
 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction: None</b>	

# Table of Contents

<b>1. Procedure Detail .....</b>	<b>2</b>
1.1 Effectiveness Factors .....	2
6110 - Effectiveness Factors for the California-Oregon Intertie (COI): (version 13.0, 4/01/24) .....	3
6140 - Effectiveness Factors for the Northwest Control Area (COI/Path 66): (version 7.1, 2/22/24) .....	11
6140A - Effectiveness Factors for the Northwest Control Area – PGAE: (version 2.2, 2/22/24) .....	16
6310 - Effectiveness Factors for Path 15 (Midway – Los Banos): (version 25.0, 4/09/23) ..	18
6410 - Effectiveness Factors for Path 26 – Midway Vincent: (version 10.7, 11/01/23) .....	31
6610 - Effectiveness Factors for Lugo – Victorville (Path 61): (version 15.6, 9/26/23) .....	33
7110 - Effectiveness Factors for Humboldt Area: (version 13.2, 9/14/23) .....	38
7120 - Effectiveness Factors for North Geysers Area: (version 9.6, 5/18/23).....	43
7230 - Effectiveness Factors for Palermo-Rio Oso Area: (version 15.4, 4/09/24) .....	44
7240 - Effectiveness Factors for Drum Area / Summit Operations: (version 14.1, 4/01/24) .....	50
7320 - Effectiveness Factors for Bay Area Transmission Management: (version 24.6, 2/29/24) .....	51
7330 - Generation Effectiveness Factors San Francisco and Peninsula Areas: (version 12.1, 6/08/23) .....	63
7340 - Generation Effectiveness Factors Silicon Valley Area: (version 3.0, 12/04/20) .....	64
7410 - Effectiveness Factors for Tesla/Bellota Area: (version 9.4, 1/11/24) .....	65
7420 - HHWP Warnerville-Standiford Lines #7 and #8 Operations: (version 6.2, 1/12/23). 71	71
7430 - Effectiveness Factors for the Fresno Area: (version 26.1, 4/01/24).....	72
7440 - Effectiveness Factors for the Los Padres Area: (version 3.1, 4/01/24).....	78
7450 - Effectiveness Factors for Midway-Kern Area: (version 2.8, 4/01/24).....	80
7500 - Effectiveness Factors for Big Creek Area: (version 2.1, 6/08/23) .....	83
7510 - Effectiveness Factors for Big Creek Area Corridor Generators (South of Magunden): (version 6.1, 8/10/23) .....	84
7540 - Effectiveness Factors for Path 60 Inyo Tie: (version 2.1, 10/12/23) .....	86
7550 - Effectiveness Factors for Vincent Banks: (version 9.2, 1/04/24) .....	87
7570 - Effectiveness Factors for Prior Outage of Vincent – Mesa or Mira Loma – Mesa: (version 13.1, 12/08/23) .....	88
7580 - Effectiveness Factors – Mira Loma Banks: (version 11.1, 12/13/23).....	102
7590 - Effectiveness Factors for Serrano Banks: (version 12.1, 7/06/23) .....	104
7610 - Generator Effectiveness Factors for Mesa 500/230 kV AA Transformer Banks (version 1.0, 5/27/22) .....	106
7630 - Effectiveness Factors for Orange County Area: (version 16.3, 9/26/23) .....	107
7680 - Effectiveness Factors for Sylmar: (version 3.2, 1/04/24).....	109
7690 - Effectiveness Factors for North of Lugo N-1-1: (version 4.1, 3/29/24).....	112
7720 - Effectiveness Factors Julian Hinds-Mirage: (version 6.1, 8/17/23).....	118
7740 - Effectiveness Factors for Parker - Gene: (version 5.1, 3/30/23).....	119
7760 - Effectiveness Factors for Devers-Red Bluff Lines: (version 1.0, 4/09/24).....	120
7820 - Effectiveness Factors for San Diego Area: (version 19.0, 2/29/24) .....	121

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction: None</b>	

7910 - Effectiveness Factors for Valley Electric Association (VEA):  
     (version 6.1, 12/19/22) ..... 133

8610 - Effectiveness Factors for Sylmar Transformer Banks (Path 41):  
     (version 5.0, 6/01/23) ..... 134

**2. Supporting Information ..... 136**

    Operationally Affected Parties ..... 136

    References & Definitions ..... 136

    Version History ..... 136


# 1. Procedure Detail

## 1.1 Effectiveness Factors

**Note:** *Effectiveness factors must be considered in conjunction with other factors affecting current system conditions and overall efficiencies. These factors include (but are not limited to) specific unit availability, transmission outages, impact on congestion to other paths, and relative costs. Due to the substantially dynamic and variable nature of system operating conditions, which affect Generation effectiveness factors, and in the interests of maximizing consistency in mitigation actions, assumptions of system conditions have been applied to power flow models to arrive at reasonable effectiveness factors that may be applied over a range of operating conditions.*

*Bus Injection Effectiveness Factors (BIEF) from RTCA may be substituted for those listed in 2210Z, as the BIEF in RTCA may be more accurate.*

*If dispatch for gas resources is substantially different from Day-Ahead schedules, contact gas suppliers to confirm that this won't be an issue.*

 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

**6110** - Effectiveness Factors for the California-Oregon Intertie (COI): (version 13.0, 4/01/24)

Table 5: Generation Effectiveness Factors: Normal Operations Flow Limits

Resource ID	MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation.															
	See Table 5A for corresponding Resource ID's															
	PGAE Pit River System Units	Feather River Generation		CDWR Lake Oroville River Units	South Feather River Units			Colusa	Hatchet Ridge	Bogue Units 56-57	Pease 60 kV Units 58-60	Drum Area Units 61-67	COI	LODI Generation		Bellota Generation
	Units 20-25	Units 26-34		Units 45-49	Units 50-51	Units 52-53								Units 68-69	Unit 70	
<b>Control Point (CP) #1</b> 0.07*Table Mountain – Tesla 500 kV (→, @Table) + 0.07*Table Mountain –Vaca 500 kV(→, @Table) + Table Mountain – Rio Oso 230 kV (→, @Table)	6	N/A <sup>2</sup>	-16	16	4 to 6	-2	-2	N/A	6	-4	N/A	-5 to -10	7	-5	-5	-4
<b>CP #2</b> 0.81*Round Mountain – Table Mountain #1 500 kV (→, @Round) + Round Mountain – Table Mountain #2 500 kV (→, @Round)  <b>Or</b> 0.81*Round Mountain – Table Mountain #2 500 kV (→, @Round) + Round Mountain – Table Mountain #1 500 kV (→, @Round)	36 to 44	-18	-10	-20	-10	-14	-13	9	42	-13	-14	-10	52	-6	-5	N/A

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Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24

**Effectiveness Factors - All**

**Distribution Restriction:  
None**

Resource ID	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation. <a href="#">See Table 5A</a> for corresponding Resource ID's															
	PGAE Pit River System Units	Feather River Generation		CDWR Lake Oroville River Units	South Feather River Units			Colusa	Hatchet Ridge	Bogue Units 56-57	Pease 60 kV Units 58-60	Drum Area Units 61-67	COI	LODI Generation		Bellota Generation
		Units 20-25	Units 26-34		Units 45-49	Units 50-51	Units 52-53							Units 68-69	Unit 70	
<b>CP #3</b> 0.08*Round Mountain – Table Mountain #1 500 kV (→, @Round) + 0.08*Round Mountain – Table Mountain #2 500 kV (→, @Round) +Table Mountain 500/230 KV Bank (←, @230 KV)	N/A <sup>1</sup>	N/A <sup>2</sup>	3 3	77	6	51	49	-2	N/A	45	51	24	N/A	9	12	7
<b>CP #4</b> 0.178*[Table Mt-Vaca Dixon 500 kV (→) + Table Mt-Tesla 500 kV (→)] + Table Mt 500/230 kV (→) + 0.67*[Caribou Units 1-3 + Butt Valley] + 0.70*[Caribou Units 4-5] + 0.06*[Helms Units 1-3 Pump Load] (To be used only when pumping) <sup>3</sup>	12 to 14	-60 to -64	-30	-66	-52	-45	-43	4	13	-39	-45	-20	16	-9	-9	-7
<b>CP #5</b> 0.012*(Table Mountain – Vaca 500 kV line) + 0.012*(Table Mountain – Tesla 500 kV line) + Pease-Rio Oso 115 kV line (→, @Pease) - 0.033*[Caribou Units 1-3 + Butt Valley] - 0.029*[Caribou Units 4-5] <sup>4</sup>	N/A	N/A <sup>2</sup>	N/A	2	7	2	4	N/A	N/A	N/A	28	-3	1	N/A	N/A	N/A

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Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24

**Effectiveness Factors - All**

**Distribution Restriction:  
None**

Resource ID	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.															
	See Table 5A for corresponding Resource ID's															
	PG&E Pit River System Units	Feather River Generation		CDWR Lake Oroville River Units	South Feather River Units			Colusa	Hatchet Ridge	Bogue Units 56-57	Pease 60 kV Units 58-60	Drum Area Units 61-67	COI	LODI Generation		Bellota Generation
Units 20-25		Units 26-34	Units 45-49		Units 50-51	Units 52-53	Units 68-69							Unit 70		
<b>CP #6</b> 0.03*(Table Mountain – Vaca 500 kV line) + 0.03*(Table Mountain – Tesla 500 kV line) + Rio Oso – Lockford 230 kV line (→, @Rio Oso) - 0.067*[Caribou Units 1-3 + Butt Valley] <sup>5</sup>	2	N/A <sub>2</sub>	N/A	6	8	N/A	N/A	2	N/A	9	8	3	3	-20	-6	
<b>CP #7</b> 0.015*Table Mountain – Vaca 500 kV line (→, @ Table Mountain) + 0.015*Table Mountain – Tesla 500 kV line (→, @Table Mountain) + Nicolaus-Rio Oso 115 kV line (→, @E. Nicolaus) - 0.043*[Caribou Units 1-3 + Butt Valley] - 0.038*[Caribou Units 4-5] <sup>6</sup>	N/A	N/A <sub>2</sub>	-2	3	8 to 10	5	27	N/A	N/A	-3	15	-5	1.5	N/A	N/A	N/A
<b>CP #8</b> 0.009*Table Mountain – Vaca 500 kV line (→, @ Table Mountain) + 0.009*Table Mountain – Tesla 500 kV line (→, @Table Mountain) + Bogue-Rio Oso 115 kV line (→, @Rio Oso) <sup>7</sup>	N/A	N/A <sub>2</sub>	N/A	2	8	N/A	N/A	N/A	N/A	61	N/A	-2 to -4	1	N/A	N/A	N/A




Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24

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None**

Resource ID	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.															
	See Table 5A for corresponding Resource ID's															
	PG&E Pit River System Units	Feather River Generation		CDWR Lake Oroville River Units	South Feather River Units			Colusa	Hatchet Ridge	Bogue Units 56-57	Pease 60 kV Units 58-60	Drum Area Units 61-67	COI	LODI Generation		Bellota Generation
Units 20-25		Units 26-34	Units 45-49		Units 50-51	Units 52-53	Units 68-69							Unit 70		
<b>CP #9</b> 0.0084*Table Mountain – Vaca 500 kV line (→, @ Table Mountain) + 0.0084*Table Mountain – Tesla 500 kV line (→, @Table Mountain) + Palermo-Pease 115 kV line (→, @Palermo) - 0.032*[Caribou Units 1-3 + Butt Valley] - 0.026*[Caribou Units 4-5] <sup>8</sup>	N/A	N/A <sup>2</sup>	N/A	2	10	N/A	-4	N/A	N/A	N/A	-28	-2	1	N/A	N/A	N/A
<b>CP #10</b> 0.0645*Table Mountain – Vaca 500 kV line (→, @ Table Mountain) + 0.0645*Table Mountain – Tesla 500 kV line (→, @Table Mountain) + Round Mountain – Cottonwood 230 kV #3 line (→, @Round Mountain) - 0.057*[Caribou Units 1-3 + Butt Valley] - 0.061*[Caribou Units 4-5] <sup>9</sup>	9-14	N/A <sup>2</sup>	2	6	5	4	3	-4	11	3	4	2	6	N/A	N/A	N/A
<b>CP #11</b> 0.63*Malin-Round Mountain 500 kV #1 line (→, @ Malin) + 0.63*Malin-Round Mountain 500 kV #2 line (→, @Malin) + Captain Jack – Olinda 500 kV line (→, @Captain Jack)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100	N/A	N/A	N/A

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<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Resource ID	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.															
	See Table 5A for corresponding Resource ID's															
	PGAE Pit River System Units	Feather River Generation		CDWR Lake Oroville River Units	South Feather River Units			Colusa	Hatchet Ridge	Bogue Units 56-57	Pease 60 kV Units 58-60	Drum Area Units 61-67	COI	LODI Generation		Bellota Generation
	Units 20-25	Units 26-34		Units 45-49	Units 50-51	Units 52-53							Units 68-69	Unit 70		
<b>CP #12</b> 0.03*Table Mountain – Vaca 500 kV line(->, @Table Mountain) + 0.03*Table Mountain – Tesla 500 kV line(->, Table Mountain ) + Delevan – Cortina 230 kV line (→, @Delevan)	3	N/A	N/A	N/A	N/A	N/A	N/A	30	3	N/A	N/A	N/A	4	N/A	N/A	N/A

**Note:** This table indicates the degree of effectiveness that Generation will be at relieving the calculated loading across the multiple transmission facilities that make up the control point. (- refers to increase generation, + refers to decrease generation to relieve control point)

**Note<sup>1</sup>:** The respective resources are not effective in mitigating the control point-3.

**Note<sup>2</sup>:** These units (Caribou, Butt valley, Hyatt and Thermalito) are tripped due to PGAE RAS actions and should not be used in mitigation


**Note<sup>3</sup>:** The Market Nomogram for **CP#4** has been modeled using the following equation:  
 $0.19 * \text{Table Mountain} - \text{Vaca 500 kV line 500 kV} (\rightarrow, @\text{Table}) + 0.19 * \text{Table Mountain} - \text{Tesla 500 kV line 500 kV} (\rightarrow, @\text{Table}) + \text{Table Mountain 500/230 KV Bank} (\rightarrow, @\text{230 KV})$

**Note<sup>4</sup>:** The Market Nomogram for **CP#5** has been modeled using the following equation:  
 $0.011 * (\text{Table Mountain} - \text{Vaca 500 kV line}) + 0.011 * (\text{Table Mountain} - \text{Tesla 500 kV line}) + \text{Pease-Rio Oso 115 kV line} (\rightarrow, @\text{Pease})$

**Note<sup>5</sup>:** The Market Nomogram for **CP#6** has been modeled using the following equation:  
 $0.026 * (\text{Table Mountain} - \text{Vaca 500 kV line}) + 0.026 * (\text{Table Mountain} - \text{Tesla 500 kV line}) + \text{Rio Oso} - \text{Lockeford 230 kV line} (\rightarrow, @\text{Rio Oso})$

**Note<sup>6</sup>:** The Market Nomogram for **CP#7** has been modeled using the following equation:  
 $0.014 * \text{Table Mountain} - \text{Vaca 500 kV line} (\rightarrow, @\text{Table Mountain}) + 0.014 * \text{Table Mountain} - \text{Tesla 500 kV line} (\rightarrow, @\text{Table Mountain}) + \text{Nicolaus-Rio Oso 115 kV line} (\rightarrow, @\text{E. Nicolaus})$

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

**Note<sup>7</sup>:** The Market Nomogram for **CP#8** has been modeled using the following equation:  
 $0.0084 * \text{Table Mountain} - \text{Vaca 500 kV line } (\rightarrow, @ \text{ Table Mountain}) + 0.0084 * \text{Table Mountain} - \text{Tesla 500 kV line } (\rightarrow, @ \text{Table Mountain}) + \text{Bogue-Rio Oso 115 kV line } (\rightarrow, @ \text{Rio Oso})$

**Note<sup>8</sup>:** The Market Nomogram for **CP#9** has been modeled using the following equation:  
 $0.0075 * \text{Table Mountain} - \text{Vaca 500 kV line } (\rightarrow, @ \text{ Table Mountain}) + 0.0075 * \text{Table Mountain} - \text{Tesla 500 kV line } (\rightarrow, @ \text{Table Mountain}) + \text{Palermo-Pease 115 kV line } (\rightarrow, @ \text{Palermo})$

**Note<sup>9</sup>:** The Market Nomogram for **CP#10** has been modeled using the following equation:  
 $0.063 * \text{Table Mountain} - \text{Vaca 500 kV line } (\rightarrow, @ \text{ Table Mountain}) + 0.063 * \text{Table Mountain} - \text{Tesla 500 kV line } (\rightarrow, @ \text{Table Mountain}) + \text{Round Mountain} - \text{Cottonwood 230 kV \#3 line } (\rightarrow, @ \text{Round Mountain})$





 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 5A: Resource IDs


River System	Resource ID		
<b>PGAE Pit River System Units</b>	1.HATCR1_7_UNIT 2.HATCR2_7_UNIT 3.PIT1_7_UNIT 1 4.PIT1_7_UNIT 2 5.PIT3_7_UNIT 1 6.PIT3_7_UNIT 2 7.PIT3_7_UNIT 3	8.PIT4_7_UNIT 1 9.PIT4_7_UNIT 2 10.PIT5_7_UNIT 1 11.PIT5_7_UNIT 2 12.PIT5_7_UNIT 3 13.PIT5_7_UNIT 4 14.BLACK_7_UNIT 1	15.BLACK_7_UNIT 2 16.PIT6_7_UNIT 1 17.PIT6_7_UNIT 2 18.PIT7_7_UNIT 1 19.PIT7_7_UNIT 2
<b>PGAE Feather River System Units</b>	20.BUTTVL_7_UNIT 1 21.CARBOU_7_UNIT 2 22.CARBOU_7_UNIT 3 23.CARBOU_7_UNIT 1 24.CARBOU_7_UNIT 4	25.CARBOU_7_UNIT 5 26.BELDEN_7_UNIT 1 27.RCKCRK_7_UNIT 1 28.RCKCRK_7_UNIT 2 29.BUCKCK_7_UNIT 1	30.BUCKCK_7_UNIT 2 31.CRESTA_7_UNIT 1 32.CRESTA_7_UNIT 2 33.POEPH_7_UNIT 1 34.POEPH_7_UNIT 2
<b>CDWR Lake Oroville River Units</b>	35.HYATT_2_UNIT 1 36.HYATT_2_UNIT 2 37.HYATT_2_UNIT 3 38.HYATT_2_UNIT 4	39.HYATT_2_UNIT 5 40.HYATT_2_UNIT 6 41.THERMA_2_UNIT 1 42.THERMA_2_UNIT 2	43.THERMA_2_UNIT 3 44.THERMA_2_UNIT 4
<b>YCWA North Yuba River and South Feather River Units</b>	45.WDLEAF_7_UNIT 1 46.FORBST_7_UNIT 1 47.SLYCRK_1_UNIT 1	48.KELYRG_6_UNIT 49.OROVIL_6_UNIT 50.COLGAT_7_UNIT 1	51.COLGAT_7_UNIT 2 52.NAROW1_2_UNIT 53.NAROW2_2_UNIT
<b>Colusa</b>	54.COLUSA_2_PL1X3		
<b>Hatchet Ridge Wind Farm</b>	55.HATRDG_2_WIND		
<b>Bogue Generation</b>	56.BOGUE_1_UNITA1		
<b>Pease 60 kV Generation</b>	58.YUBACT_1_SUNSWT 59.YUBACT_6_UNITA1 60.GRNLF2_1_UNIT		

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b> 2210Z
		<b>Version No.</b> 28.9
		<b>Effective Date</b> 4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>

River System	Resource ID		
<b>Drum Area Generation</b> <b>[Middle Fork</b> <b>Drum 1-5, Dutch Flat 1-2,</b> <b>Chicago Park, etc.]</b>	61.MDFKRL_2_PROJCT 62.DRUM_7_PL1X2 63.DRUM_7_PL3X4 64.DRUM_7_UNIT 5 65.DUTCH1_7_UNIT 1	66.DUTCH2_7_UNIT 1 67.CHICPK_7_UNIT 1	
<b>Lodi Generation</b>	68. LODIEC_2_PL1X2	69. STIGCT_2_LODI	70. LODI25_2_UNIT 1
<b>Bellota Generation</b>	71. TIGRCK_7_UNITS	72. ELECTR_7_PL1X3	73. COLVIL_7_PL1X2
<b>COI</b>	74. MALIN500		

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

6140 - Effectiveness Factors for the Northwest Control Area (COI/Path 66): (version 7.1, 2/22/24)

Table 3A: Generation Effectiveness Factors: Contingency Operations Flow Limits

Resource IDs →	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.					
	Pit River System	COI	Colusa	Hatchet Ridge Wind	Shasta Units 1-4	Rest of CVP Generation
	PIT1_7_UNIT 1, PIT1_7_UNIT 2 , PIT3_7_PL1X3, PIT4_7_PL1X2, PIT5_7_PL1X2, PIT5_7_PL3X4 PIT6_7_UNIT 1, PIT6_7_UNIT 2, PIT7_7_UNIT 1, PIT7_7_UNIT 2, BLACK_7_UNIT 1, BLACK_7_UNIT 2		COLUSA_2_PL1X3	HATRDG_2_WIND	WASN Generation	WASN Generation
<b>Control Points</b> ↓						
<b>CP #2a</b> 0.7* Cottonwood – Olinda 230 kV #2 (→ @ Cottonwood) + Cottonwood - Olinda 230 kV #1 (→ @ Cottonwood)	13-17	9	13	14	23	-16 to -10
<b>CP #2b</b> 0.7* Cottonwood – Olinda 230 kV #1 (→ @ Cottonwood) + Cottonwood - Olinda 230 kV #2 (→ @ Cottonwood)	13-17	9	13	14	23	-16 to -10
<b>CP #2c</b> 0.03 * Olinda – Tracy 500 kV (→ @ Olinda) + Table Mountain – Vaca (→ @ Table Mountain)	N/A	N/A	N/A	N/A	N/A	N/A
<b>CP #2d</b> 0.07*Olinda – Tracy + 0.81*Round Mountain – Table Mountain #1 500 kV (→, @Round) + Round Mountain – Table Mountain #2 500 kV (→, @Round)	N/A	N/A	N/A	N/A	N/A	N/A

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Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24

**Effectiveness Factors - All**

**Distribution Restriction:  
None**


Resource IDs →  Control Points↓	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.					
	Pit River System	COI	Colusa	Hatchet Ridge Wind	Shasta Units 1-4	Rest of CVP Generation
	PIT1_7_UNIT 1, PIT1_7_UNIT 2 , PIT3_7_PL1X3, PIT4_7_PL1X2, PIT5_7_PL1X2, PIT5_7_PL3X4 PIT6_7_UNIT 1, PIT6_7_UNIT 2, PIT7_7_UNIT 1, PIT7_7_UNIT 2, BLACK_7_UNIT 1, BLACK_7_UNIT 2		COLUSA_2_PL1X3	HATRDG_2_WIND	WASN Generation	WASN Generation
<b>CP #3a</b> 0.19* Captain Jack – Olinda 500 kV (→ @ Captain Jack) + Cottonwood – Olinda 230 kV #2 (→ @ Cottonwood)	13-17	8	13	14	23	-16 to -10
<b>CP #3b</b> 0.51 * Round Mountain 500/2330 kV Bank (→ @500) Cottonwood - Olinda #2 230 kV (→ @ Cottonwood)	46	N/A	24	46	27	20
<b>CP #3c</b> 0.19* Captain Jack – Olinda 500 kV (→ @ Captain Jack) + Cottonwood – Olinda 230 kV #1 (→ @ Cottonwood)	13-17	8	13	14	23	-16 to -10
<b>CP #3d</b> 0.51 * Round Mountain 500/2330 kV Bank (→ @500) Cottonwood - Olinda #1 230 kV (→ @ Cottonwood)	46	N/A	24	46	27	20
<b>CP #3e</b> 0.03 * Olinda – Tracy 500 kV (→ @ Olinda) + Table Mountain – Vaca (→ @ Table Mountain)	N/A	N/A	N/A	N/A	N/A	N/A

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

<b>Resource IDs</b> → <b>Control Points</b> ↓	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>					
	<b>Pit River System</b>	<b>COI</b>	<b>Colusa</b>	<b>Hatchet Ridge Wind</b>	<b>Shasta Units 1-4</b>	<b>Rest of CVP Generation</b>
	<b>PIT1_7_UNIT 1, PIT1_7_UNIT 2 ,  PIT3_7_PL1X3, PIT4_7_PL1X2,  PIT5_7_PL1X2, PIT5_7_PL3X4  PIT6_7_UNIT 1, PIT6_7_UNIT 2,  PIT7_7_UNIT 1, PIT7_7_UNIT 2,  BLACK_7_UNIT 1, BLACK_7_UNIT 2</b>		<b>COLUSA_2_PL1X3</b>	<b>HATRDG_2_WIND</b>	<b>WASN Generation</b>	<b>WASN Generation</b>
<b>CP #3f</b> 0.07*Olinda – Tracy + 0.81*Round Mountain – Table Mountain #1 500 kV (→, @Round) + Round Mountain – Table Mountain #2 500 kV (→, @Round)	N/A	N/A	N/A	N/A	N/A	N/A
<b>CP #4a</b> 0.7* Cottonwood – Olinda 230 kV #2 (→ @ Cottonwood) + Cottonwood - Olinda 230 kV #1 (→ @ Cottonwood)	13-17	9	13	14	23	-16 to -10
<b>CP #4b</b> 0.01 * Olinda – Tracy 500 kV (→ @ Olinda) + Delevan – Cortina 230 kV	N/A	N/A	N/A	N/A	N/A	N/A
<b>CP #4c</b> 0.08 * Olinda – Tracy 500 kV (→ @ Olinda) + Table Mountain – Vaca (→ @ Table Mountain)	N/A	N/A	N/A	N/A	N/A	N/A
<b>CP #4d</b> 0.14*Olinda – Tracy + 0.81*Round Mountain – Table Mountain #1 500 kV (→, @Round) + Round Mountain – Table Mountain #2 500 kV (→, @Round)	N/A	N/A	N/A	N/A	N/A	N/A

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

<b>CP #4e</b> 0.75 * [Round Mt-Cottonwood #230 kV line (→,@Round) + Round Mt-Cottonwood #3 230 kV line (→,@Round)] + Round Mt-Cottonwood #1 230 kV line (→,@Round)	70-75	N/A	N/A	65	N/A	N/A
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Table 3B: Generation Effectiveness Factors: Normal Operations Flow Limits


Control Points↓ Resource IDs →	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.						
	Pit River System	COI	Bypassing series caps on Olinda – Tracy 500 kV	Colusa	Hatchet Ridge Wind	Shasta Units 1-4	Rest of CVP Generation
PIT1_7_UNIT 1, PIT1_7_UNIT 2, PIT3_7_PL1X3, PIT4_7_PL1X2, PIT5_7_PL1X2, PIT5_7_PL3X4, PIT6_7_UNIT 1, PIT6_7_UNIT 2, PIT7_7_UNIT 1, PIT7_7_UNIT 2, BLACK_7_UNIT 1, BLACK_7_UNIT 2				COLUSA_2_PL1X3	HATRDG_2_WIND	WASN Generation	WASN Generation
<b>CP #1a</b> 0.23*Captain Jack – Olinda 500 kV (→ @ Captain Jack) + Cottonwood - Olinda #1 230 kV (→ @ Cottonwood) + Cottonwood - Olinda #2 230 kV (→ @ Cottonwood)	10	10	9	10	10	23	-16 to -10

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

<b>CP #1b</b> 0.6 * Round Mountain 500/2330 kV Bank (→@500) + Cottonwood - Olinda #1 230 kV (→ @ Cottonwood) + Cottonwood - Olinda #2 230 kV (→ @ Cottonwood)	46	N/A	4	24	46	27	20
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**Note:** The effectiveness of bypassing series caps is provided for a 100 MW flow on the Olinda-Tracy 500 kV line (→ @Olinda)

 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

**6140A** - Effectiveness Factors for the Northwest Control Area – PGAE: (version 2.2, 2/22/24)

Table 3A: Generation Effectiveness Factors: Contingency Operations Flow Limits

	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.			
	Upper Pit River System	Lower Pit River System	Hatchet Ridge Wind	Colusa
<b>Resource IDs</b> → <b>Control Points</b> ↓	PIT1_7_UNIT 1, PIT1_7_UNIT 2, PIT3_7_PL1X3,	PIT4_7_PL1X2, PIT5_7_PL1X2, PIT5_7_PL3X4 PIT6_7_UNIT 1, PIT6_7_UNIT 2, PIT7_7_UNIT 1, PIT7_7_UNIT 2, BLACK_7_UNIT 1, BLACK_7_UNIT 2	HATRDG_2_WIND	COLUSA_2_PL1X3
<b>CP #2a</b> 0.45 * Round Mt-Cottonwood #1 230 kV line (→, @Round) + Round Mt-Cottonwood #2 230 kV line (→, @Round)	23	43	42	N/A
<b>CP #2b</b> 0.45 * Round Mt-Cottonwood #1 230 kV line (→, @Round) + Round Mt-Cottonwood #3 230 kV line (→, @Round)	23	42	33	N/A
<b>CP #2c</b> 0.25 * Delevan - Vaca 230 kV #2 (→ @ Delevan) + Delevan - Cortina 230 kV (→ @ Delevan)	20	20	20	26

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3B: Generation Effectiveness Factors: Normal Operations Flow Limits

<b>Control Points↓</b> Resource IDs →	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.				
	HUMBPP_6_UNITS1, HUMBPP_6_UNITS2, HUMBPP_1_UNITS3, FAIRHV_6_UNIT, PACLUM_6_UNIT	LAPAC_6_UNIT , BLULKE_6_BLUELK	Cascade Imports	SMPAND_7_UNIT, WSENGY_1_UNIT 1, LEWSTN_7_WEBRFL,	COLEMN_2_UNIT, INSKIP_2_UNIT, SOUTH_2_UNIT, VOLTA_2_UNIT 1, VOLTA_2_UNIT 2, VOLTA_7_QFUNTS
<b>CP #1a</b> 0.87*Cottonwood 230/115 BK4 (←) + Cottonwood 230/115 BK1 (←)	72-68	72	65	82-73	N/A
<b>CP #1b</b> 0.87*Cottonwood 230/115 BK4 (→) + Cottonwood 230/115 BK1 (→)	-72 to -68	-72	-65	-82 to -73	N/A
<b>CP #1c</b> 0.95*Cottonwood 230/115 BK1 (←) + Cottonwood 230/115 BK4 (←)	72-68	72	65	82-73	N/A
<b>CP #1d</b> 0.95*Cottonwood 230/115 BK1 (→) + Cottonwood 230/115 BK4 (→)	-72 to -68	-72	-65	-82 to -73	N/A

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b> 2210Z
		<b>Version No.</b> 28.9
		<b>Effective Date</b> 4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>

6310 - Effectiveness Factors for Path 15 (Midway – Los Banos): (version 25.0, 4/09/23)

