

## 2013/2014 ISO Reliability Assessment - Preliminary Study Results

Study Area: **PG&E Los Padres - Summer Peak**



### Thermal Overloads

| ID          | Overloaded Facility              | Worst Contingency                                | Category | Category Description | Loading (%)      |                  |                  | Potential Mitigation Solutions       |
|-------------|----------------------------------|--|----------|----------------------|------------------|------------------|------------------|--------------------------------------|
|             |                                  |  |          |                      | 2015 Summer Peak | 2018 Summer Peak | 2023 Summer Peak |                                      |
| LP-SP-T-001 | MORRO BAY 230/115 kV # 6 BANK    | CB FAULT AT MESA SUB 115 CB102                   | C2       | CB FAULT             | 111              | <100             | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-002 | SN LS OB-SNTA MRA 115 kV #1 Line | CB FAULT AT MESA SUB 115 CB102                   | C2       | CB FAULT             | 209              | 215              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-003 | SNTA MRA-FRWAYTP 115 kV #1 Line  | CB FAULT AT MESA SUB 115 CB102                   | C2       | CB FAULT             | 104              | 108              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-004 | SISQUOC-PALMR 115 kV #1 Line     | CB FAULT AT MESA SUB 115 CB102                   | C2       | CB FAULT             | 113              | 116              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-005 | PALMR-ZACA 115 kV #1 Line        | CB FAULT AT MESA SUB 115 CB102                   | C2       | CB FAULT             | 111              | 115              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-006 | S.YNZ JT-ZACA 115 kV #1 Line     | CB FAULT AT MESA SUB 115 CB102                   | C2       | CB FAULT             | 121              | 125              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-007 | MORRO BAY 230/115 kV #6 BANK     | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines | C3       | L-1-1                | 135              | <100             | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-008 | MORRO BY-GLDTRJC1 115 kV #1 Line | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines | C3       | L-1-1                | 113              | 128              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-009 | GLDTRJC1-FTHILTP2 115 kV #1 Line | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines | C3       | L-1-1                | 104              | 119              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-010 | FTHILTP2-SN LS OB 115 kV #1 Line | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines | C3       | L-1-1                | 105              | 120              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-011 | MORRO BY-GLDTRJC2 115 kV #1 Line | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines | C3       | L-1-1                | 111              | 127              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-012 | GLDTRJC2-FTHILTP1 115 kV #1 Line | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines | C3       | L-1-1                | 112              | 127              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-013 | FTHILTP1-SN LS OB 115 kV #1 Line | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines | C3       | L-1-1                | 105              | 120              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-014 | SN LS OB-OCEANO 115 kV #1 Line   | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines | C3       | L-1-1                | 151              | 189              | <100             | Action Plan/Drop load in the interim |

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| ID          | Overloaded Facility               | Worst Contingency   | Category | Category Description | Loading (%)      |                  |                  | Potential Mitigation Solutions       |
|-------------|-----------------------------------|---|----------|----------------------|------------------|------------------|------------------|--------------------------------------|
|             |                                   |   |          |                      | 2015 Summer Peak | 2018 Summer Peak | 2023 Summer Peak |                                      |
| LP-SP-T-015 | OCEANO-UNION OL 115 kV #1 Line    | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines              | C3       | L-1-1                | 138              | 189              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-016 | MESA_PGE-UNION OL 115 kV #1 Line  | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines              | C3       | L-1-1                | 137              | 188              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-017 | MESA_PGE-S.M.ASSO 115 kV #1 Line  | Divide-Cabrillo #1 and Mesa-Santa Maria 115 kV Lines          | C3       | L-1-1                | 106              | <100             | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-018 | S.M.ASSO-SISQUOC 115 kV #1 Line   | San Luis Obispo-Santa Maria and Mesa-Santa Maria 115 kV Lines | C3       | L-1-1                | 115              | <100             | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-019 | S.YNZ JT-CABRILLO 115 kV #1 Line  | Andrew-Sisquoc 115 kV #1 & 2 Lines                            | C3       | L-1-1                | N/A              | N/A              | 101              | Rerate/Reconductor                   |
| LP-SP-T-020 | SAN MIGL-PSA RBL 70 kV #1 Line    | Morro Bay-Templeton and Templeton-Gates 230 kV Lines          | C3       | L-1-1                | 88               | 113              | 115              | Droplow/Reconductor                  |
| LP-SP-T-021 | ATASCDRO-SN LS OB 70 kV #1 Line   | Morro Bay-Templeton and Templeton-Gates 230 kV Lines          | C3       | L-1-1                | 179              | <100             | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-022 | MORRO BAY 230/115 kV BANK #6      | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines              | C5 DCTL  | L-2                  | 135              | <100             | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-023 | SN LS OB-SANTA MRA 115 kV #1 Line | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines              | C5 DCTL  | L-2                  | 190              | 240              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-024 | SN LS OB-OCEANO 115 kV #1 Line    | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines              | C5 DCTL  | L-2                  | 151              | 189              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-025 | OCEANO-UNION OL 115 kV #1 Line    | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines              | C5 DCTL  | L-2                  | 138              | 189              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-026 | MESA_PGE-UNION OL 115 kV #1 Line  | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines              | C5 DCTL  | L-2                  | 137              | 188              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-027 | MESA_PGE-S.M.ASSO 115 kV #1 Line  | Mesa-Santa Maria and San Luis Obispo-Santa Maria 115 kV Lines | C5 DCTL  | L-2                  | 114              | <100             | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-028 | S.M.ASSO-SISQUOC 115 kV #1 Line   | Mesa-Santa Maria & San Luis Obispo-Santa Maria 115 kV Lines   | C5 DCTL  | L-2                  | 114              | <100             | <100             | Action Plan/Drop load in the interim |

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### Thermal Overloads

| ID          | Overloaded Facility              | Worst Contingency                                | Category | Category Description | Loading (%)      |                  |                  | Potential Mitigation Solutions       |
|-------------|----------------------------------|--|----------|----------------------|------------------|------------------|------------------|--------------------------------------|
|             |                                  |  |          |                      | 2015 Summer Peak | 2018 Summer Peak | 2023 Summer Peak |                                      |
| LP-SP-T-029 | S.YNZ JT-CABRILLO 115 kV #1 Line | Andrew-Sisquoc No.1 and 2 115 kV Line            | C5 DCTL  | L-2                  | N/A              | N/A              | 101              | Rerate/Reconductor                   |
| LP-SP-T-030 | MORRO BY-GLDTRJC2 115 kV #1 Line | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines | C5 DCTL  | L-2                  | 111              | 127              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-031 | GLDTRJC2-FTHILTP1 115 kV #1 Line | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines | C5 DCTL  | L-2                  | 111              | 127              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-032 | FTHILTP1-SN LS OB 115 kV #1 Line | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines | C5 DCTL  | L-2                  | 105              | 120              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-033 | MORRO BY-GLDTRJC1 115 kV #1 Line | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines | C5 DCTL  | L-2                  | 113              | 128              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-034 | GLDTRJC1-FTHILTP2 115 kV #1 Line | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines | C5 DCTL  | L-2                  | 104              | 119              | <100             | Action Plan/Drop load in the interim |
| LP-SP-T-035 | FTHILTP2-SN LS OB 115 kV #1 Line | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines | C5 DCTL  | L-2                  | 105              | 120              | <100             | Action Plan/Drop load in the interim |

San Onofre Nuclear Generation Station was retired on June 7, 2013 and therefore was removed from the base cases used for the 2013/14 ISO transmission planning process.

