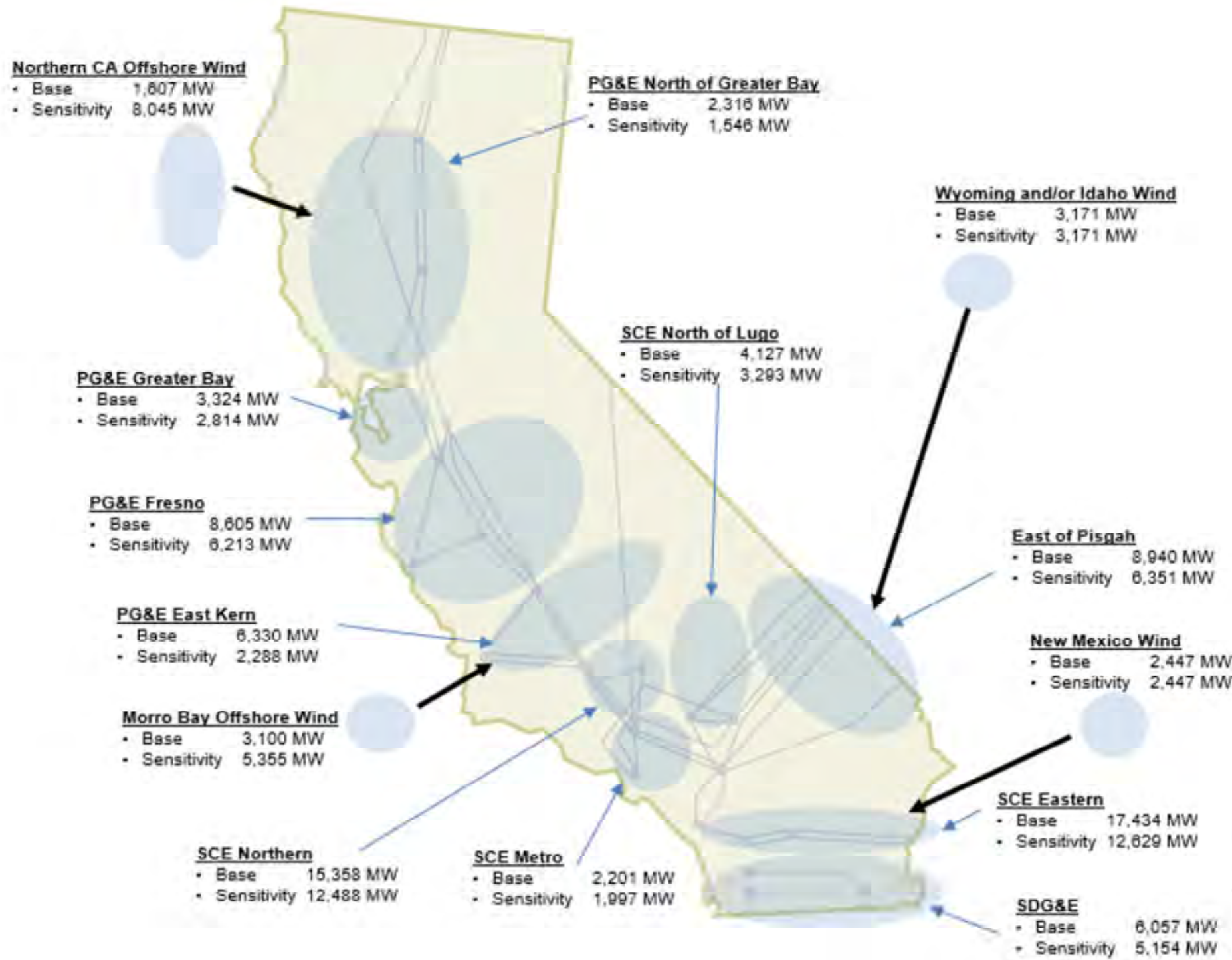


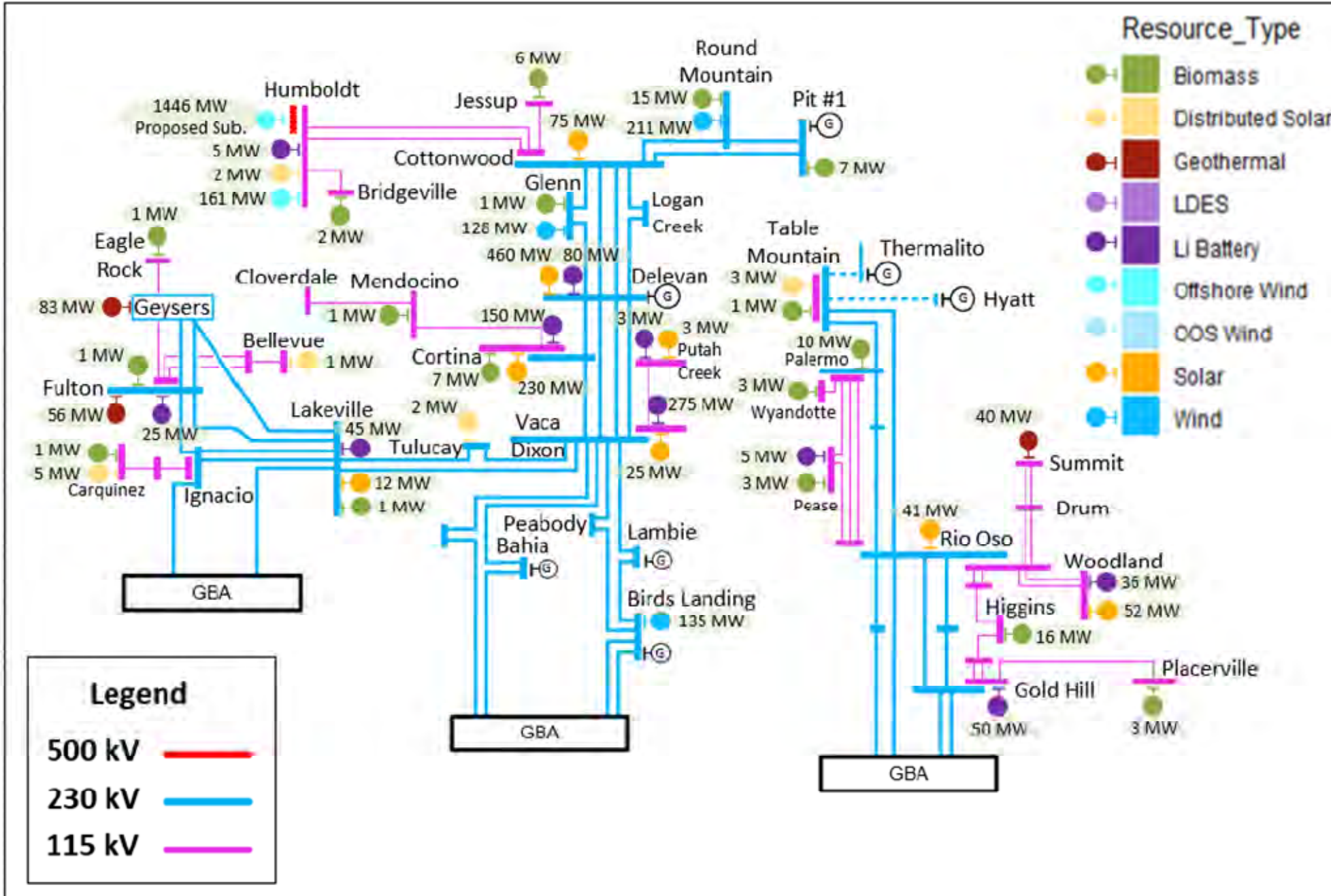
2023-2024 TPP Adopted Base and OSW Sensitivity Portfolios (2035)



Base and Sensitivity Portfolios by Resource Type

| Resource Type | Base Portfolio | | | Sensitivity Portfolio | | |
|-------------------------------------|----------------|---------------|---------------|-----------------------|---------------|---------------|
| | FCDS (MW) | EO (MW) | Total (MW) | FCDS (MW) | EO (MW) | Total (MW) |
| Solar | 15,636 | 23,311 | 38,947 | 11,442 | 14,304 | 25,746 |
| Wind - In State | 2,511 | 564 | 3,074 | 2,511 | 564 | 3,074 |
| Wind - Out-of-State (Existing TX) | 690 | 100 | 790 | 690 | 100 | 790 |
| Wind - Out-of-State (New TX) | 4,828 | 0 | 4,828 | 4,828 | 0 | 4,828 |
| Wind - Offshore | 4,546 | 161 | 4,707 | 13,239 | 161 | 13,400 |
| Li Battery | 28,374 | 0 | 28,374 | 23,545 | 0 | 23,545 |
| Geothermal | 2,037 | 0 | 2,037 | 1,149 | 0 | 1,149 |
| Long Duration Energy Storage (LDES) | 2,000 | 0 | 2,000 | 1,000 | 0 | 1,000 |
| Biomass/Biogass | 134 | 0 | 134 | 134 | 0 | 134 |
| Distributed Solar | 125 | 0 | 125 | 125 | 0 | 125 |
| Total | 60,880 | 24,135 | 85,015 | 58,663 | 15,129 | 73,791 |

Base Portfolio: North of Greater Bay Area



FCDS
2,895
MW

Total
3,923
MW

| Resource Type | Base Portfolio | | |
|-------------------------------------|----------------|--------------|--------------|
| | FCDS (MW) | EO (MW) | Total (MW) |
| Solar | 185 | 713 | 898 |
| Wind - In State | 320 | 154 | 474 |
| Wind - Out-of-State (Existing TX) | 0 | 0 | 0 |
| Wind - Out-of-State (New TX) | 0 | 0 | 0 |
| Wind - Offshore | 1,446 | 161 | 1,607 |
| Li Battery | 674 | 0 | 674 |
| Geothermal | 179 | 0 | 179 |
| Long Duration Energy Storage (LDES) | 0 | 0 | 0 |
| Biomass/Biogass | 79 | 0 | 79 |
| Distributed Solar | 13 | 0 | 13 |
| Total | 2,895 | 1,027 | 3,923 |

Will provide list of substations within the Interconnection Area

CPUC busbar mapping workbook provides resources by type mapped to substations within the Interconnection Areas

2023-0223 TPP Base Portfolio (2035) link:

https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2022-irp-cycle-events-and-materials/busbardashboard2033_30mmt_hebase_vd_02-22-23.xlsx

PG&E North of Greater Bay Interconnection Area Constraints

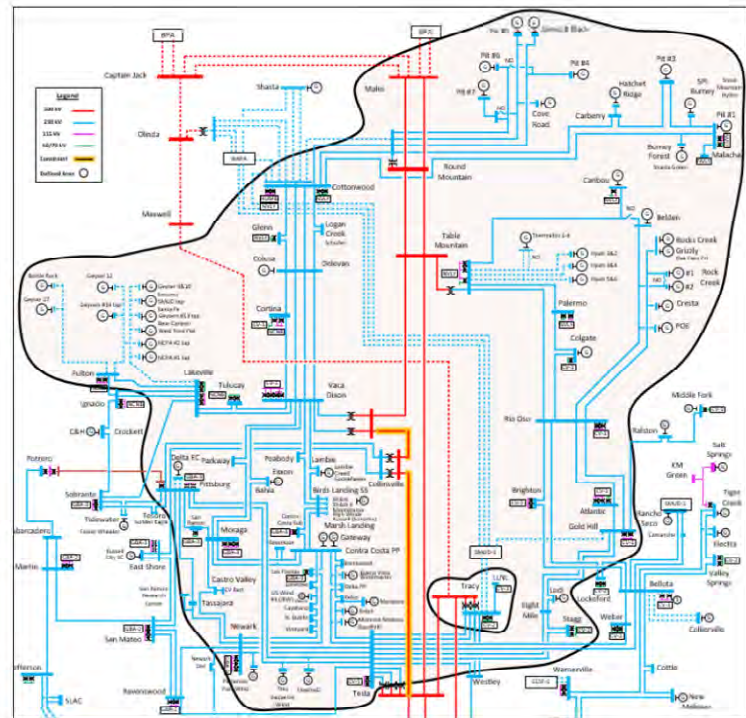
| Transmission Constraint | Affected Resource Locations | Condition Under Which Constraint is Binding (On-peak and/or Off-peak) | Estimated FCDS Capability Based on On-peak Study Resource Output (MW)** | | ADNU & Cost Estimate (\$million) | | Estimated EODS Capability Based on Off-peak Study Resource Output (MW)** | | AOPNU & Cost Estimate (\$million) | | Wind/Solar Area Designation |
|---|---|---|---|-------------------------|---|---------------|--|--------------------------|-----------------------------------|---------------|-----------------------------|
| | | | Transmission Plan Capability*** | Incremental due to ADNU | ADNU (Time to Construct) | Cost (2022\$) | Transmission Plan Capability*** | Incremental due to AOPNU | AOPNU (Time to Construct) | Cost (2022\$) | |
| PG&E North of Greater Bay Interconnection Area Constraints | | | | | | | | | | | |
| Santa Rosa-Corona 115 kV line | Greater Bay Area and North of Greater Bay Area | On-Peak | 3,995 | 703 | New line from Fulton-Vaca Dixon 230 kV (180 months) | \$725 | 3995* | N/A | N/A | N/A | Wind |
| Vaca Dixon-Tesla 500kV Line | Greater Bay Area, North of Greater Bay Area and PG&E South 500 kV | On-Peak | 1,044 | 8,645 | 500kV Delevan (144 months) | \$2,852 | 1,415* | N/A | N/A | N/A | Wind |
| Woodland- Davis 115kV line | North of Greater Bay Area | On-Peak | 76 | 109 | Re-conductor Q653F-Davis 115 kV Line (60 months) | \$9 | 76* | N/A | N/A | N/A | Wind |
| Cortina-Eagle Rock 115 kV line | North of Greater Bay Area | On-Peak | 1,575 | 50 | Re-conductor Q1284 Sw Sta-Lower Lake Sw Sta/Eagle Rock 115 kV Line (Q1284 Sw Sta-Cache Jct 1) (60 months) | \$50 | 1575* | N/A | N/A | N/A | Wind |
| Bell-Placer 115kV Line | North of Greater Bay Area | On-Peak | 630 | 480 | Re-conductor Higgins-Bell and Bell-Placer 115 kV Lines (120 months) | \$185 | 630* | N/A | N/A | N/A | Wind |
| Carberry-Round Mountain 230kV Line | North of Greater Bay Area | On-Peak, Off-Peak | 14 | 26 | Re-conductor Pit 3-Carberry and Carberry-Round mountain 230 kV Lines (84 months) | \$180 | 183 | 25 | Same as ADNU | \$180 | Wind |
| Rocklin-Pleasant grove 115kV line | North of Greater Bay Area | On-Peak | 92 | 707 | Re-conductor Rio Oso-Lincoln 115 kV Line and Lincoln-Pleasant Grove 115 kV Line (72 months) | \$125 | 226* | N/A | N/A | N/A | Wind |
| Bellota-Weber 230kV line | Greater Bay Area, North of Greater Bay Area and Fresno | On-Peak | 2382 | 460 | Subacco (120 months) | \$400 | 2382* | N/A | N/A | N/A | Wind |
| Rio Oso-Brighton 230kV line | | On-Peak | 423 | 574 | | | 423* | N/A | N/A | N/A | Wind |
| Rio Oso-Lockeford 230kV line | | On-Peak | 935 | 485 | | | 935* | N/A | N/A | N/A | Wind |

Will provide list of POIs from studies that are behind each constraint within the Interconnection Area

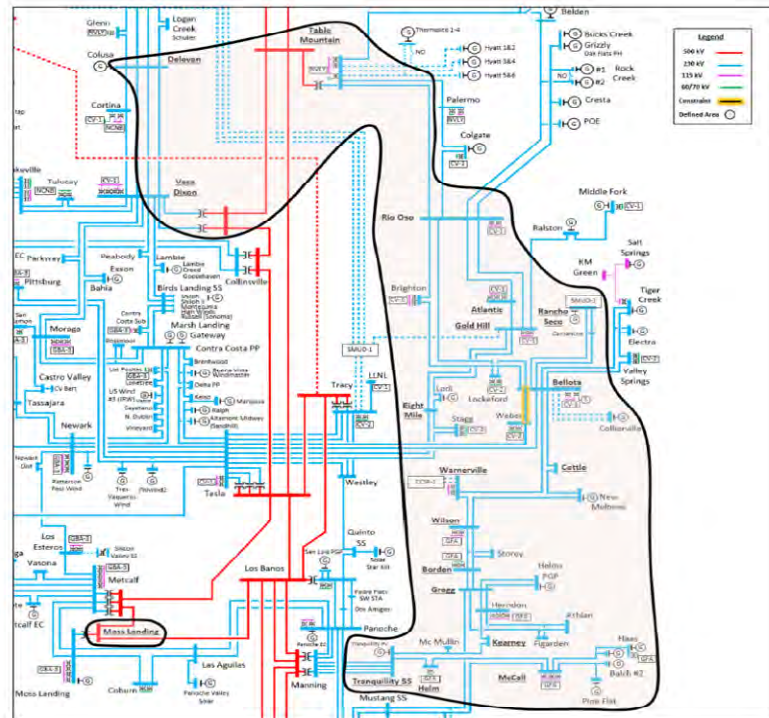
Annual TPD Allocation Report identifies TPD available behind constraints and allocated

Link to 2023 TPD Allocation Report (on Market Participant Portal): <https://mpp.caiso.com/tp/Documents/2023%20TPD%20Allocation%20Report.pdf>

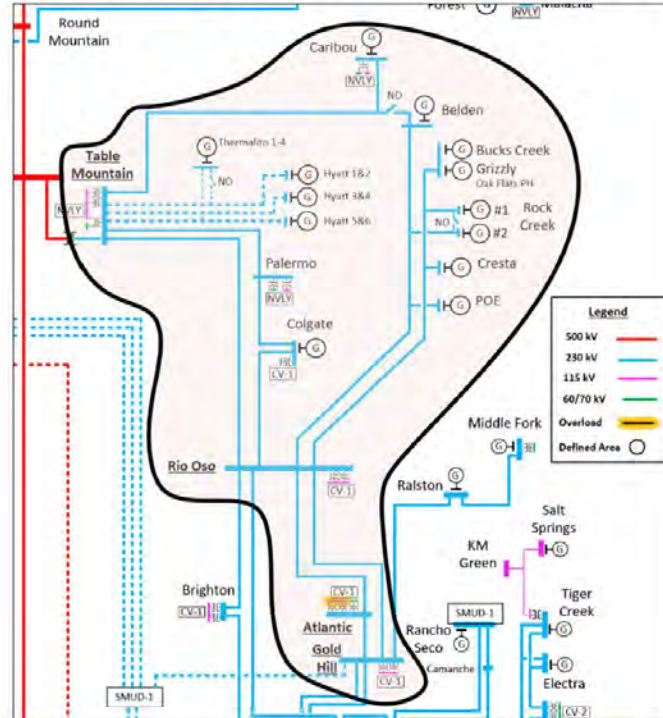
Vaca Dixon - Tesla 500kV line On-Peak Constraint



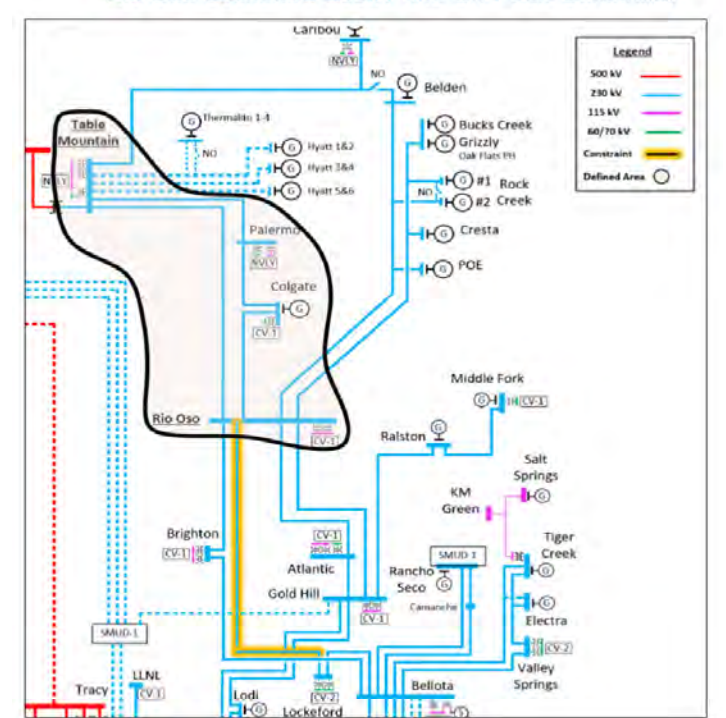
Bellota-Weber 230kV line On-Peak Constraint



Rocklin-Pleasant grove 115kV line On-Peak/Off-Peak Constraint

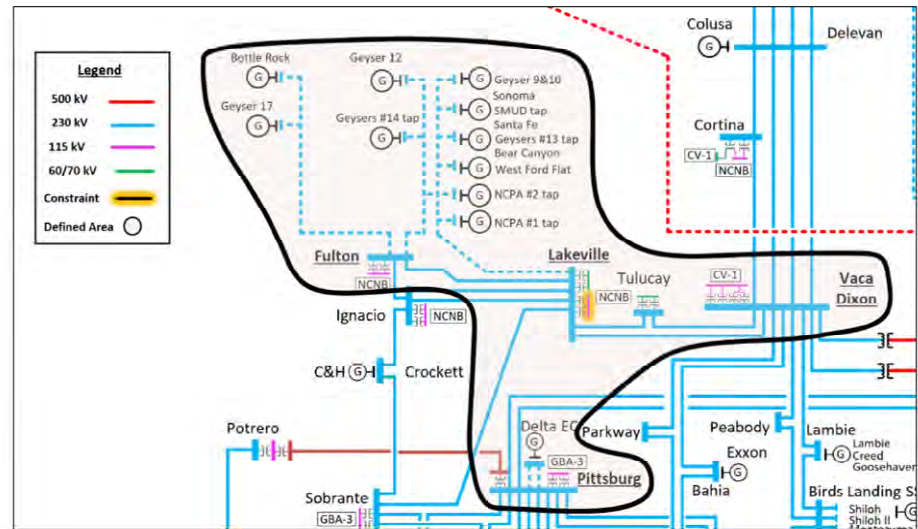


Rio Oso-Lockeford 230kV line On-Peak Constraint

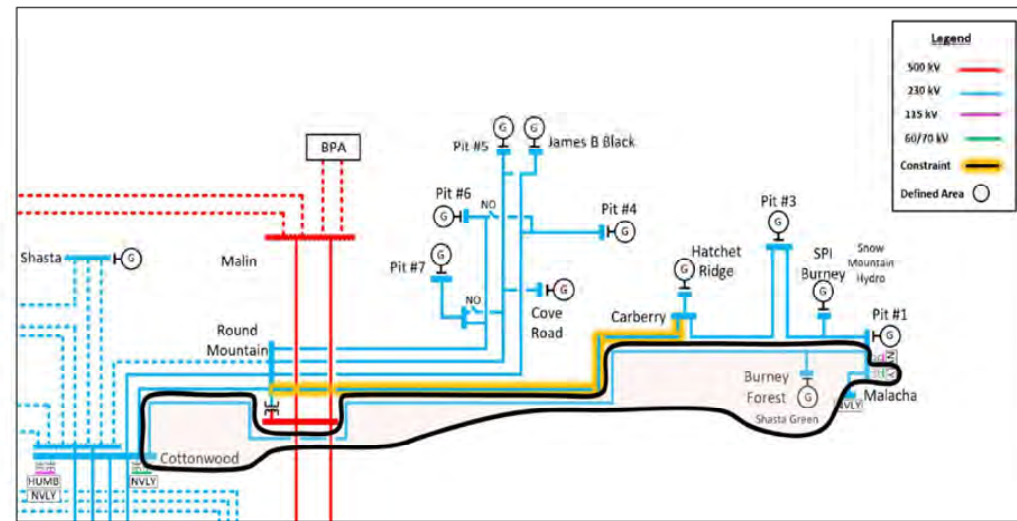


PG&E North of Greater Bay Interconnection Area Constraints (continued)

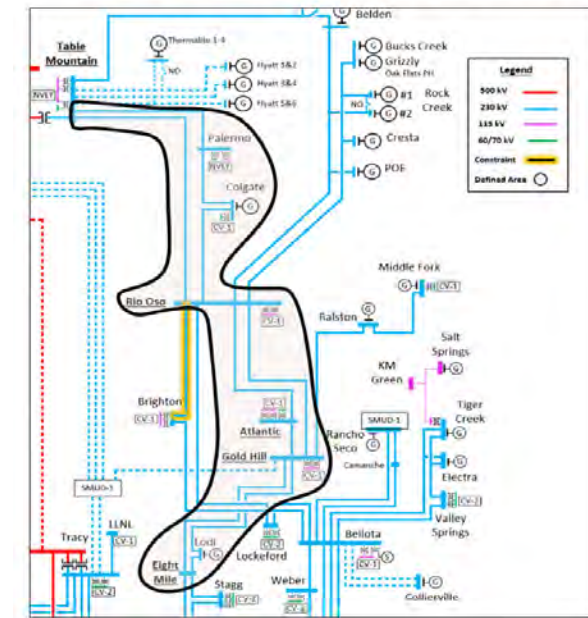
Santa Rosa-Corona 115 kV line On-Peak Constraint



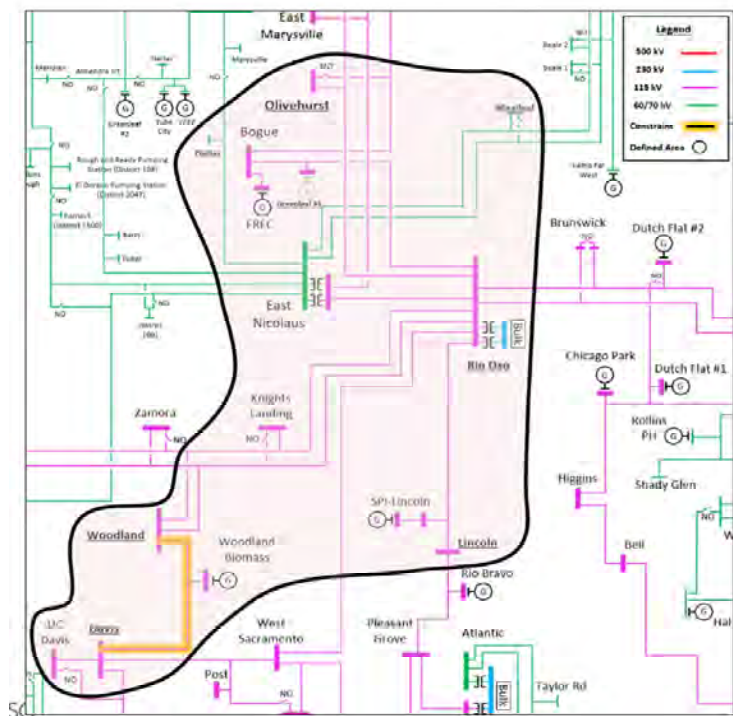
Carberry-Round mountain 230 kV line On-Peak Constraint



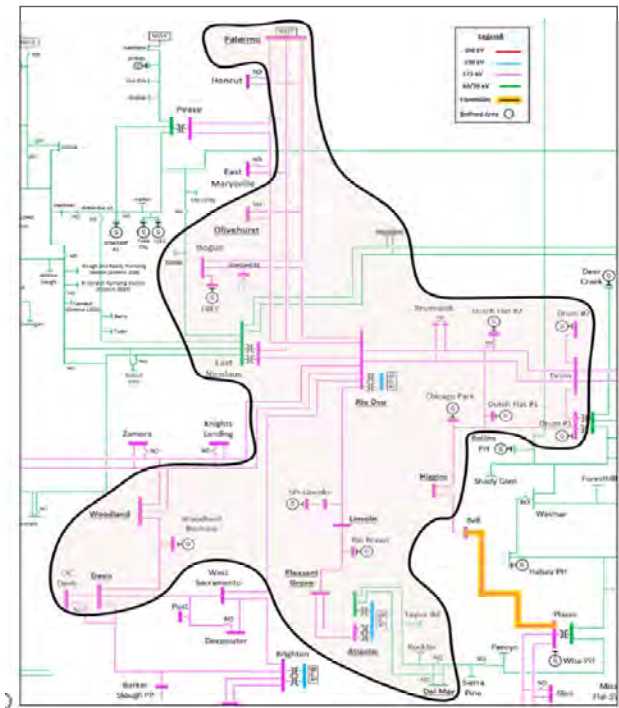
Rio Oso-Brighton 230kV line On-Peak Constraint



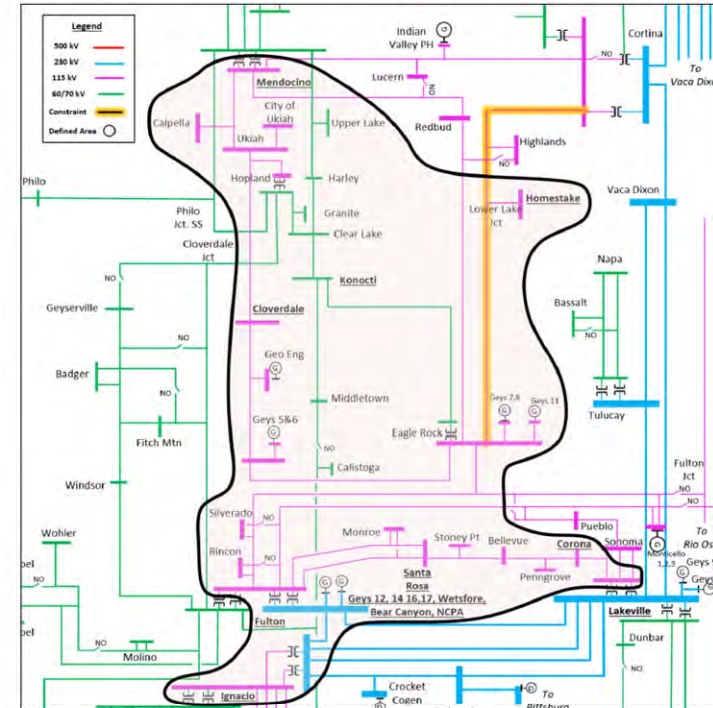
Woodland-Davis 115 kV line On-Peak Constraint



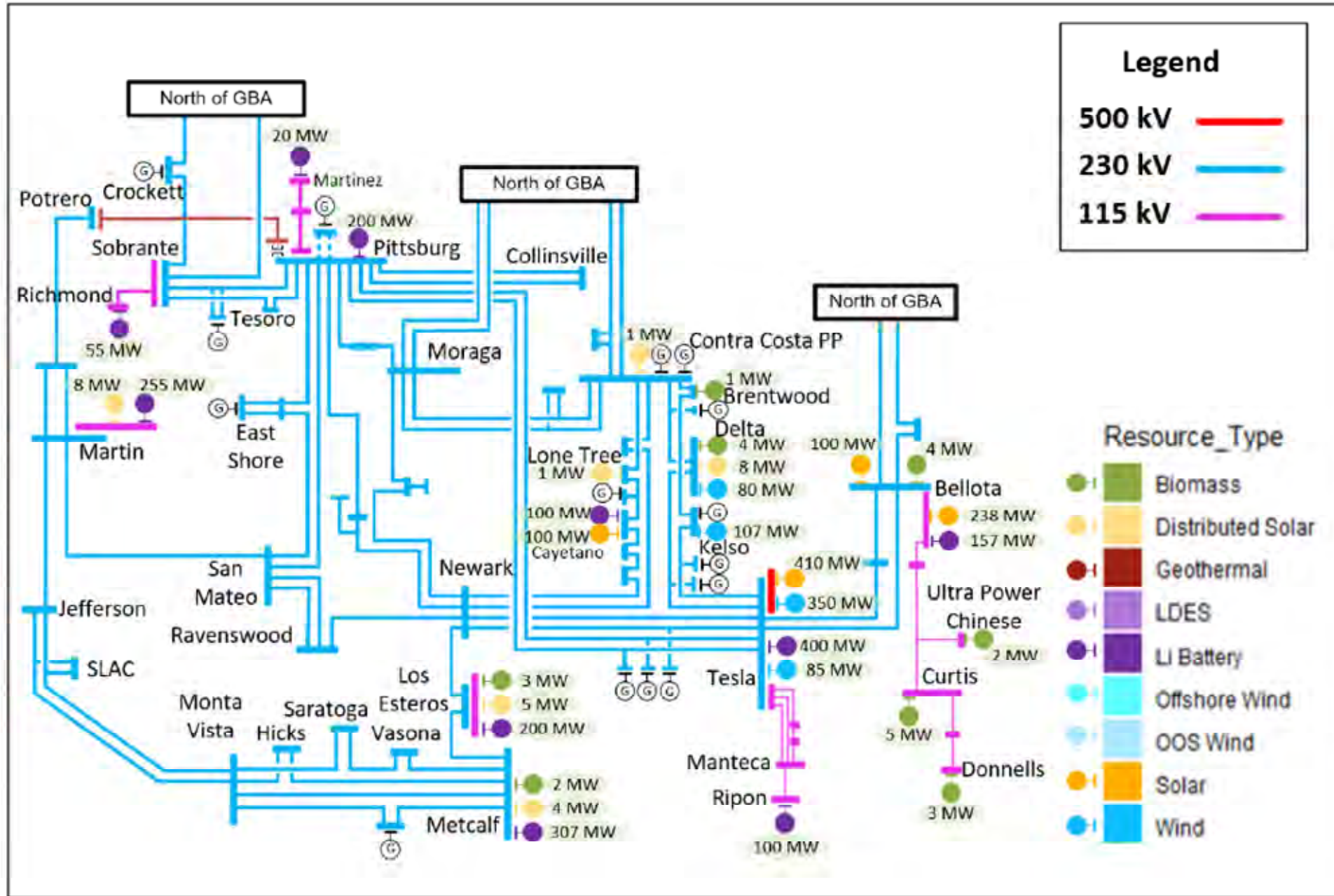
Bell-Placer 115 kV line On-Peak Constraint



