The study focuses on electrical properties of the transmission grid and economic benefits from the CAISO ratepayers’ perspective.

The study is NOT about substation siting and line routing.
# Proposed Alternatives

<table>
<thead>
<tr>
<th>#</th>
<th>Status Quo (Build Nothing)</th>
<th>Proposed Alternatives</th>
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<tr>
<td>1</td>
<td>Status Quo (Build Nothing)</td>
<td></td>
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<tr>
<td>2</td>
<td>Midway – E2 500 kV DCTL</td>
<td>Magunden – S1 230 kV DCTL (“SCE-1”)</td>
</tr>
<tr>
<td>2a</td>
<td>Midway – E2 500 kV DCTL with S2 Loop-In</td>
<td></td>
</tr>
<tr>
<td>2b</td>
<td>Midway – E2 500 kV DCTL with S2-S3 Loop-In, Whirlwind – S3 500 kV Line</td>
<td></td>
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<tr>
<td>2c</td>
<td>Midway – E2 500 kV DCTL with S2 Loop-In, Midway – Vincent #3 Upgrade</td>
<td></td>
</tr>
<tr>
<td>2d</td>
<td>Midway – Gregg 500 kV DCTL</td>
<td>Magunden – S1 230 kV DCTL (“SCE-1”)</td>
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<tr>
<td>3</td>
<td>Midway – E2 500 kV SCTL</td>
<td>Magunden – S1 230 kV DCTL (“SCE-1”)</td>
</tr>
<tr>
<td>4</td>
<td>Whirlwind – E2 500 kV DCTL with S2 Loop-In</td>
<td></td>
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<tr>
<td>5</td>
<td>Midway – E2 230 kV DCTL</td>
<td>Magunden – S1 230 kV DCTL (“SCE-1”)</td>
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<td>6</td>
<td>Fresno – Big Creek 230 kV inter-tie</td>
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<td>7</td>
<td>Midway – McCall – E2 230 kV DCTL</td>
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<td>8</td>
<td>Gates – Gregg 230 kV DCTL</td>
<td>Magunden – S1 230 kV DCTL (“SCE-1”)</td>
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<td>9</td>
<td>Raisin 230 kV Switching Station</td>
<td>Magunden – S1 230 kV DCTL (“SCE-1”)</td>
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<tr>
<td>10</td>
<td>New generation 1000 MW in Fresno</td>
<td>Magunden – S1 230 kV DCTL (“SCE-1”)</td>
</tr>
</tbody>
</table>
Updates to the Proposed Alternatives

- Stakeholders proposed to increase to 1000 MW for Alt.10 (New gen in Fresno)
- Stakeholders proposed Alt.2c (Alt.2 plus Midway-Vincent 500 kV #3 upgrade)
- Study group proposed Alt.2d (Midway-Gregg 500 kV DCTL)
- Study group added the 2nd 500/230 kV bank to 500 kV DCTL alternatives
C3ETP Stakeholder Mtg on Apr 24, 2008 / Study Overview

Legend
- Hydro
- Pumped Storage / Pump
- Nuclear
- Simple Cycle
- Combined Cycle
- Biomass / Land Fill Gas
- Wind
- Solar
- Substation
- 500 kV line
- 230 kV line

Note:
This map is approximate. The illustrated new transmission lines do not represent the routes. The illustrated new substations do not represent the exact location.

Comment:
The Midway – E2 line may go either in the east or west route.
>>> Alternative 2a <<<

Midway – E2 500 kV DCTL with S2 Loop-In

Comment:
This alternative is based on the assumption that the Midway – E2 line will go in the east route.

Note: This map is approximate. The illustrated new transmission lines do not represent the routes. The illustrated new substations do not represent the exact location.
<<< Alternative 2b >>>

Midway – E2 500 kV DCTL with S2-S3 Loop-In, Whirlwind – S3 500 kV

Comment: This alternative is based on the assumption that the Midway – E2 line will go in the east route.

Legend:
- Hydro
- Pumped Storage / Pump
- Nuclear
- Simple Cycle
- Combined Cycle
- Biomass / Land Fill Gas
- Wind
- Solar
- Substation
- 500 kV line
- 230 kV line

Note: This map is approximate. The illustrated new transmission lines do not represent the routes. The illustrated new substations do not represent the exact location.
>>> Alternative 2c <<<

Midway – E2 500 kV DCTL S2 Loop-In
Midway – Whirlwind 500 kV #3 Upgrade

Legend:
- Hydro
- Pumped Storage / Pump
- Nuclear
- Simple Cycle
- Combined Cycle
- Biomass / Land Fill Gas
- Wind
- Solar
- Substation
- 500 kV line
- 230 kV line

Comment:
This alternative is based on the assumption that the Midway – E2 line will go in the east route.