# 2013/2014 ISO Reliability Assessment - Preliminary Study Results

Study Area: **PG&E Los Padres - Summer Peak**

High/Low Voltage



| ID         | Substation       | Worst Contingency                      | Category | Category Description | Voltage (PU)     |                  |                  | Potential Mitigation Solutions                           |
|------------|------------------|--|----------|----------------------|------------------|------------------|------------------|--|
|            |                  |  |          |                      | 2015 Summer Peak | 2018 Summer Peak | 2023 Summer Peak |  |
| LP-S-V-001 | SURF 115 kV      | BUS 1 FAULT AT MESA_PGE 115 kV         | C1       | BUS                  | 0.87             | 0.88             | -                | Action plan/modify existing Divide SPS/Install UVLS      |
| LP-S-V-002 | ZACA 115 kV      | BUS 1 FAULT AT MESA_PGE 115 kV         | C1       | BUS                  | 0.88             | 0.89             | -                | Action plan/modify existing Divide SPS/Install UVLS      |
| LP-S-V-003 | BUPELLTON 115 kV | BUS 1 FAULT AT MESA_PGE 115 kV         | C1       | BUS                  | 0.88             | 0.89             | -                | Action plan/modify existing Divide SPS/Install UVLS      |
| LP-S-V-004 | CABRILLO 115 kV  | BUS 1 FAULT AT MESA_PGE 115 kV         | C1       | BUS                  | 0.88             | 0.89             | -                | Action plan/modify existing Divide SPS/Install UVLS      |
| LP-S-V-005 | LMPC-CTY 115 kV  | BUS 1 FAULT AT MESA_PGE 115 kV         | C1       | BUS                  | 0.87             | 0.88             | -                | Action plan/modify existing Divide SPS/Install UVLS      |
| LP-S-V-006 | MANVILLE 115 kV  | BUS 1 FAULT AT MESA_PGE 115 kV         | C1       | BUS                  | 0.87             | 0.88             | -                | Action plan/modify existing Divide SPS/Install UVLS      |
| LP-S-V-007 | PURISIMA 115 kV  | BUS 1 FAULT AT MESA_PGE 115 kV         | C1       | BUS                  | 0.88             | 0.89             | -                | Action plan/modify existing Divide SPS/Install UVLS      |
| LP-S-V-008 | SNTA YNZ 115 kV  | BUS 1 FAULT AT MESA_PGE 115 kV         | C1       | BUS                  | 0.88             | 0.88             | -                | Action plan/modify existing Divide SPS/Install UVLS      |
| LP-S-V-009 | MESA PGE 230 kV  | CB FAULT AT MORRO BAY SUB 230 kV CB622 | C2       | CB FAULT             | 0.88             | -                | -                | Action Plan/drop load                                    |
| LP-S-V-010 | MORRO BY 115 kV  | CB FAULT AT MORRO BAY SUB 230 kV CB622 | C2       | CB FAULT             | 0.86             | -                | -                | Action Plan/drop load                                    |
| LP-S-V-011 | GOLDTREE 115 kV  | CB FAULT AT MORRO BAY SUB 230 kV CB622 | C2       | CB FAULT             | 0.86             | -                | -                | Action Plan/drop load                                    |
| LP-S-V-012 | FOOTHILL 115 kV  | CB FAULT AT MORRO BAY SUB 230 kV CB622 | C2       | CB FAULT             | 0.86             | -                | -                | Action Plan/drop load                                    |
| LP-S-V-013 | SURF 115 kV      | CB FAULT AT MESA SUB 115 kV CB102      | C2       | CB (Bus-tie)         | 0.43             | 0.43             | 0.83             | Action plan/modify existing Divide SPS/Install UVLS      |
| LP-S-V-014 | SN LS OB 115 kV  | CB FAULT AT MESA SUB 115 kV CB102      | C2       | CB (Bus-tie)         | 0.86             | 0.88             | -                | Action Plan/drop load                                    |
| LP-S-V-015 | SNTA MRA 115 kV  | CB FAULT AT MESA SUB 115 kV CB102      | C2       | CB (Bus-tie)         | 0.62             | 0.63             | 0.89             | Action plan/modify existing Santa Maria SPS/Install UVLS |

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|------------|-----------------|--|----------|----------------------|------------------|------------------|------------------|---|
|            |                 |  |          |                      | 2015 Summer Peak | 2018 Summer Peak | 2023 Summer Peak |   |
| LP-S-V-016 | SISQUOC 115 kV  | CB FAULT AT MESA SUB 115 kV CB102                    | C2       | CB (Bus-tie)         | 0.58             | 0.59             | 0.89             | Action plan/modify existing Divide SPS/Install UVLS |
| LP-S-V-017 | PALMR 115 kV    | CB FAULT AT MESA SUB 115 kV CB102                    | C2       | CB (Bus-tie)         | 0.56             | 0.57             | 0.88             | Action plan/modify existing Divide SPS/Install UVLS |
| LP-S-V-018 | ZACA 115 kV     | CB FAULT AT MESA SUB 115 kV CB102                    | C2       | CB (Bus-tie)         | -                | -                | 0.85             | Action plan/modify existing Divide SPS/Install UVLS |
| LP-S-V-019 | SNTA YNZ 115 kV | CB FAULT AT MESA SUB 115 kV CB102                    | C2       | CB (Bus-tie)         | 0.46             | 0.47             | 0.84             | Action plan/modify existing Divide SPS/Install UVLS |
| LP-S-V-020 | CABRILLO 115 kV | CB FAULT AT MESA SUB 115 kV CB102                    | C2       | CB (Bus-tie)         | 0.44             | 0.44             | 0.84             | Action plan/modify existing Divide SPS/Install UVLS |
| LP-S-V-021 | OCEANO 115 kV   | CB FAULT AT MESA SUB 115 kV CB102                    | C2       | CB (Bus-tie)         | 0.83             | 0.85             | -                | Action plan/Drop load                               |
| LP-S-V-022 | UNION OL 115 kV | CB FAULT AT MESA SUB 115 kV CB102                    | C2       | CB (Bus-tie)         | 0.83             | 0.84             | -                | Action Plan/drop load                               |
| LP-S-V-023 | DIVIDE 70 kV    | CB FAULT AT MESA SUB 115 kV CB102                    | C2       | CB (Bus-tie)         | 0.43             | 0.44             | 0.89             | Action plan/modify existing Divide SPS/Install UVLS |
| LP-S-V-024 | VAFB SSA 70 kV  | CB FAULT AT MESA SUB 115 kV CB102                    | C2       | CB (Bus-tie)         | 0.42             | 0.43             | 0.88             | Action plan/modify existing Divide SPS/Install UVLS |
| LP-S-V-025 | LMPC-CTY 115 kV | CB FAULT AT MESA SUB 115 kV CB102                    | C2       | CB FAULT             | 0.40             | 0.41             | 0.83             | Action plan/modify existing Divide SPS/Install UVLS |
| LP-S-V-026 | FAIRWAY 115 kV  | CB FAULT AT MESA SUB 115 kV CB102                    | C2       | CB (Bus-tie)         | 0.61             | 0.62             | 0.88             | Action plan/modify existing Divide SPS/Install UVLS |
| LP-S-V-027 | BUELLTON 115 kV | CB FAULT AT MESA SUB 115 kV CB102                    | C2       | CB (Bus-tie)         | 0.47             | 0.47             | 0.84             | Action plan/modify existing Divide SPS/Install UVLS |
| LP-S-V-028 | MANVILLE 115 kV | CB FAULT AT MESA SUB 115 kV CB102                    | C2       | CB FAULT             | 0.40             | 0.41             | 0.83             | Action plan/modify existing Divide SPS/Install UVLS |
| LP-S-V-029 | PURISIMA 115 kV | CB FAULT AT MESA SUB 115 kV CB102                    | C2       | CB (Bus-tie)         | 0.41             | 0.41             | 0.84             | Action plan/modify existing Divide SPS/Install UVLS |
| LP-S-V-030 | PERRY 70 kV     | Morro Bay-Templeton and Templeton-Gates 230 kV Lines | C3       | L-1-1                | 0.90             | 0.92             | 0.84             | Monitor voltage/Install UVLS                        |