Cortina-Eagle Rock 115 kV line On-Peak Constraint



Base Portfolio: Greater Bay Area



FCDS
2,945
MW

Total
3,324
MW

| Resource Type | Base Portfolio | | |
|-------------------------------------|----------------|------------|--------------|
| | FCDS (MW) | EO (MW) | Total (MW) |
| Solar | 500 | 348 | 848 |
| Wind – In State | 592 | 30 | 622 |
| Wind – Out-of-State (Existing TX) | 0 | 0 | 0 |
| Wind – Out-of-State (New TX) | 0 | 0 | 0 |
| Wind - Offshore | 0 | 0 | 0 |
| Li Battery | 1,803 | 0 | 1,803 |
| Geothermal | 0 | 0 | 0 |
| Long Duration Energy Storage (LDES) | 0 | 0 | 0 |
| Biomass/Biogass | 24 | 0 | 24 |
| Distributed Solar | 27 | 0 | 27 |
| Total | 2,945 | 378 | 3,324 |

Will provide list of substations within the Interconnection Area

CPUC busbar mapping workbook provides resources by type mapped to substations within the Interconnection Areas

2023-0223 TPP Base Portfolio (2035) link:

https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2022-irp-cycle-events-and-materials/busbardashboard2033_30mmt_hebase_vd_02-22-23.xlsx

PG&E Greater Bay Interconnection Area Constraints

| Transmission Constraint | Affected Resource Locations | Condition Under Which Constraint is Binding (On-peak and/or Off-peak) | Estimated FCDS Capability Based on On-peak Study Resource Output (MW)** | | ADNU & Cost Estimate (\$million) | | Estimated EODS Capability Based on Off-peak Study Resource Output (MW)** | | AOPNU & Cost Estimate (\$million) | | Wind/Solar Area Designation |
|--|--|---|---|-------------------------|---|----------------------------|--|--------------------------|-----------------------------------|---------------|-----------------------------|
| | | | Transmission Plan Capability*** | Incremental due to ADNU | ADNU (Time to Construct) | Cost (2022\$) | Transmission Plan Capability*** | Incremental due to AOPNU | AOPNU (Time to Construct) | Cost (2022\$) | |
| PG&E Greater Bay Interconnection Area Constraints | | | | | | | | | | | |
| Dumbarton-Newark 115 kV line | Greater Bay Area and North of Greater Bay Area | On-Peak | 1,270 | 978 | New Collinsville 500/230 kV substation (2028) | N/A (TPP approved project) | 1270* | N/A | N/A | N/A | Wind |
| Eastshore-San Mateo 230 kV line | | On-Peak | 2,349 | 548 | | | 2349* | N/A | N/A | N/A | Wind |
| Lakeville-Ignacio 230 kV line | | On-Peak | 517 | 861 | | | 517* | N/A | N/A | N/A | Wind |
| Sobrante-Moraga 230 kV line | | On-Peak | 3,944 | 653 | | | 3944* | N/A | N/A | N/A | Wind |
| Windmaster-Delta pumps 230 kV line | Greater Bay Area and North of Greater Bay Area | On-Peak | 710 | 6,034 | Contra Costa to Tesla and Newark 230 kV lines and Birds Landing series reactors(Bay Area ADNU) (86 months) | \$417 | 710* | N/A | N/A | N/A | Wind |
| Contra Costa- Windmaster 230 kV line | | On-Peak | 1,233 | 5,601 | | | 1233* | N/A | N/A | N/A | Wind |
| Tesla-Tracy-Pump 230 kV line #2 | | On-Peak | 4,776 | 3,521 | | | 4776* | N/A | N/A | N/A | Wind |
| Contra Costa #1 115kV Line | Greater Bay Area | On-Peak | 29 | 131 | Contra Costa 115kV, 60kV reconductors and Bank Replacement (120 months) | \$185 | 29* | N/A | N/A | N/A | Wind |
| Kasson Jct-Heinz 115 kV line | Greater Bay Area, North of Greater Bay Area and Fresno | On-Peak | 91 | 1,255 | Nikola (216 months) | \$1,700 | 91* | N/A | N/A | N/A | Wind |
| Newark-Newark Distribution 115 kV line | | On-Peak | 3,822 | 831 | | | 3822* | N/A | N/A | N/A | Wind |
| Tesla-Bellota 230 kV line | | On-Peak | 4,065 | 300 | | | 4065* | N/A | N/A | N/A | Wind |
| Eight Mile-Tesla 230 kV line | | On-Peak | 3,738 | 163 | | | 3738* | N/A | N/A | N/A | Wind |
| Grant - Eastshore #2 line 115 kV | Greater Bay Area | On-Peak | 961 | 290 | Reconductor 1869-Eastshore #1 and #2 115 kV lines (84 months) | \$125 | 961* | N/A | N/A | N/A | Wind |
| Salado-Crow Creek Sw Sta 60 kV line | Greater Bay Area | On-Peak | 76 | 74 | Reconductor Salado 115kV and 60kV Area (144 months) | \$400 | 76* | N/A | N/A | N/A | Wind |
| Tesla-Salado 115 kV line | | On-Peak | 1,087 | 70 | | | 1087* | N/A | N/A | N/A | Wind |
| Los Esteros-Silicon Valley 230 kV | Greater Bay Area | On-Peak | 605 | 348 | San Jose Area HVDC Line (Newark - NRS) (2028) | N/A (TPP approved project) | 605* | N/A | N/A | N/A | Wind |
| Los Esteros-Nortech 115 kV line | | On-Peak | 639 | 160 | | | 639* | N/A | N/A | N/A | Wind |
| Newark-Los Esteros 230 kV line | | On-Peak | 4758 | 70 | | | 4758* | N/A | N/A | N/A | Wind |
| Morganhill-Metcalf 115kV Line | Greater Bay Area | On-Peak | 314 | 712 | Metcalf-Morgan Hill 115kV reconductoring (144 months) | \$380 | 314* | N/A | N/A | N/A | Wind |
| Tesla-Tracy Pump 230 kV Line #1 | Greater Bay Area and North of Greater Bay Area | On-Peak | 4,177 | 4,344 | Re-conductor 1883 Sw Sta-Tracy Pmp (2.9 miles) (60 months) | \$25 | 4177* | N/A | N/A | N/A | Wind |
| Birds Landing-Contra Costa 230kV Line | Greater Bay Area and North of Greater Bay Area | On-Peak | 836 | 1,766 | New double circuit line from Vaca-Contra Costa 230 kV (144 months) | \$700 | 836* | N/A | N/A | N/A | Wind |

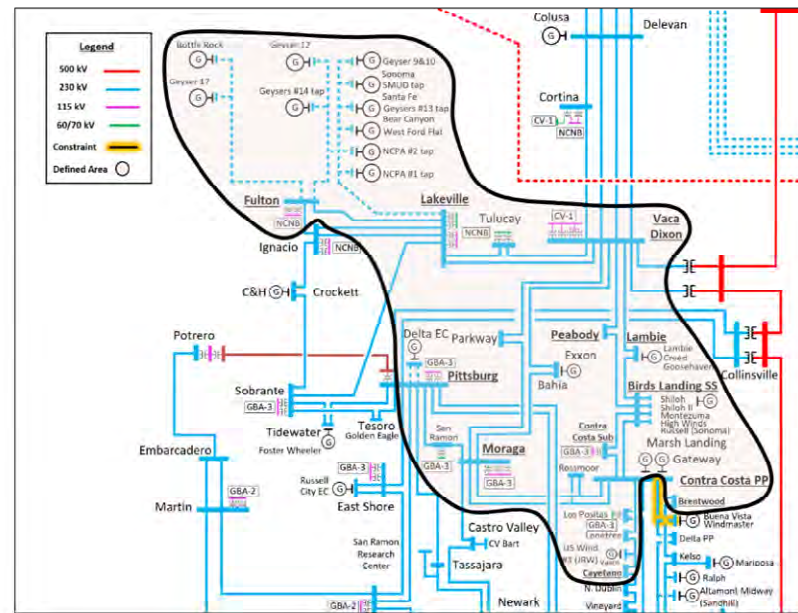
Will provide list of POIs from studies that are behind each constraint within the Interconnection Area

Annual TPD Allocation Report identifies TPD available behind constraints and allocated

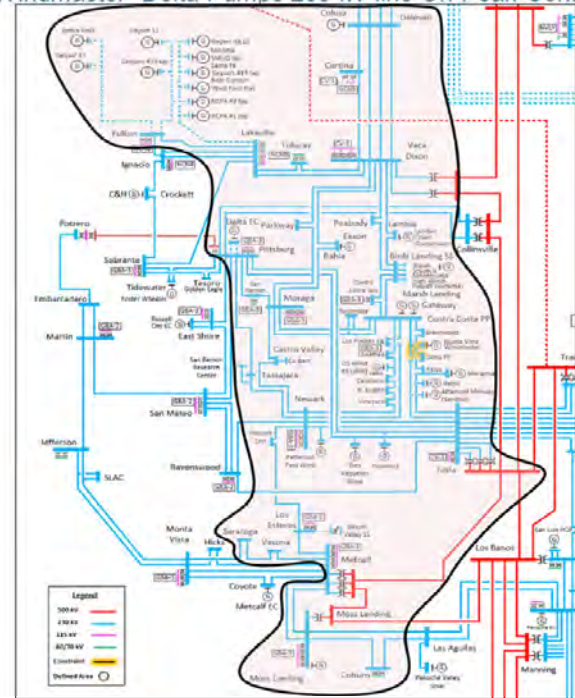
Link to 2023 TPD Allocation Report (on Market Participant Portal): <https://mpp.caiso.com/tp/Documents/2023%20TPD%20Allocation%20Report.pdf>

PG&E Greater Bay Interconnection Area Constraints (continued)

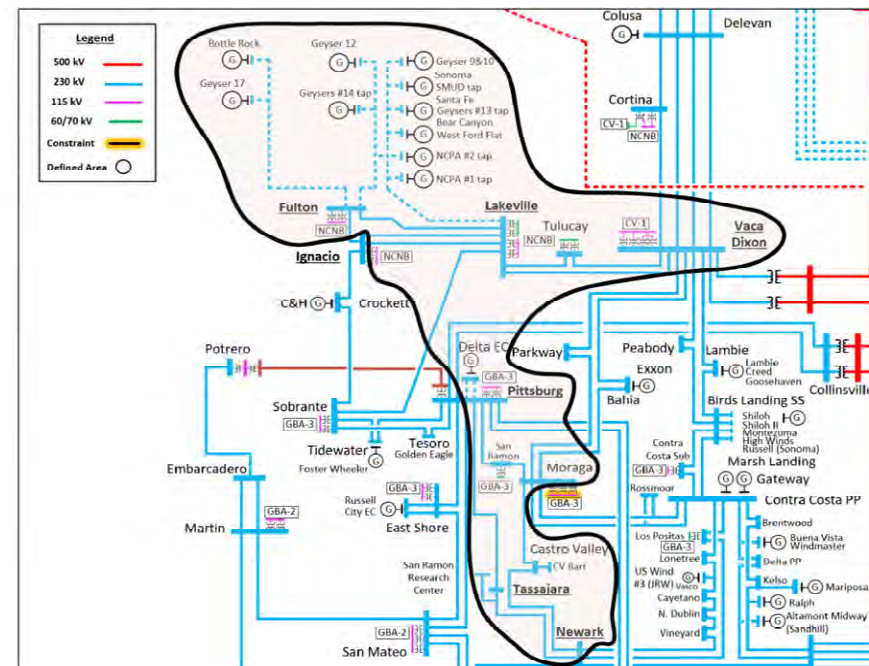
Contra Costa- Windmaster 230 kV line On-Peak Constraint



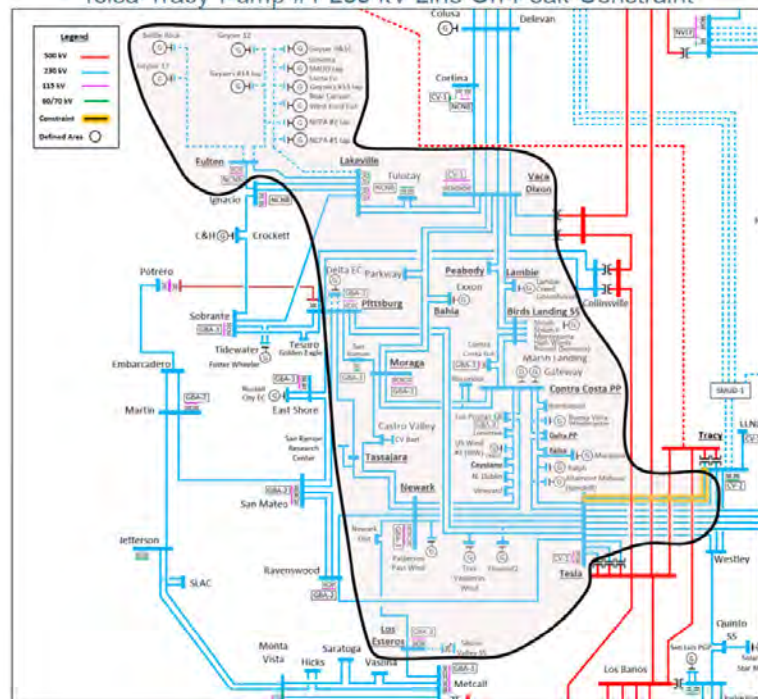
Windmaster- Delta Pumps 230 kV line On-Peak Const



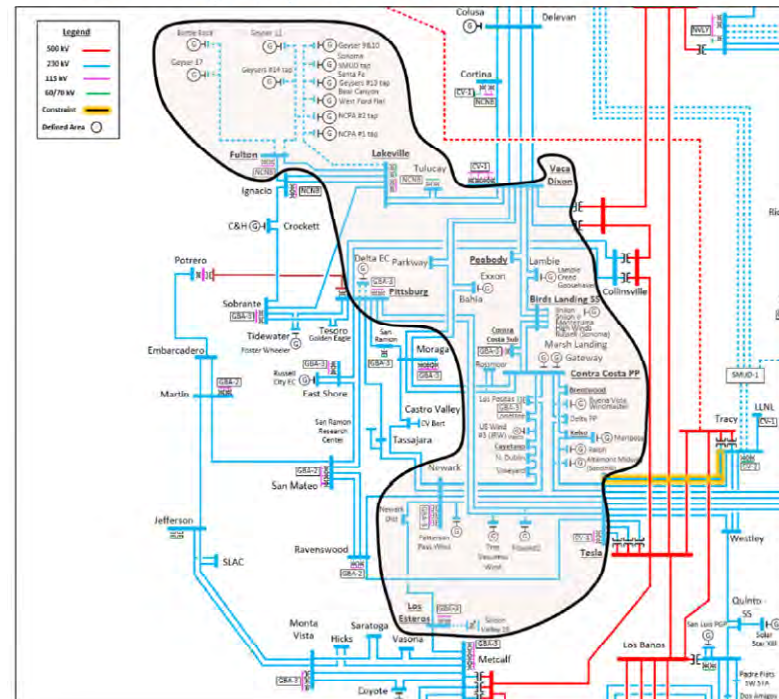
Sobrante-Moraga 230 kV line On-Peak Constraint



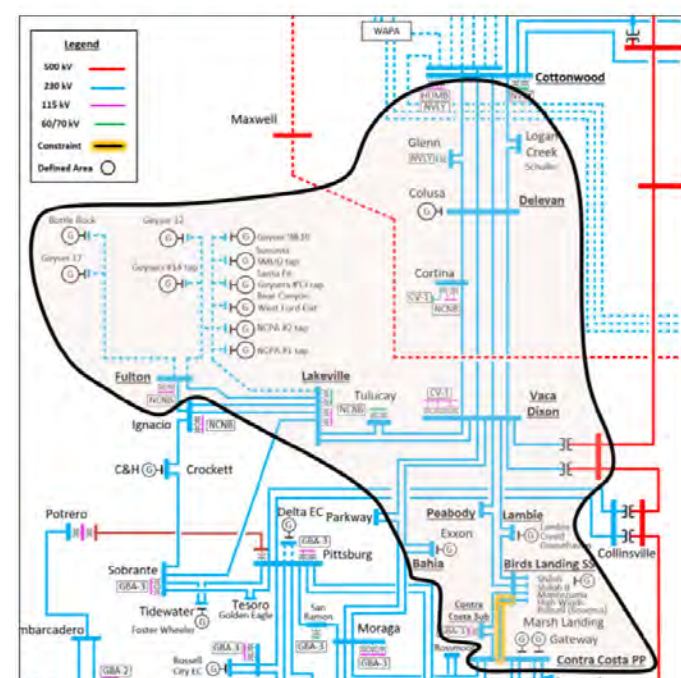
Telsa-Tracy Pump #1 230 kV Line On-Peak Constraint



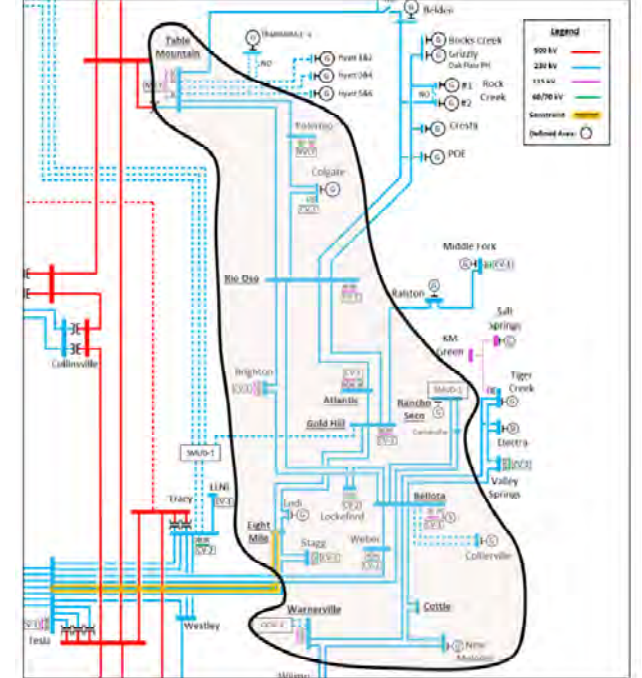
Tesla - Tracy Pumps #2 230 kV line On-Peak Constraint



Birds Landing-Contra Costa 230kV Line On-Peak Constrai

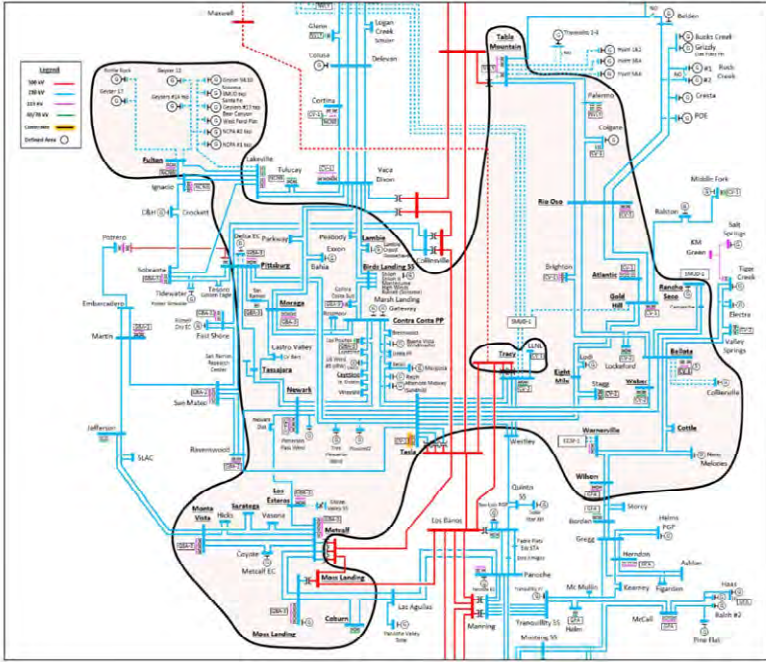


Eight Mile-Tesla 230 kV line On-Peak Constraint

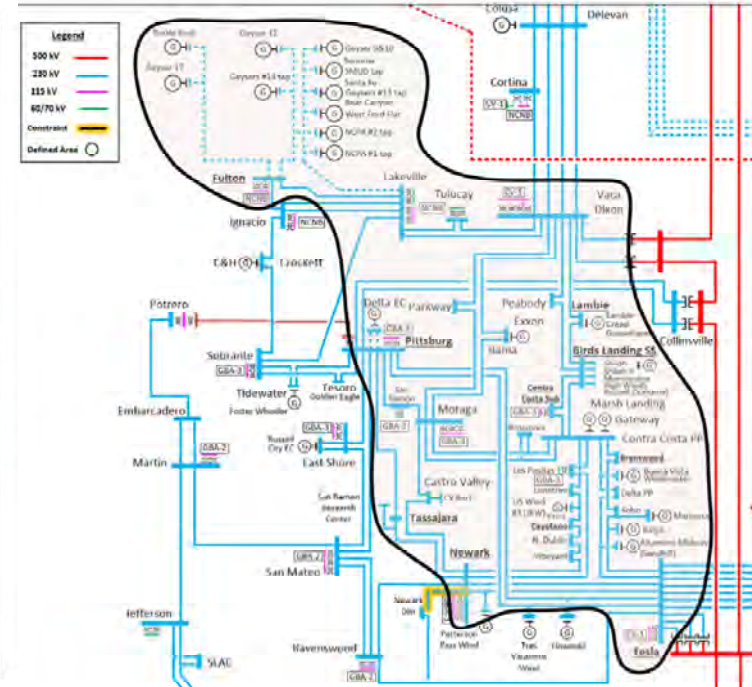


PG&E Greater Bay Interconnection Area Constraints (continued)

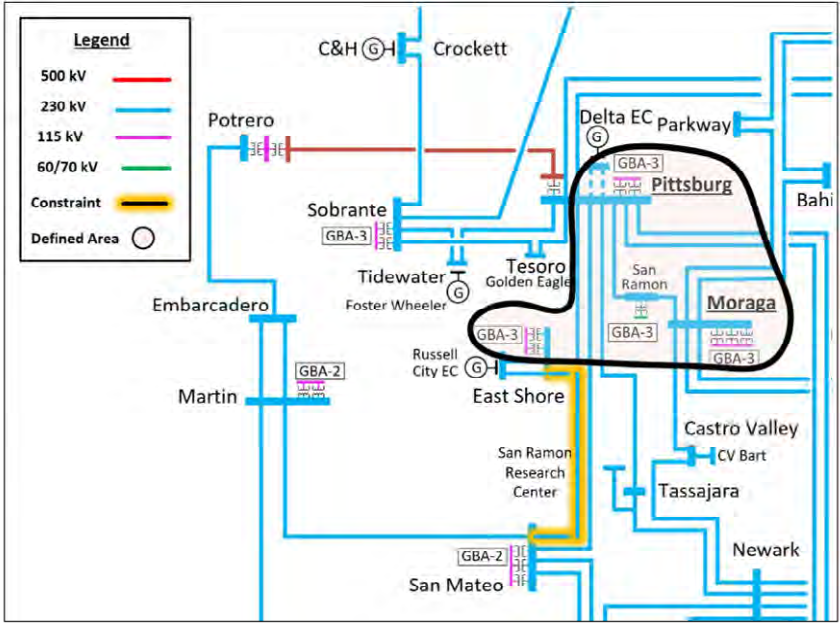
Tesla-Bellota 115 kV line On-Peak Constraint



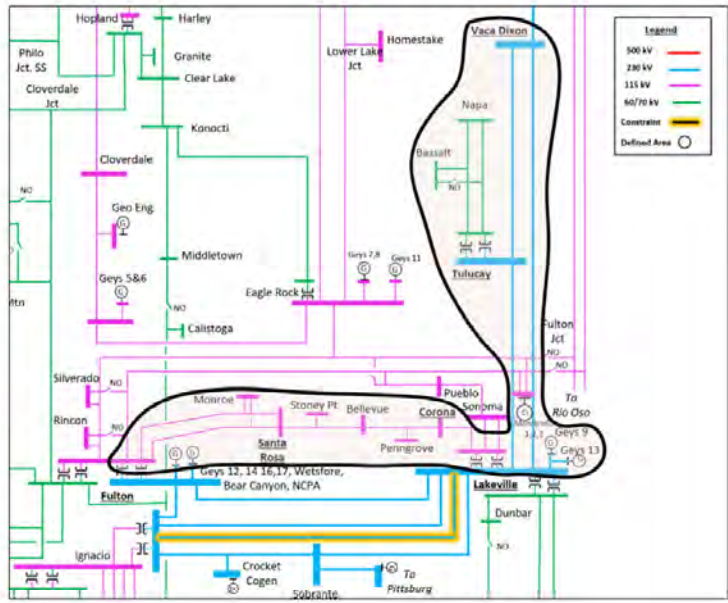
Newark-Newark Distribution 115 kV line On-Peak Constraint



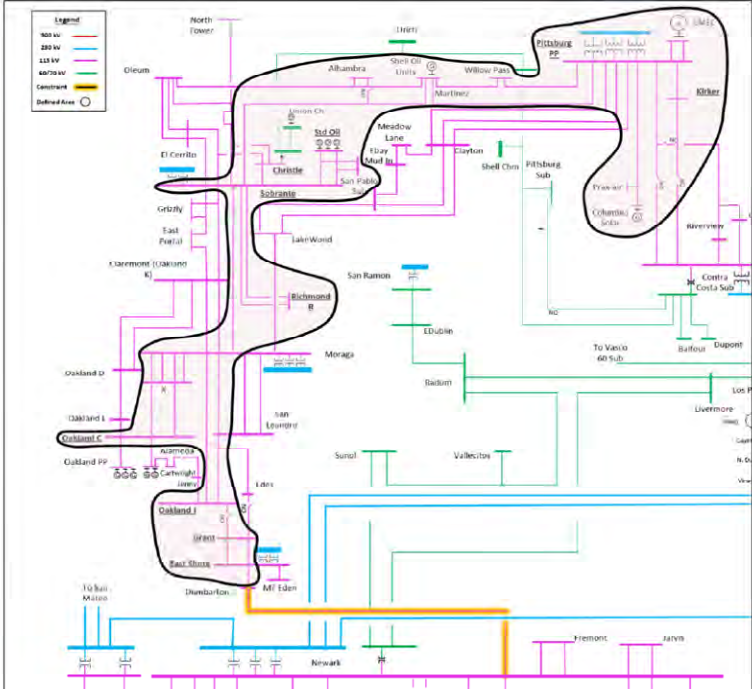
Eastshore-San Mateo 230 kV line On-Peak Constraint



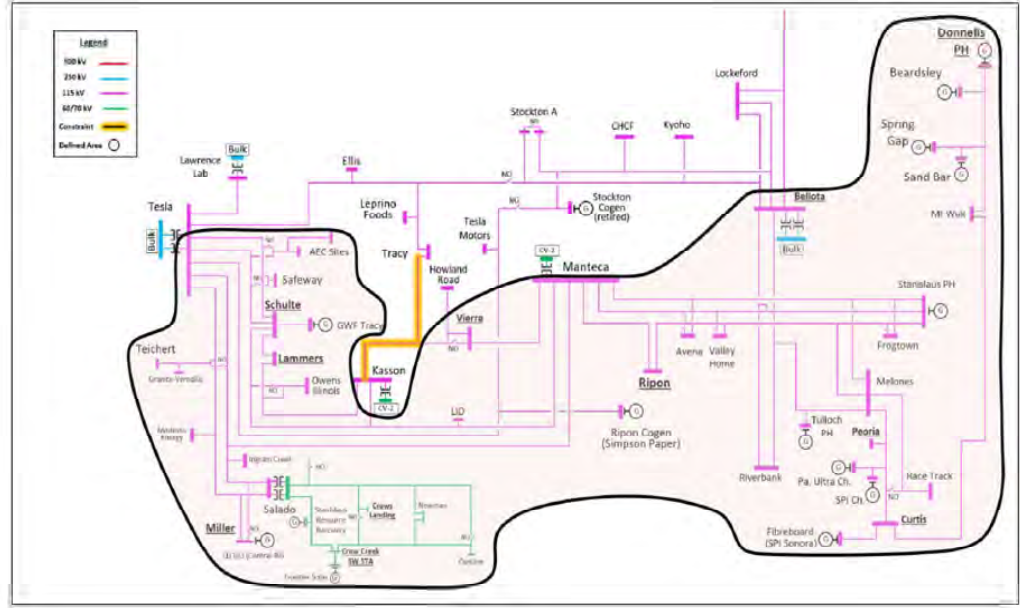
Lakeville-Igancio 230 kV line On-Peak Constraint



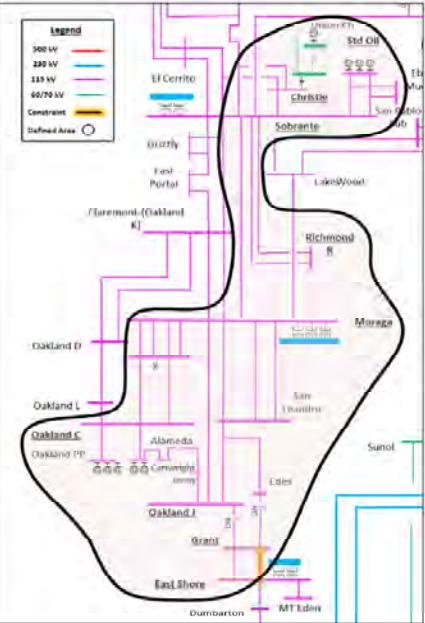
Dumbarton-Newark 115 kV line On-Peak Constraint



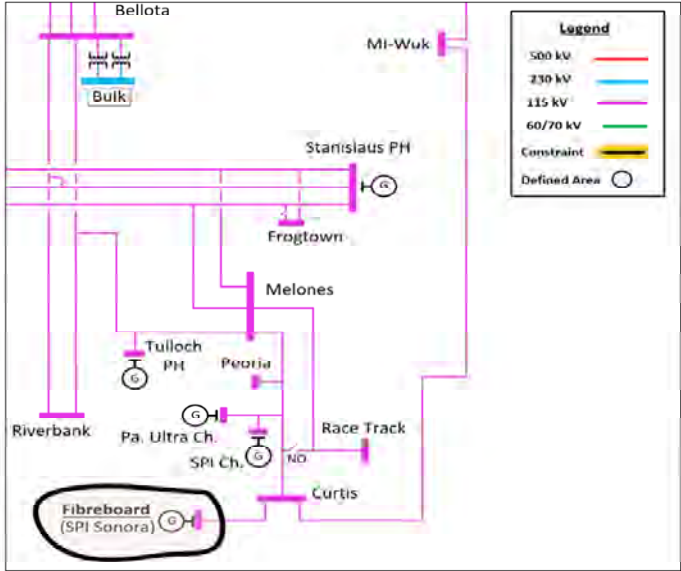
Kasson Jct-Heinz 115 kV line On-Peak Constraint



