Exhibit No.:
Issues: *South Harper Peaking Facility*
Witness: *Michael C. Blaha*
Sponsoring Party: *Calpine Central, L.P.*
Type of Exhibit: *Direct Testimony*
Case No.: *ER-2005-0436*
Date Prepared: *October 14, 2005*

BEFORE THE PUBLIC SERVICE COMMISSION OF THE STATE OF MISSOURI

CASE NO. ER-2005-0436

In the Matter of Aquila, Inc. d/b/a Aquila Networks-MPS and Aquila Networks-L&P for Authority to File Tariffs Increasing Electric Rates for the Service Provided to Customers in the Aquila Networks-MPS and Aquila-L&P Area

Submitted on behalf of CALPINE CENTRAL, L.P.

Direct Testimony

Of

MICHAEL C. BLAHA

October 14, 2005

DIRECT TESTIMONY OF

MICHAEL C. BLAHA

CALPINE CENTRAL, L.P.

CASE NO. ER-2005-0436

Q. Please state your name, business affiliation and address.

A. My name is Michael C. Blaha. I am Director, Price Forecasting for Calpine Corporation ("Calpine"). My business address is 717 Texas Avenue, Suite 1000, Houston, Texas 77002.

Q. Please describe you business experience and educational background.

A. I became an employee of Calpine in October 2000. In my current position I am responsible for the long term forecast of electric prices throughout the North American Interconnect Network. I provide energy price forecasts, capacity price forecasts and market fundamentals in support of Calpine's investment decisions, structured transactions and the long-term forward curves. Prior to joining Calpine, I co-founded Altos Management Partners and prepared market assessments to support investment decisions and financing due diligence for various clients, including Calpine. Prior to Altos, I was under contract to PanEnergy in connection with its expansion into the merchant electric business. I assisted PanEnergy with and through its merger with Duke Energy Corp. From 1990 to 1995, I worked for CSW Energy, the independent power producer of Central and South West Corp. (CSW). During this tenure I participated in the development of CSW Energy's first six cogeneration ventures in four states. I also managed the asset optimization efforts on these facilities. From 1989 to 1990, I was the assistant project manager of the proposed 2,000 MW Thousand Springs coal facility in Nevada, that was being developed by a subsidiary of Sierra

Pacific Resources, Inc. From 1982 to 1989, I worked for CSW Services, the management arm of Central and South West, in Financial Planning. My duties included managing the system generation expansion plans of the Central and Southwest system of four electric operating companies across Texas, Oklahoma, Louisiana and Arkansas. In all, I have more than twenty-three years of experience in utility and merchant power business. I received a B.S. degree in Chemistry and Computer Science from Iowa State University in 1979. I received an M.B.A. from Texas A&M University in 1981, while concurrently completing all my course work for a Ph.D. in Physical Chemistry. I am a member of Phi Lambda Upsilon, which is the National Chemical Honorary Society.

Q. What is the purpose of your testimony?

A. While this rate case involves multiple complex issues, my comments will focus primarily on three main points. First, I will discuss the transfer pricing of the turbines utilized in the Harper Peaking Facility ("Harper") facility. Second, I will discuss the cost differential associated with the dispatch of the higher heat rate units at Harper as opposed to combined cycle facilities such as Calpine's Aries plant. Additionally, I will address Aquila's failure to consider multiple market alternatives prior to constructing Harper.

Q. Are you sponsoring any appendices?

A. Yes, I am sponsoring several appendices. Appendix A is a PowerPoint slide show illustrating Harper's cost ineffectiveness relative to the Aires facility. Appendix B was used to develop the figures illustrated in Appendix A. Appendix C is a chart describing the relative start charges and associated costs for dispatching a combined cycle facility. Appendix D is a visual illustration regarding previous offers made by Calpine relative to Harper and the "Project X" placeholder described by Aquila.

Q. Please describe the relationship of Calpine and Aquila regarding Calpine's Aries facility.

A. Calpine and Aquila were previously equity partners in the ownership of the Aries plant. The partnership was dissolved on March 26, 2004, at which time a contract remained in place for the offtake of the facility. On June 1, 2005, that contract expired and currently there is no relationship, contractual or otherwise, as Calpine is the sole owner of Aries.

Q. What is your understanding of the reason(s) for constructing Harper?

A. Calpine was a previous partner with Aquila in the Aries facility. As Calpine has been an active participant in multiple regulatory proceedings across the country, Calpine is familiar with the attempts by utilities to unburden their balance sheets of non-regulated assets by placing them into rate base and converting them into regulated assets. The combustion turbines deployed at Harper were previously designated as non-regulated assets. There are two choices available to produce cash flow. The generator can either be sold or used in a new generation facility. At current market conditions, the sale would most likely be at a loss. Thus, Aquila chose to transfer its cost into a regulated asset to get a guaranteed full recovery of its investment.

Q. Can you enumerate the potential impact on Aquila and its ratepayers of the transfer of Harper's combustion turbines from non-regulated to regulated assets?

A. Yes, according to a widely used trade publication, *Gas Turbine World*, in 2001-2002 the price of a D5A (the type of combustion turbines utilized at Harper) was $25.8 million per turbine for a total of $77.4 million for the three units, which is approximately the amount that Aquila has requested in its rate case. In 2004-2005, the price was $18.7 million for a total of $56.1 million for the three units. If Aquila had sold the turbines, Aquila would have incurred

a loss of $21 million. When faced with a significant write-down for capital equipment, it is not difficult to decipher why Aquila chose to construct Harper. Therefore, Aquila ratepayers are being asked to subsidize the non-regulated unit in the amount of more than $20 million for the turbines alone.

Q. Aquila needs generation capability to support its peak and reserve margins, why not Harper?

A. Aquila has two basic alternatives to meeting its need for generation facilities. Aquila can either build or contract. The preferred choice should be the most cost effective alternative. From the ratepayer's perspective, the most cost effective alternative has the least impact on increasing rates. Harper fails the cost effectiveness test on two points. First, when Aquila decided to build a peaking plant at Harper, Aquila could have purchased the combustion turbines for $56.1 instead of transferring the turbines at cost from its unregulated affiliate. But more importantly, Aquila could have used the current favorable market conditions to purchase power and obtain even more cost effective electricity.

Q. What kind of savings could the ratepayer realize if Aquila had decided to purchase rather than build?

A. Again, this is a difficult question to answer since Harper is a peaking unit while Aries is a cycling unit. The published heat rate for the combustion turbines utilized at Harper is 10,922 BTU/kWh (HHV). The actual average heat rate at Aries during 2004 was 7,721 BTU/kWh (HHV). The design full load heat rate at Aries during 2004 is 7,160 BTU/kWh (HHV). The 10,922 BTU/kWh at Harper does not include start fuel nor degredation due to wear and tear or partial loadings. Energy produced from Aries is at least forty (40) percent cheaper than energy from Harper. Using Aries annual average heat rate and assuming a

natural gas price of $7.50 per MMBtu this equates to a savings of $28 per MWh or .28 cents per kWh. Currently natural gas prices are close to $10 per MMBtu which equates to a savings of $37 per MWh or 0.37 cents per kWh.

Q. Has Calpine made offers to Aquila that would allow them to realize these savings?

A. Yes. Calpine has made several offers over the last three years. Unfortunately, Calpine has not received any significant feedback from Aquila as to the perceived deficiencies in any of the proposals.

Q. Would any of these proposals have resulted in lower costs for ratepayers as opposed to construction of Harper?

A. Yes. In fact all of the proposals that Calpine has submitted would have resulted in lower costs to ratepayers when compared to both the Harper construction costs as well as the "Project X" PPA that Aquila has previously pointed to in this proceeding (see Appendix D).

Q. Earlier in your testimony, you stated that the Aries contract expired. What were the risks associated with letting the Aries contract expire?

A. By not having additional capacity and energy available on a firm basis, Aquila has subjected its ratepayers to significant risk. On more than one occasion since the Aries contract expired in June 2005, Aquila has procured power from as far away as south Louisiana in order to meet its load demands. The additional costs transmission and other associated with importing power to the Aquila system will be passed on to ratepayers. Additionally, if the transmission capacity had not been available, then it is possible that system instability andor service interruptions could have occurred.