Table 4 - Part 1: Generation Effectiveness Factors: Contingency Operations

Resource IDs →	MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation								
	San Luis PGP	GWF Trcy1&2 Stanislaus Ralston Middle Fork Tiger Crk Electra Salt Spring Lodi EC	C.Costa 6&7 Gateway Geys 11-20	LMEC DEC Lambie Creed Goosehaven Wolfskill Calpeak(Vaca)	Cresta, Poe Rock Crk Bucks Crk Belden Drum 1-5 Dtch Fit 1-2 Chicago Pk	Donnells Beardsley Spring Gap Sand Bar Tulluch Pac Ult Pwr	YCEC FREC Colgate 1&2	Hyatt Thermalito Woodleaf Forbestown Sly Creek Caribou 4&5 JB Black 1&2	Wellhead (Panoche) Calpeak (Panoche)
	SLUISP_2_UNITS	SCHLTE_1_UNITA1 SCHLTE_1_UNITA2 STANIS_1_UNIT MDFKRL_2_PROJCT TIGRCK_7_UNITS ELECTR_7_PL1x3 SALTSP_7_UNITS	GATWAY_2_PL1X3 GEYS11_7_UNIT11 GEYS12_7_UNIT12 GEYS13_7_UNIT13 GEYS14_7_UNIT14 GEYS16_7_UNIT16 GEYS17_2_BOTRCK GEYS17_7_UNIT17 GEYS18_7_UNIT18 GEYS20_7_UNIT20	LMEC_1_PL1X3 DELTA_2_PL1X4 LMBEPK_2_UNITA1 LMBEPK_2_UNITA2 LMBEPK_2_UNITA3 WOLFSK_1_UNITA1 VACADX_1_UNITA1	CRESTA_7_PL1X2 RCKCRK_7_UNIT 1 RCKCRK_7_UNIT 2 BUCKCK_7_PL1X2 BELDEN_7_UNIT 1 DRUM_7_PL1X2 DRUM_7_PL3X4 DRUM_7_UNIT 5 DUTCH1_7_UNIT 1 DUTCH2_7_UNIT 2 CHICPK_7_UNIT 1	DONNLS_7_UNIT BEARDS_7_UNIT 1 SPRGAP_1_UNIT 1 SNDBAR_7_UNIT 1 TULLCK_7_UNITS ULTPCH_1_UNIT 1	YUBACT_6_UNITA1 BOGUE_1_UNITA1 COLGAT_7_UNIT 1 COLGAT_7_UNIT 2	HYTTM_2_UNITS WDLEAF_7_UNIT 1 FORBST_7_UNIT 1 SLYCRK_1_UNIT 1 CARBOU_7_PL4X5 BLACK_7_UNIT 1 BLACK_7_UNIT 2	PNOCHE_1_PL1X2 PNOCHE_1_UNITA1
<b>Control Points</b> ↓									
<b>CP #1</b> 0.14*Los Banos-Tesla (->, @Los Banos) + Los Banos-Quinto (->, @Los Banos)	20	-14	-8	-8	-7	-7	-7	-7	10
<b>CP #2</b> 0.24* Los Banos-Tesla (<-, @Los Banos) +0.24* Los Banos-Tracy (<-, @Los Banos) +LosBanos-Quinto (<-, @LosBanos)	-19	14	14	14	14	14	14	14	-10

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Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24

**Effectiveness Factors - All**

**Distribution Restriction:**  
None

Resource IDs →  Control Points↓	MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation								
	San Luis PGP	GWF Trcy1&2 Stanislaus Ralston Middle Fork Tiger Crk Electra Salt Spring Lodi EC	C.Costa 6&7 Gateway Geys 11-20	LMEC DEC Lambie Creed Goosehaven Wolfskill Calpeak(Vaca)	Cresta, Poe Rock Crk Bucks Crk Belden Drum 1-5 Dtch Flt 1-2 Chicago Pk	Donnells Beardsley Spring Gap Sand Bar Tulluch Pac Ult Pwr	YCEC FREC Colgate 1&2	Hyatt Thermalito Woodleaf Forbestown Sly Creek Caribou 4&5 JB Black 1&2	Wellhead (Panoche) Calpeak (Panoche)
	SLUISP_2_ UNITS	SCHLTE_1_ UNITA1 SCHLTE_1_ UNITA2 STANIS_1_ UNIT MDFKRL_2_ PROJECT TIGRCK_7_ UNITS ELECTR_7_ PL1x3 SALTSP_7_ UNITS	GATWAY_2_ PL1X3 GEYS11_7_ UNIT11 GEYS12_7_ UNIT12 GEYS13_7_ UNIT13 GEYS14_7_ UNIT14 GEYS16_7_ UNIT16 GEYS17_2_ BOTRCK GEYS17_7_ UNIT17 GEYS18_7_ UNIT18 GEYS20_7_ UNIT20	LMEC_1_ PL1X3 DELTA_2_ PL1X4 LMBEPK_2_ UNITA1 LMBEPK_2_ UNITA2 LMBEPK_2_ UNITA3 WOLFSK_1_ UNITA1 VACADX_1_ UNITA1	CRESTA_7_ PL1X2 RCKCRK_7_ UNIT 1 RCKCRK_7_ UNIT 2 BUCKCK_7_ PL1X2 BELDEN_7_ UNIT 1 DRUM_7_ PL1X2 DRUM_7_ PL3X4 DRUM_7_ UNIT 5 DUTCH1_7_ UNIT 1 DUTCH2_7_ UNIT 2 CHICPK_7_ UNIT 1	DONNLS_7_ UNIT BEARDS_7_ UNIT 1 SPRGAP_1_ UNIT 1 SNDBAR_7_ UNIT 1 TULLCK_7_ UNITS ULTPCH_1_ UNIT 1	YUBACT_6_ UNI TA1 BOGUE_1_ UNI TA1 COLGAT_7_ UNI T 1 COLGAT_7_ UNI T 2	HYTTHM_2_ UNITS WDLEAF_7_ UNIT 1 FORBST_7_ UNIT 1 SLYCRK_1_ UNIT 1 CARBOU_7_ PL4X5 BLACK_7_ UNIT 1 BLACK_7_ UNIT 2	PNOCHE_1_ PL1X2 PNOCHE_1_ UNITA1
<b>CP #3</b> 0.06* Los Banos-Tesla (<-, @Los Banos) +0.06* Los Banos-Tracy (<-, @Los Banos) +Warnerville-Wilson (->, @Wilson)	-18	11	5	5	5	5	5	5	-4
<b>CP #4</b> 0.07*Los Banos-Midway #2 (->, @Los Banos) +0.07*Los Banos-Gates (->, @Los Banos) +Panoche-Gates #1 (->, @Panoche)	10	7	5	5	5	5	5	5	16

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Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24

**Effectiveness Factors - All**

**Distribution Restriction:**  
None

Resource IDs →  Control Points↓	MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation								
	San Luis PGP	GWF Trcy1&2 Stanislaus Ralston Middle Fork Tiger Crk Electra Salt Spring Lodi EC	C.Costa 6&7 Gateway Geys 11-20	LMEC DEC Lambie Creed Goosehaven Wolfskill Calpeak(Vaca)	Cresta, Poe Rock Crk Bucks Crk Belden Drum 1-5 Dtch Flt 1-2 Chicago Pk	Donnells Beardsley Spring Gap Sand Bar Tulluch Pac Ult Pwr	YCEC FREC Colgate 1&2	Hyatt Thermalito Woodleaf Forbestown Sly Creek Caribou 4&5 JB Black 1&2	Wellhead (Panoche) Calpeak (Panoche)
	SLUISP_2_ UNITS	SCHLTE_1_ UNITA1 SCHLTE_1_ UNITA2 STANIS_1_UNIT MDFKRL_2_PROJECT TIGRCK_7_UNITS ELECTR_7_PL1x3 SALTSP_7_UNITS	GATWAY_2_PL1X3 GEYS11_7_UNIT11 GEYS12_7_UNIT12 GEYS13_7_UNIT13 GEYS14_7_UNIT14 GEYS16_7_UNIT16 GEYS17_2_BOTRCK GEYS17_7_UNIT17 GEYS18_7_UNIT18 GEYS20_7_UNIT20	LMEC_1_PL1X3 DELTA_2_PL1X4 LMBEPK_2_UNITA1 LMBEPK_2_UNITA2 LMBEPK_2_UNITA3 WOLFSK_1_UNITA1 VACADX_1_UNITA1	CRESTA_7_PL1X2 RCKCRK_7_UNIT 1 RCKCRK_7_UNIT 2 BUCKCK_7_PL1X2 BELDEN_7_UNIT 1 DRUM_7_PL1X2 DRUM_7_PL3X4 DRUM_7_UNIT 5 DUTCH1_7_UNIT 1 DUTCH2_7_UNIT 2 CHICPK_7_UNIT 1	DONNLS_7_UNIT BEARDS_7_UNIT 1 SPRGAP_1_UNIT 1 SNDBAR_7_UNIT 1 TULLCK_7_UNITS ULTPCH_1_UNIT 1	YUBACT_6_UNI TA1 BOGUE_1_UNI TA1 COLGAT_7_UNI T 1 COLGAT_7_UNI T 2	HYTTHM_2_UNITS WDLEAF_7_UNIT 1 FORBST_7_UNIT 1 SLYCRK_1_UNIT 1 CARBOU_7_PL4X5 BLACK_7_UNIT 1 BLACK_7_UNIT 2	PNOCHE_1_PL1X2 PNOCHE_1_UNITA1
<b>CP #5</b> 0.11*Los Banos-Midway #2 (->, @Los Banos) +0.11*Gates-Midway 500 kV (->, @Gates) +Gates-Midway 230 (->, @Gates)	8	7	7	7	7	7	7	7	9
<b>CP #6</b> LosBanos-Quinto (->, @LosBanos) +0.25*Los Banos-Tesla 500(->, @Los Banos) +0.25*Los Banos-Tracy 500(->, @Los Banos) -0.12*IRAS Gen -0.12*IRAS Load	30	0	-12	-12	-12	-12	-12	-12	18

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Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24

**Effectiveness Factors - All**

**Distribution Restriction:**  
**None**

MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation									
Resource IDs → Control Points ↓	San Luis PGP	GWF Trcy1&2 Stanislaus Ralston Middle Fork Tiger Crk Electra Salt Spring Lodi EC	C.Costa 6&7 Gateway Geys 11-20	LMEC DEC Lambie Creed Goosehaven Wolfskill Calpeak(Vaca)	Cresta, Poe Rock Crk Bucks Crk Belden Drum 1-5 Dtch Flt 1-2 Chicago Pk	Donnells Beardsley Spring Gap Sand Bar Tulluch Pac Ult Pwr	YCEC FREC Colgate 1&2	Hyatt Thermalito Woodleaf Forbestown Sly Creek Caribou 4&5 JB Black 1&2	Wellhead (Panoche) Calpeak (Panoche)
	SLUIISP_2_ UNITS	SCHLTE_1_ UNITA1 SCHLTE_1_ UNITA2 STANIS_1_UNIT MDFKRL_2_PROJECT TIGRCK_7_UNITS ELECTR_7_PL1x3 SALTSP_7_UNITS	GATWAY_2_PL1X3 GEYS11_7_UNIT11 GEYS12_7_UNIT12 GEYS13_7_UNIT13 GEYS14_7_UNIT14 GEYS16_7_UNIT16 GEYS17_2_BOTRCK GEYS17_7_UNIT17 GEYS18_7_UNIT18 GEYS20_7_UNIT20	LMEC_1_PL1X3 DELTA_2_PL1X4 LMBEPK_2_UNITA1 LMBEPK_2_UNITA2 LMBEPK_2_UNITA3 WOLFSK_1_UNITA1 VACADX_1_UNITA1	CRESTA_7_PL1X2 RCKCRK_7_UNIT 1 RCKCRK_7_UNIT 2 BUCKCK_7_PL1X2 BELDEN_7_UNIT 1 DRUM_7_PL1X2 DRUM_7_PL3X4 DRUM_7_UNIT 5 DUTCH1_7_UNIT 1 DUTCH2_7_UNIT 2 CHICPK_7_UNIT 1	DONNLS_7_UNIT BEARDS_7_UNIT 1 SPRGAP_1_UNIT 1 SNDBAR_7_UNIT 1 TULLCK_7_UNITS ULTPCH_1_UNIT 1	YUBACT_6_UNI TA1 BOGUE_1_UNI TA1 COLGAT_7_UNI T 1 COLGAT_7_UNI T 2	HYTTM_2_UNITS WDLEAF_7_UNIT 1 FORBST_7_UNIT 1 SLYCRK_1_UNIT 1 CARBOU_7_PL4X5 BLACK_7_UNIT 1 BLACK_7_UNIT 2	PNOCHE_1_PL1X2 PNOCHE_1_UNITA1
<b>CP #7</b> Panoche-Gates #1 230 (<-, @Panoche) +0.07*Los Banos-Midway #2 500 (<-, @Midway) +0.07*Los Banos-Gates #1 500 (<-, @Gates) -0.05*IRAS Gen -0.03*IRAS Load -0.03*IRAS Helm Pump	-7	0	-4	-4	-4	-4	-4	-4	-13

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Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24

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**Distribution Restriction:**  
None

MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation									
Resource IDs → Control Points ↓	San Luis PGP	GWF Trcy1&2 Stanislaus Ralston Middle Fork Tiger Crk Electra Salt Spring Lodi EC	C.Costa 6&7 Gateway Geys 11-20	LMEC DEC Lambie Creed Goosehaven Wolfskill Calpeak(Vaca)	Cresta, Poe Rock Crk Bucks Crk Belden Drum 1-5 Dtch Flt 1-2 Chicago Pk	Donnells Beardsley Spring Gap Sand Bar Tulluch Pac Ult Pwr	YCEC FREC Colgate 1&2	Hyatt Thermalito Woodleaf Forbestown Sly Creek Caribou 4&5 JB Black 1&2	Wellhead (Panoche) Calpeak (Panoche)
	SLUISP_2_ UNITS	SCHLTE_1_ UNITA1 SCHLTE_1_ UNITA2 STANIS_1_UNIT MDFKRL_2_PROJECT TIGRCK_7_UNITS ELECTR_7_PL1x3 SALTSP_7_UNITS	GATWAY_2_PL1X3 GEYS11_7_UNIT11 GEYS12_7_UNIT12 GEYS13_7_UNIT13 GEYS14_7_UNIT14 GEYS16_7_UNIT16 GEYS17_2_BOTRCK GEYS17_7_UNIT17 GEYS18_7_UNIT18 GEYS20_7_UNIT20	LMEC_1_PL1X3 DELTA_2_PL1X4 LMBEPK_2_UNITA1 LMBEPK_2_UNITA2 LMBEPK_2_UNITA3 WOLFSK_1_UNITA1 VACADX_1_UNITA1	CRESTA_7_PL1X2 RCKCRK_7_UNIT 1 RCKCRK_7_UNIT 2 BUCKCK_7_PL1X2 BELDEN_7_UNIT 1 DRUM_7_PL1X2 DRUM_7_PL3X4 DRUM_7_UNIT 5 DUTCH1_7_UNIT 1 DUTCH2_7_UNIT 2 CHICPK_7_UNIT 1	DONNLS_7_UNIT BEARDS_7_UNIT 1 SPRGAP_1_UNIT 1 SNDBAR_7_UNIT 1 TULLCK_7_UNITS ULTPCH_1_UNIT 1	YUBACT_6_UNI TA1 BOGUE_1_UNI TA1 COLGAT_7_UNI T 1 COLGAT_7_UNI T 2	HYTTM_2_UNITS WDLEAF_7_UNIT 1 FORBST_7_UNIT 1 SLYCRK_1_UNIT 1 CARBOU_7_PL4X5 BLACK_7_UNIT 1 BLACK_7_UNIT 2	PNOCHE_1_PL1X2 PNOCHE_1_UNITA1
<b>CP #8</b> Gates Bank 11 500/230 (->, @ 230 kV) +0.2*Los Banos-Gates #1 500 kV (<-, @Gates) +0.13*Los Banos-Midway #2 500 kV (<-, @Midway) +0.03*IRAS Gen -0.07*IRAS Load -0.3*IRAS Helm Pump	-13	0	-7	-7	-7	-7	-7	-7	-27

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Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24

**Effectiveness Factors - All**

**Distribution Restriction:**  
**None**

Resource IDs → Control Points ↓	MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation								
	San Luis PGP	GWF Trcy1&2 Stanislaus Ralston Middle Fork Tiger Crk Electra Salt Spring Lodi EC	C.Costa 6&7 Gateway Geys 11-20	LMEC DEC Lambie Creed Goosehaven Wolfskill Calpeak(Vaca)	Cresta, Poe Rock Crk Bucks Crk Belden Drum 1-5 Dtch Flt 1-2 Chicago Pk	Donnells Beardsley Spring Gap Sand Bar Tulluch Pac Ult Pwr	YCEC FREC Colgate 1&2	Hyatt Thermalito Woodleaf Forbestown Sly Creek Caribou 4&5 JB Black 1&2	Wellhead (Panoche) Calpeak (Panoche)
	SLUIISP_2_ UNITS	SCHLTE_1_ UNITA1 SCHLTE_1_ UNITA2 STANIS_1_UNIT MDFKRL_2_PROJECT TIGRCK_7_UNITS ELECTR_7_PL1x3 SALTSP_7_UNITS	GATWAY_2_PL1X3 GEYS11_7_UNIT11 GEYS12_7_UNIT12 GEYS13_7_UNIT13 GEYS14_7_UNIT14 GEYS16_7_UNIT16 GEYS17_2_BOTRCK GEYS17_7_UNIT17 GEYS18_7_UNIT18 GEYS20_7_UNIT20	LMEC_1_PL1X3 DELTA_2_PL1X4 LMBEPK_2_UNITA1 LMBEPK_2_UNITA2 LMBEPK_2_UNITA3 WOLFSK_1_UNITA1 VACADX_1_UNITA1	CRESTA_7_PL1X2 RCKCRK_7_UNIT 1 RCKCRK_7_UNIT 2 BUCKCK_7_PL1X2 BELDEN_7_UNIT 1 DRUM_7_PL1X2 DRUM_7_PL3X4 DRUM_7_UNIT 5 DUTCH1_7_UNIT 1 DUTCH2_7_UNIT 2 CHICPK_7_UNIT 1	DONNLS_7_UNIT BEARDS_7_UNIT 1 SPRGAP_1_UNIT 1 SNDBAR_7_UNIT 1 TULLCK_7_UNITS ULTPCH_1_UNIT 1	YUBACT_6_UNI TA1 BOGUE_1_UNI TA1 COLGAT_7_UNI T 1 COLGAT_7_UNI T 2	HYTTM_2_UNITS WDLEAF_7_UNIT 1 FORBST_7_UNIT 1 SLYCRK_1_UNIT 1 CARBOU_7_PL4X5 BLACK_7_UNIT 1 BLACK_7_UNIT 2	PNOCHE_1_PL1X2 PNOCHE_1_UNITA1
<b>CP #9</b> Gates-Midway 230 (<-,Midway) +0.11*Los Banos-Midway #2 500 (<-,@Midway) +0.11*Gates-Midway 500 (->,@Midway) -0.1*IRAS Gen -0.05*IRAS Load -0.07*IRAS Helm Pump	-5	0	-5	-5	-5	-5	-5	-5	-5
<b>CP #10</b> 0.70*Los Banos-Midway #2 (<-, @Midway) +Gates-Midway 500 (<-, @Midway)	-14	-14	-14	-14	-14	-14	-14	-14	-14

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Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24

**Effectiveness Factors - All**

**Distribution Restriction:**  
**None**

Resource IDs →	MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation								
	San Luis PGP	GWF Trcy1&2 Stanislaus Ralston Middle Fork Tiger Crk Electra Salt Spring Lodi EC	C.Costa 6&7 Gateway Geys 11-20	LMEC DEC Lambie Creed Goosehaven Wolfskill Calpeak(Vaca)	Cresta, Poe Rock Crk Bucks Crk Belden Drum 1-5 Dtch Flt 1-2 Chicago Pk	Donnells Beardsley Spring Gap Sand Bar Tulluch Pac Ult Pwr	YCEC FREC Colgate 1&2	Hyatt Thermalito Woodleaf Forbestown Sly Creek Caribou 4&5 JB Black 1&2	Wellhead (Panoche) Calpeak (Panoche)
	SLUIISP_2_ UNITS	SCHLTE_1_ UNITA1 SCHLTE_1_ UNITA2 STANIS_1_UNIT MDFKRL_2_PROJECT TIGRCK_7_UNITS ELECTR_7_PL1x3 SALTSP_7_UNITS	GATWAY_2_PL1X3 GEYS11_7_UNIT11 GEYS12_7_UNIT12 GEYS13_7_UNIT13 GEYS14_7_UNIT14 GEYS16_7_UNIT16 GEYS17_2_BOTRCK GEYS17_7_UNIT17 GEYS18_7_UNIT18 GEYS20_7_UNIT20	LMEC_1_PL1X3 DELTA_2_PL1X4 LMBEPK_2_UNITA1 LMBEPK_2_UNITA2 LMBEPK_2_UNITA3 WOLFSK_1_UNITA1 VACADX_1_UNITA1	CRESTA_7_PL1X2 RCKCRK_7_UNIT 1 RCKCRK_7_UNIT 2 BUCKCK_7_PL1X2 BELDEN_7_UNIT 1 DRUM_7_PL1X2 DRUM_7_PL3X4 DRUM_7_UNIT 5 DUTCH1_7_UNIT 1 DUTCH2_7_UNIT 2 CHICPK_7_UNIT 1	DONNLS_7_UNIT BEARDS_7_UNIT 1 SPRGAP_1_UNIT 1 SNDBAR_7_UNIT 1 TULLCK_7_UNITS ULTPCH_1_UNIT 1	YUBACT_6_UNI TA1 BOGUE_1_UNI TA1 COLGAT_7_UNI T 1 COLGAT_7_UNI T 2	HYTTM_2_UNITS WDLEAF_7_UNIT 1 FORBST_7_UNIT 1 SLYCRK_1_UNIT 1 CARBOU_7_PL4X5 BLACK_7_UNIT 1 BLACK_7_UNIT 2	PNOCHE_1_PL1X2 PNOCHE_1_UNITA1
<b>Control Points</b> ↓									
<b>CP #11</b> Dos Amigos Pumping Plant - Panoche 230 (<-, @Panoche) +0.05*Los Banos-Midway #2 500 (<-, @Midway) +0.05*Los Banos-Gates #1 500 (<-, @Gates) -0.04*IRAS Gen -0.01*IRAS Load +0.07*IRAS Helm Pump	-8	0	0	0	0	0	0	0	10

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Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24

**Effectiveness Factors - All**

**Distribution Restriction:**  
**None**

MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation									
Resource IDs → Control Points ↓	San Luis PGP	GWF Trcy1&2 Stanislaus Ralston Middle Fork Tiger Crk Electra Salt Spring Lodi EC	C.Costa 6&7 Gateway Geys 11-20	LMEC DEC Lambie Creed Goosehaven Wolfskill Calpeak(Vaca)	Cresta, Poe Rock Crk Bucks Crk Belden Drum 1-5 Dtch Flt 1-2 Chicago Pk	Donnells Beardsley Spring Gap Sand Bar Tulluch Pac Ult Pwr	YCEC FREC Colgate 1&2	Hyatt Thermalito Woodleaf Forbestown Sly Creek Caribou 4&5 JB Black 1&2	Wellhead (Panoche) Calpeak (Panoche)
	SLUIISP_2_ UNITS	SCHLTE_1_ UNITA1 SCHLTE_1_ UNITA2 STANIS_1_UNIT MDFKRL_2_PROJECT TIGRCK_7_UNITS ELECTR_7_PL1x3 SALTSP_7_UNITS	GATWAY_2_PL1X3 GEYS11_7_UNIT11 GEYS12_7_UNIT12 GEYS13_7_UNIT13 GEYS14_7_UNIT14 GEYS16_7_UNIT16 GEYS17_2_BOTRCK GEYS17_7_UNIT17 GEYS18_7_UNIT18 GEYS20_7_UNIT20	LMEC_1_PL1X3 DELTA_2_PL1X4 LMBEPK_2_UNITA1 LMBEPK_2_UNITA2 LMBEPK_2_UNITA3 WOLFSK_1_UNITA1 VACADX_1_UNITA1	CRESTA_7_PL1X2 RCKCRK_7_UNIT 1 RCKCRK_7_UNIT 2 BUCKCK_7_PL1X2 BELDEN_7_UNIT 1 DRUM_7_PL1X2 DRUM_7_PL3X4 DRUM_7_UNIT 5 DUTCH1_7_UNIT 1 DUTCH2_7_UNIT 2 CHICPK_7_UNIT 1	DONNLS_7_UNIT BEARDS_7_UNIT 1 SPRGAP_1_UNIT 1 SNDBAR_7_UNIT 1 TULLCK_7_UNITS ULTPCH_1_UNIT 1	YUBACT_6_UNI TA1 BOGUE_1_UNI TA1 COLGAT_7_UNI T 1 COLGAT_7_UNI T 2	HYTTM_2_UNITS WDLEAF_7_UNIT 1 FORBST_7_UNIT 1 SLYCRK_1_UNIT 1 CARBOU_7_PL4X5 BLACK_7_UNIT 1 BLACK_7_UNIT 2	PNOCHE_1_PL1X2 PNOCHE_1_UNITA1
CP #12 LBN path flow (S->N)	17	-10	-8	-8	-8	-9	-8	-8	18
CP #13 and CP #14 Path15 flow (S->N)	-3	-3	-3	-3	-3	-3	-3	-3	-4

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b> 2210Z
		<b>Version No.</b> 28.9
		<b>Effective Date</b> 4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>

Table 4 - Part 2: Generation Effectiveness Factors: Contingency Operations (continued with Part 1)

<b>Resource IDs</b> →  <b>Control Points</b> ↓	<b>MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation</b>								
	<b>California Solar Ranch</b> Topaz Solar	<b>Elk Hill</b> La Paloma Sunset Sunrise	<b>HAAS Pine Flat</b> Balch 230	<b>Helms</b>	<b>Exchequer Chowchilla</b>	<b>Friant Wishon</b>	<b>Balch 115 Kings River Malaga</b>	<b>Moss Landing PB 1 &amp; 2</b>	<b>DCPP</b>
	CAVLSR_2_BSOLAR CAVLSR_2_RSOLAR TOPAZ_2_SOLAR	ELKHIL_2_PL1X3 LAPLMA_2_UNIT1 LAPLMA_2_UNIT2 LAPLMA_2_UNIT3 LAPLMA_2_UNIT4 SUNSET_2_UNNITS SUNRIS_2_P1X3	HAASPH_7_PL1X2 PINFLT_7_UNITS BALCHS_7_UNIT2 BALCHS_7_UNIT3	HELMPG_7_UNIT1 HELMPG_7_UNIT2 HELMPG_7_UNIT3	EXCHEC_7_UNIT1 CHWCHL_1_BIOMAS CHWCHL_1_UNIT	FRIANT_6_UNITS WISHON_6_UNITS	BALCHS_7_UNIT1 KINGRV_7_UNIT1 MALAGA_1_P1X2	MOSSLD_2_PSP1 MOSSLD_2_PSP2	DIABLO_7_UNIT1 DIABLO_7_UNIT2
<b>CP #1</b> 0.14* Los Banos-Tesla (->, @Los Banos) + Los Banos-Quinto (->, @Los Banos)	4	3	5	3	0	0	0	-2	3
<b>CP #2</b> 0.24* Los Banos-Tesla (<-, @Los Banos) +0.24* Los Banos-Tracy (<-, @Los Banos) +LosBanos-Quinto (<-, @LosBanos)	-5	-5	-5	-2	-5	-1	-1	3	-5
<b>CP #3</b> 0.06* Los Banos-Tesla (<-, @Los Banos) +0.06* Los Banos-Tracy (<-, @Los Banos) +Warnerville-Wilson (->, @Wilson)	-3	-2	-10	-18	-24	-20	-12	2	-2

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Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24

**Effectiveness Factors - All**

**Distribution Restriction:**  
None

Resource IDs →  Control Points↓	MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation								
	California Solar Ranch Topaz Solar	Elk Hill La Paloma Sunset Sunrise	HAAS Pine Flat Balch 230	Helms	Exchequer Chowchilla	Friant Wishon	Balch 115 Kings River Malaga	Moss Landing PB 1 & 2	DCPP
	CAVLSR_2_BSOLAR CAVLSR_2_RSOLAR TOPAZ_2_SOLAR	ELKHIL_2_PL1X3 LAPLMA_2_UNIT1 LAPLMA_2_UNIT2 LAPLMA_2_UNIT3 LAPLMA_2_UNIT4 SUNSET_2_UNNITS SUNRIS_2_P1X3	HAASPH_7_PL1X2 PINFLT_7_UNITS BALCHS_7_UNIT2 BALCHS_7_UNIT3	HELM PG_7_UNIT1 HELM PG_7_UNIT2 HELM PG_7_UNIT3	EXCHEC_7_UNIT1 CHWCHL_1_BIOMAS CHWCHL_1_UNIT	FRIANT_6_UNITS WISHON_6_UNITS	BALCHS_7_UNIT1 KINGRV_7_UNIT1 MALAGA_1_P1X2	MOSSLD_2_PSP1 MOSSLD_2_PSP2	DIABLO_7_UNIT1 DIABLO_7_UNIT2
<b>CP #5</b> 0.11*Los Banos-Midway #2 (->, @Los Banos) +0.11*Gates-Midway 500 kV (->, @Gates) +Gates-Midway 230 (->, @Gates)	-4	-4	4	4	1	1	1	7	-3
<b>CP #6</b> LosBanos-Quinto (->, @LosBanos) +0.25*Los Banos-Tesla 500 (->, @Los Banos) +0.25*Los Banos-Tracy 500 (->, @Los Banos) -0.12*IRAS Gen -0.12*IRAS Load	13	0	13	2	4	7	12	12	12

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Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24

**Effectiveness Factors - All**

**Distribution Restriction:  
None**

Resource IDs → Control Points↓	MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation								
	California Solar Ranch Topaz Solar	Elk Hill La Paloma Sunset Sunrise	HAAS Pine Flat Balch 230	Helms	Exchequer Chowchilla	Friant Wishon	Balch 115 Kings River Malaga	Moss Landing PB 1 & 2	DCPP
	CAVLSR_2_BSOLAR CAVLSR_2_RSOLAR TOPAZ_2_SOLAR	ELKHIL_2_PL1X3 LAPLMA_2_UNIT1 LAPLMA_2_UNIT2 LAPLMA_2_UNIT3 LAPLMA_2_UNIT4 SUNSET_2_UNNITS SUNRIS_2_P1X3	HAASPH_7_PL1X2 PINFLT_7_UNITS BALCHS_7_UNIT2 BALCHS_7_UNIT3	HELMPG_7_UNIT1 HELMPG_7_UNIT2 HELMPG_7_UNIT3	EXCHEC_7_UNIT1 CHWCHL_1_BIOMAS CHWCHL_1_UNIT	FRIANT_6_UNITS WISHON_6_UNITS	BALCHS_7_UNIT1 KINGRV_7_UNIT1 MALAGA_1_P1X2	MOSSL2_2_PSP1 MOSSL2_2_PSP2	DIABLO_7_UNIT1 DIABLO_7_UNIT2
<b>CP #7</b> Panoche-Gates #1 230 (<-, @Panoche) +0.07*Los Banos-Midway #2 500 (<-, @Midway) +0.07*Los Banos-Gates #1 500 (<-, @Gates) -0.05*IRAS Gen -0.03*IRAS Load -0.03*IRAS Helm Pump	6	0	-5	-3	-4	-3	-4	-5	12
<b>CP #8</b> Gates Bank 11 500/230 (->, @ 230 kV) +0.2*Los Banos-Gates #1 500 kV (<-, @Gates) +0.13*Los Banos-Midway #2 500 kV (<-, @Midway) +0.03*IRAS Gen -0.07*IRAS Load -0.3*IRAS Helm Pump	-14	0	-37	-30	-25	-31	-35	-9	4

