Decision on ISO 2019-2020 Transmission Plan

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Director, Transmission Infrastructure Planning

Board of Governors Meeting
General Session
March 25, 2020
Approving the plan means approving determinations and recommendations contained in the plan

• 9 transmission projects identified as needed:
  – 9 reliability-driven projects totaling $141.7 million
  – 7 of the 9 projects, totaling $87.7 million, were approved by ISO Management as a part of the 2019-2020 transmission planning process

• 3 previously approved projects are on hold and require further evaluation in future planning cycles

• No policy-driven projects

• No economic-driven projects
  – one project already found to be needed for reliability needs is recommended to be advanced for economic benefit reasons
2019-2020 Transmission Planning Process

Phase 1 – Develop detailed study plan

- State and federal policy
- CEC - Demand forecasts
- CPUC - Resource forecasts and common assumptions with procurement processes
- Other issues or concerns

Phase 2 - Sequential technical studies

- Reliability analysis
- Renewable (policy-driven) analysis
- Economic analysis

Publish comprehensive transmission plan with recommended projects

Phase 3 Procurement

ISO Board for approval of transmission plan
Emphasis in transmission planning cycle

• A modest capital program, as
  – Reliability issues are largely in hand
  – Policy work considered portfolios submitted by CPUC of “42 MMT scenario” baseline and sensitivity studies.
  – Very little economic-driven opportunity, largely due to status of IRP decision making and need to retain the gas fleet.

• Significant interest in development community for transmission lines and storage proposals for major facilities needing detailed economic analysis.

• Continued “special” study efforts on local capacity areas and gas-fired generation requirements.
Studies are sequentially coordinated as a part of the transmission planning process

- **Reliability Driven Projects meeting Reliability Needs**
- **Policy Driven Projects meeting Policy and possibly Reliability Needs**
- **Economic Driven Projects meeting Economic and possibly Policy and Reliability Needs (multi-value)**
- **Commitment for biennial 10-year local capacity study**
- **Assess local capacity areas**
- **Subsequent consideration of interregional transmission project proposals as potential solutions to regional needs...as needed.**
The ISO’s reliability analysis led to the following:

- 9 new reliability projects of approximately $141.7 million
  - 7 projects in PG&E service territory totaling $120.7 million
  - 1 project in VEA/GLW service territory totaling $5 million
  - 1 project in SCE service territory totaling $16 million
  - 7 of the 9 projects totaling $87.7 million were approved by ISO Management as a part of the 2019-2020 transmission planning process.

- Three previously approved projects in PG&E service territory are recommended to be on hold for further review in future cycles.
Policy-driven analysis

• CPUC’s 2017-2018 Integrated Resource Planning cycle provided resource planning assumptions to the ISO:
  – Base portfolio based on its “42 MMT scenario” that results in approximately a 60 percent RPS, and
  – Two sensitivity portfolios resulting in approximately a 71 percent RPS.

• The ISO performed policy-driven study assessments of the 42 MMT scenario and did not identify any new Category 1 policy-driven transmission needs.

• Sensitivity analyses showed significant potential curtailments, raising potential for economic-driven needs, if not policy-driven

• The ISO is not recommending any new transmission solutions at this time for policy purposes.
Generic resources included in CPUC base portfolio:

- **Northwest wind (601 MW total)**
  - 601 MW wind FCDS

- **Northern CA (424 MW total)**
  - 424 MW geothermal FCDS

- **Solano (643 MW total)**
  - 643 MW wind EODS

- **Central Valley North & Los Banos (146 MW total)**
  - 146 MW Wind FCDS

- **Westlands (0 MW total)**

- **Greater Carrizo (160 MW total)**
  - 160 MW wind EODS

- **Tehachapi (1,166 MW total)**
  - 1,013 MW solar FCDS
  - 153 MW wind FCDS

- **Southern NV, Mountain Pass and Eldorado (3,006 MW total)**
  - 802 MW solar FCDS
  - 2,204 MW solar EODS

- **Riverside East and Palm Springs (1362 MW total)**
  - 318 MW solar FCDS
  - 42 MW wind FCDS
  - 1,002 MW solar EODS

- **Southwest wind (500 MW total)**
  - 500 MW wind FCDS

- **Greater Imperial (1,276 MW total)**
  - 624 MW geothermal FCDS
  - 652 MW geothermal EODS
1,656 MW Offshore Wind

