

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

PIN		Project Title	C-WBS	Order #	High/ Low Voltage	OD	Project Total (ISO & non-ISO)				ISO Portion			
							Prior	2018	2019	Total	Prior	2018	2019	Total
Non-Incentive Transmission Projects includes Direct Installation and Removal Expenditures, but excludes any C-WBS or Order # with 0% ISO.														
Other Transmission														
07756	Whirlwind Sub (POS): Equip one (1) 220 kV position to terminate the Rattlesnake-Whirlwind 22	CET-ET-TP-RN-775602	901458993	High	Jun-18		1,232	700	-	1,932	1,232	700	-	1,932
07775	Whirlwind Substation (NU): Equip one (1) 220 kV position to terminate the Desert Flower-Whirh	CET-ET-TP-RN-777500	901515853	High	Jul-18		32	50	-	82	32	50	-	82
Total Other Transmission							1,264	750	-	2,014	1,264	750	-	2,014
Added Facilities														
08090	Bob Switch - Eldorado T/L: Install one transmission structure with two (2) spans from the SCE	ET-ET-AF-CF-809000	902249126	High	Jul-19		1	1,024	1,046	2,071	1	1,024	1,046	2,071
08090	Eldorado Substation (NU): install the following equipment on a dedicated 220kV double breake	CET-ET-LG-AF-809000	902249125	High	Jun-19		2	100	5,806	5,908	2	100	5,806	5,908
08090	Bob Switch to Eldorado 220 kV Interconnection						3	1,124	6,852	7,979	3	1,124	6,852	7,979
Total Added Facilities							3	1,124	6,852	7,979	3	1,124	6,852	7,979
TSP Projects														
05383	Chino 220/66kV - Add a 4th 280MVA, 220/66kV Transformer Bank and Split the Chino 66kV S	CET-ET-LG-TS-538303	901191112	High	Nov-19		2,987	1,189	850	5,025	1,045	416	297	1,759
06824	La Fresa Sub (Phase 2): Install new MEER and cut over existing protection and upgrade CTs	CET-ET-LG-TS-682400	900522611	High	Dec-18		23,713	1,126	-	24,839	8,774	417	-	9,190
07113	El Nido: Install 230 kV (63 kA) double breakers on No. 1 A bank at position 3 and No. 3A bank	CET-ET-LG-TS-711300	901241164	High	Jun-18		10,018	1,239	-	11,257	10,018	1,239	-	11,257
06263	Vestal: Equip 230 KV A-Bank positions (no.1 and 2) with circuit breakers	CET-ET-LG-TS-626302	900312889	High	Aug-17		-	25	-	25	-	24	-	24
06670	Valley 'A/B' 500/115 - Install 115kV GIS	CET-ET-LG-TS-667000	800440341	Low	Jun-17		-	166	-	166	-	10	-	10
07834	Bailey Sub: Install a 28.8 MVAR Cap	CET-ET-LG-TS-783400	901618623	Low	Jun-18		642	721	-	1,363	642	721	-	1,363
Total TSP Projects							37,359	4,467	850	42,676	20,479	2,826	297	23,603
Transmission Project Reliability														
06468	Victor Sub: Upgrade protection and install 4 SEL-351 relays	CET-ET-TP-RL-646800	800063610	High	Dec-17		-	1	-	1	-	1	-	1
07112	Devers: Equip the 230 KV A-Bank positions (3 & 4) with circuit breakers	CET-ET-TP-RL-711200	900305114	High	Dec-17		-	166	-	166	-	166	-	166
07680	Santiago Substation: 225 MVAR synchronous condenser system installation	CET-ET-TP-RL-768000	901333497	High	Dec-17		-	2,000	-	2,000	-	1,920	-	1,920
07518	Springville Sub: Redesign high side feed from bank on bus to double CB at 220kV position 4	CET-ET-TP-RL-751800	901007168	High	Dec-18		6,550	2,623	612	9,785	-	2,098	490	2,588
07119	Walnut: Convert the Mesa 220 kV Line Position and 3A & 4A Bank High Side Positions to	CET-ET-TP-RL-711900	900772538	High	Dec-18		5,798	5,687	1,003	12,488	-	5,687	1,003	6,690
07790	Eagle Mountain Substation: Install a 45 MVAR tertiary reactor (effective 34 MVAR @ 12 kV)	CET-ET-TP-RL-779000	901552346	High	Dec-18		3,100	3,127	-	6,227	-	3,127	-	3,127
07547	Eldorado: Engineer, remove and install equipment for changing the 500kV line pos for the	CET-ET-TP-RL-754700	901107340	High	Jun-18		3,831	700	-	4,531	-	700	-	700
