

CAISO
2016 Cost of Service Study

2016 Revenue Requirement						Market Services Split			System Operations Split		
Component	2016 Budget	Market Services	System Operations	CRRs	Indirect	Total	Real Time Market	Day Ahead Market	Total	Real Time Dispatch	BA Services
	<i>(amounts in thousands)</i>					<i>(amounts in thousands)</i>			<i>(amounts in thousands)</i>		
Direct Costs	\$ 71,611	\$ 18,652	\$ 41,180	\$ 889	\$ 10,890	\$ 18,652	\$ 13,966	\$ 4,686	\$ 41,180	\$ 15,257	\$ 25,923
Indirect Costs	65,188	-	-	-	65,188	-	-	-	-	-	-
Non-ABC Costs	32,541	1,390	1,519	50	29,582	1,390	1,337	53	1,519	1,407	112
Total O&M	169,340	20,042	42,699	939	105,660	20,042	15,303	4,739	42,699	16,664	26,035
O&M Direct %		31%	67%	2%		100%	76%	24%	100%	39%	61%
Debt Service 2013 bonds	16,900	-	-	-	16,900	-	-	-	-	-	-
Cash Funded Capital	24,000	-	-	-	24,000	-	-	-	-	-	-
Total Debt Service and Capital	40,900	-	-	-	40,900	-	-	-	-	-	-
Other Income	(10,800)	(1,470)	(4,430)	-	(4,900)	(1,470)	(1,394)	(76)	(4,430)	(1,635)	(2,795)
Operating Cost Reserve Adj	(4,100)	-	-	-	(4,100)	-	-	-	-	-	-
Total Before Allocation of Indirect	195,340	18,572	38,269	939	137,560	18,572	13,909	4,663	38,269	15,029	23,240
Direct Costs %		32%	66%	2%		100%	75%	25%	100%	39%	61%
Allocate Indirect		44,019	90,790	2,751	(137,560)	44,019	33,014	11,005	90,790	35,408	55,382
Total Revenue Requirement	\$ 195,340	\$ 62,591	\$ 129,059	\$ 3,690		\$ 62,591	\$ 46,923	\$ 15,668	\$ 129,059	\$ 50,437	\$ 78,622
Cost Category Percentages	100%	32%	66%	2%		100%	75%	25%	100%	39%	61%
Revenue Requirement	\$ 195,340	\$ 62,591	\$ 129,059	\$ 3,690		\$ 62,591	\$ 46,923	\$ 15,668	\$ 129,059	\$ 50,437	\$ 78,622
Less Fees											
Bid Segment Fees	(290)	(290)	-	-		(290)	(145)	(145)	-	-	-
Inter-SC Trade Fees	(2,321)	(2,321)	-	-		(2,321)	-	(2,321)	-	-	-
SCID Fees	(2,592)	(2,592)	-	-		(2,592)	(1,296)	(1,296)	-	-	-
TOR Fees	(675)	-	(675)	-		-	-	-	(675)	(675)	-
CRR Auction Bid Fees	(849)	-	-	(849)		-	-	-	-	-	-
Total Fees	(6,727)	(5,203)	(675)	(849)		(5,203)	(1,441)	(3,762)	(675)	(675)	-
Remaining Revenue Requirement to Collect	\$ 188,613	\$ 57,388	\$ 128,384	\$ 2,841		\$ 57,388	\$ 45,482	\$ 11,906	\$ 128,384	\$ 49,762	\$ 78,622
Estimated Volumes		552,607	467,311	838,191		552,607	552,607	552,607	467,311	467,311	467,311
Less Grandfathered Generation		-	(5,694)	-		-	-	-	(5,694)	(5,694)	(5,694)
Estimated Volumes		552,607	461,617	838,191		552,607	552,607	552,607	461,617	461,617	461,617
2016 Rates Using Revised Percentages		\$ 0.1038	\$ 0.2781	\$ 0.0034		\$ 0.1038	\$ 0.0823	\$ 0.0215	\$ 0.2781	\$ 0.1078	\$ 0.1703
EIM (combined as one rate)	Combined	RT Mkt	RT Dispatch			RT Mkt			RT Dispatch		
Costs	\$ 95,244	\$ 45,482	\$ 49,762			\$ 45,482			\$ 49,762		
Percentage of costs	100%	48%	52%			79%			39%		
EIM Rate (using component rates)	\$ 0.1901	\$ 0.0823	\$ 0.1078			\$ 0.1038	\$ 0.0823		\$ 0.2781	\$ 0.1078	
EIM Rate	\$ 0.1901										

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2016 Revenue Requirement: Debt Service Bonds and Cash Funded Capital

Component	Market Services	System Operations	CRR Svcs	Indirect	2016 Budget	Market Services	System Operations	CRR Svcs	Indirect	Comments
Total Debt Service 2013 Bonds				100%	\$ 16,900	\$ -	\$ -	\$ -	\$ 16,900	Attributes are not distinguishable to any specific category.