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High/Low Voltage



| ID         | Substation      | Worst Contingency   | Category | Category Description | Voltage (PU)     |                  |                  | Potential Mitigation Solutions |
|------------|-----------------|---|----------|----------------------|------------------|------------------|------------------|--------------------------------|
|            |                 |   |          |                      | 2015 Summer Peak | 2018 Summer Peak | 2023 Summer Peak |                                |
| LP-S-V-031 | OCEANO 115 kV   | Diablo-Mesa and Morro Bay-Mesa 230 kV Lines                 | C3       | L-1-1                | 0.76             | 0.77             | -                | Action Plan/drop load          |
| LP-S-V-032 | BAYWOOD 70 kV   | Morro Bay-Templeton and Templeton-Gates 230 kV Lines        | C3       | L-1-1                | -                | -                | 0.87             | Monitor voltage/Install UVLS   |
| LP-S-V-033 | CAMBRIA 70 kV   | Morro Bay-Templeton and Templeton-Gates 230 kV Lines        | C3       | L-1-1                | 0.90             | 0.92             | 0.84             | Monitor voltage/Install UVLS   |
| LP-S-V-034 | CAYUCOS 70 kV   | Morro Bay-Templeton and Templeton-Gates 230 kV Lines        | C3       | L-1-1                | 0.90             | -                | 0.85             | Install UVLS                   |
| LP-S-V-035 | FAIRWAY 115 kV  | Mesa-Sisquoc 115 kV and Mesa-Santa Maria 115 kV Lines       | C3       | L-1-1                | 0.87             | 0.87             | -                | Action Plan/drop load          |
| LP-S-V-036 | ATASCDRO 70 kV  | Morro Bay-Templeton and Templeton-Gates 230 kV Lines        | C3       | L-1-1                | 0.82             | 0.85             | 0.79             | Install UVLS                   |
| LP-S-V-037 | DIABLOCN 230 kV | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines            | C3       | L-1-1                | 0.48             | 0.69             | -                | Action Plan/drop load          |
| LP-S-V-038 | FOOTHILL 115 kV | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines            | C3       | L-1-1                | 0.87             | 0.87             | -                | Action Plan/drop load          |
| LP-S-V-039 | GOLDTREE 115 kV | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines            | C3       | L-1-1                | 0.88             | 0.87             | -                | Action Plan/drop load          |
| LP-S-V-040 | MESA PGE 230 kV | Diablo-Mesa and Morro Bay-Mesa 230 kV Lines                 | C3       | L-1-1                | 0.47             | 0.48             | -                | Action Plan/drop load          |
| LP-S-V-041 | MORRO BY 115 kV | Morro Bay-Mesa 230 kV Line and Morro Bay 230/115 kV #6 Bank | C3       | T-1-1                | 0.87             | -                | -                | Action Plan/drop load          |
| LP-S-V-042 | PSA RBLS 70 kV  | Morro Bay-Templeton and Templeton-Gates 230 kV Lines        | C3       | L-1-1                | 0.75             | 0.75             | 0.70             | Install UVLS                   |
| LP-S-V-043 | SAN MIGL 70 kV  | Morro Bay-Templeton and Templeton-Gates 230 kV Lines        | C3       | L-1-1                | 0.77             | 0.76             | 0.72             | Install UVLS                   |
| LP-S-V-044 | SN LS OB 115 kV | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines            | C3       | L-1-1                | 0.85             | 0.85             | -                | Action Plan/drop load          |
| LP-S-V-045 | TEMPLETN 230 kV | Morro Bay-Templeton and Templeton-Gates 230 kV Lines        | C3       | L-1-1                | 0.63             | 0.64             | 0.59             | Install UVLS                   |

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**High/Low Voltage**

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|------------|-----------------|--|----------|----------------------|------------------|------------------|------------------|--------------------------------|
|            |                 |  |          |                      | 2015 Summer Peak | 2018 Summer Peak | 2023 Summer Peak |                                |
| LP-S-V-046 | UNION OL 115 kV | Diablo-Mesa and Morro Bay-Mesa 230 kV Lines      | C3       | L-1-1                | 0.74             | 0.75             | -                | Action Plan/drop load          |
| LP-S-V-047 | DIABLOCN 230 kV | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines | C5 DCTL  | L-2                  | 0.48             | 0.69             | -                | Action Plan/drop load          |
| LP-S-V-048 | MESA PGE 230 kV | Diablo-Mesa and Morro Bay-Mesa 230 kV Lines      | C5 DCTL  | L-2                  | 0.47             | 0.48             | -                | Action Plan/drop load          |
| LP-S-V-049 | GOLDTREE 115 kV | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines | C5 DCTL  | L-2                  | 0.88             | 0.87             | -                | Action Plan/drop load          |
| LP-S-V-050 | FOOTHILL 115 kV | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines | C5 DCTL  | L-2                  | 0.87             | 0.87             | -                | Action Plan/drop load          |
| LP-S-V-051 | SN LS OB 115 kV | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines | C5 DCTL  | L-2                  | 0.85             | 0.85             | -                | Action Plan/drop load          |
| LP-S-V-052 | OCEANO 115 kV   | Diablo-Mesa and Morro Bay-Mesa 230 kV Lines      | C5 DCTL  | L-2                  | 0.76             | 0.77             | -                | Action Plan/drop load          |
| LP-S-V-053 | UNION OL 115 kV | Diablo-Mesa and Morro Bay-Mesa 230 kV Lines      | C5 DCTL  | L-2                  | 0.74             | 0.75             | -                | Action Plan/drop load          |

