

## Summary of ISO Capital Expenditure Forecast - Non-Incentive Projects (\$000)

					Project Total (ISO & non-ISO)				ISO Portion			
PIN	Project Title	Order #	High/Low Voltage	OD	Prior	2015	2016	Total	Prior	2015	2016	Total
Non-Incentive Transmission Projects includes Direct Installation and Removal Expenditures												
Other Transmission												
07559	Colorado River (Network Upgrade) install 220kV circuit breakers (CBs) & Remote Terminal Unit (RTU)		High	May-15	1,119	1,000	-	2,119	1,119	1,000	-	2,119
06694	Devers: Upgrade the Devers RTU		High	May-13	9,657	100	-	9,757	9,657	100	-	9,757
06694	Vista Sub: Upgrade line protection at the Devers #1 220kV T/L position.		High	Jun-14	640	100	-	740	640	100	-	740
06694	El Casco Sub: Install one SEL-2407 satellite synchronized clock and two N60 relays		High	May-14	254	100	-	354	254	100	-	354
06694	San Bernardino Sub: Install one SEL-2407 satellite synchronized clock and four N60 relays		High	Jun-14	460	100	-	560	460	100	-	560
06694	Total CPV Sentinel Project - Sentinel-Devers 220kV				11,012	400	-	11,412	11,012	400	-	11,412
07050	Blythe Solar Energy Center (BSEC) ---- Colorado River (NU): 220kV Line/Bank Pos for BSEC		High	Dec-15	1,187	250	-	1,437	1,187	250	-	1,437
07059	Red Bluff Sub (IF): Equip a shared 220kV line/bank pos to terminate the Queue #365 No.1 220kV line		High	Jun-16	1,033	50	200	1,283	1,033	50	200	1,283
07556	Del Sur: Install equipment for network upgrade		High	Jun-15	10	300	400	710	10	300	400	710
07580	Whirlwind (NU): Install 220kV CBs, RTU		High	Dec-15	8	1,700	-	1,708	8	1,700	-	1,708
07691	Antelope (NU): Equip 1 220kV CB position		High	Oct-16	4	700	1,500	2,204	4	700	1,500	2,204
07733	Whirlwind (Plan of Service): Equip one 220 kV position to terminate the Teddy-Whirlwind 220kV T/L		High	Nov-16	-	600	1,600	2,200	-	600	1,600	2,200
07756	Whirlwind (POS): Equip one 220kV position to terminate the Rattlesnake-Whirlwind 220kV T/L		High	Nov-16	-	550	1,650	2,200	-	550	1,650	2,200
07093	Windhub: Install Special Protection System to trip Windhub area Transition Cluster queued generation		High	Dec-16	-	100	650	750	-	100	650	750
Total Other Transmission					14,372	5,650	6,000	26,022	14,372	5,650	6,000	26,022
TSP Projects												
06107	Pardee Sub: Install new double breaker 220 kV CB's in position 11 to terminate bank leads		High	Dec-15	2,437	618	-	3,055	2,437	618	-	3,055
Total TSP Projects					2,437	618	-	3,055	2,437	618	-	3,055
Transmission Project Reliability												
06434	TRTP Seg 3A Vegetation Remediation (Environmental Mitigation)		High	Jul-14	543	100	-	643	543	100	-	643
07183	REMOVAL work associated with visual mitigation measures at Highwind Sub		High	Dec-15	-	50	-	50	-	50	-	50
Total TRTP Seg 1-3A					543	100	-	643	543	100	-	643
06440	REMOVE EQUIPMENT at Vincent Sub		High	Feb-12	689	10	-	699	689	10	-	699
06438	REMOVE 16 MILES SINGLE CKT T/L B/W DUARTE AND NEW MESA SUB		High	Jan-15	12,959	26	-	12,985	12,959	26	-	12,985
06439	REMOVE 5.62 MILES IDLE CHINO-MESA AND CHINO-MIRA LOMA #2 & 3 220KV T/Ls		High	Feb-14	8,538	219	-	8,757	8,538	219	-	8,757
06439	REMOVE 7.26 MILES CHINO-MIRA LOMA #1, #2 & #3 220KV T/Ls		High	Feb-14	10,527	5,546	-	16,073	10,527	5,546	-	16,073
06439	REMOVAL work on section of Mira Loma - Vincent 500 kV T/L		High	Jun-12	469	233	-	702	469	233	-	702
06439	REMOVE 1.17 Miles MESA-WALNUT AND CENTER-OLINDA 220kV double-circuit T/Ls		High	Mar-15	2,084	3,092	-	5,175	2,084	3,092	-	5,175
Total TRTP Seg 7&8 Removal					34,578	9,115	-	43,693	34,578	9,115	-	43,693
04956	Big Creek #3-Springville 220-kV: Construct approx. 23 miles of new double-circuit 230kV T/L		High	Nov-14	-	6,850	1,000	7,850	-	6,850	1,000	7,850
05146	Various Substations: Fire Mitigation		High	Blanket Specifics	-	-	2,570	2,570	-	-	2,570	2,570
06154	N of Magunden : Install a 2nd set of Bushing Current Transformer's on 220kV CB #1 on position 1		High	Jun-15	408	100	-	508	408	100	-	508
06154	Vestal - Install a second set of BCT's on 220kV CB's #1 and 2 on position 1		High	Dec-15	567	50	-	617	567	50	-	617
Total North of Magunden Redundant Bushing Current Transformer (BCT) Upgrades					975	150	-	1,125	975	150	-	1,125
06415	Mirage Sub: PHASE 2 - Replace two (2) 2000A 220kV CB's at positions 2S and 3S		High	Dec-14	117	100	-	217	117	100	-	217
06415	Devers-Mirage #1 230kV T/L: Build 15 mil (Path 42) Double Circuit 220kV T/L		High	Dec-14	23,270	400	-	23,670	23,270	400	-	23,670
06415	Devers Sub: PHASE 1 - Install relays, meters and logic controllers as necessary for IID's new SPS		High	Dec-14	428	100	-	528	428	100	-	528