Grant - Eastshore #2 115 kV line On-Peak Constraint

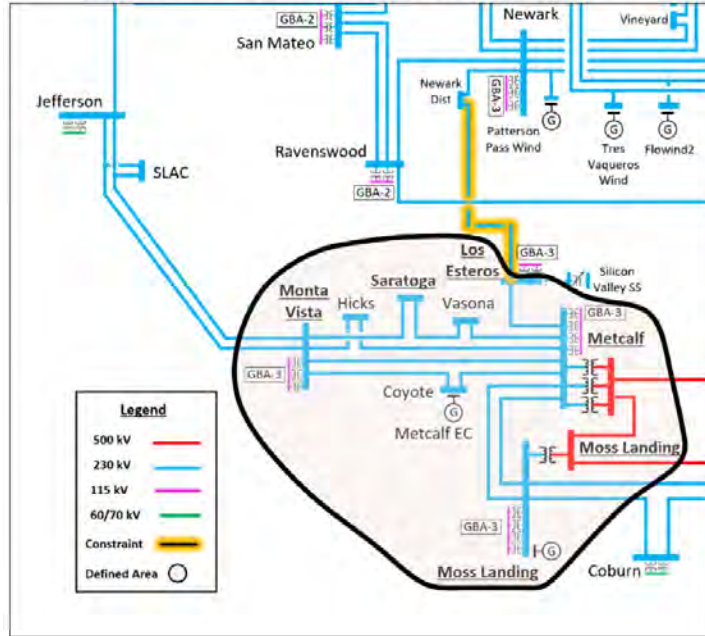


Contra Costa #1 115 kV line On-Peak Constraint

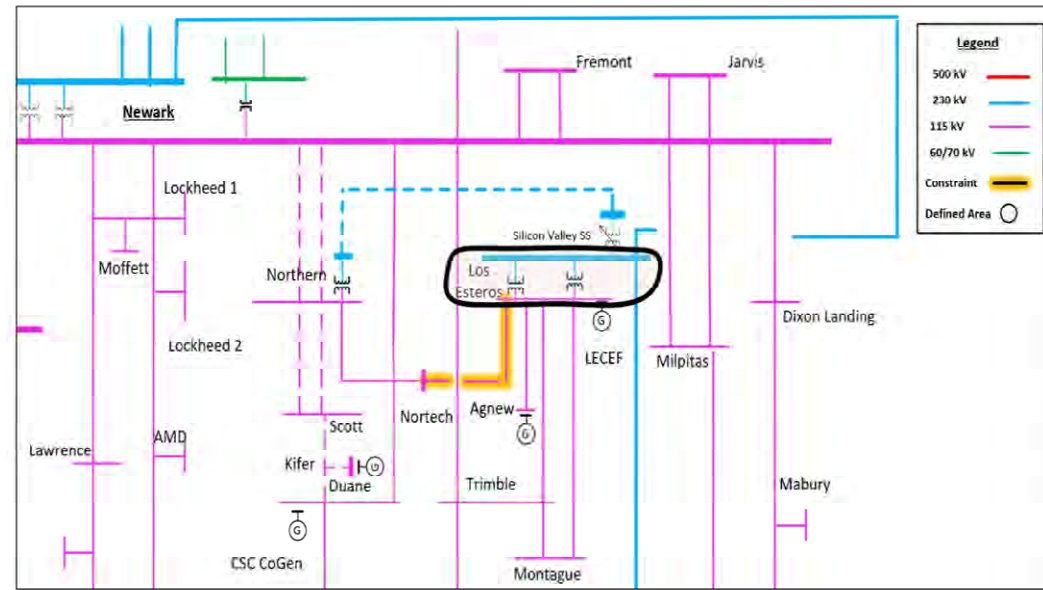


PG&E Greater Bay Interconnection Area Constraints (continued)

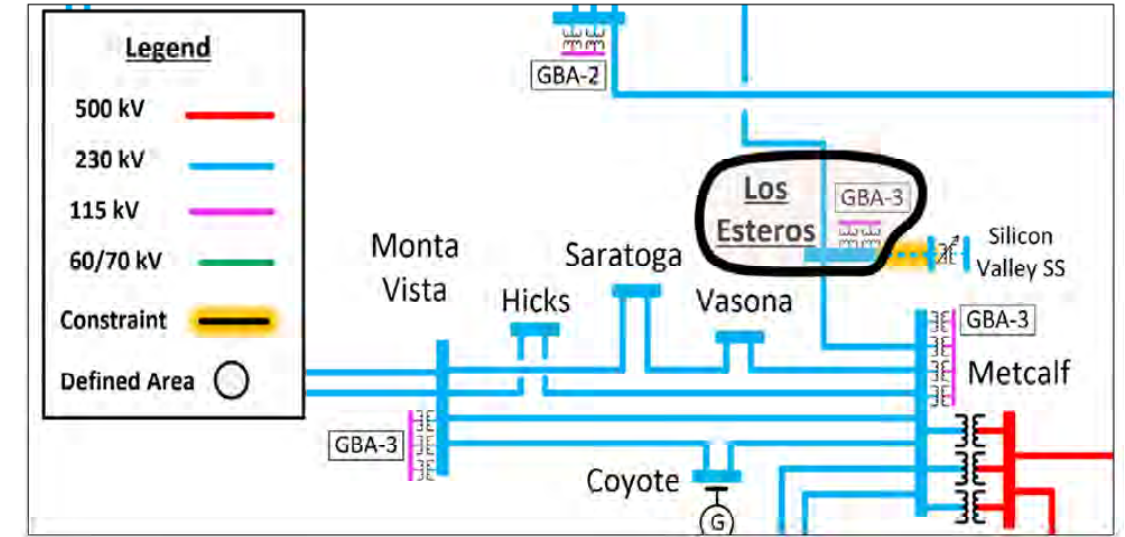
Newark-Los Esteros 230 kV line On-Peak Constraint



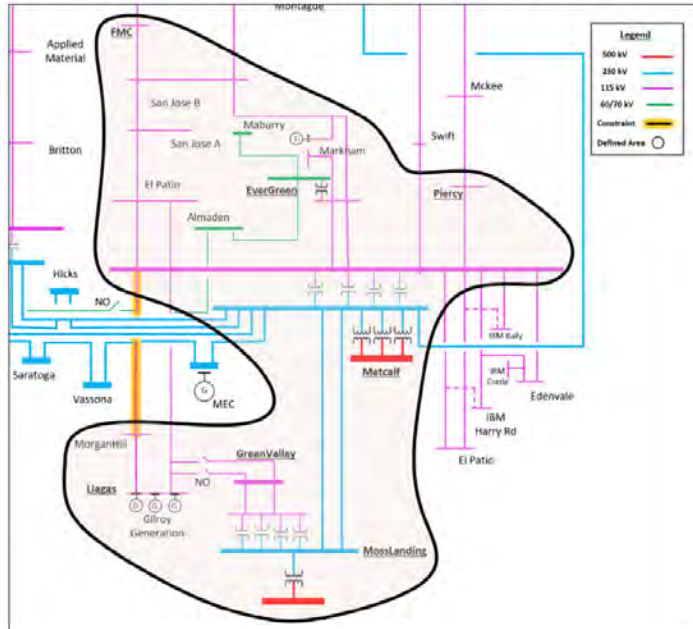
Los Esteros-Nortech 115 kV line On-Peak Constraint



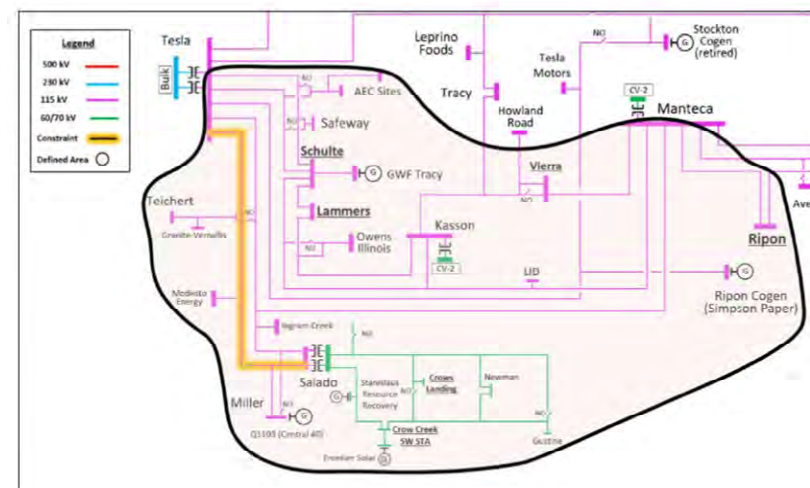
Los Esteros-Silicon Valley 230 kV On-Peak Constraint



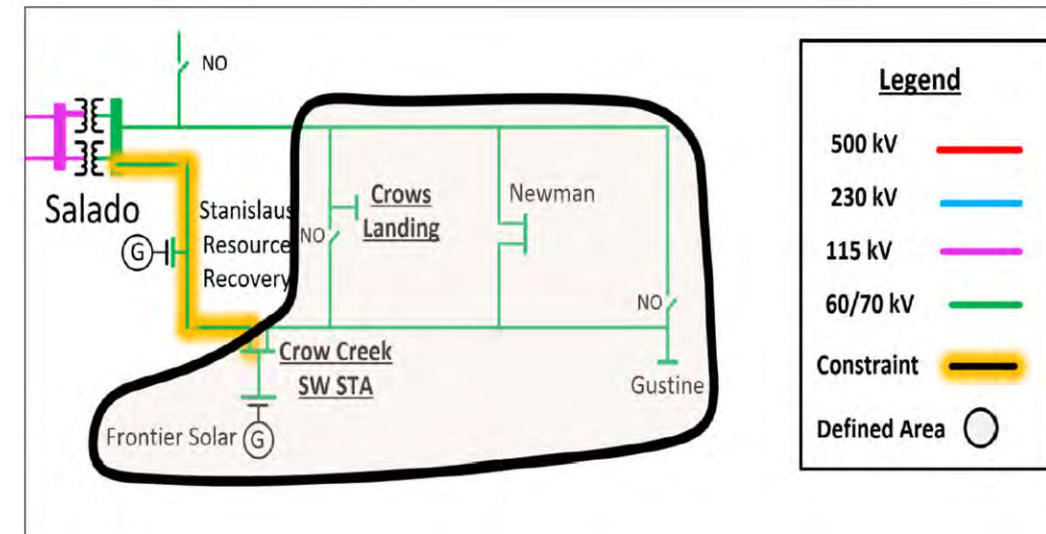
Morganhill-Metcalf 115kV Line On-Peak Constraint



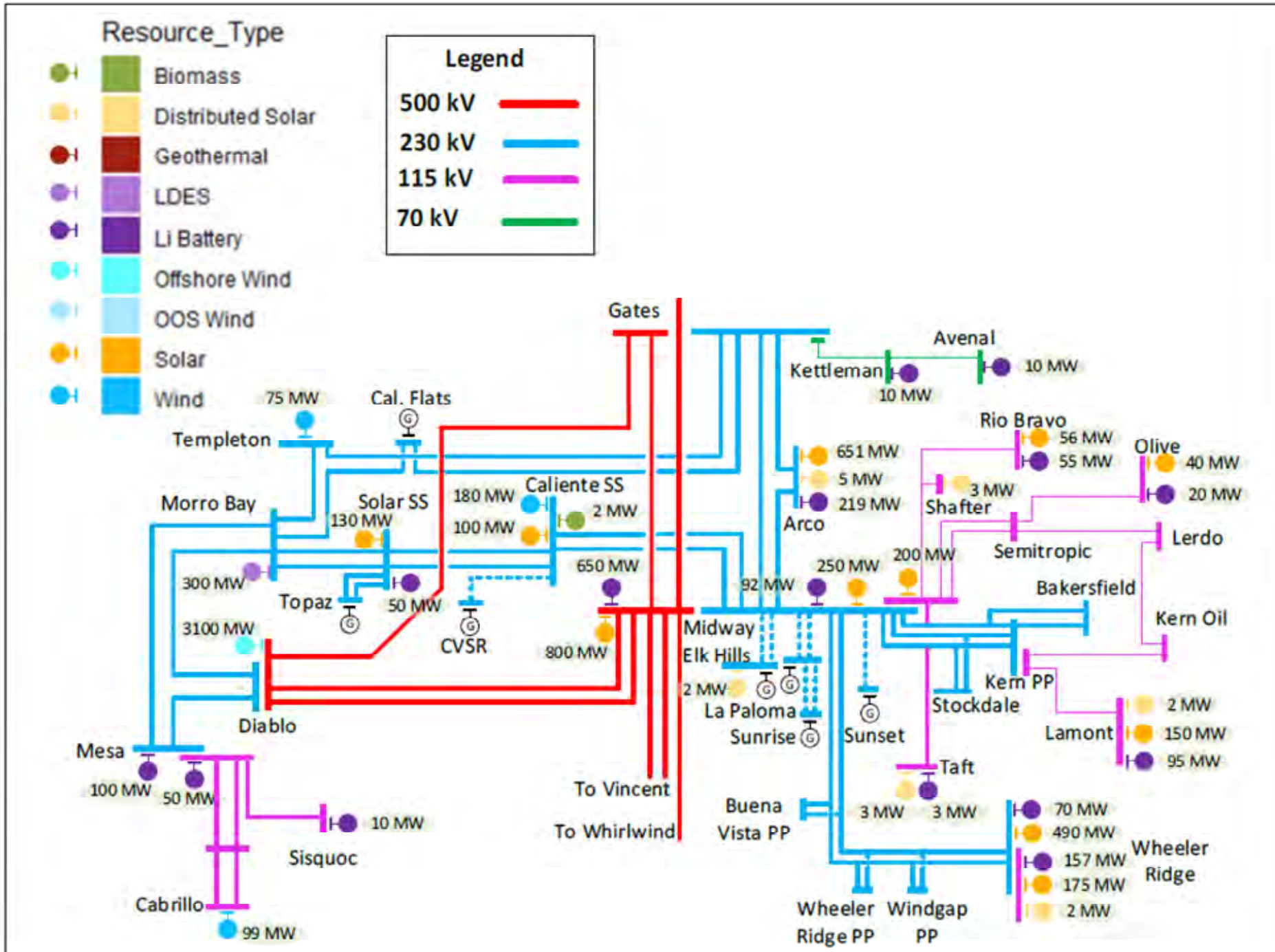
Tesla - Salado 115 kV line On-Peak Constraint



Salado - Crow Creek 60 kV line On-Peak Constraint



Base Portfolio: PG&E Kern Area



| Resource Type | Base Portfolio | | |
|-------------------------------------|----------------|--------------|--------------|
| | FCDS (MW) | EO (MW) | Total (MW) |
| Solar | 1,361 | 2,374 | 3,735 |
| Wind - In State | 255 | 0 | 255 |
| Wind - Out-of-State (Existing TX) | 0 | 0 | 0 |
| Wind - Out-of-State (New TX) | 0 | 0 | 0 |
| Wind - Offshore | 3,100 | 0 | 3,100 |
| Li Battery | 2,021 | 0 | 2,021 |
| Geothermal | 0 | 0 | 0 |
| Long Duration Energy Storage (LDES) | 300 | 0 | 300 |
| Biomass/Biogass | 2 | 0 | 2 |
| Distributed Solar | 18 | 0 | 18 |
| Total | 7,056 | 2,374 | 9,430 |

FCDS
7,056
MW

Total
9,430
MW

Will provide list of substations within the Interconnection Area

CPUC busbar mapping workbook provides resources by type mapped to substations within the Interconnection Areas

2023-0223 TPP Base Portfolio (2035) link:

https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltp/2022-irp-cycle-events-and-materials/busbardashboard2033_30mmt_hebase_vd_02-22-23.xlsx

PG&E Kern Interconnection Area Constraints

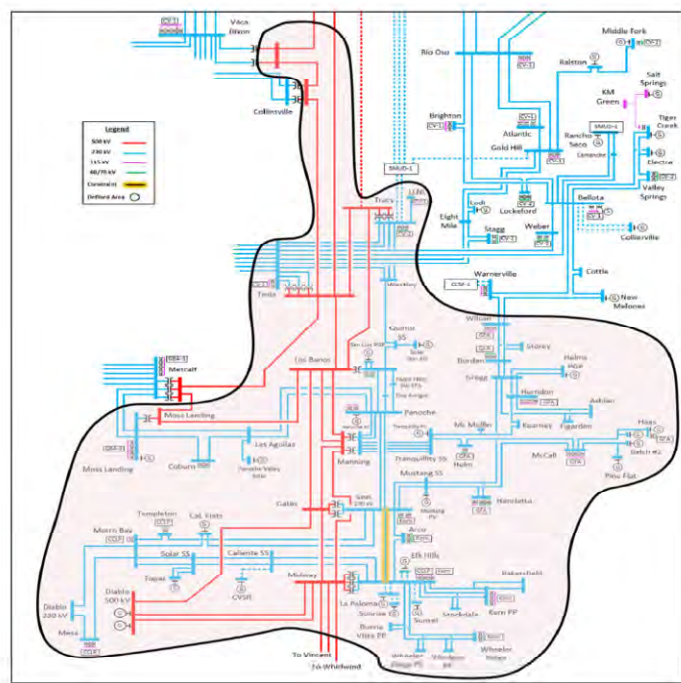
| Transmission Constraint | Affected Resource Locations | Condition Under Which Constraint is Binding (On-peak and/or Off-peak) | Estimated FCDS Capability Based on On-peak Study Resource Output (MW)** | | ADNU & Cost Estimate (\$million) | | Estimated EODS Capability Based on Off-peak Study Resource Output (MW)** | | AOPNU & Cost Estimate (\$million) | | Wind/Solar Area Designation |
|---|-----------------------------|---|---|-------------------------|--|---------------|--|--------------------------|-----------------------------------|---------------|-----------------------------|
| | | | Transmission Plan Capability*** | Incremental due to ADNU | ADNU (Time to Construct) | Cost (2022\$) | Transmission Plan Capability*** | Incremental due to AOPNU | AOPNU (Time to Construct) | Cost (2022\$) | |
| PG&E Kern Interconnection Area Constraints | | | | | | | | | | | |
| Oceano-Calendar 115kV line | Kern, Los Padres | On-Peak, Off-Peak | 937 | 1,418 | Morro Bay Looping (98 months) | \$1,008 | 174 | 230 | Same as ADNU | \$1,008 | Solar |
| Midway-Q2005 230kV Line | Kern | On-Peak, Off-Peak | 1,099 | 16,891 | Re-conductor and reconfigure Gates-Arco-Midway 230 kV Lines (144 months) | \$940 | 278 | 962 | Same as ADNU | \$940 | Solar |
| Smyrna-Q1984 115kV line | Kern | On-Peak, Off-Peak | 144 | 687 | Alpaugh-Semitropic Reconductor(96 months) | \$220 | 132 | 632 | Same as ADNU | \$220 | Solar |
| Kern 230/115kV TB #4 | Kern | On-Peak | 1,869 | 179 | Add New Kern 230/115kV Transformer Bank (54 months) | \$30 | 1869* | N/A | N/A | N/A | Solar |
| Maricopa-Copus 70 kV line | Kern | On-Peak, Off-Peak | 51 | 206 | Reconductor Kern-Old River 115 and 70 kV | \$620 | 53 | 68 | Same as ADNU | \$620 | Solar |
| Midway-Taft 115 kV line | Kern | On-Peak | 263 | 9 | | | 263* | N/A | | | Solar |
| Kern-Tevis-Stockdale-Lamont 115kV line | Kern | On-Peak, Off-Peak | 109 | 367 | Reconductor Kern-Stockdale-Lamont 115 kV | \$120 | 177 | 107 | Same as ADNU | \$120 | Solar |
| Midway 230/115kV TB #3 | Kern | On-Peak, Off-Peak | 1,370 | 784 | Add new Midway 230/115 kV Transformer Bank | \$150 | 1,051 | 1,477 | Same as ADNU | \$150 | Solar |
| Semitropic-Midway 115kV Line | Kern | On-Peak, Off-Peak | 255 | 637 | Reconductor Semitropic-Midway-Kern 115 kV and 70 kV Lines | \$760 | 241 | 475 | Same as ADNU | \$760 | Solar |
| Midway-Q2011 230 kV Line | Kern | On-Peak | 438 | 234 | Reconductor Midway-Q2011 230 kV Line | \$100 | 438* | N/A | Same as ADNU | \$100 | Solar |

Will provide list of POIs from studies that are behind each constraint within the Interconnection Area

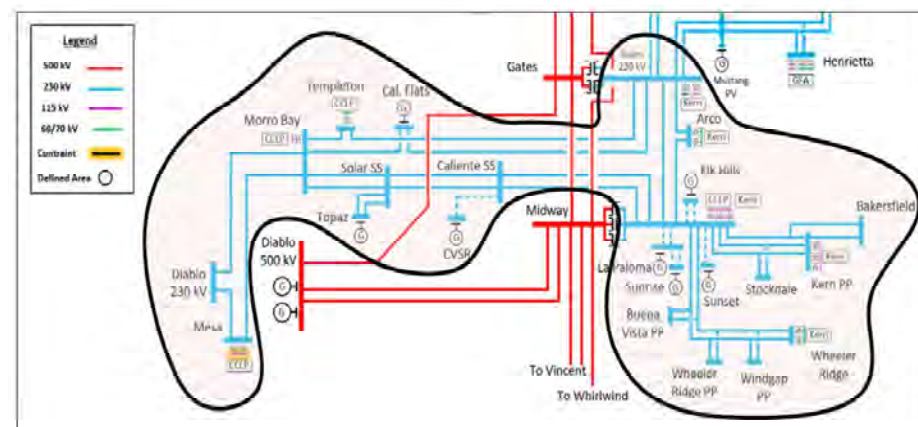
Annual TPD Allocation Report identifies TPD available behind constraints and allocated

Link to 2023 TPD Allocation Report (on Market Participant Portal): <https://mpp.aiso.com/tp/Documents/2023%20TPD%20Allocation%20Report.pdf>

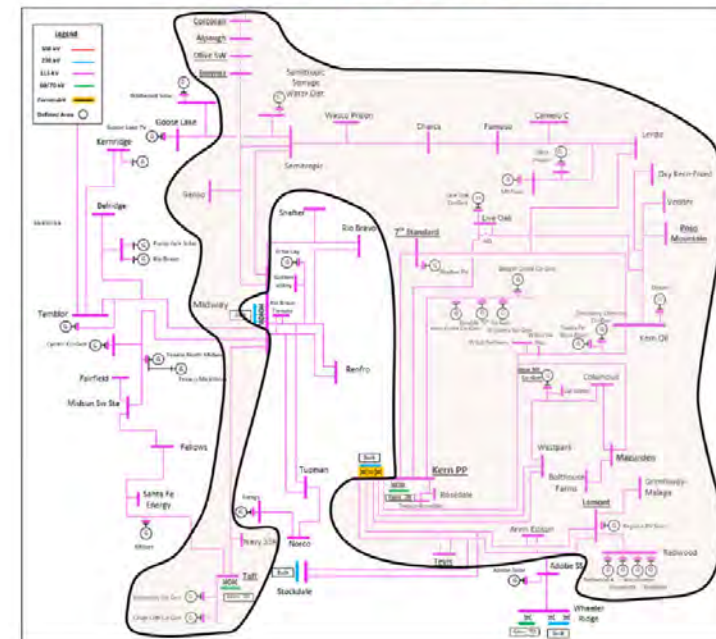
Midway-Q2005 230kV line On-Peak/Off-Peak Constraint



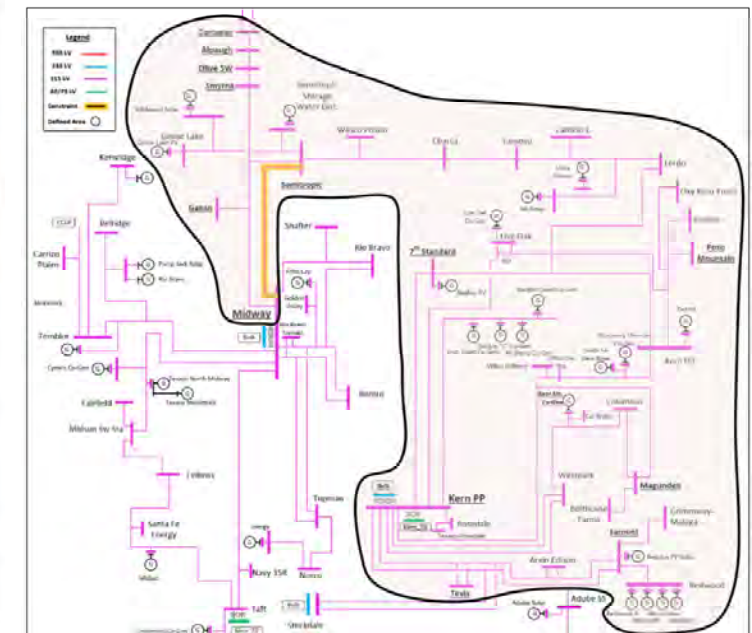
Oceano-Calendar 115kV line On-Peak/Off-Peak Constraint



Kern 230/115kV TB #4 On-Peak Constraint

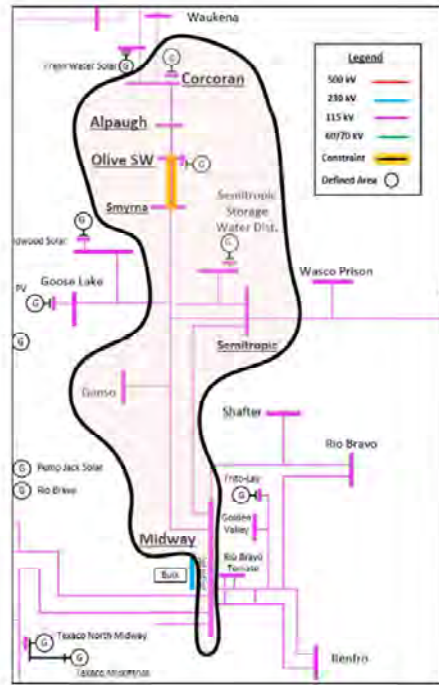


Semitropic-Midway 115kV Line On-Peak/Off-Peak Constraint

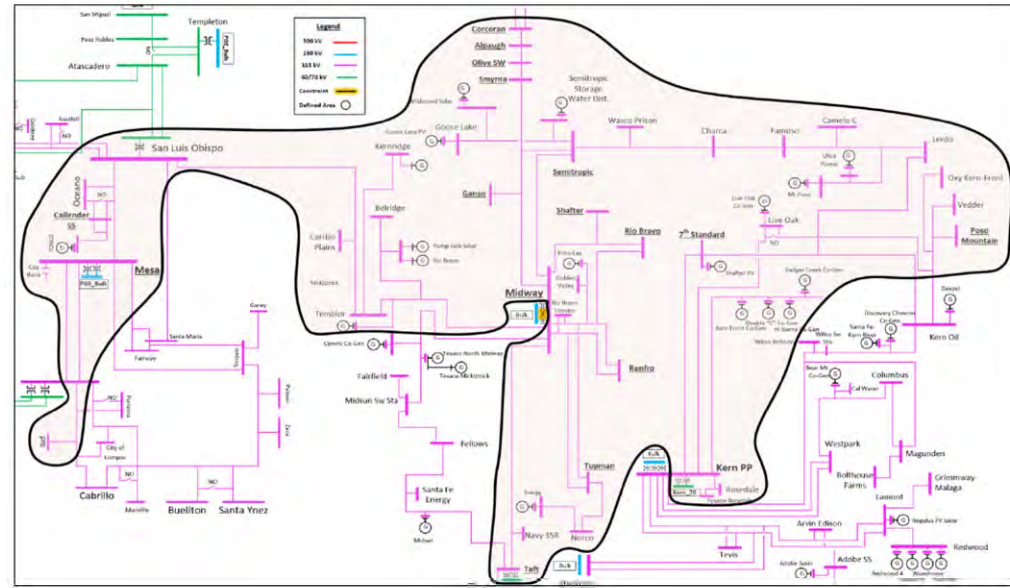


PG&E Kern Interconnection Area Constraints (continued)

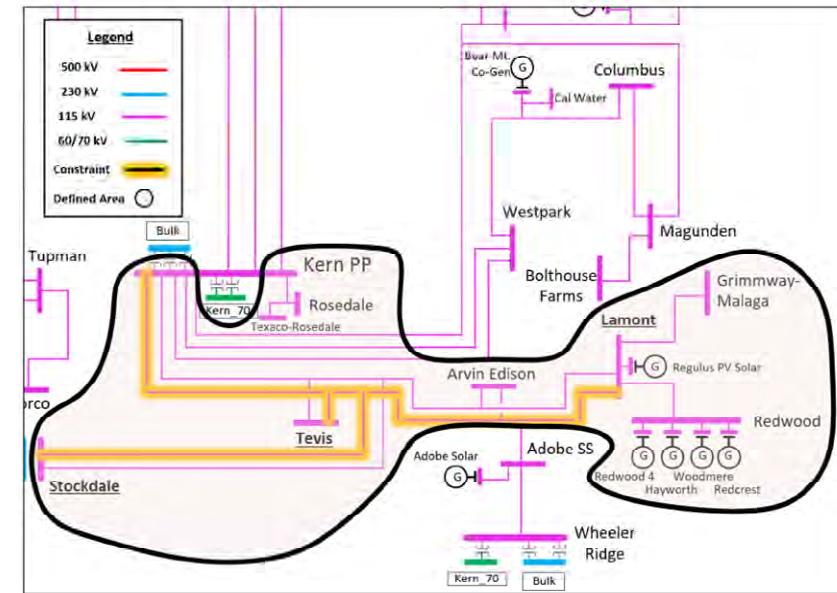
Smyrna - Q1984 115kV line On-Peak/off-Peak



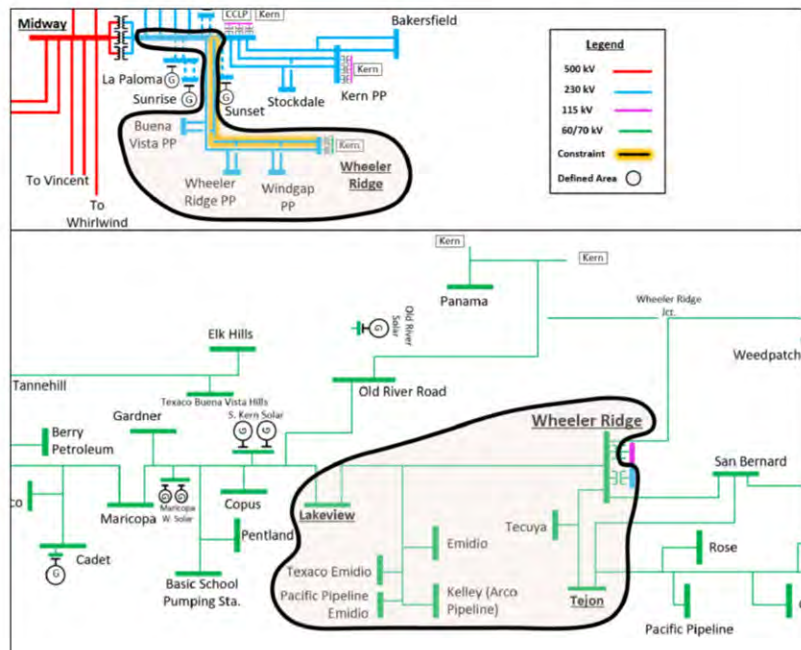
Midway 230/115kV TB #3 On-Peak/Off-Peak Constraint



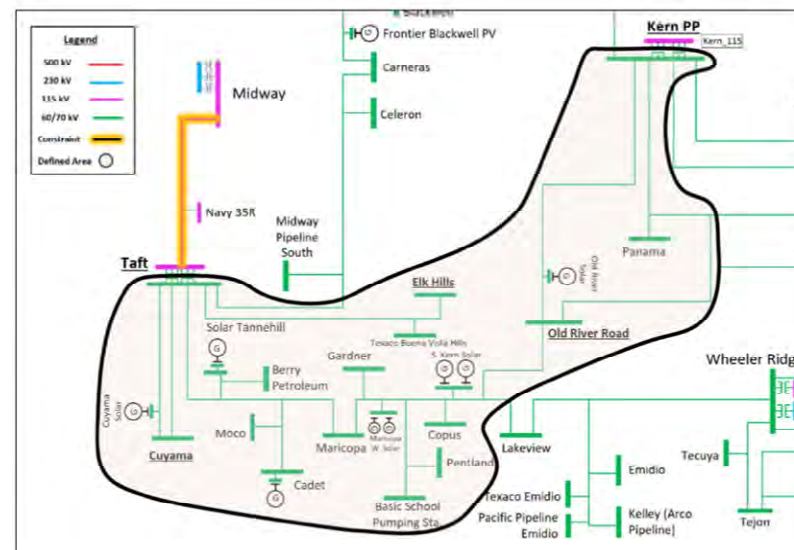
Kern-Tevis-Stockdale-Lamont 115kV line On-Peak/Off-Peak Constraint