Q. Aquila has cited the high start costs at Aries as one reason for building the South Harper Peaking Facility instead of contracting for capacity from Aries. How much merit does this argument have?

A. This argument has little merit. Although the cost of starting a combined cycle power plant such as Aries is higher than the starting a simple cycle plant such as South Harper, the Aries power plant is so much more efficient than the South Harper Peaking Facility that the difference in start costs are recovered in less than 2 hours of running Aries versus Harper (see Appendix C).

Q. In your opinion, what would have been the most prudent course of action for Aquila regarding the Harper facility?

A. Setting aside the legal and zoning issues and all of the accompanying appeals and costs, it is fair to say that there were multiple market alternatives to the construction of a new facility. Aquila could have entered into long term market purchases that would have been able to meet its current load demands without having to take on the additional risks and capital costs associated with construction of a new facility. Furthermore, entering into these contracts would have resulted in lower costs for ratepayers and would have eliminated the risk and uncertainty taken on by Aquila.

Q. Can you summarize your testimony?

A. From the ratepayer's perspective, Harper is not currently the most cost effective system expansion alternative available to Aquila. Rather, Harper was constructed to recoup Aquila's investment in non-regulated assets by transferring the non-regulated investment into rate base and consequently obligating the ratepayer the backstop. There currently exist other market based alternatives with lower heat rates but similar capacity costs as Harper. Clearly,

the most cost effective alternative for Aquila's ratepayers is any alternative with lower capacity prices and lower production. Currently, the most cost effective sources of generation are purchases from the existing excess generation fleet.

Q. Does this conclude your testimony?

A. Yes.

Appendix A

CALPINE®

Meeting with MPSC Staff

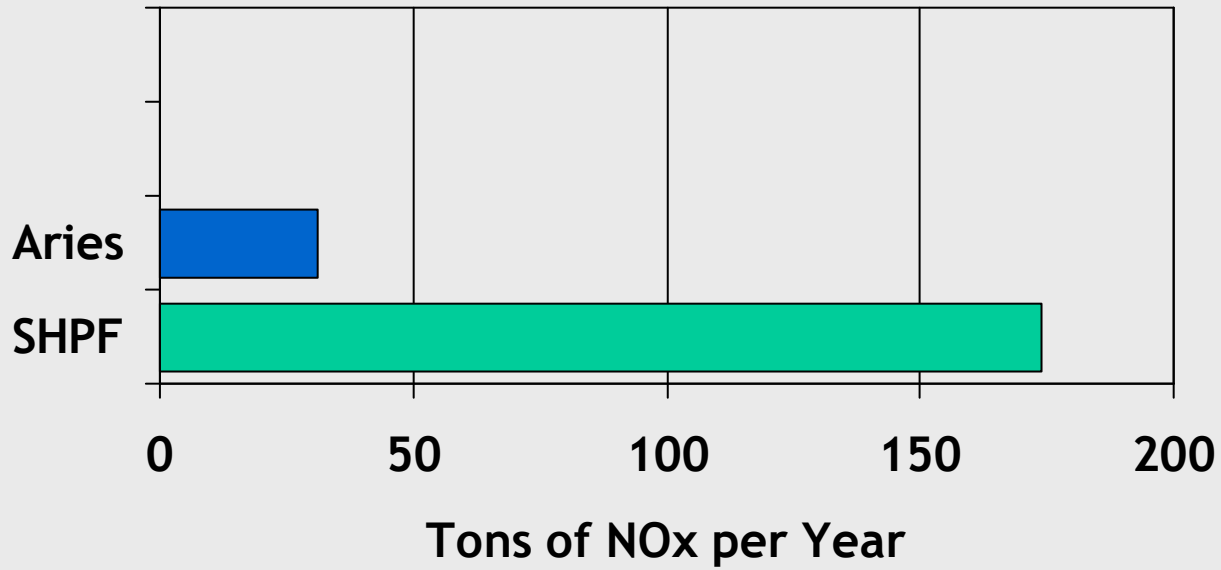
June 15, 2005

Appendix A

ARIES WILL PRODUCE THE SAME AMOUNT OF ELECTRICITY WITH SIGNIFICANTLY LESS POLLUTION COMPARED TO SIMPLE CYCLE PEAKING PLANT

CALPINE®

Polution Reduction



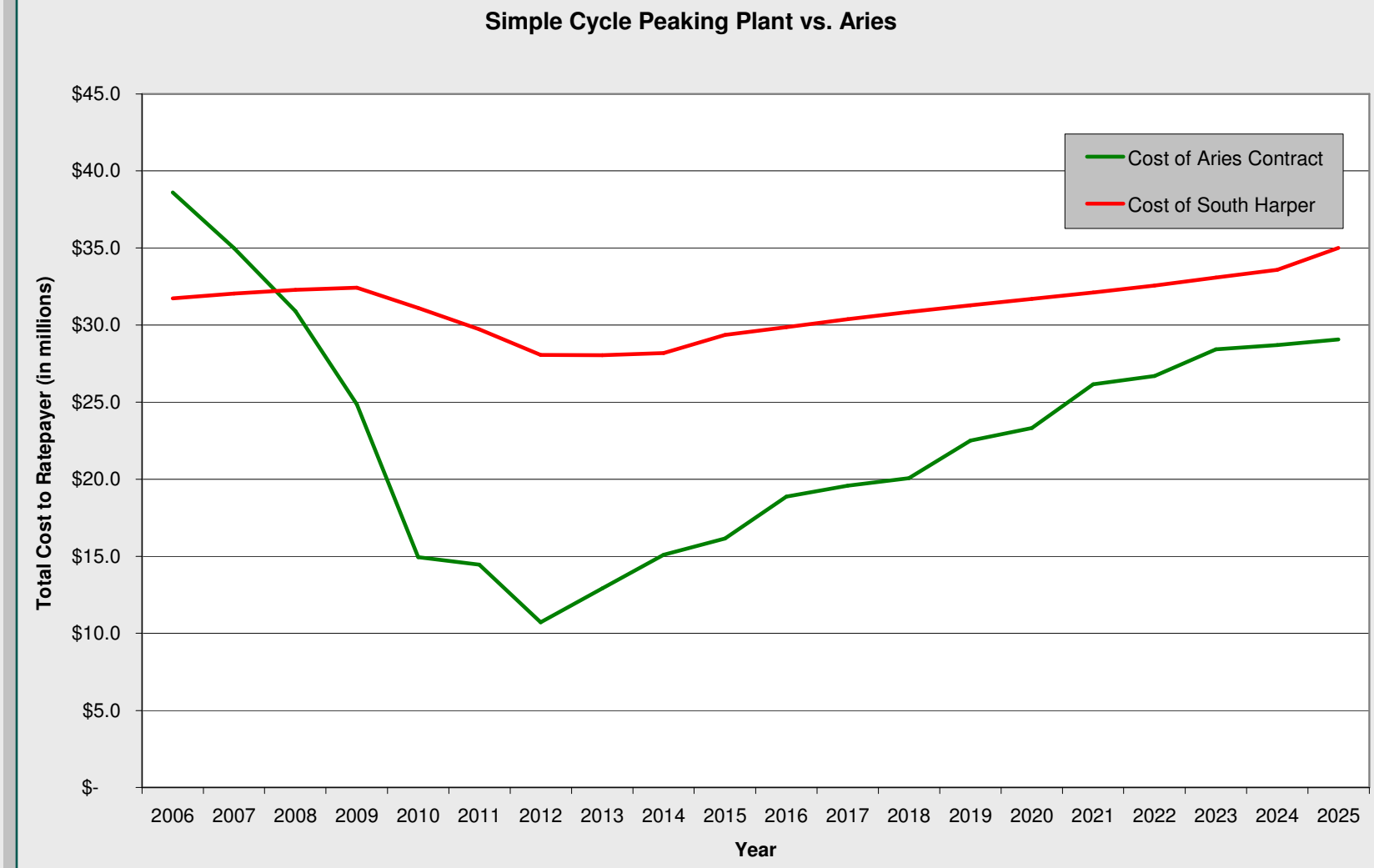
A Simple cycle peaker would produce 173 Tons per year (over 5 times) more emissions than Aries generating the same amount of energy.*