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06415	Mirage Sub: PHASE 1 - Install relays, meters and logic controllers as necessary for IID's new SPS		High	Dec-14	330	50	-	380	330	50	-	380
<b>06415</b>	<b>Total Path 42 and Devers-Mirage 230kV Upgrades</b>				<b>24,144</b>	<b>650</b>	<b>-</b>	<b>24,794</b>	<b>24,144</b>	<b>650</b>	<b>-</b>	<b>24,794</b>
06791	Lugo-Rancho Vista 500kV Line: Relocate Rancho Vista 500kV line from Pos 5 E to Pos 4 W Bus		High	Dec-16	1	1,500	1,400	2,901	1	1,500	1,400	2,901
06791	Lugo 500kV Sub breaker installation for No. 1AA & No. 2AA banks		High	Dec-15	6,474	200	6,500	13,174	6,474	200	6,500	13,174
<b>06791</b>	<b>Total Lugo 500kV Substation Breaker Installation</b>				<b>6,474</b>	<b>1,700</b>	<b>7,900</b>	<b>16,074</b>	<b>6,474</b>	<b>1,700</b>	<b>7,900</b>	<b>16,074</b>
07241	Eldorado: Install (2) 500 kV CBs, (3) 500 kV gang operated disconnects and other associated equiprr		High	Nov-15	5,096	1,540	2,229	8,865	5,096	1,540	2,229	8,865
07248	Ivanpah Sub: Install a dedicated 220 kV double-breaker line position on a breaker-and-a-half configur		High	Nov-15	839	161	-	1,000	839	161	-	1,000
07248	Eldorado: Install (1) 500 kV Switchyard Operating Bus extension, (8) bus dead-end structures, (48) bu		High	Nov-15	44,532	31,823	430	76,785	44,532	31,823	430	76,785
07248	Eldorado-Lugo: Rotate the A and C phases of the transmission line conductors		High	Nov-15	105	795	-	900	105	795	-	900
07248	Ivanpah Sub (NU): Update the GE-N60 RAS relay settings at Ivanpah sub to receive new breaker sta		High	Nov-15	74	26	-	100	74	26	-	100
07248	Power Systems Control (PSC) (POS NU) Eldorado RTU		High	Nov-15	-	50	-	50	-	50	-	50
	<b>Total Eldorado AA Bank</b>				<b>50,647</b>	<b>34,395</b>	<b>2,659</b>	<b>87,701</b>	<b>50,647</b>	<b>34,395</b>	<b>2,659</b>	<b>87,701</b>
07376	Eldorado-Install Fire Mitigation 3AA		High	Dec-15	56	866	800	1,722	56	866	800	1,722
07376	Eldorado-Install fire mitigation for 4AA		High	Dec-16	1	180	1,416	1,597	1	180	1,416	1,597
<b>07376</b>	<b>Total Eldorado-Install Fire Mitigation 3 &amp; 4 AA Bank</b>				<b>57</b>	<b>1,046</b>	<b>2,216</b>	<b>3,319</b>	<b>57</b>	<b>1,046</b>	<b>2,216</b>	<b>3,319</b>
07426	Primm (Plan of Service Network Upgrade (POS NU)): New 220kV substation		High	Oct-15	9,346	8,405	-	17,751	9,346	8,405	-	17,751
07426	Eldorado-Ivanpah #1 (NU): Loop into Primm		High	Oct-15	323	4,252	-	4,575	323	4,252	-	4,575
07426	Ivanpah: replace relay on loop into Primm		High	Oct-15	36	24	-	60	36	24	-	60
07426	Obtain easements and / or acquire land		High	Oct-15	-	211	-	211	-	211	-	211
<b>07426</b>	<b>Total New 220kV Primm Substation - Network Upgrade</b>				<b>9,705</b>	<b>12,892</b>	<b>-</b>	<b>22,597</b>	<b>9,705</b>	<b>12,892</b>	<b>-</b>	<b>22,597</b>
07243	Eisenhower Sub: Install (4) GE N60 relay		High	Dec-15	2	20	-	22	2	20	-	22
07243	Farrell Sub: Install (2) GE N60 relays		High	Dec-15	1	20	-	21	1	20	-	21
07243	Garnet Sub: Install (2) GE N60 relays		High	Dec-15	1	20	-	21	1	20	-	21
07243	Thornhill Sub: Install (2) GE N60 relays		High	Dec-15	1	20	-	21	1	20	-	21
07243	Devers Sub: Install (4) GE N60 relay		High	Dec-15	2	40	-	42	2	40	-	42
<b>07243</b>	<b>Total Devers 220/115 (S)</b>				<b>6</b>	<b>120</b>	<b>-</b>	<b>126</b>	<b>6</b>	<b>120</b>	<b>-</b>	<b>126</b>
07645	Loop Kramer-Lugo 230 kV #1 & #2 lines into Victor substation		High	Jun-16	1,863	2,000	1,000	4,863	1,863	2,000	1,000	4,863
07645	Lugo Sub: Perform Protection upgrade		High	Jun-16	1	150	50	201	1	150	50	201
07645	Kramer Sub: Perform Protection upgrade		High	Jun-16	7	150	50	207	7	150	50	207
07645	Kramer-Lugo lines: Loop into Victor Sub		High	Jun-16	0	150	50	200	0	150	50	200
<b>07645</b>	<b>Total Victor Loop-In Project</b>				<b>1,871</b>	<b>2,450</b>	<b>1,150</b>	<b>5,471</b>	<b>1,871</b>	<b>2,450</b>	<b>1,150</b>	<b>5,471</b>
07451	Bailey Sub: Upgrade protection as required		Low	Dec-15	5,329	5,257	1,000	11,586	3,784	3,732	710	8,226
07451	Pastoria Substation: Replace relays due to work at Bailey Sub		High	Dec-16	-	75	325	400	-	75	325	400
<b>07451</b>	<b>Total Bailey Sub Protection Upgrade</b>				<b>5,329</b>	<b>5,332</b>	<b>1,325</b>	<b>11,986</b>	<b>3,784</b>	<b>3,807</b>	<b>1,035</b>	<b>8,626</b>
07763	Eldorado 500/220 kV (T):Install ten (10) N60 relaysInstall one (1) Ethernet switchInstall one (1) satellit		High	Dec-16	-	202	802	1,004	-	202	802	1,004
07763	Lugo 500/220 kV (T): Install two (2) N60 relays; Install one (1) Ethernet switch; Install one (1) satellit		High	Dec-16	-	234	234	468	-	234	234	468
07763	Mohave 500 kV: Install two (2) N60 relays; Install one (1) Ethernet switch; Install one (1) satellite switc		High	Dec-16	-	167	167	333	-	167	167	333
<b>07763</b>	<b>Total Lugo-Victorville 500 kV T/L Special Protection System (SPS)</b>				<b>-</b>	<b>603</b>	<b>1,203</b>	<b>1,806</b>	<b>-</b>	<b>603</b>	<b>1,203</b>	<b>1,806</b>
07758	REMOVE equipment associated with the Valley Direct Load Trip (VDLT) RAS at Serrano Sub		High	Dec-16	-	8	17	25	-	8	17	25
07758	REMOVE equipment associated with the VDLT Remedial Action Scheme (RAS) at Valley Sub		High	Dec-16	-	8	17	25	-	8	17	25
<b>07758</b>	<b>Total Serrano 500/220 (T) and Valley Bulk 500/115 (T)</b>				<b>-</b>	<b>16</b>	<b>34</b>	<b>50</b>	<b>-</b>	<b>16</b>	<b>34</b>	<b>50</b>
<b>06468</b>	Victor Sub: Upgrade protection and install 4 SEL-351 relays		High	Jun-16	648	150	50	848	648	150	50	848
<b>07112</b>	Devers: Equip the 230 KV A-Bank positions (3 & 4) with circuit breakers		High	Dec-16	286	770	1,950	3,006	286	770	1,950	3,006

