources by 2045, largely from wind, new firm resources, solar, and batteries. The team then mapped these additions to zones in the state to support the next stage of the analysis, busbar mapping.

Montara Mountain Energy then presented a preliminary busbar mapping result as an example of what to expect from the busbar mapping analysis. This analysis applies the zonal results from the capacity expansion plan, the generator additions, to specific substations on the Colorado map. The analysis also applies several screening criteria to ensure careful land use, environmental, and social considerations in mapping new generation to specific substations. Montara Energy anticipates adjusting some of the zonal results to better reflect commercial interest and land use constraints. A busbar mapping proposal will be shared with stakeholders in the coming weeks.

### **Scenario Proposals**

In addition to the reference case, this study will also examine three scenarios that represent different but plausible future grid conditions. Based on stakeholder comments and Energy Strategies' expertise, the team proposed three scenarios:

1. **Regional integration scenario** - will add resources in the Southwest Power Pool region, remove inter-state transmission constraints, and develop a regional transmission organization market proxy.



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2. **High demand scenario** - will increase electrification assumptions, assuming higher “point loads” (e.g. data centers, hydrogen production, etc.) and increased electrification in the transportation, heating, and manufacturing/industry sectors.
3. **Extreme event scenario** - will stress the system with an extreme weather event. Stakeholders input requested on the appropriate event to model (heat dome? polar vortex? historic event to use as a reference?)

### Stakeholder Questions

Gridworks then opened the meeting to stakeholder questions. Topics included:

- **Demand-side management and distributed energy resources** - could these resources be used more to reduce the capacity needs identified by the model?
- **Extreme weather and reliability assumptions** - using a single extreme weather event to stress the system is insufficient; there is a need to model more diverse weather events and use multi-metrics to better address the potential future risk.
  - see [ESIG: New Resource Adequacy Criteria for the Energy Transition](#) and [Western Grid Group: Transition Plan](#)
- **Timing and budget constraints** - need to keep in mind the short time frame set by the Legislature for this study; there are limits to what can be accomplished in this time frame.
- **Import assumptions** - question the reference case capacity expansion results that indicate no imports. Wyoming wind is a significant resource, and I am surprised it is not included in an optimized plan. Need to elaborate on the import assumptions.
- **Wind generator additions in 2035-2045** - model assumptions for wind additions in Montrose and Rifle are not realistic. Commercial interest, transmission constraints in that area, timing of peak load needs (day time) all suggest the wind amounts in Montrose and Rifle should be reduced.
- **Capacity expansion software choice** - why did the team not use National Renewable Energy Labs’s ReEDS model?
- **Southwest Power Pool extreme weather scenario** - might be worth looking at this work to inform the extreme weather scenario proposed here.
- **Severe contingencies and wildfire** - given climate change, we should anticipate greater natural disasters such as high winds, flooding and debris flows, wildfires, etc. The study should consider a wider range of damage scenarios in the future.
  - [Salt River Project: Electric Grid Resiliency](#)
- **Curtailment figures** - increase from 5-12% in the 20-year study; this feels low. Xcel Energy shows curtailment above 15% through 2030 ([ERP 120-day report, table 19](#)).
- **Sharing transmission lines** - wind and solar do not usually peak at the same time and can share transmission. In modeling each at 100%, this analysis misses that potential for synergy.



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### Methodology Updates

Energy Strategies then presented the next step in the study process starting in the next few weeks, the power flow assessment. This step will examine the transmission needs to reliably deliver the new resources identified in the 20-year timeframe. This assessment will employ both a reliability case, a steady state contingency analysis to reveal transmission deficiencies, and a deliverability case, to study local systems experiencing excessive congestion or curtailment.

### Methodologies to Evaluate Technologies

Energy Strategies also addressed technology solutions proposed by several stakeholders, such as reconductoring, advanced conductors, storage as transmission, advanced powerflow controllers, and dynamic line ratings. Energy Strategies emphasized that the appropriate solution needs to be applied to fit the transmission problem. The modeling team will be developing a “playbook” to define appropriate technology applications for different transmission situations.

### Stakeholder Questions

Gridworks finished the meeting with a final section opening to more stakeholder questions.

Topics included:

- **PacifiCorp to Craig connection** - is this included in the 10-year study since Xcel Energy included it in its Rule 3627 Report?
- **Follow on recommendations in final report** - given the tight timeline, Energy Strategies should include a section in the final report that addresses what could be done with more time and more budget, such as varied extreme weather modeling or more detailed busbar mapping analysis.
- **Load management and distributed energy resource management systems** - would like to see more detail about these assumptions. Load flexibility measures as an alternative to building peaking units or transmission should be considered as a scenario.

### Next Steps

Stakeholder meeting #3 will occur in early May; Gridworks will communicate the date in the coming days. The purpose of the meeting is to review the 20-year reference case reliability results with stakeholders and seek input on potential solutions. The team will also present preliminary results from the production cost modeling.

### Action Items

1. **Stakeholder written comments** - requested by **April 5**. In particular, the team seeks feedback on these topics:
  - three proposed scenarios: regional integration, high demand, transmission resilience to an extreme event



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- extreme weather event - what event is likely to most stress the system? A heat dome? A polar vortex? Is there a historic event to use as a reference?
  - input to develop parameters for using advanced technologies - when is it appropriate to apply different types of technology?
  - publicly available data sources that identify commercial interest in generation options
  - send comments to: [cboies@gridworks.org](mailto:cboies@gridworks.org)
2. **Busbar mapping proposal** - the team will share a proposal with stakeholders in the coming weeks to elaborate on commercial interest screening and adjustments proposed after further mapping work.
  3. **For inclusion in the final report** - the team will recommend additional work that could add further insights with additional time and budget