Cash Funded Capital				100%	\$ 24,000	\$ -	\$ -	\$ -	\$ 24,000	Amounts and projects vary yearly thus attributes are not distinguishable to any specific category.

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2016 Revenue Requirement: Indirect ABC Costs, Non-ABC Costs, Other Costs and Revenue and Operating Costs Reserve Adjustment										Market Services Split		System Operations Split		Market Services Split			System Operations Split												
Component	Market Services	System Operations	CRR Services	Indirect	2016 Budget	Market Services	System Operations	CRR Services	Indirect	Comments	Real Time Market	Day Ahead Market	Real Time Dispatch	BA Services	Total	Real Time Market	Day Ahead Market	Total	Real Time Dispatch	BA Services									
(amounts in thousands)										(amounts in thousands)										(amounts in thousands)									
Indirect ABC Costs																													
Man Human Capabilities (MHC) (80003)				100%	3,173	0	-	0	3,173	Attributes are not distinguishable to any specific category.					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -									
Plan & Manage Business (PMB) (80008)				100%	12,327	0	-	0	12,327	Attributes are not distinguishable to any specific category.					-	-	-	-	-	-									
Support Business Services (SBS) (80009)				100%	49,688	0	-	0	49,688	Attributes are not distinguishable to any specific category.					-	-	-	-	-	-									
Total ABC Support Costs					65,188	0	-	0	65,188						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -									
Non-ABC Support Costs																													
Chief Executive Officer Division																													
Bank Fees				100%	290	0	-	0	290	Attributes are not distinguishable to any specific category.					-	-	-	-	-	-									
SSAE 16 Audit	45%	45%	10%		500	225	225	50	-	Use 80007 Task 412	80%	20%	100%		225	180	45	225	225	-									
Operations Audit	21%	79%			\$ 224	47	\$ 177	0	\$ -	Use 80005 total	82%	18%	37%	63%	47	39	8	177	65	112									
Insurance				100%	2,231	0	-	0	2,231	Attributes are not distinguishable to any specific category.					-	-	-	-	-	-									
HR Support				100%	2,110	0	-	0	2,110	Attributes are not distinguishable to any specific category.					-	-	-	-	-	-									
CEO Total					5,355	272	402	50	4,631																				
Technology Division																													
Hardware and Software Maintenance and Equipment				100%	\$ 11,838	0	\$ -	0	\$ 11,838	Attributes are not distinguishable to any specific category.					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -									
Telecommunications				100%	5,100	0	-	0	5,100	Attributes are not distinguishable to any specific category.					-	-	-	-	-	-									
Occupancy				100%	5,013	0	-	0	5,013	Attributes are not distinguishable to any specific category.					-	-	-	-	-	-									
Technology Total					21,951	0	-	0	21,951																				
MQRI Division																													
Intermittent Resource Forecasting Costs	50%	50%			\$ 2,235	1118	\$ 1,117	0	\$ -	Use 80005 Task 353	100%		100%		1,118	1,118	-	1,117	1,117	-									
MQRI Total					2,235	1118	1,117	0	-																				
General Counsel Division																													
Outside Legal				100%	3,000	0	-	0	3,000	Attributes are not distinguishable to any specific category.					-	-	-	-	-	-									
General Counsel Total					3,000	0	-	0	3,000																				