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Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24

**Effectiveness Factors - All**

**Distribution Restriction:  
None**

Resource IDs →  Control Points↓	MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation								
	California Solar Ranch Topaz Solar	Elk Hill La Paloma Sunset Sunrise	HAAS Pine Flat Balch 230	Helms	Exchequer Chowchilla	Friant Wishon	Balch 115 Kings River Malaga	Moss Landing PB 1 & 2	DCPP
	CAVLSR_2_BSOLAR CAVLSR_2_RSOLAR TOPAZ_2_SOLAR	ELKHIL_2_PL1X3 LAPLMA_2_UNIT1 LAPLMA_2_UNIT2 LAPLMA_2_UNIT3 LAPLMA_2_UNIT4 SUNSET_2_UNNITS SUNRIS_2_P1X3	HAASPH_7_PL1X2 PINFLT_7_UNITS BALCHS_7_UNIT2 BALCHS_7_UNIT3	HELMPG_7_UNIT1 HELMPG_7_UNIT2 HELMPG_7_UNIT3	EXCHEC_7_UNIT1 CHWCHL_1_BIOMAS CHWCHL_1_UNIT	FRIANT_6_UNITS WISHON_6_UNITS	BALCHS_7_UNIT1 KINGRV_7_UNIT1 MALAGA_1_P1X2	MOSSL2_2_PSP1 MOSSL2_2_PSP2	DIABLO_7_UNIT1 DIABLO_7_UNIT2
<b>CP #9</b> Gates-Midway 230 (<-, Midway) +0.11*Los Banos-Midway #2 500 (<-, @Midway) +0.11*Gates-Midway 500 (->, @Midway) -0.1*IRAS Gen -0.05*IRAS Load -0.07*IRAS Helm Pump	6	0	-8	-8	-7	-7	-8	-5	2
<b>CP #10</b> 0.70*Los Banos-Midway #2 (<-, @Midway) +Gates-Midway 500 (<-, @Midway)	25	36	-15	-15	-15	-15	-15	-20	23

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Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24

**Effectiveness Factors - All**

**Distribution Restriction:  
None**

Resource IDs →  Control Points↓	MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation								
	California Solar Ranch Topaz Solar	Elk Hill La Paloma Sunset Sunrise	HAAS Pine Flat Balch 230	Helms	Exchequer Chowchilla	Friant Wishon	Balch 115 Kings River Malaga	Moss Landing PB 1 & 2	DCPP
	CAVLSR_2_BSOLAR CAVLSR_2_RSOLAR TOPAZ_2_SOLAR	ELKHIL_2_PL1X3 LAPLMA_2_UNIT1 LAPLMA_2_UNIT2 LAPLMA_2_UNIT3 LAPLMA_2_UNIT4 SUNSET_2_UNNITS SUNRIS_2_P1X3	HAASPH_7_PL1X2 PINFLT_7_UNITS BALCHS_7_UNIT2 BALCHS_7_UNIT3	HELMPG_7_UNIT1 HELMPG_7_UNIT2 HELMPG_7_UNIT3	EXCHEC_7_UNIT1 CHWCHL_1_BIOMAS CHWCHL_1_UNIT	FRIANT_6_UNITS WISHON_6_UNITS	BALCHS_7_UNIT1 KINGRV_7_UNIT1 MALAGA_1_P1X2	MOSSL_2_PSP1 MOSSL_2_PSP2	DIABLO_7_UNIT1 DIABLO_7_UNIT2
<b>CP #11</b> Dos Amigos Pumping Plant - Panoche 230 (<-, @Panoche) +0.05*Los Banos-Midway #2 500 (<-, @Midway) +0.05*Los Banos-Gates #1 500 (<-, @Gates) -0.04*IRAS Gen -0.01*IRAS Load +0.07*IRAS Helm Pump	4	4	8	8	8	8	8	0	3
<b>CP #12</b> LBN path flow (S->N)	18	18	18	15	12	12	18	6	18
<b>CP #13 and CP #14</b> Path15 flow (S->N)	8	13	-5	-5	-5	-5	-5	-4	4

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

6410 - Effectiveness Factors for Path 26 – Midway Vincent: (version 10.7, 11/01/23)

Table 2: Generation Effectiveness Factors

Resource Location →	MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation					
	SCE Big Creek Gen	SCE South of Magunden area, Metro area Gen	SCE Blythe-Mirage area, Devers area, North of Lugo area Gen	SCE Tehachapi area Gen	PGAE South area Gen	PGAE North area, Bay area Gen
Control Points ↓						
CP #1	-89 to -91	-80 to -84	-73 to -78	-75 to -80	18 to 25	8 to 16
CP #2	-46	-42 to -45	-42 to -45	-30	8 to 12	4 to 7
CP #3	-89 to -91	-80 to -84	-73 to -78	-75 to -80	18 to 25	8 to 16
CP #4	-89 to -91	-80 to -84	-73 to -78	-75 to -80	18 to 25	8 to 16
CP #7	63	66 to 70	66 to 70	70 to 72	-13 to -19	-6 to -12
CP #8	65	66 to 73	66 to 73	66 to 73	-13 to -20	-6 to -12
CP #9	65	66 to 73	66 to 73	66 to 73	-13 to -20	-6 to -12
CP #12	-35 to -38	-35 to -38	-35 to -38	-35 to -38	8 to 12	4 to 7


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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

<b>Resource Location</b> →	<b>MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation</b>					
	<b>SCE Big Creek Gen</b>	<b>SCE South of Magunden area, Metro area Gen</b>	<b>SCE Blythe-Mirage area, Devers area, North of Lugo area Gen</b>	<b>SCE Tehachapi area Gen</b>	<b>PGAE South area Gen</b>	<b>PGAE North area, Bay area Gen</b>
<b>Control Points</b> ↓						
<b>CP #13</b>	-35 to -38	-35 to -38	-35 to -38	-35 to -38	8 to 12	4 to 7
<b>CP #14</b>	-32 to -35	-32 to -35	-32 to -35	-36 to -41	3 to 9	3 to 9

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

**6610** - Effectiveness Factors for Lugo – Victorville (Path 61): (version 15.6, 9/26/23)

Table 3A: Path 61 Generation Effectiveness Factors

Unit →	MW increase in the <b>calculated loading</b> across the transmission facilities that make up the <b>control point</b> for a 100 MW increase in Generation.						
	High Desert	Etiwanda / Grapeland Peaker / Mira Loma Peaker	Mountain view /Sentinel 1-8	Tehachapi Wind Gen	PGE Gen	Big Creek / Pastoria	Ormond
Resource ID →	HIDSRT_2_UNITS	MIRLOM_6_PEAKER ETIWND_6_GRPLND	SBERDO_2_PSP3_PSP4 SENTNL_2_CTG1-8	EMS Navigator -> System Wind Generation Summary  For any of the 45 Resource IDS	Any Unit	BIGCRK_2_EXESWD LEBECS_2_UNITS	ORMOND_7_UNIT 1 ORMOND_7_UNIT 2
Path 61	-18	-15	-13-	-9	-8	9 /13	15 / 18

**Notes:**

- 1) These Effectiveness Factors were determined using the WECC system as a distributed slack bus.
- 2) Monitor the loading on South of Lugo because mitigation for the Lugo – Victorville 500 kV line Nomogram can increase the South of Lugo flow if High Desert, or PGAE Generation is increased.
- 3) Monitor the loading on the Sylmar transformer banks. Depending upon the flow on the Sylmar transformer banks, reducing generation at Ormond, Pastoria, or Big Creek may increase the Sylmar transformer bank loading.
- 4) The effectiveness factors are based on a normal steady-state condition, and may differ under real-time conditions.

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3B: Generation Effectiveness Factors with PDCI<sup>1</sup> Schedule Cuts

Unit →	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.							
	High Desert	Grapeland Peaker / Mira Loma Peaker	Mountain view/ Etiwanda	PGE Gen	Huntington Beach / Barre Peaker	Alamitos / Center Peaker / SDGE Gen / Walnut Creek	El Segundo / Redondo / Long Beach	Buck Blvd
Resource ID →	HIDSRT_2_UNITS	ETIWND_6_GRPLND MIRLOM_6_PEAKEK	SBERDO_2_PSP3_PSP4 ETIWND_2_UNIT1	Any Unit	HNTGBH_2_PL1X3 HNTGBH_7_UNIT2 BARRE_6_PEAKEK	ALAMIT_2_PL1X3 ALAMIT_7_UNIT 3 - 5 ALAMIT_7_ES1 CENTER_6_PEAKEK Any SDGE Unit WALCRK_2_CTG 1 thru 5	ELSEGN_2_UN1011 ELSEGN_2_UN1012 REDOND_7_UNIT 5,6, 8 HINSON_6_LBECH1 thru 4	BuckBL_2_PL1X3
Path 61 Flows	- 44	-40	- 36	- 35	- 33	- 31	-28	- 27

**Notes:**

- 1) The effectiveness factors shown in Table 3B are for a **100 MW increase** at the units listed in the table and a **100 MW decrease** on the PDCI schedules (**in the Southbound direction**). These effectiveness factors consider that when schedules are cut they will also affect LADWP flows.
- 2) Monitor the loading on South of Lugo because the mitigation for the Lugo – Victorville 500 kV line could increase the South of Lugo flow if High Desert, or PGAE is chosen to increment.
- 3) Pastoria and Ormond are not shown since with PDCI cuts they are less effective than all the listed generators and will potentially exacerbate Sylmar Bank Loading.

<sup>1</sup> Circulating South-to-North on PDCI without any targeted generation re-dispatch will have an Effectiveness Factor of approximately 30%.

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b> 2210Z
		<b>Version No.</b> 28.9
		<b>Effective Date</b> 4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>

Table 3C: Path 61 Generation Effectiveness Factors with LADWP Interchange Cuts

Unit →	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.							
	High Desert	Etiwanda / Mira Loma Peaker / Grapeland Peaker	Mountain view	PGE Gen	Huntington Beach / Barre Peaker / Walnut	Alamitos / Center Peaker / SDGE Gen	El Segundo / Redondo Beach / Long Beach	Buck Boulevard
Resource ID →	HIDSRT_2_UNITS	ETIWND_6_GRPLND MIRLOM_6_PEA KER	SBERDO_2_PSP3_	Any Unit	HNTGBH_2_PL1X3 HNTGBH_7_UNIT2  BARRE_6_PEA KER  WALCRK_2_C TG 1 thru 5	ALAMIT_2_PL1X3  ALAMIT_7_ UNIT 3 - 5  ALAMIT_7_ES1  CENTER_6_PEA KER  SDGE Any Unit	ELSEGN_2_UN1011 ELSEGN_2_UN1012  REDOND_7_ UNIT 5, 6, 8 HINSON_6_L BECH1 thru 4	BuckBL_2_PL 1X3
<b>Path 61 Flows</b>	-49	-45	-44	-41	-37	-34	-33	-30

**Notes:**

- 1) The effectiveness factors shown in [Table 3C](#) are for a **100 MW increase** at the units listed in the table and a **100 MW decrease** in the Interchange with the LADWP area. In order to decrease the Interchange with the LADWP area, curtail Schedules at the interface titled "[Lugo Checkout](#)" per CAISO Operating Procedure [2540 Interchange Schedule Curtailments](#).
- 2) Monitor the loading on South of Lugo as the mitigation for the Lugo – Victorville 500 kV line Nomogram could increase the South of Lugo flow if High Desert, or PGAE is chosen to increment.
- 3) Big Creek, Pastoria, and Ormond Beach are not shown as they are less effective than all the listed generators and will exacerbate Sylmar Bank Loading.

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3D: Path 61 Effectiveness Factors with IPP + LADWP Schedule Cuts

Unit →	MW increase in the <b>calculated loading</b> across the transmission facilities that make up the <b>control point</b> for a 100 MW increase in Generation.				
	High Desert	Etiwanda / Grapeland Peaker / Mira Loma Peaker	Mountain view / Sentinel 1-8	Tehachapi Wind Gen	Big Creek / Pastoria
Resource ID →	HIDSRT_2_UNITS	MIRLOM_6_PEAKER ETIWND_6_GRPLND	SBERDO_2_PSP3_PSP4 SENTNL_2_CTG1-8	EMS Navigator -> System Wind Generation Summary For any of the 45 Resource IDS	BIGCRK_2_EXESWD LEBECS_2_UNITS
Path 61	-67	-62	-56	-52	-47

**Notes:**

- 1) These Effectiveness Factors were by cutting IPP schedules in combination with a cut in Interchange between SCE and LADWP. Effectively Intermountain Power is decreased and CAISO controlled generation is increased.
- 2) Monitor the loading on South of Lugo because mitigation for the Lugo – Victorville 500 kV line Nomogram can increase the South of Lugo flow if High Desert, or PG&E Generation is increased.
- 3) Monitor the loading on the Sylmar transformer banks. Depending upon the flow on the Sylmar transformer banks, reducing generation at Ormond, Pastoria, or Big Creek may increase the Sylmar transformer bank loading.
- 4) The effectiveness factors are based on a normal steady-state condition, and may differ under real-time conditions.

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 4: Series Capacitor Effectiveness

Series Capacitors Bypassed	Approximate Effectiveness Factor
2 of 4 segments bypassed on McCullough-Victorville #1 & #2 500 kV lines	5
4 of 4 segments bypassed on McCullough-Victorville #1 & #2 500 kV lines	11
4 of 4 segments bypassed on McCullough-Victorville #1 & #2 500 kV lines and 1 of 2 segments bypassed on Marketplace-Adelanto 500 kV line	16
4 of 4 segments bypassed on McCullough-Victorville #1 & #2 500 kV lines and 2 of 2 segments bypassed on Marketplace-Adelanto 500 kV line	20

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

7110 - Effectiveness Factors for Humboldt Area: (version 13.2, 9/14/23)

Table 3A: Generation Effectiveness Factors: Contingency Operations Flow Limits

<b>Control Points ↓</b> <b>Resource ID →</b>	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>						
	<b>Humboldt Bay Generating Station#1 &amp; Humboldt Bay Generating Station#2</b>		<b>Humboldt Bay Generating Station #3</b>		<b>Blue Lake 60 kV</b>	<b>Pacific Lumber 60 kV (QF)</b>	<b>Fairhaven 60kV (QF)</b>
	<b>HUMBPP_6_UNITS</b>		<b>HUMBPP_1_UNITS3</b>		<b>BLULKE_6_BLU ELK</b>	<b>PACLUM_6_U NIT</b>	<b>FAIRHV_6_U NIT</b>
<b>CP #8</b> 0.8*Trinity-Cottonwood 115 kV (←@Cottonwood) + Keswick - Cascade 60 kV (←@Cascade)	60 kV	115 kV	60 kV	115 kV	-60	-54	-62
	-82	-58	-82	-58			
<b>CP #9</b> Humboldt – Trinity 115 kV (←,@Humboldt) + Trinity – Maple Creek 60 kV (→,@Maple Creek) + Garberville-Laytonville 60 kV (←@Garberville)	60 kV	115 kV	60 kV	115 kV	-96	-92	-96
	-95	-96	-95	-96			
<b>CP #10</b> 0.8*Bridgeville - Cottonwood 115 kV (←@Cottonwood)+ Keswick - Cascade 60 kV (←@Cascade)	60 kV	115 kV	60 kV	115 kV	-60	-54	-62
	-82	-58	-82	-58			
<b>CP #11</b> 0.70*Bridgeville - Cottonwood 115 kV (←@Cottonwood)+ Trinity - Maple Creek 60 kV (←@Trinity)	60 kV	115 kV	60 kV	115 kV	-83	-60	-78
	-76	-82	-76	-82			
<b>CP #12</b> Bridgeville - Cottonwood 115 kV (←,@Bridgeville) + Trinity - Maple Creek 60 kV (→,@Maple Creek) + Garberville - Laytonville 60 kV (←@Garberville)	60 kV	115 kV	60 kV	115 kV	-96	-92	-96
	-95	-96	-95	-96			

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

<b>Control Points ↓</b>  <b>Resource ID →</b>	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>						
	<b>Humboldt Bay Generating Station#1 &amp; Humboldt Bay Generating Station#2</b>		<b>Humboldt Bay Generating Station#3</b>		<b>Blue Lake 60 kV</b>	<b>Pacific Lumber 60 kV (QF)</b>	<b>Fairhaven 60kV (QF)</b>
	HUMBPP_6_UNITS		HUMBPP_1_UNITS3		BLULKE_6_BL UELK	PACLUM_6_UNIT	FAIRHV_6_UNIT
<b>CP #13</b> Humboldt – Trinity 115 kV (←,@Humboldt) + Bridgeville – Cottonwood 115 kV (←,@Bridgeville) + Trinity – Maple Creek 60 kV (←,@Maple Creek) + Garberville – Laytonville 60 kV (←@Garberville)	60 kV	115 kV	60 kV	115 kV	-96	-92	-96
	-95	-96	-95	-96			

**Note:** Humboldt Bay Generation Station Resources 1 & 2 normally dispatched from 60 kV bus. Humboldt Bay Generation Station Resource 3 normally dispatched from 115 kV bus.

**Note:** If Humboldt Bay Generating Station Units 1 or 2 are dispatched from the 115 kV bus by closing the bus tiebreaker, use an Exceptional Dispatch. Also, if Humboldt Bay Generating Station Unit 3 is dispatched from the 60 kV bus by closing bus tiebreaker, use an Exceptional Dispatch.

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3B: Generation Effectiveness Factors: Normal Operations Flow Limits

<b>Control Points ↓</b>  <b>Resource ID →</b>	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>					
	<b>Humboldt Bay Generating Station Resource #1</b>		<b>Humboldt Bay Generating Station Resource #3</b>		<b>Blue Lake 60 kV</b>	<b>Fairhaven 60 kV (QF)</b>
	<b>HUMBPP_6_UNITS</b>		<b>HUMBPP_1_UNITS3</b>		<b>BLULKE_6_BLUELK</b>	<b>FAIRHV_6_UNIT</b>
<b>CP #1</b> (0.44*Trinity – Cottonwood 115 kV + Keswick – Cascade 60 kV)	60 kV	115 kV	60 kV	115 kV	-27	-27
	-24	-25	-24	-25		
<b>CP #2</b> Humboldt – Trinity 115 kV (←@Humboldt) + Bridgeville – Cottonwood 115 kV (←@Bridgeville) + Trinity – Maple Creek 60 kV (→@Maple Creek) + Garberville – Laytonville 60 kV (←@Garberville)	60 kV	115 kV	60 kV	115 kV	-96	-96
	-95	-96	-95	-96		
<b>CP #3</b> (0.93*Humboldt 115/60 kV bank #1 + Humboldt 115/60 kV bank #2)	60 kV	115 kV	60 kV	115 kV	-81	-82
	-75	14	-75	14		
<b>CP #4</b> (0.38* Humboldt Bay – Humboldt #2 60 kV + Humboldt Bay – Humboldt #1 60 kV)	60 kV	115 kV	60 kV	115 kV	N/A	N/A
	45	N/A	45	N/A		
<b>CP #5</b> (0.40 * Humboldt Bay – Humboldt #2 60 kV + Humboldt Bay – Humboldt #1 60 kV)	60 kV	115 kV	60 kV	115 kV	N/A	N/A
	45	N/A	35	N/A		
<b>CP #6</b> 0.76*Bridgeville 115/60 kV Bank (→, @Bridgeville 115 kV) + Humboldt Bay – Rio Dell 60 kV (→,@Humboldt Bay)	60 kV	115 kV	60 kV	115 kV	N/A	N/A
	8	8	8	8		

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

<b>Resource ID →</b>  <b>Control Points ↓</b>	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>					
	<b>Humboldt Bay Generating Station Resource #1</b>		<b>Humboldt Bay Generating Station Resource #3</b>		<b>Blue Lake 60 kV</b>	<b>Fairhaven 60 kV (QF)</b>
	HUMBPP_6_UNITS		HUMBPP_1_UNITS3		BLULKE_6_BLUELK	FAIRHV_6_UNIT
<b>CP #7</b> 0.53* Humboldt – Bridgeville 115 kV (→, @Humboldt 115 kV) + Humboldt Bay – Rio Dell 60 kV (→, @Humboldt Bay)	60 kV	115 kV	60 kV	115 kV	30	11
	30	30	30	30		

This table indicates the degree of effectiveness that Generation will be at relieving the calculated loading across the multiple transmission facilities that make up the control point.

**Note:** Humboldt Bay Generation Station Resources 1 & 2 normally dispatched from 60 kV bus. Humboldt Bay Generation Station Resource 3 normally dispatched from 115 kV bus.

**Note:** If Humboldt Bay Generating Station Resources 1 & 2 are dispatched from the 115 kV bus by closing the bus tiebreaker, use an Exceptional Dispatch. Also, if Humboldt Bay Generating Station Resource 3 is dispatched from the 60 kV bus by closing bus tiebreaker, use an Exceptional Dispatch.

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	


Table 3C: Generation Effectiveness Factors: Transmission Facilities

<b>Resource ID →</b> <b>Facility↓</b>	<b>MW increase in the <u>calculated loading</u> across a transmission facility for a 100MW increase in Generation.</b>								
	<b>Humboldt Bay Generating Station#1</b>		<b>Humboldt Bay Generating Station#2</b>		<b>Humboldt Bay Generating Station#3</b>		<b>Blue Lake 60 kV</b>	<b>Pacific Lumber 60 kV (QF)</b>	<b>Fairhaven 60 kV (QF)</b>
	<b>HUMBPP_6_UNITS1</b>		<b>HUMBPP_6_UNITS2</b>		<b>HUMBPP_1_UNITS3</b>		<b>BLULKE_6_BLUELK</b>	<b>PACLUM_6_UNIT</b>	<b>FAIRHV_6_UNIT</b>
Humboldt 115/60 kV bank #1 or 2 (→ @115 kV)	60 kV	115 kV	60 kV	115 kV	60 kV	115 kV	-42	-22	-41
	-37	7	-37	7	-37	7			
Humboldt - Trinity 115 kV Line (← @Humboldt)	60 kV	115 kV	60 kV	115 kV	60 kV	115 kV	-40	-29	-38
	-35	-38	-34	-38	-34	-38			
Bridgeville – Cottonwood 115 kV Line (← @Cottonwood)	60 kV	115 kV	60 kV	115 kV	60 kV	115 kV	-46	-47	-47
	-44	-47	-45	-47	-45	-47			
Humboldt – Maple Creek 60 kV Line (← @Humboldt)	60 kV	115 kV	60 kV	115 kV	60 kV	115 kV	-9	-7	-7
	-8	-7	-9	-7	-9	-7			
Bridgeville – Garberville 60 kV Line (← @Bridgeville)	60 kV	115 kV	60 kV	115 kV	60 kV	115 kV	-8	-8	-8
	-7	-7	-7	-7	-7	-7			
Humboldt Bay - Humboldt #1 60 kV Line (→ @Humboldt Bay)	60 kV	115 kV	60 kV	115 kV	60 kV	115 kV	N/A	N/A	N/A
	45	N/A	45	N/A	45	N/A			
Humboldt Bay – Eureka 60 kV Line (→ @Humboldt Bay)	60 kV	115 kV	60 kV	115 kV	60 kV	115 kV	N/A	N/A	N/A
	35	N/A	35	N/A	35	N/A			

This table indicates the degree of effectiveness that Generation will be at relieving flows on individual transmission facilities.

**Note:** Humboldt Bay Generation Station Resources 1 & 2 normally dispatched from 60 kV bus. Humboldt Bay Generation Station Resource 3 normally dispatched from 115 kV bus.

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	


**Note:** If Humboldt Bay Generating Station Resource 1 or 2 are dispatched from the 115 kV bus by closing bus tiebreaker, use an Exceptional Dispatch. Also, if Humboldt Bay Generating Station Resource 3 is dispatched from the 60 kV bus by closing bus tiebreaker, use an Exceptional Dispatch.

**7120 - Effectiveness Factors for North Geysers Area: (version 9.6, 5/18/23)**

Table 3: Generation Effectiveness Factors (North Geysers Area Generation)

<b>Resource ID</b> <b>Control Points</b> ↓	<b>MW increase in the Calculated Loading across the transmission facilities that make up the Loading limit for a 100 MW increase in Generation.</b>								
	Aidlin	Geysers #5	Geysers #6	Geysers #7	Geysers #8	Geysers #11	Wadham	Indian Valley	Potter Valley
	ADLIN_1_UNITS	GYS5X6_7_UNITS	GYS5X6_7_UNITS	GYS7X8_7_UNITS	GYS7X8_7_UNITS	GEYS11_7_UNITS	WADHAM_6_UNITS	INDVLY_1_UNITS	POTTER_6_UNITS
<b>CP #1</b> 0.14 * Eagle Rock – Fulton-Silverado 115 kV Line (→, @Eagle Rock) + Fulton - Hopland 60 kV line (←, @Hopland)	13	11	11	11	11	11	0	0	20
<b>CP #2</b> 0.66* Cortina 230/115 kV Bank #4 (→, @230 kV) + Cortina 230/115/60 kV Bank #1 (→, @230 kV)	-32	-32	-32	-32	-32	-32	-70	-51	-35

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

**7230** - Effectiveness Factors for Palermo-Rio Oso Area: (version 15.4, 4/09/24)

**Note:** For the most effective solution, increasing and decreasing should be done in pairs. Two separate solutions need to be considered, one increase solution, and one decrease solution. If this is done, then their effectiveness factors can be added together resulting in a more accurate number. It is recommended to try and match the best increase option with the best decrease option for maximum effectiveness. (Symbol “-“ means increase generation to reduce congestion, symbol “+” means reduce generation to reduce congestion)

Table 3: Generation Effectiveness Factors – Palermo-Rio Oso Area

Control Points↓	MW increase in the CALCULATED LOADING across the transmission facilities that make up the area LIMIT for 100 MW increase in Generation.											
	FREC	YCEC	South Feather Water and Power	Greenleaf II YC Cogen	Narrows 1 & 2	Colgate 1 & 2	Hyatt 1-6 Thermalito 1-4	Ralston Middle Fork 1-2	Drum 1-5 Dutch Flat 1 Dutch Flat 2 Chico Park	Bucks Creek Belden Rock Creek Cresta, Poe	Caribou Butt Valley and Grizzly	SPP import (E->W)
Resource ID ↓	BOGUE_1_UNITA1	YUBACT_6_UNITA1	SLYCRK_1_UNIT 1 WDLEAF_7_UNIT 1 FORBST_7_UNIT 1	GRNLF2_1_UNIT YUBACT_1_SUNSWT	NAROW1_2_UNIT NAROW2_2_UNIT	COLGAT_7_UNIT 1 COLGAT_7_UNIT 2	HYTTHM_2_UNITS	MDFKRL_2_PROJECT	DRUM_7_PL1X2 DRUM_7_PL3X4 DRUM_7_UNIT 5 DUTCH1_7_UNIT 1 DUTCH2_7_UNIT 1 CHICPK_7_UNIT 1	BUCKCK_7_PL1X2 BELDEN_7_UNIT 1 RCKCRK_7_UNIT 1 & 2 CRESTA_7_PL1X2 POEPH_7_UNIT 1 & 2	CARBOU_7_PL2X3 CARBOU_7_PL4X5 CARBOU_7_UNIT 1 BUTTVL_7_UNIT 1 GRIZLY_1_UNIT 1	NOTE: The (-) symbol means increasing imports E->W
<b>CP #1</b> 0.81* Palermo - Pease 115 kV line (→, @ Palermo) + Pease-Rio Oso 115 kV line (←, @ Rio Oso)	N/A	-70	N/A	-70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>CP #2</b> 0.25* Palermo - Nicolaus 115 kV line (→, @Palermo) + Palermo - Pease 115 kV line (→, @Palermo)	N/A	-40	10	-40	N/A	N/A	N/A	N/A	-5	N/A	3	-4

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Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24

**Effectiveness Factors - All**

**Distribution Restriction:  
None**

Control Points↓	Resource ID ↓	MW increase in the CALCULATED LOADING across the transmission facilities that make up the area LIMIT for 100 MW increase in Generation.											
		FREC	YCEC	South Feather Water and Power	Greenleaf II YC Cogen	Narrows 1 & 2	Colgate 1 & 2	Hyatt 1-6 Thermalito 1-4	Ralston Middle Fork 1-2	Drum 1-5 Dutch Flat 1 Dutch Flat 2 Chico Park	Bucks Creek Belden Rock Creek Cresta, Poe	Caribou Butt Valley and Grizzly	SPP import (E->W)
		BOGUE_1_UNITA1	YUBACT_6_UNITA1	SLYCRK_1_UNIT 1 WDLEAF_7_UNIT 1 FORBST_7_UNIT 1	GRNLF2_1_UNIT YUBACT_1_SUNSWT	NAROW1_2_UNIT NAROW2_2_UNIT	COLGAT_7_UNIT 1 COLGAT_7_UNIT 2	HYTTHM_2_UNITS	MDFKRL_2_PROJECT	DRUM_7_PL1X2 DRUM_7_PL3X4 DRUM_7_UNIT 5 DUTCH1_7_UNIT 1 DUTCH2_7_UNIT 1 CHICPK_7_UNIT 1	BUCKCK_7_PL1X2 BELDEN_7_UNIT 1 RCKCRK_7_UNIT 1 & 2 CRESTA_7_PL1X2 POEPH_7_UNIT 1 & 2	CARBOU_7_PL2X3 CARBOU_7_PL4X5 CARBOU_7_UNIT 1 BUTTVL_7_UNIT 1 GRIZLY_1_UNIT 1	NOTE: The (-) symbol means increasing imports E->W
<b>CP #3</b> 0.25* Palermo - Nicolaus 115 kV line (→, @Palermo) + Pease - Rio Oso 115 kV line (→, @Pease)		-3	40	8	40	N/A	N/A	N/A	N/A	-7	-3	-3	-5
<b>CP #4</b> 0.16*Palermo - Bogue 115 kV line (→, Palermo) + Palermo - Pease 115 kV line (→, @Palermo)		N/A	-40	10	-40	N/A	N/A	N/A	N/A	-5	N/A	3	-4
<b>CP #5</b> 0.42*Colgate #3 230/60 kV Bank (→, @60 kV) + Colgate - Palermo 60 kV (←, @Palermo) - 0.40*Colgate SPS armed Load		N/A	-8	N/A	-8	-38 <small>Note 1</small>	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>CP #6</b> 0.36*Rio Oso 230/115 kV Bank 2 (→, @115 kV) + Rio Oso 230/115kV Bank 1 (→, @115 kV)		-30	-20	-11	-20	N/A	N/A	N/A	3	-25	7	-5	-21