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					Prior	2015	2016	Total	Prior	2015	2016	Total
07113	El Nido: Install 230 kV (63 kA) double breakers on No. 1 A bank at pos 3 and No.3A bank at pos 6		High	Dec-16	10	2,000	3,000	5,010	10	2,000	3,000	5,010
07116	Villa Park: Equip the 230 KV A-Bank positions (no. 1 & 2) with circuit breakers		High	Dec-15	3,976	1,500	-	5,476	3,976	1,500	-	5,476
07117	Kramer Sub: Equip 1A & 2A with CBs ---- Kramer: Equip 1A & 2A with CBs		High	Dec-15	3,855	800	-	4,655	3,855	800	-	4,655
07119	Mesa Sub: Install an L90 relay.		High	Dec-16	65	30	50	145	65	30	50	145
07121	Padua: Equip 2A & 3A with CBs		High	Dec-14	5,075	700	-	5,775	3,045	420	-	3,465
06792	Rector 220/66kV Sub: Install 2X79.2 MVAR switching shunt capacitor		High	Oct-14	102	1,000	-	1,102	102	1,000	-	1,102
07466	Big Creek 3: Build Mechanical Electrical Equipment Room (MEER) Building		High	Dec-14	-	100	-	100	-	87	-	87
07518	Springville Sub: Redesign high side feed from bank on bus to double CB at 220kV pos 4		High	Jun-16	1,026	1,000	5,250	7,276	821	800	4,200	5,821
<b>Total Transmission Project Reliability</b>					<b>150,062</b>	<b>83,529</b>	<b>30,357</b>	<b>263,249</b>	<b>146,281</b>	<b>81,512</b>	<b>29,017</b>	<b>256,810</b>