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## Voltage Deviations



| ID          | Substation      | Worst Contingency                   | Category | Category Description | Post Cont. Voltage Deviation % |                  |                  | Potential Mitigation Solutions  |
|-------------|-----------------|-------------------------------------|----------|----------------------|--------------------------------|------------------|------------------|---|
|             |                 |                                     |          |                      | 2015 Summer Peak               | 2018 Summer Peak | 2023 Summer Peak |   |
| LP-S-VD-001 | FOOTHILL 115 kV | Morro Bay 230/115 kV Bank #6        | B        | T-1                  | -7                             | -                | -                | Action Plan   |
| LP-S-VD-002 | GOLDTREE 115 kV | Morro Bay 230/115 kV Bank #6        | B        | T-1                  | -7                             | -                | -                | Action Plan   |
| LP-S-VD-003 | MORRO BY 115 kV | Morro Bay 230/115 kV Bank #6        | B        | T-1                  | -8                             | -                | -                | Action Plan   |
| LP-S-VD-004 | SN LS OB 115 kV | Morro Bay 230/115 kV Bank #6        | B        | T-1                  | -6                             | -                | -                | Action Plan   |
| LP-S-VD-005 | SURF 115 kV     | CB FAULT AT MESA SUB 115 CB102      | C2       | CB (Bus-tie)         | -53                            | -53              | -14              | Modify existing Divide SSPS/Install UVLS (Also see mitigation for low voltage concerns) |
| LP-S-VD-006 | ZACA 115 kV     | CB FAULT AT MESA SUB 115 CB102      | C2       | CB (Bus-tie)         | -48                            | -48              | -13              | Modify existing Divide SSPS/Install UVLS (Also see mitigation for low voltage concerns) |
| LP-S-VD-007 | PALMR 115 kV    | CB FAULT AT MESA SUB 115 CB102      | C2       | CB (Bus-tie)         | -42                            | -42              | -12              | Modify existing Divide SSPS/Install UVLS (Also see mitigation for low voltage concerns) |
| LP-S-VD-008 | DIVIDE 70 kV    | CB FAULT AT MESA SUB 115 CB102      | C2       | CB (Bus-tie)         | -59                            | -60              | -15              | Modify existing Divide SSPS/Install UVLS (Also see mitigation for low voltage concerns) |
| LP-S-VD-009 | OCEANO 115 kV   | CB FAULT AT MESA SUB 115 CB102      | C2       | CB (Bus-tie)         | -15                            | -14              | -                | Action Plan/drop load   |
| LP-S-VD-010 | FAIRWAY 115 kV  | CB FAULT AT MESA SUB 115 CB102      | C2       | CB (Bus-tie)         | -38                            | -37              | -12              | Modify existing Divide SSPS/Install UVLS (Also see mitigation for low voltage concerns) |
| LP-S-VD-011 | SISQUOC 115 kV  | CB FAULT AT MESA SUB 115 CB102      | C2       | CB (Bus-tie)         | -41                            | -40              | -11              | Modify existing Divide SSPS/Install UVLS (Also see mitigation for low voltage concerns) |
| LP-S-VD-012 | BUELLTON 115 kV | CB FAULT AT MESA SUB 115 CB102      | C2       | CB (Bus-tie)         | -50                            | -50              | -14              | Modify existing Divide SSPS/Install UVLS (Also see mitigation for low voltage concerns) |
| LP-S-VD-013 | CABRILLO 115 kV | CB FAULT AT MESA SUB 115 CB102      | C2       | CB (Bus-tie)         | -53                            | -53              | -14              | Modify existing Divide SSPS/Install UVLS (Also see mitigation for low voltage concerns) |
| LP-S-VD-014 | FOOTHILL 115 kV | CB FAULT AT MORRO BAY SUB 230 CB622 | C2       | CB FAULT             | -13                            | -                | -                | Action Plan/drop load   |
| LP-S-VD-015 | GOLDTREE 115 kV | CB FAULT AT MORRO BAY SUB 230 CB622 | C2       | CB FAULT             | -13                            | -                | -                | Action Plan/drop load   |

**Voltage Deviations**

| ID          | Substation      | Worst Contingency                                    | Category | Category Description | Post Cont. Voltage Deviation % |                  |                  | Potential Mitigation Solutions  |
|-------------|-----------------|--|----------|----------------------|--------------------------------|------------------|------------------|---|
|             |                 |  |          |                      | 2015 Summer Peak               | 2018 Summer Peak | 2023 Summer Peak |   |
| LP-S-VD-016 | LMPC-CTY 115 kV | CB FAULT AT MESA SUB 115 CB102                       | C2       | CB (Bus-tie)         | -56                            | -56              | -15              | Modify existing Divide SSPS/Install UVLS (Also see mitigation for low voltage concerns) |
| LP-S-VD-017 | MANVILLE 115 kV | CB FAULT AT MESA SUB 115 CB102                       | C2       | CB (Bus-tie)         | -56                            | -56              | -15              | Modify existing Divide SSPS/Install UVLS (Also see mitigation for low voltage concerns) |
| LP-S-VD-018 | MESA PGE 230 kV | CB FAULT AT MORRO BAY SUB 230 CB622                  | C2       | CB FAULT             | -12                            | -                | -                | Action Plan/drop load   |
| LP-S-VD-019 | MORRO BY 115 kV | CB FAULT AT MORRO BAY SUB 230 CB622                  | C2       | CB FAULT             | -14                            | -                | -                | Action Plan/drop load   |
| LP-S-VD-020 | PURISIMA 115 kV | CB FAULT AT MESA SUB 115 CB102                       | C2       | CB (Bus-tie)         | -56                            | -56              | -15              | Modify existing Divide SSPS/Install UVLS (Also see mitigation for low voltage concerns) |
| LP-S-VD-021 | SN LS OB 115 kV | CB FAULT AT MESA SUB 115 CB102                       | C2       | CB (Bus-tie)         | -13                            | -11              | -                | Action Plan/drop load   |
| LP-S-VD-022 | SNTA MRA 115 kV | CB FAULT AT MESA SUB 115 CB102                       | C2       | CB (Bus-tie)         | -37                            | -36              | -11              | Modify existing Divide SSPS/Install UVLS (Also see mitigation for low voltage concerns) |
| LP-S-VD-023 | SNTA YNZ 115 kV | CB FAULT AT MESA SUB 115 CB102                       | C2       | CB (Bus-tie)         | -50                            | -50              | -14              | Modify existing Divide SSPS/Install UVLS (Also see mitigation for low voltage concerns) |
| LP-S-VD-024 | UNION OL 115 kV | CB FAULT AT MESA SUB 115 CB102                       | C2       | CB (Bus-tie)         | -16                            | -15              | 0                | Modify existing Divide SSPS/Install UVLS (Also see mitigation for low voltage concerns) |
| LP-S-VD-025 | VAFB SSA 70 kV  | CB FAULT AT MESA SUB 115 CB102                       | C2       | CB (Bus-tie)         | -59                            | -59              | -15              | Modify existing Divide SSPS/Install UVLS (Also see mitigation for low voltage concerns) |
| LP-S-VD-026 | PERRY 70 kV     | Templeton-Gates and Morro Bay-Templeton 230 kV Lines | C3       | L-1-1                | -12                            | -10              | -17              | Install UVLS for the Los Padres 70 kV system  |
| LP-S-VD-027 | OCEANO 115 kV   | Morro Bay-Mesa 230 kV and Diablo-Mesa 230 kV Lines   | C3       | L-1-1                | -21                            | -20              | -                | Install UVLS for the Los Padres 70 kV system  |
| LP-S-VD-028 | BAYWOOD 70 kV   | Templeton-Gates and Morro Bay-Templeton 230 kV Lines | C3       | L-1-1                | -                              | -                | -15              | Install UVLS for the Los Padres 70 kV system  |
| LP-S-VD-029 | CAMBRIA 70 kV   | Templeton-Gates and Morro Bay-Templeton 230 kV Lines | C3       | L-1-1                | -12                            | -10              | -17              | Install UVLS for the Los Padres 70 kV system  |
| LP-S-VD-030 | CAYUCOS 70 kV   | Templeton-Gates and Morro Bay-Templeton 230 kV Lines | C3       | L-1-1                | -12                            | 0                | -17              | Install UVLS for the Los Padres 70 kV system  |