**Effectiveness Factors - All**

**Distribution Restriction:**  
None

Control Points↓	Resource ID ↓	MW increase in the CALCULATED LOADING across the transmission facilities that make up the area LIMIT for 100 MW increase in Generation.											
		FREC	YCEC	South Feather Water and Power	Greenleaf II YC Cogen	Narrows 1 & 2	Colgate 1 & 2	Hyatt 1-6 Thermalito 1-4	Ralston Middle Fork 1-2	Drum 1-5 Dutch Flat 1 Dutch Flat 2 Chico Park	Bucks Creek Belden Rock Creek Cresta, Poe	Caribou Butt Valley and Grizzly	SPP import (E->W)
		BOGUE_1_UNITA1	YUBACT_6_UNITA1	SLYCRK_1_UNIT 1 WDLEAF_7_UNIT 1 FORBST_7_UNIT 1	GRNLF2_1_UNIT YUBACT_1_SUNSWT	NAROW1_2_UNIT NAROW2_2_UNIT	COLGAT_7_UNIT 1 COLGAT_7_UNIT 2	HYTTHM_2_UNITS	MDFKRL_2_PROJECT	DRUM_7_PL1X2 DRUM_7_PL3X4 DRUM_7_UNIT 5 DUTCH1_7_UNIT 1 DUTCH2_7_UNIT 1 CHICPK_7_UNIT 1	BUCKCK_7_PL1X2 BELDEN_7_UNIT 1 RCKCRK_7_UNIT 1 & 2 CRESTA_7_PL1X2 POEPH_7_UNIT 1 & 2	CARBOU_7_PL2X3 CARBOU_7_PL4X5 CARBOU_7_UNIT 1 BUTTVL_7_UNIT 1 GRIZLY_1_UNIT 1	NOTE: The (-) symbol means increasing imports E->W
<b>CP #7</b> 0.04*Table Mt-Rio Oso 230 kV line (→, @Table Mt) + Palermo - Pease 115 kV line (→, @Palermo)	N/A	-40	9	-40	N/A	N/A	N/A	N/A	-4	N/A	3	-4	
<b>CP #8</b> 0.058*Table Mt - Rio Oso 230 kV line (→, @Table Mt) + Pease - Rio Oso 115 kV line (→, @Pease)	-3	40	7	40	N/A	N/A	N/A	N/A	-7	-3	-3	-5	
<b>CP #9</b> 0.01*Table Mt-Vaca Dixon 500 kV line (→, @Table Mt) + Palermo-Pease 115 kV line (→, @Palermo)	N/A	-40	9	-40	N/A	N/A	N/A	N/A	-4	N/A	3	N/A	
<b>CP #10</b> 0.013*Table Mt - Vaca Dixon 500 kV line (→, @Table Mt) + Pease - Rio Oso 115 kV line (→, @Pease)	-3	40	7	40	N/A	N/A	N/A	N/A	-5	-3	-3	-5	



**Effectiveness Factors - All**

**Distribution Restriction:**  
None

Control Points↓	MW increase in the CALCULATED LOADING across the transmission facilities that make up the area LIMIT for 100 MW increase in Generation.											
	FREC	YCEC	South Feather Water and Power	Greenleaf II YC Cogen	Narrows 1 & 2	Colgate 1 & 2	Hyatt 1-6 Thermalito 1-4	Ralston Middle Fork 1-2	Drum 1-5 Dutch Flat 1 Dutch Flat 2 Chico Park	Bucks Creek Belden Rock Creek Cresta, Poe	Caribou Butt Valley and Grizzly	SPP import (E->W)
Resource ID ↓	BOGUE_1_UNITA1	YUBACT_6_UNITA1	SLYCRK_1_UNIT 1 WDLEAF_7_UNIT 1 FORBST_7_UNIT 1	GRNLF2_1_UNIT YUBACT_1_SUNSWT	NAROW1_2_UNIT NAROW2_2_UNIT	COLGAT_7_UNIT 1 COLGAT_7_UNIT 2	HYTTHM_2_UNITS	MDFKRL_2_PROJECT	DRUM_7_PL1X2 DRUM_7_PL3X4 DRUM_7_UNIT 5 DUTCH1_7_UNIT 1 DUTCH2_7_UNIT 1 CHICPK_7_UNIT 1	BUCKCK_7_PL1X2 BELDEN_7_UNIT 1 RCKCRK_7_UNIT 1 & 2 CRESTA_7_PL1X2 POEPH_7_UNIT 1 & 2	CARBOU_7_PL2X3 CARBOU_7_PL4X5 CARBOU_7_UNIT 1 BUTTVL_7_UNIT 1 GRIZLY_1_UNIT 1	NOTE: The (-) symbol means increasing imports E->W
<b>CP #11</b> 0.012*Table Mt - Vaca Dixon 500 kV line (→, @Table Mt) + Palermo - Bogue 115 kV line (→, @Bogue)	-40	N/A	7	N/A	N/A	N/A	N/A	N/A	-4	N/A	3	-5
<b>CP #12</b> 0.37*Pease 115/60 kV Bank 2 (→, @115 kV) + Smartville - Marysville 60 kV line (→, @Smartville)	N/A	-30	N/A	-30	15 <i>Note 1</i>	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>CP #13</b> Pease 115/60 kV Bank 2 (→, @115kV) + Table Mt - Peachton 60 kV line (→, @Table Mt)	N/A	-100	N/A	-100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>CP #14</b> Pease 115/60 kV Bank 2 (←, @60kV) + Peachton - Pease 60 kV line (←, @Pease)	N/A	100	N/A	100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24

**Effectiveness Factors - All**

**Distribution Restriction:**  
None

Control Points↓	Resource ID ↓	MW increase in the CALCULATED LOADING across the transmission facilities that make up the area LIMIT for 100 MW increase in Generation.												
		FREC	YCEC	South Feather Water and Power	Greenleaf II YC Cogen	Narrows 1 & 2	Colgate 1 & 2	Hyatt 1-6 Thermalito 1-4	Ralston Middle Fork 1-2	Drum 1-5 Dutch Flat 1 Dutch Flat 2 Chico Park	Bucks Creek Belden Rock Creek Cresta, Poe	Caribou Butt Valley and Grizzly	SPP import (E->W)	
		BOGUE_1_UNITA1	YUBACT_6_UNITA1	SLYCRK_1_UNIT 1 WDLEAF_7_UNIT 1 FORBST_7_UNIT 1	GRNLF2_1_UNIT YUBACT_1_SUNSWT	NAROW1_2_UNIT NAROW2_2_UNIT	COLGAT_7_UNIT 1 COLGAT_7_UNIT 2	HYTTHM_2_UNITS	MDFKRL_2_PROJECT	DRUM_7_PL1X2 DRUM_7_PL3X4 DRUM_7_UNIT 5	DUTCH1_7_UNIT 1 DUTCH2_7_UNIT 1 CHICPK_7_UNIT 1	BUCKCK_7_PL1X2 BELDEN_7_UNIT 1 RCKCRK_7_UNIT 1 & 2 CRESTA_7_PL1X2 POEPH_7_UNIT 1 & 2	CARBOU_7_PL2X3 CARBOU_7_PL4X5 CARBOU_7_UNIT 1 BUTTVL_7_UNIT 1 GRIZLY_1_UNIT 1	NOTE: The (-) symbol means increasing imports E->W
<b>CP #15</b> 0.55*Table Mt - Peachton 60 kV line (→, @Table Mt) + Palermo - Pease 115 kV line (→, @Palermo)		N/A	-50	8	-50	N/A	N/A	N/A	N/A	-5	N/A	3	-4	
<b>CP #16</b> 0.25*Palermo 230/115 kV Bank 2 (→, @230 kV)+ Rio Oso 230/115 kV Bank 1 (→, @230 kV)		-30	-23	-26	-23	N/A	N/A	N/A	N/A	-19	3	-7	-18	
<b>CP #17</b> 0.28*Palermo 230/115 kV Bank 2 (→, @230 kV) + Rio Oso 230/115 kV Bank 2 (→, @230 kV)		-32	-25	-29	-25	N/A	N/A	N/A	N/A	-21	3	-8	-19	
<b>CP #18</b> 0.09*Palermo 230/115 kV Bank 2 (→, @230 kV) + Table Mtn - Peachton 60 kV line (→, @Table Mt)		N/A	-25	-8	-25	N/A	N/A	N/A	N/A	-3	N/A	N/A	N/A	





Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24


**Effectiveness Factors - All**

**Distribution Restriction:**  
None

Control Points↓	Resource ID ↓	MW increase in the CALCULATED LOADING across the transmission facilities that make up the area LIMIT for 100 MW increase in Generation.											
		FREC	YCEC	South Feather Water and Power	Greenleaf II YC Cogen	Narrows 1 & 2	Colgate 1 & 2	Hyatt 1-6 Thermalito 1-4	Ralston Middle Fork 1-2	Drum 1-5 Dutch Flat 1 Dutch Flat 2 Chico Park	Bucks Creek Belden Rock Creek Cresta, Poe	Caribou Butt Valley and Grizzly	SPP import (E->W)
		BOGUE_1_UNITA1	YUBACT_6_UNITA1	SLYCRK_1_UNIT 1 WDLEAF_7_UNIT 1 FORBST_7_UNIT 1	GRNLF2_1_UNIT YUBACT_1_SUNSWT	NAROW1_2_UNIT NAROW2_2_UNIT	COLGAT_7_UNIT 1 COLGAT_7_UNIT 2	HYTTHM_2_UNITS	MDFRLL_2_PROJECT	DRUM_7_PL1X2 DRUM_7_PL3X4 DRUM_7_UNIT 5 DUTCH1_7_UNIT 1 DUTCH2_7_UNIT 1 CHICPK_7_UNIT 1	BUCKCK_7_PL1X2 BELDEN_7_UNIT 1 RCKCRK_7_UNIT 1 & 2 CRESTA_7_PL1X2 POEPH_7_UNIT 1 & 2	CARBOU_7_PL2X3 CARBOU_7_PL4X5 CARBOU_7_UNIT 1 BUTTVL_7_UNIT 1 GRIZLY_1_UNIT 1	NOTE: The (-) symbol means increasing imports E->W
<b>CP #19</b> 0.05*Table Mt 500/230 kV Bank 1 (→, @500 kV) + Rio Oso 230/115 kV Bank 1 (→, @230 kV)		-22	-16	-10	-16	N/A	N/A	-4	N/A	-17	3	-6	-16
<b>CP #20</b> 0.05*Table Mt 500/230 kV Bank 1 (→, @500 kV) + Rio Oso 230/115 kV Bank 2 (→, @230 kV)		-24	-17	-11	-17	N/A	N/A	-5	N/A	-19	4	-7	-18

**Note<sup>1</sup>:** Applicable only when the Colgate 60 kV system is not radialized. Also, Narrows units are currently not dispatchable.

**Note:** Applicable only when the Colgate 60 kV system is radialized. Also, Narrows units are currently not dispatchable.


 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

7240 - Effectiveness Factors for Drum Area / Summit Operations: (version 14.1, 4/01/24)

Table 5: Normal Operations - Effectiveness Factors, Simultaneous Loading Limits

<b>Resource ID</b> → <b>Control Points</b> ↓	<b>MW increase in the Calculated Loading across the transmission facilities that make up the Loading limit for a 100 MW increase in Generation.</b>								
	Drum 1-4	Drum 5	Dutch Flat 1	Dutch Flat 2	Chicago Park	Wise	Rollins	Newcastle	Summit Tie Exports
	DRUM_7_PL1X2 DRUM_7_PL3X4	DRUM_7_UNIT 5	DUTCH1_7_UNIT 1	DUTCH2_7_UNIT 1	CHICPK_7_UNIT 1	WISE_1_UNIT 1	ROLLIN_6_UNIT	NWCSTL_7_UNIT 1	SUMITM_1_SPP
CP #1	30	44	31	48	42	N/A	33	N/A	-43
CP #2	46	44	31	40	42	N/A	33	N/A	-43

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

7320 - Effectiveness Factors for Bay Area Transmission Management: (version 24.6, 2/29/24)

Table 3A: Generation Effectiveness Factors – System Operating Limits

Resource IDs →	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.														
	TBC	Ptsb. 115 kV	Ptsb. 230 kV	Oakland	Contra Costa	Los Esteros	Lambie	River-view	Gilroy	MEC	Moss 230 kV	Geysers	Cal-peak	Kelso (Mariposa)	Russell City
<b>Control Points</b> ↓	<a href="#">See Table 3C</a>														
<b>CP # 1:</b> 0.24* Pittsburg - San Mateo 230 kV (→, @Pittsburg) + Pittsburg-Eastshore 230 kV (→, @Pittsburg)	-20	+11	+12	+7	+2	-3	+2	-	-2	-2	-	+6	+2	-	-22
<b>CP #2:</b> 0.30* Kelso - Tesla 230 kV (←, @Tesla) + Delta Sw Yd - Tesla 230 kV (←, @Tesla)	+2	-6	-6	-10	-34	-4	-14	-22	-2	-2	-	-7	-7	-25	-4
<b>CP # 3:</b> 0.228* Tesla 500/230 kV Bank #6 (→, @LSIDE) + Tesla 500/230 kV Bank #4 (→, @HSIDE)	+2	-12	-12	-11	-13	-8	-7	-12	-3	-2	-	-6	-2	-	-9
<b>CP # 4:</b> 0.164* Tesla 500/230 kV Bank #4 (→, @HSIDE) + Tesla 500/230 kV Bank #6 (→, @LSIDE)	+8	-22	-24	-17	-12	-13	-7	-11	-6	-5	-2	-11	-4	-	-16
<b>CP # 5:</b> 0.71* Pittsburg 230/115 kV Bank #12 (→, @LSIDE) + Pittsburg 230/115 kV Bank #13 (→, @LSIDE)	-4	-57	+4	-9	-2	-	-	-	-	-	-	-2	-	-	-
<b>CP # 6:</b> Metcalf - Morgan Hill 115 kV (→, @Metcalf) + Metcalf - Llagas 115 kV (→, @Metcalf)	-	-	-	-	-	-	-	-	-100	-	-	-	-	-	-

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3A: Generation Effectiveness Factors – System Operating Limits *Continued...*

Resource IDs →	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.													
	TBC	Ptsb. 115 kV	Ptsb. 230 kV	Oakland	Contra Costa	Los Esteros	Lambie	River-view	Gilroy	Geysers	Cal-peak	Birds Landing Wind	Kelso (Mariposa)	Russell City
<b>Control Points ↓</b>	<a href="#">See Table 3C</a>													
<b>CP # 7:</b> 0.30* Sobrante - Claremont #1 115 kV (→, @Claremont) + Sobrante-Grizzly - Claremont #2 115 kV (→, @Claremont)	-2	+2	+2	-25	-2	-	-	-	-	+3	-	-	-	-
<b>CP # 8:</b> 0.38* Moraga 230/115 kV Bank #2 (→, @HSIDE) + Moraga 230/115 kV Bank #3 (→, @HSIDE)	+6	-9	-6	-26	+4	-	-	-	-	-4	-	-	-	-
<b>CP # 9:</b> Normal Loading Llagas - Gilroy 115 kV (←, @Llagas)	-	-	-	-	-	-	-	-	+100	-	-	-	-	-
<b>CP # 11:</b> 0.65 * Birds Landing Sw Sta -Contra Costa PP 230 kV (→, @ Birds Landing) + Contra Costa PP - Contra Costa sub 230 kV (←, Contra Costa Sub)	-	-3	-3	-5	-21	-3	+33	+70	-	-	-	+45	-7	-3

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3A: Generation Effectiveness Factors – System Operating Limits *Continued...*

	MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation.																				
	TBC	Ptsb. 115 kV	Ptsb. 230 kV	Oakland	Contra Costa	Los Esteros	Lambie	River-view	North Geysers	South Geysers	Birds Landing Wind	Kelso (Mariposa)	Russell City	Contra Costa Carbon Plant	Tosco (Rodeo Plant)	Chevron Richmond Refinery	Berkeley Cogeneration	Shell Oil Refinery Aggregate	Crocket Cogen	Martinez Cogen Limited	Colusa Generating Station
<b>Resource IDs →</b> <b>Control Points ↓</b>	<a href="#">See Table 3C</a>																				
<b>CP # 13</b> 0.15 * Contra Costa -> Los Positas 230 kV (@ Contra Costa PP) + Lonetree -> Cayetano 230 kV (@ Cayetano)	-3	-	-	+2	+1 0	-4	+5	+9	-	-	+7	+3	-3	-	-	-	-	-	-	-	-
<b>CP # 15</b> 0.43 * Eastshore -> San Mateo 230 kV line (@Eastshore) + Dumbarton -> Newark 115 kV line (@Dumbarton)	-6	5	5	3	-	-	-	-	-	-	-	-	-42	-	-	-	-	-	-	-	-
<b>CP # 16</b> 0.27 *Pittsburg -> San Mateo 230 kV line (@Pittsburg) + Eastshore -> San Mateo 230 kV line (@ Eastshore)	-21	7	8	5	-	-	-	-	-	-	-	-	-56	-	-	-	-	-	-	-	-
<b>CP # 23:</b> Christie - Sobrante 115 kV line (←, @Sobrante) + Oleum - North Tower - Christie 115 kV line (→, Oleum)	-	-	-	-	-	-	-	-	-	-	-	-	-	-100	-	-	-	-	-	-	-
<b>CP # 25:</b> 0.21* Sobrante - Moraga 115 kV line (←, @Moraga) + Moraga - Claremont #2 115 kV line (→, @Moraga)	2	-2	-2	-7	-	-	-	-	-3	-3	-	-	-	-10	-9	-11	-11	-6	-5	-4	-

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.																				
	TBC	Ptsb. 115 kV	Ptsb. 230 kV	Oakland	Contra Costa	Los Esteros	Lambie	River-view	North Geysers	South Geysers	Birds Landing Wind	Kelso (Mariposa)	Russell City	Contra Costa Carbon Plant	Tosco (Rodeo Plant)	Chevron Richmond Refinery	Berkeley Cogeneration	Shell Oil Refinery Aggregate	Crocket Cogen	Martinez Cogen Limited	Colusa Generating Station
<b>Control Points ↓</b> <b>Resource IDs →</b>	<a href="#">See Table 3C</a>																				
<b>CP # 26:</b> 0.21* Vaca - Lakeville #1 230 kV line (→, @Vaca) + Tulucay - Vaca 230 kV line (←, @Vaca)	-5	-6	-6	-	-	-	-	-	-15	-35	-	-	-5	-	-	-	-	-	-17	-9	3

**Note:** For CP #27 see listing for 7340, Table 3. This CP requires Silicon Valley Power mitigation for alleviating the overloads.

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3B: Generation Effectiveness Factors - Individual Elements

Resource IDs →	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.														
	TBC	Ptsb. 115 kV	Ptsb. 230 kV	Oakland	Contra Costa	Los Esteros	Lambie	River-view	Gilroy	MEC	Moss 230 kV	Moss 500 kV	Geysers	Cal-peak	Russell City
Control Points ↓	<a href="#">See Table 3C</a>														
Metcalf 500/230 KV Bank #11	-5	-4	-4	-4	-3	-11	-2	-3	-17	-19	-4	-	-2	-	-7
Metcalf 500/230 KV Bank #12	-6	-4	-4	-4	-3	-11	-2	-3	-19	-20	-5	2	-3	-	-8
Metcalf 500/230 KV Bank #13	-5	-4	-5	-4	-3	-12	-2	-3	-19	-21	-5	2	-3	-	-8
Moss Landing 500/230 KV Bank #9	2	3	3	3	3	5	2	2	7	8	57	-12	2	2	-
Tesla 500/230 KV Bank #2	-4	-5	-5	-5	-5	-7	-2	-5	-2	-	-	-	-2	-	-9
Tesla 500/230 KV Bank #4	-	-7	-7	-7	-11	-5	-5	-10	-2	-	-	-	-4	-	-6
Tesla 500/230 KV Bank #6	8	-21	-22	-16	-10	-12	-6	-9	-6	-4	-2	-	-11	-3	-15
Tracy 500/230 KV Banks KT1A OR KT2A	-	-4	-4	-4	-6	-4	-3	-5	-2	-	-	-	-3	-2	-4
Vaca Dixon 500/230 KV Bank #11 OR #12	4	-11	-10	-15	-15	-5	-24	-16	-2	-2	-	-	-23	-32	-7

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3B: Generation Effectiveness Factors - Individual Elements *Continued...*

Resource IDs→	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.														
	TBC	Ptsb. 115 kV	Ptsb. 230 kV	Oakland	Contra Costa	Los Esteros	Lambie	River-view	Gilroy	MEC	Moss 230 kV	Moss 500 kV	Geysers	Cal-peak	Russell City
	See Table 3C														
Control Points↓															
Ignacio (Crock Tap) – Sobrante 230 KV Line	4	-6	-6	-5	-	-	-	-	-	-	-	-	19	3	-3
Lakeville-Sobrante #2 230 KV Line	5	-7	-7	-6	-	-2	2	-	-	-	-	-	23	3	-3
Moss Landing-Metcalf #1 OR #2 230 KV	-2	-3	-3	-3	-3	-5	-3	-3	-7	-7	13	2	-3	-2	-4
Newark – Ravenswood 230 KV Line	-29	-3	-4	-	4	8	2	3	-	-	-	-	-	-	-25
Pittsburg – Eastshore 230 KV Line	-	9	10	6	-	-2	-	-	-2	-	-	-	5	-	-21
Pittsburg – San Mateo 230 KV Line	-	8	9	5	-	-2	-	-	-	-	-	-	4	-	-5
Ravenswood – San Mateo #1 OR #2 230 KV	-17	-5	-5	-3	-	-	-	-	-	-	-	-	-2	-	-21
Tesla – Newark #1 230 KV line	-4	-7	-7	-7	-5	-14	-3	-5	-7	-6	-3	-2	-4	-2	-11
Tesla – Newark #2 230 kV line	-9	-	-	-2	-3	-13	-2	-3	-6	-5	-2	-2	-	-	-9
Pittsburg – Tesla #1or #2 230 kV (←)/(→)	12 -12	-16 16	-17 17	-10 10	-3 3	-2 2	-3 3	-	-	-	-	-	-8 8	-2 2	-5
Tesla – Ravenswood 230 KV Line	-11	-6	-6	-5	-3	-9	-2	-3	-5	-4	-2	-2	-3	-	-15
Tesla – Tracy #1 OR #2 230 KV Lines (←)	-	-6	-6	-6	-8	-5	-5	-7	-3	-2	-	-	-4	-3	-6

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	


Table 3B: Generation Effectiveness Factors - Individual Elements *Continued...*

Resource IDs→	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.														
	TBC	Ptsb. 115 kV	Ptsb. 230 kV	Oakland	Contra Costa	Los Esteros	Lambie	River-view	Gilroy	MEC	Moss 230 kV	Moss 500 kV	Geysers	Cal-peak	Russell City
<b>Control Points↓</b>	<a href="#">See Table 3C</a>														
Vaca Dixon – Bahia 230 KV Line	-	-4	-3	-7	-3	-2	-	-2	-	-	-	-	4	4	-
Vaca Dixon – Peabody 230 kV Line	-	-2	-2	-3	-11	-2	-2	-10	-	-	-	-	3	6	-
Monta Vista – Jefferson 230 kV Line #1 OR #2	-9	-2	-2	-2	-	-	-	-	2	2	-	-	-	-	-5
Vaca Dixon – Lambie Sw Sta 230 kV Line	-	-2	-2	-3	-16	-2	-58	-19	-	-	-	-	3	7	-
Vaca Dixon – Parkway 230 KV Line	-2	-4	-4	-8	-3	-2	-	-3	-	-	-	-	4	4	-
Moraga – Coco PP # 1 230 kV	+4	-6	-5	-12	+11	-2	+5	+10	-	-1	-	-	-	-	-
Moraga - Coco PP # 2 230 kV	+4	-6	-5	-12	+11	-2	+4	+10	-	-1	-	-	-	-	-
Coco PP- Los Positas 230 kV	-3	-	-	+2	+10	-5	+6	+10	-2	-2	-	-	-	-	-3
Lonetree - Cayetano 230 kV	-3	-	-	+2	+8	-4	+5	+7	-2	-1	-	-	-	-	-3

**Notes:**

- *Wolfskill Energy Center has approximately the same effectiveness factor as Calpeak.*
- *The tables assume the direction of power flow is indicated by the name of the transmission facility unless an arrow symbol “(←)” is added to the name in [Table 3A](#).*
  1. *Example 1, MW flow is assumed from Newark to Ravenswood on the “Newark-Ravenswood 230 kV Line” (therefore, no symbol is required).*
  2. *Example 2, MW flow is assumed from Tracy to Tesla on the “Tesla-Tracy #1 & #2 230 kV Lines (←)”. The typical direction of power flow is also illustrated in attachment D – Sketches, Bay Area Transmission System.*

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

- *Tables 1 through 3 were constructed with the assumption that Pittsburg Series Reactors are bypassed. In addition, two reactors in-service on the Jefferson-Martin 230 kV Cable and two reactors in-service on the San Mateo-Martin 230 kV Cable. Most of the Effectiveness Factors do not change much with the insertion of the Pittsburg Series Reactors.*
- *Dispatchers must use judgment when alleviating transmission constraints – note that [Table 3A](#) does not consider economic factors. Therefore, the “most effective” mitigation measure may not necessarily be the “most efficient/economic” solution to relieve facility loading.*
- *Refer to [Table 3C](#) for a list of individual units within each of the Generation groups.*
- *Refer to Operating Procedure [7120 North Geysers Area - 115 kV](#) for Geysers Generation Dispatch instructions.*

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3C: Resource IDs

Generation Group	Resource Name	Resource ID
Pittsburg Group- 115 KV	Medanos Energy Center 1X0 Mode, 1X1 Mode, Los 2X1 Mode	LMEC_1_CC1X0, LMEC_1_CC1X1, LMEC_1_CC2X1
	Los Medanos Energy Center AGGREGATE	LMEC_1_PL1X3
Pittsburg Group- 230 KV	Delta Energy Center Aggregate	DELTA_2_PL1X4
	Delta Energy Center CCYC Modes 1X0, 1X1, 2X1, 3X1	DELTA_2_CC1X0, DELTA_2_CC1X1, DELTA_2_CC2X1, DELTA_2_CC3X1
Oakland Group	Oakland Station C GT Units 1, 2, 3	OAK C_7_UNIT 1, OAK C_7_UNIT 2, OAK C_7_UNIT 3
	Alameda GT Units 1, 2	ALMEGT_1_UNIT 1, ALMEGT_1_UNIT 2
Contra Costa Group	Gateway Generation Station	GATWAY_2_PL1X3
	Marsh Landing Generation Unit 1 2 3 4	COCOPP_2_CTG3, COCOPP_2_CTG4, COCOPP_2_CTG1, COCOPP_2_CTG2
	Montezuma Wind (Estimated Sync Date Dec 2011)	BRDSLD_2_MTZUMA
Birds Landing Wind Gen	High Winds Energy Center	BRDSLD_2_HIWIND
	Shiloh 1 Wind Project	BRDSLD_2_SHILO1
	Shiloh 2 Wind Project	BRDSLD_2_SHILO2
	Shiloh 3A Wind Project	BRDSLD_2_SHILO3A
	Solano Wind Firm	USWNRD_2_SMUD
	Solano Wind Firm Project Phase 3	USWNRD_2_SMUD2
	Los Esteros Energy Facility Aggregate	LECEF_1_UNITS
Los Esteros Group (Silicon Valley Area Group)	Gilroy Cogen 1X0 Mode, 1X1 Mode	GILROY_1_CC1X0, GILROY_1_CC1X1
Gilroy Group (Silicon Valley Area Group)	Gilroy Cogen Aggregate	GILROY_1_UNIT
	Gilroy Energy Center Units 1, 2	GILRPP_1_UNIT 1, GILRPP_1_UNIT 2
	Gilroy Energy Center Units 1 & 2 Aggregate	GILRPP_1_PL1X2
	Gilroy Energy Center, Unit #3	GILRPP_1_PL3X4

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Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24

**Effectiveness Factors - All**

**Distribution Restriction:  
None**

Generation Group	Resource Name	Resource ID
Moss Landing 230	Moss Landing Power Blocks 1, 2	MOSSLD_2_PSP1, MOSSLD_2_PSP2
Dallas Energy Storage	Dallas Energy Storage	VISTRA_5_DALBT1, VISTRA_5_DALBT2, VISTRA_5_DALBT3
Black Diamond Energy Storage	Black Diamond Energy	BLKDIA_2_BDEBT1
Kelso	Kelso (Mariposa Energy)	KELSO_2_UNITS
MEC	Metcalf Energy Center	METEC_2_PL1X3
Russell City Generation	Russell City Generation	RUSCTY_2_CTG1, RUSCTY_2_CTG2, RUSCTY_2_STG
North Geysers Group	Calpine Geysers Units 5 & 6 Aggregate	GYS5X6_7_UNITS
	Calpine Geysers Units 7 & 8 Aggregate	GYS7X8_7_UNITS
	Geysers Unit 11	GEYS11_7_UNIT11
South Geysers Group	Geothermal Energy Partners 1, 2	ADLIN_1_UNIT 1, ADLIN_1_UNIT 2
	Calpine Geysers CO. L. P. (KW#1 and KW#2)	BEARCN_2_UNIT 1, BEARCN_2_UNIT 2
	Geysers Units 12, 13, 14 (Healdsburg)	GEYS12_7_UNIT12, GEYS13_7_UNIT13, GEYS14_7_UNIT14
	Geysers Unit 16 , 17, 18 (Healdsburg)	GEYS16_7_UNIT16, GEYS17_7_UNIT17, GEYS18_7_UNIT18
	Geysers Unit 20 (Healdsburg)	GEYS20_7_UNIT20
	Geysers Power Company, LLC	SANTFG_7_UNITS
	Sonoma Power Plant	SMUDGO_7_UNIT 1
	Sonoma County Landfill	SNMALF_6_UNITS
	NCPA Geo Plant 1 Units 1, 2	NCPA_7_GP1UN1, NCPA_7_GP1UN2
	NCPA Geo Plant 2 Units 3, 4	NCPA_7_GP2UN3, NCPA_7_GP2UN4
	Bottlerock	GEYS17_2_BOTRCK
Lambie/Goosehaven/ Creed Group	Lambie Energy Center, Unit #1	LMBEPK_2_UNITA1
	Goose Haven Energy Center, Unit #1	LMBEPK_2_UNITA3
	Creed Energy Center, Unit #1	LMBEPK_2_UNITA2
Riverview Group	Riverview Energy Center (GP Antioch)	RVRVIEW_1_UNITA1
Calpeak/Wolfskill Group	Calpeak Power – Vaca Dixon, LLC	VACADX_1_UNITA1
	Wolfskill Energy Center - Calpine	WOLFSK_1_UNITA1

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b> 2210Z
		<b>Version No.</b> 28.9
		<b>Effective Date</b> 4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>

Generation Group	Resource Name	Resource ID
Transbay cable	Transbay	CISO_POTTBAY_I_WHL_TBAYDC CISO_POTTBAY_E_WHL_TBAYDC
Contra Costa Carbon Plant	Contra Costa Carbon Plant	UNCHEM_1_UNIT
Tosco (Rodeo Plant)	Tosco (Rodeo Plant)	UNOCAL_1_UNITS
Chevron Richmond Refinery	Chevron Richmond Refinery	STOILS_1_UNITS
Shell Oil Refinery Aggregate	Shell Oil Refinery Aggregate	SHELRF_1_UNITS
Berkeley Cogeneration	Berkeley Cogeneration	GRZZLY_1_BERKLY
Crockett Cogen	Crockett Cogen	CROKET_7_UNIT
Martinez Cogen Limited Partnership	Martinez Cogen Limited Partnership	TIDWTR_2_UNITS
Colusa Generating Station	Colusa Generating Station	COLUSA_2_PL1X3

**Note:** Resource Names and IDs that are grayed out are not normally submitted in schedules, they are usually part of an aggregated schedule.