**Infrastructure Replacement**

04211	Replace Bulk Power Circuit Breakers		High	Blanket Specifics	-	102	1,103	1,205	-	102	1,103	1,205
04329	Non-Bulk Circuit Breaker Replacement		Low	Blanket Specifics	-	456	-	456	-	456	-	456
03138	Sylmar Converter Station & HVDC T/L: Capital Additions & Betterment		High	Blanket Specifics	-	453	-	453	-	453	-	453
03138	LADWP DC electrode replacement (LAND segment)		High	Mar-16	3,696	10,000	11,050	24,746	3,696	10,000	11,050	24,746
04484	Coupling Capacitor Voltage Transformers		High	Blanket Specifics	-	60	154	214	-	60	154	214
04651	Palo Verde Switchrack		High	Blanket Specifics	-	2,713	1,500	4,213	-	2,713	1,500	4,213
06197	On-line Dissolved Gas Analysis of Bulk Power Transformer Banks		High	Blanket Specifics	-	155	2,883	3,038	-	155	2,883	3,038
04343	Non-Bulk Relay Replacement Program ("SRRP")		Low	Blanket Specifics	-	6,867	7,738	14,605	-	6,867	7,738	14,605
05089	Bulk Power 500kV Line Relay Replacement		High	Blanket Specifics	-	1,967	1,518	3,485	-	1,967	1,518	3,485
04756	Substation Equipment Additions & Betterment		High	Blanket Specifics	-	1,813	9,971	11,784	-	1,813	9,971	11,784
04791	Engineer and construct new interconnection facilities - Network Upgrades		High	Blanket Specifics	-	5,000	5,000	10,000	-	5,000	5,000	10,000
05210	Substation Transformer Bank Replacement Program (AA-Bank & A-Bank)		High	Blanket Specifics	-	15,600	18,148	33,748	-	15,600	18,148	33,748
07681	NERC/CIP-14 (Physical Security)		High	Blanket Specifics	-	16,000	-	16,000	-	14,511	-	14,511
<b>Total Infrastructure Replacement</b>					<b>3,696</b>	<b>61,186</b>	<b>59,065</b>	<b>123,947</b>	<b>3,696</b>	<b>59,697</b>	<b>59,065</b>	<b>122,458</b>

