

**APPENDIX C**  
**EXCERPTS FROM**  
**CALIFORNIA ISO**  
**2012-2013 TRANSMISSION PLAN**

# 2012-2013 TRANSMISSION PLAN



**California ISO**  
Shaping a Renewed Future

March 20, 2013

Approved by ISO Board of Governors  
Prepared by: Infrastructure Development

Table 3.5-10– Summary of Mid-Term and Long-Term (generation) options

Summary of Generation & Dynamic Reactive Support Need (No SONGS Analyses) - Mid-Term and Long-Term (Generation) Options

| 2018 (Mid-Term)^          |  |                         | 2022 (Long-Term) - Generation Options<br>(Incremental Need) |  |                         | Total Generation & Dynamic Support<br>Need By 2022 |   |                                  |
|---------------------------|--|-------------------------|---|--|-------------------------|--|---|----------------------------------|
| Area                      | OTC Replacement<br>Assumptions<br>(MW) | New Generation*<br>(MW) | Dynamic Reactive Support<br>Need<br>(MVAR)                  | OTC Replacement<br>Assumptions<br>(MW) | New Generation*<br>(MW) | Dynamic Reactive<br>Support Need<br>(MVAR)         | Total Dynamic<br>Support Need<br>(MVAR) | Total Generation<br>Need<br>(MW) |
| <b>Alternative #1</b>     |  |                         |   |  |                         |  |   |                                  |
| Southwestern LA Basin     | 0                                      | 0                       | 280 (HB)! + 400/500**                                       | 2900                                   | 1000 - 1200             | 550 #  | 500 - 1050 #                            | 3915 - 4115                      |
| Northwestern LA Basin     | 0                                      | 0                       | 0   | 0                                      | 300                     | 0  | 0                                       | 300                              |
| Eastern LA Basin          | 0                                      | 0                       | 0   | 0                                      | 100 - 200               | 0  | 0                                       | 100 - 200                        |
| <i>Subtotal LA Basin</i>  |  |                         | <i>280 (HB)! + 400/500 **</i>                               |  | <i>4315 - 4615 ◊ #</i>  | <i>550 #</i>                                       | <i>500 - 1050</i>                       | <i>4315 - 4615 #</i>             |
| Northwest San Diego       | 620/820 +                              | 0                       | 240 !!  | ++ ◊                                   | 0                       | 240 !!   | 480                                     | 620/820 ++ ◊                     |
| Southwest San Diego       | 0                                      | 0                       | !!  | 0                                      | 0                       | 2x240 !!   | 480                                     | 0                                |
| Southeast San Diego       | 0                                      | 300                     | 0   | 0                                      | 0                       | 0  | 0                                       | 300                              |
| <i>Subtotal San Diego</i> | <i>920/1120</i>                        |                         | <i>240 !!</i>   | <i>(Minimum 920 carried from 2018)</i> |                         | <i>720 !!</i>                                      | <i>960</i>                              | <i>920/1120 ◊</i>                |
| <b>Alternative #2</b>     |  |                         |   |  |                         |  |   |                                  |
| Northwestern LA Basin     | 0                                      | 0                       | 280 (HB)! + 500   | 2860                                   | 0                       | 0  | 280 (HB)! + 500                         | 2860                             |
| Eastern LA Basin          | 0                                      | 0                       | 0   | 0                                      | 0                       | 0  | 0                                       | 0                                |
| <i>Subtotal LA Basin</i>  |  |                         | <i>280 (HB)! + 500</i>                                      |  |                         |  | <i>280 (HB)! + 500</i>                  | <i>3820</i>                      |
| Northwest San Diego       | 965 \$ 0                               | 0                       | 2x240 (new)   | 520 \$ 3820                            | 0                       | 0  | 480                                     | 1485                             |
| Southwest San Diego       | 0                                      | 0                       | 2x240 (new)   | 0                                      | 0                       | 0  | 480                                     | 0                                |
| Southeast San Diego       | 0                                      | 0                       | 0   | 400 \$                                 | 0                       | 0  | 0                                       | 400                              |
| <i>Subtotal San Diego</i> |  |                         | <i>960</i>  |  |                         |  | <i>960</i>                              | <i>1885</i>                      |
|                           | <i>965</i>                             |                         |   | <i>920</i>                             |                         |  |   |                                  |

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**Notes:** ^ Common transmission line need: Sycamore-Penasquitos 230kV line

\* New generation can replace OTC generation if in the same vicinity area

\*\* Need: 400 MVAR with design provision for future expansion for additional 100 MVAR (may need to be upgraded to 500 MVAR between 2018 - 2022 time frame)

# Generation need may be reduced by 300 MW by adding an additional 550 MVAR SVC at San Onofre switchyard

+ This can be accomplished by combining a minimum of 620 MW generation replacement/repowering; the remaining (200 MW) generation need is OTC-extended until further development in the long term

++ Need a minimum of 620 MW OTC permanent replacement or new generation in the N/W S/D vicinity area (this part is carried over from the larger 2018 mitigation)