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3D: Series Reactors Effectiveness Factors

<b>Estimated Shift in the CALCULATED LOADING across the transmission facilities that make up the LIMIT resulting from the Insertion of the Pittsburg 230 kV Series Reactors and Jefferson-Martin Series Reactors</b>				
<b>Control Point</b>	<b>Pittsburg Series Reactors</b>		<b>Jefferson-Martin Series Reactors</b>	
	<b>Increase/Decrease in CALCULATEDLOADING</b>	<b>MW Change in Flow</b>	<b>Increase/Decrease in CALCULATEDLOADING</b>	<b>MW Change in Flow</b>
Pittsburg - San Mateo 230 kV Line & Pittsburg - East Shore 230 kV Line	Decrease	52.1	Increase	2.5
Ravenswood - San Mateo #1 & #2 230 kV Lines & Ravenswood - San Mateo 115 kV Line (←)	Increase	5.0	Increase	3.35
Pittsburg –Tesla #1 & #2 230 kV Lines (←)/(→)	Decrease/Increase	32/42	Increase	2.2
Tesla 500/230 kV Bank #6 Onto Tesla 500/230 kV Bank #4	Decrease	2.9	Increase	2.1
Pittsburg 230/115 kV Banks #12 & #13	Increase	5.5	--	--
Tesla - Ravenswood 230 kV Line & Newark - Ravenswood 230 kV Line & Newark - Ames Distribution 115 kV Line	Increase	3.8	Increase	1.73

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

**7330** - Generation Effectiveness Factors San Francisco and Peninsula Areas: (version 12.1, 6/08/23)

Table 2: Generation Effectiveness Factors

<b>Control Points ↓</b> <b>Resource IDs →</b>	<b>Trans Bay DC Cable</b>	<b>Ox Mountain Gen</b>
	<b>TBC</b>	<b>OXMTN_6_LNDFIL</b>
<b>CP-1: 0.45*AY-2 (→,@Potrero; Potrero - Larkin) + AX-1 (→,@Potrero; Potrero - Mission) - 0.15 * Armed TBC dispatch</b>	Decrease TBC dispatch <b>(~15% effective)</b>	N/A
<b>CP-2: 0.45*AY-2 (→,@Potrero; Potrero - Larkin) + AX-1 (→,@Potrero; Potrero - Mission)</b>	Decrease TBC dispatch <b>(~15% effective)</b>	N/A
<b>CP-3: 0.09 * Jefferson → Martin 230 kV [@Jefferson] + Jefferson → Hillsdale Jct. 60 kV [@Jefferson]</b>	Increase TBC dispatch <b>(~4% effective)</b>	Increase OXMNT_6_LNDFIL <b>(~60% effective)</b>

**Note:** If CP #3 cannot be met with available TBC and Ox-Mtn., contact PG&E OE for additional options such as radializing the San Mateo 60 kV system.

 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

**7340** - Generation Effectiveness Factors Silicon Valley Area: (version 3.0, 12/04/20)


Table 3: Generation Effectiveness Factors

<b>Resource ID</b> <b>Control Point ↓</b> →	<b>MW increase in the CALCULATED LOADING across the transmission facilities that make up the area LIMIT for 100 MW increase in Generation.</b>				
	<b>SVP PST</b>	<b>DVR</b> <b>(Donald Von Raesfeld)</b>	<b>Gianera</b>	<b>LECEF</b> <b>(Los Esteros Energy Facility)</b>	<b>Gilroy</b>
	SVP PST	DUANE_1_PL1X3	CSCGNR_1_UNIT 1 CSCGNR_1_UNIT 2	LECEF_1_UNITS	GILROY_1_UNIT GILRPP_1_PL1X2 GILRPP_1_PL3X4
0.70* NRS - Scott #1 115 kV line (→, @NRS) + NRS-Scott #2 115 kV line (→, @NRS)	22	-47	-8	3	-2
<b>CP #27</b> from OP 7320: 1.00 * Metcalf - El Patio #1 115 kV line (->, @ Metcalf)+ 0.43 * Metcalf - El Patio #2 115 kV line (->, @ Metcalf)	5	10	10	7	-8

**Note:** SVP PST is operated by Silicon Valley Power. DVR and Gianera are operated by NCPA. For mitigation using any of these options (SVP PST, DVR, and/or Gianera), coordinate with SVP. Refer to procedure 7340 for mitigation instructions.

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

7410 - Effectiveness Factors for Tesla/Bellota Area: (version 9.4, 1/11/24)

Table 3A-1: Generation Effectiveness Factors – Combined Limits

<b>Resource IDs</b> → <b>Control Points↓</b>	<b>MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation.</b>								
	Beardsley	Donnells	Pacifica Ultra Power	Sand Bar	Spring Gap	Stanislaus PH	Tulloch Unit 1 & 2	GWF Tracy 1 & 2	Ripon Cogen
	BEARDS_1 UNIT1	DONNLS_7 UNIT	ULTPCH_1 UNIT 1	SNDBAR_7 UNIT 1	SPRGAP_1 UNIT 1	STANIS_7 UNIT 1	TULLCK_7 UNITS	SCHLTE_1 UNIT A1, A2	SMPRIP_1 SMPSON
<b>CP #2</b> 0.72 x Tesla - Schulte No.1 115 kV (→, @Tesla) + Tesla - Schulte No.2 115 kV (→, @ Tesla)	-20	-20	-20	-20	-20	-30	-20	-65	+5
<b>CP #3</b> 0.72 x Tesla-Schulte No.1 115 kV (<-, @Tesla) + Tesla - Schulte No.2 115 kV (<-, @ Tesla)	20	20	20	20	20	30	20	65	-5

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Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24

**Effectiveness Factors - All**

**Distribution Restriction:**  
**None**

Resource IDs → Control Points↓	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.								
	Beardsley	Donnells	Pacifica Ultra Power	Sand Bar	Spring Gap	Stanislaus PH	Tulloch Unit 1 & 2	GWF Tracy 1 & 2	Ripon Cogen
	BEARDS_1 UNIT1	DONNLS_7 UNIT	ULTPCH_1 UNIT 1	SNDBAR_7 UNIT 1	SPRGAP_1 UNIT 1	STANIS_7 UNIT 1	TULLCK_7 UNITS	SCHLTE_1 UNIT A1, A2	SMPRIP_1 SMPSON
<b>CP #6</b> 0.59*Schulte - Lammers 115 kV line (@ Schulte) + Schulte - Manteca 115 kV line (@ Schulte) - 0.15* 60 MW generation reduction at GWF Tracy	-25	-22	-30	-20	-17	-27	-19	+15	+3
<b>CP #7</b> 0.59* Schulte - Lammers 115 kV line (@ Schulte) + Schulte - Manteca 115 kV line (@ Schulte)	-25	-22	-30	-20	-17	-27	-19	+15	+3
<b>CP #9</b> Schulte Sw Sta - Manteca 115 kV Line (→ @ Manteca) +0.78 * Vierra -Tracy - Kasson 115 kV Line (<- @ Vierra)	-30	-30	-32	-30	-30	-36	-30	+11	+2

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

<b>Resource IDs</b> → <b>Control Points↓</b>	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>								
	Beardsley	Donnells	Pacifica Ultra Power	Sand Bar	Spring Gap	Stanislaus PH	Tulloch Unit 1 & 2	GWF Tracy 1 & 2	Ripon Cogen
	BEARDS_1 UNIT1	DONNLS_7 UNIT	ULTPCH_1 UNIT 1	SNDBAR_7 UNIT 1	SPRGAP_1 UNIT 1	STANIS_7 UNIT 1	TULLCK_7 UNITS	SCHLTE_1 UNIT A1, A2	SMPRIP_1 SMPSON
<b>CP #13</b> 0.68* Schulte - Lammers 115 kV line (@ Schulte) + Schulte SW Sta – Kasson - Manteca 115 kV Line (@ Kasson)	-25	-22	-30	-20	-17	-27	-19	+15	+3

**Note:** If all listed Generation for CP's 2, 6, and 7 has been exhausted, then consider reconfiguration and/or shedding Load at the Manteca and Racetrack substations.

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3A-2: Generation Effectiveness Factors – Combined Limits

<b>Resource IDs</b> → <b>Control Points</b> ↓	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>												
	Electra	Tiger Creek	Salt Spring	Collierville	Melones PH	Kirkwood	Holm	Middle Fork	Drum Area Gen <sup>***</sup>	East of Manteca Hydro	Feather River Hydro <sup>*</sup>	Fresno Area Gen <sup>****</sup>	Bay Area Gen <sup>**</sup>
	ELECTR .UNIT 1, 2, 3	TIGRCK .UNIT 1, 2	SALTSP.UNI T 1, 2	COLVIL .UNIT 1, 2	(BANC)	INTKEP .KIRKW1, 2, 3	INTKEP .HOLM 1, 2	MDFKRL_2 _PROJECT					
<b>CP #4</b> 0.32 x Bellota-Tesla No. 2 230 kV line (->) + Bellota-Weber 230 kV line (->)	+25	+25	+25	+26	+20	+20	+20	+7	+7	+7	+7	+5	-2.5
<b>CP #8</b> 0.32 x Bellota-Tesla No. 2 230 kV line (<-) + Weber-Tesla 230 kV line (<-)	-25	-25	-25	-26	-20	-20	-20	-7	-7	-7	-7	-5	+2.5
<b>CP #11a and #11b</b> 0.17 *( Hurley-Tracy 230 kV #1 + Hurley-Tracy 230 kV #2) + Weber-Tesla 230 kV	-20	-20	-20	-20	-16	-13	-13	-5	-6	-5	N/A	-4	+2

\* Feather River Hydro = Poe PH, Cresta PH, Rock Creek PH, Bucks Creek PH

\*\* Bay Area Gen = DEC, LMEC, Pittsburg, Gateway

\*\*\*Drum Area Gen = Drum, Dutch Flat, Chicago Park, Bowman, Spaulding, etc.

\*\*\*\*Fresno Area Gen = Kerckhoff, Hass, Helms, Exchequer, Pine Flat, etc.

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3B-1: Generation Effectiveness Factors – Individual Lines

<b>Resource IDs</b> <b>Control Points</b> ↓	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>								
	Beardsley	Donnells	Pacifica Ultra Power	Sand Bar	Spring Gap	Stanislaus PH	Tulloch Unit 1 & 2	GWF Tracy 1 & 2	Ripon Cogen
	BEARDS_1 UNIT1	DONNLS_7 UNIT	ULTPCH_1 UNIT 1	SNDBAR_7 UNIT 1	SPRGAP_1 UNIT 1	STANIS_7 UNIT 1	TULLCK_7 UNITS	SCHLTE_1 UNIT A1, A2	SMPRIP_1 SMPSON
Tesla-Tracy 115 kV line	-15	-15	-16	-15	-15	-19	-12	-10	+2
Tesla-Schulte No.2 115 kV line	-13	-15	-16	-15	-15	-19	-12	-69	+2
Schulte-Manteca 115 kV line (Kasson Jct – Manteca section)	-20	-22	-24	-22	-22	-27	-18	+5	+2
Tesla-Schulte No.1 115 kV line	-14	-14	-16	-14	-14	-18	-13	-10	+2
Tesla – Salado – Manteca 115 kV line (Ingram Creek - Manteca)	-6	-6	-7	-6	-7	-9	-6	-2	+1
Lawrence Livermore Lab - Tesla 115 kV line (->/<-)	-42 42	-42 42	-42 42	-42 42	-42 42	-42 42	-42 42	-62 67	N/A

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3B-2: Generation Effectiveness Factors – Individual Lines

<b>Resource IDs</b> → <b>Control Points</b> ↓	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>						
	Electra	Tiger Creek	Salt Spring	Collierville	Melones PH	Kirkwood	Holm
	ELECTR .UNIT 1, 2, 3	TIGRCK .UNIT 1, 2	SALTSP.UNIT 1, 2	COLVIL .UNIT 1, 2	(BANC)	INTKEP .KIRKW1, 2, 3	INTKEP .HOLM 1, 2
Bellota - Tesla No. 2 230 kV line (→)	+19	+19	+18	+20	+15	+15	+15
Bellota-Weber 230 kV line (→)	+20	+20	+18	+20	+15	+15	+15

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

**7420** - HHWP Warnerville-Standiford Lines #7 and #8 Operations: (version 6.2, 1/12/23)

Table 3: Generation Effectiveness Factors on Calculated Loading

Loading Equation	MW increase in the loading across the transmission facilities that make up the loading equation for a 100 MW increase in Generation										
	Intake units	ELCAP_1_SOLAR	EXCHEC_7_UNIT 1	CHWCHL_1_BIOMAS	CHWCHL_1_BIOMAS	TIGRCK_7_UNITS	SALTSP_7_UNITS	COLVIL_7_PL1X2	HEMMPG_7_UNIT 1	HEMMPG_7_UNIT 2	HEMMPG_7_UNIT 3
CP #1: Warnerville – Standiford #8 115 kV line + Warnerville – Standiford #7 115 kV line	+17	+6	+7	+6	+6	+5	+5	+5	+4	+4	+4

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

**7430** - Effectiveness Factors for the Fresno Area: (version 26.1, 4/01/24)

**Note:** When operating constraints allow increasing and decreasing should be done in pairs. It is recommended to try and match the best increase option with the best decrease option for maximum effectiveness. If this is done, then their effectiveness factors can be added together resulting in a more accurate number.

Table 3A: Generation Effectiveness Factors on Calculated Loading

Loading Equation	MW increase in the loading across the transmission facilities that make up the loading equation for a 100 MW increase in Generation																		
	Balch #1	Balch #2	CalPeak Power Panoche	CAPCO Madera	Chevron USE (Coalinga)	Chowchilla	Dinuba	Dynamis CoGen	Exchequer	Fresno CoGen (Agrico)	Friant Dam	GWF Henrietta Peaker Plant	Haas	Helms in Pump Mode	Helms in Gen Mode	HEP Peaker Plant & GWF Hanford	JR Wood	Huron Solar	Cantua Solar
<b>CP #1:</b> 0.78* Gates - Mustang #2 230 kV line (→, @Gates) + Gates - Mustang #1 230 kV line (→, @Gates)	-37	-39	-5	-20	+4	-21	-37	-37	-18	-12	-33	-66	-39	33	-33	-52	-18	-	-4
<b>CP #6:</b> 0.44* Gregg - Wilson 230 kV line (→, @Gregg) + Gregg-Borden 230 kV line (→, @Gregg)	13.1	10.1	1.6	-5.4	3.9	-7.2	12.3	12.4	-13.5	5.9	-70.5	9.8	10.1	-22.0	22.0	10.7	-21.7	0	0
<b>CP #7:</b> Merced 115/70 bank #2 (<-, @115 kV) + Exchequer – Le Grand 115 kV line (→, @Exchequer)	-0.3	-0.2	-0.7	-2.3	-0.2	-3.2	-0.2	-0.2	100	-0.3	0.1	-0.1	-0.2	-0.1	0.1	-0.1	1.3	0	0.
Warnerville – Wilson 230 kV Line	-15.9	-12.7	-10.3	-18.4	-7.3	-24.3	-15.2	-15.2	-25.7	-10.7	-23.7	-10.8	-12.6	22.0	-22.0	-12.7	-33.5	-11.1	-10

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**Effectiveness Factors - All**

**Distribution Restriction:  
None**

Loading Equation	MW increase in the loading across the transmission facilities that make up the loading equation for a 100 MW increase in Generation																		
	Balch #1	Balch #2	CalPeak Power Panoche	CAPCO Madera	Chevron USE (Coalinga)	Chowchilla	Dinuba	Dynamis CoGen	Exchequer	Fresno CoGen (Agrico)	Friant Dam	GWF Henrietta Peaker Plant	Haas	Helms in Pump Mode	Helms in Gen Mode	HEP Peaker Plant & GWF Hanford	JR Wood	Huron Solar	Cantua Solar
<b>CP # 8:</b> 0.51* Melones - Wilson 230 kV Line (->, @ Wilson) + Warnerville - Wilson 230 kV Line (->, @Wilson)	-17.8	-15.4	-12.2	-24	-11.1	-31	-16.3	-18.4	-34	-11	-27.2	-16.0	-15.1	23.8	-23.8	-14.0	-26.3	0	-10
<b>CP # 11:</b> 0.05* Tranquillity - Kearney 230 kV Line (→, @Tranquillity) + Wilson - Oro Loma 115 kV Line (<-,@ Oro Loma)	-3.5	-7.6	-2.0	-3.4	0	-8.3	0	-2.6	-9.1	0	0	-	-1.5	3.9	-3.9	-2	-26.3	0	0
<b>CP # 12:</b> 0.19* Tranquillity - Kearney 230 kV Line (→, @Tranquillity) + Warnerville - Wilson 230 kV Line (->, @Wilson)	-21.4	-13.4	-8.1	-20.9	-2.6	-29.1	-18.1	-26.6	-32.1	-9.0	-25.6	-13	-15.1	27.2	-27.2	-16	-26.3	-11.1	-11.1
<b>CP#16:</b> 0.15 * Panoche - Mendota 115 kV line (->,@ Mendota) + Panoche - Oro Loma 115 kV line (->, @ Panoche)	-	-	+6	-9	-	-	-	-	-8	+2	-2	-	-	2	-2	-	-10	-	-
<b>CP #17:</b> 0.73 * Panoche - Mendota 115 kV line (->,@ Mendota) + Wilson - LeGrand 115 kV line (->,@ LeGrand)	-4	-4	-	-	-	-67	-6	-	-65	-	-	-	-4	-	-	-2	+7	-	-
Panoche-Oro Loma 115 kV Line	-	-	+6	-9	-	-	-	-	-8	+2	-2	-	-	2	-2	-	-10	-	-
<b>CP #18:</b> 0.51* Bellota - Cottle 230 kV Line (->, @ Bellota) + Warnerville - Wilson 230 kV Line (->, @Wilson)	-17.8	-15.4	-9	0	-11.1	-31	-16.3	-18.4	-34	-11	-27.2	-16.0	-15.1	23.8	-23.8	-14.0	-26.3	0	-10

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Loading Equation	MW increase in the loading across the transmission facilities that make up the loading equation for a 100 MW increase in Generation																		
	Balch #1	Balch #2	CalPeak Power Panoche	CAPCO Madera	Chevron USE (Coalinga)	Chowchilla	Dinuba	Dynamis CoGen	Exchequer	Fresno CoGen (Agrico)	Friant Dam	GWF Henrietta Peaker Plant	Haas	Helms in Pump Mode	Helms in Gen Mode	HEP Peaker Plant & GWF Hanford	JR Wood	Huron Solar	Cantua Solar
CP # 19: 0.81 * Wilson 230/115 kV TB #2 (->) + Wilson 230/115 kV TB #1 (->)	-2	-2	-6	-	-	-42	-2	-	-53	-	+4	-	-2	-3	3	-	-70	-	-
CP # 20: 0.20* Mustang - Gregg 230 kV Line (->, @ Gregg) + Warnerville - Wilson 230 kV Line (->, @Wilson)	-14	-11	-7	-21	-3	-25	-13	-14	-30	-7	-24	-5	-11	22	-22	-8	-36	-3	-6

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3B: Generation Effectiveness Factors on Calculated Loading

Loading Equation	MW increase in the loading across the transmission facilities that make up the loading equation for a 100 MW increase in Generation																	
	Kerckhoff #1 & #2	Kings River	KRCD	McSwain	Merced Falls	Starwood Power – Midway LLC	Panoche Energy Center	Panoche Peaker	PE-KES Kingsburg	Pine Flat	Rio Bravo Fresno (Ultrapower)	San Joaquin 2	Wishon	Collierville, Tiger Creek, Electra	Melones (BANC)	CCSF Hetch Hetchy Hydro	Giffen Solar	Kansa Solar
<b>CP #1:</b> 0.78 * Gates - Mustang #2 230 kV line (→, @Gates) + Gates - Mustang #1 230 kV line (→, @Gates)	-33	-37	-37	-18	-18	-5	-4	-5	-40	-38	-37	-33	-33	-3	-10	-	-11	-58
<b>CP #6:</b> 0.44 * Gregg - Wilson 230 kV line (→, @Gregg) + Gregg - Borden 230 kV line (→, @Gregg)	10.7	12.3	12.3	-14.9	-15.0	1.6	4.5	3.1	11.3	10.2	12.3	-73.0	-72.9	5.7	14	10.2	+10	+10
<b>CP #7:</b> Merced - Merced Falls (<-, @ Merced) + Exchequer – Le Grand 115 kV line (→, @Exchequer)	-0.8	-0.2	-0.2	100	100	-0.7	-0.1	-0.1	-0.2	-0.2	-0.2	0.1	0.1	0.0	0.0	0.0	0	0
Warnerville - Wilson 230 kV Line	-19.0	-15.0	-15.1	-27.2	-27.2	-10.2	-7.3	-8.5	-14.0	-12.9	-15.1	-24.6	-24.6	+5.7	-12.0	+23	-10	-10
<b>CP # 8:</b> 0.51* Melones-Wilson 230 kV Line (<-, @ Wilson) + Warnerville - Wilson 230 kV Line (<-, @Wilson)	-23.5	-17.0	-18.0	-33.3	-33.3	-13.1	-9.8	-10.2	-14.7	-14.2	-20.6	-23.0	-23.0	+8.0	+7.5	+23	-15	-10
<b>CP # 11:</b> 0.05* Tranquillity - Kearney 230 kV Line (→, @Tranquillity) + Wilson - Oro Loma 115kV Line (<-, @ Oro Loma)	-5.5	-2.5	-2.0	-33.3	0	+1.6	+1.9	+4.0	-2.9	-2.2	0	0.0	0	-1.8	+3.6	-3.3	0	0


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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Loading Equation	MW increase in the loading across the transmission facilities that make up the loading equation for a 100 MW increase in Generation																	
	Kerckhoff #1 & #2	Kings River	KRCD	McSwain	Merced Falls	Starwood Power – Midway LLC	Panoche Energy Center	Panoche Peaker	PE-KES Kingsburg	Pine Flat	Rio Bravo Fresno (Ultrapower)	San Joaquin 2	Wishon	Collierville, Tiger Creek, Electra	Melones (BANC)	CCSF Hetch_Hetchy Hydro	Giffen Solar	Kansa Solar
<b>CP #12:</b> 0.19* Tranquillity - Kearney 230 kV Line (→, @Tranquillity) + Warnerville - Wilson 230 kV Line (→, @Wilson)	-22.2	-20.0	-18.0	-33.3	-34.4	-9.8	-5.8	-6.1	-17.6	-15.5	-2.9	0.0	-22.2	+5.4	-13.3	+23.3	-11.1	-10
<b>CP #16:</b> 0.15 * Panoche - Mendota 115 kV line (->, @ Mendota) + Panoche - Oro Loma 115 kV line (->, @ Panoche)	-2	-	-	-8	-2	+8	+3	+6	-	-	-	-2	-2	-	-3	-2	-	-
<b>CP #17:</b> 0.73 * Panoche - Mendota 115 kV line (->, @ Mendota) + Wilson - LeGrand 115 kV line (->, @ LeGrand)	-15	-5	-5	-51	-	-	-	-	-5	-4	-5	-	-	-	-	-	-	-
Panoche-Oro Loma 115 kV Line	-2	-	-	-8	-2	+8	+3	+6	-	-	-	-2	-2	-	-3	-2	-	-
<b>CP #18:</b> 0.51* Bellota - Cottle 230 kV Line (->, @ Bellota) + Warnerville - Wilson 230 kV Line (->, @Wilson)	-23.5	-17.0	-18.0	-33.3	-33.3	-13.1	-9.8	-10.2	-14.7	-14.2	-20.6	-23.0	-23.0	+8.0	+42	+23	-15	-10
<b>CP # 19:</b> 0.81 * Wilson 230/115 kV TB #2 (->) + Wilson 230/115 kV TB #1 (->)	-8	-2	-2	-54	-54	-6	-3	-6	-2	-2	-2	+4	+4	+2	+6	+5	-	-
<b>CP # 20:</b> 0.20* Mustang - Gregg 230 kV Line (→, @ Gregg) + Warnerville - Wilson 230 kV Line (->, @Wilson)	-17	-14	-14	-31	-31	-5	-6	-5	-12	-11	-12	-24	-24	+7	-12	+27	-8	-5

**Note 1:** Dropping a Helms pump has the same effect as increasing Helms Generation. The ID for each pump is: HELMPG\_7\_#100LD, HELMPG\_7\_#200LD, HELMPG\_7\_#300LD

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

**Note 2:** Units with an RMR or RA contract will be dispatched first, and the market units second. RA unit portfolio changes on a monthly basis, so, check the list of RA units prior to adjusting generation.

Table 3C: Generation Effectiveness Factors on Calculated Loading

Loading Equation	MW increase in the loading across the transmission facilities that make up the loading equation for a 100 MW increase in Generation						
	Waukena Solar	CID Solar	Corcoran City	FreshWater Solar	Little Bear Solar	NorthStar	Cal Renew
<b>CP #13:</b> Kingsburg - Corcoran 115 kV #1 (<- , @Kingsburg) + Kingsburg - Waukena 115 kV (<- , @Kingsburg)	100	100	100	100	-	-	-
<b>CP #21:</b> Mendota - Panoche 115 kV (-> , @Mendota) + Mendota - Dairyland 115 kV (-> , @Mendota)	-	-	-	-	100	100	100

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

7440 - Effectiveness Factors for the Los Padres Area: (version 3.1, 4/01/24)

Table 3: Effectiveness Factors

Loading Equation	MW increase in the loading across the transmission facilities that make up the loading equation for a 100 MW increase in Generation					
	Topaz Solar TOPAZ_2_SOLAR	CVSR CAVLSR_2_BSOLAR CAVLSR_2_RSOLAR	Sunset SUNSET_2_UNITS	Sunrise SUNRIS_2_PL1X3	Elk Hills ELKHIL_2_PL1X3	La Paloma LAPLMA_2_UNIT 1 LAPLMA_2_UNIT 2 LAPLMA_2_UNIT 3 LAPLMA_2_UNIT 4
<b>CP #1:</b> 0.53* Morro Bay - Solar #2 230 kV line (<, @Solar) + Morro Bay-Solar #1 230 kV line (<, @Solar)	+20	+16	+4	+3.5	+3.5	+3.4

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3: Effectiveness Factors – *Continued*

Loading Equation	MW increase in the loading across the transmission facilities that make up the loading equation for a 100 MW increase in Generation						
	Dallas Battery Energy Storage VISTRA_5_DALBT1 VISTRA_5_DALBT2 VISTRA_5_DALBT3 VISTRA_5_DALBT4	Moss Landing Power Blocks MOSSLD_2_PSP1 MOSSLD_2_PSP2	Metcalf Energy Center	Gilroy Co-gen GILROY_1_UNIT	Panoche Valley Solar PNCHVS_2_SOLAR	Panoche Energy Center PNCHEG_2_PL1X4	Tranquility Solar TRNQL8_2_AMASR1 TRNQL8_2_AZUSR1 TRNQL8_2_ROJSR1 TRNQL8_2_VERSR1 TRNQLT_2_SOLAR
<b>CP #2:</b> 0.10* Moss Landing - LosBanos 500 kV line (<-, @Moss Landing) + Moss Landing - Las Aguilas 230 kV line (<-, @Moss Landing)	-6.0	-12.0	-5.0	-4.5	20.0	12.0	10.0

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

7450 - Effectiveness Factors for Midway-Kern Area: (version 2.8, 4/01/24)

Table 3 - Part 1: Generation Effectiveness Factors – System Operating Limits

<b>Resource IDs→</b>  <b>Control Points↓</b>	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>					
	<b>Live Oak</b>	<b>Mt. Poso</b>	<b>Dexzel</b>	<b>Discovery Chevron Santa Fe Co-gen</b>	<b>Bear Mountain</b>	<b>Kern Front Double C High Sierra Badger Creek</b>
	LIVOAK_1_UNIT 1	MTNPOS_1_UNIT	DEXZEL_1_UNIT	DISCOV_1_CHEVRN VEDDER_1_SEKERN	BEARMT_1_UNIT	KERNFT_1_UNITS DOUBLC_1_UNITS SIERRA_1_UNITS BDGRCK_1_UNITS
<b>CP #1a:</b> Smyrna – Semitropic - Midway 115 kV line (IN @ Semitropic) + 0.75* Semitropic - Midway #1 115 kV line (OUT @ Midway)	-8	-36	-10	-10	-7	-5
<b>CP #1b:</b> Semitropic - Midway #1 115 kV line (OUT @ Midway) + 0.80* Smyrna – Semitropic - Midway 115 kV line (IN @ Semitropic)	-8	-36	-10	-10	-7	-5
<b>CP #2:</b> Kern – Westpark #1-115 kV line (→, @ Kern) + Kern – Westpark #2-115 kV line (→, @ Kern)	-5	-4	-8	-9	-64	-
<b>CP #3a:</b> Kern – Magunden - Witco 115 kV line (OUT @ Kern) + 0.63* (Westpark - Magunden 115 kV line (OUT @ Westpark) + Bear Mnt - Cal Water TB #1)	-30	-20	-45	-50	-	-

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Procedure No.	2210Z
Version No.	28.9
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**Effectiveness Factors - All**

**Distribution Restriction:**  
**None**

Resource IDs→ Control Points↓	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.					
	Live Oak	Mt. Poso	Dexzel	Discovery Chevron Santa Fe Co-gen	Bear Mountain	Kern Front Double C High Sierra Badger Creek
	LIVOAK_1_UNIT 1	MTNPOS_1_UNIT	DEXZEL_1_UNIT	DISCOV_1_CHEVRN VEDDER_1_SEKERN	BEARMT_1_UNIT	KERNFT_1_UNITS DOUBLC_1_UNITS SIERRA_1_UNITS BDGRCK_1_UNITS
<b>CP #3b:</b> Kern – Magunden - Witco 115 kV line (OUT @ Kern) + 0.63* (Westpark - Magunden 115 kV line (OUT @ Westpark) + Westpark TB #3)	-30	-20	-45	-50	-63	-
<b>CP #3c:</b> Kern – Magunden - Witco 115 kV line (IN @ Magunden) + Westpark - Magunden 115 kV line (OUT @ Westpark) + Westpark TB #3	-	-	-	-	-100	-
<b>CP #4:</b> Semitropic - Charca 115 kV line (OUT @ Semitropic) + Lerdo - Kern Oil - 7th Standard 115 kV line (IN @ Lerdo)	-	-100	-	-	-	-

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3 - Part 2: Generation Effectiveness Factors – System Operating Limits

<b>Resource IDs→</b>  <b>Control Points↓</b>	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>					
	<b>Pump Jack Solar Kernridge Mckittrick</b>	<b>Berry Co-gen 18 Cadet Co-gen</b>	<b>Maricopa West South Kern Solar</b>	<b>Kern Canyon Kern Hydro</b>	<b>Adobe Solar</b>	<b>Chalk Cliff Berry Cogen 38</b>
	PMPJCK_1 KERNRG_1_UNITS MKTRCK_1_UNIT 1	TANHIL_6_SOLART CHEVCD_6_UNIT	MARCPW_6_SOLAR1 SKERN_6	KRNCNY_6_UNIT RIOBRV_6_UNIT 1	ADOBEE_1_SOLAR	CHALK_1_UNIT UNVRSY_1_UNIT
<b>CP #5:</b> Weedpatch - San Bernard 70 kV line (IN @ Weedpatch) + 0.69* Wheeler Ridge - Weedpatch 70 kV line (OUT @ WR) + Arvin TB #1	-	-	-	-42	7	-
<b>CP #6:</b> Taft TB #2 (115 to 70 kV, @ 70 kV) + 0.95*Taft TB #1 (115 to 70 kV, @ 70 kV)	-	-75	-	-	-	8
<b>CP #10:</b> Midway – Belridge 115 kV Line (←, @ Midway) + San Luis Obispo - Temblor 115 kV line (←, @ San Luis Obispo)	100	-	-	-	-	-
<b>CP #11:</b> Copus - Old River 70 kV line (IN @ Old River) + Taft-Maricopa 70 kV line (OUT @ Maricopa)	-	-	100	-	-	-
<b>CP #12:</b> Taft - Maricopa 70 kV line (OUT @ Taft) + Berry Co-gen + 0.39* Kern - Old River #1-70 kV line ( IN @ Old River	-	-7	-	-	-	9

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

**7500** - Effectiveness Factors for Big Creek Area: (version 2.1, 6/08/23)

Table 3: Generation Effectiveness Factors of Big Creek Generators

<b>Resource IDs</b> → <b>Control Points</b> ↓	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>		
	<b>66 kV Gen (Kawgen) (Wellgen, Ultragen, Lakegen)</b>	<b>Big Creek</b>	<b>Eastwood (Pump/Gen)</b>
	(VECTOR_2_QF) (VESTAL_2_WELLHD, VESTA_6_ULTRGN, VESTAL_2_RTS042, VESTAL_6_QF)	BIGCRK_2_EXESWD	EASTWD_7_UNIT
<b>Magunden – Vestal #1 + #2</b>	67%	~50%	47%

**Note:** Big Creek is Dispatched as an aggregate due to water restrictions; the Effectiveness Factor is an approximate as it was calculated with respect to the entire Big Creek Project.

