Generation Planning and Policy

1. The current state of the transmission grid.
2. Why transmission is essential to state energy policy.
3. How state policies influence transmission and generation planning.
Resource Delivery

1. Electric Generating Resources
   - Overhead Transmission Lines (230,000 volts)

2. Receiving Station
   - Distribution Lines (12,500 volts)
   - Sub-Transmission Lines (69,000 volts)

3. Distribution Station

4. Residential Customer

5. Industrial Customer

6. Commercial Customer

http://www.tristartransmission.com/project/
Current State of the Transmission Grid
Current state of the transmission grid:

- A network of high voltage lines, stations and telecommunication facilities possessing considerable operational flexibility (a smart grid).
- Very efficient system (96-97%).
- High degree of reliability and availability.
- Providing / transporting an affordable product in very high demand.
Current state of the transmission grid:

• Interconnected nature of the transmission system provides significant reliability benefits to all users of electricity.

• Fuel diversification further enhances system security and reliability. (e.g., disruption in fuel supply, having adequate generating resources available to regulate system voltages and frequency)
Electric power from owned and contracted generation is delivered over a 5,300 mile transmission network.
Why Transmission is Essential to State Energy Policy
Why transmission is essential to state energy policy:

- Without adequate transmission wholesale power markets cannot function.
- Without adequate transmission public policy goals cannot be met. (e.g., Renewable Portfolio Standards, retirement of coal generation) (noted exceptions: distributed generation, efficiency standards)
Why transmission is essential to state energy policy:

• Without adequate transmission reliability of service can suffer. Existing system is heavily utilized with many lines fully subscribed or with little available transmission capacity.

• Without adequate transmission we cannot bridge to next generation energy technologies.
Why transmission is essential to state energy policy:

Source: The U.S. Energy Information Administration

Total Electric Power Net Generation (2014)

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<thead>
<tr>
<th>Source</th>
<th>Amount</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>All Energy Sources</td>
<td>4,092,935 Million KW hours</td>
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<tr>
<td>Renewables (excluding hydro)</td>
<td>281,060 (6.87%)</td>
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<tr>
<td>Hydroelectric conventional</td>
<td>258,749 (6.32 %)</td>
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Note: Solar thermal and photovoltaic is a subset of Renewables and is approximately one quarter of one percent of the total of All Energy Sources.
Why transmission is essential to state energy policy:

• Economic growth and population are increasing energy consumption at a rate that outpaces current variable energy supplies.

• Simply retiring or displacing fossil fuel generation with renewables does not address increasing consumption needs.

• Therefore, we remain dependent on the high voltage transmission system as we integrate next generation technologies.
Installed Nameplate Capacity of VERs
Source: NERC 2015 Summer Reliability Assessment
How State Policies Influence Transmission and Generation Planning
How state policies influence transmission and generation planning:

- Public Policy initiatives regarding generation types (RPS) and location will affect system power flows and existing ATC. This often results in the need for additional transmission and ancillary services to ensure grid reliability and security.

  Example: Eastern Colorado 230kV system
How state policies influence transmission and generation planning:

- Policies regarding siting and permitting can result in very long lead times for construction.

Examples: United Power project
Montrose – Cahone 230kV project
How state policies influence transmission and generation planning:

• Federal and state initiatives are not always coordinated and can sometimes be opposed.

Example: San Luis Valley 230/345kV project
Policy makers are encouraged to:

1. Reduce redundancy in federal, state and local permitting processes where possible. (e.g., when upgrading or re-permitting)

2. Set reasonable timeframes for implementation of policy initiatives, especially to allow for multi-agency and multi-state coordination.

3. Develop consistent, predictable and timely processes for approval.
Policy makers are encouraged to:

4. Consider remaining service life (of existing generation) when proposing new generation.

5. Avoid compensatory mitigation.

6. Always link generation policy initiatives with the need to construct accompanying transmission.