07547	Eldorado-Mohave & Eldorado-Moenkopi lines.													
07547	Eldorado-Mohave 500kV: Remove two (2) existing transmission structures. Install three (3) ne	CET-ET-TP-RL-754701	901107560	High	Jun-18		6,599	400	-	6,999	-	400	-	400
07547	Eldorado-Moenkopi 500 kV: Remove one (1) existing transmission structure. Install one (1) ne	CET-ET-TP-RL-754702	901107562	High	Jun-18		3,916	150	-	4,066	-	150	-	150
07547	Total Eldorado-Mohave and Eldorado-Moenkopi 500kV Line Position Swap						14,346	1,250	-	15,596	-	1,250	-	1,250
07727	Inyokern Substation: Expand existing MEER at Inyokern Substation.	CET-ET-TP-RL-772700	901394462	Low	Aug-19		5	303	-	308	2	112	-	114
07727	Control Substation: Install 12 (12) N60 relays, one (1) satellite clock, and two (2) ethernet switc	CET-ET-TP-RL-772701	901394533	Low	Apr-19		40	165	-	205	34	142	-	176
07727	Kramer Substation Install six (6) N60 relays and one (1) satellite clock. Add points to existing	CET-ET-TP-RL-772704	901394536	High	Jul-19		8	88	-	96	6	69	-	75
07727	Total Digial 395 Project: North-of-Kramer Area Telecom Network and RAS Upgrades						53	556	-	609	42	323	-	365
07763	Lugo 500/220 kV: Install two N60 relays Install one ethernet switch Install one satellite switch	CET-ET-TP-RN-776301	901484303	High	Dec-17		-	1	-	1	-	1.0	-	1
07763	PSC- RTU Point additions at Lugo PSC-Modify Lugo-Victorville SPS program and test													
07763	Eldorado-Lugo 500 kV line: CA side - Install 85 miles of new OPGW between CA/NV border ar	CET-ET-TP-RN-776304	901665563	High	Oct-19		3,849	151	6,900	10,900	3,849	151	6,900	10,900
07763	Eldorado-Lugo 500 kV line: NV Side -Install 2 miles of new OPGW between CA/NV border anc	CET-ET-TP-RN-776305	901665564	High	Dec-19		390	21	50	461	390	21	50	461
07763	Pisgah Sub: Install new telecommunication room.	CET-ET-TP-RL-776300	901671834	High	Dec-18		966	1	-	967	966	1	-	967
07763	Mohave: Instal(2)Relays and (2) Switches	CET-ET-TP-RN-776302	901484315	High	Oct-19		88	21	150	259	88	21	150	259
07763	Lugo Sub: Install new control cables	CET-ET-TP-RN-776307	902249120	High	Dec-19		-	49	-	49	-	49	-	49
07763	Total Lugo-Victorville 500 kV SPS						5,292	244	7,100	12,636	5,292	244	7,100	12,636
07645	Loop Kramer-Lugo 230 kV #1 & #2 lines into Victor substation	CET-ET-TP-RL-764500	901254013	High	Nov-17		-	14	-	14	-	14	-	14

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				Voltage		Prior	2018	2019	Total	Prior	2018	2019	Total
07645	Lugo Sub: Perform Protection upgrade	CET-ET-TP-RL-764501	901254014	High	Nov-17	-	18	-	18	-	18	-	18
07645	Kramer Sub: Perform Protection upgrade	CET-ET-TP-RL-764502	901254015	High	Nov-17	-	7	-	7	-	7	-	7
07645	Total Victor Loop-In Project					-	39	-	39	-	39	-	39
07806	Kramer Substation: Install One (1) 220kV, 45MVAR Bus Shunt Reactor at Pos. 1x	CET-ET-TP-RL-780601	901580779	High	Dec-17	-	38	-	38	-	38	-	38