# 2013/2014 ISO Reliability Assessment - Preliminary Study Results

Study Area: **PG&E Los Padres - Summer Peak**

## Voltage Deviations



| ID          | Substation      | Worst Contingency   | Category | Category Description | Post Cont. Voltage Deviation % |                  |                  | Potential Mitigation Solutions               |
|-------------|-----------------|---|----------|----------------------|--------------------------------|------------------|------------------|--|
|             |                 |   |          |                      | 2015 Summer Peak               | 2018 Summer Peak | 2023 Summer Peak |  |
| LP-S-VD-031 | MUSTANG 70 kV   | Templeton-Gates and Morro Bay-Templeton 230 kV Lines      | C3       | L-1-1                | -                              | -                | -11              | Monitor voltage deviation                    |
| LP-S-VD-032 | ATASCDRO 70 kV  | Templeton-Gates and Morro Bay-Templeton 230 kV Lines      | C3       | L-1-1                | -19                            | -15              | -21              | Install UVLS for the Los Padres 70 kV system |
| LP-S-VD-033 | DIABLOCN 230 kV | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines          | C3       | L-1-1                | -51                            | -33              | -                | Action Plan/drop load                        |
| LP-S-VD-034 | FOOTHILL 115 kV | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines          | C3       | L-1-1                | -12                            | -11              | -                | Action Plan/drop load                        |
| LP-S-VD-035 | GOLDTREE 115 kV | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines          | C3       | L-1-1                | -11                            | -11              | -                | Action Plan/drop load                        |
| LP-S-VD-036 | MESA PGE 230 kV | Morro Bay-Mesa 230 kV and Diablo-Mesa 230 kV Lines        | C3       | L-1-1                | -50                            | -52              | -                | Action Plan/drop load                        |
| LP-S-VD-037 | MORRO BY 115 kV | Morro Bay-Mesa 230 kV Line & Morro Bay 230/115 kV #6 Bank | C3       | L-1/T-1              | -12                            | 0                | -                | Action Plan/drop load                        |
| LP-S-VD-038 | PSA RBLs 70 kV  | Templeton-Gates and Morro Bay-Templeton 230 kV Lines      | C3       | L-1-1                | -24                            | -23              | -28              | Install UVLS for the Los Padres 70 kV system |
| LP-S-VD-039 | SAN MIGL 70 kV  | Templeton-Gates and Morro Bay-Templeton 230 kV Lines      | C3       | L-1-1                | -20                            | -21              | -24              | Install UVLS for the Los Padres 70 kV system |
| LP-S-VD-040 | SN LS OB 115 kV | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines          | C3       | L-1-1                | -12                            | -13              | -                | Action Plan/drop load                        |
| LP-S-VD-041 | TEMPLETN 230 kV | Templeton-Gates and Morro Bay-Templeton 230 kV Lines      | C3       | L-1-1                | -36                            | -35              | -40              | Install UVLS                                 |
| LP-S-VD-042 | UNION OL 115 kV | Morro Bay-Mesa 230 kV and Diablo-Mesa 230 kV Lines        | C3       | L-1-1                | -23                            | -22              | -                | Action Plan/drop load                        |
| LP-S-VD-043 | OCEANO 115 kV   | Morro Bay-Mesa 230 kV and Diablo-Mesa 230 kV Lines        | C5 DCTL  | L-2                  | -22                            | -22              | -                | Action Plan/drop load                        |
| LP-S-VD-044 | DIABLOCN 230 kV | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines          | C5 DCTL  | L-2                  | -52                            | -33              | -                | Action Plan/drop load                        |
| LP-S-VD-045 | FOOTHILL 115 kV | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines          | C5 DCTL  | L-2                  | -12                            | -13              | -                | Action Plan/drop load                        |

# 2013/2014 ISO Reliability Assessment - Preliminary Study Results

Study Area: **PG&E Los Padres - Summer Peak**



## Voltage Deviations

| ID          | Substation      | Worst Contingency                                  | Category | Category Description | Post Cont. Voltage Deviation % |                  |                  | Potential Mitigation Solutions |
|-------------|-----------------|--|----------|----------------------|--------------------------------|------------------|------------------|--------------------------------|
|             |                 |  |          |                      | 2015 Summer Peak               | 2018 Summer Peak | 2023 Summer Peak |                                |
| LP-S-VD-046 | GOLDTREE 115 kV | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines   | C5 DCTL  | L-2                  | -11                            | -12              | -                | Action Plan/drop load          |
| LP-S-VD-047 | MESA PGE 230 kV | Morro Bay-Mesa 230 kV and Diablo-Mesa 230 kV Lines | C5 DCTL  | L-2                  | -53                            | -53              | -                | Action Plan/drop load          |
| LP-S-VD-048 | SN LS OB 115 kV | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines   | C5 DCTL  | L-2                  | -13                            | -14              | -                | Action Plan/drop load          |
| LP-S-VD-049 | UNION OL 115 kV | Morro Bay-Mesa 230 kV and Diablo-Mesa 230 kV Lines | C5 DCTL  | L-2                  | -25                            | -24              | -                | Action Plan/drop load          |

## 2013/2014 ISO Reliability Assessment - Preliminary Study Results

Study Area: **PG&E Los Padres - Summer Off-Peak & Summer Light Load**



### Thermal Overloads

| ID          | Overloaded Facility              | Worst Contingency  | Category | Category Description | Loading (%)          |                        |                      | Potential Mitigation Solutions                               |
|-------------|----------------------------------|--|----------|----------------------|----------------------|------------------------|----------------------|--|
|             |                                  |  |          |                      | 2015 Summer Off-Peak | 2018 Summer Light Load | 2023 Summer Off-Peak |  |
| LP-NP-T-001 | SN LS OB-SNTA MRA 115 kV #1 Line | CB FAULT AT MESA SUB 115 CB102                             | C2       | CB (Bust tie)        | 140                  | 134                    | <100                 | Action Plan until Midway-Andrew 230 kV project is in service |
| LP-NP-T-002 | S.YNZ JT-ZACA 115 kV #1 Line     | CB FAULT AT MESA SUB 115 CB102                             | C2       | CB (Bust tie)        | 103                  | 102                    | <100                 | Action Plan until Midway-Andrew 230 kV project is in service |
| LP-NP-T-003 | MORROBAY-SOLARSS 230 #1 Line     | Morro Bay-SolarS #2 and Midway-Caliente SS 230 kV #2 Lines | C3       | L-1-1                | 108                  | <100                   | <100                 | Action Plan  |
| LP-NP-T-004 | MORROBAY-SOLARSS 230 #2 Line     | Morro Bay-SolarS #1 and Midway-Caliente SS 230 kV #2 Lines | C3       | L-1-1                | 108                  | <100                   | <100                 | Action Plan  |
| LP-NP-T-005 | SN LS OB-SNTA MRA 115 kV #1 Line | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines           | C3       | L-1-1                | 109                  | <100                   | <100                 | Action Plan until Midway-Andrew 230 kV project is in service |
| LP-NP-T-006 | SISQUOC-PALMR 115 kV #1 Line     | Mesa-Divide 115 kV #1 and 2 Lines                          | C3       | L-1-1                | 123                  | <100                   | <100                 | Action Plan until Midway-Andrew 230 kV project is in service |
| LP-NP-T-007 | S.YNZ JT-ZACA 115 kV #1 Line     | Mesa-Divide 115 kV #1 and 2 Lines                          | C3       | L-1-1                | 137                  | <100                   | <100                 | Action Plan until Midway-Andrew 230 kV project is in service |
| LP-NP-T-008 | S.YNZ JT-CABRILLO 115 kV #1 Line | Mesa-Divide 115 kV #1 and 2 Lines                          | C3       | L-1-1                | 114                  | <100                   | <100                 | Action Plan until Midway-Andrew 230 kV project is in service |
| LP-NP-T-009 | PALMR-ZACA 115 kV #1 Line        | Mesa-Divide 115 kV #1 and 2 Lines                          | C3       | L-1-1                | 122                  | <100                   | <100                 | Action Plan until Midway-Andrew 230 kV project is in service |
| LP-NP-T-010 | MORROBAY-SOLARSS 230 #1 Line     | Midway-CalienteSS 230 kV #1 and 2 Lines                    | C5       | L-2                  | 110                  | <100                   | <100                 | Action Plan  |
| LP-NP-T-011 | MORROBAY-SOLARSS 230 #2 Line     | Midway-CalienteSS 230 kV #1 and 2 Lines                    | C5       | L-2                  | 110                  | <100                   | <100                 | Action Plan  |
| LP-NP-T-012 | SN LS OB-SNTA MRA 115 kV #1 Line | Morro Bay-Diablo and Morro Bay-Mesa 230 kV Lines           | C5       | L-2                  | 109                  | <100                   | <100                 | Action Plan until Midway-Andrew 230 kV project is in service |
| LP-NP-T-013 | SISQUOC-PALMR 115 kV #1 Line     | Mesa-Divide 115 kV #1 and 2 Lines                          | C5       | L-2                  | 123                  | <100                   | <100                 | Action Plan until Midway-Andrew 230 kV project is in service |
| LP-NP-T-014 | S.YNZ JT-ZACA 115 kV #1 Line     | Mesa-Divide 115 kV #1 and 2 Lines                          | C5       | L-2                  | 137                  | <100                   | <100                 | Action Plan until Midway-Andrew 230 kV project is in service |

