

## 2012/2013 ISO Reliability Assessment - Preliminary Study Results

Study Area: **PG&E Greater Bay Area East Bay - Summer Peak**



### Thermal Overloads

| ID           | Overloaded Facility                        | Worst Contingency   | Category | Category Description | Loading (%)      |                  |                  | Potential Mitigation Solutions  |
|--------------|--|---|----------|----------------------|------------------|------------------|------------------|---|
|              |  |   |          |                      | 2014 Summer Peak | 2017 Summer Peak | 2022 Summer Peak |   |
| Ebay-SP-T-01 | San Leandro - Oakland J 115 kV Line        | Moraga-Oakland J 115kV Line   | B        | N-1                  | 100%             | 81%              | 86%              | East Shore - Oakland J 115 kV Reconductor Project                                 |
| Ebay-SP-T-02 | Oakland C-L 115 kV Cable                   | CB FAULT AT 32780 CLARMNT 115 CB122   | C2       | Breaker              | 108%             | 112%             | 118%             | Re-rate or reconductor line. Drop load either manually or thru SPS as appropriate |
| Ebay-SP-T-03 | San Leandro - Oakland J 115 kV Line        | Sobrante-Grizzly-Claremont #1 115kV Li_Moraga-Oakland J 115kV Line            | C3       | N-1-1                | 101%             | 80%              | 85%              | East Shore - Oakland J 115 kV Reconductor Project                                 |
| Ebay-SP-T-04 | San Leandro - Oakland J 115 kV Line        | Grant-Oakland J 115 kV Line _Moraga-Oakland J 115kV Line                      | C3       | N-1-1                | N/A              | 104%             | 110%             | Re-rate or reconductor line. Drop load either manually or thru SPS as appropriate |
| Ebay-SP-T-05 | Moraga - Oakland J 115 kV Line             | Grant-Oakland J 115 kV Line _San Leandro - Oakland J #1 115kV Line            | C3       | N-1-1                | N/A              | 102%             | 107%             | Re-rate or reconductor line. Drop load either manually or thru SPS as appropriate |
| Ebay-SP-T-06 | Oakland C-L 115 kV Cable                   | Claremont K - Oakland D #1 115kV Cable_Claremont K - Oakland D #2 115kV Cable | C3       | N-1-1                | 108%             | 112%             | 118%             | Re-rate or reconductor line. Drop load either manually or thru SPS as appropriate |
| Ebay-SP-T-07 | Oleum - North Tower - Christie 115 kV Line | Sobrante-G Nos. 1 & 2 115 kV lines  | C5       | DCTL                 | 101%             | N/A              | 80%              | North Tower 115 kV Looping Project  |
| Ebay-SP-T-08 | Christie - Sobrante 115 kV Line            | Sobrante-G Nos. 1 & 2 115 kV lines  | C5       | DCTL                 | 112%             | 89%              | 96%              | North Tower 115 kV Looping Project  |
| Ebay-SP-T-09 | Oleum - Martinez 115 kV Line               | Sobrante-G Nos. 1 & 2 115 kV lines  | C5       | DCTL                 | 112%             | 94%              | 99%              | North Tower 115 kV Looping Project  |

**Thermal Overloads**

| ID | Overloaded Facility | Worst Contingency | Category | Category Description | Loading (%)            |                      |     | Potential Mitigation Solutions |
|----|---------------------|-------------------|----------|----------------------|------------------------|----------------------|-----|--------------------------------|
|    |                     |                   |          |                      | 2014 Summer Light Load | 2017 Summer Off-Peak | N/A |                                |
|    |                     |                   |          |                      |                        |                      |     |                                |

No thermal overloads identified.

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**Voltage Deviations**

| ID            | Substation | Worst Contingency                     | Category | Category Description | Post Cont. Voltage Deviation % |                  |                  | Potential Mitigation Solutions |
|---------------|------------|---------------------------------------|----------|----------------------|--------------------------------|------------------|------------------|--------------------------------|
|               |            |                                       |          |                      | 2014 Summer Peak               | 2017 Summer Peak | 2022 Summer Peak |                                |
| Ebay-SP-DV-01 | EDES 115kV | San Leandro - Oakland J #1 115kV Line | B        | N-1                  | 7%                             | 1%               | 1%               | Add reactive support           |



Voltage Deviations

| ID | Substation | Worst Contingency | Category | Category Description | Post Cont. Voltage Deviation % |                      |     | Potential Mitigation Solutions |
|----|------------|-------------------|----------|----------------------|--------------------------------|----------------------|-----|--------------------------------|
|    |            |                   |          |                      | 2014 Summer Light Load         | 2017 Summer Off-Peak | N/A |                                |
|    |            |                   |          |                      |                                |                      |     |                                |

No voltage deviations identified.