**assumes that SHPF has an annual capacity factor of 10%*

Appendix A

CALPINE®

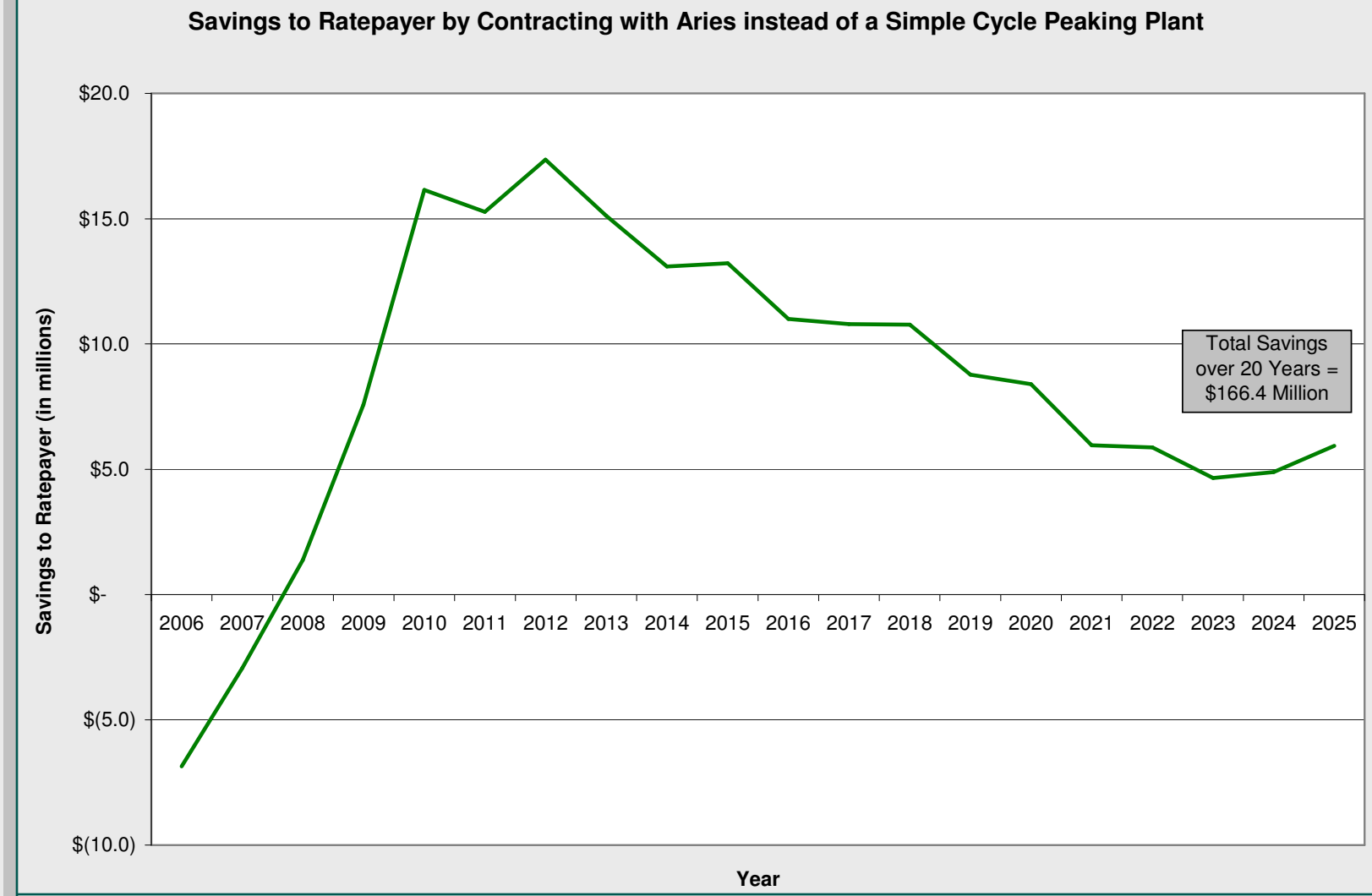
COSTS TO RATE PAYERS OF A SIMPLE CYCLE PEAKING PLANT COMPARED TO ARIES - ANNUALIZED