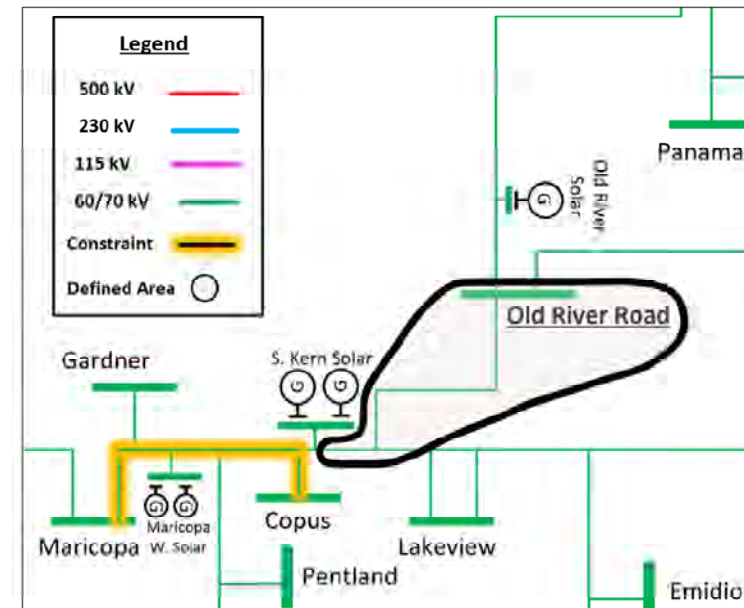
Midway-Q2011 230 kV Line On-Peak Constraint



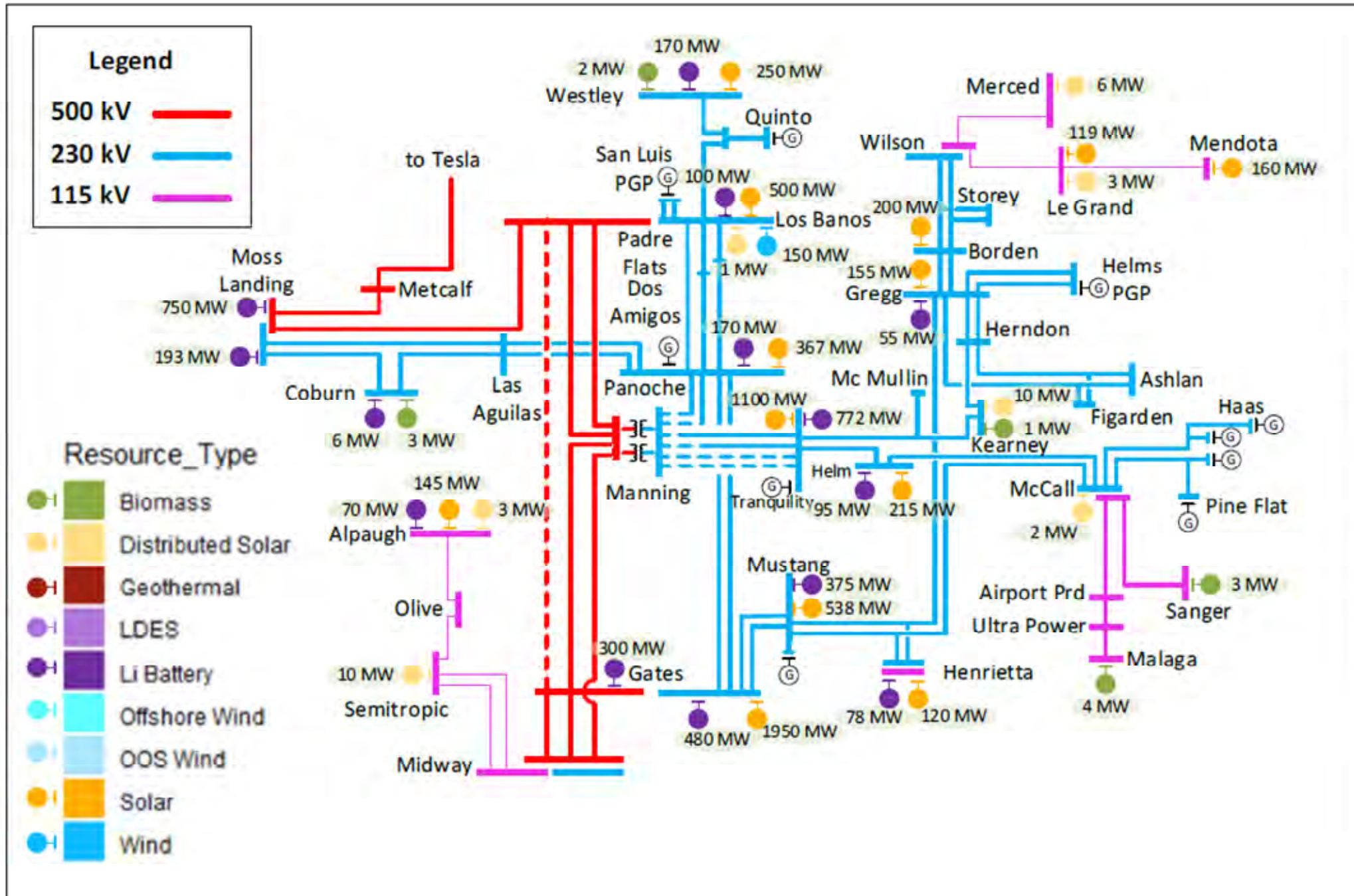
Midway-Taft 115 kV line On-Peak/Off-Peak Constraint



Maricopa-Copus 70 kV line On-Peak/Off-Peak Constraint



Base Portfolio: PG&E Fresno Area



| Resource Type | Base Portfolio | | |
|-------------------------------------|----------------|--------------|--------------|
| | FCDS (MW) | EO (MW) | Total (MW) |
| Solar | 3,184 | 0 | 3,184 |
| Wind - In State | 249 | 0 | 249 |
| Wind - Out-of-State (Existing TX) | 0 | 0 | 0 |
| Wind - Out-of-State (New TX) | 0 | 0 | 0 |
| Wind - Offshore | 0 | 0 | 0 |
| Li Battery | 3,184 | 0 | 3,184 |
| Geothermal | 0 | 0 | 0 |
| Long Duration Energy Storage (LDES) | 0 | 0 | 0 |
| Biomass/Biogass | 12 | 0 | 12 |
| Distributed Solar | 35 | 0 | 35 |
| Total | 6,241 | 2,364 | 8,605 |

FCDS
6,241
MW

Total
8,605
MW

Will provide list of substations within the Interconnection Area

CPUC busbar mapping workbook provides resources by type mapped to substations within the Interconnection Areas

2023-0223 TPP Base Portfolio (2035) link:

https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2022-irp-cycle-events-and-materials/busbardashboard2033_30mnt_hebase_vd_02-22-23.xlsx

PG&E Fresno Interconnection Area Constraints

| Transmission Constraint | Affected Resource Locations | Condition Under Which Constraint is Binding (On-peak and/or Off-peak) | Estimated FCDS Capability Based on On-peak Study Resource Output (MW)** | | ADNU & Cost Estimate (\$million) | | Estimated EODS Capability Based on Off-peak Study Resource Output (MW)** | | AOPNU & Cost Estimate (\$million) | | Wind/Solar Area Designation | |
|--|-----------------------------|---|---|-------------------------|--|----------------------------|--|--------------------------|--|---------------|-----------------------------|-------|
| | | | Transmission Plan Capability*** | Incremental due to ADNU | ADNU (Time to Construct) | Cost (2022\$) | Transmission Plan Capability*** | Incremental due to AOPNU | AOPNU (Time to Construct) | Cost (2022\$) | | |
| PG&E Fresno Interconnection Area Constraints | | | | | | | | | | | | |
| Gates 500/230kV TB #12 | Fresno, Kern | On-Peak, Off-Peak | 3,213 | 14,825 | Gates Bank 500/230kV Bank #13 (48 months) | \$35 | 3,148 | 6,843 | Same as ADNU | \$35 | Solar | |
| Gates 500/230kV TB #11 | Fresno, Kern | On-Peak, Off-Peak | 3,684 | 10,038 | | | 6,343 | 3,856 | | | | |
| Gates 230/70kV TB #5 | Fresno | On-Peak, Off-Peak | 272 | 47 | New Gates #6 230/70kV (96 months) | \$110 | 356 | 390 | Same as ADNU | \$110 | Solar | |
| Tranquility-Helm 230kV Line | Fresno | On-Peak, Off-Peak | 2,229 | 2,274 | Gregg 500kV (180 months) | \$1,500 | 1,170 | 607 | Same as ADNU | \$1,500 | Solar | |
| Dairyland-Chowchilla 115kV Line | Fresno | On-Peak, Off-Peak | 2,865 | 1,211 | Mendota 230 kV Conversion (120 months) | \$250 | 128 | 122 | Same as ADNU | \$250 | Solar | |
| Chowchilla-Le grand 115kV Line | Fresno | On-Peak, Off-Peak | 699 | 1,211 | Le Grand 230 kV Station Conversion (180 months) | \$550 | 908 | 546 | Same as ADNU | \$550 | Solar | |
| Panoche-Los Banos 230kV line #2 | Fresno | On-Peak, Off-Peak | 206 | 6,367 | New Manning 500/230 kV Substation (2028) | N/A (TPP approved project) | 3,478 | 3,139 | | | Solar | |
| Dos Amigos-Los Banos 230kV line | Fresno | On-Peak | 516 | 6,367 | | | 516* | N/A | | | | Solar |
| Los Banos 500/230kV TB | Fresno | On-Peak, Off-Peak | 3930 | 4,931 | | | 206 | 402 | | | | Solar |
| Schindler 115/70kV TB #1 | Fresno | On-Peak, Off-Peak | 0 | 3,160 | Manning 115 kV Addition (120 months) | \$370 | 92 | 87 | Same as ADNU | \$370 | Solar | |
| Panoche- Mendota 115 kV line | Fresno | On-Peak, Off-Peak | 1,798 | 2,019 | | | 7 | 302 | | | | Solar |
| Coalinga #1-Coalinga #2 70 kV line | Fresno | On-Peak, Off-Peak | 1,660 | 878 | | | 175 | 5 | | | | Solar |
| Panoche-Oro Loma 115kV Line | Fresno | On-Peak | 3,661 | 588 | Reconductor Oro Loma-Panoche 115 kV Lines (months) | \$0 | 3661* | N/A | N/A | N/A | Solar | |
| Borden-Storey #1 230kV line | Fresno | On-Peak, Off-Peak | 300 | 3,895 | Reconductor Wilson-Storey-Borden 230 kV Lines (86 months) | \$75 | 1,811 | 2,047 | Same as ADNU | \$75 | Solar | |
| Merced 115/70kV TB#2 | Fresno | On-Peak, Off-Peak | 247 | 358 | Replace Bank, and Reconductor Lines at Merced (144 months) | \$125 | 100 | 291 | Same as ADNU | \$125 | Solar | |
| Helm 230/70kV TB #1 | Fresno | On-Peak, Off-Peak | 4 | 60 | Helm 230/70 kV Transformer Bank replacement | \$135 | 0 | 226 | Same as ADNU | \$135 | Solar | |
| Oro Loma-El Nido 115kV Line | Fresno | On-Peak, Off-Peak | 1,410 | 3,192 | Oro-loma- El nido-Wilson Reconductor (120 months) | \$330 | 243 | 65 | Same as ADNU | \$330 | Solar | |
| Q2008-Gates 500 kV line | Kern, Fresno | On-Peak, Off-Peak | 5,203 | 4,125 | New Diablo-Midway #4 500 kV Line (98 months) | \$830 | 345 | 395 | Same as ADNU | \$830 | Solar | |
| Mustang-Henrietta 230 kV line | Fresno | On-Peak | 10,302 | 2,479 | | | 10302* | N/A | | | | Solar |
| Gates-Panoche 230 kV #1 and #2 Lines | Fresno | On-Peak | 7,440 | 8,379 | Reconductor Gates-Panoche #1 and #2 230 kV Lines (86 months) | \$214 | 7440* | N/A | N/A | N/A | Solar | |
| Moss Landing-Las Aguilas 230 kV Line | Fresno, Bay Area | Off-peak | 2276* | N/A | N/A | N/A | 0 | 1,760 | Reconductor Moss Landing-Las Aguilas 230 kV Line (98 months) | \$40 | Solar | |
| Jacksson-Waukena Corcoran 115kV line | Fresno | Off-peak | 85* | N/A | N/A | N/A | 28 | 66 | Reconductor Jacksson-Waukena Corcoran 115kV line (120 months) | \$150 | Solar | |

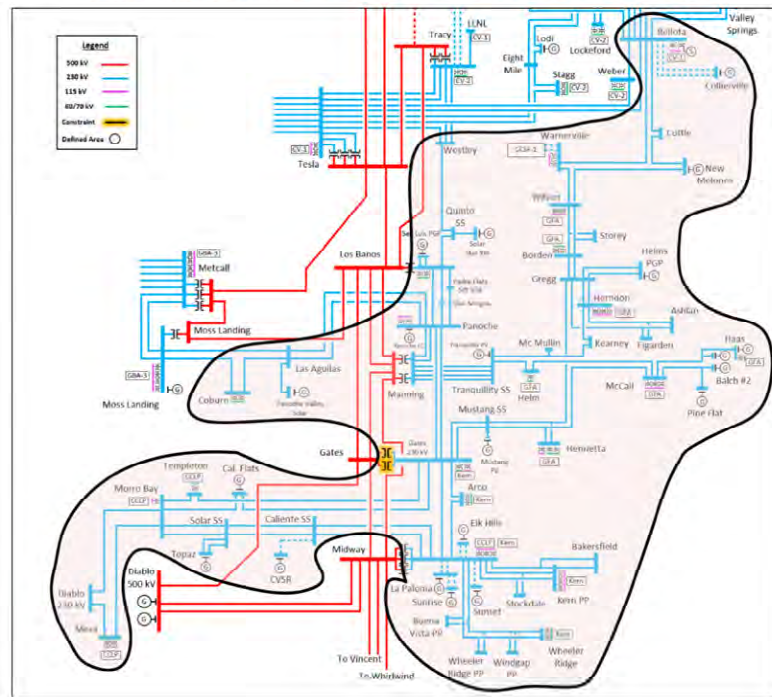
Will provide list of POIs from studies that are behind each constraint within the Interconnection Area

Annual TPD Allocation Report identifies TPD available behind constraints and allocated

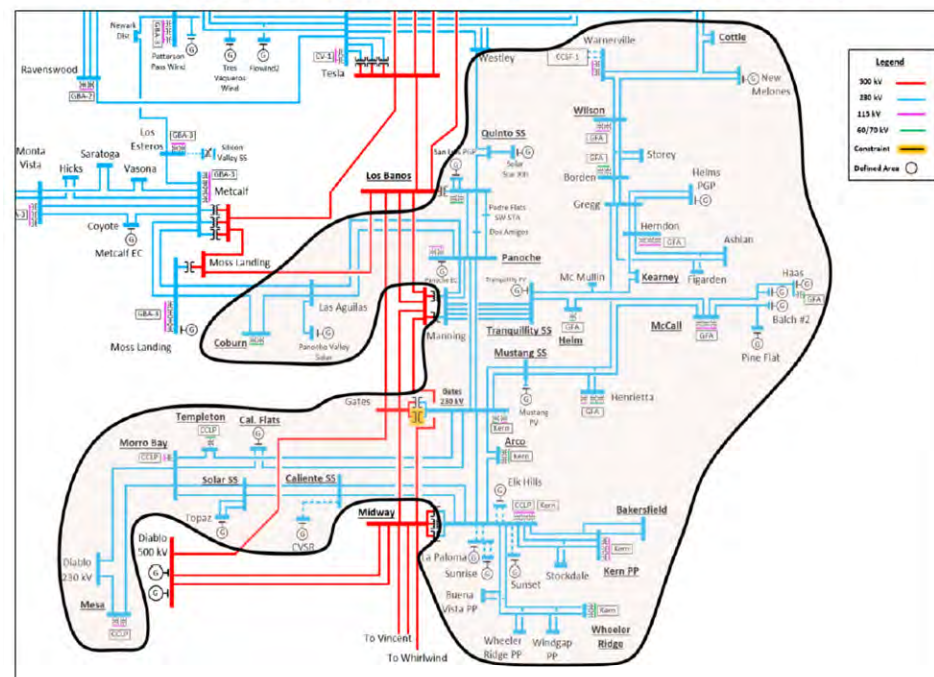
Link to 2023 TPD Allocation Report (on Market Participant Portal): <https://mpp.caiso.com/tp/Documents/2023%20TPD%20Allocation%20Report.pdf>

PG&E Fresno Interconnection Area Constraints (continued)

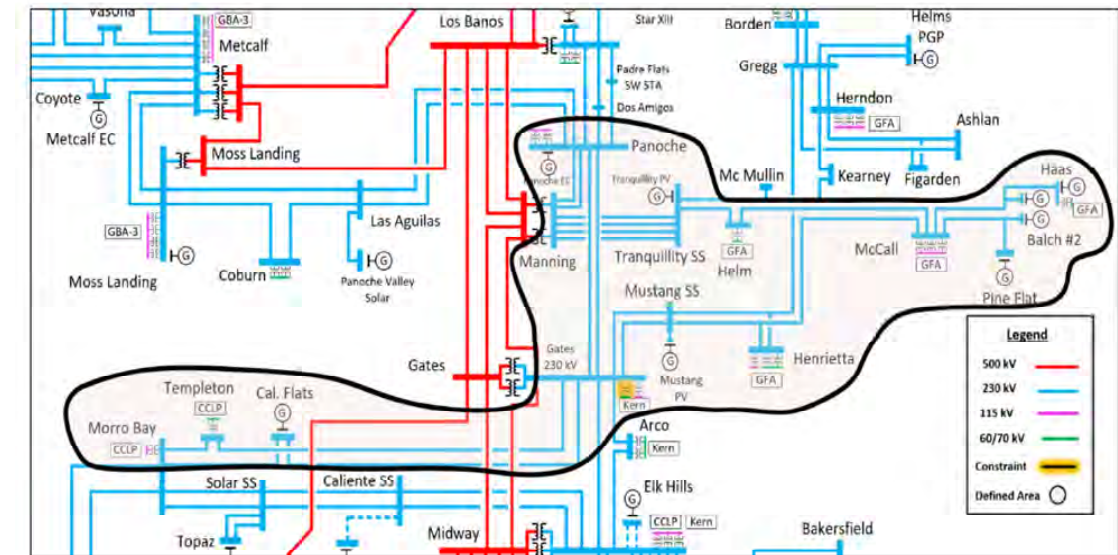
Gates 500/230kV TB #12 On-Peak/Off-Peak Constraint



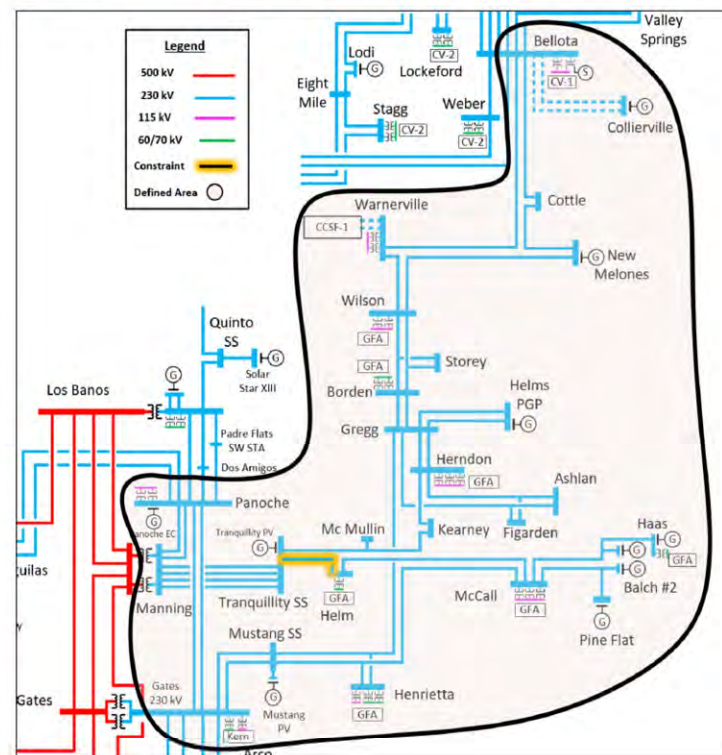
Gates 500/230kV TB #11 On-Peak/Off-Peak Constraint



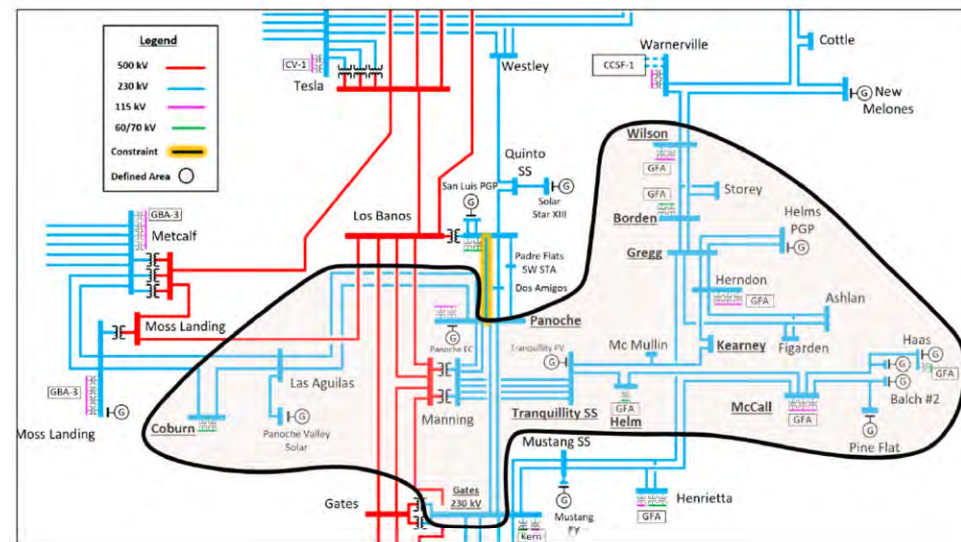
Gates 230/70 kV TB #5 On-Peak/Off-Peak Constraint



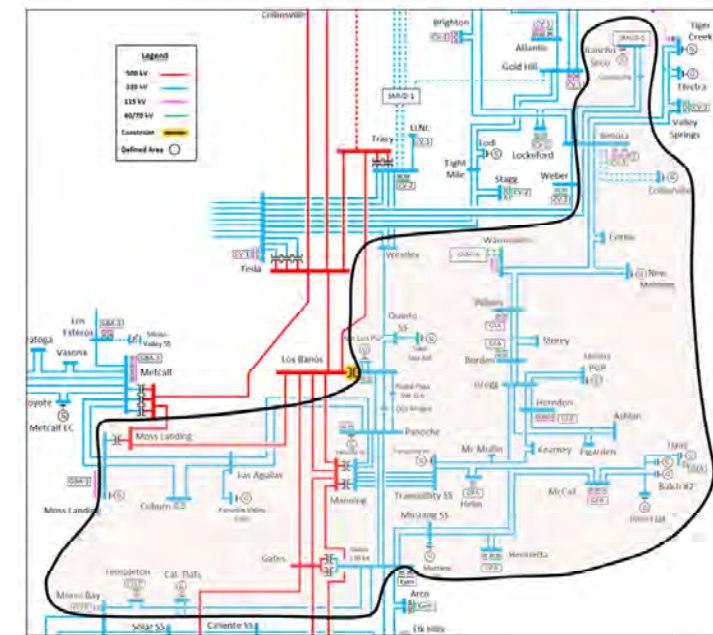
Tranquility-Helm 230kV Line On-Peak/Off-Peak Constraint



Panoche-Los Banos 230kV line #2 On-Peak/Off-Peak Constraint

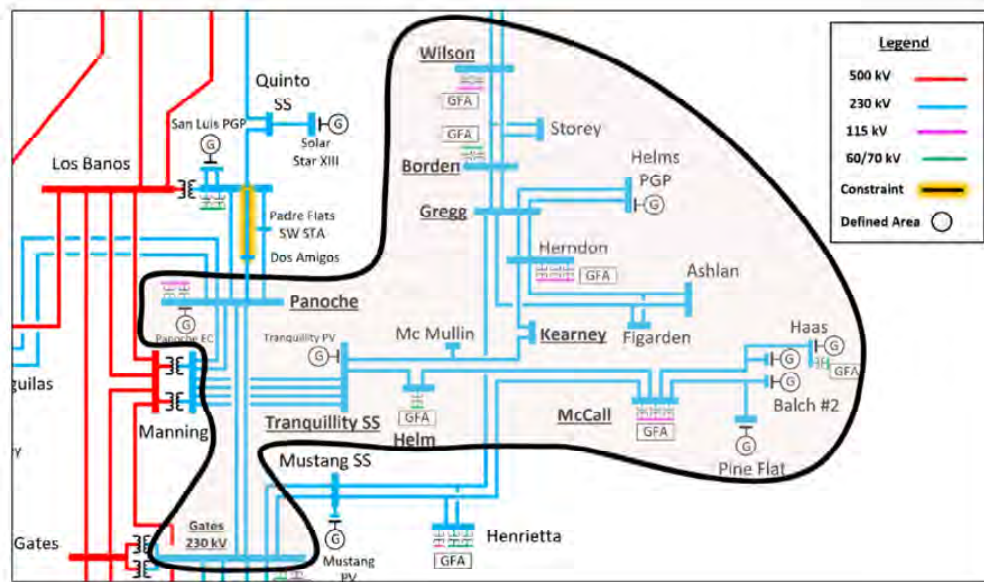


Los Banos 500/230 kV Bank On-Peak/Off-peak Constraint

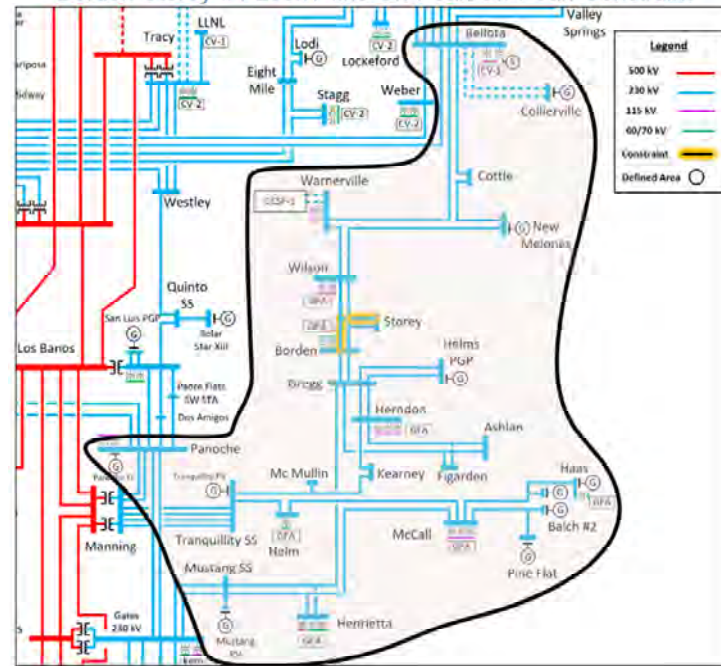


PG&E Fresno Interconnection Area Constraints (continued)

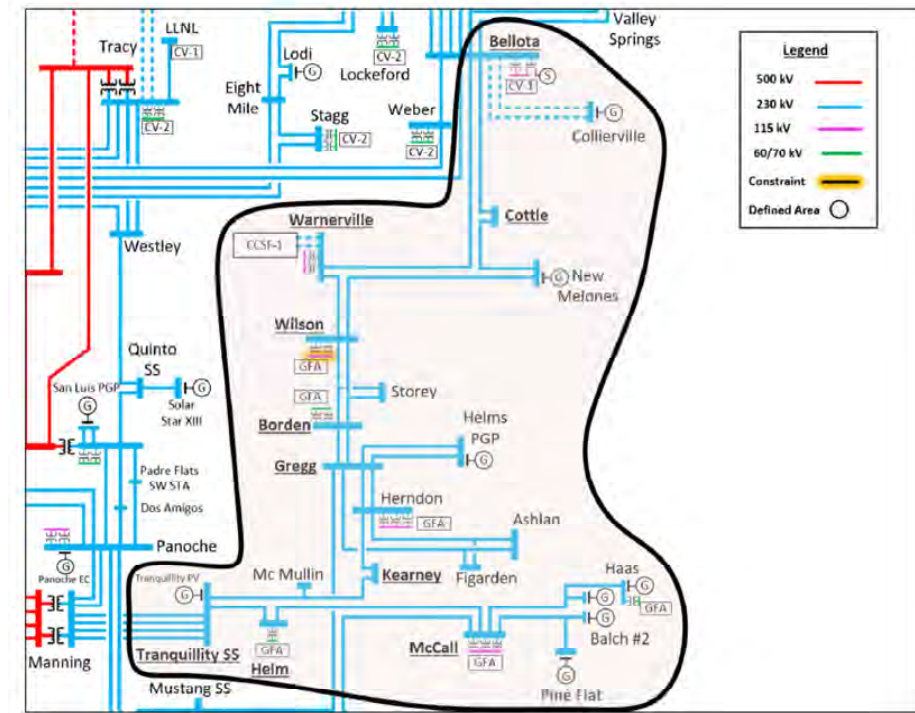
Dos Amigos-Los Banos 230kV line On-Peak Constraint



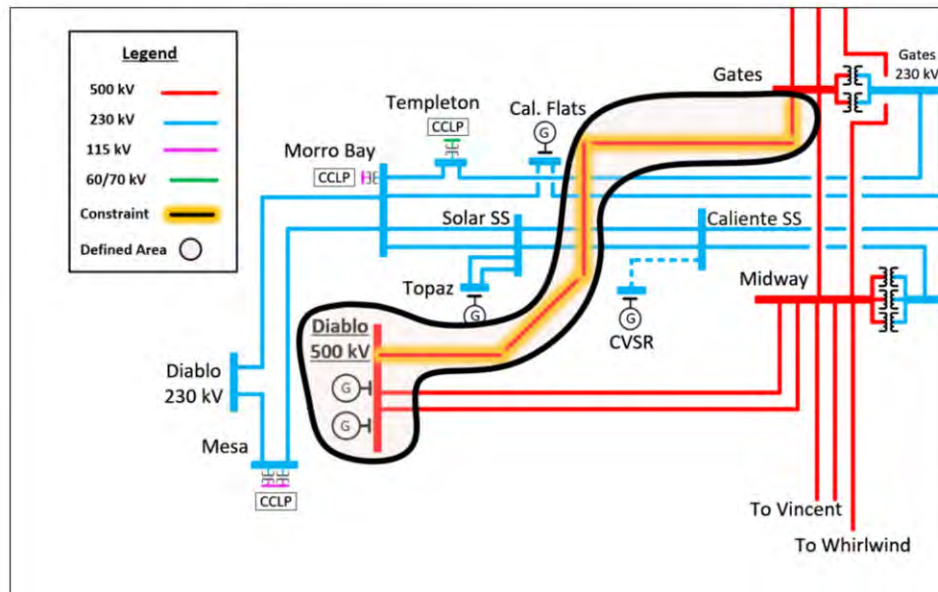
Borden-Storey #1 230kV line On-Peak/Off-Peak Constraint