# 2013/2014 ISO Reliability Assessment - Preliminary Study Results

Study Area: **PG&E Los Padres - Summer Off-Peak & Summer Light Load**



## Thermal Overloads

| ID          | Overloaded Facility              | Worst Contingency                 | Category | Category Description | Loading (%)          |                        |                      | Potential Mitigation Solutions                               |
|-------------|----------------------------------|-----------------------------------|----------|----------------------|----------------------|------------------------|----------------------|--|
|             |                                  |                                   |          |                      | 2015 Summer Off-Peak | 2018 Summer Light Load | 2023 Summer Off-Peak |  |
| LP-NP-T-015 | S.YNZ JT-CABRILLO 115 kV #1 Line | Mesa-Divide 115 kV #1 and 2 Lines | C5       | L-2                  | 114                  | <100                   | <100                 | Action Plan until Midway-Andrew 230 kV project is in service |
| LP-NP-T-016 | PALMR-ZACA 115 kV #1 Line        | Mesa-Divide 115 kV #1 and 2 Lines | C5       | L-2                  | 122                  | <100                   | <100                 | Action Plan until Midway-Andrew 230 kV project is in service |

# 2013/2014 ISO Reliability Assessment - Preliminary Study Results

Study Area: **PG&E Los Padres - Summer Off-Peak & Summer Light Load**

**High/Low Voltage**



| ID          | Substation      | Worst Contingency              | Category | Category Description | Voltage (PU)         |                        |                      | Potential Mitigation Solutions |
|-------------|-----------------|--------------------------------|----------|----------------------|----------------------|------------------------|----------------------|--------------------------------|
|             |                 |                                |          |                      | 2015 Summer Off-Peak | 2018 Summer Light Load | 2023 Summer Off-Peak |                                |
| LP-NP-V-001 | DIVIDE 70 kV    | -                              | A        | Normal               | 1.06                 | 1.07                   | 1.07                 | Review for exemption           |
| LP-NP-V-002 | VAFB SSA 70 kV  | -                              | A        | Normal               | -                    | 1.06                   | 1.06                 | Review for exemption           |
| LP-NP-V-003 | SURF 115 kV     | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | 0.58                 | 0.72                   | -                    | Action plan/drop load          |
| LP-NP-V-004 | ZACA 115 kV     | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | 0.64                 | 0.77                   | -                    | Action plan/drop load          |
| LP-NP-V-005 | PALMR 115 kV    | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | 0.70                 | 0.82                   | -                    | Action plan/drop load          |
| LP-NP-V-006 | DIVIDE 70 kV    | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | 0.60                 | 0.75                   | -                    | Action plan/drop load          |
| LP-NP-V-007 | OCEANO 115 kV   | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | 0.89                 | -                      | -                    | Action plan/drop load          |
| LP-NP-V-008 | FAIRWAY 115 kV  | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | 0.75                 | 0.85                   | -                    | Action plan/drop load          |
| LP-NP-V-009 | SISQUOC 115 kV  | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | 0.72                 | 0.83                   | -                    | Action plan/drop load          |
| LP-NP-V-010 | BUELLTON 115 kV | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | 0.62                 | 0.75                   | -                    | Action plan/drop load          |
| LP-NP-V-011 | CABRILLO 115 kV | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | 0.59                 | 0.73                   | -                    | Action plan/drop load          |
| LP-NP-V-012 | LMPC-CTY 115 kV | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | 0.56                 | 0.71                   | -                    | Action plan/drop load          |
| LP-NP-V-013 | MANVILLE 115 kV | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | 0.56                 | 0.70                   | -                    | Action plan/drop load          |
| LP-NP-V-014 | PURISIMA 115 kV | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | 0.56                 | 0.71                   | -                    | Action plan/drop load          |
| LP-NP-V-015 | SNTA MRA 115 kV | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | 0.75                 | 0.86                   | -                    | Action plan/drop load          |

# 2013/2014 ISO Reliability Assessment - Preliminary Study Results

Study Area: **PG&E Los Padres - Summer Off-Peak & Summer Light Load**

High/Low Voltage



| ID          | Substation      | Worst Contingency                 | Category | Category Description | Voltage (PU)         |                        |                      | Potential Mitigation Solutions |
|-------------|-----------------|-----------------------------------|----------|----------------------|----------------------|------------------------|----------------------|--------------------------------|
|             |                 |                                   |          |                      | 2015 Summer Off-Peak | 2018 Summer Light Load | 2023 Summer Off-Peak |                                |
| LP-NP-V-016 | SNTA YNZ 115 kV | CB FAULT AT MESA SUB 115 CB102    | C2       | CB (Bus tie)         | 0.62                 | 0.75                   | -                    | Action plan/drop load          |
| LP-NP-V-017 | UNION OL 115 kV | CB FAULT AT MESA SUB 115 CB102    | C2       | CB (Bus tie)         | 0.89                 | -                      | -                    | Action plan/drop load          |
| LP-NP-V-018 | VAFB SSA 70 kV  | CB FAULT AT MESA SUB 115 CB102    | C2       | CB (Bus tie)         | 0.58                 | 0.73                   | -                    | Action plan/drop load          |
| LP-NP-V-019 | SURF 115 kV     | Mesa-Divide 115 kV #1 and 2 Lines | C3       | L-1-1                | 0.79                 | 0.90                   | -                    | Action plan/drop load          |
| LP-NP-V-020 | ZACA 115 kV     | Mesa-Divide 115 kV #1 and 2 Lines | C3       | L-1-1                | 0.87                 | -                      | -                    | Action plan/drop load          |
| LP-NP-V-021 | DIVIDE 70 kV    | Mesa-Divide 115 kV #1 and 2 Lines | C3       | L-1-1                | 0.80                 | 0.94                   | -                    | Action plan/drop load          |
| LP-NP-V-022 | BUELLTON 115 kV | Mesa-Divide 115 kV #1 and 2 Lines | C3       | L-1-1                | 0.84                 | -                      | -                    | Action plan/drop load          |
| LP-NP-V-023 | CABRILLO 115 kV | Mesa-Divide 115 kV #1 and 2 Lines | C3       | L-1-1                | 0.80                 | 0.91                   | -                    | Action plan/drop load          |
| LP-NP-V-024 | LMPC-CTY 115 kV | Mesa-Divide 115 kV #1 and 2 Lines | C3       | L-1-1                | 0.75                 | 0.89                   | -                    | Action plan/drop load          |
| LP-NP-V-025 | MANVILLE 115 kV | Mesa-Divide 115 kV #1 and 2 Lines | C3       | L-1-1                | 0.75                 | 0.89                   | -                    | Action plan/drop load          |
| LP-NP-V-026 | PURISIMA 115 kV | Mesa-Divide 115 kV #1 and 2 Lines | C3       | L-1-1                | 0.75                 | 0.89                   | -                    | Action plan/drop load          |
| LP-NP-V-027 | SNTA YNZ 115 kV | Mesa-Divide 115 kV #1 and 2 Lines | C3       | L-1-1                | 0.84                 | -                      | -                    | Action plan/drop load          |
| LP-NP-V-028 | VAFB SSA 70 kV  | Mesa-Divide 115 kV #1 and 2 Lines | C3       | L-1-1                | 0.79                 | 0.93                   | -                    | Action plan/drop load          |
| LP-NP-V-029 | SURF 115 kV     | Mesa-Divide 115 kV #1 and 2 Lines | C5 DCTL  | L-2                  | 0.79                 | 0.90                   | -                    | Action plan/drop load          |
| LP-NP-V-030 | ZACA 115 kV     | Mesa-Divide 115 kV #1 and 2 Lines | C5 DCTL  | L-2                  | 0.87                 | -                      | -                    | Action plan/drop load          |