Appendix A

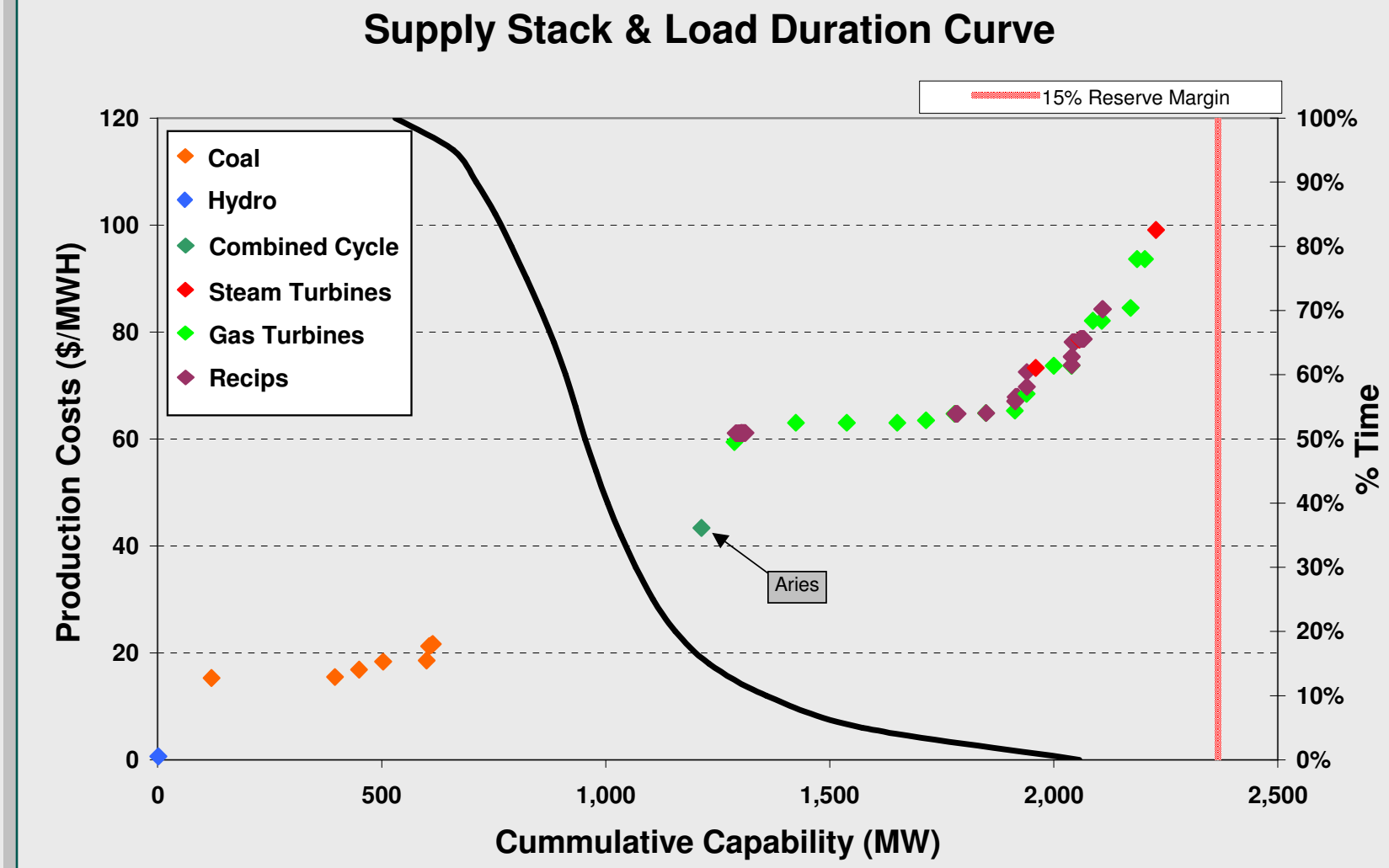
CALPINE®

SAVINGS TO RATE PAYERS BY CONTRACTING WITH ARIES - ANNUALIZED



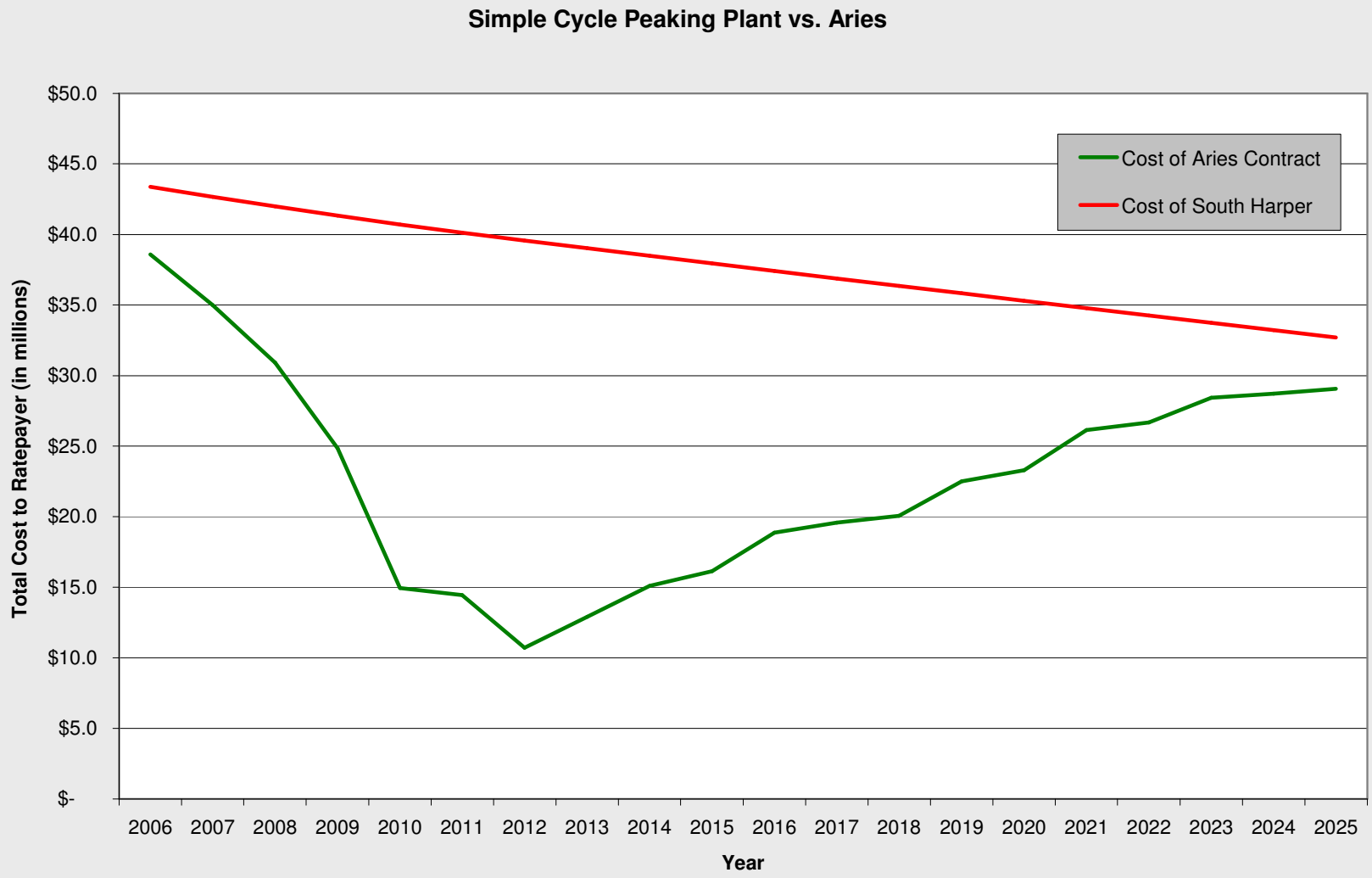
Appendix A

AQUILA GENERATION STACK AND LOAD - 2006



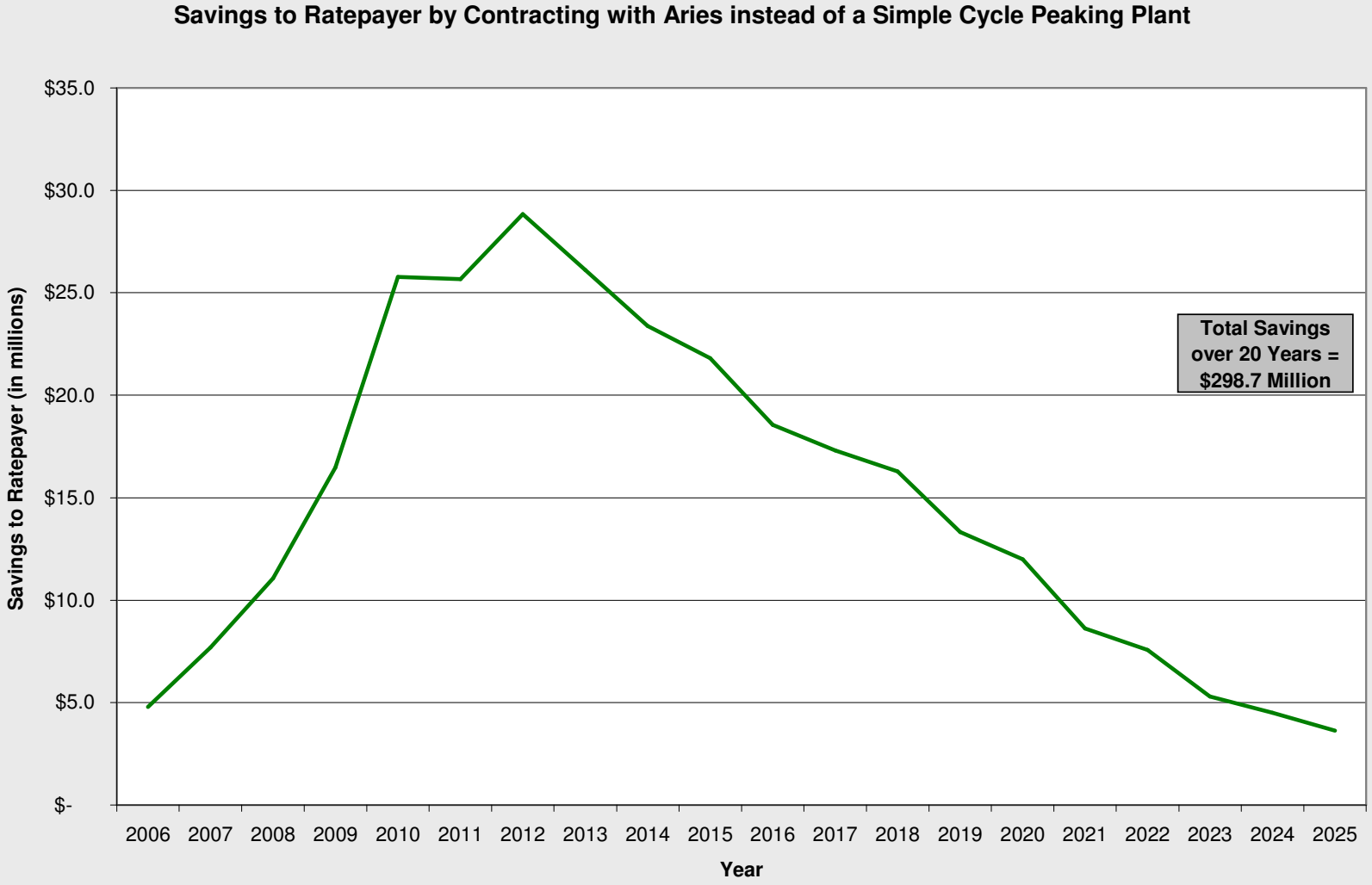