Note:
This map is approximate. The illustrated new transmission lines do not represent the routes. The illustrated new substations do not represent the exact location.
C3ETP Stakeholder Mtg on Apr 24, 2008 / Study Overview

>>> Alternative 2d <<<

Midway – Gregg 500 kV DCTL
Magunden – Rector 230 kV DCTL

Legend
- Hydro
- Pumped Storage / Pump
- Nuclear
- Simple Cycle
- Combined Cycle
- Biomass / Land Fill Gas
- Wind
- Solar
- Substation
- 500 kV line
- 230 kV line

Note: This map is approximate. The illustrated new transmission lines do not represent the routes. The illustrated new substation does not represent the exact location.

Comment:
The Midway – Gregg line may go either in the east or west route.

Tracy
Tesla
Los Banos
Moss Landing
Gates
Midway
Diablo Canyon
Morro Bay
Kern PP

Wishon
Kern PP

Path 15
Path 26

San Joaquin
Wilson

Kings River
Pine Flats

Big Creek

Note:
This map is approximate. The illustrated new transmission lines do not represent the routes. The illustrated new substation does not represent the exact location.
>>> Alternative 3 <<<

**Midway – E2 500 kV SCTL**

**Magunden – Rector 230 kV DCTL**

Legend:
- Hydro
- Pumped Storage / Pump
- Nuclear
- Simple Cycle
- Combined Cycle
- Biomass / Land Fill Gas
- Wind
- Solar
- Substation
- 500 kV line
- 230 kV line

Comment:
The Midway – E2 line may go either in the east or west route.

Note:
This map is approximate. The illustrated new transmission lines do not represent the routes. The illustrated new substations do not represent the exact location.
>>> Alternative 4 <<<

Whirlwind – E2 500 kV DCTL with S2 Loop-In

Legend:
- Hydro
- Pumped Storage / Pump
- Nuclear
- Simple Cycle
- Combined Cycle
- Biomass / Land Fill Gas
- Wind
- Solar
- Substation
- 500 kV line
- 230 kV line

Note:
This map is approximate. The illustrated new transmission lines do not represent the routes. The illustrated new substations do not represent the exact location.
>>> Alternative 5 <<<

Midway – E2 230 kV DCTL
Magunden – Rector 230 kV DCTL

Comment:
The Midway – E2 line may go either in the east or west route.

Note:
This map is approximate. The illustrated new transmission lines do not represent the routes. The illustrated new switching station and substation do not represent the exact location.

Legend:
- Hydro
- Pumped Storage / Pump
- Nuclear
- Simple Cycle
- Combined Cycle
- Biomass / Land Fill Gas
- Wind
- Solar
- Substation
- 500 kV line
- 230 kV line
>>> Alternative 6 <<<

Fresno – Big Creek
230 kV inter-tie

Note: This map is approximate. The illustrated new transmission lines do not represent the routes. The illustrated new switching station and substation do not represent the exact location.
Note: This map is approximate. The illustrated new transmission lines do not represent the routes. The illustrated new switching stations and substations do not represent the exact location.

>>> Alternative 7 <<<

Midway – McCall – E2 230 kV DCTL
Magunden – Rector 230 kV DCTL
>>> Alternative 8 <<<

**Gates – Gregg 230 kV DCTL**

**Magunden – Rector 230 kV DCTL**

Legend:
- Hydro
- Pumped Storage / Pump
- Nuclear
- Simple Cycle
- Combined Cycle
- Biomass / Land Fill Gas
- Wind
- Solar
- Substation
- 500 kV line
- 230 kV line

Note: This map is approximate. The illustrated new transmission lines do not represent the routes. The illustrated new substation does not represent the exact location.
>>> Alternative 9 <<<

Raisin 230 kV Switching Station
Magunden – Rector 230 kV DCTL

Legend
- Hydro
- Pumped Storage / Pump
- Nuclear
- Simple Cycle
- Combined Cycle
- Biomass / Land Fill Gas
- Wind
- Solar
- Substation
- 500 kV line
- 230 kV line

Note:
The map is approximate. The illustrated new transmission lines do not represent the routes. The illustrated new switching station and substation do not represent the exact location.
Information Updates

- Alternatives updated per stakeholder recommendations
- Project Q#47 (CT 200 MW, COD 2009) withdrew and PPA cancelled
- PGE updated the Reliability Assessment study plan per stakeholder comments
- SCE also developed a study plan for Reliability Assessment
- PG&E and SCE delivers preliminary results of Reliability Assessment
- CAISO in transition from GridView™ to PROMOD™
- WECC 2017 database remains to be released
Assessment of Alternatives
Reliability Assessment and Economic Assessment

Proposed Alternatives

Reliability Assessment
- Status: Preliminary results available

Alternatives that pass reliability assessment

Economic Assessment
- Status: To be determined

Status: To be performed
Central California Clean Energy Transmission Project (C3ETP)

Your comments and questions are welcome
For written comments, please send to: RegionalTransmission@caiso.com