07806	Kramer Substation: Install two (2) tertiary bank reactors, 45MVAR each (1A and 2A banks)	CET-ET-TP-RL-780600	901580758	High	Jun-16	-	2	-	2	-	2	-	2
07806	Total Kramer High Voltage Mitigation Project					-	39	-	38	-	39	-	39
07120	Chino Sub: equip the No.1A 220kV A-Bank positions with circuit breakers	CET-ET-TP-RL-712000	900713964	High	Jun-18	31,125	1,446	3,599	36,170	20,231	940	2,339	23,511
07120	Mira Loma Sub: Upgrade 220 kV line protection for compatibility with associated SAS protection upgrades at Chino Substation	CET-ET-TP-RL-712002	901573514	High	Jun-18	100	24	-		100	24	-	124
07120	Serrano Sub: Upgrade 220 kV line protection for compatibility with associated SAS protection upgrades at Chino Substation	CET-ET-TP-RL-712003	901192472	High	Jun-19	209	56	-		209	56	-	264
07120	Total Chino 220/66 kV Bank on Circuit Breaker Project					31,434	1,525	3,599	36,170	20,540	1,019	2,339	23,899
07884	Tap the remainig Lighthipe 220kV line to Harborgen substation	CET-ET-TP-RL-788402	901822249	High	Dec-17	296	200	200	696	296	200	200	696
07884	Harbogen-Lng Bch 220kV:Rmv 1 mile of line (REMOVAL ONLY)	CET-ET-TP-RL-788400	901822245	High	Jan-19	856	250	250	1,356	856	250	250	1,356
07884	Lighthipe-Lng Bch 220kV:Rmv 1 mile of line (REMOVAL ONLY)	CET-ET-TP-RL-788401	901822246	High	Jan-19	856	250	250	1,356	856	250	250	1,356
07884	Long Beach Sub: Remove 220kV switchyard	CET-ET-TP-RL-788403	901822250	High	Jun-18	23	300	300	623	23	300	300	623
07884	Total Cerritos Channel Relocation Project					2,031	1,000	1,000	4,031	2,031	1,000	1,000	4,031
08019	CONTROL-SILVER PEAK "A" 55KV Install 11 sets of Remote Fault Indicators (RFIs), includin	CET-ET-TP-RL-801900	TD1269146	Low	Oct-18	13	299	-	313	13	299	-	313
08019	CONTROL-SILVER PEAK "C" 55KV Install 11 sets of Remote Fault Indicators (RFIs), includin	CET-ET-TP-RL-801902	TD1269499	Low	Oct-18	11	236	-	247	11	236	-	247
08019	Total Control-Silver Peak "A" Transmission Project					24	535	-	559	24	535	-	559
06714	Rio Hondo: Equip the 230kV A-Banks at positions 2, 3, 9 & 10 with double breaker configuration--circuit breakers, disconnect switches, lightning arresters.	CET-ET-TP-RL-671400	800135527	High	Jul-14	-	62	-	62	-	24.8	-	25
06791	Lugo 500 kV Substation breaker installation for No. 1AA & No. 2AA banks	CET-ET-TP-RL-679100	800308934	High	Jul-19	6,359	391	1,175	7,925	6,359	391	1,175	7,925
07060	Vista: Replace (2) Conductors on Mira Loma#2 220kV Line Position	CET-ET-TP-RN-706000	900639015	High	Apr-18	-	12	210	222	-	12	210	222
07115	Johanna:Install double breakers on 3A+4A	CET-ET-TP-RL-711500	902067053	High	May-19	400	1,439	4,268	6,107	400	1,439	4,268	6,107
07116	Villa Park: Equip the existing No. 2A bank currently connected to 220 kV position 4 South bus with double breaker configuration	CET-ET-TP-RL-711600	900645440	High	May-16	-	17	-	17	-	17	-	17
