PNL--8556

DE93 009084

ECONOMIC ANALYSIS OF OPERATING ALTERNATIVES FOR THE SOUTH VANDENBERG POWER PLANT AT VANDENBERG AIR FORCE BASE, CALIFORNIA

K. K. Daellenbach
J. E. Dagle
R. W. Reilly
S. A. Shankle

February 1993

Prepared for
the U.S. Department of Energy
Federal Energy Management Program
under Contract DE-AC06-76RLO 1830

Pacific Northwest Laboratory
Richland, Washington 99352

MASTER

ABSTRACT

Vandenberg Air Force Base (VAFB), located approximately 50 miles northwest of Santa Barbara, California, commissioned the Pacific Northwest Laboratory[a] to conduct an economic analysis of operating alternatives of the South Vandenberg Power Plant (SVPP). Recent concern over SVPP operating and environmental costs prompted VAFB personnel to consider other means to support the Missile Operation Support Requirement (MOSR). The natural gas-fired SVPP was originally designed to support the Space Transportation System launch activities. With cancellation of this mission, the SVPP has been used to provide primary and backup electric power to support MOSR activities for the Space Launch Complexes. This document provides economic analysis in support of VAFB decisions about future operation of the SVPP.

This analysis complied with the life-cycle cost (LCC) analytical approach detailed in 10 CFR 436, which is used in support of all Federal energy decisions. Many of the SVPP operational and environmental cost estimates were provided by VAFB staff, with additional information from vendors and engineering contractors. The data were carefully reviewed by VAFB personnel through several iterations.

The LCC analysis consisted of three primary operating strategies, each with a level of service equal to or better than the current status-quo operation. These scenarios are:

- Status-quo operation where the SVPP provides both primary and backup MOSR power.
- Purchased utility power providing primary MOSR support with backup power provided by an Uninterruptible Power Supply (UPS) system. The SVPP would be used to provide power for long-duration power outages.
- Purchased utility power provides primary MOSR support with backup power provided by a UPS system. A new set of dedicated generators would provide backup power for long-duration power outages.

(a) Pacific Northwest Laboratory is operated for the U.S. Department of Energy by Battelle Memorial Institute under Contract DE-AC06-76RLO 1830.

Each of the strategies was analyzed with and without peak shaving. As a peak shaver, the SVPP would be used to offset part of the VAFB daily peak electrical consumption which is billed at a higher rate than average electrical consumption. An additional sensitivity analysis of alternative operation scenarios included consideration of both current SVPP operating hours as regulated by the 1990 Permit to Operate[a] and relaxed environmental hours of operation, and both with and without salvage value of gas turbine components upon SVPP retirement.

The results of the analysis indicate that the SVPP is cost-effective as a stand-alone peak-shaving plant because the energy savings resulting from peak shaving can cover both the variable costs of generation and the annual fixed costs of operation. Hence, strategies that include peak shaving are always preferred to those without peak shaving.

The most cost-effective strategy is to use the SVPP for continued MOSR power support and peak shaving during all cost-effective, permitted hours throughout the remainder of the SVPP useful life in 2009, at which time a new UPS system could provide for MOSR power support. Even when UPS installation is delayed as long as possible, the next most cost-effective strategy would be to install a UPS system and use the SVPP as a backup generator. Of the strategies analyzed, the least cost-effective one would be to install a UPS system with a new dedicated generator.

If environmental constraints limiting hours of operation are removed, the SVPP would be able to peak shave more hours every year, which causes the LCC of all strategies to decrease. The effect of including the salvage value of the gas turbine components in the analysis makes little difference in the results because the preferred option is to keep the SVPP operational until 2009 for all strategies considered, at which point the salvage value would be zero.

(a) Permit to Operate Number 6117. 19 November 1990. County of Santa Barbara, Air Pollution Control District, Goleta, California.

SUMMARY

This report presents the results of an economic analysis of alternative operating strategies for the South Vandenberg Power Plant (SVPP), located at Vandenberg Air Force Base (VAFB) in California. The SVPP was designed to provide electrical power in support of West Coast space shuttle launches, a mission that was cancelled. The SVPP was completed in 1990, and has been used to provide the Missile Operation Support Requirement (MOSR) for missile launches at the Space Launch Complexes (SLCs) since November 1990. In this capacity, the SVPP has provided both primary and backup power support at the primary SLCs (Atlas launches at SLC-3; Titan launches at SLV-4; and occasional Scout launches at SLC-3). The missile launch support activity is operational only a small number of hours per year, resulting in substantial idle capacity. Maintenance and operation of the SVPP have proved costly, leading to this analysis, whose purpose is to investigate the cost-effectiveness of a number of alternative operating strategies for the SVPP, including peak shaving and closure. Because VAFB has time-of-day electric rates from their utility, Pacific Gas and Electric (PG&E), the SVPP could be used to generate electricity during peak demand periods, thereby reducing both demand and energy charges to VAFB.