8,323 MW Offshore Wind

Queue Map – Conventional & Renewables – July 24, 2019
Economic-driven analysis

• In the economic assessment the ISO:
  – Received a number of economic study requests, which included projects that would more reasonably be categorized as interregional transmission projects;
  – Received several proposed reliability projects that cited material economic benefits; and
  – Completed the expanded 10-year local capacity technical study initiated in the 2018-2019 planning cycle exploring potential transmission upgrades

• No new projects were found to be needed as economic-driven projects in the 2019-2020 planning cycle
  – One project already found to be needed for reliability needs is recommended to be advanced for economic benefit reasons.
  – One project in Contra Costa LCR subarea will be continue to be assessed as a part of the annual LCR analysis – and may be brought for approval in at a future Board of Governors meeting.
Projects approved by ISO Management in the 2019-2020 transmission planning process:

<table>
<thead>
<tr>
<th>Projects</th>
<th>PTO</th>
<th>Project costs (millions)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tulucay-Napa #2 60 kV Line Capacity Increase</td>
<td>PG&amp;E</td>
<td>$5-$10</td>
<td>Reliability</td>
</tr>
<tr>
<td>East Shore 230 kV Bus Terminals Reconfiguration</td>
<td>PG&amp;E</td>
<td>$2-$4</td>
<td>Reliability</td>
</tr>
<tr>
<td>Newark 230/115 kV Tran7 of the 9 projects totaling $87.7 million</td>
<td>PG&amp;E</td>
<td>$3-$6</td>
<td>Reliability</td>
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<td>were approved by CAISO management as a part of transmission planning</td>
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<tr>
<td>process sformer Bank #7 Circuit Breaker Addition</td>
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</tr>
<tr>
<td>Moraga 230 kV Bus Upgrade</td>
<td>PG&amp;E</td>
<td>$17</td>
<td>Reliability</td>
</tr>
<tr>
<td>Wilson-Oro Loma 115kV Line Reconductoring</td>
<td>PG&amp;E</td>
<td>$11.3-$22.7</td>
<td>Reliability</td>
</tr>
<tr>
<td>Borden 230/70 kV Transformer Bank #1 Capacity Increase</td>
<td>PG&amp;E</td>
<td>$11.5-$23</td>
<td>Reliability</td>
</tr>
<tr>
<td>Gamebird 230/138 kV Transformer Upgrade</td>
<td>VEA/GLW</td>
<td>$5</td>
<td>Reliability</td>
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Projects recommended for approval in the 2019-2020 Transmission Plan:

<table>
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<th>Comments</th>
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</thead>
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<tr>
<td>Salinas-Firestone #1 and #2 60 kV Lines</td>
<td>PG&amp;E</td>
<td>$19-$38</td>
<td>Reliability</td>
</tr>
<tr>
<td>Pardee-Sylmar 230 kV Line Rating Increase Project</td>
<td>SCE</td>
<td>$16</td>
<td>Reliability (with economic benefits)</td>
</tr>
</tbody>
</table>
Previously Approved Projects Recommended to be on Hold

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<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>North of Mesa Upgrades</td>
<td>PG&amp;E</td>
<td>On hold</td>
</tr>
<tr>
<td>Moraga-Sobrante 115 kV Line Reconductors</td>
<td>PG&amp;E</td>
<td>On hold</td>
</tr>
<tr>
<td>Wheeler Ridge Junction Station Project</td>
<td>PG&amp;E</td>
<td>On hold</td>
</tr>
</tbody>
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Other Informational Studies

• As in past transmission planning cycles, the ISO undertook additional informational studies to help inform future transmission planning or resource procurement processes:
  – Frequency response and dynamic system modeling
  – Reliance on gas-fired generation in local capacity Areas
  – Flexible capacity deliverability requirements
Regional high voltage transmission access charge projection trending from January 1, 2020 values:

- **Regional High Voltage TAC**
- **$/MWh**

![Graph showing projected costs from 2019 to 2030 with blue and red lines indicating different projection scenarios.](image-url)
Stakeholder feedback

- General support for much of the transmission plan
- Concerns with CPUC portfolios used for planning
- Requests for further consideration of alternatives submitted
- Concerns with respect to potential renewable generation curtailment
- Concerns with PTO capital maintenance projects
  - PG&E capital maintenance plans in Oakland area
Management recommends the Board approve the 2019-2020 ISO Transmission Plan

- Continues to pursue low emission strategies in addressing reliability needs of the ISO controlled grid
- Sets a foundation for higher renewable energy goals
- Provides for prudent and economic development of the transmission system
Management proposes the following motion:

Moved, that the ISO Board of Governors approves the ISO 2019-2020 transmission plan attached to the memorandum dated March 18, 2020.