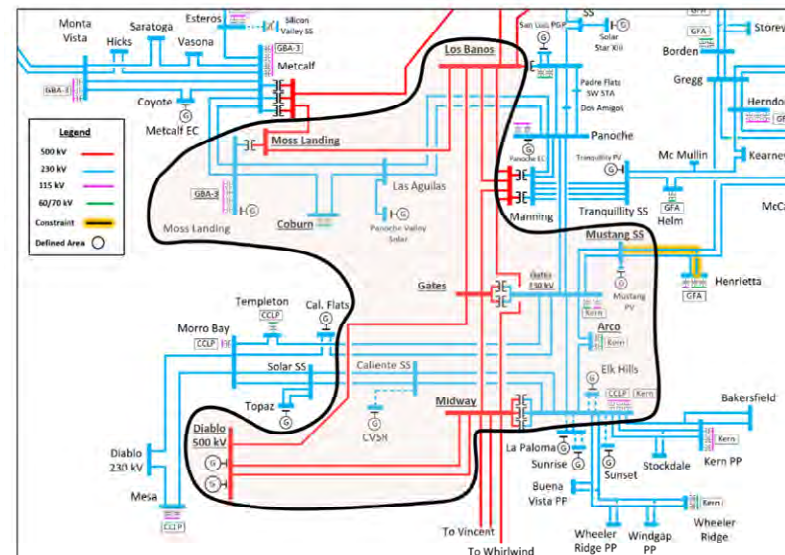
Dairyland-Chowchilla 115kV Line On-Peak/Off-Peak Constraint



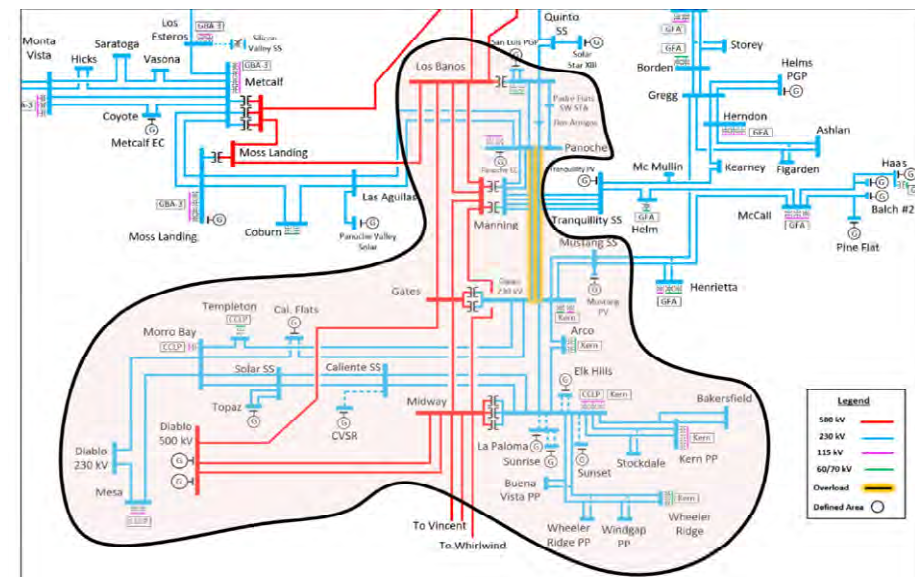
Q2008-Gates 500 kV line On-Peak/Off-peak Constraint



Mustang-Henrietta 230 kV line On-Peak Constraint

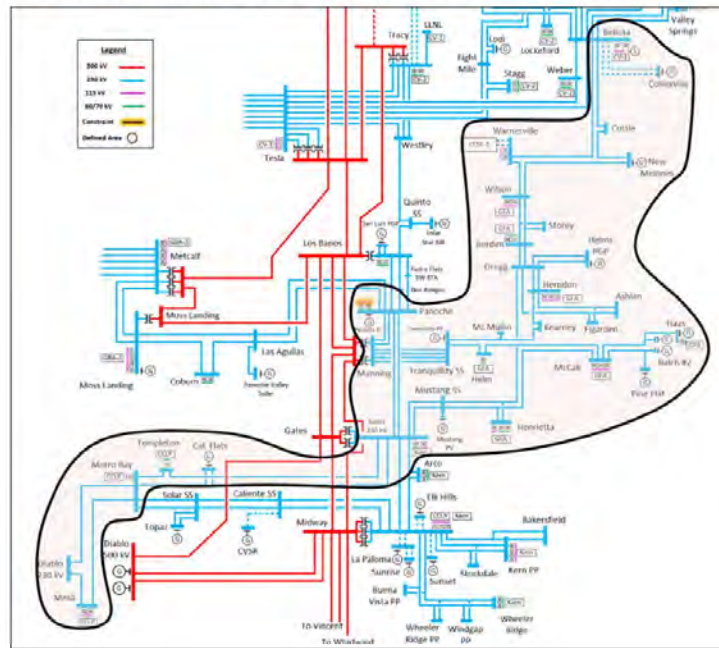


Gates-Panoche 230 kV #1 and #2 Lines On-Peak Constraint

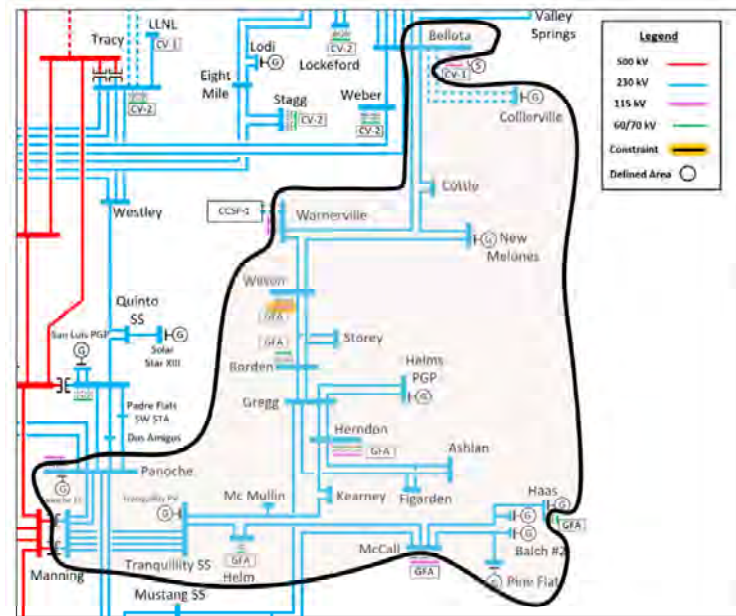


PG&E Fresno Interconnection Area Constraints (continued)

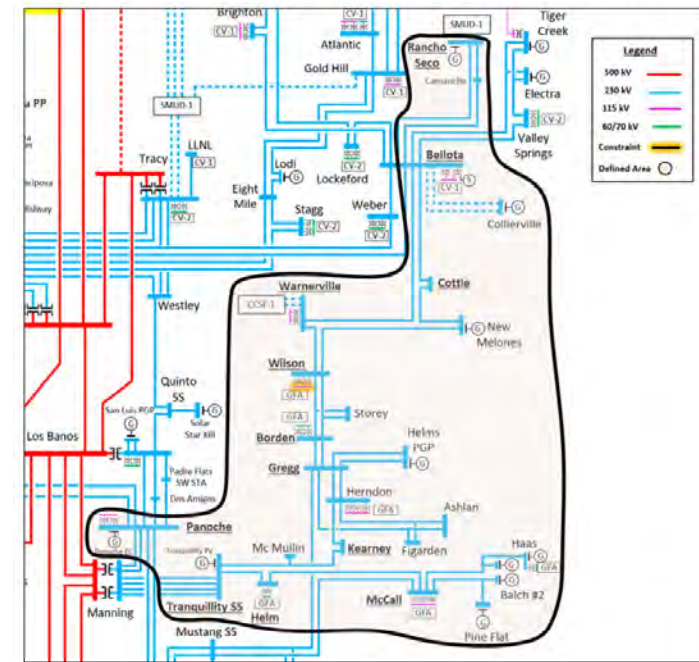
Panoche-Mendota 115 kV line On-Peak/Off-Peak Constraint



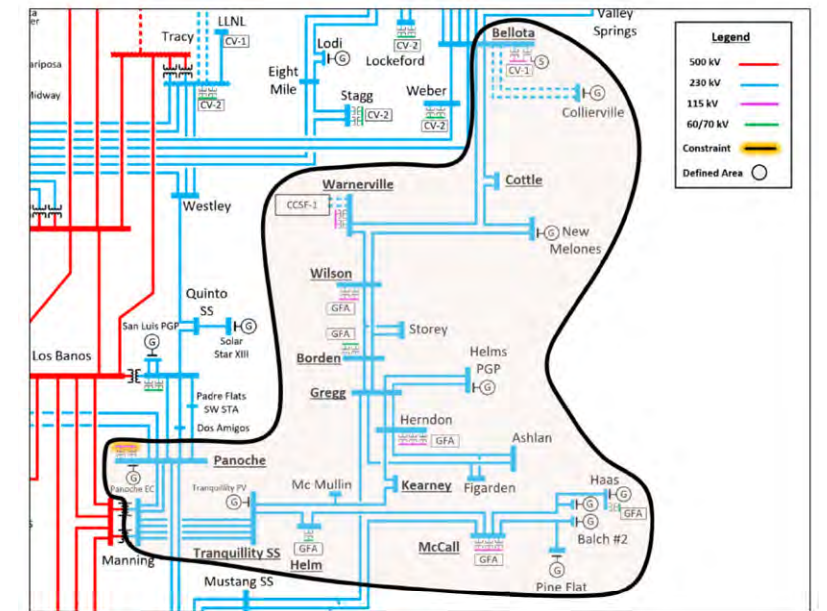
Chowchilla-Le grand 115kV Line On-Peak/Off-Peak Constraint



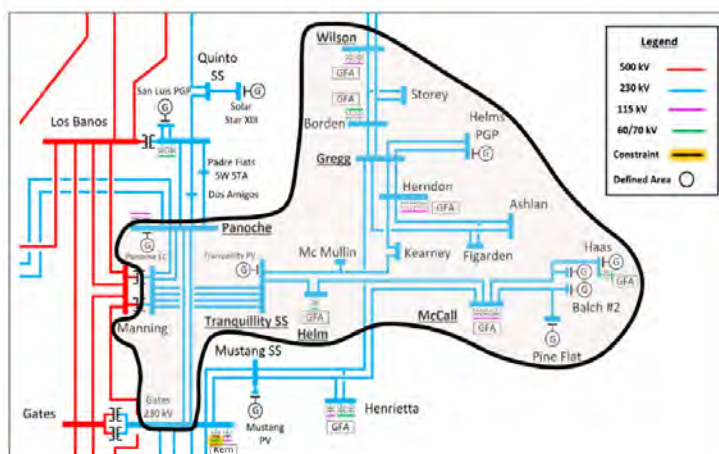
Oro Loma-El Nido 115kV Line On-Peak/Off-Peak Constraint



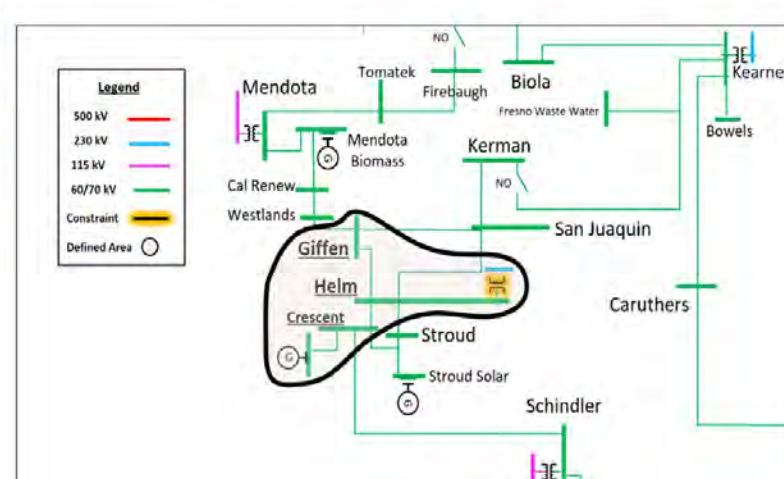
Panoche-Oro Loma 115kV Line On-Peak Constraint



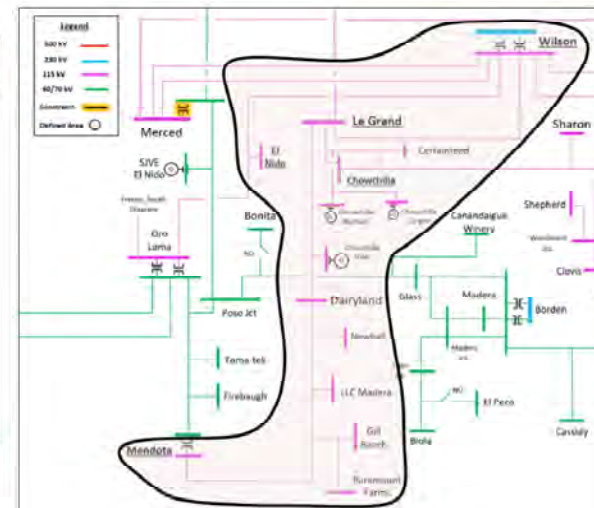
Schindler 115/70kV kV #1 Bank On-Peak/Off-peak Constraint



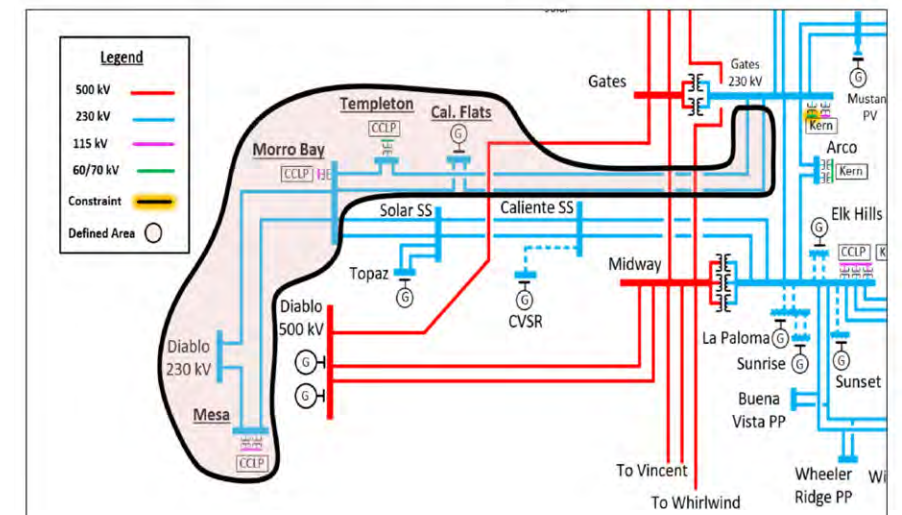
Helm 230/70kV TB#1 On-Peak/Off-Peak Constraint



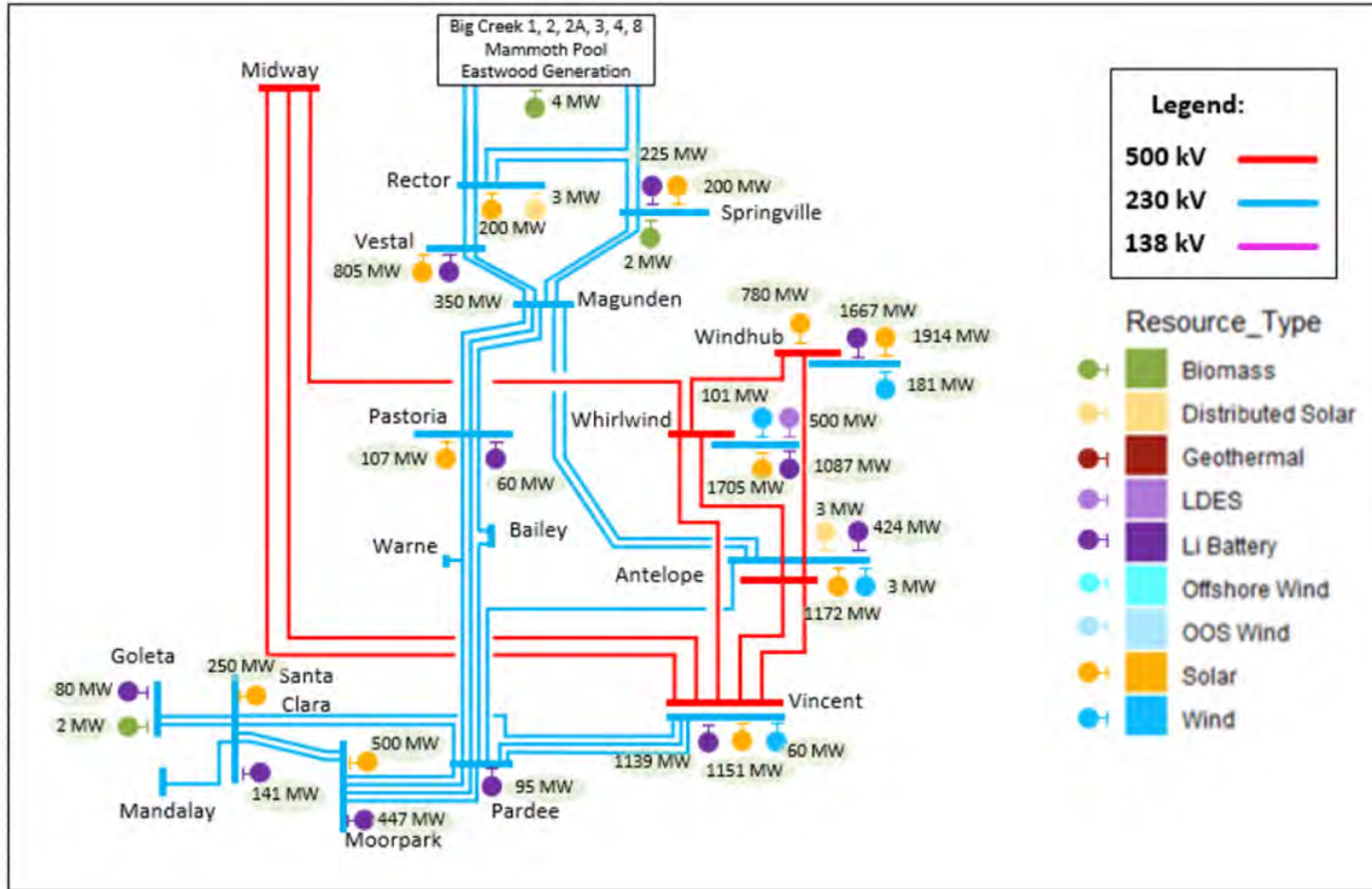
Merced 115/70kV TB#2 On-Peak/Off-Peak Constraint



Coalinga #1-Coalinga #2 70 kV line On-Peak/Off-Peak Constraint



Base Portfolio: SCE Northern Area



FCDS
10,336
MW

Total
15,358
MW

| Resource Type | Base Portfolio | | |
|-------------------------------------|----------------|--------------|---------------|
| | FCDS (MW) | EO (MW) | Total (MW) |
| Solar | 3,763 | 5,022 | 8,784 |
| Wind – In State | 345 | 0 | 345 |
| Wind – Out-of-State (Existing TX) | 0 | 0 | 0 |
| Wind – Out-of-State (New TX) | 0 | 0 | 0 |
| Wind - Offshore | 0 | 0 | 0 |
| Li Battery | 5,714 | 0 | 5,714 |
| Geothermal | 0 | 0 | 0 |
| Long Duration Energy Storage (LDES) | 500 | 0 | 500 |
| Biomass/Biogass | 8 | 0 | 8 |
| Distributed Solar | 6 | 0 | 6 |
| Total | 10,336 | 5,022 | 15,358 |

Will provide list of substations within the Interconnection Area

CPUC busbar mapping workbook provides resources by type mapped to substations within the Interconnection Areas

2023-0223 TPP Base Portfolio (2035) link:

https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2022-irp-cycle-events-and-materials/busbardashboard2033_30mmt_hebase_vd_02-22-23.xlsx

SCE Northern Interconnection Area

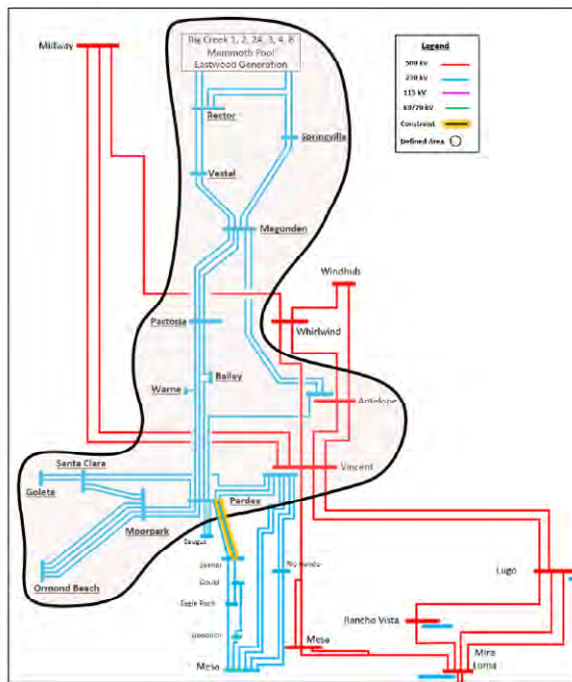
| Transmission Constraint | Affected Resource Locations | Condition Under Which Constraint is Binding (On-peak and/or Off-peak) | Estimated FCDS Capability Based on On-peak Study Resource Output (MW)** | | ADNU & Cost Estimate (\$million) | | Estimated EODS Capability Based on Off-peak Study Resource Output (MW)** | | AOPNU & Cost Estimate (\$million) | | Wind/Solar Area Designation |
|--|-------------------------------|---|---|-------------------------|--|---------------|--|--------------------------|---|---------------|-----------------------------|
| | | | Transmission Plan Capability*** | Incremental due to ADNU | ADNU (Time to Construct) | Cost (2022\$) | Transmission Plan Capability**** | Incremental due to AOPNU | AOPNU (Time to Construct) | Cost (2022\$) | |
| SCE Northern Interconnection Area Constraints | | | | | | | | | | | |
| Antelope-Vincent Constraint | Tehachapi, Big Creek | On-Peak | 7396 | 1,500 | Upgrade Antelope-Vincent No.1 and 2 500 kV Lines (2 yrs) | \$13 | 7396* | N/A | N/A | N/A | Solar |
| Vincent-Lugo Constraint | Tehachapi | On-Peak | 9,184 | 2,000 | Upgrade Vincent-Lugo No.1 and 2 500 kV Lines (4 yrs) | \$86 | 9184* | N/A | N/A | N/A | Solar |
| Pardee-Sylmar Constraint | Big Creek, Ventura | On-Peak | 4,884 | 1,800 | Install Phase Shifters at Pardee on the Pardee-Sylmar No. 1 and No. 2 230 kV Lines, Reconductor Pardee-Vincent No. 2 220 kV line (9 yrs) | \$660 | 4884* | N/A | N/A | N/A | Solar |
| Windhub Constraint | Tehachapi | On-Peak | 2,400 | 2,500 | New 500 kV Transmission Line from Whirlwind to Windhub 500 kV (9 yrs) | \$612 | 2400* | N/A | N/A | N/A | Solar |
| Moorpark-Pardee Constraint | Ventura | On-Peak | 3,792 | 900 | Upgrade the Moorpark-Pardee #2 and #3 220 kV and Santa Clara-Vincent 220 kV lines (9 yrs) | \$600 | 3792* | N/A | N/A | N/A | Solar |
| North of Magunden Constraint | Big Creek | On-Peak | 1,387 | 500 | Rebuild Magunden - Vestal No.2 230 kV and Magunden - Springville No.2 230 kV Lines (9 yrs) | \$1,253 | 1387* | N/A | N/A | N/A | Solar |
| South of Magunden Constraint | Big Creek, Ventura | On-Peak, Off-Peak | 740 | 2,000 | Rebuild various SOM lines (9 yrs) | \$4,358 | 500* | 2,000 | Rebuild Magunden-Pastoria 230 kV line (9 yrs) | \$66 | Solar |
| Antelope-Neenach Constraint | Antelope/Bailey/Pastoria area | On-Peak, Off-Peak | 0 | 2,000 | Reconductor Antelope-Bailey 66 kV lines (2 yrs) | \$100 | 0* | 15 | Bailey-Neenach-Westpac 66 kV line upgrade | \$45 | Solar |

Will provide list of POIs from studies that are behind each constraint within the Interconnection Area

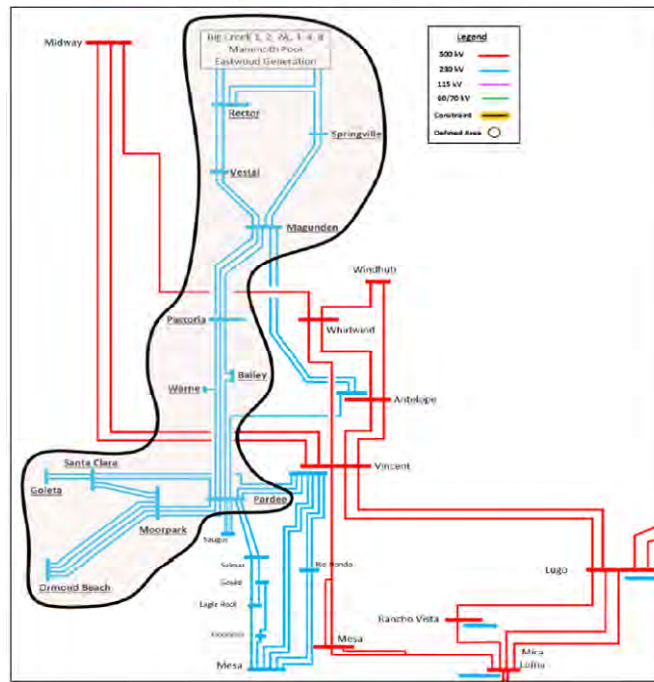
Annual TPD Allocation Report identifies TPD available behind constraints and allocated

Link to 2023 TPD Allocation Report (on Market Participant Portal): <https://mpp.aiso.com/tp/Documents/2023%20TPD%20Allocation%20Report.pdf>

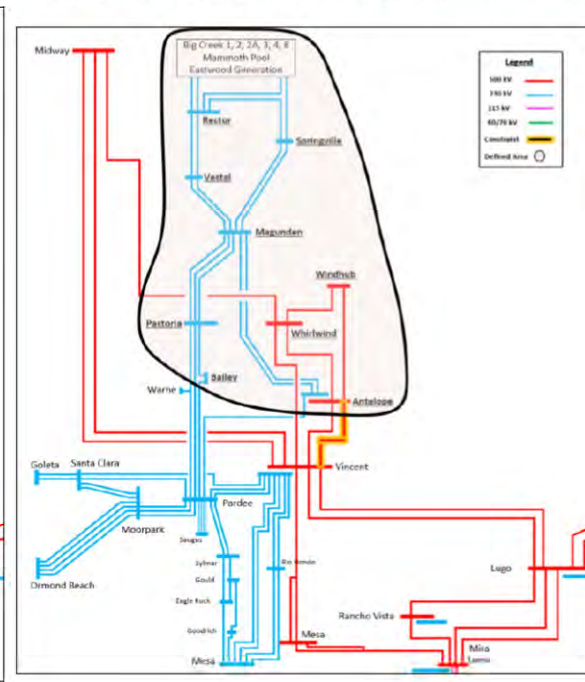
Pardee-Sylmar On-Peak Constraint



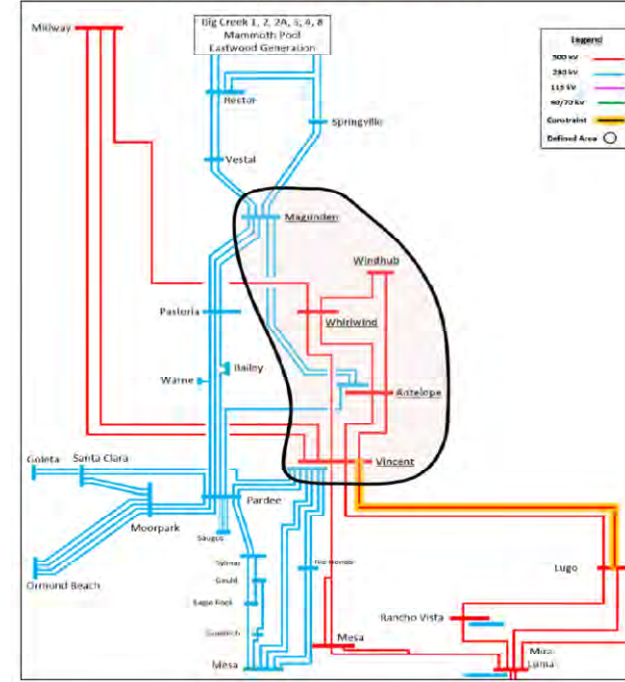
South of Magunden On-Peak Constraint



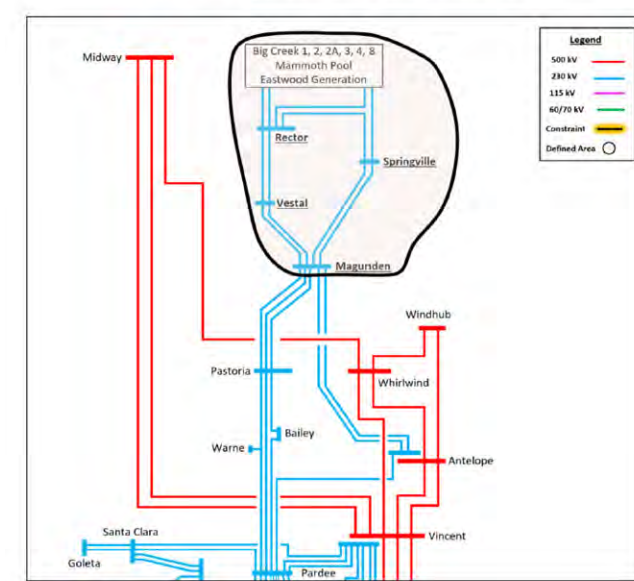
Antelope-Vincent On-Peak and Off-Peak Constraint



