

2012/2013 ISO Reliability Assessment - Preliminary Study Results

Study Area: **SCE Eastern area - Summer Peak without Renewables**



Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2014 Summer Peak	2017 Summer Peak	2022 Summer Peak	
E-SpWOR-TO-001	Mirage - Santa Rosa 115 kV	Mirage - Concho 115 kV	B	L-1	92.70%	95.40%	103.80%	Continue monitoring loading in future planning cycles and 1) reconductor existing line or 2) build a new line in a timely fashion.
E-SpWOR-TO-002	Garnet - Tap 817 115 kV	Devers - Farrell - Windland 115 kV & Devers - Garnet 115 kV	C	L-1/L-1	96.30%	101.80%	112.50%	30 minute rating (110%) allows manual adjustment after the second contingency per SCE SOB 004 until well after 2017. Continue monitoring loading in future planning cycles and modify planned Devers 115 kV RAS to include this contingency if necessary.
E-SpWOR-TO-003	Garnet - Tap 817 115 kV	Devers - Eisenhower - Thornhill 115 kV & Devers - Garnet 115 kV	C	L-1/L-1	94.50%	97.10%	109.90%	Same as above
E-SpWOR-TO-004	Mirage 230/115 kV No. 4 bank	Mirage No.1 & No.3 230/115 kV banks	C	T-1/T-1	115.60%	120.00%	128.50%	1) Include contingency in the planned Mirage 115 kV RAS 2) Manual adjustment after the initial contingency per SCE SOB 004.
E-SpWOR-TO-005	Mirage 230/115 kV No. 3 bank	Mirage No.1 & No.4 230/115 kV banks	C	T-1/T-1	115.60%	120.00%	128.50%	Same as above
E-SpWOR-TO-006	Mirage 230/115 kV No. 1 bank	Mirage No.3 & No.4 230/115 kV banks	C	T-1/T-1	115.60%	120.00%	128.50%	Same as above

Note: Mirage and Devers 115 kV facilities are expected to become non-ISO facilities once the system is split in 2013.

Study Area: **SCE Eastern area - Summer Light Load & Spring Off-Peak without renewables**



Thermal Overloads

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

No thermal overloads identified.



Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %			Potential Mitigation Solutions
					2014 Summer Peak	2017 Summer Off-Peak	2022 Summer Peak	

No voltage deviations identified.



Voltage Deviations

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

No voltage deviations identified.



High/Low Voltage

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					2014 Summer Peak	2017 Summer Peak	2022 Summer Peak	

No high/low voltage issues identified.

High/Low Voltage

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					2014 Summer Light Load	2017 Summer Off-Peak	N/A	

No high/low voltage issues identified.

Transient Stability

ID	Contingency	Category	Category Description	Transient Stability Performance			Potential Mitigation Solutions
				2014 Summer Peak	2017 Summer Peak	2022 Summer Peak	
E-SpWOR-TS-001	Julian Hinds - Mirage 230 kV	B	N-1	Stable but frequency dip at Julian Hinds MWD 6.9 kV buses exceeds limits	Stable but frequency dip at Julian Hinds MWD 6.9 kV buses exceeds limits	Stable but frequency dip at Julian Hinds MWD 6.9 kV buses exceeds limits	SCE/MWD accept transient frequency dip and will submit to WECC less stringent frequency criteria for the 6.9 kV buses

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Transient Stability

ID	Contingency	Category	Category Description	Transient Stability Performance			Potential Mitigation Solutions
				2014 Summer Light Load	2017 Summer Off-Peak	N/A	
E-SopWOR-TS-001	Julian Hinds - Mirage 230 kV	B	N-1	Stable but frequency dip at MWD's Julian Hinds 6.9 kV buses exceeds limits	Stable but frequency dip at MWD's Julian Hinds 6.9 kV buses exceeds limits		SCE/MWD accept transient frequency dip and will submit to WECC less stringent frequency criteria for the 6.9 kV buses
E-SopWOR-TS-002	Iron Mountain - Camino - Mead- Gene 230 kV & Julian Hinds - Mirage 230 kV	C	L-1/L-1	Diverged	Diverged		Operating solution
E-SopWOR-TS-003	Eagle Mountain - Iron Mountain 230 kV & Julian Hinds - Mirage 230 kV		L-1/L-1	Diverged	Diverged		Same as above



Post-Transient Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2014 Summer Peak	2017 Summer Peak	2022 Summer Peak	

No post-transient thermal overload issues identified.



Post-Transient Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					Select..	Select..	Select..	

No post-transient thermal overloads identified.

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Post-Transient Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %			Potential Mitigation Solutions
					2014 Summer Peak	2017 Summer Peak	2022 Summer Peak	
E-SpWOR-PT-001	Eagle Mountain	Palo Verde - Colorado River 500 kV (Full Blythe plant tripped)	B	L-1	7.70%	6.60%	9.70%	Mitigation solutions are under investigation.
E-SpWOR-PT-002	Iron Mountain	Palo Verde - Colorado River 500 kV (Full Blythe plant tripped)	B	L-1	7.60%	5.70%	9.40%	Same as above
E-SpWOR-PT-003	Camino	Palo Verde - Colorado River 500 kV (Full Blythe plant tripped)	B	L-1	5.10%	< 5%	5.70%	Same as above
E-SpWOR-PT-004	Julian Hinds	Palo Verde - Colorado River 500 kV (Full Blythe plant tripped)	B	L-1	5.90%	< 5%	8.20%	Same as above

Post-Transient Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %			Potential Mitigation Solutions
					2014 Summer Light Load	2017 Spring Off-Peak	N/A	
E-SopWOR-PT-001	N/A	Iron Mountain - Camino - Mead- Gene 230 kV & Julian Hinds - Mirage 230 kV	C	L-1/L-1	Diverged	Diverged		Operating solution
E-SopWOR-PT-002	N/A	Eagle Mountain - Iron Mountain 230 kV & Julian Hinds - Mirage 230 kV	C	L-1/L-1	Diverged	Diverged		Same as above

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Single Contingency Load Drop

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

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

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Single Source Substation with more than 100 MW Load

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

No single source substation with more than 100 MW Load