The analysis began by developing three primary strategies. Each strategy describes a way to provide primary and backup electricity sources to meet the MOSR, including a role for the SVPP. The status-quo strategy (base case) is for the SVPP to support both the primary and backup electricity requirements without peak shaving. Two alternative strategies include various combinations of purchasing primary power from PG&E and providing backup power through an Uninterruptible Power Supply (UPS), whose electricity is provided from dedicated generators or the SVPP. Each of these three primary strategies was then compounded by considering peak shaving, which results in a total of six strategies to be analyzed, as summarized in Table S.1.

The cost-effectiveness of each of the six strategies was analyzed under three different scenarios. The base-case scenario assumed that no salvage value is realized upon closure of the SVPP and that existing constraints on

TABLE S.1. SVPP Analysis Operating Strategies

#	Operating Strategy	Four Operating Dimensions			
		Primary Power	Backup Power	Backup Generator	Peak Shaving
1A	Status Quo	SVPP	SVPP	None	No
1B	Base Case + Peak Shave	SVPP	SVPP	None	Yes
2A	UPS + SVPP	Purchased	UPS	SVPP	No
2B	UPS + SVPP + Peak Shave	Purchased	UPS	SVPP	Yes
3A	UPS + Generator	Purchased	UPS	Dedicated Generator	No
3B	UPS + Generator + Peak Shave	Purchased	UPS	Dedicated Generator	Yes

SVPP = South Vandenberg Power Plant; UPS = Uninterruptible Power Supply.

the annual hours of SVPP operation, as mandated by the Santa Barbara Air Pollution Control District (SBAPCD), remain unchanged. The first alternative scenario assumed that the SBAPCD constraints on operating hours are relaxed and that the SVPP can peak shave whenever it is cost-effective to do so. The intent of this scenario is to determine the value of peak-shaving operation without constraints on the hours of generation, so that VAFB staff could determine, based upon the cost of negotiating reduced constraints, whether it would be worthwhile to attempt to eliminate the existing constraints. In the second alternative scenario, we assumed that the salvage value of the SVPP would be realized upon its closure. This assumed that the gas turbines are sold or transferred to another federal site (in the strategy where the SVPP is closed). This analysis also includes a full accounting of the value of the emission rights associated with operation of the SVPP and is detailed in Appendix C.

The overall analysis was first simplified by determining the cost-effectiveness of peak shaving across each of the three major strategies. It was found that when the SVPP is operated as a peak-shaving plant, it can cover not only its variable costs of generation but also its annual fixed costs of

operation. Under the cost assumptions provided by VAFB staff, the SVPP is cost-effective as a stand-alone peak-shaving plant. Hence, scenarios that include peak shaving will always be preferred to those without peak shaving, and all of the "A" strategies, as shown in Table 4.1, were dismissed from further analysis, except strategy 1A because it is the current operating strategy and provides an important basis of comparison.

The remaining strategies (1A, 1B, 2B, and 3B) were then analyzed to determine the most cost-effective way to meet the mission requirements and operate the SVPP. The life-cycle cost (LCC) of each of the four strategies was calculated. Strategy 1A is the existing operating strategy. In strategy 1B, the SVPP is operated for primary and backup MOSR power and for peak shaving, with peak shaving beginning in 1994 and extending through the life of the gas turbines (2009). In 2009, the installation of grounding transformers will be completed, thereby allowing safe transmission of power generated at the SVPP onto the PG&E power grid. Strategies 2B and 3B, which call for the installation of a UPS system, were analyzed assuming that a UPS system is operational on January 1, 1996, the first year that the UPS system could be available. Because the relative gas and electricity price projections change continually, it is not adequate to assume that these dates are the optimal times to begin operations. Hence, the analysis looks at UPS operations beginning in every year starting in 1996 through the life of the current turbines (2009). The LCC from the most cost-effective year of installation was then used as the figure of merit for comparison purposes. Note that in all analyses it is assumed that a UPS system with its dedicated generators is installed to replace the SVPP in 2010 if these systems were not installed earlier.

The LCC results are summarized in Table S.2. In each case, the net present value is the difference between the LCC of the alternate strategy being analyzed and that of the base-case strategy (strategy 1A). Table S.2 assumes that the UPS system is installed in 1996.