Vincent-Lugo On-Peak Constraint

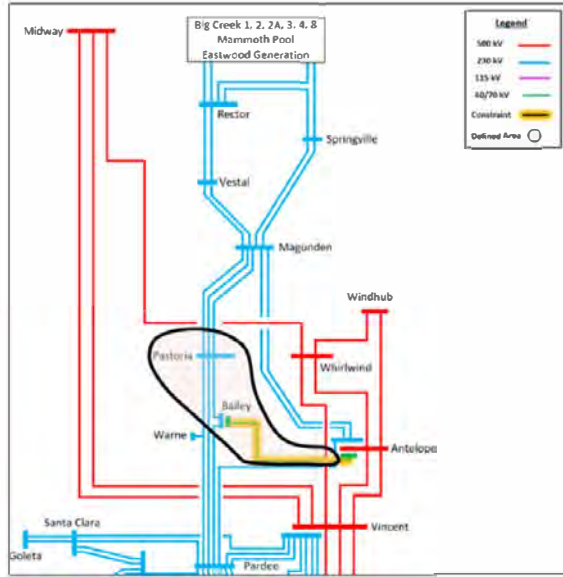


North of Magunden On-Peak Constraint

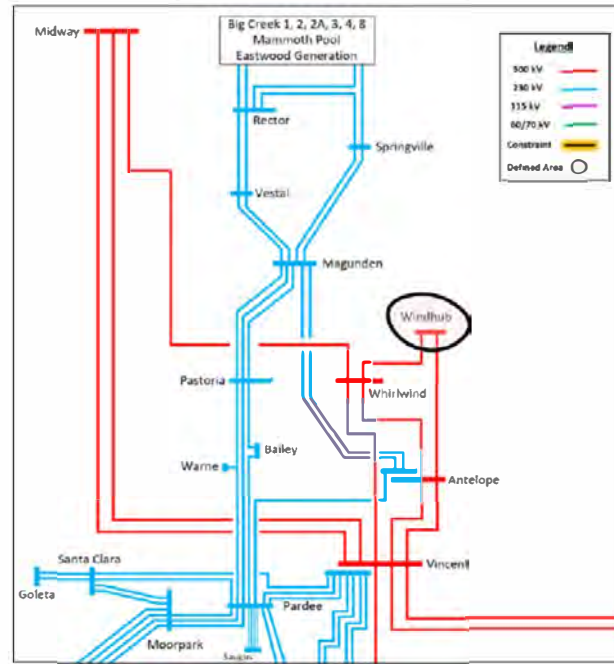


SCE Northern Interconnection Area

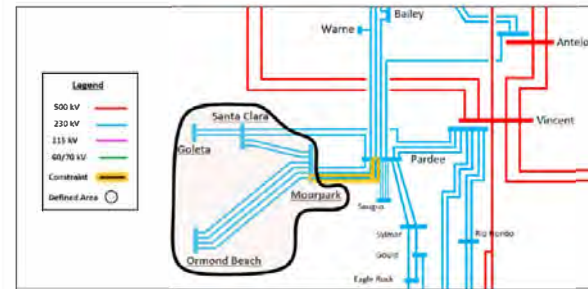
Antelope-Neenach On-Peak Constraint



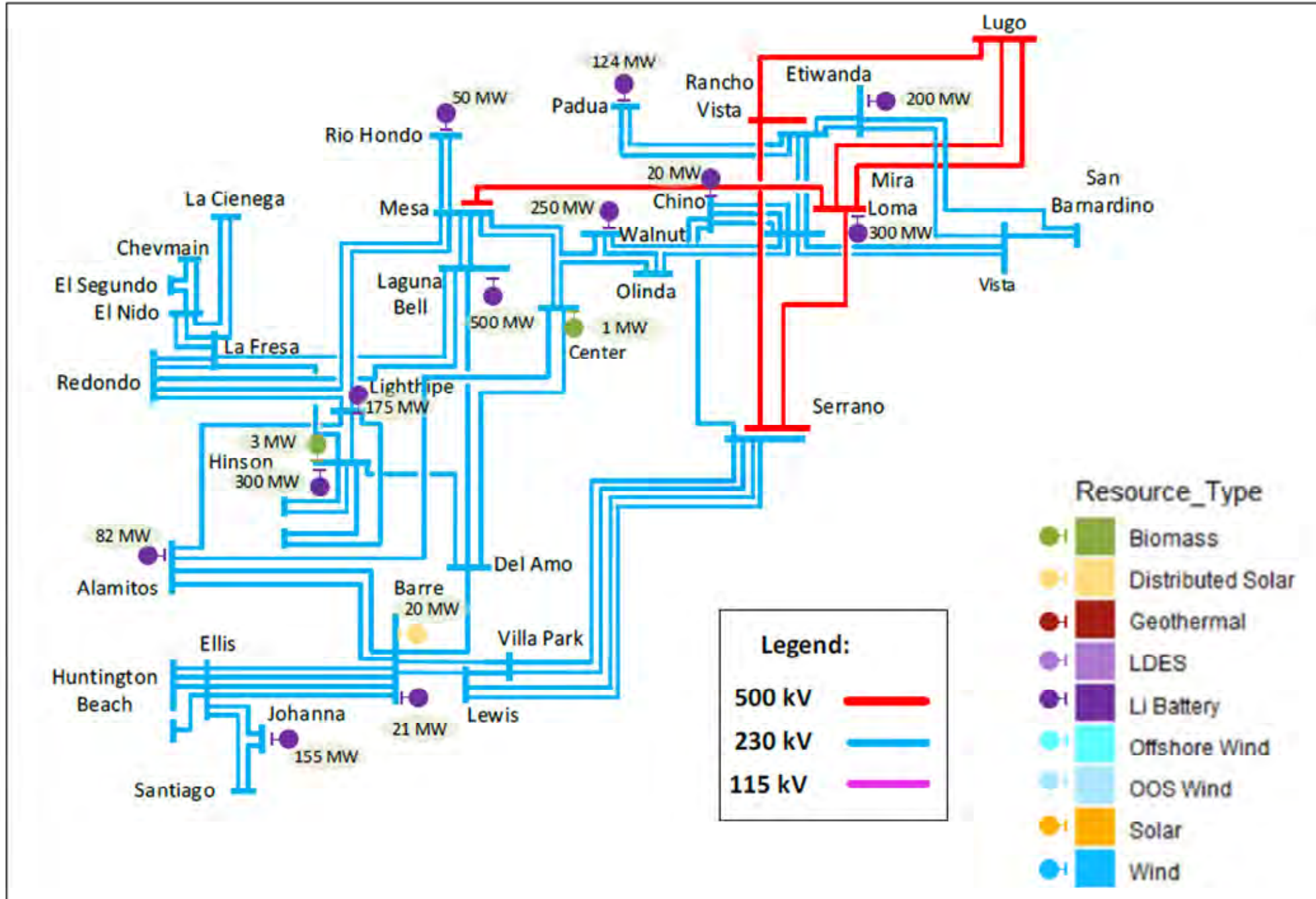
Windhub On-Peak Constraint



Moorpark-Pardee On-Peak Constraint



Base Portfolio: SCE Metro Area



| Resource Type | Base Portfolio | | |
|-------------------------------------|----------------|----------|--------------|
| | FCDS (MW) | EO (MW) | Total (MW) |
| Solar | 0 | 0 | 0 |
| Wind – In State | 0 | 0 | 0 |
| Wind – Out-of-State (Existing TX) | 0 | 0 | 0 |
| Wind – Out-of-State (New TX) | 0 | 0 | 0 |
| Wind - Offshore | 0 | 0 | 0 |
| Li Battery | 2,177 | 0 | 2,177 |
| Geothermal | 0 | 0 | 0 |
| Long Duration Energy Storage (LDES) | 0 | 0 | 0 |
| Biomass/Biogass | 4 | 0 | 4 |
| Distributed Solar | 20 | 0 | 20 |
| Total | 2,201 | 0 | 2,201 |

FCDS
2,201
MW

Total
2,201
MW

Will provide list of substations within the Interconnection Area

CPUC busbar mapping workbook provides resources by type mapped to substations within the Interconnection Areas

2023-0223 TPP Base Portfolio (2035) link:

https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2022-irp-cycle-events-and-materials/busbardashboard2033_30mmt_hebase_vd_02-22-23.xlsx

SCE Metro Interconnection Area Constraints

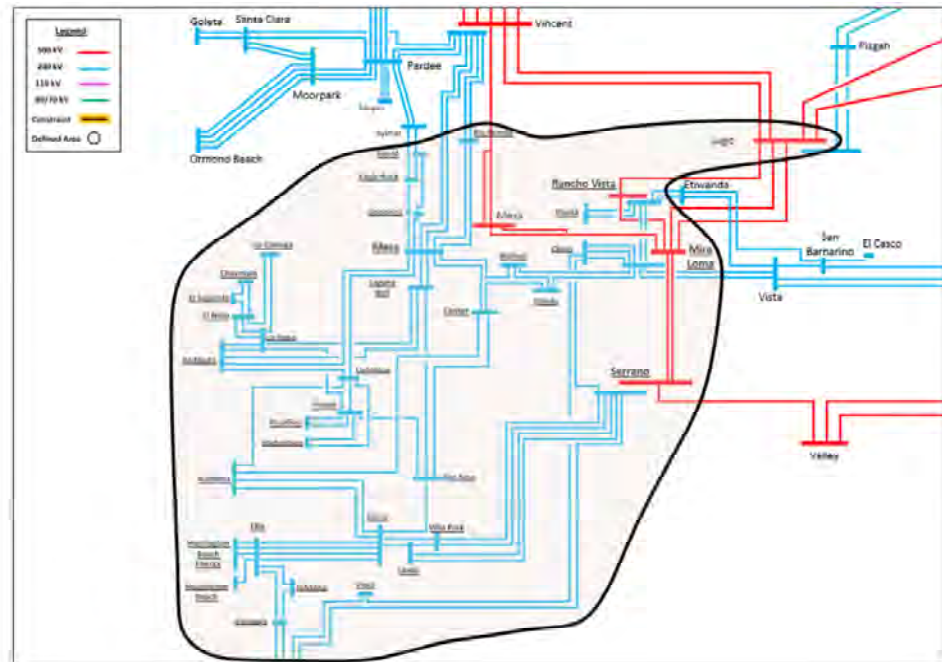
| Transmission Constraint | Affected Resource Locations | Condition Under Which Constraint is Binding (On-peak and/or Off-peak) | Estimated FCDS Capability Based on On-peak Study Resource Output (MW)** | | ADNU & Cost Estimate (\$million) | | Estimated EODS Capability Based on Off-peak Study Resource Output (MW)** | | AOPNU & Cost Estimate (\$million) | | Wind/Solar Area Designation |
|---|-----------------------------|---|---|-------------------------|---|---------------|--|--------------------------|-----------------------------------|---------------|-----------------------------|
| | | | Transmission Plan Capability*** | Incremental due to ADNU | ADNU (Time to Construct) | Cost (2022\$) | Transmission Plan Capability*** | Incremental due to AOPNU | AOPNU (Time to Construct) | Cost (2022\$) | |
| SCE Metro Interconnection Area Constraints | | | | | | | | | | | |
| Del Amo - Barre Area Constraint | LA Basin | On-Peak | 6,700 | 1,058 | Upgrade the Del Amo - Barre 220 kV Transmission Line (27 months) | \$11 | 6700* | N/A | N/A | N/A | Solar |
| Hinson - Del Amo Constraint | LA Basin | On-Peak | 3,544 | 800 | Upgrade the Hinson - Del Amo 220 kV Transmission Line (27 months) | \$28 | 3544* | N/A | N/A | N/A | Solar |
| SCE Metro Area Default Constraint | LA Basin | None | 13731* | N/A | N/A | - | 13731* | N/A | N/A | N/A | Solar |

Will provide list of POIs from studies that are behind each constraint within the Interconnection Area

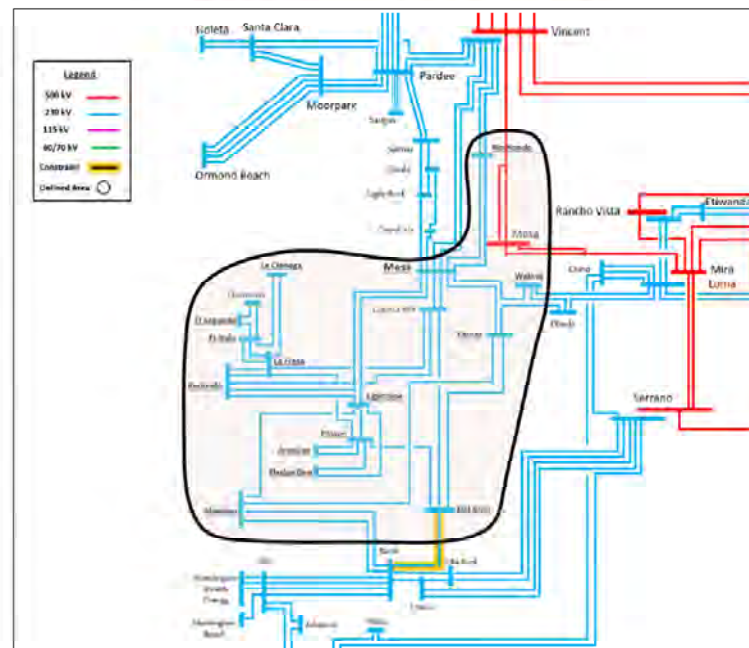
Annual TPD Allocation Report identifies TPD available behind constraints and allocated

Link to 2023 TPD Allocation Report (on Market Participant Portal): <https://mpp.aiso.com/tp/Documents/2023%20TPD%20Allocation%20Report.pdf>

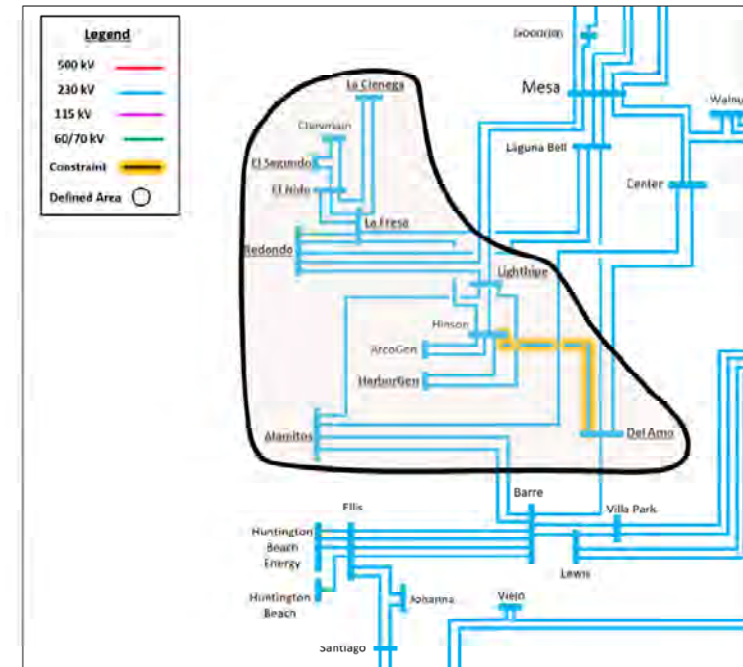
SCE Metro Area Default Constraint



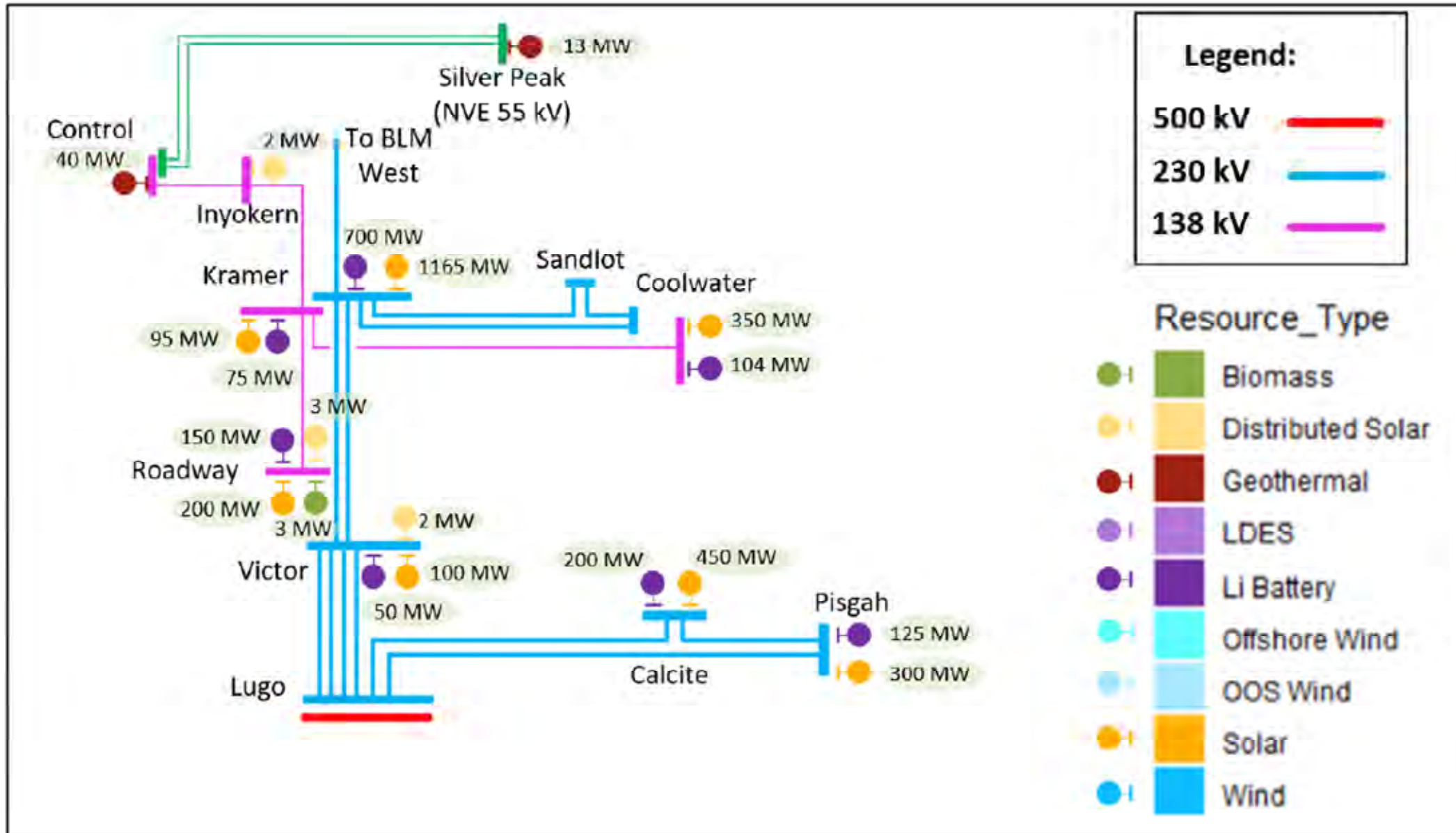
Del Amo – Barre On-Peak Constraint



Hinson - Del Amo On-Peak Constraint



Base Portfolio: SCE North of Lugo Area



| Resource Type | Base Portfolio | | |
|-------------------------------------|----------------|--------------|--------------|
| | FCDS (MW) | EO (MW) | Total (MW) |
| Solar | 1,310 | 1,350 | 2,660 |
| Wind – In State | 0 | 0 | 0 |
| Wind – Out-of-State (Existing TX) | 0 | 0 | 0 |
| Wind – Out-of-State (New TX) | 0 | 0 | 0 |
| Wind - Offshore | 0 | 0 | 0 |
| Li Battery | 1,404 | 0 | 1,404 |
| Geothermal | 53 | 0 | 53 |
| Long Duration Energy Storage (LDES) | 0 | 0 | 0 |
| Biomass/Biogass | 3 | 0 | 3 |
| Distributed Solar | 7 | 0 | 7 |
| Total | 2,777 | 1,350 | 4,127 |

FCDS
2,777
MW

Total
4,127
MW

Will provide list of substations within the Interconnection Area

CPUC busbar mapping workbook provides resources by type mapped to substations within the Interconnection Areas

2023-0223 TPP Base Portfolio (2035) link:

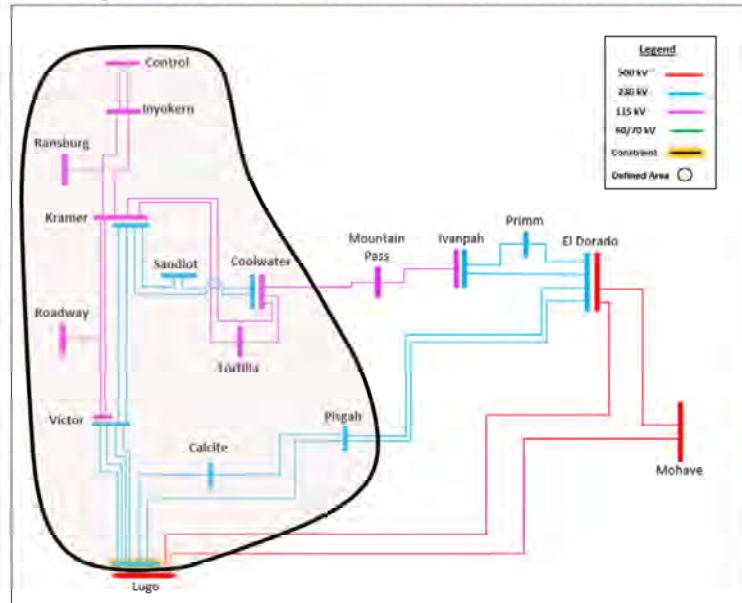
https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2022-irp-cycle-events-and-materials/busbardashboard2033_30mmt_hebase_vd_02-22-23.xlsx

SCE North of Lugo Interconnection Area Constraints

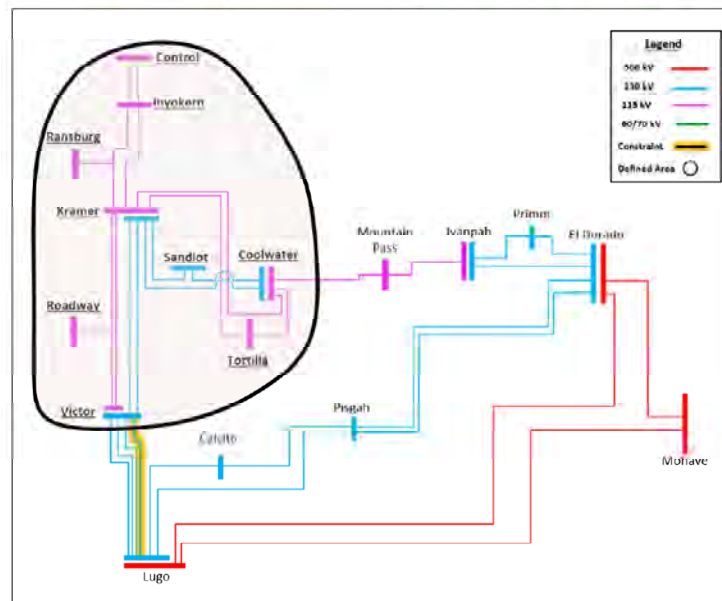
Transmission capability estimates for use in the CPUC's IRP process - Revised 6/28/2023

| Transmission Constraint | Affected Resource Locations | Condition Under Which Constraint is Binding (On-peak and/or Off-peak) | Estimated FCDS Capability Based on On-peak Study Resource Output (MW)** | | ADNU & Cost Estimate (\$million) | | Estimated EODS Capability Based on Off-peak Study Resource Output (MW)** | | AOPNU & Cost Estimate (\$million) | | Wind/Solar Area Designation |
|---|---------------------------------------|---|---|-------------------------|--|---------------|--|--------------------------|-----------------------------------|---------------|-----------------------------|
| | | | Transmission Plan Capability*** | Incremental due to ADNU | ADNU (Time to Construct) | Cost (2022\$) | Transmission Plan Capability*** | Incremental due to AOPNU | AOPNU (Time to Construct) | Cost (2022\$) | |
| SCE North of Lugo (NOL) Interconnection Area Constraints | | | | | | | | | | | |
| Control to Inyokern area constraint | Inyokern_North | On-Peak | 15 | 186 | Build a new, series compensated Control-Inyokern 115 kV line and upgrade Inyo Phase Shifter (105 months) | \$329 | 15* | N/A | N/A | N/A | Solar |
| Kramer to Victor Area Constraint | Inyokern_North_Kramer Victor | On-Peak | 1,300 | 1,206 | Convert Kramer - Victor 115 kV lines to 230 kV (120 months) | \$300 | 1,300 | N/A | N/A | N/A | Solar |
| Victor to Lugo Area Constraint | Inyokern_North_Kramer Victor | On-Peak | 1,350 | 1,221 | Re-conductor the four Lugo-Victor 230 kV lines (54 months) | \$112 | 1,350 | N/A | N/A | N/A | Solar |
| Lugo Transformer Area Constraint | Inyokern_North_Kramer, Victor, Pisgah | On-Peak | 1,585 | 1,178 | Add a third 500/230 kV transformer at Lugo Substation (54 months) | \$70 | 1,585 | N/A | N/A | N/A | Solar |
| Calcite to Lugo Area Constraint | Pisgah | On-Peak | 548 | 1,046 | Rebuild Calcite-Lugo 220 kV Transmission Line (105 months) | \$239 | 548* | N/A | N/A | N/A | Solar |

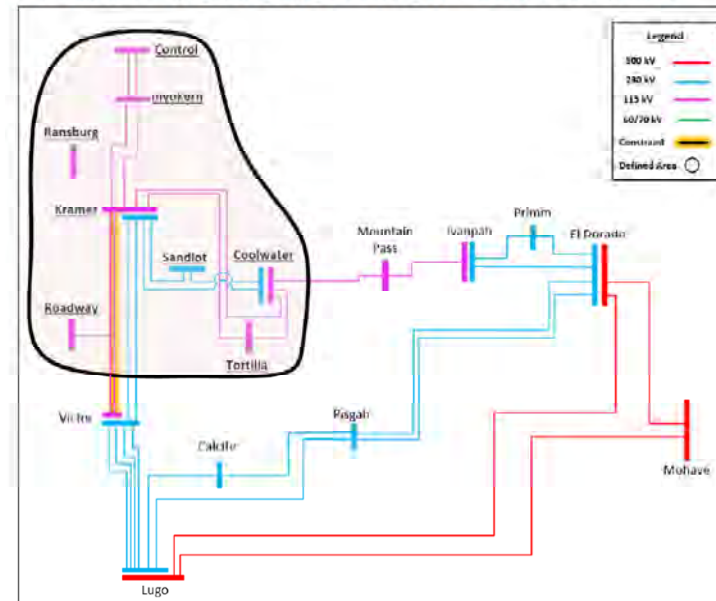
Lugo 500/230 kV Transformer On Peak Constraint



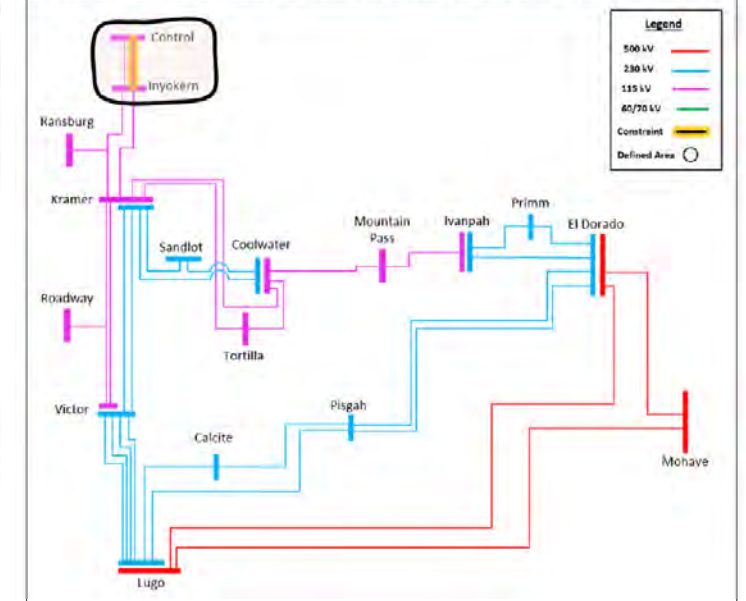
Victor – Lugo Constraint On Peak Constraint



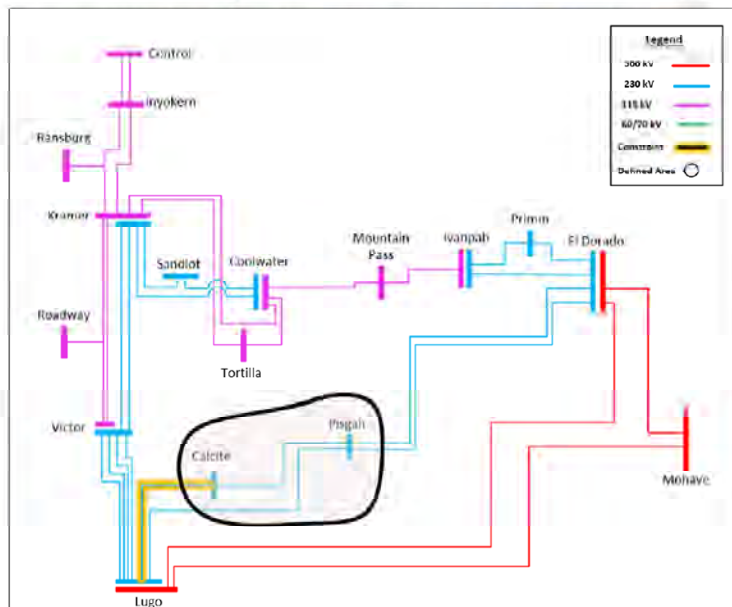
Kramer - Victor Constraint On-Peak Constraint



Control to Inyokern Constraint On-Peak Constraint



Calcite to Lugo Constraint On Peak Constraint

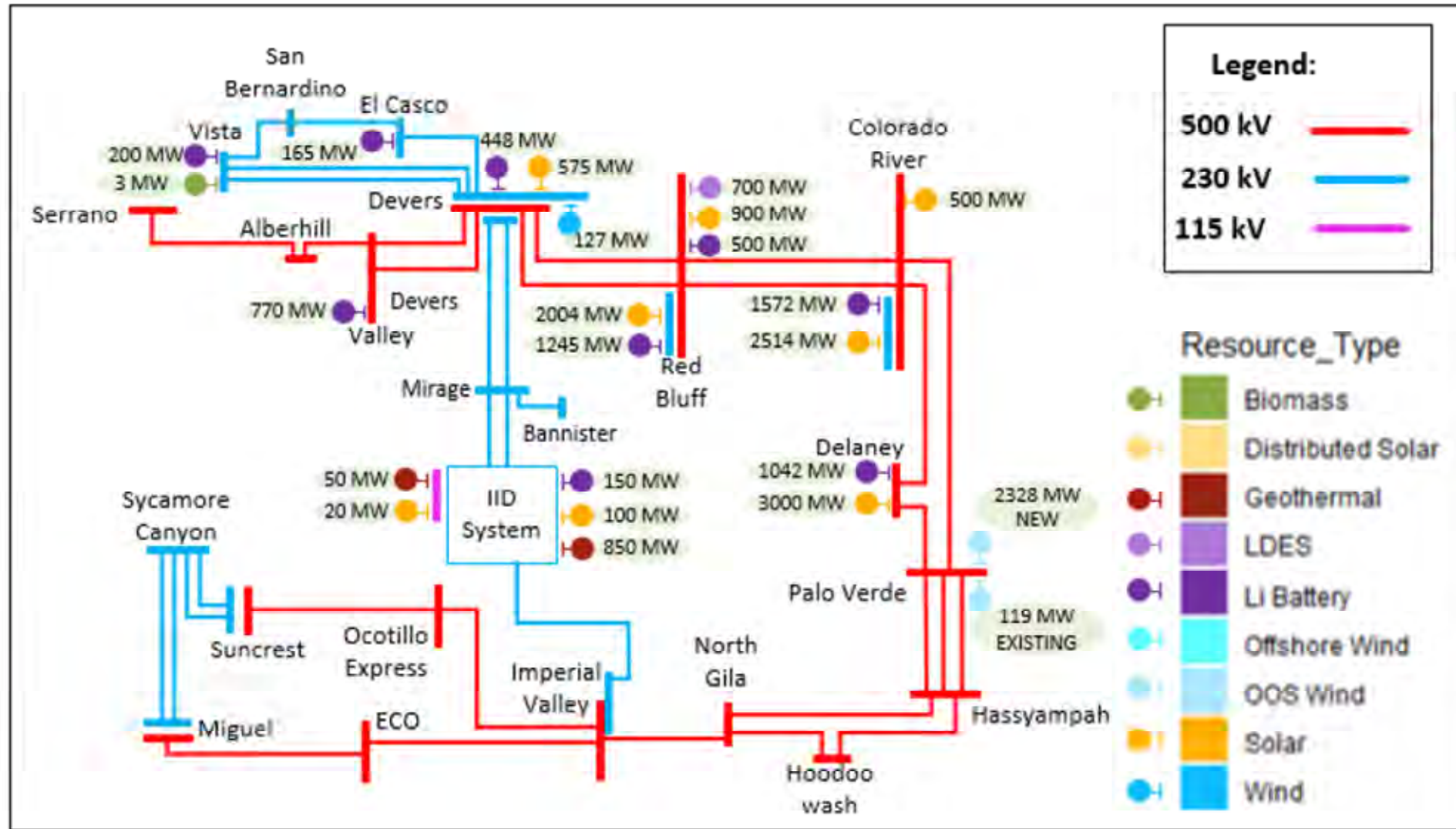


Will provide list of POIs from studies that are behind each constraint within the Interconnection Area

Annual TPD Allocation Report identifies TPD available behind constraints and allocated
Link to 2023 TPD Allocation Report (on Market Participant Portal):

<https://mpp.caiso.com/tp/Documents/2023%20TPD%20Allocation%20Report.pdf>

Base Portfolio: SCE Eastern Area



FCDS
13,198
MW

Total
19,881
MW

| Resource Type | Base Portfolio | | |
|-------------------------------------|----------------|--------------|---------------|
| | FCDS (MW) | EO (MW) | Total (MW) |
| Solar | 6,092 | 0 | 6,092 |
| Wind - In State | 107 | 20 | 127 |
| Wind - Out-of-State (Existing TX) | 119 | 0 | 119 |
| Wind - Out-of-State (New TX) | 2,328 | 0 | 2,328 |
| Wind - Offshore | 0 | 0 | 0 |
| Li Battery | 6,092 | 0 | 6,092 |
| Geothermal | 900 | 0 | 900 |
| Long Duration Energy Storage (LDES) | 700 | 0 | 700 |
| Biomass/Biogass | 3 | 0 | 3 |
| Distributed Solar | 0 | 0 | 0 |
| Total | 13,198 | 6,684 | 19,881 |

Will provide list of substations within the Interconnection Area

CPUC busbar mapping workbook provides resources by type mapped to substations within the Interconnection Areas

2023-0223 TPP Base Portfolio (2035) link:

https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2022-irp-cycle-events-and-materials/busbardashboard2033_30mmt_hebase_vd_02-22-23.xlsx