Total Non-ABC Support Costs					\$ 32,541	\$ 1,390	\$ 1,519	\$ 50	\$ 29,582						\$ 1,390	\$ 1,337	\$ 53	\$ 1,519	\$ 1,407	\$ 112									
Other Costs and Revenue																													
Energy Imbalance Interconnection Fees				100%	\$ 2,500	\$ -	\$ -	\$ -	\$ 2,500						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -									
Intermittent Resource Forecasting Fees	50%	50%			2,100	1,050	1,050	-	-	Use 80005 Task 353	100%		100%		1,050	1,050	-	1,050	1,050	-									
COI Path Operator Fees	21%	79%			2,000	420	1,580	-	-	Use 80005 total	82%	18%	37%	63%	420	344	76	1,580	585	995									
Interest Earnings				100%	2,000	-	-	-	2,000						-	-	-	-	-	-									
Large Generation Interconnection Fees		100%			1,800	-	1,800	-	-	Use 80001 Task 203				100%	-	-	-	1,800	-	1,800									
SC Application Fees				100%	300	-	-	-	300						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -									
MSS Penalties				100%	100	-	-	-	100						-	-	-	-	-	-									
Total Other Costs and Revenue					\$ 10,800	\$ 1,470	\$ 4,430	\$ -	\$ 4,900						\$ 1,470	\$ 1,394	\$ 76	\$ 4,430	\$ 1,635	\$ 2,795									
Operating Costs Reserve Adjustment																													
Adjustment in 15% reserve for O&M				100%	\$ (600)	\$ -	\$ -	\$ -	\$ (600)						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -									
25% debt service reserve 2013 bonds				100%	3,400	-	-	-	3,400						-	-	-	-	-	-									
Revenue changes				100%	90	-	-	-	90						-	-	-	-	-	-									
Expense changes				100%	1,210	-	-	-	1,210	Attributes are not distinguishable to any specific category.					-	-	-	-	-	-									
Total Operating Costs Reserve Adjustment					\$ 4,100	\$ -	\$ -	\$ -	\$ 4,100						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -									

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2016 Revenue Requirement: ABC Direct Operating Activities											Market Services Split		System Operations Split		Market Services Split			System Operations Split			
Code	ABC Level 2 Activities	Market Services	System Operations	CRR Services	Indirect	2016 Budget	Market Services	System Operations	CRR Services	Indirect	Real Time Market	Day Ahead Market	Real Time Dispatch	BA Services	Total	Real Time Market	Day Ahead Market	Total	Real Time Dispatch	BA Services	
											(amounts in thousands)										
80001	Develop Infrastructure (DI)																				
201	Develop & Monitor Regulatory Contract Procedures				100%	\$ 441	\$ -	\$ -	\$ -	\$ 441					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
202	Manage Generator Interconnection Agreements (GIA)		100%			\$ 358	-	358	-	-				100%	-	-	-	358	-	358	
203	Manage Generator Interconnection Process (GIP)		100%			\$ 2,316	-	2,316	-	-				100%	-	-	-	2,316	-	2,316	
204	Manage Long Term Transmission Planning		100%			\$ 4,775	-	4,775	-	-				100%	-	-	-	4,775	-	4,775	
205	Manage Transmission and Resource Implementation		100%			\$ 252	-	252	-	-				100%	-	-	-	252	-	252	
206	Manage Transmission Maintenance Standards		100%			\$ 635	-	635	-	-				100%	-	-	-	635	-	635	
207	NERC/ WECC Loads & Resources Data Requests		100%			\$ 308	-	308	-	-				100%	-	-	-	308	-	308	
208	Seasonal Assessment		100%			\$ 224	-	224	-	-				100%	-	-	-	224	-	224	
209	Manage Queue		100%			\$ 879	-	879	-	-				100%	-	-	-	879	-	879	
	Total DI					10,188	-	9,747	-	441					-	-	-	9,747	-	9,747	
						-															
80002	Develop Markets (DM)																				
226	Manage Regulatory Filings				100%	499	-	-	-	499					-	-	-	-	-	-	-