The results of the analysis indicate that the most cost-effective action is to delay installation of the UPS system until after the useful life of the SVPP. It is most cost-effective for the SVPP to be operated in a peak-shaving mode throughout the remainder of its life. The next most cost-effective case

TABLE S.2. Analysis Results

Strategy Number	Operating Strategy	Life-Cycle Cost	Net Present Value	Optimal Year to Install UPS
1A	Status Quo	$13,561,590	NA	2010
1B	SVPP + PS	$3,289,468	$10,272,123	2010
2B	UPS + SVPP + PS	$4,963,101	$8,598,489	2010
3B	UPS + Gen + PS	$10,148,855	$3,412,735	2010

PS = Peak Shave; SVPP = South Vandenberg Power Plant; UPS = Uninterruptible Power Supply; NA = Not Available.

(installing a UPS system using the SVPP as the backup generator) is approximately $1.7 million less cost-effective if the UPS is installed in the year 1996. As the installation of the UPS system is delayed, the LCC continues to decline until 2009 when the LCC falls to $3,302,691. This is very close to the LCC of strategy 1B, as should be expected. The only difference between strategies 1B and 2B implemented in 2009 is a 1-year difference in when the UPS system is installed. Given that installation of the UPS is not a cost-effective strategy (as compared to strategy 1B), it should be delayed as long as possible. In the event that environmental constraints were relaxed, allowing all cost-effective peak shaving to occur, the LCC of all of the strategies (except 1A) would fall. It would still not be cost-effective to install a UPS system in 1996, but it would become just cost-effective in the year 2009. In other words, the impact of relaxing the environmental constraints to allow for a greater number of SVPP annual operating hours would accelerate the optimal year of the UPS installation by 1 year. Salvage value has no impact on the relative ranking of the strategies, because none of the best strategies include shutting down the SVPP.

The most cost-effective strategy, 1B, can in fact be improved upon. The strategy analyzed assumes the SVPP provides both primary and backup power for MOSR support. Because MOSR operations occur during partial peak and off-peak hours, it would be more cost-effective to purchase primary power from PG&E, providing only backup power via the SVPP.

Table S.3 illustrates the impact of the alternative strategies on the costs of operating the SVPP for 1 year. The table shows the costs for 1996, so as to allow comparison with strategies 2B and 3B, which could not come into play until then. For the purposes of this table, it is assumed that the UPS system in strategies 2B and 3B is installed on January 1, 1996.

Table S.3 shows the cost of operating the SVPP under the current operating regime (status quo) and under each of the three peak-shaving strategies in the year 1996. The table then shows the value of the electricity generated at the SVPP, for both MOSR and peak-shaving purposes. The Net Annual Operating Cost is the total cost of operating the SVPP less the value of the electricity generated at the plant. Under the current operating regime, the plant would cost approximately $1.27 million to operate in 1996. The electricity generated for MOSR would cost VAFB approximately $130,000, and so the net cost of operating the SVPP would be approximately $1.15 million.

If the plant were operated in a peak-shaving mode in all cost-effective hours, the cost of operating the plant would rise to $2.06 million, primarily as a result of increased natural gas use. The value of the electricity generated at the plant would be $2.10 million, however, which would more than cover the cost of operating the SVPP, resulting in a net cost of -$40,000. If a UPS system were installed and the SVPP were freed from producing MOSR electricity (strategy 2B), the cost of labor at the plant would fall and the value of the electricity generated at the plant would rise, leading to a net operating cost of -$252,000 in 1996. If the UPS had its own backup generator (strategy 3B), the labor cost would be reduced still more, resulting in a net operating cost of -$307,000.

The last row of Table S.3, Net Annual Cost, reflects the results shown by the LCCs in Table S.2. The decreased net operating cost of strategies 2B and 3B is not sufficient to make up for the investment in the UPS required to implement the strategies. Strategy 2B requires an investment of nearly $5 million, and strategy 3B requires an investment of nearly $11 million (Keller and Gannon 1990). The $200,000 and $250,000 per year advantages these