**Grid Applications**

06446	Phasor Measurement System Installations		High	Blanket Specifics	-	1,372	4,198	5,570	-	1,023	4,198	5,221
06428	Centralized Remedial Action Scheme (C-RAS) Program Phase		High	Blanket Specifics	-	13,233	13,833	27,065	-	13,233	13,833	27,065
06428	Centralized Remedial Action Scheme (C-RAS) Project Phase		High	Jun-15	3,661	1,228	-	4,889	3,661	1,228	-	4,889
07666	CRAS Program - Phase 1: Colorado River Corridor RAS		High	Dec-16	-	57	111	168	-	57	111	168
<b>Total Grid Apps</b>					<b>3,661</b>	<b>15,889</b>	<b>18,142</b>	<b>37,692</b>	<b>3,661</b>	<b>15,540</b>	<b>18,142</b>	<b>37,343</b>

**PWRD Blankets**

03363	Substation Planned Maintenance Replacements		High	Blanket Specifics	-	21,638	19,000	40,638	-	2,984	2,620	5,604
03363	Substation Unplanned Maintenance Replacements		High	Blanket Specifics	-	8,799	9,050	17,849	-	846	870	1,715
03363	Facilities- Operational		High	Blanket Specifics	-	6,233	-	6,233	-	6,233	-	6,233
<b>03363 Substation Equipment Additions &amp; Replacements</b>					-	<b>36,670</b>	<b>28,050</b>	<b>64,720</b>	-	<b>10,062</b>	<b>3,490</b>	<b>13,552</b>
03364	Transmission Breakdown Maintenance Planned		High	Blanket Specifics	-	28,000	26,673	54,673	-	7,204	6,863	14,067
03364	Transmission Breakdown Maintenance Unplanned		High	Blanket Specifics	-	4,600	4,700	9,300	-	1,148	1,173	2,320
03364	Transmission Pole Replacement		High	Blanket Specifics	-	67,261	40,970	108,232	-	599	365	963
03364	Pole Remediation Transmission		High	Blanket Specifics	-	20,534	45,075	65,609	-	183	401	584
<b>03364 Transmission Equipment Additions &amp; Replacements</b>					-	<b>120,395</b>	<b>117,419</b>	<b>237,814</b>	-	<b>9,133</b>	<b>8,802</b>	<b>17,935</b>
07298	Transmission Line Rating Remediation		High	Blanket Specifics	-	18,990	60,450	79,440	-	18,990	60,450	79,440
03362	Critical Infrastructure Spare		High	Dec-15	-	9,100	-	9,100	-	9,100	-	9,100
03367	Substation Claim		High	Blanket Specifics	-	793	816	1,610	-	33	33	66
03367	Transmission Claim		High	Blanket Specifics	-	2,400	2,400	4,800	-	161	161	321
03367	Transmission Storm		High	Blanket Specifics	-	4,700	4,800	9,500	-	1,020	1,042	2,062

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03367	Transmission Storm & Claims				-	7,893	8,016	15,910	-	1,213	1,236	2,450
	Total PWRD Blankets				-	193,048	213,935	406,983	-	48,499	73,977	122,476
Total Non-Incentive Transmission Projects					174,227	359,921	327,499	860,948	170,446	211,516	186,202	568,164
Total Forecast Expenditures (Closing by December 2016)					174,227	110,182	44,948	328,658	170,446	108,165	43,608	322,219
Total Forecast Blanket Expenditures (Closing by December 2016)					-	249,739	282,551	532,289	-	103,351	142,594	245,944