**High/Low Voltage**

| ID           | Substation     | Worst Contingency   | Category | Category Description | Voltage (PU)     |                  |                  | Potential Mitigation Solutions |
|--------------|----------------|---|----------|----------------------|------------------|------------------|------------------|--------------------------------|
|              |                |   |          |                      | 2014 Summer Peak | 2017 Summer Peak | 2022 Summer Peak |                                |
| Ebay-SP-V-01 | STD. OIL 115kV | Normal  | A        | N-0                  | 0.95             | 0.95             | 0.95             | Add reactive support           |
| Ebay-SP-V-02 | PP STEEL 115kV | Sobranite-Standard Oil #2 115kV Line<br>_ChevGen2 13.80 Unit ID 1                 | C3       | N-1-1                | 0.90             | 0.90             | 0.90             | Add reactive support           |
| Ebay-SP-V-03 | SAN PBLO 115kV | Sobranite-Standard Oil #1 115kV Line<br>_ChevGen2 13.80 Unit ID 1                 | C3       | N-1-1                | 0.90             | 0.91             | 0.90             | Add reactive support           |
| Ebay-SP-V-04 | PT PINLE 115kV | Sobranite-Standard Oil #2 115kV Line<br>_ChevGen2 13.80 Unit ID 1                 | C3       | N-1-1                | 0.90             | 0.90             | 0.90             | Add reactive support           |
| Ebay-SP-V-05 | STD. OIL 115kV | Sobranite-Standard Oil #1 115kV Line<br>_Standard Oil STA - Standard Oil #1 115kV | C3       | N-1-1                | 0.90             | 0.90             | 0.90             | Add reactive support           |

# 2012/2013 ISO Reliability Assessment - Preliminary Study Results

Study Area: **PG&E Greater Bay Area East Bay - Summer Light Load & Summer Off-Peak**

**High/Low Voltage**



| ID           | Substation    | Worst Contingency | Category | Category Description | Voltage (PU)           |                      |     | Potential Mitigation Solutions |
|--------------|---------------|-------------------|----------|----------------------|------------------------|----------------------|-----|--------------------------------|
|              |               |                   |          |                      | 2014 Summer Light Load | 2017 Summer Off-Peak | N/A |                                |
| EBay-OP-V-01 | UNIN CHM 60kV | Normal            | A        | N-0                  | 1.06                   | 1.06                 |     | Add reactive support           |
| EBay-OP-V-02 | CHRISTIE 60kV | Normal            | A        | N-0                  | 1.06                   | 1.07                 |     | Add reactive support           |
| EBay-OP-V-03 | PRT CSTA 60kV | Normal            | A        | N-0                  | 1.06                   | 1.06                 |     | Add reactive support           |
| EBay-OP-V-04 | FRANKLIN 60kV | Normal            | A        | N-0                  | 1.06                   | 1.06                 |     | Add reactive support           |
| EBay-OP-V-05 | SEQUOIA 60kV  | Normal            | A        | N-0                  | 1.06                   | 1.06                 |     | Add reactive support           |

## 2012/2013 ISO Reliability Assessment - Preliminary Study Results

Study Area: **PG&E Greater Bay Area East Bay**



### Single Contingency Load Drop

| ID | Worst Contingency | Category | Category Description | Amount of Load Drop (MW) |      |      | Potential Mitigation Solutions |
|----|-------------------|----------|----------------------|--------------------------|------|------|--------------------------------|
|    |                   |          |                      | 2014                     | 2017 | 2022 |                                |
|    |                   |          |                      |                          |      |      |                                |

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

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*Single Source Substation with more than 100 MW Load*

| ID | Substation | Load Served (MW) |      |      | Potential Mitigation Solutions |
|----|------------|------------------|------|------|--------------------------------|
|    |            | 2014             | 2017 | 2022 |                                |
|    |            |                  |      |      |                                |

No single source substation with more than 100 MW Load