227	Manage Tariff Amendments				100%	174	-	-	-	174					-	-	-	-	-	-	-
228	Manage Post Order, Rehearing, and Compliance				100%	14	-	-	-	14					-	-	-	-	-	-	-
229	Develop State/ Federal Regulatory Policy				100%	687	-	-	-	687					-	-	-	-	-	-	-
230	BPM Change Management				100%	27	-	-	-	27					-	-	-	-	-	-	-
231	Develop Infrastructure Policy		100%			1,548	-	1,548	-	-				100%	-	-	-	1,548	-	1,548	
232	Perform Market Analysis		100%			2,364	2,364	-	-	-	80%	20%			2,364	1,891	473	-	-	-	-
233	Market Design & Infrastructure Policy		100%			2,560	2,560	-	-	-	50%	50%			2,560	1,280	1,280	-	-	-	-
234	Regulatory Contract Negotiations				100%	253	-	-	-	253					-	-	-	-	-	-	-
	Total DM					8,126	4,924	1,548	-	1,654					4,924	3,171	1,753	1,548	-	1,548	
						-															
80004	Manage Market & Reliability Data & Modeling (MMR)																				
301	Manage Full Network Model (FNM) Maintenance	50%	50%			1,594	797	797	-	-	50%	50%			797	399	398	797	797	-	-
302	Plan & Develop Operations Simulator Training	20%	80%			652	130	522	-	-	100%			100%	130	130	-	522	522	-	-
304	Energy Measure (EMAA) Telemetry		100%			381	-	381	-	-				20%	80%	-	-	381	76	305	-
307	Manage Congestion Revenue Rights (CRR)				100%	495	-	-	495	-					-	-	-	-	-	-	-
308	Manage Credit & Collateral	45%	45%	10%		760	342	342	76	-	50%	50%			342	171	171	342	342	-	-
309	Resource Management	50%	50%			1,071	536	535	-	-	80%	20%			536	429	107	535	268	267	-
310	Manage Reliability Requirements		100%			292	-	292	-	-					-	-	-	292	-	292	-
311	Manage Operations Planning		100%			1,261	-	1,261	-	-				20%	80%	-	-	1,261	252	1,009	-
312	Manage WECC Seasonal Studies		100%			49	-	49	-	-				20%	80%	-	-	49	10	39	-
314	Manage & Facilitate Procedure Maintenance	20%	80%			758	152	606	-	-	100%			20%	80%	152	152	606	121	485	-
315	Procedure Admin and Reporting	20%	80%			24	5	19	-	-	100%			100%	5	5	-	19	19	-	-
316	Operations Systematic Approach to Training	20%	80%			974	195	779	-	-	100%			100%	195	195	-	779	779	-	-
317	Execute & Track Operations Training	20%	80%			1,242	248	994	-	-	100%			100%	248	248	-	994	994	-	-
320	Provide Stakeholder Training				100%	304	-	-	-	304					-	-	-	-	-	-	-
321	SC Management				100%	180	-	-	-	180					-	-	-	-	-	-	-
322	Register, Modify, and Terminate PDR/RDRR Resource	50%	50%			159	79	80	-	-	50%	50%			79	40	39	80	40	40	-
323	Calculate & Monitor Energy Costs & Indices	100%				160	160	-	-	-	50%	50%			160	80	80	-	-	-	-
	Total MMR					10,356	2,644	6,657	571	484					2,644	1,849	795	6,657	4,220	2,437	
						-															

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2016 Revenue Requirement: ABC Direct Operating Activities											Market Services Split		System Operations Split		Market Services Split			System Operations Split			
Code	ABC Level 2 Activities	Market Services	System Operations	CRR Services	Indirect	2016 Budget	Market Services	System Operations	CRR Services	Indirect	Real Time Market	Day Ahead Market	Real Time Dispatch	BA Services	Total	Real Time Market	Day Ahead Market	Total	Real Time Dispatch	BA Services	
80005	Manage Market & Grid (MMG)																				
352	Support Day Ahead Market	100%				297	297	-	-	-		100%			297	-	297	-	-	-	
353	Support Real Time Market	50%	50%			1,731	866	865	-	-	100%				866	866	-	865	865	-	
355	Manage Outages		100%			2,775	-	2,775	-	-					-	-	-	2,775	555	2,220	
360	Real Time Operations		100%			140	-	140	-	-					-	-	-	140	70	70	