Appendix A

COSTS TO RATE PAYERS OF A SIMPLE CYCLE PEAKING PLANT COMPARED TO ARIES – RATE BASED



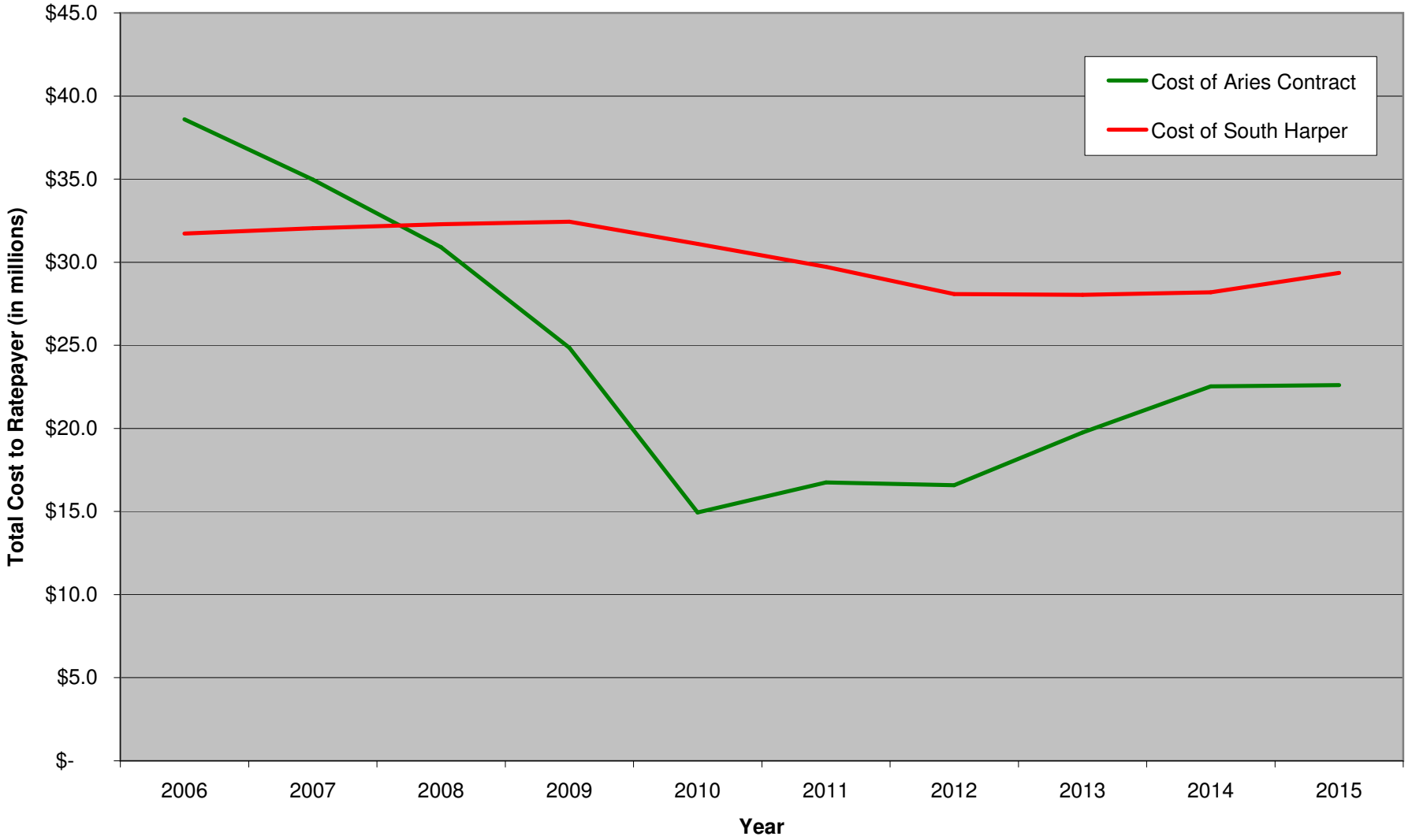
Appendix A

SAVINGS TO RATE PAYERS BY CONTRACTING WITH ARIES – RATE BASED



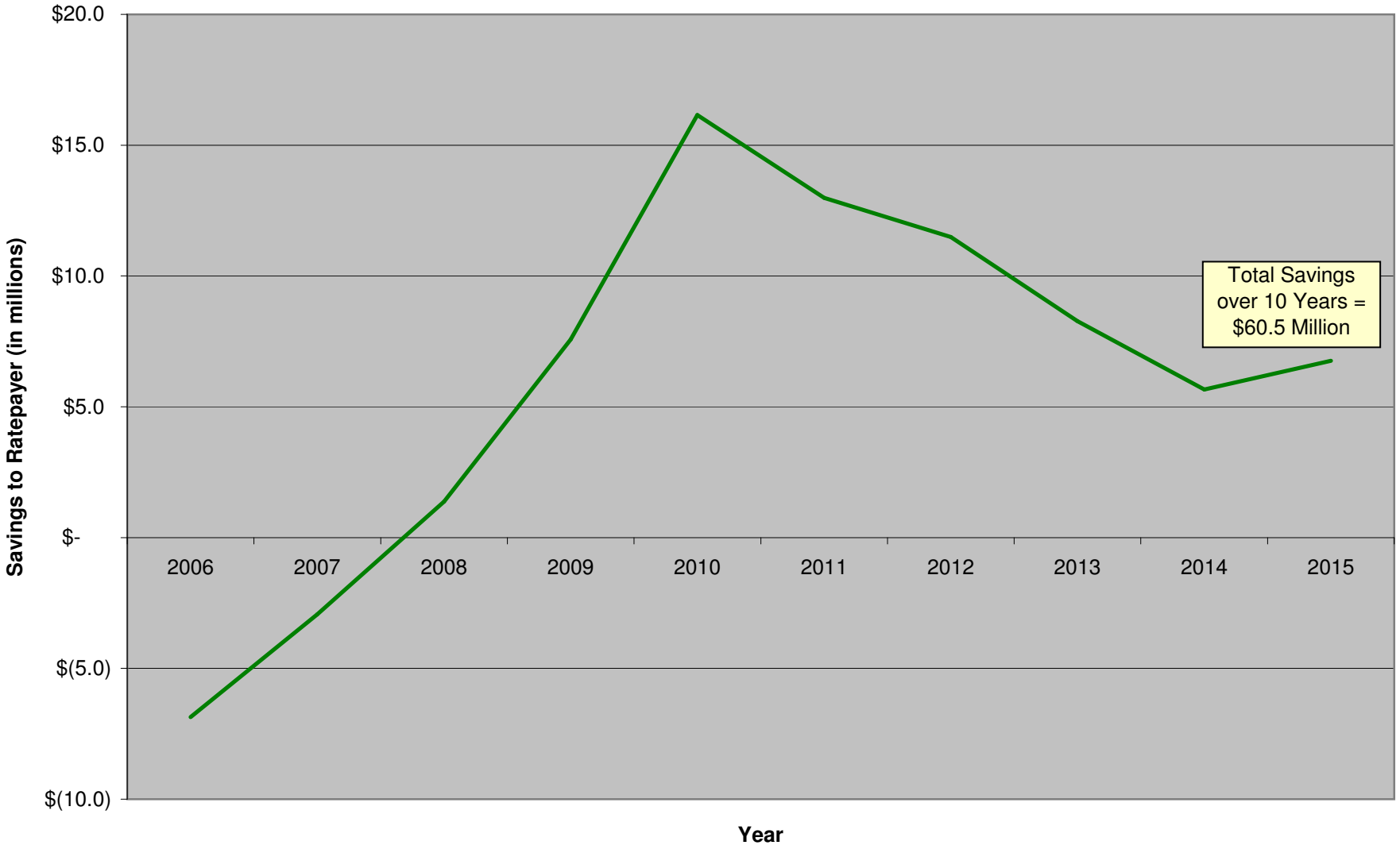