 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

**7510 - Effectiveness Factors for Big Creek Area Corridor Generators (South of Magunden): (version 6.1, 8/10/23)**

Table 4: Generation Effectiveness Factors of Big Creek Area Corridor Generators

<b>Resource IDs</b> →	<b>MW increase in the <u>calculated Loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>				
	Big Creek/Mammoth/ Eastwood	Sycamore Canyon/Omar	66 kV Gen (Vestal, Ceducr, and Rector)	Pastoria	Warne
	BIGCRK_2_EXESWD EASTWD_7_UNIT	SYCAMR_2_UNIT1 thru 4 OMAR_2_UNIT1 thru 4	VESTAL_2_KERN VESTAL_2_RTS042 VESTAL_2_SOLAR 1,2 VESTAL_2_UNIT1 VESTAL_2_WELLHD VESTAL_6_QF CEDUCR_2_SOLAR 1 thru 4 RECTOR_2_CREST RECTOR_2_KAWEAH RECTOR_2_KAWH 1 RECTOR_2_QF	LEBECS_2_UNITS	WARNE_2_UNIT
<b>Control Points</b> ↓					
<b>CP#1</b>	22	26	24	-11	-8
<b>CP#2</b>	20	23	22	33	61
<b>CP#3, #4, #5</b>	36	42	40	-18	-12
<b>CP#6, #7</b>	33	36	35	48	72

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Procedure No.	2210Z
Version No.	28.9
Effective Date	4/09/24

**Effectiveness Factors - All**

**Distribution Restriction:  
None**

Resource IDs →	MW increase in the <u>calculated Loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.				
	Big Creek/Mammoth/ Eastwood	Sycamore Canyon/Omar	66 kV Gen (Vestal, Ceducr, and Rector)	Pastoria	Warne
	BIGCRK_2_EXESWD EASTWD_7_UNIT	SYCAMR_2_UNIT1 thru 4 OMAR_2_UNIT1 thru 4	VESTAL_2_KERN VESTAL_2_RTS042 VESTAL_2_SOLAR 1,2 VESTAL_2_UNIT1 VESTAL_2_WELLHD VESTAL_6_QF CEDUCR_2_SOLAR 1 thru 4 RECTOR_2_CREST RECTOR_2_KAWEAH RECTOR_2_KAWH 1 RECTOR_2_QF	LEBECS_2_UNITS	WARNE_2_UNIT
Control Points↓					
<b>CP#8</b>	36	40	39	50	N/A
<b>CP#9</b>	22	24	23	32	64
<b>CP#10</b>	23	25	24	33	N/A

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	


7540 - Effectiveness Factors for Path 60 Inyo Tie: (version 2.1, 10/12/23)

Table 4: Path 60 Generation Effectiveness Factors (Flows from SCE to LADWP)

		MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation.		
		Mammoth/ Oxbow/ Bishop Creek	Coso Finance Partners/ North American Argus	Borax/ Mojave Cogen/ Coolwater 1&2/ Luz Solar Partners 3-7
Resource IDs →	Control Points ↓	CONTRL_1_CASAD1&3 CONTRL_1_OXBOW BISHOP_1_ALAMO BISHOP_1_UNITS	CALGEN_1_UNITS SEARLS_7_ARGUS	HOLGAT_1_BORAX CWATER_7_UNIT 1&2 KRAMER_1_SEGS37
CP#1	CP#2	42	11	3

**Notes:** The effectiveness factors are based on a steady-state condition, and may differ under real-time conditions.

\*When the flows are from LADWP to SCE, the table above has the reverse effectiveness.

 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	


7550 - Effectiveness Factors for Vincent Banks: (version 9.2, 1/04/24)

Table 3B: Generation Effectiveness Factors to mitigate AA bank overload for one of the AA bank contingency with all AA Banks in service

<b>Resource IDs</b> → <b>Combined Control Points</b> ↓	<b>MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation.</b>								
	Pastoria	Ormond Beach	Huntington Beach	El Segundo / Redondo Glen Arm	Harborgen Units/ Arco gen/ Long Beach Center Peaker	Walnut Creek	Alamitos Units	Big Creek	Etiwanda / Mountainview Sentinel Units/
	LEBECS_2_UNITS ORMOND_7_UNIT 1 & 2 HNTGBH_2_PL1X3 HNTGBH_7_UNIT 2 ELSEGN_2_UN101 1 ELSEGN_2_UN202 1 REDOND_7_UNIT 5, 6, 8 GLNARM_2_UNIT 1 - 4 GLNARM_2_UNIT 5 HARBGN_7_UNITS ARCOGN_2_UNITS HINSON_6_LBECH1 - 4 CENTER_6_PEAKE R WALCRK_2_CTG1-CTG5 ALAMIT_2_PL1X3 ALAMIT_7_UNIT 3 - 5 ALAMIT_7_ES1 BIGCRK_2_EXESWD MTWIND_1_UNIT 1 - 3 SBERDO_2_PSP3 & 4 SENTNL_2_CTG1-CTG8	-6	-8	-8	-13	-12	-9	-10	-4
<b>2AA or 3AA</b>	-9	-15	-8	-14	-13	-12	-11	-7	-5
<b>1AA or 4AA</b>									

**Study Reference:** These effectiveness factors are based on a normal steady-state condition, and may differ under Real-Time conditions. The reference bus used in the study was Morro Bay.

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

**7570** - Effectiveness Factors for Prior Outage of Vincent – Mesa or Mira Loma – Mesa: (version 13.1, 12/08/23)

Table 3A: Lugo-Mira Loma #3 Generation Effectiveness Factor with prior outage of Vincent-Mesa

<b>Resource IDs</b> → <b>Control Points</b> ↓	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>					
	<b>Grape land Peaker / Etiwanda units / Mira Loma Peakers / Mountain View units</b>	<b>Sentinel / Canyon Power Plant units</b>	<b>RedBluff / Colorado River Solar</b>	<b>Huntington Beach / Alamitos gen / Walnut Creek Energy</b>	<b>El Segundo / Redondo / Long Beach / Harborgen / Center / ARCO gen</b>	<b>Buck Blvd</b>
	ETIWND_6_GRPLND MIRLOM_6_PEAKE SBERDO_2_PSP3 SBERDO_2_PSP4	SENTNL_2_C TG1-8 ANAHM_2_C ANYN1-4	DSRTSN_2_SOLAR1 DSRTSN_2_SOLAR2 GENESI_2_STG	HNTGBH_7_UNIT1 HNTGBH_7_UNIT2 ALAMIT_7_UNIT 1-6 WALCRK_2_C TG1-5	ELSEGN_2_UN1011 ELSEGN_2_UN2021 REDOND_7_UNIT 5,6,8 HINSON_6_LBECH1-4 CENTER_6_PEAKE HARBGN_7_UNITS ARCOGN_2_UNITS	BUCKBL_2_PL1X3
CP#1a <sup>1</sup> CP#4a CP#6a CP#7a	-39	-35	-24	-32	-29	-15

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3A (Continued): Lugo-Mira Loma #3 Generation Effectiveness Factor with prior outage of Vincent-Mesa

<b>Resource IDs</b> →  <b>Control Points</b> ↓	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>				
	<b>Ormond / Pastoria gen / Big Creek</b>	<b>High Desert / North of Lugo Gen (Solar)</b>	<b>Palomar Energy</b>	<b>Otay Mesa / SDGE Peakers</b>	<b>IV Gen</b>
	ORMOND_7_UNIT 1 ORMOND_7_UNIT 2 LEBECS_2_UNITS BIGCRK_2_EXESWD	HIDSRT_2_UNITS KRAMER_1_SEGS37 KRAMER_2_SEGS89 SANDLT_2_SUNITS	PALOMR_2_PL1X3	BORDER_6_UNITA1 ESCND0_6_UNITB1 ELCAJN_6_UNITA1 LARKSP_6_UNIT 1 LARKSP_6_UNIT 2 ESCND0_6_PL1X2 OTAY_6_PL1X2 MRGT_6_MMAREF MRGT_6_MEF2 OGROVE_6_PL1X2 ELCAJN_6_LM6K OTMESA_2_PL1X2 CARLS1_2_CARCT1 CARLS2_1_CARCT1	TERMEX_2_PL1X3 LAROA1_2_UNITA1 LAROA2_2_UNITA1 CSLR4S_2_SOLAR IVSLRP_2_SOLAR1 CNTNLA_2_SOLAR1 CPVERD_2_SOLAR
CP#1a <sup>1</sup> CP#4a CP#6a CP#7a	6	18	-27	-25	-18

**\*Swing bus:** Distributed Swing Bus

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3B: Lugo-Mira Loma #3 Generation Effectiveness Factor with prior outage of Mira Loma-Mesa

<b>Resource IDs</b> →	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>					
	<b>Grape land Peaker / Etiwanda units / Mira Loma Peakers / Mountain View units</b>	<b>Sentinel / Canyon Power Plant units</b>	<b>RedBluff / Colorado River Solar</b>	<b>Huntington Beach</b>	<b>Alamitos gen / Walnut Creek Energy</b>	<b>El Segundo / Redondo / Long Beach / Harborgen / ARCO gen</b>
	ETIWND_6_GRPLND MIRLOM_6_PEAKE SBERDO_2_PSP3 SBERDO_2_PSP4	SENTNL_2_C TG1-8 ANAHM_2_C ANYN1-4	DSRTSN_2_SOLAR1 DSRTSN_2_SOLAR2 GENESI_2_STG	HNTGBH_7_UNIT1 HNTGBH_7_UNIT2	ALAMIT_7_UNIT 1-6 WALCRK_2_C TG1-5	ELSEGN_2_UN1011 ELSEGN_2_UN2021 REDOND_7_UNIT 5,6,8 HINSON_6_LBECH1-4 HARBGN_7_UNITS ARCOGN_2_UNITS
<b>Control Points↓</b>						
CP#1b <sup>1</sup> CP#4b CP#6b CP#7b	-41	-35	-25	-28	-29	-15

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		<b>Version No.</b> 28.9
		<b>Effective Date</b> 4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>

Table 3B continued: Lugo-Mira Loma #3 Generation Effectiveness Factor with prior outage of Mira Loma-Mesa

<b>Resource IDs</b> →  <b>Control Points</b> ↓	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>					
	Center / Buck Blvd	Ormond / Pastoria gen / Big Creek	High Desert / North of Lugo Gen(Solar)	Palomar Energy	Otay Mesa / SDGE Peakers	IV Gen
	BUCKBL_2_PL1X3 CENTER_6_PEAKEER	ORMOND_7_UNIT 1 ORMOND_7_UNIT 2 LEBECS_2_UNITS BIGCRK_2_EXESW D	HIDSRT_2_UNITS KRAMER_1_SEGS3 7 KRAMER_2_SEGS8 9 SANDLT_2_SUNIT S	PALOMR_2_PL1X3	BORDER_6_UNITA1 ESCNDO_6_UNITB1 ELCAJN_6_UNITA1 LARKSP_6_UNIT 1 LARKSP_6_UNIT 2 ESCNDO_6_PL1X2 OTAY_6_PL1X2 MRGT_6_MMAREF MRGT_6_MEF2 OGROVE_6_PL1X2 ELCAJN_6_LM6K OTMESA_2_PL1X2 CARLS1_2_CARCT1 CARLS2_1_CARCT1	TERMEX_2_PL1X3 LAROA1_2_UNITA1 LAROA2_2_UNITA1 CSLR4S_2_SOLAR IVSLRP_2_SOLAR1 CNTNLA_2_SOLAR1 CPVERD_2_SOLAR
CP#1b <sup>1</sup> CP#4b CP#6b CP#7b	-17	9	18	-25	-23	-17

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		<b>Version No.</b> 28.9
		<b>Effective Date</b> 4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>

Table 3C: Mesa - Walnut 230 kV line generation effectiveness Factor for Lugo-Ranch Vista / Lugo – Mira Loma #3 line out with prior outage of Vincent-Mesa

<b>Resource IDs</b> →  <b>Control Points</b> ↓	<b>MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation.</b>					
	<b>Walnut Creek Energy / Huntington Beach</b>	<b>Mountain View / Etiwanda units</b>	<b>Sentinel</b>	<b>Buck Blvd / Red Bluff / Colorado River Solar/ Center</b>	<b>El Segundo / Redondo / Long Beach / Harborgen / ARCO gen</b>	<b>SDGE Gen</b>
	WALCRK_2_CTG1 WALCRK_2_CTG2 WALCRK_2_CTG3WAL CRK_2_CTG4 WALCRK_2_CTG5 HNTGBH_7_UNIT1 HNTGBH_7_UNIT2	SBERDO_2_PSP3 SBERDO_2_PSP4	SENTNL_2_CTG1-8	BUCKBL_2_PL1X3 DSRTSN_2_SOLAR1 DSRTSN_2_SOLAR2 GENESI_2_STG CENTER_6_PEAKEK	ELSEGN_2_UN1011 ELSEGN_2_UN2021 REDOND_7_UNIT 5,6,8 HINSON_6_LBECH1-4 HARBGN_7_UNITS ARCOGN_2_UNITS	OTMESA_2_PL1X2 PALOMR_2_PL1X3 CARLS1_2_CARCT1 CARLS2_1_CARCT1
CP#2a CP#3a	-46	-9	-7	-4	2	-4

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b> 2210Z
		<b>Version No.</b> 28.9
		<b>Effective Date</b> 4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>

Table 3D: Mesa - Walnut 230 kV line generation effectiveness Factor for Lugo-Ranch Vista / Lugo – Mira Loma #3 line out with prior outage of Mira Loma-Mesa

	MW increase in the calculated loading across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.							
	Walnut Creek Energy	Mountain View / Etiwanda units	Sentinel	Huntington Beach / Red Bluff / Colorado River Solar	El Segundo / Redondo	SDGE Gen	Buck Blvd / Center	Long Beach / Harborgen / ARCO gen
<b>Resource IDs</b> →  <b>Control Points</b> ↓	WALCRK_2_CTG1 WALCRK_2_CTG2 WALCRK_2_CTG3 WALCRK_2_CTG4 WALCRK_2_CTG5	SBERDO_2_P SP3 SBERDO_2_P SP4	SENTNL_2_CTG1-8	HNTGBH_7_UNIT1 HNTGBH_7_UNIT2 DSRTSN_2_SOLAR1 DSRTSN_2_SOLAR2 GENESI_2_STG	ELSEGN_2_UN1011  ELSEGN_2_UN2021  REDOND_7_UNIT 5,6,8	OTMESA_2_PL1 X2 PALOMR_2_PL1 X3 CARLS1_2_CAR CT1 CARLS2_1_CAR CT1	CENTER_6_PEA KER BUCKBL_2_PL1 X3	HINSON_6_LBE CH1-4 HARBGN_7_UNI TS ARCOGN_2_UNI TS
CP#2b CP#3b	-47	-16	-13	-9	6	-8	-5	3

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		<b>Version No.</b> 28.9
		<b>Effective Date</b> 4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>

Table 3E: Lugo-Mira Loma #2 Generation Effectiveness Factor for one CB out with prior outage of Vincent-Mesa

<b>Resource IDs</b> →	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>					
	<b>Mira Loma Peakers</b>	<b>Etiwanda units / Mountain View units / Sentinel / Canyon Power Plant units</b>	<b>Red Bluff / Colorado River Solar</b>	<b>Huntington Beach / Alamitos Gen / Walnut Creek Energy</b>	<b>El Segundo / Redondo / Long Beach / Harborgen / ARCO Gen / Center</b>	<b>Buck Blvd</b>
	<b>MIRLOM_6_PEAKEP</b>	ETIWND_6_GRP LND SBERDO_2_PSP3 SBERDO_2_PSP4 SENTNL_2_CTG1-8 ANAHM_2_CANYN1-4	DSRTSN_2_SOLAR1 DSRTSN_2_SOLAR2 GENESI_2_STG	HNTGBH_7_UNIT1 HNTGBH_7_UNIT2 ALAMIT_7_UNIT 1-6 WALCRK_2_CTG1-5	ELSEGN_2_UN1011 ELSEGN_2_UN2021 REDOND_7_UNIT 5,6,8 HINSON_6_LBECH1-4 CENTER_6_PEAKEP HARBGN_7_UNITS ARCOGN_2_UNITS	BUCKBL_2_PL1X3
<b>Control Points</b> ↓						
CP#8a	-29	-21	-21	-15	-20	-9

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3E (Continued): Lugo-Mira Loma #2 Generation Effectiveness Factor for one CB out prior outage of Vincent-Mesa

	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.				
	Ormond / Pastoria / Big Creek	High Desert / North of Lugo Gen (Solar)	Palomar Energy	SDGE Peaker / Otay Mesa	IV Gen
<b>Resource IDs</b> →	ORMOND_7_UNIT 1 ORMOND_7_UNIT 2 LEBECS_2_UNITS BIGCRK_2_EXESWD	HIDSRT_2_UNITS KRAMER_1_SEGS37 KRAMER_2_SEGS89 SANDLT_2_SUNITS	PALOMR_2_PL1X3	BORDER_6_UNITA1 ESCND0_6_UNITB1 ELCAJN_6_UNITA1 LARKSP_6_UNIT 1 LARKSP_6_UNIT 2 ESCND0_6_PL1X2 OTAY_6_PL1X2 MRGT_6_MMAREF MRGT_6_MEF2 OGROVE_6_PL1X2 ELCAJN_6_LM6K OTMESA_2_PL1X2 CARLS1_2_CARCT1 CARLS2_1_CARCT1	TERMEX_2_PL1X3 LARO1_2_UNITA1 LARO2_2_UNITA1 CSLR4S_2_SOLAR IVSLRP_2_SOLAR1 CNTNLA_2_SOLAR1 CPVERD_2_SOLAR
<b>Control Points</b> ↓					
CP#8a	3	12	-18	-17	-12

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3F: Lugo-Mira Loma #2 Generation Effectiveness Factor for one CB out with prior outage of Mira Loma-Mesa

<b>Resource IDs</b> →	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>					
	<b>Mira Loma Peakers</b>	<b>Etiwanda units / Mountain View units / Sentinel / Canyon Power Plant units</b>	<b>Red Bluff / Colorado River Solar</b>	<b>Huntington Beach</b>	<b>Alamitos Gen / Walnut Creek Energy</b>	<b>El Segundo / Redondo / Long Beach / Harborgen / ARCO Gen / Buck Blvd</b>
	<b>Control Points</b> ↓	MIRLOM_6_PEAKER	ETIWND_6_GRPLND SBERDO_2_PSP3 SBERDO_2_PSP4 SENTNL_2_CTG1-8 ANAHM_2_CANYN1-4	DSRTSN_2_SOLAR1 DSRTSN_2_SOLAR2 GENESI_2_STG	HNTGBH_7_UNIT1 HNTGBH_7_UNIT2	ALAMIT_7_UNIT 1-6 WALCRK_2_CTG1-5
CP#8b	-30	-21.5	-15	-17	-13	-8

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3F (Continued): Lugo-Mira Loma #2 Generation Effectiveness Factor for one CB out with prior outage of Mira Loma-Mesa

<b>Resource IDs</b> →  <b>Control Points</b> ↓	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>					
	<b>Center</b>	<b>Ormond / Pastoria / Big Creek</b>	<b>High Desert / North of Lugo Gen (Solar)</b>	<b>Palomar Energy</b>	<b>Otay Mesa / SDGE Peakers</b>	<b>IV Gen</b>
	<b>CP#8b</b>	CENTER_6_PEAKEER	ORMOND_7_UNIT 1 ORMOND_7_UNIT 2 LEBECS_2_UNITS BIGCRK_2_EXESWD	HIDSRT_2_UNITS KRAMER_1_SEGS37 KRAMER_2_SEGS89 SANDLT_2_SUNITS	PALOMR_2_PL1X3	BORDER_6_UNITA1 ESCNDO_6_UNITB1 ELCAJN_6_UNITA1 LARKSP_6_UNIT 1 LARKSP_6_UNIT 2 ESCNDO_6_PL1X2 OTAY_6_PL1X2 MRGT_6_MMAREF MRGT_6_MEF2 OGROVE_6_PL1X2 ELCAJN_6_LM6K OTMESA_2_PL1X2 CARLS1_2_CARCT1 CARLS2_1_CARCT1
	-11	6	11	-16	-15	-11

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3G: Lugo-Ranch Vista Generation Effectiveness Factor for one CB out prior outage of Vincent-Mesa

<b>Resource IDs</b> →	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>					
	<b>Mira Loma Peakers / Mountain View units</b>	<b>Grape land Peaker / Etiwanda units</b>	<b>Sentinel / Canyon Power Plant</b>	<b>Red Bluff / Colorado River Solar</b>	<b>Huntington Beach / Alamitos gen / Walnut Creek Energy</b>	<b>El Segundo / Redondo / Long Beach / Harborgen / Center / ARCO gen</b>
	MIRLOM_6_PEAKE SBERDO_2_PSP3 SBERDO_2_PSP4	ETIWND_6_GRPLND	SENTNL_2_CTG1-8 ANAHM_2_CANYN1-4	DSRTSN_2_SOLAR1 DSRTSN_2_SOLAR2 GENESI_2_STG	HNTGBH_7_UNIT1 HNTGBH_7_UNIT2 ALAMIT_7_UNIT 1-6 WALCRK_2_CTG1-5	ELSEGN_2_UN1011 ELSEGN_2_UN2021 REDOND_7_UNIT 5,6,8 HINSON_6_LBECH1-4 CENTER_6_PEAKE HARBGN_7_UNITS ARCOGN_2_UNITS
<b>Control Points</b> ↓						
CP#5a	-36	-42	-33	-24	-29	-25

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3G (Continued): Lugo-Ranch Vista Generation Effectiveness Factor for one CB out prior outage of Vincent-Mesa

	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.					
	Buck Blvd	Ormond / Pastoria gen / Big Creek	High Desert / North of Lugo Gen (Solar)	Palomar Energy	SDGE Peaker / Otay Mesa	IV Gen
<b>Resource IDs</b> →	BUCKBL_2_PL1X3	ORMOND_7_UNIT 1 ORMOND_7_UNIT 2 LEBECS_2_UNITS BIGCRK_2_EXESWD	HIDSRT_2_UNITS KRAMER_1_SEGS37 KRAMER_2_SEGS89 SANDLT_2_SUNITS	PALOMR_2_PL1X3	BORDER_6_UNITA1 ESCND0_6_UNITB1 ELCAJN_6_UNITA1 LARKSP_6_UNIT 1 LARKSP_6_UNIT 2 ESCND0_6_PL1X2 OTAY_6_PL1X2 MRGT_6_MMAREF MRGT_6_MEF2 OGROVE_6_PL1X2 ELCAJN_6_LM6K OTMESA_2_PL1X2 CARLS1_2_CARCT1 CARLS2_1_CARCT1	TERMEX_2_PL1X3 LAROA1_2_UNITA1 LAROA2_2_UNITA1 CSLR4S_2_SOLAR IVSLRP_2_SOLAR1 CNTNLA_2_SOLAR1 CPVERD_2_SOLAR
<b>Control Points</b> ↓						
CP#5a	-14	7	17	-25	-24	-17

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3H: Lugo-Ranch Vista Generation Effectiveness Factor for one CB out with prior outage of Mira Loma-Mesa

<b>Resource IDs</b> →	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>					
	<b>Mira Loma Peakers / Mountain View units</b>	<b>Grape land Peaker / Etiwanda units</b>	<b>Sentinel / Canyon Power Plant</b>	<b>Red Bluff / Colorado River Solar / Huntington Beach</b>	<b>Alamitos gen / Walnut Creek Energy</b>	<b>El Segundo / Redondo / Long Beach / Harborgen / ARCO gen</b>
	MIRLOM_6_PEAKE SBERDO_2_PSP3 SBERDO_2_PSP4	ETIWND_6_GRPLND	SENTNL_2_CTG1-8 ANAHM_2_CANYN1-4	DSRTSN_2_SOLAR1 DSRTSN_2_SOLAR2 GENESI_2_STG HNTGBH_7_UNIT1 HNTGBH_7_UNIT2	ALAMIT_7_UNIT 1-6 WALCRK_2_CTG1-5	ELSEGN_2_UN1011 ELSEGN_2_UN2021 REDOND_7_UNIT 5,6,8 HINSON_6_LBECH1-4 HARBGN_7_UNITS ARCOGN_2_UNITS
<b>Control Points</b> ↓						
CP#5b	-37	-44	-31	-25	-21	-12

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b> 2210Z
		<b>Version No.</b> 28.9
		<b>Effective Date</b> 4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>

Table 3H (Continued): Lugo-Ranch Vista Generation Effectiveness Factor for one CB out with prior outage of Mira Loma-Mesa

	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.					
	Buck Blvd / Center	Ormond / Pastoria gen / Big Creek	High Desert / North of Lugo Gen (Solar)	Palomar Energy	SDGE Peaker / Otay Mesa	IV Gen
<b>Resource IDs</b> →	BUCKBL_2_PL1X3 CENTER_6_PEAKEER	ORMOND_7_UNIT 1 ORMOND_7_UNIT 2 LEBECS_2_UNITS BIGCRK_2_EXESWD	HIDSRT_2_UNITS KRAMER_1_SEGS37 KRAMER_2_SEGS89 SANDLT_2_SUNITS	PALOMR_2_PL1X3	BORDER_6_UNITA1 ESCNDO_6_UNITB1 ELCAJN_6_UNITA1 LARKSP_6_UNIT 1 LARKSP_6_UNIT 2 ESCNDO_6_PL1X2 OTAY_6_PL1X2 MRGT_6_MMAREF MRGT_6_MEF2 OGROVE_6_PL1X2 ELCAJN_6_LM6K OTMESA_2_PL1X2 CARLS1_2_CARCT1 CARLS2_1_CARCT1	TERMEX_2_PL1X3 LAROA1_2_UNITA1 LAROA2_2_UNITA1 CSLR4S_2_SOLAR IVSLRP_2_SOLAR1 CNTNLA_2_SOLAR1 CPVERD_2_SOLAR
<b>Control Points</b> ↓						
CP#5b	-16	9	17	-23	-22	-16

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

**7580** - Effectiveness Factors – Mira Loma Banks: (version 11.1, 12/13/23)

Table 3C: Switching Effectiveness Factors to Mitigate Overload for 1AA or 2AA Banks

Transmission Line to be Opened	Effectiveness factors represent a percentage decrease (-) or increase (+) in the loading across <u>each</u> of the two Mira Loma AA Banks that are in service (prior to opening)
Mira Loma-Walnut 220 kV line	-24
Mira Loma-Chino #1 220 kV line**	-10
Mira Loma-Chino #2 220 kV line**	-10

*\*Please be aware that by opening any of the above lines, the flows on the 3AA and 4AA banks will increase. Please conduct a real-time study before implementing the switching.*

*\*\*Avoid opening Mira Loma-Chino#1 & #2, when there is only one San Onofre Unit online.*

**Note:** *The effectiveness percentage is defined as MW flow reduction of each applicable in-service AA bank expressed as percentage of the pre-switching flow of the transmission line switched. Note that these percentages are based on offline Load flow studies for four Mira Loma AA banks in service. Depending on system configuration, these effectiveness percentages may be different in Real-Time.*



 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3D: Switching Effectiveness Factors to Mitigate Overload for 3AA or 4AA Banks

Transmission Line to be Opened	Effectiveness factors represent a percentage decrease (-) or increase (+) in the loading across each of the two Mira Loma AA Banks that are in service (prior to opening)
Mira Loma-Olinda 220 kV line	-21
Mira Loma-Vista #2 220 kV line	-13
Mira Loma-Chino #3 220 kV line	-20

*\*Please be aware that by opening any of the above lines the flows on the 1AA and 2AA banks will increase. Please conduct a real-time study before implementing the switching.*

**Note:** *The effectiveness percentage is defined as MW flow reduction of each applicable in-service AA bank expressed as percentage of the pre-switching flow of the transmission line switched. Note that these percentages are based on offline Load flow studies for four Mira Loma AA banks in service. Depending on system configuration, these effectiveness percentages may be different in Real-Time.*

 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b> 2210Z
		<b>Version No.</b> 28.9
		<b>Effective Date</b> 4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>

**7590 - Effectiveness Factors for Serrano Banks: (version 12.1, 7/06/23)**

Table 2A: Generation Effectiveness Factors for next worst N-1 contingency with Two AA Banks in service

	MW increase in the calculated loading across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.										
	Barre	Huntington Beach	Alamitos	Harbor	Long Beach	Center	El Segundo	Redondo	Walnut Creek	Sentinel Unit	SDG&E
<b>Resource IDs</b> →  <b>Control Points</b> ↓	BARRE_6_P EAKER	HNTGBH_2_ PL1X3 HNTGBH_7_ UNIT 2	ALAMIT_2_P L1X3 ALAMIT_7_U NIT 3 ALAMIT_7_U NIT 4 ALAMIT_7_U NIT 5 ALAMIT_7_E S1	HARBGN_ 7_UNIT 2 HARBGN_ 7_UNIT 3 HARBGN_ 7_UNITS	HINSON_6_ LBECH1 HINSON_6_ LBECH2 HINSON_6_ LBECH3 HINSON_6_ LBECH4	CENTER_6 _PEAKER	ELSEGN_2_ UN1011 ELSEGN_2_ UN2021	REDOND_7_ _UNIT 5 REDOND_7_ _UNIT 6 REDOND_7_ _UNIT 8	WALCRK_2_ _CTG1- CTG5	SENTNL_2_ CTG1-CTG8	OTMESA_1_ _PL1X3 PALOMR_2_ _PL1X3 CARLS1_2_ _CARCT1 CARLS2_1_ _CARCT1
<b>Serrano AA Transformers</b>	-27	-27	-22	-17	-17	-16	-15	-15	-9	5	-17

**Note 1:** For the most effective solution, increasing and decreasing should be done in pairs. Two separate solutions need to be considered, one increase solution and one decrease solution. If this is done, then their Effectiveness Factors can be added together resulting in a more accurate number. It is recommended to try and match the best increase option with the best decrease option for maximum effectiveness.

