

Thermal Overloads

ID	Overloaded Facility	Contingency	Category	Category Description	Loading (%)				Potential Mitigation Solutions
					2017 Summer Peak Dry	2017 Summer Partial Peak Dry	2017 Spring Off-pk Wet	2017 Winter-Off-pk Dry	
	Midway-Gates #1 230kV	Gates #11 500/230kV	B	T-1	N/A	N/A	N/A	116.5%	
	Borden-Gregg 230kV	Herndon #1 230kV Bus Fault	C1	Bus	N/A	N/A	102.8%	N/A	
	Borden-Gregg 230kV	Panoche #2 230kV Bus Fault	C1	Bus	N/A	N/A	100.7%	N/A	
	McCall #2 230/115kV	McCall #2 230kV Bus Fault	C1	Bus	N/A	100.3%	N/A	N/A	
	Panoche-Gates #1 230kV	Gates 230kV CB312 Failure	C2	Breaker	N/A	N/A	N/A	120.5%	
	Kearney-Herndon 230kV	Gates 230kV CB312 Failure	C2	Breaker	N/A	N/A	N/A	109.6%	
	Panoche-Gates #2 230kV	Gates 230kV CB322 Failure	C2	Breaker	N/A	N/A	N/A	100.2%	
	Gregg-Borden #1 230kV	Panoche 230kV CB202 Failure	C2	Breaker	N/A	N/A	112.1%	N/A	
	Gates-Gregg 230kV	Panoche 230kV CB202 Failure	C2	Breaker	N/A	N/A	N/A	105.4%	
	Oro Loma-El Nido 115kV	Gates-Gregg 230kV & Kearney-Herndon 230kV	C3	L-1-1	N/A	105.0%	N/A	N/A	
	Sanger-McCall 115kV	Gates-Gregg 230kV & Kearney-Herndon 230kV	C3	L-1-1	N/A	105.0%	N/A	N/A	
	Gates-Panoche #1 & #2 230kV	Gates-McCall 230kV & Los Banos 500/230kV	C3	L-1/T-1	N/A	N/A	N/A	108.0%	
	Gates-Gregg 230kV	Helm-McCall 230kV & Gates-McCall 230kV	C3/C5	L-1-1	N/A	N/A	N/A	106.8%	
	Borden-Gregg 230kV	Herndon-Kearney 230kV & Helm-McCall 230kV	C3	L-1-1	N/A	N/A	106.0%	N/A	
	Borden-Gregg 230kV	Los Banos-Westley 230kV & Herndon-Kearney 230kV	C3	L-1-1	N/A	N/A	102.1%	N/A	
	Oro Loma-El Nido 115kV	Los Banos-Westley 230kV & Panoche-Kearney 230kV	C3	L-1-1	N/A	N/A	N/A	101.1%	
	Borden-Gregg 230kV	Panoche-Gates #1 OR #2 230kV & Herndon-Kearney 230kV	C3	L-1-1	N/A	N/A	100.0%	N/A	
	Gates-Gregg 230kV	Panoche-Helm 230kV & Gates-McCall 230kV	C3	L-1-1	N/A	N/A	N/A	103.0%	
	Borden-Gregg 230kV	Panoche-Helm 230kV & Herndon-Kearney 230kV	C3	L-1-1	N/A	N/A	107.9%	N/A	

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					2017 Summer Peak Dry	2017 Summer Partial Peak Dry	2017 Spring Off-pk Wet	2017 Winter-Off-pk Dry	
	Borden-Gregg 230kV	Panoche-Kearney 230kV & Panoche-Helm 230kV	C3/C5	L-1-1	N/A	N/A	106.3%	N/A	
	Sanger-McCall #3 115kV	Panoche-Kearney 230kV & Gates-Gregg 230kV	C3/C5	L-1-1	N/A	112.0%	N/A	N/A	
	Kearney-Herndon 230kV	Gates-Gregg 230kV & Gates-McCall 230kV	C5	L-2	N/A	111.0%	N/A	N/A	
	Oro Loma-El Nido 115kV	Panoche-Kearney 230kV & Gates-Gregg 230kV	C3/C5	L-1-1	N/A	113.0%	N/A	N/A	
	Oro Loma-El Nido 115kV	Bellota-Melones 230kV & Warnerville-Wilson 230kV	C3/C5	L-1-1	N/A	108.7%	N/A	N/A	
	Oro Loma-El Nido 115kV	Herndon-Kearney 230kV & Gates-Gregg 230kV	C3/C5	L-1-1	N/A	104.6%	N/A	N/A	
	Gates-Gregg 230kV	Herndon-Kearney 230kV & Gates-McCall 230kV	C3	L-1-1	N/A	N/A	N/A	107.6%	
	Wilson-Gregg 230kV	Panoche-Kearney 230kV & Wilson-Borden 230kV	C3	L-1-1	N/A	N/A	104.3%	N/A	
	Borden-Gregg 230kV	Panoche-Kearney 230kV & Helm-McCall 230kV	C3	L-1-1	N/A	N/A	104.0%	N/A	
	Gates-Gregg 230kV	Panoche-Kearney 230kV & Gates-McCall 230kV	C3	L-1-1	N/A	N/A	N/A	100.1%	
	Wilson-Le Grand 115kV	Warnerville-Wilson 230kV & Panoche-Kearney 230kV	C3	L-1-1	N/A	103.4%	N/A	N/A	
	Wilson-Gregg 230kV	Wilson-Borden 230kV & Herndon-Kearney 230kV	C3	L-1-1	N/A	N/A	105.9%	N/A	
	Oro Loma-El Nido 115kV	Warnerville-Wilson 230kV & Panoche-Helm 230kV	C3	L-1-1	N/A	104.4%	N/A	N/A	

2012/2013 ISO Reliability Assessment - Final Study Results

Study Area: **PG&E Bulk - Summer Light Load, Summer Off-Peak & Summer Partial Peak**



Voltage Deviations

ID	Substation	Contingency	Category	Category Description	Post Cont. Voltage Deviation %				Potential Mitigation Solutions
					2017 Summer Peak Dry	2017 Summer Partial Peak Dry	2017 Spring Off-pk Wet	2017 Winter-Off-pk Dry	
	Storey 2 230kV	Borden-Gregg 230kV	B	L-1	-0.05	-0.05	N/A	N/A	
	Helms PGP 230kV	Panoche-Kearney 230kV & Helms-Gregg #1 230kV	C3	L-1-1	N/A	N/A	-0.13	N/A	

Study Area: **PG&E San Joaquin Valley Greater Fresno - Summer Light Load, Summer Off-Peak & Summer Partial Peak**



Transient Stability

ID	Contingency	Category	Category Description	Transient Stability Performance				Potential Mitigation Solutions
				2017 Summer Peak Dry	2017 Summer Partial Peak Dry	2017 Spring Off-pk Wet	2017 Winter-Off-pk Dry	