07241	Eldorado: Install (2) 500 kV CBs, (3) 500 kV gang operated disconnects and other associated equipment to terminate the 3 AA bank to the number 3 position on the Eldorado 500 kV bus	CET-ET-TP-RL-724100	900713966	High	Jun-16	-	25	-	25	-	25	-	25
07248	New 500/230 kV AA-Bank at Eldorado Connected to the New 220 kV SCE Owned Switchyard	CET-ET-TP-RN-724800	900692364	High	Oct-15	-	827	-	827	-	827	-	827
07511	Antelope-Pardee 500kV: Install Marker Balls and Lighting per FAA requirements	CET-PD-OT-LM-751101	900719387	High	Dec-18	1,527	1,600	-	3,127	1,527	1,600	-	3,127
Total Transmission Project Reliability						76,914	23,166	18,967	118,658	36,216	21,785	17,585	75,586

Infrastructure Replacement

04211	Replace Bulk Power Circuit Breakers	CET-ET-IR-CB-421100		High	Blanket Specifics	-	11,528	268	11,796	-	11,528	268	11,796
04329	Non-Bulk Circuit Breaker Replacement Program (115kV and Below)	CET-ET-IR-CB-432911		Low	Blanket Specifics	-	259	-	259	-	259	-	259
03138	LADWP DC electrode replacement (LAND Segment)	CET-OT-OT-ME-313802	900250937	High	Jun-18	13,152	671	13	13,836	13,152	671.0	12.5	13,836
03138	LADWP DC electrode replacement (OCEAN Segment)	CET-OT-OT-ME-313802	901653468	High	Dec-18	1,257	25,300	700	27,257	1,257	25,300	700	27,257
03138	LADWP DC electrode replacement					14,410	25,971	713	41,093	14,410	25,971	713	41,093
06197	On-line Dissolved Gas Analysis of Bulk Power Transformer Banks	CET-ET-IR-ME-619700		High	Blanket Specifics	-	289	171	460	-	289	171	460
04343	Non-Bulk Relay Replacement Program ("SRRP")	CET-ET-IR-RP-434301		Low	Blanket Specifics	-	1,115	1,058	2,173	-	1,115	1,058	2,173
05089	Bulk Power 500kV & 220kV Line Relay Replacement	CET-ET-IR-RP-508900		High	Blanket Specifics	-	6,388	10,063	16,451	-	6,388	10,063	16,451
04756	Substation Miscellaneous Equipment Additions & Betterment	CET-ET-IR-ME-475600		High	Blanket Specifics	-	7,967	8,111	16,078	-	7,967	8,111	16,078
05210	Substation Transformer Bank Replacement Program (AA-Bank & A-Bank)	CET-ET-IR-TB-521001		High	Blanket Specifics	-	19,223	21,018	40,241	-	19,223	21,018	40,241
07924	Antelope: Substation Maintenance and Test Building Improvements program	COS-00-RE-AD-SR0001	801432302	High	Dec-19	338	569	8,526	9,433	338	569	8,526	9,433
07956	Pardee: Substation Maintenance and Test Building Improvements program	COS-00-RE-AD-SR0003	801432580	High	Dec-19	339	127	8,756	9,221	302	113	7,801	8,216
07957	Devers: Substation Maintenance and Test Building Improvements program	COS-00-RE-AD-SR0004	801432305	High	Jul-19	335	599	8,208	9,141	274	490	6,719	7,484
07958	Santa Clara: Substation Maintenance and Test Building Improvements program	COS-00-RE-AD-SR0005	801432583	High	Dec-18	293	7,045	182	7,520	77	1,842	47	1,967