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b> 2210Z
		<b>Version No.</b> 28.9
		<b>Effective Date</b> 4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>

Table 3A: Generation Effectiveness Factors for next worst N-1 contingency with Three AA Banks in service

	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.										
	Barre	Huntington Beach	Alamitos	Harbor	Long Beach	Center	EI Segundo	Walnut Creek	Sentinel Unit	Redondo	SDG&E
<b>Resource IDs</b> →  <b>Control Points</b> ↓	BARRE_6_PEAKER	HNTGBH_2_PL1X3 HNTGBH_7_UNIT 2	ALAMIT_2_PL1X3 ALAMIT_7_UNIT 3 ALAMIT_7_UNIT 4 ALAMIT_7_UNIT 5 ALAMIT_7_ES1	HARBGN_7_UNIT 2 HARBGN_7_UNIT 3 HARBGN_7_UNITS	HINSON_6_LBECH1 HINSON_6_LBECH2 HINSON_6_LBECH3 HINSON_6_LBECH4	CENTER_6_PEAKER	ELSEGN_2_UN1011 ELSEGN_2_UN2021	WALCRK_2_CTG1-CTG5	SENTNL_2_CTG1-CTG8	REDOND_7_UNIT 5 REDOND_7_UNIT 6 REDOND_7_UNIT 8	OTMESA_1_PL1X3 PALOMR_2_PL1X3 CARLS1_2_CARCT1 CARLS2_1_CARCT1
<b>Serrano AA Transformers</b>	-18	-18	-15	-11	-11	-11	-10	-6	3	-10	-12

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

**7610** - Generator Effectiveness Factors for Mesa 500/230 kV AA Transformer Banks (version 1.0, 5/27/22)

Table 1B: Generator Effectiveness Factors to mitigate overloads on Mesa 500/230 kV AA Banks

<b>Resource IDs</b> →  <b>Control Points</b> ↓	<b>MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation.</b>								
	<b>Center Peaker</b>	<b>EI Segundo Units</b>	<b>Huntington Beach Units</b>	<b>Redondo</b>	<b>Alamitos Units</b>	<b>Walnut Creek</b>	<b>Arco Gen, Long Beach</b>	<b>Harbor</b>	<b>Barre Peaker</b>
	CENTER_6_PEAKEER	ELSEGN_2_UN1011 ELSEGN_2_UN2021	HNTGBH_2_PL1X3 HNTGBH_7_UNIT 2 BARRE_6_PEAKEER	REDOND_7_UNIT 5, 6, 8	ALAMIT_2_PL1X3 ALAMIT_7_UNIT 3-5 ALAMIT_7_ES 1	WALCRK_2_CTG1-CTG5	ARCOGN_2_UNITS HINSON_6_LBECH 1-4	HARBGN_7_UNITS	BARRE_6_PEAKEER
<b>Mesa 500/220 kV AA Banks</b>	-18	-17	-8	-16	-12	-8	-16	-15	-7

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

7630 - Effectiveness Factors for Orange County Area: (version 16.3, 9/26/23)

Table 3A: Effectiveness Factors

<b>Resource IDs</b> →  <b>Transmission Line↓</b>	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>								
	<b>Barre Peaker</b>	<b>Huntington Beach Units</b>	<b>Alamitos</b>	<b>Harbor Gen, Long Beach</b>	<b>Center Peaker</b>	<b>Redondo Beach</b>	<b>El Segundo Units</b>	<b>Walnut Creek Energy Center</b>	<b>Mountain View, Etiwanda, Mira Loma Peaker</b>
	BARRE_6_ PEAKER	HNTGBH_2_ PL1X3 HNTGBH_7_ UNIT 2	ALAMIT_2_ PL1X3 ALAMIT_7_ UNIT 3-5 ALAMIT_7_ ES1	HARBGN_7_ UNITS, HINSON_6_ LBECH1 thru 4	CENTER_6_ PEAKER	REDOND_7_ UNIT 5,6,8	ELSEGN_ UN1011 ELSEGN_ UN2021	WALCRK_2_ CTG1 WALCRK_2_ CTG2 WALCRK_2_ CTG3 WALCRK_2_ CTG4 WALCRK_2_ CTG5	SBERDO_2_ PSP3 and 4, MIRLOM_6_ PEAKER
<b>Barre-Lewis 220 kV line</b>	-30	-26	-22	-9	-17	-13	-13	-5	2
<b>Barre-Villa Park 230 kV Line</b>	-17	-19	-14	-9	-13	-9	-9	-3	2

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3B: Minimum Online Commitment (MOC) Relative Effectiveness Factors

Resource IDs →	Generation units to be used for thermal constraints				
	Huntington Beach Units	Alamitos Units	Harbor Gen	El Segundo Units	Redondo Units
	HNTGBH_2_PL1X3 HNTGBH_7_UNIT 2	ALAMIT_2_PL1X3 ALAMIT_7_UNIT 3 - 5 ALAMIT_7_ES1	HARBGN_7_UNITS	ELSEGN_UN1011 ELSEGN_UN2021	REDOND_7_UNIT 5,6,8
<b>MOC</b>	1.00	.85	.48	.50	.43

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

7680 - Effectiveness Factors for Sylmar: (version 3.2, 1/04/24)

Table 5A: Sylmar-Pardee #1 Generation Effectiveness Factors for Sylmar-Pardee #2 contingency (Flows from LADWP to SCE)

	MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation.									
	PDCI (Circulation) /PDCI (Schedule Cut)	Berry Cogen 42	Ormand	Pastoria/ Ellwood/ Oxgen/Procter/ Willamette	Big Creek/ Eastwood	El Segundo/ Redondo/Hinson/ Alamitos/ Huntington Beach/Desert Sunlight/Genesis/ Sentinel	PGAE Unit	Ivanpah	SDGE Unit	High Desert/ Hoover/Four Corners/ Etiwanda/ Mountainview
<b>Resource IDs</b> →  <b>Control Points</b> ↓	PDCI (Circulation South to North)/PDCI (Schedule Cut)	TENGEN_2_PL1X2	ORMON D_7_ UNIT 1 ORMON D_7_ UNIT 2	LEBECS_2_ UNITS GOLETA_6_ELLW ODSNCLRA_6_O XGEN SNCLRA_6_PRO CGN SNCLRA_6_WILL MT	BIGCRK_2_EXESWD EASTWD_7_UNIT	ELSEGN_2_UN1011ELS EGN_2_UN2021 REDOND_7_UNIT 5,6,8 HINSON_6_LBECH1 thru 4 ALAMIT_2_PL1X3 ALAMIT_7_ UNIT 3 - 5 ALAMIT_7_ES1 HNTGBH_2_PL1X3 HNTGBH_7_UNIT2 DSRTSN_2_SOLAR1 &2 GENESI_2_STG SENTNL_2_CTG1 - 8	Multiple	IVANPA_1_UNIT1 thru 3	Multiple	HIDSRT_2_UNITS SCEHOV_2_HOOV ER SBERDO_2_PSP3 & PSP4
CP#1 CP#2 CP#3	-18/-12	-51	-48	-42	-35	6	-3	7	6	5

**Notes:** The effectiveness factors are based on a steady-state condition, and may differ under real-time conditions.  
 \*When the flows are from SCE to LADWP, the table on previous page (Table 5A) has the reverse effectiveness.

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 5B: Sylmar-Pardee #1/#2 Generation Effectiveness Factors for Lugo-Victorville contingency (Flows from LADWP to SCE)

MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation.										
	PDCI (Circulation)/PDCI (Schedule Cut)	Berry Cogen 42	Ormand	Pastoria/ Ellwood/ Oxgen/Procter/ Williamette	Big Creek/ Eastwood	El Segundo/ Redondo/Hinson/ Alamos/ Huntington Beach/Desert Sunlight/Genesis/ Sentinel	PGAE Unit	Ivanpah	SDGE Unit	High Desert/ Hoover/Four Corners/ Etiwanda/ Mountainview
<b>Resource IDs</b> →  <b>Control Points</b> ↓	PDCI (Circulation South to North)/PDCI (Schedule Cut)	TENGEN_2_PL1X2	ORMOND_7 - UNIT 1 ORMOND_7 - UNIT 2	LEBECS_2_ UNITS GOLETA_6_ELLWOD SNCLRA_6_OXGEN SNCLRA_6_PROCG N SNCLRA_6_WILLMT	BIGCRK_2_EXES WD EASTWD_7_UNIT	ELSEGN_2_UN1011EL SEGN_2_UN2021 REDOND_7_UNIT 5,6,8 HINSON_6_LBECH1 thru 4 ALAMIT_2_PL1X3 ALAMIT_7_ UNIT 3 - 5 ALAMIT_7_ES1 HNTGBH_2_PL1X3 HNTGBH_7_UNIT2 DSRTSN_2_SOLAR1 &2 GENESI_2_STG SENTNL_2_CTG1 thru 8	Multiple	IVANPA_1_ UNIT1 thru 3	Multiple	
CP#4 CP#5	-20/-19	-48	-46	-41	-35	5	-3	10	6	3

**Notes:** The effectiveness factors are based on a steady-state condition, and may differ under real-time conditions.  
 \*For the control points #4 and #5 in Table 5B, on previous page, has the reverse effectiveness.

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 6: Transmission Facility Effectiveness Factors with All Lines in Service (Flows from LADWP to SCE) (4)

Transmission Facilities	CAISO: Moorpark-Sylmar de-loop at Pardee	LADWP: Adelanto-Rinaldi 500 kV line	LADWP: Victorville-Rinaldi 500 kV line
Sylmar AC	Varies (1)	16 (2,3)	17 (2,3)


**Notes:** 1) The effectiveness factors for de-looping Moorpark-Sylmar line at Pardee: this de-loop at the Pardee 220 kV substation creates a Sylmar #1 to Moorpark #3 220 kV line and a Sylmar #2 to Moorpark #2 220 kV line, the effectiveness factors vary with system conditions. The mitigation is therefore not a preferred option.

If there is a need to implement this, conduct a study using Network Applications to verify this mitigation will be effective prior to implementation.

2) Do not open any of these 500 kV line if the 287 kV lines (Victorville-Century #1 and #2, Victorville-Mead) or Victorville Substation Bank K are out of service.

3) Opening any of these 500 kV line will result in a SCIT de-rate. Refer to CAISO Operating Procedure [6510 SCIT](#).

4) This mitigation is only valid for flows from LADWP to SCE.

 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

7690 - Effectiveness Factors for North of Lugo N-1-1: (version 4.1, 3/29/24)

Table 3A: Inyokern-Control Area Import Condition Generation Effectiveness Factors

<b>Resource IDs</b> → <b>Control Points</b> ↓	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>				
	<b>Coso Navy 1</b>	<b>Argus Cogeneration</b>	<b>Oxbow Geothermal</b>	<b>Mammoth G</b>	<b>Lundy, Poole Hydro, Control QFS, Rush Creek, and Bishop Creek</b>
	CALGEN_1_UNITS	SEARLS_7_ARGUS	CONTRL_1_OXBOW	CONTRL_1_CASAD1, CONTRL_1_CASAD3	CONTRL_1_LUNDY, CONTRL_1_POOLE, CONTRL_1_QF, CONTRL_1_RUSHCK, BISHOP_1_ALAMO, BISHOP_1_UNITS
CP#1	-100	-100	-100	-100	-100

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3B: Inyokern-Control Area Export Condition Generation Effectiveness Factors

<b>Resource IDs</b> → <b>Control Points</b> ↓	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>				
	<b>Coso Navy 1</b>	<b>Argus Cogeneration</b>	<b>Oxbow Geothermal</b>	<b>Mammoth G</b>	<b>Lundy, Poole Hydro, Control QFS, Rush Creek, and Bishop Creek</b>
<b>CALGEN_1_UNITS</b>	<b>SEARLS_7_ARGUS</b>	<b>CONTRL_1_OXBOW</b>	<b>CONTRL_1_CASAD1, CONTRL_1_CASAD3</b>	<b>CONTRL_1_LUNDY, CONTRL_1_POOLE, CONTRL_1_QF, CONTRL_1_RUSHCK, BISHOP_1_ALAMO, BISHOP_1_UNITS</b>	
<b>CP#2</b>	100	100	100	100	100

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3C: Inyokern-Control Area Import Condition Generation Effectiveness Factors

<b>Resource IDs</b> → <b>Control Points↓</b>	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>				
	Oxbow Geothermal	Mammoth G	Lundy, Poole Hydro	Control QFS, Rush Creek	Bishop Creek
	CONTRL_1_OXBOW	CONTRL_1_CASAD1, CONTRL_1_CASAD3	CONTRL_1_LUNDY, CONTRL_1_POOLE	CONTRL_1_QF, CONTRL_1_RUSHCK	BISHOP_1_ALAMO, BISHOP_1_UNITS
CP#3	-100	-100	-100	-100	-100

Table 3D: Inyokern-Control Area Import Condition Generation Effectiveness Factors

<b>Resource IDs</b> → <b>Control Points↓</b>	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>				
	Oxbow Geothermal	Mammoth G	Lundy, Poole Hydro	Control QFS, Rush Creek	Bishop Creek
	CONTRL_1_OXBOW	CONTRL_1_CASAD1, CONTRL_1_CASAD3	CONTRL_1_LUNDY, CONTRL_1_POOLE	CONTRL_1_QF, CONTRL_1_RUSHCK	BISHOP_1_ALAMO, BISHOP_1_UNITS
CP#4	100	100	100	100	100

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		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3E: Control-Hariwee-Inyoken Thermal Condition Generation Effectiveness Factors

	MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.				
	Coso Naby 1	Augus Cogeneration Trona Solar III	Bishop Creek Plan 3 and 4, Bishop Creek Plan 2 and 6, Dixie Valley Geo, Contrl QFS	Casa Diablo 4 Mammoth G1, G2, G3	Rush Creek Lundy Poole Hydro Plant 1
<b>Resource IDs</b> →					
<b>Control Points</b> ↓	CALGEN_1_UNITS	SEARLS_7_ARGUS, SEARLS_1_TS3SR1	BISHOP_1_UNITS, BISHOP_1_ALAMO, CONTRL_1_OXBOW, CONTRL_1_QF	CASADB_1_CD4GT1, CONTRL_1_CASAD1, CONTRL_1_CASAD2, CONTRL_1_CASAD3,	CONTRL_1_RUSHCK, CONTRL_1_LUNDY, CONTRL_1_POOLE
CP#5	-9	-7	22	20	18

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		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3F: Roadway-Victor Thermal Condition Generation Effectiveness Factors

<b>Resource IDs</b> <b>Control Points</b> ↓	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>					
	<b>Baldy Mesa</b>	<b>Resurgence</b>	<b>Alba, Ocaso, BLM, LSP</b>	<b>Daggett</b>	<b>Coso Navy 1</b>	<b>High Desert</b>
→ HAMLIN_1_BLDSB1	KRAMER_1_R1BX3, KRAMER_1_R1PX3, KRAMER_1_R2BX2, KRAMER_1_R2PX2	SANDLT_2_SUNITS, BLM W_2_COSBT1, BLM_2_UNITS, NAVYII_2_UNITS, LCKTH1_2_LH1SR1, LCKTH1_2_LH1SR2, KRAMER_2_SEGS 9	CMBLND_2_DS2BT1, CMBLND_2_DS2BT2, CMBLND_2_DS2BT3, CMBLND_2_DS2SR1, CMBLND_2_DS2SR2, CMBLND_2_DS2SR3, SISPRG_2_DS3BT1, SISPRG_2_DS3BT2, SISPRG_2_DS3BT3, SISPRG_2_DS3BT4, SISPRG_2_DS3SR1, SISPRG_2_DS3SR2, SISPRG_2_DS3SR3, SISPRG_2_DS3SR4	CALGEN_1_UNITS	HIDSRT_2_UNITS	
CP#6	80	11	7	7	11	-4

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		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3G: Kramer-Victor #1 Thermal Condition Generation Effectiveness Factors

<b>Resource IDs → Control Points↓</b>	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>					
	<b>Baldy Mesa</b>	<b>Resurgence</b>	<b>Alba, Ocaso, BLM, LSP</b>	<b>Daggett</b>	<b>Coso Navy 1</b>	<b>High Desert</b>
HAMLIN_1_BLDSB1	KRAMER_1_R1BX3, KRAMER_1_R1PX3, KRAMER_1_R2BX2, KRAMER_1_R2PX2	SANDLT_2_SUNITS, BLM W_2_COSBT1, BLM_2_UNITS, NAVYII_2_UNITS, LCKTH1_2_LH1SR1, LCKTH1_2_LH1SR2, KRAMER_2_SEGS 9	CMBLND_2_DS2BT1, CMBLND_2_DS2BT2, CMBLND_2_DS2BT3, CMBLND_2_DS2SR1, CMBLND_2_DS2SR2, CMBLND_2_DS2SR3, SISPRG_2_DS3BT1, SISPRG_2_DS3BT2, SISPRG_2_DS3BT3, SISPRG_2_DS3BT4, SISPRG_2_DS3SR1, SISPRG_2_DS3SR2, SISPRG_2_DS3SR3, SISPRG_2_DS3SR4	CALGEN_1_UNITS	HIDSRT_2_UNITS	
<b>CP#7</b>	9	31	39	38	26	-4

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		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

7720 - Effectiveness Factors Julian Hinds-Mirage: (version 6.1, 8/17/23)

Table 4: Generation Effectiveness Factors - None

<b>Control Points↓</b> <b>Resource IDs →</b>	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>
	<b>Buck Blvd.</b>
	BUCKBL_2_PLIX3
<u>Combined Loading #1</u>	-67
<u>Combined Loading #2</u>	-100

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		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	


**7740** - Effectiveness Factors for Parker - Gene: (version 5.1, 3/30/23)

Table 3: (Utilizing WALC decremental Generation from outside of the CAISO Balancing Area)

<b>Control Points↓</b>  <b>Resource IDs →</b>	<b>MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation. (i.e. mitigation requires a decrease in WALC area Generation, and an increase in CAISO Generation)*</b>			
	<b>Southpoint</b>	<b>Parker</b>	<b>Davis</b>	<b>Griffith</b>
	Not a Market Participant	Not a Market Participant	Not a Market Participant	GRIFFI_2_LSPDYN (PSEUDO TIE)
<b>Parker – Gene 230 kV Line</b>	15	15	10	7

\* A Schedule adjustment must accompany any decremental Generation.

All of these Generators are WALC Generation facilities and the Generators do not have CAISO Participating Generator Agreements. These effectiveness factors are therefore not found in the IFM/RTN, with the exception of Griffith which is a pseudo tie and is a Market Participant in the WALC BA Area.

 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	


**7760** - Effectiveness Factors for Devers-Red Bluff Lines: (version 1.0, 4/09/24)

**Table 1D: Devers Area Generation Effectiveness**

<b>Resource Locations</b> → <b>Control Points</b> ↓	<b>MW increase in the calculated loading across the transmission facilities that make up the control point for a 100 MW increase in Generation.</b>			
	<b>Red Bluff</b>	<b>Colorado River</b>	<b>Devers</b>	<b>Valley</b>
<b>Devers-Red Bluff 500 kV Lines</b>	56	47	-15	-14

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		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

7820 - Effectiveness Factors for San Diego Area: (version 19.0, 2/29/24)

Table 3A: SDGE/CFE import & SDGE import Generation Effectiveness Factors

<b>Resource IDs</b> →  <b>Control Points</b> ↓	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>		
	<b>Palomar Energy</b>	<b>Otay Mesa</b>	<b>SDGE Peakers</b>
		PALOMR_2_PL1X3	OTMESA_2_PL1X2
SDGE/CFE Import	-100	-100	-100

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		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3B: TL6913 Generation Effectiveness Factors – CP# 4a of 7820 Table 1A

<b>Resource IDs</b> →  <b>Control Points</b> ↓	<b>MW increase in the calculated loading across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>				
	<b>Palomar Energy</b>	<b>Otay Mesa</b>	<b>Pio Pico</b>	<b>SDGE Peakers</b>	<b>IV gen</b>
	PALOMR_2_PL1X3	OTMESA_2_PL1X2	PIOPIC_2_CTG2 PIOPIC_2_CTG3 PIOPIC_2_CTG1	ESCNDO_6_PL1X2 ESCO_6_GLMQF	TERMEX_2_PL1X3 LAROA1_2_UNITA1 LAROA2_2_UNITA1 CSLR4S_2_SOLAR IVSLRP_2_SOLAR1 CNTNLA_2_SOLAR1 CPVERD_2_SOLAR
TL6913	-5	2	2	-11	2

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3C: TL6913 Generation Effectiveness Factors – CP# 4b of 7820 Table 1A

<b>Resource IDs</b> →	<b>MW increase in the calculated loading across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>				
	<b>Palomar Energy</b>	<b>Otay Mesa</b>	<b>Pio Pico</b>	<b>SDGE Peakers</b>	<b>IV gen</b>
	PALOMR_2_PL1X3	OTMESA_2_PL1X2	PIOPIC_2_CTG2 PIOPIC_2_CTG3 PIOPIC_2_CTG1	ESCNDO_6_PL1X2 ESCO_6_GLMQF	TERMEX_2_PL1X3 LAROA1_2_UNITA1 LAROA2_2_UNITA1 CSLR4S_2_SOLAR IVSLRP_2_SOLAR1 CNTNLA_2_SOLAR1 CPVERD_2_SOLAR
<b>Control Points</b> ↓					
TL6913	-14	2	2	-17	2

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3D: TL23040 Generation Effectiveness Factors

	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>					
	Palomar Energy	Otay Mesa	Pio Pico	SDGE Peakers	IV Gen	IV PST
<b>Resource IDs</b> →  <b>Control Points</b> ↓	PALOMR_2_PL1X3	OTMESA_2_PL1X2	PIOPIC_2_CTG2 PIOPIC_2_CTG3 PIOPIC_2_CTG1	BORDER_6_UNITA1 ESCNDO_6_UNITB1 ELCAJN_6_UNITA1 LARKSP_6_UNIT 1 LARKSP_6_UNIT 2 MRGT_6_MMAREF MRGT_6_MEF2 ELCAJN_6_LM6K CARLS1_2_CARCT1 CARLS2_1_CARCT1	TERMEX_2_PL1X3 LAROA1_2_UNITA1 LAROA2_2_UNITA1 CSLR4S_2_SOLAR IVSLRP_2_SOLAR1 CNTNLA_2_SOLAR1 CPVERD_2_SOLAR	22357_IV PFC1 _230_22358_IV PFC _230_PS_1  or  22357_IV PFC1 _230_22358_IV PFC _230_PS_2
TL23040	-7	-17	-17	-10	12	96

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		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3E: Relative effectiveness of Schedule changes on S Line (Imperial Valley - El Centro (IID)) 230 kV direction.<sup>1</sup>

<b>Resource↓</b> <b>Flow →</b>	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>	
	<b>SCE Area Generation (Mountain View, Blythe Energy Center) <sup>2</sup></b>	<b>PGAE Area Generation (Delta) <sup>3</sup></b>
IV Generation	-13	-12
SDGE Generation	-8	-8

**Note<sup>1</sup>:** These incremental and decremental dispatches should be exercised in pairs for maximum effectiveness.

**Note<sup>2</sup>:** This calculation is based on increase of IV generation and decrease of SCE Area generation (Mountain View, Blythe Energy Center)

**Note<sup>3</sup>:** This calculation is based on the increase of IV generation and decrease of PGAE Area generation (Delta)


 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3F: South of San Onofre Generation Effectiveness Factors

	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>				
	<b>Palomar Energy</b>	<b>Otay Mesa</b>	<b>Pio Pico</b>	<b>SDGE Peakers</b>	<b>IV gen</b>
<b>Resource IDs</b> →	PALOMR_2_PL1X3	OTMESA_2_PL1X2	PIOPIC_2_CTG2 PIOPIC_2_CTG3 PIOPIC_2_CTG1	BORDER_6_UNITA1 ESCND0_6_UNITB1 ELCAJN_6_UNITA1 LARKSP_6_UNIT 1 LARKSP_6_UNIT 2 ESCND0_6_PL1X2 OTAY_6_PL1X2 MRGT_6_MMAREF MRGT_6_MEF2 OGROVE_6_PL1X2 ELCAJN_6_LM6K CARLS1_2_CARCT1 CARLS2_1_CARCT1	TERMEX_2_PL1X3 LAROA1_2_UNITA1 LAROA2_2_UNITA1 CSLR4S_2_SOLAR IVSLRP_2_SOLAR1 CNTNLA_2_SOLAR1 CPVERD_2_SOLAR
<b>Control Points</b> ↓					
South of San Onofre	-88	-83	-83	-90	-75

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		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3G: 631 (El Cajon - Los Coches) 69 kV Generation Effectiveness Factors

<b>Control Points↓</b>  <b>Resource IDs</b> →	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>
	<b>SDGE Peakers</b>
	ELCAJN_6_UNITA1 ELCAJN_6_LM6K
(TL 631) El Cajon – Los Coches 69 kV	-22

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		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3H: Suncrest 500/230 kV Bank 80 or 81 Generation Effectiveness Factors for TL50001 out of service and Suncrest 500/230 kV Bank 80 or 81 Contingency

<b>Resource IDs</b> →	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>				
	<b>Otay Mesa</b>	<b>Pio Pico</b>	<b>El Cajon</b>	<b>IV generation</b>	<b>IV PST</b>
	OTAYMGT1 OTAYMGT2 OTAYMST1	PIO PICO CT1 PIO PICO CT2 PIO PICO CT 3	EC GEN1 EC GEN2	OCO GEN G1 OCO GEN G2 ECO GEN1 G1 IV GEN1 STG IV GEN1 CTG2	22357_IV PFC1 _230_22358_IV PFC _230_PS_1 or 22357_IV PFC1 _230_22358_IV PFC _230_PS_2
<b>Control Points</b> ↓					
Suncrest 500/230 kV Bank 80 or 81	-27	-27	-26	30	-40 <sup>1</sup>

**Note<sup>1</sup>:** Increasing flow from IV to La Roa

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		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3I: Combined loading of Miguel Banks Generation Effectiveness Factors for IV-SX connection out of service

<b>Control Points↓</b>  <b>Resource IDs</b> →	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>	
	<b>IV Generation</b>	<b>Export to CENACE</b>
	TERMEX_2_PL1X3 LAROA1_2_UNITA1 LAROA2_2_UNITA1 CSLR4S_2_SOLAR IVSLRP_2_SOLAR1 CNTNLA_2_SOLAR1 CPVERD_2_SOLAR	
Combined Loading of Miguel 500/230 kV Banks 80 & 81	28	-27

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		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3J: Relative effectiveness of Generating Units on relieving congestion on SWPL<sup>1</sup> (includes TL50002 only)

<b>Resource</b> →	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>		
	<b>SDG&amp;E Generation</b> <b>(Studied at Palomar)</b>	<b>SCE Generation</b> <b>(Studied at Pastoria)</b>	<b>PG&amp;E Generation</b> <b>(Studied at Delta)</b>
<b>Control Points</b> ↓			
SWPL (Includes TL50002 only)	-43	-14	-13

**Note**<sup>1</sup>: Effectiveness factors were studied with a corresponding decrease in Palo Verde Generation.

Table 3K: TL13810 Generation Effectiveness Factors

<b>Resource IDs</b> →	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>				
	<b>Palomar Energy</b>	<b>Otay Mesa</b>	<b>Pio Pico</b>	<b>SDGE Peakers</b>	<b>IV gen</b>
<b>Control Points</b> ↓					
	PALOMR_2_PL1X3	OTMESA_2_PL1X2	PIOPIC_2_CTG2 PIOPIC_2_CTG3 PIOPIC_2_CTG1	MRGT_6_MMAREF MRGT_6_MEF2 CARLS1_2_CARCT1 CARLS2_1_CARCT1	TERMEX_2_PL1X3 LAROA1_2_UNITA1 LAROA2_2_UNITA1
TL13810	-7	5	5	-7	3

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		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3L: TL23054 (Sycamore Canyon - Suncrest) 230 kV Generation Effectiveness Factors for TL50001 out of service

<b>Resource IDs</b> <b>Control Points↓</b>	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>			
	<b>Otay Mesa</b>	<b>Pio Pico</b>	<b>IV generation</b>	<b>IV PST</b>
	OTAYMGT1 OTAYMGT2 OTAYMST1 →	PIO PICO CT1 PIO PICO CT2 PIO PICO CT 3	OCO GEN G1 OCO GEN G2 ECO GEN1 G1 IV GEN1 STG IV GEN1 CTG2	22357_IV PFC1 _230_22358_IV PFC _230_PS_1 or 22357_IV PFC1 _230_22358_IV PFC _230_PS_2
(TL23054) Suncrest – Sycamore #1 230 kV	-7	-7	9	-30

Table 3M: Sycamore Canyon Bk60 Generation Effectiveness Factors for TL50001 out of service

<b>Resource IDs</b> <b>Control Points↓</b>	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>		
	<b>EI Cajon</b>	<b>IV generation</b>	<b>IV PST</b>
	EC GEN1 EC GEN2 →	OCO GEN G1 OCO GEN G2 ECO GEN1 G1 IV GEN1 STG IV GEN1 CTG2	22357_IV PFC1 _230_22358_IV PFC _230_PS_1 or 22357_IV PFC1 _230_22358_IV PFC _230_PS_2
Sycamore Canyon BK60	-10	6	-3

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		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3N: IV PST2 Generation Effectiveness Factors for loss of IV PST1

<b>Resource IDs</b> →	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>
	<b>IV PST</b>
	22357_IV PFC1 _230_22358_IV PFC _230_PS_1 or 22357_IV PFC1 _230_22358_IV PFC _230_PS_2
<b>Control Points</b> ↓	
IV PST2	100

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

**7910** - Effectiveness Factors for Valley Electric Association (VEA): (version 6.1, 12/19/22)

Table 3: VEA CP #2 Generation Effectiveness Factors

<b>Resource IDs</b> →	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>	
	<b>Sunshine Valley Solar 1</b>	<b>Community Solar</b>
	SUNSLR_1_SSVSR1	VEAVST_1_SOLAR
<b>Control Points</b> ↓		
CP#2	80%	78%

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b> 2210Z
		<b>Version No.</b> 28.9
		<b>Effective Date</b> 4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>

**8610** - Effectiveness Factors for Sylmar Transformer Banks (Path 41): (version 5.0, 6/01/23)

Table 3A: Generation Effectiveness Factors – Flow Limits

<b>Resource IDs</b> →  <b>Control Points</b> ↓	<b>MW increase in the <u>calculated loading</u> across the transmission facilities that make up the <u>control point</u> for a 100 MW increase in Generation.</b>								
	Hoover	1-4 /High Desert	Etiwanda/ Mountainview/Mira Loma Peaker/ Grapeland Peaker	SDG&E: Any Units	Ormond	Pastoria / Omar / Sycamore	Big Creek	Ventura	Vestal
	HOOVER_2_SCEPT → HOVER_2_SCEPT	HIDSRT_2_UNITS → HIDSRT_2_UNITS	ETIWND_2_UNIT1 ETIWND_6_GRPLND MIRLOM_6_PEAKE SBERDO_2_PSP3 SBERDO_2_PSP4 → ETIWND_2_UNIT1 ETIWND_6_GRPLND MIRLOM_6_PEAKE SBERDO_2_PSP3 SBERDO_2_PSP4	Refer to 7820 PI Gen list → Refer to 7820 PI Gen list	ORMOND_7_UNIT 1 ORMOND_7_UNIT 2 → ORMOND_7_UNIT 1 ORMOND_7_UNIT 2	LEBECS_2_UNITS OMAR_2_UNITS SYCAMR_2_UNITS → LEBECS_2_UNITS OMAR_2_UNITS SYCAMR_2_UNITS	BIGCRK_2_EXESWD → BIGCRK_2_EXESWD	GOLETA_2_VALBT1 GOLETA_6_EXGEN GOLETA_6_ELLWOD SNCLRA_2_SPRHYD SNCLRA_2_HOWLNG SNCLRA_2_UNIT SNCLRA_2_UNIT1 SNCLRA_2_SILBT1 SNCLRA_2_VESBT1 SNCLRA_6_OXGEN MNDALY_6_MCGRTH → GOLETA_2_VALBT1 GOLETA_6_EXGEN GOLETA_6_ELLWOD SNCLRA_2_SPRHYD SNCLRA_2_HOWLNG SNCLRA_2_UNIT SNCLRA_2_UNIT1 SNCLRA_2_SILBT1 SNCLRA_2_VESBT1 SNCLRA_6_OXGEN MNDALY_6_MCGRTH	VESTAL_2_KERN VESTAL_2_RTS042 VESTAL_2_SOLAR1 VESTAL_2_SOLAR2 VESTAL_2_TS5SR1 VESTAL_2_UNIT1 VESTAL_2_WELLHD VESTAL_6_QF → VESTAL_2_KERN VESTAL_2_RTS042 VESTAL_2_SOLAR1 VESTAL_2_SOLAR2 VESTAL_2_TS5SR1 VESTAL_2_UNIT1 VESTAL_2_WELLHD VESTAL_6_QF
<b>Path 41</b>	9	7	4	2	-36	-27	-26	-34	-27

**General Notes:** This table indicates the degree of effectiveness that Generation will be at relieving the calculated loading across the multiple transmission facilities that make up the control point.