Appendix B

Decision to Build South Harper Peaking Facility

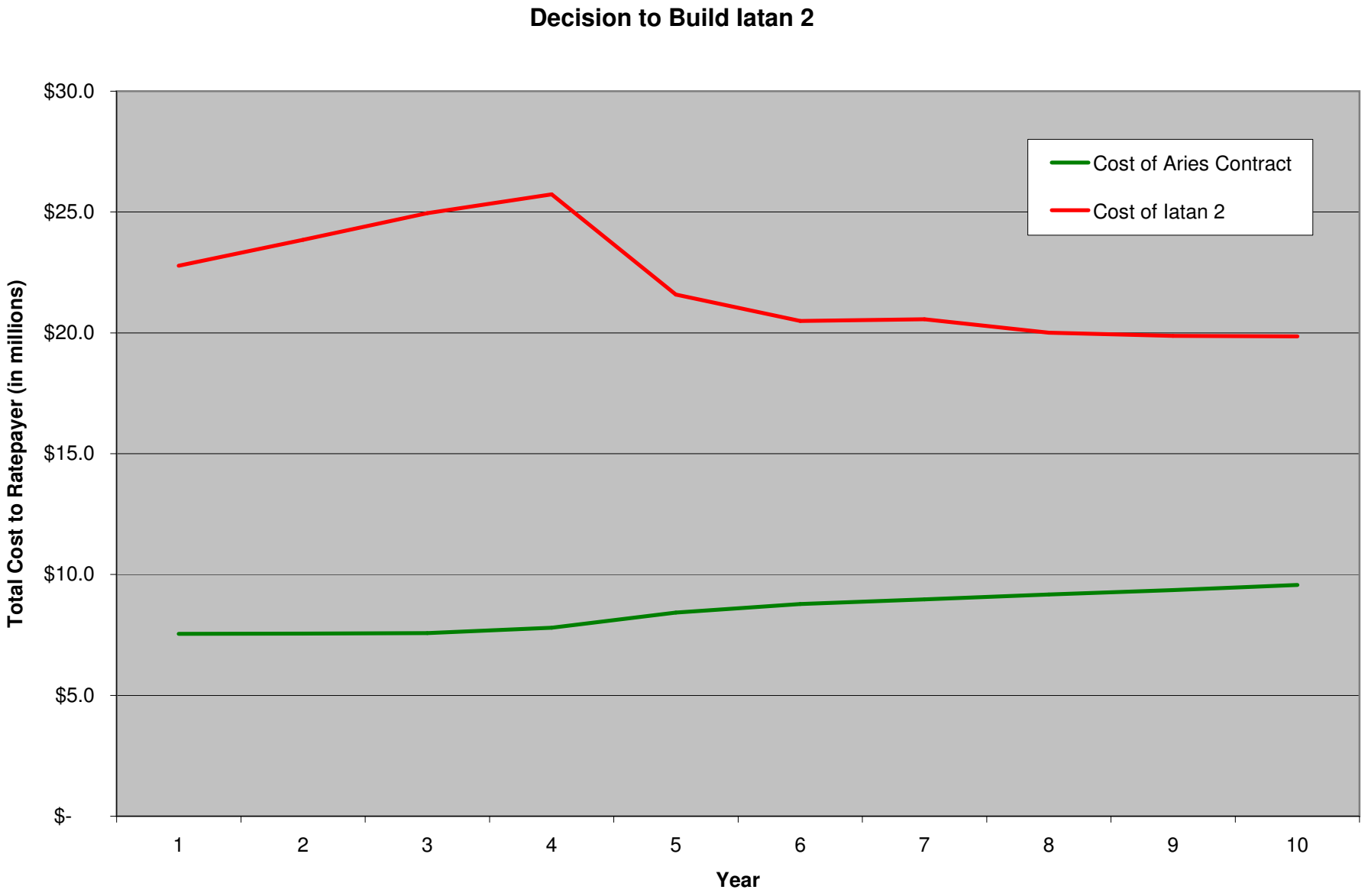


Appendix B

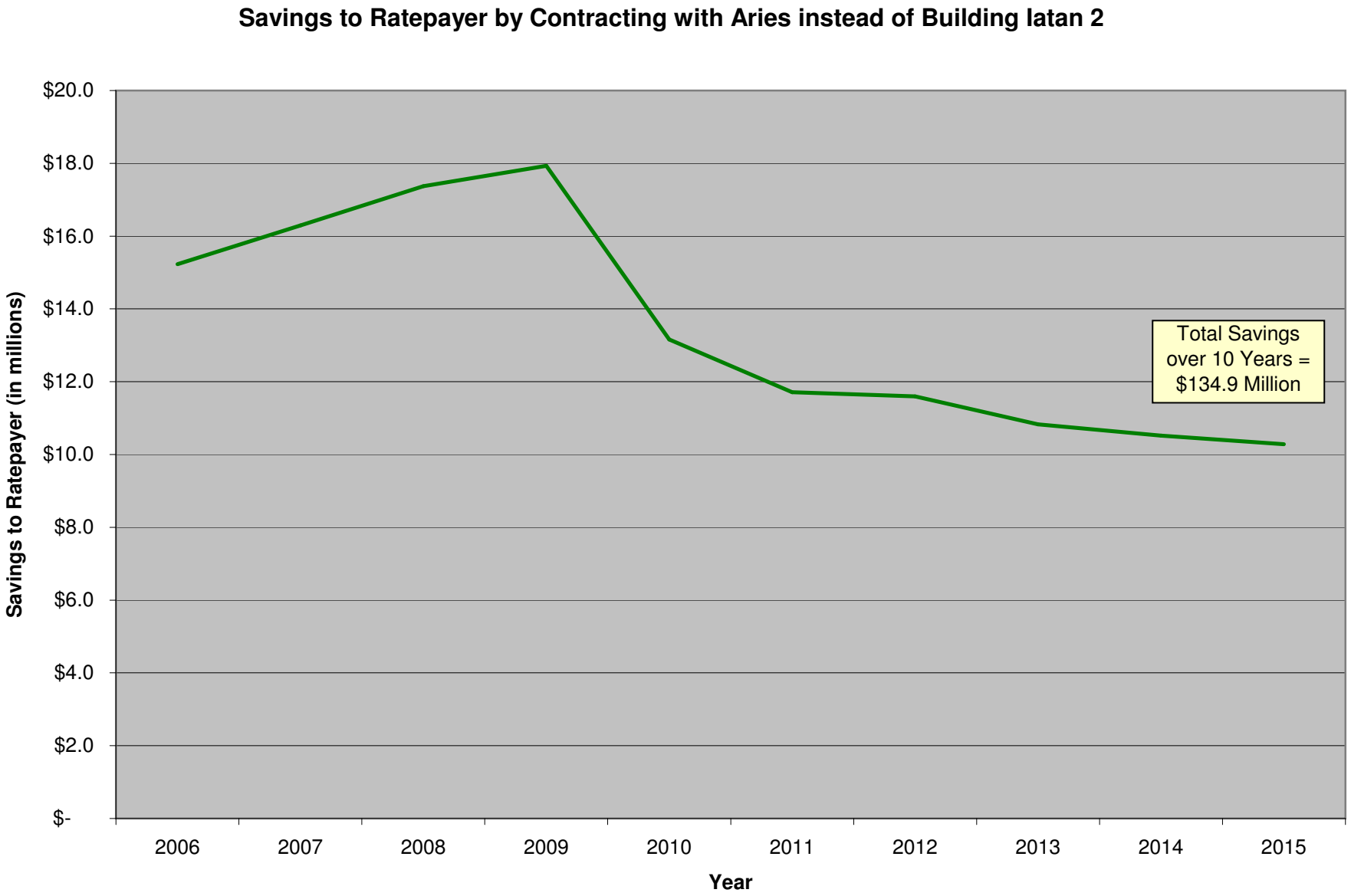
Savings to Ratepayer by Contracting with Aries instead of Building South Harper