TABLE S.3. Snapshot of SVPP Operating Costs in 1996

	Status Quo Strat. 1A	Status Quo + PS Strat. 1B	UPS+SVPP+PS Strat. 2B	UPS+GEN+PS Strat. 3B
Fixed Annual Operating Costs				
Environmental Costs	$354,851	$354,851	$354,851	$354,851
Non-Fuel O&M	$101,843	$101,843	$101,843	$101,843
Labor	$583,422	$583,422	$305,225	$249,850
Increment Fee	$18,869	$18,869	$18,869	$18,869
Gas Customer Charge	$9,000	$9,000	$9,000	$9,000
Subtotal	$1,067,985	$1,067,985	$789,788	$734,412
Annual Variable Environmental Costs				
Rate per Ton	$165	$165	$165	$165
Tons	7.05	33.05	29.96	29.96
Subtotal	$1,163	$5,453	$4,943	$4,943
Annual Variable Non-Fuel Operating Costs				
Rate per Turbine Hour	$7.66	$7.66	$7.66	$7.66
Turbine Hours	2,013	9,439	8,557	8,557
Subtotal	$15,409	$72,257	$65,504	$65,504
Annual Fuel Cost	$187,782	$915,397	$1,054,323	$1,054,323
Total Annual Operating Cost	$1,272,338	$2,061,092	$1,914,558	$1,859,182
Annual Generation (MWh)	2,568	24,919	25,743	25,743
Value of Generation	$126,228	$2,101,544	$2,166,504	$2,166,504
Net Annual Operating Cost	$1,146,110	-$40,453	-$251,946	-$307,322
Annual Capitalization Cost	$0	$0	$313,021	$758,870
Net Annual Cost	$1,146,110	-$40,453	$61,075	$451,548

Gen = New Dedicated Generator; PS = Peak Shave; SVPP = South Vandenberg Power Plant; UPS = Uninterruptible Power Supply.

strategies have over strategy 1B are not sufficient to justify the expenditure. Strategy 1B requires no upfront investment - just a change in the current operating regime.

ACKNOWLEDGMENTS

The authors gratefully acknowledge the assistance of several people allied with the decision-making process for the South Vandenberg Power Plant. These people provided us with detailed and timely information that increased the value and usefulness of our analysis. While it is not possible to identify all those who provided assistance, we would like to thank the following dedicated individuals who provided helpful support: SSgt J. R. Dick, CMSgt W. H. Fowler, K. Padilla, MSgt Powell, Lt. Col. D. P. Schmarje, Lt. Col. Van Mullem, and MSgt J. H. Woods, Jr. of Vandenberg Air Force Base (VAFB), California; W. A. Kammer of The Aerospace Corporation (Lompoc, California); C. A. Miller of Air Force Space Command Headquarters (Peterson Air Force Base, Colorado); M. J. Silvia and K. Wright of Environmental Management Consultants, Inc. (Lompoc, California); and M. B. Hammarstedt and N. Kayser of Keller and Gannon (San Francisco, California). Of particular importance to completion of this study was the significant and conscientious assistance provided by Lt. R. Zawakzki of VAFB.

In addition, the authors thank L. A. Empey, M. M. Hale, M. A. Halverson, M. J. Larson, R. M. Urbina, M. H. White, and P. C. Young for their excellent assistance in preparing this document.

CONTENTS

ABSTRACT iii

SUMMARY v

ACKNOWLEDGMENTS xiii

1.0 INTRODUCTION 1.1

2.0 OPERATING STRATEGIES 2.1

2.1 FORMULATION OF OPERATING STRATEGIES 2.1

2.1.1 Source of Primary MOSR Power 2.1

2.1.2 Source of Backup MOSR Power 2.1

2.1.3 Generating Source for Backup Power Source 2.2

2.1.4 Operation of SVPP for Peak-Shaving 2.3

2.2 PEAK-SHAVING STRATEGIES 2.3

2.2.1 Peak Shaving Versus Do Not Peak Shave, Given SVPP Open 2.5

2.2.2 Satisfy MOSR Without SVPP, Keep SVPP Open Strictly to Peak Shave 2.8

2.3 PRINCIPAL OPERATING STRATEGIES 2.10

2.3.1 Strategy 1B: SVPP Operation for Primary MOSR and Backup Power and SVPP Peak Shaving 2.10

2.3.2 Strategy 2B: Purchased Power for Primary MOSR, UPS with SVPP Generator for Backup Power, and SVPP Peak Shaving 2.10