! ISO assumes HB synchronous condensers to be available for 2018 (for 2022 if HB repowering occurs for one CCGT block only)

!! Reactive support need to be expanded with additional 720 MVAR in San Diego between 2018 - 2022 time frame for a total of 960 MVAR in San Diego in 2022

\$ If total San Diego generation replacement and new generation is 1120 MW for mid-term (2018), then the additional need is 765 MW for 2022

◇ Approximately 200 MW of generation in the West LA Basin can be lowered if 200 MW of generation is developed in San Diego

Table 3.5-11– Summary of Mid-Term and Long-Term (combined transmission & generation) alternatives

Summary of Generation & Dynamic Reactive Support Need (No SONGS Analyses) - Combined Transmission & Generation Alternatives

| 2018 (Mid-Term)^          |                                  |                      |                                      | 2022 (Long-Term) - Combined Transmission Line and Generation Option (Incremental Need) |                      |                                      | Total Generation & Dynamic Reactive Support Need by 2022 |                            |
|---------------------------|----------------------------------|----------------------|--------------------------------------|--|----------------------|--------------------------------------|--|----------------------------|
| Area                      | OTC Replacement Assumptions (MW) | New Generation* (MW) | Dynamic Reactive Support Need (MVAR) | OTC Replacement Assumptions (MW)   | New Generation* (MW) | Dynamic Reactive Support Need (MVAR) | Total Dynamic Support Need (MVAR)                        | Total Generation Need (MW) |
| <b>Alternative #1</b>     |                                  |                      |                                      |  |                      |                                      |  |                            |
| Southwestern LA Basin     | 0                                | 0                    | 280 (HB)! + 400/500 **               | 2915   | 0                    | 0                                    | 500  | 2915                       |
| Northwestern LA Basin     | 0                                | 0                    | 0                                    | 0  | 0                    | 0                                    | 0  | 0                          |
| Eastern LA Basin          | 0                                | 0                    | 0                                    | 0  | 0                    | 0                                    | 0  | 0                          |
| <i>Subtotal LA Basin</i>  | 0                                |                      | 280 (HB)! + 400/500 **               | 2915   |                      |                                      | 500  | 2915                       |
| <b>Alternative #2</b>     |                                  |                      |                                      |  |                      |                                      |  |                            |
| Northwest San Diego       | 820                              | 0                    | 240 !!                               | 360  | 0                    | 240 !!                               | 480  | 1180                       |
| Southwest San Diego       | 0                                | 0                    | !!                                   | 0  | 0                    | 2x240 !!                             | 480  | 0                          |
| Southeast San Diego       | 0                                | 300                  | 0                                    | 0  | 100                  | 0                                    | 0  | 400                        |
| <i>Subtotal San Diego</i> | 1120                             |                      | !!                                   | 460  |                      | 720 !!                               | 960  | 1580                       |
| <b>Alternative #2</b>     |                                  |                      |                                      |  |                      |                                      |  |                            |
| Southwestern LA Basin     | 0                                | 0                    | 280 (HB)! + 500 (new)                | 2915   | 0                    | 0                                    | 500  | 2915                       |
| Northwestern LA Basin     | 0                                | 0                    | 0                                    | 0  | 0                    | 0                                    | 0  | 0                          |
| Eastern LA Basin          | 0                                | 0                    | 0                                    | 0  | 0                    | 0                                    | 0  | 0                          |
| <i>Subtotal LA Basin</i>  |                                  |                      | 280 (HB)! + 500 (new)                | 2915   |                      |                                      | 500  | 2915                       |
| Northwest San Diego       | 965                              | 0                    | 2x240                                | 215  | 0                    | 0                                    | 480  | 1180                       |
| Southwest San Diego       | 0                                | 0                    | 2x240                                | 0  | 0                    | 0                                    | 480  | 0                          |
| Southeast San Diego       | 0                                | 0                    | 0                                    | 0  | 400                  | 0                                    | 0  | 400                        |
| <i>Subtotal San Diego</i> | 965                              |                      | 960                                  | 615  |                      |                                      | 960  | 1580                       |

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**Notes:** ^ Common transmission line need: Sycamore-Penasquitos 230kV line

\* New generation can replace OTC generation if in the same vicinity area

\*\* Need: 400 MVAR with design provision for future expansion for additional 100 MVAR (may need to be upgraded to 500 MVAR between 2018 - 2022 time frame)

+ Can be accomplished by combining a minimum of 620 MW replacement/repowering and the remaining generation need is OTC-extended until further generation development in the long term (2022)

++ Need a minimum of 620 MW OTC replacement or new generation in the N/W S/D vicinity area (this part is carried over from the larger 2018 mitigation),(see notes + above for residual need in 2018)

! ISO assumes HB synchronous condensers to be available for 2018 (for 2022, assumes that all HB units would be repowered)

!! Reactive support need to be expanded with additional 720 MVAR in San Diego between 2018 - 2022 time frame for a total of 960 MVAR in San Diego in 2022

◇ Approximately 100 MW of generation in the West LA Basin can be lowered if 100 MW of generation is developed in San Diego