Appendix B


Decision to Build Iatan 2
$30.0
$25.0
$20.0
$15.0
$10.0
$5.0
$-
Total Cost to Ratepayer (in millions)
1
2
3
4
5
6
7
8
9
10
Year
Cost of Aries Contract
Cost of Iatan 2

Appendix B


Savings to Ratepayer by Contracting with Aries instead of Building Iatan 2
$20.0
$18.0
$16.0
$14.0
$12.0
$10.0
$8.0
$6.0
$4.0
$2.0
$-
Savings to Ratepayer (in millions)
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Year
Total Savings over 10 Years = $134.9 Million

Appendix B

Assumptions

Plant/Unit Name	PM	Fuel	Fixed O&M ($/kW-Yr)	Capital Cost ($/kW)	Variable O&M ($/MWh)	Heat Rate (Btu/kWh)	Fuel Price ($/MMBtu)
Aries	CC	NG	$ 13.21	$ 590	$ 1.93	7500	$ 6.520
SHPF	CT	NG	$ 9.33	$ 415	$ 3.89	12000	$ 6.520
Iatan II	COL	COL	$ 32.90	$ 1,500	$ 12.00	9000	$ 1.207
		0.612					
		0.388	$ 95.30				

Case 1 - Decision to Build SHPF (515 MW Need)

	Supply	MW	Capacity Cost ($/kW-Yr)	Energy Savings ($/kW-Yr)	Net Effect to Ratepayer ($/kW-Yr)		
Option A - Pay Aries a Capacity Payment	Aries	515	$ 127.94	$ 84.04	$ 43.90		
Option B - Build SHPF	SHPF	315	$ 86.09	$ 23.26	$ 62.83		
	Spot Market Purchases	200	$ 47.85	$ -	$ 47.85		
	Supply	**MW**	**Capacity Cost ($/Yr)**	**Energy Savings ($/Yr)**	**Net Effect to Ratepayer ($/Yr)**		
Option A - Pay Aries a Capacity Payment	Aries	515	$ 65,888,043	$ 43,279,837	$ 22,608,206		
				Total	**$ 22,608,206**		
Option B - Build SHPF	SHPF	315	$ 27,119,692	$ 7,327,444	$ 19,792,248		
	Spot Market Purchases	200	$ 9,569,709	$ -	$ 9,569,709		
				Total	**$ 29,361,957**	$	6,753,751

Case 2 - SHPF Built; No Other Builds; Decision for Aries to Leave (200 MW Need)

	Supply	MW	Capacity Cost ($/kW-Yr)	Energy Savings ($/kW-Yr)	Net Effect to Ratepayer ($/kW-Yr)		
Option A - Aries Stays	Spot Market Purchases	200	$ 47.85	$ -	$ 47.85		
Option B - Aries Leaves	Spot Market Purchases	200	$ 52.05	$ -	$ 52.05		
	Supply	**MW**	**Capacity Cost ($/Yr)**	**Energy Savings ($/Yr)**	**Net Effect to Ratepayer ($/Yr)**		
Option A - Aries Stays	Spot Market Purchases	200	$ 9,569,709	$ -	$ 9,569,709		
				Total	**$ 9,569,709**		
Option B - Aries Leaves	Spot Market Purchases	200	$ 10,409,317	$ -	$ 10,409,317		
				Total	**$ 10,409,317**	$	839,608

Case 3 - SHPF Built; Decision to Build Iatan 2 (200 MW Need)

	Supply	MW	Capacity Cost ($/kW-Yr)	Energy Savings ($/kW-Yr)	Net Effect to Ratepayer ($/kW-Yr)		
Option A - Pay Aries a Capacity Payment	Aries	200	$ 131.89	$ 84.04	$ 47.85		
Option B - Build Iatan 2	Iatan 2	200	$ 288.78	$ 189.53	$ 99.25		
Option C - Purchase from Spot Market	Spot Market Purchases	200	$ 47.85	$ -	$ 47.85		
	Supply	**MW**	**Capacity Cost ($/Yr)**	**Energy Savings ($/Yr)**	**Net Effect to Ratepayer ($/Yr)**		
Option A - Pay Aries a Capacity Payment	Aries	200	$ 26,377,413	$ 16,807,704	$ 9,569,709		
				Total	**$ 9,569,709**		
Option B - Build Iatan 2	Iatan 2	200	$ 57,756,266	$ 37,905,718	$ 19,850,548		
				Total	**$ 19,850,548**	$	10,280,838
Option C - Purchase from Spot Market	Spot Market Purchases	200	$ 9,569,709	$ -	$ 9,569,709		
				Total	**$ 9,569,709**		

	Option A Case1	Case2	Case3a	We Need	We Get	Shortfall	
2006	$ 38,596,937	$ 7,549,828	$ 7,549,828	86.49	74.95	11.55	0.96
2007	$ 34,978,012	$ 7,555,278	$ 7,555,278	79.78	67.92	11.86	0.99
2008	$ 30,911,597	$ 7,579,687	$ 7,579,687	71.86	60.02	11.84	0.99
2009	$ 24,856,628	$ 7,794,075	$ 7,794,075	58.79	48.27	10.53	0.88
2010	$ 14,951,868	$ 8,422,793	$ 8,422,793	31.46	29.03	2.43	0.20
2011	$ 16,746,135	$ 8,778,369	$ 8,778,369	28.05	32.52	-4.46	-0.37
2012	$ 16,586,102	$ 8,968,856	$ 8,968,856	20.82	32.21	-11.39	-0.95
2013	$ 19,756,778	$ 9,174,691	$ 9,174,691	25.07	38.36	-13.29	-1.11
2014	$ 22,530,968	$ 9,353,363	$ 9,353,363	29.31	43.75	-14.44	-1.20
2015	$ 22,608,206	$ 9,569,709	$ 9,569,709	31.35	43.90	-12.55	-1.05

	Option B		
2007	$ 32,044,522	$ 8,150,636	$ 23,849,210
2008	$ 32,286,851	$ 8,342,967	$ 24,950,748
2009	$ 32,431,040	$ 8,626,050	$ 25,726,650
2010	$ 31,108,101	$ 9,285,299	$ 21,585,763
2011	$ 29,728,624	$ 9,640,876	$ 20,489,091
2012	$ 28,076,338	$ 9,831,362	$ 20,566,325
2013	$ 28,033,253	$ 10,021,932	$ 20,003,510
2014	$ 28,187,327	$ 10,192,971	$ 19,875,265
2015	$ 29,361,957	$ 10,409,317	$ 19,850,548

	Savings Case1	Case2	Case3a
2006	$ (6,865,878)	$ 503,765	$ 15,227,363
2007	$ (2,933,490)	$ 595,358	$ 16,293,933
2010	$ 16,156,233	$ 862,506	$ 13,162,970
2011	$ 12,982,490	$ 862,506	$ 11,710,722
2012	$ 11,490,236	$ 862,506	$ 11,597,469
2013	$ 8,276,475	$ 847,241	$ 10,828,819
2014	$ 5,656,359	$ 839,608	$ 10,521,901
2015	$ 6,753,751	$ 839,608	$ 10,280,838