2013/2014 ISO Reliability Assessment - Preliminary Study Results

Study Area: **PG&E Los Padres - Summer Off-Peak & Summer Light Load**



**High/Low Voltage**

| ID          | Substation      | Worst Contingency                 | Category | Category Description | Voltage (PU)         |                        |                      | Potential Mitigation Solutions |
|-------------|-----------------|-----------------------------------|----------|----------------------|----------------------|------------------------|----------------------|--------------------------------|
|             |                 |                                   |          |                      | 2015 Summer Off-Peak | 2018 Summer Light Load | 2023 Summer Off-Peak |                                |
| LP-NP-V-031 | DIVIDE 70 kV    | Mesa-Divide 115 kV #1 and 2 Lines | C5 DCTL  | L-2                  | 0.80                 | 0.94                   | -                    | Action plan/drop load          |
| LP-NP-V-032 | BUELLTON 115 kV | Mesa-Divide 115 kV #1 and 2 Lines | C5 DCTL  | L-2                  | 0.84                 | -                      | -                    | Action plan/drop load          |
| LP-NP-V-033 | CABRILLO 115 kV | Mesa-Divide 115 kV #1 and 2 Lines | C5 DCTL  | L-2                  | 0.80                 | 0.91                   | -                    | Action plan/drop load          |
| LP-NP-V-034 | LMPC-CTY 115 kV | Mesa-Divide 115 kV #1 and 2 Lines | C5 DCTL  | L-2                  | 0.75                 | 0.89                   | -                    | Action plan/drop load          |
| LP-NP-V-035 | MANVILLE 115 kV | Mesa-Divide 115 kV #1 and 2 Lines | C5 DCTL  | L-2                  | 0.75                 | 0.89                   | -                    | Action plan/drop load          |
| LP-NP-V-036 | PURISIMA 115 kV | Mesa-Divide 115 kV #1 and 2 Lines | C5 DCTL  | L-2                  | 0.75                 | 0.89                   | -                    | Action plan/drop load          |
| LP-NP-V-037 | SNTA YNZ 115 kV | Mesa-Divide 115 kV #1 and 2 Lines | C5 DCTL  | L-2                  | 0.84                 | -                      | -                    | Action plan/drop load          |
| LP-NP-V-038 | VAFB SSA 70 kV  | Mesa-Divide 115 kV #1 and 2 Lines | C5 DCTL  | L-2                  | 0.79                 | 0.93                   | -                    | Action plan/drop load          |

**Voltage Deviations**

| ID           | Substation      | Worst Contingency              | Category | Category Description | Post Cont. Voltage Deviation % |                  |                  | Potential Mitigation Solutions                        |
|--------------|-----------------|--------------------------------|----------|----------------------|--------------------------------|------------------|------------------|---|
|              |                 |                                |          |                      | 2015 Summer Peak               | 2018 Summer Peak | 2023 Summer Peak |   |
| LP-NP-VD-001 | SURF 115 kV     | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | -41                            | -29              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-002 | ZACA 115 kV     | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | -36                            | -25              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-003 | GAREY 115 kV    | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | -30                            | -19              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-004 | PALMR 115 kV    | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | -31                            | -21              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-005 | DIVIDE 70 kV    | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | -46                            | -33              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-006 | OCEANO 115 kV   | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | -12                            | -                | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-007 | DIVIDE 115 kV   | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | -44                            | -31              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-008 | FAIRWAY 115 kV  | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | -27                            | -17              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-009 | SISQUOC 115 kV  | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | -30                            | -19              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-010 | BUELLTON 115 kV | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | -38                            | -27              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-011 | CABRILLO 115 kV | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | -41                            | -29              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-012 | LMPC-CTY 115 kV | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | -44                            | -31              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-013 | MANVILLE 115 kV | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | -44                            | -31              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-014 | PURISIMA 115 kV | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | -44                            | -31              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-015 | S.M.ASSO 115 kV | CB FAULT AT MESA SUB 115 CB102 | C2       | CB (Bus tie)         | -30                            | -20              | -                | Action Plan until Midway-Andrew project is in service |

**Voltage Deviations**

| ID           | Substation      | Worst Contingency                  | Category | Category Description | Post Cont. Voltage Deviation % |                  |                  | Potential Mitigation Solutions                        |
|--------------|-----------------|------------------------------------|----------|----------------------|--------------------------------|------------------|------------------|---|
|              |                 |                                    |          |                      | 2015 Summer Peak               | 2018 Summer Peak | 2023 Summer Peak |   |
| LP-NP-VD-016 | SN LS OB 115 kV | CB FAULT AT MESA SUB 115 CB102     | C2       | CB (Bus tie)         | -10                            | -                | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-017 | SNTA MRA 115 kV | CB FAULT AT MESA SUB 115 CB102     | C2       | CB (Bus tie)         | -27                            | -17              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-018 | SNTA YNZ 115 kV | CB FAULT AT MESA SUB 115 CB102     | C2       | CB (Bus tie)         | -38                            | -27              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-019 | UNION OL 115 kV | CB FAULT AT MESA SUB 115 CB102     | C2       | CB (Bus tie)         | -12                            | -                | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-020 | VAFB SSA 70 kV  | CB FAULT AT MESA SUB 115 CB102     | C2       | CB (Bus tie)         | -46                            | -33              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-021 | VAFB SSB 70 kV  | CB FAULT AT MESA SUB 115 CB102     | C2       | CB (Bus tie)         | -46                            | -33              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-022 | SURF 115 kV     | Mesa-Divide #1 and #2 115 kV Lines | C3       | L-1-1                | -20                            | -11              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-023 | ZACA 115 kV     | Mesa-Divide #1 and #2 115 kV Lines | C3       | L-1-1                | -13                            | -                | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-024 | DIVIDE 70 kV    | Mesa-Divide #1 and #2 115 kV Lines | C3       | L-1-1                | -                              | -13              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-025 | DIVIDE 70 kV    | Mesa-Divide #1 and #2 115 kV Lines | C3       | L-1-1                | -24                            | -13              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-026 | DIVIDE 115 kV   | Mesa-Divide #1 and #2 115 kV Lines | C3       | L-1-1                | -23                            | -12              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-027 | BUELLTON 115 kV | Mesa-Divide #1 and #2 115 kV Lines | C3       | L-1-1                | -15                            | -                | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-028 | CABRILLO 115 kV | Mesa-Divide #1 and #2 115 kV Lines | C3       | L-1-1                | -19                            | -10              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-029 | LMPC-CTY 115 kV | Mesa-Divide #1 and #2 115 kV Lines | C3       | L-1-1                | -23                            | -12              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-030 | MANVILLE 115 kV | Mesa-Divide #1 and #2 115 kV Lines | C3       | L-1-1                | -23                            | -12              | -                | Action Plan until Midway-Andrew project is in service |