Monitor the loading on South of Lugo because the mitigation for the Sylmar Banks could increase the South of Lugo flow if Generation at Etiwanda, Mountainview, Mira Loma Peaker, or Grapeland Peaker is decreased. Monitor the loading on the Victorville-Lugo 500 kV line. Depending upon the flow on this line, increasing Generation at Ormond, Pastoria, or Big Creek may exacerbate the loading.

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	

Table 3B: Effectiveness of Switching Lines


Transmission Facilities <sup>1,7</sup>	CAISO: Eagle Rock - Sylmar 220 kV line	CAISO: Pardee – Sylmar #1 or #2 220 kV lines	CAISO: Moorpark – Sylmar de-loop at Pardee	LADWP: Adelanto - Rinaldi 500 kV line	LADWP: Victorville - Rinaldi 500 kV line	LADWP: Adelanto - Toluca 500 kV line
<b>Path 41</b>	32 <sup>5</sup>	24 <sup>5</sup>	Varies <sup>4,6</sup>	38 <sup>2,3</sup>	38 <sup>2,3</sup>	33 <sup>2,3</sup>

**Notes:**

1. It is not recommended to open more than one line (combined) in LADWP & CAISO BA Areas. Consult Operations Engineering if more than one transmission line needs to be opened.
2. Do not open any of these 500 kV lines if the 287 kV lines or Victorville Substation Bank K are out of service.
3. Opening any of these 500 kV lines will result in a SCIT de-rate. **Refer** to CAISO Operating Procedure [6510 SCIT](#)
4. The effectiveness for de-looping Moorpark-Sylmar line at Pardee varies with system conditions. This Mitigation is therefore not a preferred option. If there is a need to implement this, conduct a study using Advanced Network Applications to verify if this mitigation will be effective prior to implementing this.
5. Opening these 220 kV lines is only effective when the flows on these lines are leaving Sylmar.
6. This de-loop at Pardee 220 kV substation creates a Sylmar #1 to Moorpark #3 220 kV line and a Sylmar #2 to Moorpark #2 220 kV line. This transmission line switching can be performed in combination with the opening of the Eagle Rock – Sylmar 220 kV line. Please note that implementing only the de-looping at Pardee for Pardee-Sylmar #1 & #2 lines is not considered as opening the lines.
7. Taking these lines out of service reduces loading on the Sylmar transformer banks.

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b> 2210Z
		<b>Version No.</b> 28.9
		<b>Effective Date</b> 4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>

## 2. Supporting Information

### Operationally Affected Parties

Shared with the Public.

### References & Definitions


None.

### Version History

Version	Change	Date
27.0	Added Section 1 & 2 headers and sub headers to better align with other procedures. Updated version number and dates only for the following: <ul style="list-style-type: none"> <li>• 7240: version 11.2, effective 1/16/19</li> <li>• 7320: version 23.4, effective 1/10/19</li> <li>• 7540: version 1.3, effective 1/25/19</li> <li>• 7690: version 1.3, effective 1/25/19</li> </ul>	1/25/19
27.1	<ul style="list-style-type: none"> <li>• 7320, Table 3C: Removed Moss Landing 6 &amp; 7, as they were retired and updated to version 23.5, effective 3/05/19.</li> <li>• 7420, Table 3: Updated based on the procedure revision and updated to version 5.1, effective 2/07/19.</li> <li>• 7450, Table 3: Updated CPs #1 &amp; 3, updated resources in Part 2 &amp; CP #6; updated to version 1.11, effective 4/26/19.</li> <li>• 7570, Tables 1A, 1C &amp; 1D: Removed Kearny 3, as it was retired.</li> <li>• Updated version and dates only for the following:               <ul style="list-style-type: none"> <li>○ 6110: version 8.7, effective 4/01/19</li> <li>○ 6140: version 6.1, effective 4/26/19</li> <li>○ 6140A: version 1.7, effective 3/05/19</li> <li>○ 7110: version 12.12, effective 3/05/19</li> <li>○ 7120: version 8.6, effective 3/05/19</li> <li>○ 7230: version 11.8, effective 3/05/19</li> <li>○ 7240: version 11.3, effective 4/26/19</li> <li>○ 7330: version 11.8, effective 3/05/19</li> <li>○ 7430: version 23.4, effective 3/05/19</li> <li>○ 7440: version 1.6, effective 3/05/19</li> </ul> </li> </ul>	4/29/19


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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>	


Version	Change	Date
27.2	<ul style="list-style-type: none"> <li>• Updated Section 1.1 by adding note regarding Bus Injection Effectiveness Factors (BIEF) and note about contacting gas suppliers when dispatch for gas resources are substantially different.</li> <li>• 6140A: Table 3A - updated distribution factors on CP #3a and 3b. Table 3B - removed SPIAND_1_UNIT as a resource as it was retired 2/21/19. Updated to version 1.8, effective 9/10/19.</li> <li>• Updated version and dates only for the following: <ul style="list-style-type: none"> <li>○ 6110: version 8.8, effective 6/01/19</li> <li>○ 6140: version 6.3, effective 7/30/19</li> <li>○ 6310: version 22.2, effective 6/07/19</li> <li>○ 6610: version 12.8, 7/01/19</li> <li>○ 7240: version 12.0, effective 7/18/19</li> <li>○ 7320: version 23.7, effective 6/19/19</li> <li>○ 7340: version 2.4, effective 5/03/19</li> <li>○ 7410: version 7.9, effective 7/03/19</li> <li>○ 7430: version 23.5, effective 6/14/19</li> <li>○ 7440: version 1.7, effective 5/09/19</li> <li>○ 7510: version 5.4, effective 8/26/19</li> <li>○ 7580: version 9.1, effective 8/19/19</li> <li>○ 7630: version 14.2, effective 6/19/19</li> <li>○ 7750: version 1.9, effective 8/01/19</li> <li>○ 7820: version 15.14, effective 6/07/19</li> </ul> </li> </ul>	9/10/19
27.3	<ul style="list-style-type: none"> <li>• Updated 7820: Table 3H - updated for Suncrest, Table 3K - removed IV BK 80 detail and replaced with TL13810 detail, Table 3N - deleted IV BK 80 detail and relabeled following Table 3O as now 3N. Updated to version 15.15, 9/28/19.</li> <li>• Updated version and date only for the following: <ul style="list-style-type: none"> <li>○ 7450: version 1.12. effective 9/10/19</li> </ul> </li> </ul>	10/03/19
27.4	<ul style="list-style-type: none"> <li>• 6310: Relabeled Table 3 (Parts 1 &amp; 2) and added Control Point numbers; Table 3, Part 1: Added CP#11, Dos Amigos Pumping Plant - Panoche 230; added CP #12, LBN path flow (S-&gt;N); added CP #13 &amp; 14, Path 15 flow (S-&gt;N). Table 3, Part 2: Added CP#11, Dos Amigos Pumping Plant - Panoche 230; added CP #12, LBN path flow (S-&gt;N); added CP #13 &amp; 14, Path 15 flow (S-&gt;N). Updated to version 22.3, effective 11/01/19.</li> <li>• Updated version and dates only for the following: <ul style="list-style-type: none"> <li>○ 6110: version 9.0, effective 11/01/19</li> <li>○ 6140: version 6.4, effective 11/01/19</li> <li>○ 6610: version 12.9, effective 10/02/19</li> <li>○ 7820: version 15.16, effective 11/01/19</li> </ul> </li> </ul>	11/21/19

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b> 2210Z
		<b>Version No.</b> 28.9
		<b>Effective Date</b> 4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>


Version	Change	Date
27.5	<ul style="list-style-type: none"> <li>• Updated version and dates only for the following:               <ul style="list-style-type: none"> <li>○ 6310: version 22.4, effective 12/06/19</li> <li>○ 6610: version 13.0, effective 12/17/19</li> <li>○ 7430: version 23.6, effective 11/21/19</li> </ul> </li> <li>• Added new 7910 - Effectiveness Factors for Valley Electric Association (VEA): Table 3 –VEA CP #2 Generation Effectiveness Factors, version 5.0, effective 12/17/19.</li> </ul>	12/17/19
27.6	<ul style="list-style-type: none"> <li>• 7410: Updated Tables 3A-1 &amp; 3B-1, updated to version 8.1, effective 4/30/20.</li> <li>• Updated version and dates only for the following:               <ul style="list-style-type: none"> <li>○ 6110: version 9.1, effective 4/02/20</li> <li>○ 6310: version 22.5, effective 4/01/20</li> <li>○ 6610: version 13.1, effective 4/02/20</li> <li>○ 7230: version 11.9, effective 1/10/20</li> <li>○ 7430: corrected to version 24.0</li> <li>○ 7440: version 2.0, effective 2/05/20</li> <li>○ 7450: version 2.0, effective 4/23/20</li> <li>○ 7630: version 15.0, effective 1/30/20</li> <li>○ 7740: version 5.0, effective 3/20/20</li> <li>○ 7820: version 15.17, effective 12/19/19</li> <li>○ 7910: version 5.1, effective 3/26/20</li> <li>○ 8610: version 4.0, effective 2/05/20</li> </ul> </li> </ul>	5/07/20
27.7	<ul style="list-style-type: none"> <li>• 6610 (Table 3B), 7550 (Tables 3A &amp; 3B), 7570 (Tables 1A – 1D), 7580 (Tables 3A &amp; 3B), 7590 (Tables 2A &amp; 3A), 7630 (Tables 3A &amp; 3B), 7680 (Tables 5A &amp; 5B) –               <ul style="list-style-type: none"> <li>○ Removed REDOND_7_UNIT 7 due to retirement.</li> </ul> </li> <li>• 7430, Tables 3A &amp; 3B, CP#17: Corrected typo.</li> <li>• 7580, Table 3A: Removed CHINO_6_SMPPAP due to retirement.</li> <li>• Updated version and date for the following procedures:               <ul style="list-style-type: none"> <li>○ 6110: Version 10.2, effective 2/04/21</li> <li>○ 6140A: Version 2.0, effective 1/08/21</li> <li>○ 6310: Version 23.0, effective 6/01/20</li> <li>○ 6610: Version 14.0, effective 11/01/20</li> <li>○ 7110: Version 13.0, effective 10/22/20</li> <li>○ 7120: Version 9.0, effective 6/04/20</li> <li>○ 7230: Version 12.1, effective 1/29/21</li> <li>○ 7240: Version 13.0, effective 7/20/20</li> <li>○ 7320: Version 24.0, effective 1/28/21</li> <li>○ 7330: Version 12.0, effective 12/04/20</li> <li>○ 7340: Version 3.0, effective 12/04/20</li> <li>○ 7420: Version 6.0, effective 11/05/20</li> <li>○ 7430: Version 24.2, effective 9/25/20</li> <li>○ 7440: Version 2.3, effective 2/19/21</li> <li>○ 7450: Version 2.1, effective 11/05/20</li> </ul> </li> </ul>	2/19/21

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b> 2210Z
		<b>Version No.</b> 28.9
		<b>Effective Date</b> 4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>


	<ul style="list-style-type: none"> <li>○ 7500: Version 2.0, effective 6/26/20</li> <li>○ 7510: Version 6.0, effective 11/19/20</li> <li>○ 7540: Version 2.0, effective 8/12/20</li> <li>○ 7550: Version 8.0, effective 11/19/20</li> <li>○ 7570: Version 12.0, effective 8/20/20</li> <li>○ 7580: Version 10.0, effective 11/19/20</li> <li>○ 7590: Version 12.0, effective 7/24/20</li> <li>○ 7630: Version 15.2, effective 12/10/20</li> <li>○ 7680: Version 3.1, effective 12/04/20</li> <li>○ 7820: Version 16.3, effective 2/03/21</li> <li>○ 7910: Version 5.3, effective 6/26/20</li> <li>● Version History: Corrected typo (Version 25.6).</li> <li>● Replaced instances of ISO with CAISO.</li> </ul>	
<b>Version</b>	<b>Change</b>	<b>Date</b>
27.8	<ul style="list-style-type: none"> <li>● 6310: Updated to Table 4 and updated to version 23.1, effective 4/01/21.</li> <li>● Added 6410 Table 2 and version 9.2, effective 4/22/21.</li> <li>● 7320, Table C: Added Dallas Energy Storage and Black Diamond Energy Storage.</li> <li>● 7430, Table 3A/3B: Removed reference of Mendota Biomass/Coalinga Cogen.</li> <li>● Added 7430 Table 3C.</li> <li>● 7440, Table 3: Updated Effectiveness Factors.</li> <li>● Updated version and date for the following procedures:               <ul style="list-style-type: none"> <li>○ 6110: Updated to version 10.3, effective 4/01/21.</li> <li>○ 6140: Updated to version 7.0, effective 4/07/21.</li> <li>○ 7120: Updated to version 9.1, effective 4/07/21.</li> <li>○ 7450: Updated to version 2.2, effective 4/01/21.</li> <li>○ 7820: Updated to version 16.4, effective 4/20/21.</li> </ul> </li> </ul>	4/22/21
27.9	<p>Updated 6610, Table 4: added right column header and updated to version 14.1, effective 4/15/21.</p> <p>Removed 7750 Tables, as procedure retired 5/06/21.</p> <p>Updated version and date for the following procedures:</p> <ul style="list-style-type: none"> <li>● 6110: Updated to version 10.4, effective 5/13/21.</li> <li>● 6140A: Updated to version 2.1, effective 5/13/21.</li> <li>● 6410: Updated to version 9.3, effective 5/20/21.</li> <li>● 7120: Updated to version 9.3, effective 6/22/21.</li> <li>● 7230: Updated to version 13.1, effective 6/22/21.</li> <li>● 7320: Updated to version 24.1, effective 7/01/21.</li> <li>● 7430: Updated to version 24.3, effective 6/11/21.</li> <li>● 7440: Updated to version 2.4, effective 6/24/21.</li> <li>● 7450: Updated to version 2.4, effective 6/22/21.</li> <li>● 7570: Updated to version 12.1, effective 6/10/21.</li> <li>● 7690: Updated to version 2.0, effective 6/03/21.</li> </ul>	7/01/21

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b> 2210Z
		<b>Version No.</b> 28.9
		<b>Effective Date</b> 4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>


	<ul style="list-style-type: none"> <li>7820: Updated to version 17.0, effective 6/01/21.</li> <li>7910: Updated to version 5.4, effective 7/01/21.</li> </ul>	
<b>Version</b>	<b>Change</b>	<b>Date</b>
28.0	<ul style="list-style-type: none"> <li>Updated 6110, Table 5A: Removed GRNLF1_1_UNITS; updated to version 11.0, effective 9/01/21.</li> <li>Updated 6610, Tables 3A thru 3D: removed INLDEM_5_UNIT 1 &amp; 2; Tables 3B &amp; C - Removed HNTGBH_7_UNIT1, 3 &amp; 4; added HNTGBH_2_PL1X3; Removed ALAMIT_7_UNIT 1, 2 &amp; 6; added ALAMIT_2_PL1X3 and ALAMIT_7_ES1; Table 3B: added ETIWND_2_UNIT1, and updated to version 15.0, effective 8/05/21.</li> <li>Updated 7230, Table 3: Removed GRNLF_1_UNITS.</li> <li>Updated 7440, Table 3: Added VISTRA_5_DALBT3 for CP2 mitigation.</li> <li>Updated 7500, Table 3: removed PANDOL_6_UNIT.</li> <li>Updated 7540, Table 4: removed HOLGAT_1_MOGEN.</li> <li>Updated 7550, Tables 3A &amp; 3B: Removed HNTGBH_&amp;_UNIT1, added HNTGBH_2_PL1X3; Removed ALAMIT_7_UNIT 1, 2 &amp; 6, added ALAMIT_2_PL1X3 &amp; ALAMIT_7_ES1; Removed INLDEM_5_UNIT 1 &amp; 2.</li> <li>Updated 7570, Table 1A, 1C &amp; 1D: removed INLDEM_5_UNIT 1 &amp; 2; removed HNTGBH_7_UNIT 1 and added HNTGBH_2_PL1X3; Removed ALAMIT_7_UNIT 1, 2 &amp; 6 and added ALAMIT_7_ES1 &amp; ALAMIT_2_PL1X3. Table 1B: removed INLDEM_5_UNIT 1 &amp; 2; HNTGBH_7_UNIT 1 and added HNTGBH_2_PL1X3.</li> <li>Updated 7580, Table 3A &amp; 3B: removed INLDEM_5_UNIT 1 &amp; 2; removed HNTGBH_7_UNIT 1 and added HNTGBH_2_PL1X3; Removed ALAMIT_7_UNIT 1, 2 &amp; 6 and added ALAMIT_7_ES1 &amp; ALAMIT_2_PL1X3.</li> <li>Updated 7590, Table 2A &amp; 3A: removed INLDEM_5_UNIT 1 &amp; 2; removed HNTGBH_7_UNIT 1 and added HNTGBH_2_PL1X3; Removed ALAMIT_7_UNIT 1, 2 &amp; 6 and added ALAMIT_7_ES1 &amp; ALAMIT_2_PL1X3.</li> <li>Updated 7630, Table 3A: removed INLDEM_5_UNIT 1 &amp; 2. Tables 3A &amp; 3 B; removed HNTGBH_7_UNIT 1 and added HNTGBH_2_PL1X3; Removed ALAMIT_7_UNIT 1, 2 &amp; 6 and added ALAMIT_7_ES1 &amp; ALAMIT_2_PL1X3; updated to version 15.3, effective 9/29/21.</li> <li>Updated 7680, Table 5A, 5B: removed INLDEM_5_UNIT 1 &amp; 2; removed HNTGBH_7_UNIT 1 and added HNTGBH_2_PL1X3; Removed ALAMIT_7_UNIT 1, 2 &amp; 6 and added ALAMIT_7_ES1 &amp; ALAMIT_2_PL1X3.</li> <li>Updated 7910, Table 3: Updated values from negatives to positives.</li> <li>Updated 8610, Table 3A: added ETIWND_2_UNIT1.</li> <li>Updated version and date only for the following procedures:</li> </ul>	10/21/21

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b> 2210Z
		<b>Version No.</b> 28.9
		<b>Effective Date</b> 4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>


	<ul style="list-style-type: none"> <li>○ 6310: Updated to version 24.0, effective 9/01/21.</li> <li>○ 7120: Updated to version 9.4, effective 10/15/21.</li> <li>● Removed Technical Review Section for consistency with others.</li> </ul>	
<b>Version</b>	<b>Change</b>	<b>Date</b>
28.1	<ul style="list-style-type: none"> <li>● 7510, Table 4: Removed PANDOL_6_UNIT, as resource was retired.</li> <li>● 7630, Table 3A: Removed ANAHM_7_CT and Anaheim Peaker column, as resource was retired on 6/30/2020.</li> <li>● Updated version and date only for the following procedures:               <ul style="list-style-type: none"> <li>○ 6110: version 11.1, effective 11/01/21</li> <li>○ 6310: version 24.3, effective 2/17/22</li> <li>○ 6410: version 10.0, effective 11/01/21</li> <li>○ 7430: version 24.4, effective 2/17/22</li> <li>○ 7820: version 17.2, effective 12/16/21</li> <li>○ 7910: version 5.5, effective 12/09/21</li> </ul> </li> <li>● Removed history prior to five years and typo corrections in 7320 (Table 3C) and Version History.</li> </ul>	3/10/22
28.2	<ul style="list-style-type: none"> <li>● 7550: Removed Table 3A and updated to version 9.0, effective 5/27/22.</li> <li>● 7570: Replaced existing tables with new Tables 3A to 3H, and updated to version 13.0, effective 5/27/22.</li> <li>● 7580: Removed Tables 3A and 3B, updated Table 3D values and updated to version 11.0, effective 5/27/22.</li> <li>● 7610: New effectiveness factors for Mesa 500/230 kV AA Banks with Table 1B and version 1.0, effective 5/27/22.</li> <li>● 7630: Updated Tables 3A and 3B values and updated to version 16.0, effective 5/27/22.</li> <li>● Updated version and date only for the following:               <ul style="list-style-type: none"> <li>○ 6110: Updated to version 11.2, effective 4/01/22</li> <li>○ 7120: Updated to version 9.5, effective 4/27/22</li> <li>○ 7230: Updated to version 14.0, effective 5/03/22</li> <li>○ 7430: Updated to version 25.0, effective 5/06/22</li> <li>○ 7450: Updated to version 2.5, effective 5/06/22</li> </ul> </li> <li>● Updated instances of PG&amp;E to PGAE for procedures consistency.</li> <li>● Minor formatting and removed history prior to five years.</li> </ul>	5/27/22
28.3	<p>Periodic Review:</p> <ul style="list-style-type: none"> <li>● 7110: Updates made within all three tables due to an incorrect character used in place of an arrow.</li> <li>● 7510: Removed Pandol from 66 kV Gen column since there are no resources listed for Pandol.</li> <li>● Updated version and date only for the following:               <ul style="list-style-type: none"> <li>○ 6110: version 11.3, effective 8/18/22</li> <li>○ 6410: version 10.1, effective 6/13/22</li> <li>○ 6610: version 15.2, effective 7/07/22</li> </ul> </li> </ul>	10/20/22

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b> 2210Z
		<b>Version No.</b> 28.9
		<b>Effective Date</b> 4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>


	<ul style="list-style-type: none"> <li>○ 7230: version 15.1, effective 8/11/22</li> <li>○ 7420: version 6.1, effective 9/09/22</li> <li>○ 7430: version 25.1, effective 8/04/22</li> <li>○ 7550: version 9.1, effective 8/02/22</li> <li>○ 7720: version 6.0, effective 12/01/20</li> <li>○ 7820: version 17.4, effective 8/02/22</li> <li>○ 7910: version 6.0, effective 7/29/22</li> <li>● Minor formatting and removed history prior to five years.</li> </ul>	
<b>Version</b>	<b>Change</b>	<b>Date</b>
28.4	<p>Updated version and effective date only for the following:</p> <ul style="list-style-type: none"> <li>● 6110: version 11.4, 11/01/22</li> <li>● 6310: version 24.4, 1/12/23</li> <li>● 6410: version 10.2, 11/01/22</li> <li>● 6610: version 15.3, 11/01/22</li> <li>● 7420: version 6.2, 1/23/23</li> <li>● 7430: version 25.2, 12/01/22</li> <li>● 7630: version 16.1, 2/16/23</li> <li>● 7820: version 17.5, 12/01/22</li> <li>● 7910: version 6.1, 12/19/22</li> <li>● 8610: version 4.1, 2/16/23</li> </ul> <p>Minor formatting and removed history prior to five years.</p>	3/16/23
28.5	<ul style="list-style-type: none"> <li>● 8610: Updated values for generators and transmission as well as added new units due to Sylmar Bank E out-of-service for long duration. Updated to version 5.0, effective 6/01/23.</li> <li>● Updated version and date only for the following:             <ul style="list-style-type: none"> <li>○ 6110 - version 11.6, effective 5/18/23</li> <li>○ 6310 - version 24.5, effective 5/01/23</li> <li>○ 7120 - version 9.6, effective 5/18/23</li> <li>○ 7410 - version 9.0, effective 4/27/23</li> <li>○ 7430 - version 25.3, effective 4/25/23</li> <li>○ 7450 - version 2.6, effective 4/13/23</li> <li>○ 7740 - version 5.1, effective 3/30/23</li> <li>○ 7820 - version 17.6, effective 3/30/23</li> </ul> </li> </ul>	6/01/23
28.6	<ul style="list-style-type: none"> <li>● 7820 Table 3D: Corrected Pio Pico Gen Effectiveness Factor from '17' to '-17'.             <ul style="list-style-type: none"> <li>○ Updated to version 17.9, effective 9/14/23</li> </ul> </li> <li>● 7690: Added Tables 3F and 3G for new CPs.             <ul style="list-style-type: none"> <li>○ Updated to version 4.0, effective 9/14/23</li> </ul> </li> <li>● Updated version and date only for the following:             <ul style="list-style-type: none"> <li>○ 6110: version 12.0, effective 8/01/23</li> <li>○ 6410: version 10.5, effective 7/05/23</li> <li>○ 6610: version 15.5, effective 7/06/23</li> <li>○ 7110: version 13.1, effective 8/17/23</li> <li>○ 7230: version 15.2, effective 6/01/23</li> <li>○ 7240: version 14.0, effective 7/19/23</li> </ul> </li> </ul>	9/14/23

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b> 2210Z
		<b>Version No.</b> 28.9
		<b>Effective Date</b> 4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction:</b> <b>None</b>

	<ul style="list-style-type: none"> <li>○ 7320: version 24.2 (Date unchanged)</li> <li>○ 7330: version 12.1, effective 6/08/23</li> <li>○ 7410: version 9.1, effective 8/07/23</li> <li>○ 7430: version 25.6, effective 8/17/23</li> <li>○ 7440: version 3.0, effective 6/08/23</li> <li>○ 7450: version 2.7, effective 8/31/23</li> <li>○ 7500: version 2.1, effective 6/08/23</li> <li>○ 7510: version 6.1, effective 8/10/23</li> <li>○ 7590: version 12.1, effective 7/06/23</li> <li>○ 7630: version 16.2, effective 6/01/23</li> <li>○ 7720: version 6.1, effective 8/17/23</li> </ul>	
<b>Version</b>	<b>Change</b>	<b>Date</b>
28.7	<ul style="list-style-type: none"> <li>● 7320: Added note regarding CP #27 included in 7340 since it requires Silicon Valley Power mitigation for alleviating overloads. Updated to version 24.4, effective 10/12/23</li> <li>● 7430: Update to Table 3 Gen effectiveness for new CP #27.</li> <li>● Updated version and date only for the following:               <ul style="list-style-type: none"> <li>○ 6310: version 24.6, effective 10/05/23</li> <li>○ 6410: version 10.6, effective 9/26/23</li> <li>○ 6610: version 15.6, effective 9/26/23</li> <li>○ 7110: version 13.2, effective 9/14/23</li> <li>○ 7230: version 15.3, effective 10/12/23</li> <li>○ 7410: version 9.2, effective 9/15/23</li> <li>○ 7630: version 16.3, effective 9/26/23</li> </ul> </li> </ul>	10/12/23
28.8	<ul style="list-style-type: none"> <li>● 7690: Added Tables 3E. Updated the CP# for Table 3A-3D. Updated the Table titles for 3F and 3G</li> <li>● Updated version and date only for the following:               <ul style="list-style-type: none"> <li>○ 6110: version 12.1, effective 11/01/23</li> <li>○ 6410: version 10.7, effective 11/01/23</li> <li>○ 7230: version 15.3, effective 11/01/23</li> <li>○ 7320: version 24.5, effective 11/01/23</li> <li>○ 7410: version 9.3, effective 11/09/23</li> <li>○ 7430: version 25.7. effective 11/21/23</li> <li>○ 7570: version 13.1, effective 12/08/23</li> <li>○ 7580: version 11.1, effective 12/13/23</li> <li>○ 7820: version 18.1, effective 11/01/23</li> </ul> </li> </ul>	12/15/23
28.9	<ul style="list-style-type: none"> <li>● Added new 7760, Table 1D: Devers Area Generation Effectiveness - version 1.0, effective 4/09/24</li> <li>● Updated version and date only for the following:               <ul style="list-style-type: none"> <li>○ 6110: version 13.0, effective 4/01/24</li> <li>○ 6140: version 7.1, effective 2/22/24</li> <li>○ 6140A: version 2.2, effective 2/22/24</li> <li>○ 6310: version 25.0, effective 4/09/24</li> <li>○ 7230: version 15.4, effective 4/09/24</li> <li>○ 7240: version 14.1, effective 4/01/24</li> </ul> </li> </ul>	4/09/24

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 <b>California ISO</b>	<b>Operating Procedure</b>	<b>Procedure No.</b>	2210Z
		<b>Version No.</b>	28.9
		<b>Effective Date</b>	4/09/24
<b>Effectiveness Factors - All</b>		<b>Distribution Restriction: None</b>	

	<ul style="list-style-type: none"> <li>○ 7320 : version 24.6, effective 2/29/24</li> <li>○ 7410: version 9.4, effective 1/11/24</li> <li>○ 7430: version 26.1, effective 4/01/24</li> <li>○ 7440: version 3.1, effective 4/01/24</li> <li>○ 7450: version 2.8, effective 4/01/24</li> <li>○ 7540: version 2.1, effective 10/12/23</li> <li>○ 7550: version 9.2, effective 1/04/24</li> <li>○ 7680: version 3.2, effective 1/04/24</li> <li>○ 7690: version 4.1, effective 3/29/24</li> <li>○ 7820: version 19.0, effective 2/29/24</li> </ul>	
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