Chart Data

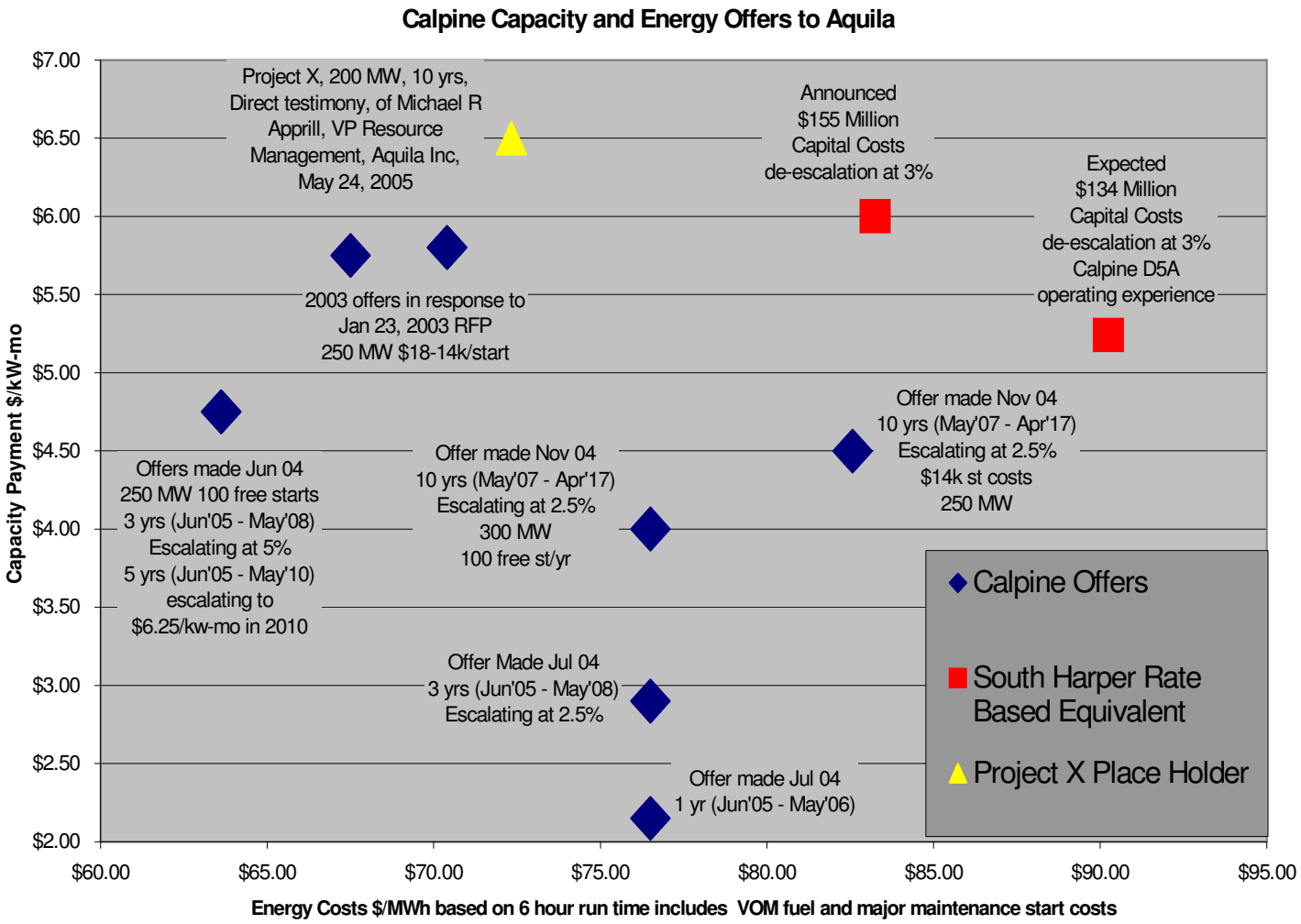
	Case 1 Option A	Option B	Savings	Case 2 Option A	Option B	Savings
2006	$ 38.6	#REF!	$ (6.9)	$ 7.5	#REF!	$ 15.2
2007	$ 35.0	$ 32.0	$ (2.9)	$ 7.6	$ 23.8	$ 16.3
2008	$ 30.9	$ 32.3	#REF!	$ 7.6	$ 25.0	#REF!
2009	$ 24.9	$ 32.4	#REF!	$ 7.8	$ 25.7	#REF!
2010	$ 15.0	$ 31.1	$ 16.2	$ 8.4	$ 21.6	$ 13.2
2011	$ 16.7	$ 29.7	$ 13.0	$ 8.8	$ 20.5	$ 11.7
2012	$ 16.6	$ 28.1	$ 11.5	$ 9.0	$ 20.6	$ 11.6
2013	$ 19.8	$ 28.0	$ 8.3	$ 9.2	$ 20.0	$ 10.8
2014	$ 22.5	$ 28.2	$ 5.7	$ 9.4	$ 19.9	$ 10.5
2015	$ 22.6	$ 29.4	$ 6.8	$ 9.6	$ 19.9	$ 10.3

Appendix C

Number of days plant ran during 1 month		15	
Price o Fuel $/MMBtu	$	7.00	
		Aries	Simple Cycle Peaking Plant
Capacity MW		230	315
Heat Rate		7.46	11.5
VOM $/MWh	$	1.00	$ 0.25
Start Fuel MMBtu		1000	200
Major Maintenance St costs	$	15250.5	5400

		Aries $/MWh	Aries Equivalent Heat Rate MMBtu/MWh	SC Pkr Variable Costs Per Hour $/MWh	SC Pkr Equivalent Heat Rate MMBtu/MWh	savings Aries vs SC Pkr $/MWh	savings Aries vs SC Pkr $/month
1	Run Hours per start	$ 149.96	21.42	$ 102.34	14.62	$ (47.62)	$ (164,303)
2	Run Hours per start	$ 101.59	14.51	$ 91.54	13.08	$ (10.05)	$ (69,324)
3	Run Hours per start	$ 85.47	12.21	$ 87.95	12.56	$ 2.48	$ 25,654
4	Run Hours per start	$ 77.41	11.06	$ 86.15	12.31	$ 8.74	$ 120,633
5	Run Hours per start	$ 72.57	10.37	$ 85.07	12.15	$ 12.50	$ 215,611
6	Run Hours per start	$ 69.34	9.91	$ 84.35	12.05	$ 15.00	$ 310,590
7	Run Hours per start	$ 67.04	9.58	$ 83.83	11.98	$ 16.79	$ 405,568
8	Run Hours per start	$ 65.31	9.33	$ 83.45	11.92	$ 18.14	$ 500,547
9	Run Hours per start	$ 63.97	9.14	$ 83.15	11.88	$ 19.18	$ 595,525
10	Run Hours per start	$ 62.89	8.98	$ 82.91	11.84	$ 20.01	$ 690,504
11	Run Hours per start	$ 62.01	8.86	$ 82.71	11.82	$ 20.70	$ 785,482
12	Run Hours per start	$ 61.28	8.75	$ 82.55	11.79	$ 21.27	$ 880,461
13	Run Hours per start	$ 60.66	8.67	$ 82.41	11.77	$ 21.75	$ 975,439
14	Run Hours per start	$ 60.13	8.59	$ 82.29	11.76	$ 22.16	$ 1,070,418
15	Run Hours per start	$ 59.67	8.52	$ 82.19	11.74	$ 22.52	$ 1,165,396
16	Run Hours per start	$ 59.27	8.47	$ 82.10	11.73	$ 22.83	$ 1,260,375

Appendix D


Calpine Capacity and Energy Offers to Aquila
Capacity Payment $/kW-mo
$7.00
$6.50
$6.00
$5.50
$5.00
$4.50
$4.00
$3.50
$3.00
$2.50
$2.00
$60.00
$65.00
$70.00
$75.00
$80.00
$85.00
$90.00
$95.00
Energy Costs $/MWh based on 6 hour run time includes VOM fuel and major maintenance start costs
Project X, 200 MW, 10 yrs, Direct testimony, of Michael R Apprill, VP Resource Management, Aquila Inc, May 24, 2005
Announced $155 Million Capital Costs de-escalation at 3%
Expected $134 Million Capital Costs de-escalation at 3% Calpine D5A operating experience
2003 offers in response to Jan 23, 2003 RFP 250 MW $18-14k/start
Offer made Nov 04 10 yrs (May'07 - Apr'17) Escalating at 2.5% $14k st costs 250 MW
Offers made Jun 04 250 MW 100 free starts 3 yrs (Jun'05 - May'08) Escalating at 5% 5 yrs (Jun'05 - May'10) escalating to $6.25/kw-mo in 2010
Offer made Nov 04 10 yrs (May'07 - Apr'17) Escalating at 2.5% 300 MW 100 free st/yr
Offer Made Jul 04 3 yrs (Jun'05 - May'08) Escalating at 2.5%
Offer made Jul 04 1 yr (Jun'05 - May'06)
Calpine Offers
South Harper Rate Based Equivalent
Project X Place Holder