SCE Eastern Interconnection Area Constraints

| Transmission Constraint | Affected Resource Locations | Condition Under Which Constraint is Binding (On-peak and/or Off-peak) | Estimated FCDS Capability Based on On-peak Study Resource Output (MW)** | | ADNU & Cost Estimate (\$million) | | Estimated EODS Capability Based on Off-peak Study Resource Output (MW)** | | AOPNU & Cost Estimate (\$million) | | Wind/Solar Area Designation |
|---|---|---|---|-------------------------|---|---------------|--|--------------------------|-----------------------------------|---------------|-----------------------------|
| | | | Transmission Plan Capability*** | Incremental due to ADNU | ADNU (Time to Construct) | Cost (2022\$) | Transmission Plan Capability*** | Incremental due to AOPNU | AOPNU (Time to Construct) | Cost (2022\$) | |
| SCE Eastern Interconnection Area Constraints | | | | | | | | | | | |
| Colorado River 500/230 kV Constraint | Colorado River 230 kV | On-Peak, Off-Peak | 545 | 1,370 | New Colorado River No. 3 500/230 kV transformer (4 years) | \$67 | 1,414 | 1,299 | Same as ADNU | \$67 | Solar |
| Colorado River-Red Bluff Constraint | SCE Eastern (east of Colorado River), East of Pisgah, and SDG&E areas | On-Peak | 10,933 | 1,000 | New Colorado River-Red Bluff No. 3 500 kV line (10 years) | \$305 | 10933* | N/A | N/A | N/A | Solar |
| DCRT Constraint | Cielo Azul, Delaney | On-Peak | 2,300 | 3,000 | New Cielo Azul - Colorado River No. 2 500 kV line, Upgrade the series cap on Cielo Azul - Colorado River No.1 500 kV line to match the conductor rating (6 years) | \$463 | 2300* | N/A | N/A | N/A | Solar |
| Devers-Red Bluff Constraint | SCE Eastern (east of Red Bluff), East of Pisgah, and SDG&E areas | On-Peak, Off-Peak | 4,050 | 2,500 | New Devers-Red Bluff No. 3 500 kV line (9 years) | \$875 | 10,167 | 4,334 | Same as ADNU | \$875 | Solar |
| Eagle Mountain Constraint | Eagle Mountain, Julian Hinds, Mirage | On-Peak | 0 | 600 | New Devers-Julian Hinds 220 kV line (10 years) | \$1,182 | 300* | N/A | N/A | N/A | Solar |
| Etiwanda-Rancho Vista Constraint | SCE Eastern area | On-Peak | 7,734 | 3,350 | Upgrade Etiwanda-Rancho Vista No. 1 & No. 2 220 kV lines, New Etiwanda-Rancho Vista No. 3 220 kV line (3 years) | \$89 | 9689* | N/A | N/A | N/A | Solar |
| Red Bluff 500/230 kV Constraint | Red Bluff 230 kV | On-Peak, Off-Peak | 722 | 1,200 | New Red Bluff No. 3 500/230 kV transformer (4 years) | \$69 | 1,684 | 39 | Same as ADNU | \$69 | Solar |
| Serrano-Alberhill-Valley Constraint | SCE Eastern and SDG&E areas | On-Peak, Off-Peak | 5,328 | 6,000 | New Devers-Mira Loma 500 kV line, Mira Loma-Mesa 500kV Underground Cable Addition, Upgrade San Bernardino-Vista 220 kV line, Upgrade Etiwanda-Vista 220 kV line, Upgrade Mira Loma-Vista No. 2 220kV line (9 years) | \$1,234 | 13,529 | 2,123 | Same as ADNU | \$1,234 | Solar |

Will provide list of POIs from studies that are behind each constraint within the Interconnection Area

Annual TPD Allocation Report identifies TPD available behind constraints and allocated

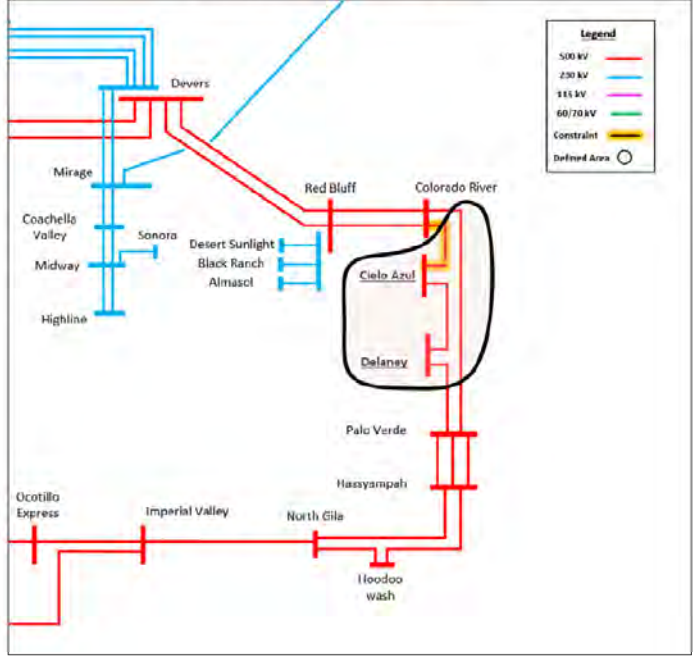
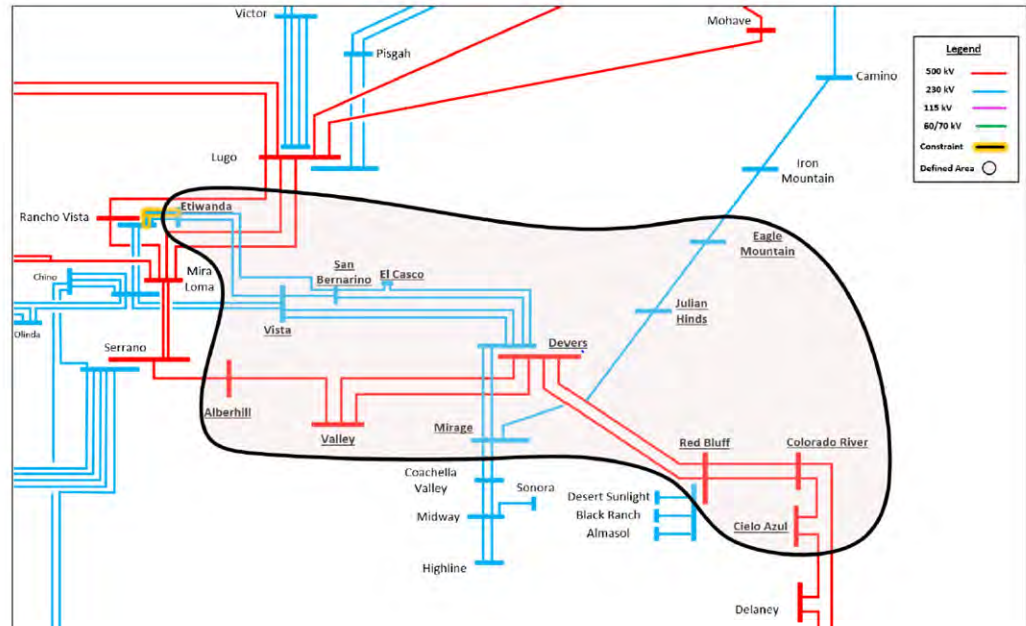
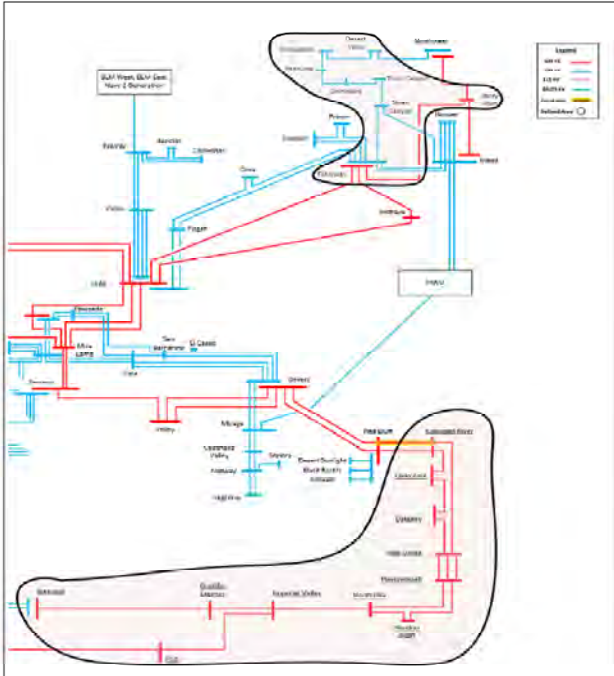
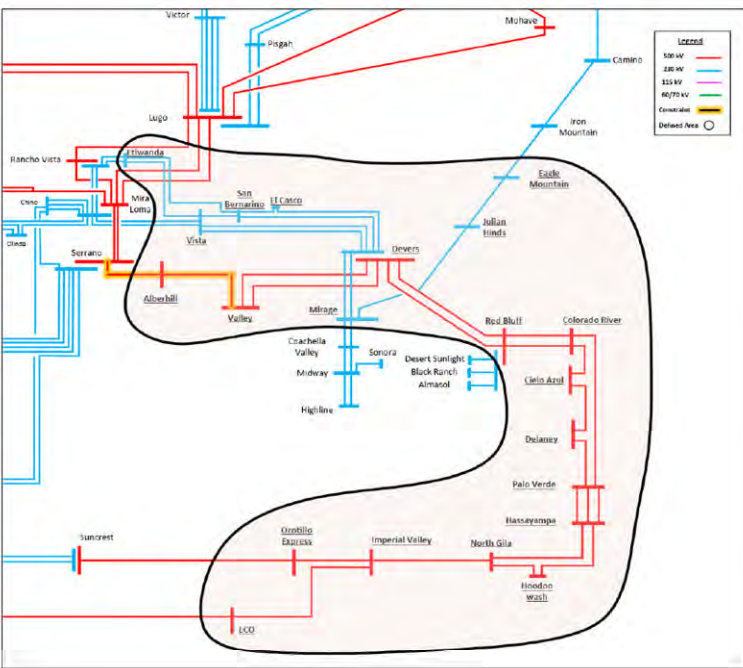
Link to 2023 TPD Allocation Report (on Market Participant Portal): <https://mpp.caiso.com/tp/Documents/2023%20TPD%20Allocation%20Report.pdf>

Serrano-Alberhill-Valley On-Peak/Off-Peak Constraint

Colorado River-Red Bluff On-Peak Constraint

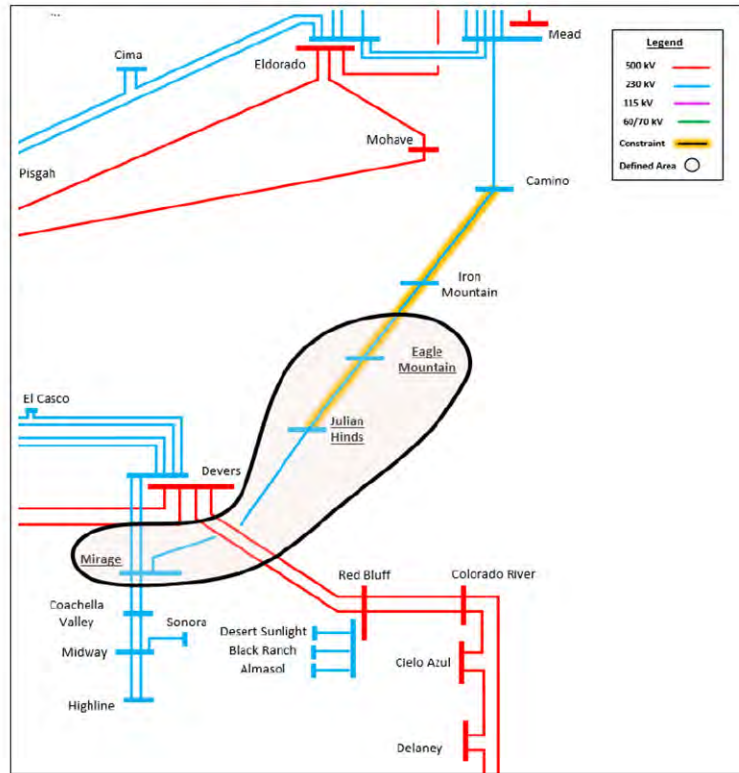
Etiwanda-Rancho Vista On-Peak Constraint

DCRT On-Peak Constraint

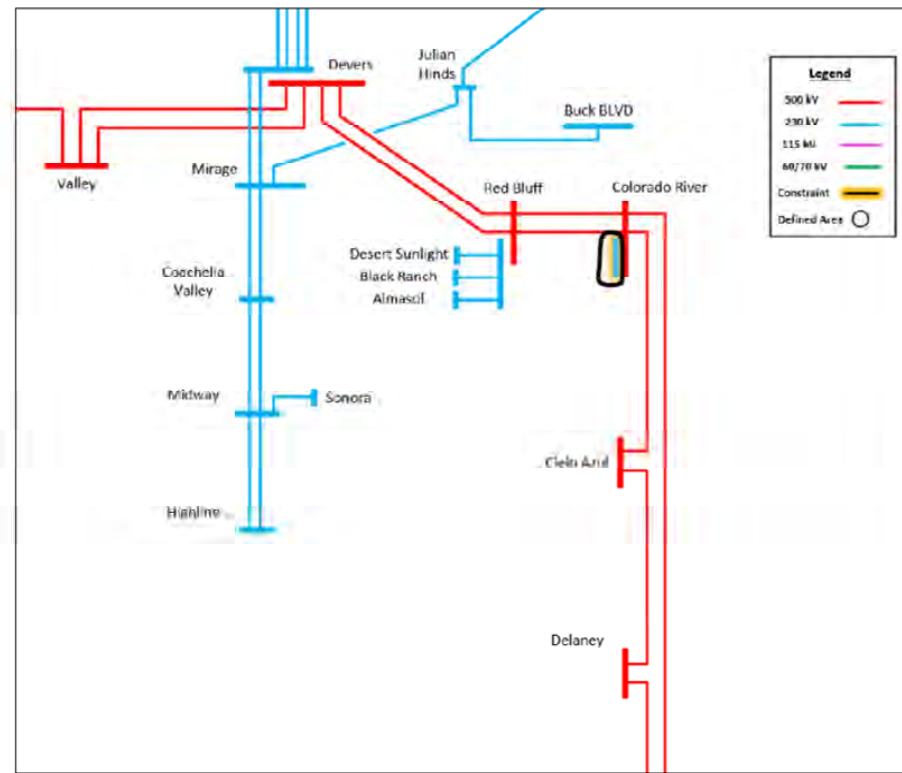


SCE Eastern Interconnection Area Constraints (continued)

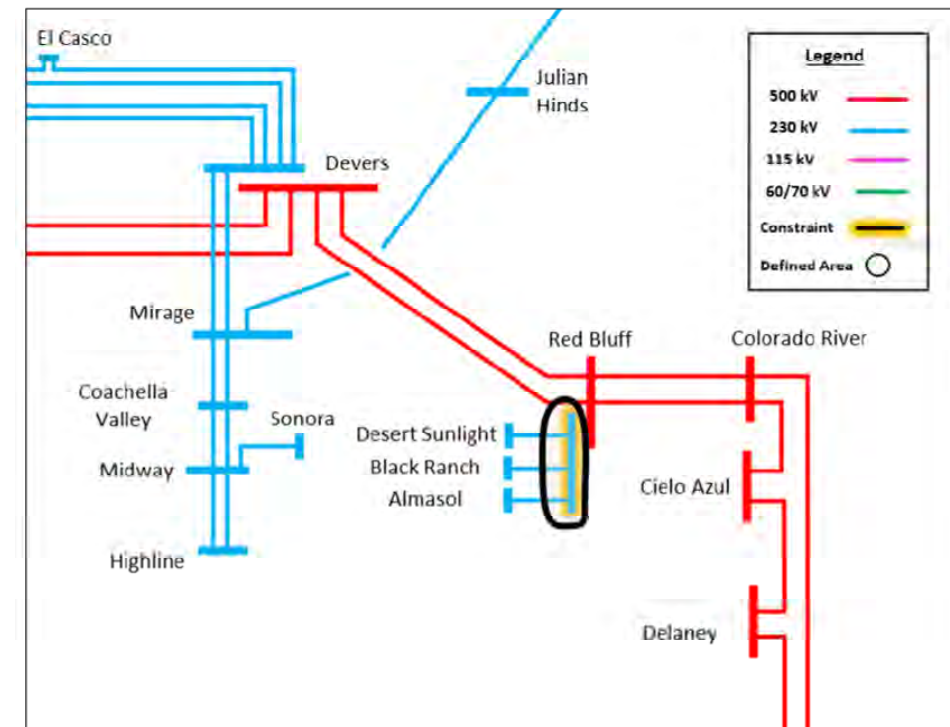
Eagle Mountain On-Peak Constraint



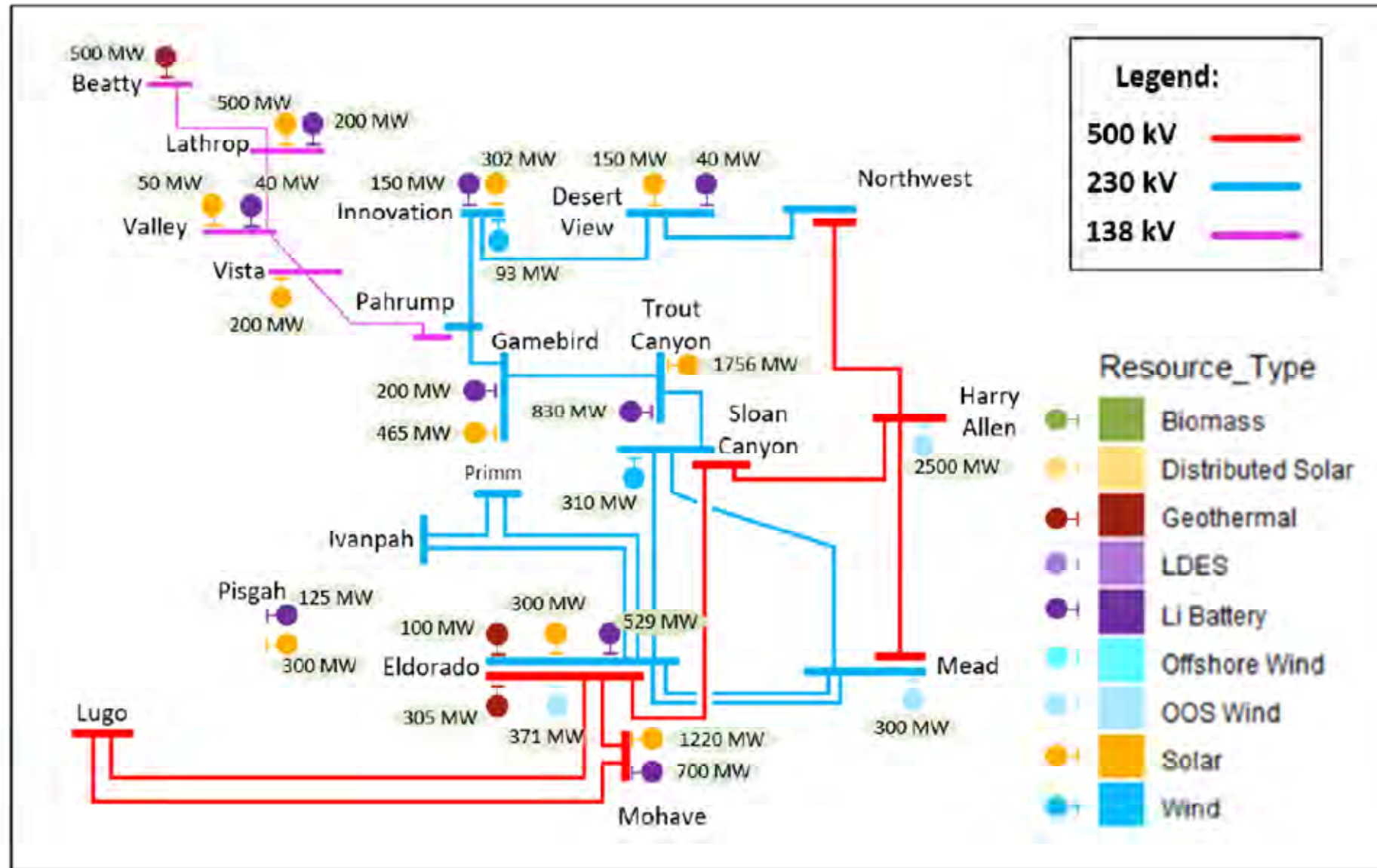
Colorado River 500/230 kV On-Peak/Off-Peak Constraint (230 kV bus only)



Red Bluff 500/230 kV On-Peak/Off-Peak Constraint (230 kV only)



Base Portfolio: East of Pisgah Area



FCDS
9,225
MW

Total
12,111
MW

| Resource Type | Base Portfolio | | |
|-------------------------------------|----------------|--------------|---------------|
| | FCDS (MW) | EO (MW) | Total (MW) |
| Solar | 2,157 | 2,786 | 4,943 |
| Wind – In State | 403 | 0 | 403 |
| Wind – Out-of-State (Existing TX) | 571 | 100 | 671 |
| Wind – Out-of-State (New TX) | 2,500 | 0 | 2,500 |
| Wind - Offshore | 0 | 0 | 0 |
| Li Battery | 2,689 | 0 | 2,689 |
| Geothermal | 905 | 0 | 905 |
| Long Duration Energy Storage (LDES) | 0 | 0 | 0 |
| Biomass/Biogass | 0 | 0 | 0 |
| Distributed Solar | 0 | 0 | 0 |
| Total | 9,225 | 2,886 | 12,111 |

Will provide list of substations within the Interconnection Area

CPUC busbar mapping workbook provides resources by type mapped to substations within the Interconnection Areas

2023-0223 TPP Base Portfolio (2035) link:

https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2022-irp-cycle-events-and-materials/busbardashboard2033_30mmt_hebase_vd_02-22-23.xlsx

East of Pisgah Interconnection Area Constraints

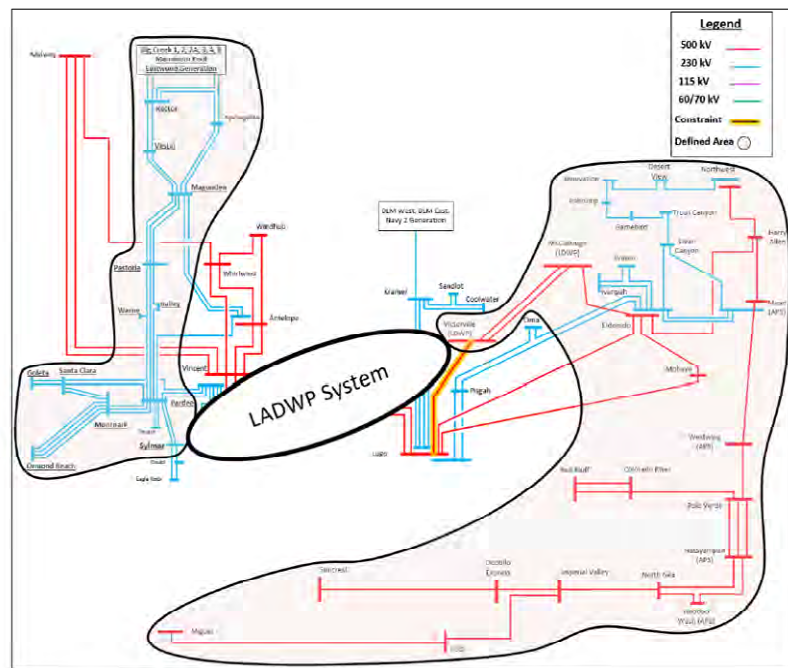
| Transmission Constraint | Affected Resource Locations | Condition Under Which Constraint is Binding (On-peak and/or Off-peak) | Estimated FCDS Capability Based on On-peak Study Resource Output (MW)** | | ADNU & Cost Estimate (\$million) | | Estimated EODS Capability Based on Off-peak Study Resource Output (MW)** | | AOPNU & Cost Estimate (\$million) | | Wind/Solar Area Designation |
|---|---|---|---|-------------------------|--|---------------|--|--------------------------|------------------------------------|---------------|-----------------------------|
| | | | Transmission Plan Capability*** | Incremental due to ADNU | ADNU (Time to Construct) | Cost (2022\$) | Transmission Plan Capability*** | Incremental due to AOPNU | AOPNU (Time to Construct) | Cost (2022\$) | |
| East of Pisgah (EOP) Interconnection Area Constraints (SCE, GLW, VEA) | | | | | | | | | | | |
| VEA 138kV area constraint | VEA 138kV buses | On-Peak, Off-Peak | 260 | 1,367 | VEA 230kV conversion project (4 years) | \$175 | 105 | 930 | Same as ADNU | \$175 | Solar |
| GLW 230kV area constraint | VEA 138kV and GLW 230kV buses | On-Peak, Off-Peak | 900 | 1,100 | ISO approved GLW upgrade (4 years) | \$278 | 760 | 1,023 | ISO approved GLW upgrade (4 years) | \$278 | Solar |
| Lugo - Victorville area constraint | East of Pisgah, SCE Eastern, SDG&E and SCE Northern areas | On-peak | 10,100 | 6,800 | Eldorado - Lugo 500kV No.2 line (10 years) | \$2,165 | 9600* | 6800* | Same as ADNU | \$2,165 | Solar |

Will provide list of POIs from studies that are behind each constraint within the Interconnection Area

Annual TPD Allocation Report identifies TPD available behind constraints and allocated

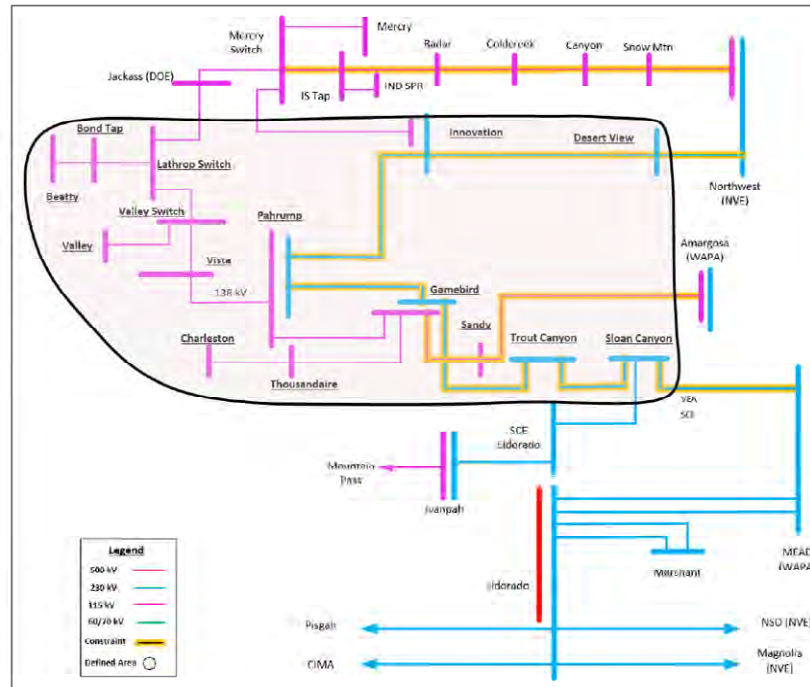
Link to 2023 TPD Allocation Report (on Market Participant Portal): <https://mpp.caiso.com/tp/Documents/2023%20TPD%20Allocation%20Report.pdf>

Lugo-Victorville On-peak Constraint

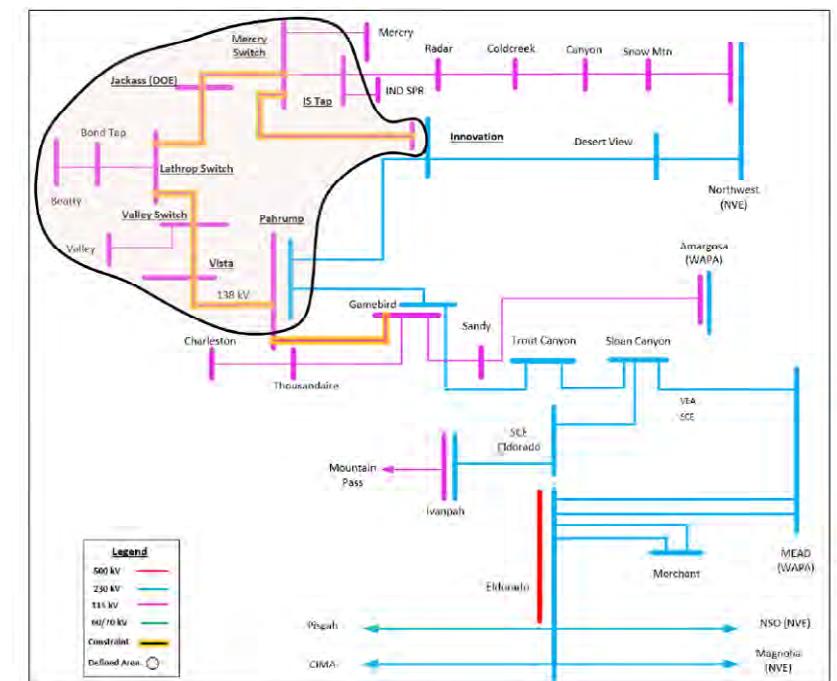


Note: The GLW/VEA system, which is not shown in detail, is inside the constraint boundary.