07959	Rector: Substation Maintenance and Test Building Improvements program	COS-00-RE-AD-SR0006	801432582	High	Dec-18	318	10,094	-	10,412	184	5,837	-	6,021
Total Substation Maintenance and Test Building Improvements Program						1,623	18,434	25,671	45,728	1,175	8,852	23,094	33,121
07637	Substation Facility Capital Maintenance	COS-00-RE-MA-NE7637		High	Blanket Specifics	-	15,000	15,920	30,920	-	1,503	1,595	3,098

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				Voltage		Prior	2018	2019	Total	Prior	2018	2019	Total
07392	Seismic Program - Trans Subs (FERC)	COS-00-SP-TD-000000		High	Blanket Specifics	-	12,814	12,814	25,629	-	12,814	12,814	25,629
07392	Seismic Program - Trans Lines	COS-00-SP-TD-000002		High	Blanket Specifics	-	3,210	953	4,163	-	3,210	953	4,163
07392	Seismic Assessment and Mitigation Program for Transmission Assets					-	16,024	13,767	29,792	-	16,024	13,767	29,792
07820	NERC CIP-14 Physical Security Enhancements	COS-00-CS-CS-782000		High	Blanket Specifics	-	11,252	2,845	14,097	-	10,031	2,536	12,567
07820	Mira Loma: NERC CIP-14 Physical Security Enhancements	CET-ET-IR-ME-782001	901656354	High	Dec-18	4,839	12,606	-	17,445	4,114	10,719	-	14,833
07820	Pardee: NERC CIP-14 Physical Security Enhancements	CET-ET-IR-ME-782002	901656355	High	Dec-18	5,982	3,211	-	9,193	5,329	2,861	-	8,190
07820	Vincent: NERC CIP-14 Physical Security Enhancements	CET-ET-IR-ME-782005	901656358	High	Jul-19	1,108	486	10,050	11,645	1,108	486	10,050	11,645
07820	Eldorado: NERC CIP-14 Physical Security Enhancements	CET-ET-IR-ME-782008	901657121	High	Dec-19	58	300	9,988	10,346	58	300	9,988	10,346
07820	Lugo: PHY-Physical Security Project	CET-ET-IR-ME-782009	902072001	High	Apr-18	2,388	1,092	-	3,480	2,388	1,092	-	3,480
07820	Total Substation Physical Security Enhancements Project					14,374	28,947	22,884	62,725	12,997	25,488	22,575	61,061
	Total Infrastructure Replacement					30,406	151,145	119,644	297,716	28,581	124,607	102,434	255,623
Grid Applications													
06428	Generation Interconnection Remedial Action Scheme (RAS)	CET-OT-OT-BP-642800		High	Blanket Specifics	-	43	-	43	-	0	-	0
07666	Total CRAS Program - Phase 1: Colorado River Corridor RAS	CET-ET-GA-CR-766600		High	Blanket Specifics	-	4,073	-	4,073	-	4,073	-	4,073
08009	Northern CRAS to Tehachapi CRAS	CET-ET-GA-CR-800900		High	Blanket Specifics	-	1,973	2,897	4,869	-	1,973	2,897	4,869
06446	Phasor Measurement System Installations	CET-ET-GA-EM-644606		High	Blanket Specifics	-	1,513	297	1,809	-	1,513	297	1,809
	Total Grid Apps					-	7,601	3,194	1,853	-	7,559	3,194	10,752
PWRD Blankets													
03363	Substation Planned Maintenance Replacements	CET-PD-IR-SP-SUBSNW		High	Blanket Specifics	-	2,145	2,192	4,336	-	259	264	523