362	Manage Operations Engineering Support	20%	80%			1,733	347	1,386	-	-	50%	50%			347	174	173	1,386	1,386	-	
363	RTO Shift Supervisor	20%	80%			2,081	416	1,665	-	-	100%				416	416	-	1,665	1,332	333	
365	Manage Real Time Operations - Transmission & Electric System		100%			4,877	-	4,877	-	-					-	-	-	4,877	-	4,877	
366	Manage Real Time Interchange Scheduling		100%			3,451	-	3,451	-	-			20%	80%	-	-	-	3,451	690	2,761	
367	Manage Annual Operational Assessment				100%	524	-	-	-	524					-	-	-	-	-	-	
358 + 368	Manage Day Ahead and Market Operations (Manage Market Operations)	80%	20%			3,090	2,472	618	-	-	80%	20%			2,472	1,978	494	618	494	124	
364 +369	Manage Real Time Operations Generation	20%	80%			4,294	859	3,435	-	-	100%				859	859	-	3,435	1,718	1,717	
	Total MMG					24,993	5,257	19,212	-	524					5,257	4,293	964	19,212	7,110	12,102	
	MMG %					100%	21%	79%							100%	82%	18%	100%	37%	63%	
80007	Manage Operations Support & Settlements (MOS)																				
401	Perform Price Validation	50%	50%			90	45	45	-	-	80%	20%	100%		45	36	9	45	45	-	
402	Manage Dispute Analysis & Resolution				100%	515	-	-	-	515					-	-	-	-	-	-	
403	Manage Market Quality System (MQS)	50%	50%			1,371	685	686	-	-	80%	20%	100%		685	548	137	686	686	-	
404	Manage Data Requests				100%	128	-	-	-	128					-	-	-	-	-	-	
405	Manage Reg No Pay and Deviation Penalties Calculations		100%			2	-	2	-	-					-	-	-	2	-	2	
406	Manage Rules of Conduct				100%	155	-	-	-	155					-	-	-	-	-	-	
408	ISO RIG Engineering		100%			87	-	87	-	-					-	-	-	-	-	87	
409	Meter Data Acquisition and Processing		100%			793	-	793	-	-			100%		-	-	-	793	793	-	
411	Manage Market Clearing	45%	45%	10%		87	39	39	9	-	80%	20%	100%		39	31	8	39	39	-	
412	Manage Market Billing & Settlements	45%	45%	10%		1,665	749	749	167	-	80%	20%	100%		749	599	150	749	749	-	
413	Manage Reliability Must Run (RMR) Settlements		100%			39	-	39	-	-			100%		-	-	-	39	39	-	
414	Manage Settlements Quarterly Release Cycle	45%	45%	10%		1,416	637	637	142	-	80%	20%	100%		637	510	127	637	637	-	
416	Market Issues Steering Committee	80%	20%			15	12	3	-	-	80%	20%	100%		12	10	2	3	3	-	
417	Perform Market Reporting	50%	50%			58	29	29	-	-	50%	50%	100%		29	15	14	29	29	-	
418	Manage Good Faith Negotiation (GFN) Requests				100%	30	-	-	-	30					-	-	-	-	-	-	
419	Manage Price Corrections	80%	20%			1,841	1,473	368	-	-	80%	20%	100%		1,473	1,178	295	368	368	-	
	Total MOS					8,292	3,669	3,477	318	828					3,669	2,927	742	3,477	3,388	89	
80010	Support Customers & Stakeholders (SCS)																				
539	Representing the ISO Externally				100%	240	-	-	-	240					-	-	-	-	-	-	
601	Manage Client Inquiries	80%	20%			1,617	1,294	323	-	-	80%	20%	100%		1,294	1,035	259	323	323	-	
602	Strategic Client Account Management	80%	20%			1,080	864	216	-	-	80%	20%	100%		864	691	173	216	216	-	
603	Manage Stakeholder Process				100%	543	-	-	-	543					-	-	-	-	-	-	
605	Develop PTDS				100%	-	-	-	-	-					-	-	-	-	-	-	
606	Serve New Comers				100%	119	-	-	-	119					-	-	-	-	-	-	
609	Government Affairs				100%	3,984	-	-	-	3,984					-	-	-	-	-	-	
610	Communications & Public Relations				100%	2,073	-	-	-	2,073					-	-	-	-	-	-	
	Total MOS					9,656	2,158	539	-	6,959					2,158	1,726	432	539	539	-	
	Total Direct O&M					\$ 71,611	\$ 18,652	\$ 41,180	\$ 889	\$ 10,890					\$ 18,652	\$ 13,966	\$ 4,686	\$ 41,180	\$ 15,257	\$ 25,923	
	Direct O&M %					100%	26%	58%	1%	15%					100%	75%	25%	100%	37%	63%	