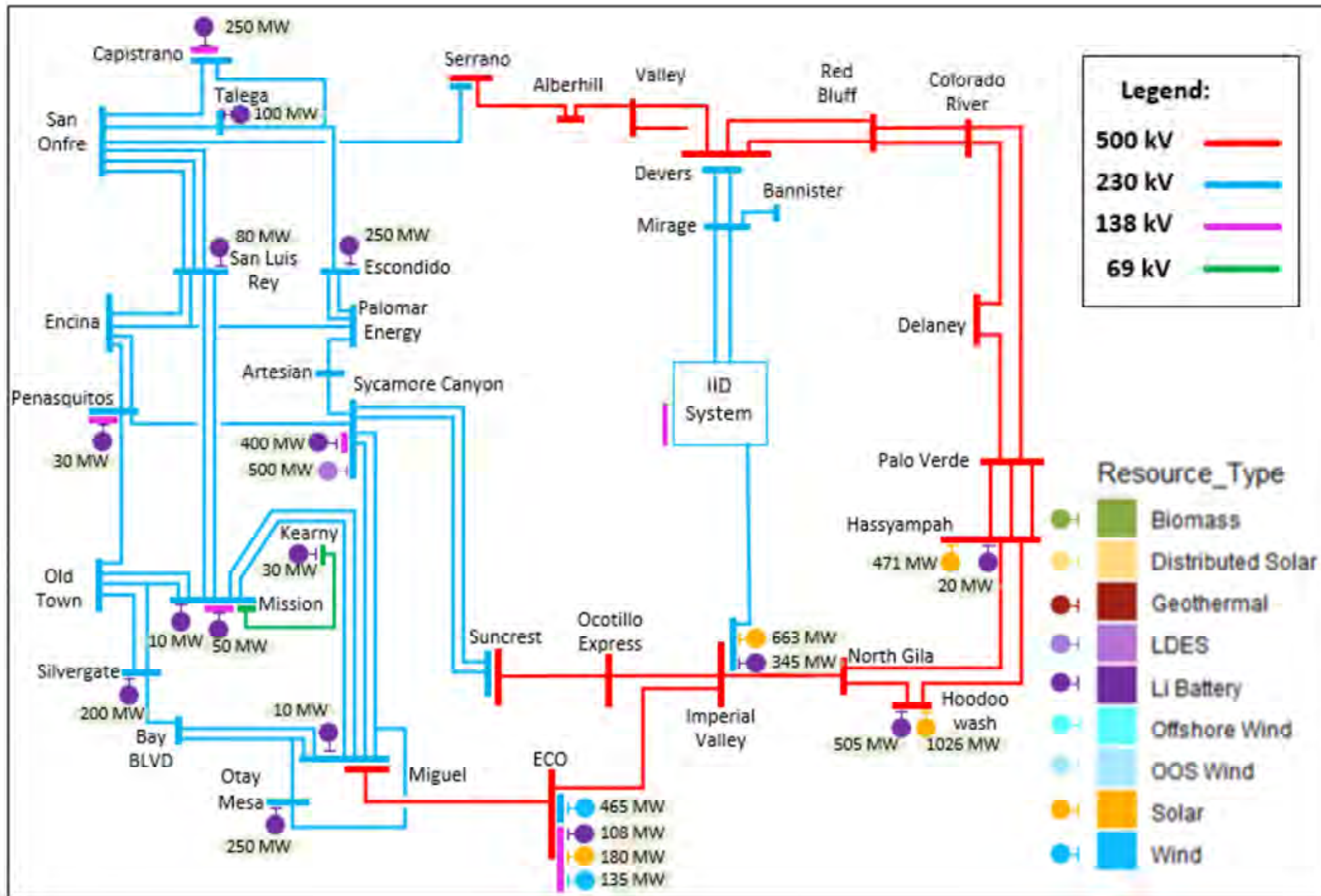
GLW 230kV On-peak/Off-peak Constraint



VEA 138kV On-peak/Off-peak Constraint



Base Portfolio: SDG&E Area



| Resource Type | Base Portfolio | | |
|-------------------------------------|----------------|--------------|--------------|
| | FCDS (MW) | EO (MW) | Total (MW) |
| Solar | 650 | 1,690 | 2,340 |
| Wind – In State | 240 | 360 | 600 |
| Wind – Out-of-State (Existing TX) | 0 | 0 | 0 |
| Wind – Out-of-State (New TX) | 0 | 0 | 0 |
| Wind - Offshore | 0 | 0 | 0 |
| Li Battery | 2,617 | 0 | 2,617 |
| Geothermal | 0 | 0 | 0 |
| Long Duration Energy Storage (LDES) | 500 | 0 | 500 |
| Biomass/Biogass | 0 | 0 | 0 |
| Distributed Solar | 0 | 0 | 0 |
| Total | 4,007 | 2,050 | 6,057 |

FCDS
4,007
MW

Total
6,057
MW

Will provide list of substations within the Interconnection Area

CPUC busbar mapping workbook provides resources by type mapped to substations within the Interconnection Areas

2023-0223 TPP Base Portfolio (2035) link:

https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2022-irp-cycle-events-and-materials/busbardashboard2033_30mmt_hebase_vd_02-22-23.xlsx

SDGaE Interconnection Area Constraints

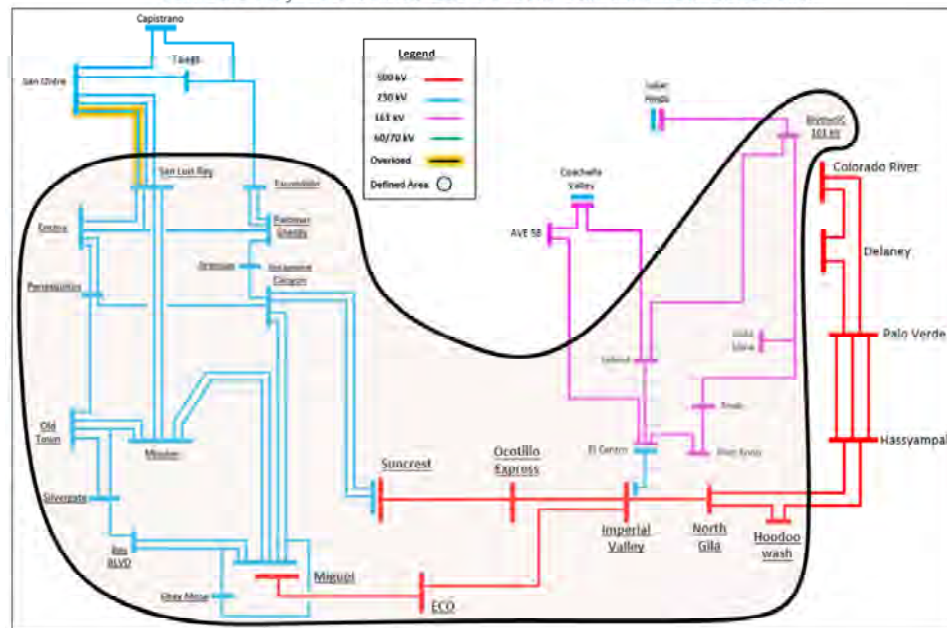
| Transmission Constraint | Affected Resource Locations | Condition Under Which Constraint is Binding (On-peak and/or Off-peak) | Estimated FCDS Capability Based on On-peak Study Resource Output (MW)** | | ADNU & Cost Estimate (\$million) | | Estimated EODS Capability Based on Off-peak Study Resource Output (MW)** | | AOPNU & Cost Estimate (\$million) | | Wind/Solar Area Designation |
|--|--|---|---|-------------------------|---|---------------|--|--------------------------|-----------------------------------|---------------|-----------------------------|
| | | | Transmission Plan Capability*** | Incremental due to ADNU | ADNU (Time to Construct) | Cost (2022\$) | Transmission Plan Capability*** | Incremental due to AOPNU | AOPNU (Time to Construct) | Cost (2022\$) | |
| SDGaE Interconnection Area Constraints | | | | | | | | | | | |
| Capistrano-San Onofre 230 kV constraint | SDGE local area | On-peak | 1,500 | 920 | Capistrano-San Onofre 230 kV upgrade (60 months) | \$58 | 1500* | N/A | N/A | N/A | N/A |
| Chicarita 138 kV constraint | Baja, Imperial, SDGE local area | On-peak | 224 | 700 | Chicarita 138 kV Upgrades (48 months) | \$100 | 224* | N/A | N/A | N/A | N/A |
| El Cajon 69 kV constraint | SDGE local area | On-peak | 406 | 547 | El Cajon 69 kV Upgrade (48 months) | \$15 | 406* | N/A | N/A | N/A | N/A |
| Internal San Diego Area constraint | Baja, Imperial, SDGE local area | On-Peak, Off-Peak | 1,001 | 2,757 | Internal San Diego Area reconductors (48 months) | \$107 | 70 | 2,757 | Same as ADNU | \$107 | Solar |
| Miguel 69 kV constraint | SDGE local area | On-peak | 231 | 431 | Miguel 69 kV upgrades (48 months) | \$671 | 231* | N/A | N/A | N/A | N/A |
| Encina - San Luis Rey 230 kV constraint | Baja, Imperial, Arizona, SDGE local area | On-Peak, Off-Peak | 1,922 | 4,660 | New Encina - San Luis Rey 230 kV line (120 months) | \$84 | 2,586 | 4,660 | Same as ADNU | \$84 | Solar |
| East of Miguel constraint | Baja, Imperial, Arizona, Riverside East | On-Peak, Off-Peak | 1,035 | 1,286 | New Imperial Valley - Serrano 500 kV line (188 months) | \$2,713 | 1,377 | 1,286 | Same as ADNU | \$2,713 | Solar |
| San Luis Rey-San Onofre 230 kV line constraint | Baja, Imperial, Arizona, SDGE local area | On-Peak, Off-Peak | 2,018 | 4,254 | New San Luis Rey-San Onofre 230 kV line (120 months) | \$107 | 6,764 | 4,254 | Same as ADNU | \$107 | Solar |
| Ocean Ranch 69 kV constraint | SDGE local area | On-peak | 274 | 692 | Ocean Ranch 69 kV upgrade (48 months) | \$28 | 274* | N/A | N/A | N/A | N/A |
| Otay Mesa 230 kV constraint | Imperial, SDGE local area | On-peak | 1,425 | 2,189 | Otay Mesa 230 kV upgrade (60 months) | \$80 | 1425* | N/A | N/A | N/A | N/A |
| Silvergate - Bay Blvd 230 kV constraint | Baja, Imperial, SDGE local area | On-Peak, Off-Peak | 663 | 4,887 | Silvergate - Bay Blvd 230 kV 3-ohm Series Reactor (36 months) | \$30 | 883 | 4,887 | Same as ADNU | \$30 | Solar |
| Silvergate-Old Town 230 kV constraint | Baja, Imperial, SDGE local area | On-peak | 1,221 | 2,522 | Silvergate-Old Town 230 kV Upgrades (60 months) | \$283 | 1221* | N/A | N/A | N/A | N/A |
| Talega 230 kV constraint | SDGE local area | On-peak | 1,205 | 2,201 | Talega 230 kV Upgrades (60 months) | \$211 | 1205* | N/A | N/A | N/A | N/A |
| Trabuco-Capistrano 138 kV constraint | SDGE local area | On-peak | 501 | 556 | Trabuco-Capistrano 138 kV upgrade (48 months) | \$103 | 501* | N/A | N/A | N/A | N/A |

Will provide list of POIs from studies that are behind each constraint within the Interconnection Area

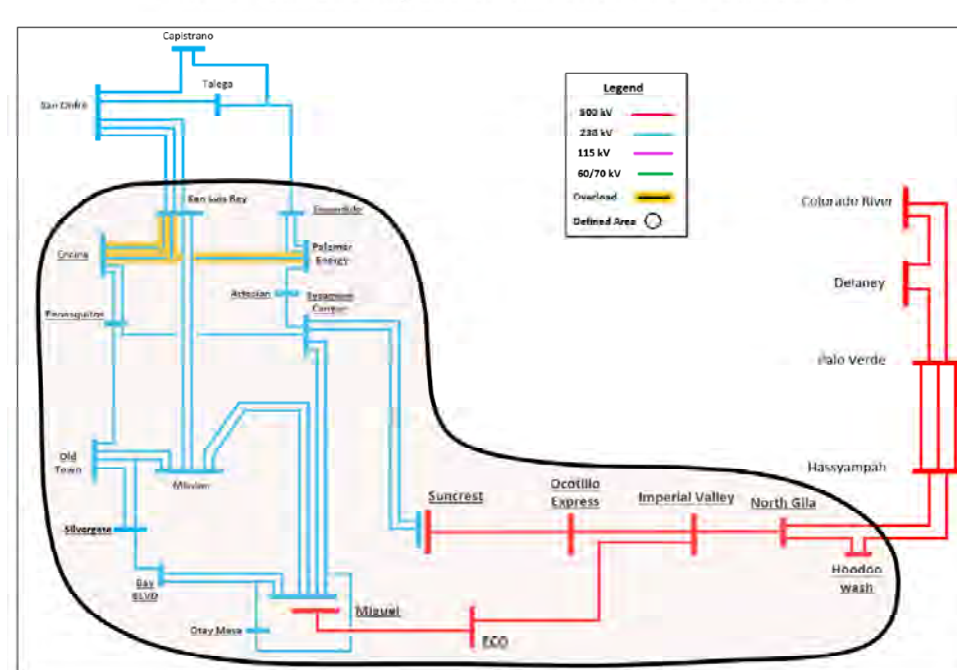
Annual TPD Allocation Report identifies TPD available behind constraints and allocated

Link to 2023 TPD Allocation Report (on Market Participant Portal): <https://mpp.caiso.com/tp/Documents/2023%20TPD%20Allocation%20Report.pdf>

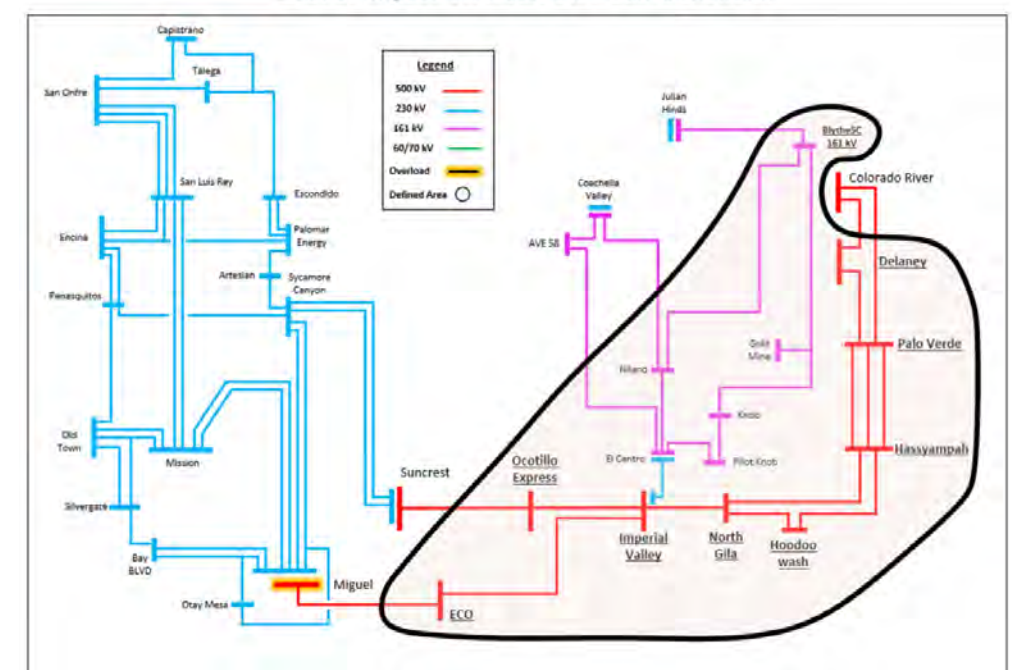
San Luis Rey-San Onofre 230 kV On-Peak/Off-Peak Constraint



Encina - San Luis Rey 230 kV On-Peak/Off-Peak Constraint

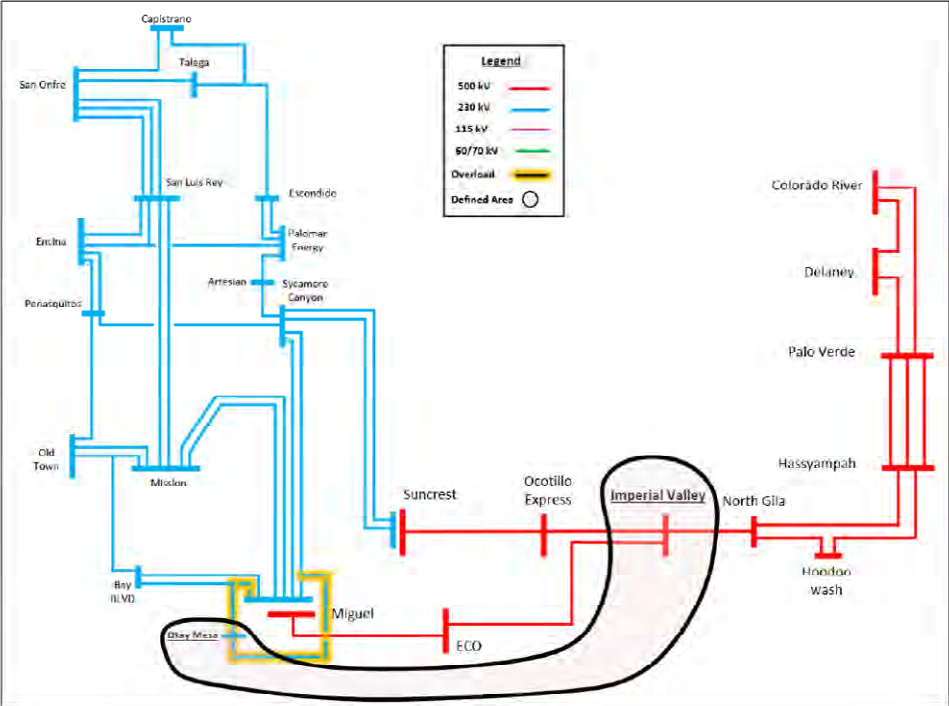


East of Miguel On-Peak/Off-Peak Constraint

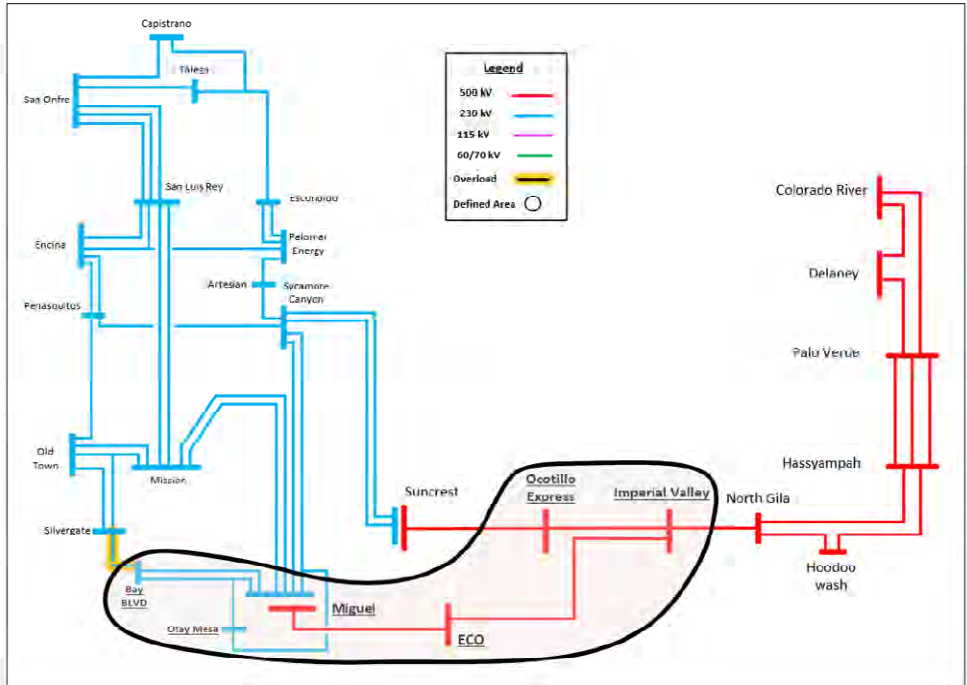


SDGaE Interconnection Area Constraints (continued)

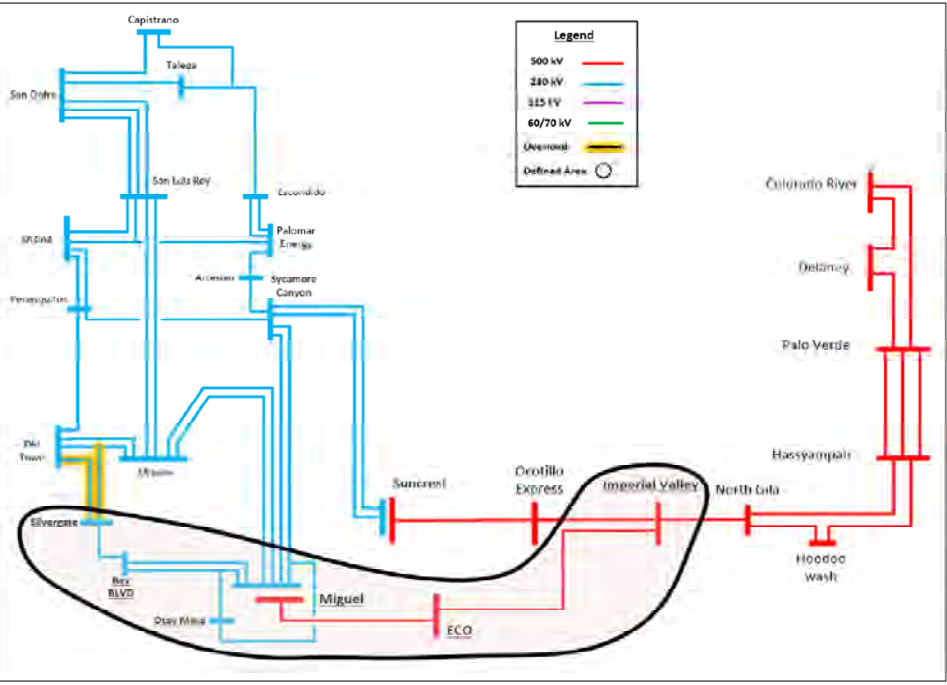
Otay Mesa 230 kV On-Peak Constraint



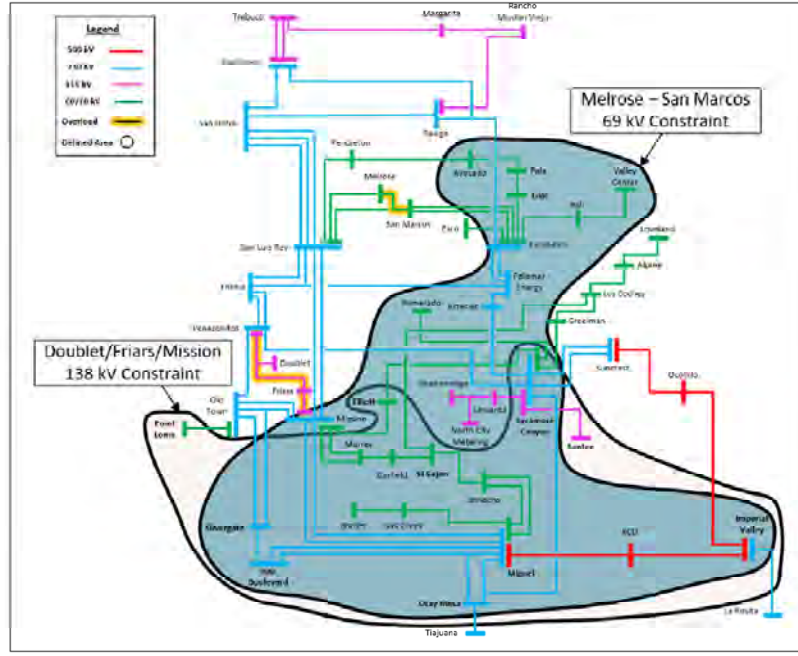
Silvergate - Bay Blvd 230 kV On-Peak/Off-Peak Constraint



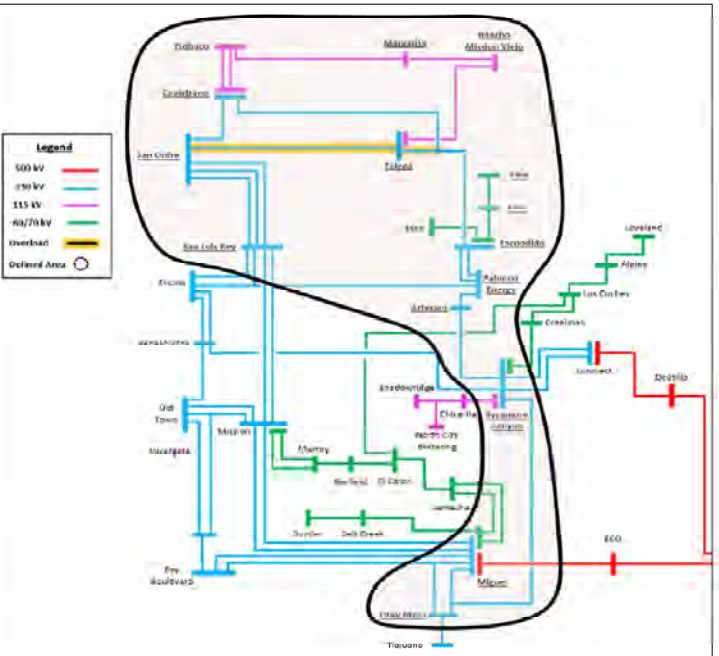
Silvergate-Old Town 230 kV On-Peak Constraint



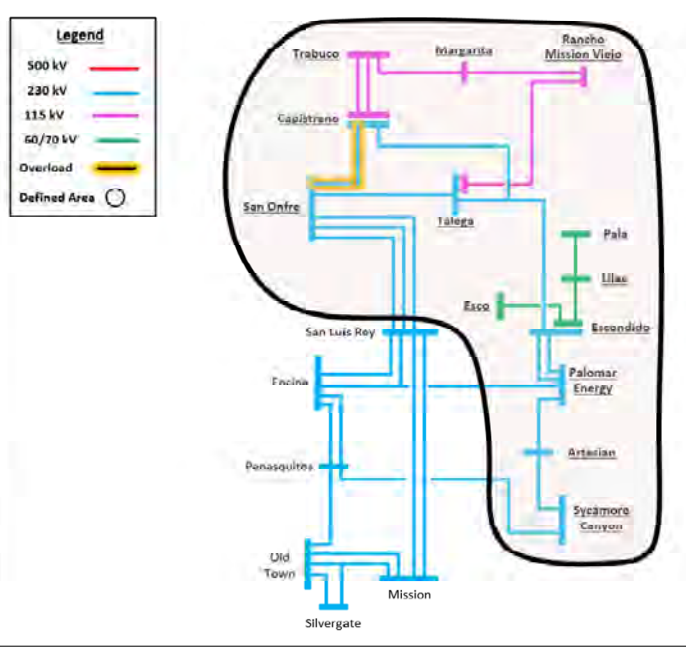
Internal San Diego Area On-Peak/Off-Peak Constraint



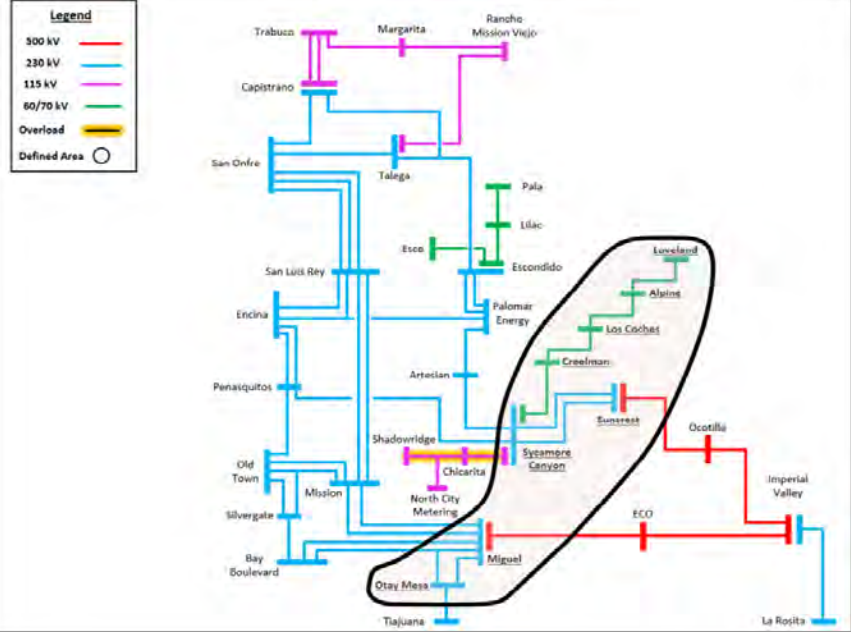
Talega 230 kV On-Peak Constraint



Capistrano-San Onofre 230 kV On-Peak Constraint

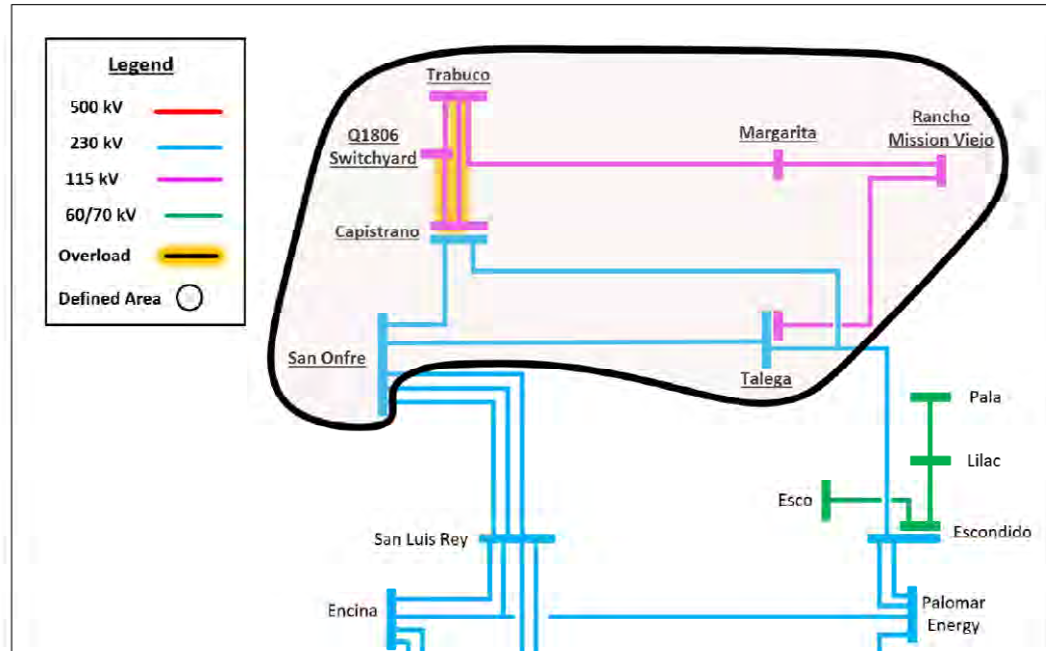


Chicarita 138 kV On-Peak Constraint

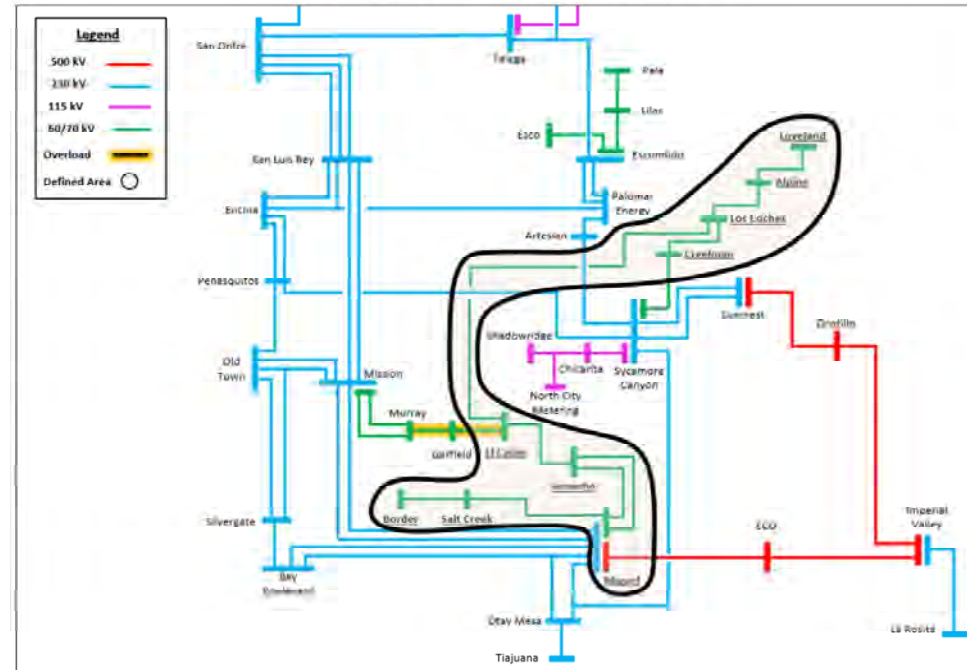


SDGaE Interconnection Area Constraints (continued)

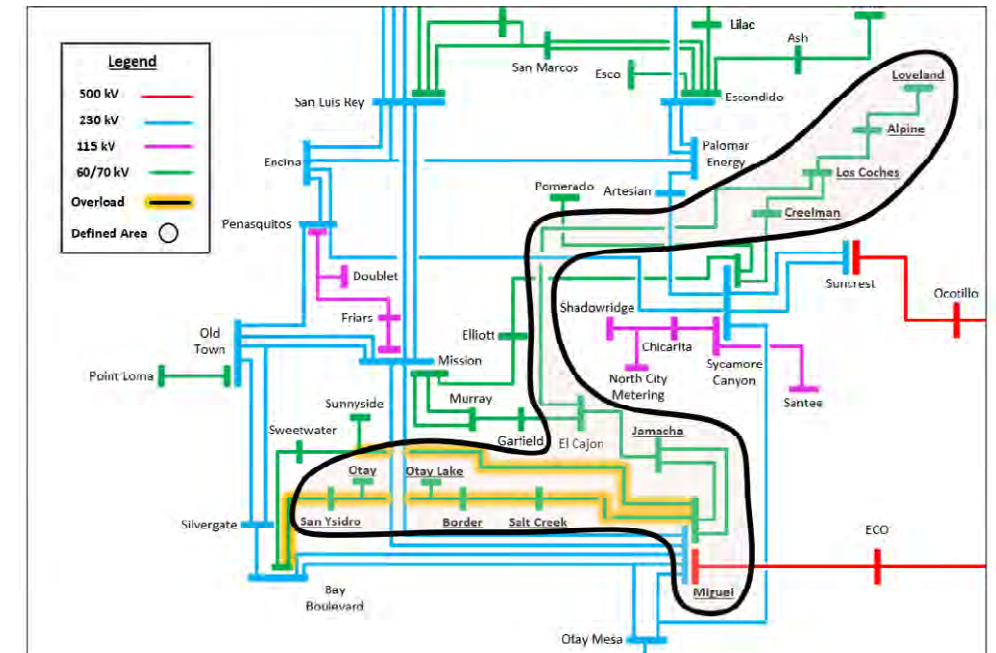
Trabuco-Capistrano 138 kV On-Peak Constraint



El Cajon 69 kV On-Peak Constraint



Miguel 69 kV On-Peak Constraint



Ocean Ranch 69 kV On-Peak Constraint