**Voltage Deviations**

| ID           | Substation      | Worst Contingency                  | Category | Category Description | Post Cont. Voltage Deviation % |                  |                  | Potential Mitigation Solutions                        |
|--------------|-----------------|------------------------------------|----------|----------------------|--------------------------------|------------------|------------------|---|
|              |                 |                                    |          |                      | 2015 Summer Peak               | 2018 Summer Peak | 2023 Summer Peak |   |
| LP-NP-VD-031 | PURISIMA 115 kV | Mesa-Divide #1 and #2 115 kV Lines | C3       | L-1-1                | -23                            | -12              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-032 | SNTA YNZ 115 kV | Mesa-Divide #1 and #2 115 kV Lines | C3       | L-1-1                | -15                            | -                | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-033 | VAFB SSA 70 kV  | Mesa-Divide #1 and #2 115 kV Lines | C3       | L-1-1                | -24                            | -13              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-034 | VAFB SSB 70 kV  | Mesa-Divide #1 and #2 115 kV Lines | C3       | L-1-1                | -24                            | -13              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-035 | SURF 115 kV     | Mesa-Divide #1 and #2 115 kV Lines | C5 DCTL  | L-2                  | -21                            | -11              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-036 | ZACA 115 kV     | Mesa-Divide #1 and #2 115 kV Lines | C5 DCTL  | L-2                  | -14                            | -                | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-037 | DIVIDE 70 kV    | Mesa-Divide #1 and #2 115 kV Lines | C5 DCTL  | L-2                  | -26                            | -14              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-038 | DIVIDE 115 kV   | Mesa-Divide #1 and #2 115 kV Lines | C5 DCTL  | L-2                  | -24                            | -13              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-039 | BUELLTON 115 kV | Mesa-Divide #1 and #2 115 kV Lines | C5 DCTL  | L-2                  | -16                            | -                | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-040 | CABRILLO 115 kV | Mesa-Divide #1 and #2 115 kV Lines | C5 DCTL  | L-2                  | -20                            | -11              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-041 | LMPC-CTY 115 kV | Mesa-Divide #1 and #2 115 kV Lines | C5 DCTL  | L-2                  | -25                            | -13              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-042 | MANVILLE 115 kV | Mesa-Divide #1 and #2 115 kV Lines | C5 DCTL  | L-2                  | -25                            | -13              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-043 | PURISIMA 115 kV | Mesa-Divide #1 and #2 115 kV Lines | C5 DCTL  | L-2                  | -24                            | -13              | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-044 | SNTA YNZ 115 kV | Mesa-Divide #1 and #2 115 kV Lines | C5 DCTL  | L-2                  | -17                            | -                | -                | Action Plan until Midway-Andrew project is in service |
| LP-NP-VD-045 | VAFB SSA 70 kV  | Mesa-Divide #1 and #2 115 kV Lines | C5 DCTL  | L-2                  | -26                            | -14              | -                | Action Plan until Midway-Andrew project is in service |

2013/2014 ISO Reliability Assessment - Preliminary Study Results

Study Area: **PG&E Los Padres - Summer Peak**



**Voltage Deviations**

| ID           | Substation     | Worst Contingency                  | Category | Category Description | Post Cont. Voltage Deviation % |                  |                  | Potential Mitigation Solutions                        |
|--------------|----------------|------------------------------------|----------|----------------------|--------------------------------|------------------|------------------|---|
|              |                |                                    |          |                      | 2015 Summer Peak               | 2018 Summer Peak | 2023 Summer Peak |   |
| LP-NP-VD-046 | VAFB SSB 70 kV | Mesa-Divide #1 and #2 115 kV Lines | C5 DCTL  | L-2                  | -26                            | -14              | -                | Action Plan until Midway-Andrew project is in service |

Study Area: **PG&E Los Padres - Summer Peak**



*Single Contingency Load Drop*

| ID | Worst Contingency | Category | Category Description | Amount of Load Drop (MW) |          |          | Potential Mitigation Solutions |
|----|-------------------|----------|----------------------|--------------------------|----------|----------|--------------------------------|
|    |                   |          |                      | Select..                 | Select.. | Select.. |                                |
|    |                   |          |                      |                          |          |          |                                |

No single contingency resulted in total load drop of more than 250 MW.

## 2013/2014 ISO Reliability Assessment - Preliminary Study Results

Study Area: **PG&E Los Padres - Winter Peak**

### Single Contingency Load Drop



| ID | Worst Contingency | Category | Category Description | Amount of Load Drop (MW) |          |          | Potential Mitigation Solutions |
|----|-------------------|----------|----------------------|--------------------------|----------|----------|--------------------------------|
|    |                   |          |                      | Select..                 | Select.. | Select.. |                                |
|    |                   |          |                      |                          |          |          |                                |

No single contingency resulted in total load drop of more than 250 MW.

## 2013/2014 ISO Reliability Assessment - Preliminary Study Results

Study Area: **PG&E Los Padres - Summer Off-Peak & Summer Light Load**



### Single Contingency Load Drop

| ID | Worst Contingency | Category | Category Description | Amount of Load Drop (MW) |          |          | Potential Mitigation Solutions |
|----|-------------------|----------|----------------------|--------------------------|----------|----------|--------------------------------|
|    |                   |          |                      | Select..                 | Select.. | Select.. |                                |
|    |                   |          |                      |                          |          |          |                                |

No single contingency resulted in total load drop of more than 250 MW.

Study Area: **PG&E Los Padres - Summer Peak**



*Single Source Substation with more than 100 MW Load*

| ID | Substation | Load Served (MW) |          |          | Potential Mitigation Solutions |
|----|------------|------------------|----------|----------|--------------------------------|
|    |            | Select..         | Select.. | Select.. |                                |
|    |            |                  |          |          |                                |

No single source substation with more than 100 MW Load

Study Area: **PG&E Los Padres - Winter Peak**



*Single Source Substation with more than 100 MW Load*

| ID | Substation | Load Served (MW) |          |          | Potential Mitigation Solutions |
|----|------------|------------------|----------|----------|--------------------------------|
|    |            | Select..         | Select.. | Select.. |                                |
|    |            |                  |          |          |                                |

No single source substation with more than 100 MW Load

## 2013/2014 ISO Reliability Assessment - Preliminary Study Results

Study Area: **PG&E Los Padres - Summer Off-Peak & Summer Light Load**



***Single Source Substation with more than 100 MW Load***

| ID | Substation | Load Served (MW) |          |          | Potential Mitigation Solutions |
|----|------------|------------------|----------|----------|--------------------------------|
|    |            | Select..         | Select.. | Select.. |                                |
|    |            |                  |          |          |                                |

No single source substation with more than 100 MW Load