03363	Substation Unplanned Maintenance Replacements	CET-PD-BM-SU-SUBSNW		High	Blanket Specifics	-	10,621	10,854	21,475	-	587	600	1,187
03363	Substation - Storm	CET-PD-ST-SS-SUBSNW		High	Blanket Specifics	-	1,137	1,167	2,304	-	241	247	489
03363	Substation Maintenance, Breakdown, & Storm					-	13,902	14,212	28,114	-	1,087	1,112	2,199
03364	Transmission Maintenance Planned	CET-PD-IR-TP-TRMETE		High	Blanket Specifics	-	2,824	1,472	4,296	-	2,824	1,472	4,296
03364	Transmission Breakdown Maintenance Unplanned	CET-PD-BM-TU-TREAST		High	Blanket Specifics	-	2,362	2,414	4,776	-	589	602	1,192
03364	Transmission Maintenance & Breakdown Maintenance					-	5,186	3,886	9,072	-	3,413	2,074	5,488
03364	Transmission Deteriorated Pole Repl & Restoration	CET-PD-IR-TR-TRMETW		High	Blanket Specifics	-	76,265	1,022	77,287	-	860	12	872
03364	Pole Loading Transmission Pole Replacements	CET-PD-IR-PT-TRMETW		High	Blanket Specifics	-	15,616	15,959	31,574	-	176	180	356
03364	Transmission Poles (Pole Loading & Deteriorated Pole Programs)					-	91,881	16,981	108,862	-	1,036	192	1,228
07298	Transmission Line Rating Remediation	CET-PD-OT-PJ-729801		High	Blanket Specifics	-	69,476	78,679	148,155	-	69,476	78,679	148,155
07867	TLRR Eldorado-Lugo-Pisqah 220kV Transmission	CET-PD-OT-PJ-786700		High	Blanket Specifics	-	1,935	1,291	3,226	-	1,935	1,291	3,226
07904	TLRR Ivanpah-Coolwater-Kramer-Inyokern 115kV Subtrans	CET-PD-OT-PJ-790400		Low	Blanket Specifics	-	2,087	1,868	3,955	-	2,087	1,868	3,955
07905	TLRR Control-Haiwee 115kV Subtrans	CET-PD-OT-PJ-790500		Low	Blanket Specifics	-	1,916	2,777	4,693	-	1,916	2,777	4,693
07906	TLRR Control-Silver Peak 55kV Subtrans	CET-PD-OT-PJ-790600		Low	Blanket Specifics	-	1,198	1,700	2,899	-	1,198	1,700	2,899
	Transmission Line Rating Remediation (TLRR)					-	76,612	86,316	162,928	-	76,612	86,316	162,928
03362	Critical Infrastructure Spare - FERC Spare Transformer Equipment Program (STEP)/Emergen	CET-PD-CI-CI-CRINSP		High	Blanket Specifics	-	84	-	84	-	84	-	84
03367	Substation - Claim	CET-PD-CL-SC-SUBSNW		High	Blanket Specifics	-	931	955	1,886	-	34	35	68
03367	Transmission - Claim	CET-PD-CL-TC-TREAST		High	Blanket Specifics	-	2,946	3,010	5,956	-	84	86	171
03367	Transmission - Storm	CET-PD-ST-TS-TREAST		High	Blanket Specifics	-	5,019	5,130	10,149	-	996	1,017	2,013
03367	Transmission Storm & Claims					-	8,896	9,095	17,991	-	1,114	1,138	2,252
	Total PWRD Blankets					-	196,561	130,490	327,051	-	83,346	90,832	174,178
Total Non-Incentive Transmission Projects						145,947	384,814	279,996	797,946	86,544	241,998	221,193	549,735
Total Forecast Specific Project Expenditures (Closing by December 2019)						145,947	91,607	73,091	306,775	86,544	76,765	68,580	231,888
Total Forecast Blanket Expenditures (Closing by December 2019)						-	293,208	206,906	491,171	-	165,232	152,614	317,846