2.3.3 Strategy 3B: Purchased Power for MOSR, UPS with Dedicated Generator for Backup Power, and SVPP Peak Shaving 2.11

3.0 ANALYSIS SCENARIOS 3.1

4.0 RESULTS AND CONCLUSIONS 4.1

5.0 REFERENCES 5.1

APPENDIX A - ANALYTICAL METHODOLOGY A.1

APPENDIX B - BASIC COST AND OPERATING ASSUMPTIONS FOR SVPP ANALYSIS . . B.1

APPENDIX C - EMISSIONS TRADING AT VANDENBERG AIR FORCE BASE C.1

APPENDIX D - OPERATING STRATEGY SPREADSHEETS D.1

TABLES

S.1 SVPP Analysis Operating Strategies vi

S.2 Analysis Results vii

S.3 Snapshot of SVPP Operating Costs in 1996 x

2.1 SVPP Analysis Operating Strategies 2.2

2.2 Hours of Cost-Effective Peak-Shaving Generation: Strategy 1B . . 2.4

2.3 Hours of Cost-Effective Peak-Shaving Generation: Strategies 2B and 3B 2.5

2.4 Variable Cost of Generation, By Year and By Month 2.6

2.5 Value of Generation, By Year, Month, and Period 2.7

2.6 Generation Cost Differential, Based on Variable Costs 2.7

2.7 Costs of Operating SVPP for Peak Shaving in Strategy 3B 2.8

2.8 Net Value of Annual Generation 2.9

3.1 Scenario A - SVPP Salvage Value 3.1

4.1 Analysis Results 4.1

1.0 INTRODUCTION

This document contains an economic analysis of primary strategies for operation of the South Vandenberg Power Plant (SVPP) and provides a sensitivity analysis to consider alternative operating scenarios that further impact the economics of these major strategies. For a strategy to be considered, the level of service provided must be equal to or better than the existing operating strategy where the SVPP is used to generate electricity to meet the Missile Operation Support Requirement (MOSR). It is based upon estimates of SVPP operational and environmental costs and supersedes all previous SVPP analysis documents by the Pacific Northwest Laboratory.[a] This document provides descriptions of the strategies, details the analytical methodology, and presents the results and conclusions of the economic analysis. Supporting documentation includes Appendix A: Analytical Methodology, Appendix B: Basic Cost and Operating Assumptions for SVPP Analysis, Appendix C: Emissions Trading at Vandenberg Air Force Base, and Appendix D: Operating Strategy Spreadsheets.

(a) Pacific Northwest Laboratory is operated for the U.S. Department of Energy by Battelle Memorial Institute under Contract DE-AC06-76RLO 1830.

2.0 OPERATING STRATEGIES

This section provides a discussion and analysis of the six strategies developed to determine the most cost-effective operation of the SVPP. Section 2.1 describes the six strategies, including three that operate the SVPP for peak shaving. Section 2.2 discusses the feasibility of operating the SVPP for peak shaving and shows how the analysis of peak-shaving feasibility allowed three of the operating scenarios to be excluded from further analysis. Section 2.3 analyzes the remaining three strategies in greater detail.

2.1 FORMULATION OF OPERATING STRATEGIES

The formulation of potential operating strategies at the SVPP assumed the MOSR as a given and determined the most cost-effective method for supplying these requirements. The MOSR is broken into two components:

- the MOSR for primary power
- the requirement for backup power to provide sufficient reliability.

A set of three primary operating strategies was defined to meet the MOSR, each of which satisfies the above two components. Each of these strategies has a substrategy that adds peak shaving, for a total of six strategies. The strategies differ from each other in four operating dimensions and are summarized in Table 2.1.

Each of the operating dimensions is discussed below.

2.1.1 Source of Primary MOSR Power

Power for the MOSR is currently provided by the SVPP. This would continue under two of the six strategies (1A and 1B). Under the other four strategies, primary power would be purchased from the local electrical utility, Pacific Gas & Electric (PG&E).

2.1.2 Source of Backup MOSR Power

The need for high reliability requires a backup power source to supplement the power provided by two SVPP turbines. Because the MOSR load may be less than the output capacity provided by the two turbines, excess power can

TABLE 2.1. SVPP Analysis Operating Strategies

#	Operating Strategy	Four Operating Dimensions			
		Primary Power	Backup Power	Backup Generator	Peak Shaving
1A	Status Quo SVPP\SVPP\No PS	SVPP	SVPP	None	No
1B	Base Case + Peak Shave SVPP\SVPP\PS	SVPP	SVPP	None	Yes
2A	UPS + SVPP Purchased\UPS\SVPP\No PS	Purchased	UPS	SVPP	No
2B	UPS + SVPP + Peak Shave Purchased\UPS\SVPP\PS	Purchased	UPS	SVPP	Yes
3A	UPS + Generator Purchased\UPS\Gen.\No PS	Purchased	UPS	Dedicated Generator	No
3B	UPS + Generator + Peak Shave Purchased\UPS\Gen.\PS	Purchased	UPS	Dedicated Generator	Yes

Gen = New Dedicated Generator; PS = Peak Shave; SVPP = South Vandenberg Power Plant; UPS = Uninterruptible Power Supply.

be dumped to a load bank that is used to prevent turbine instability and flame-out. The four strategies that call for purchasing power from PG&E (2A, 2B, 3A, and 3B) would all have the backup needs supplied by an uninterruptible power supply (UPS) system. The analysis assumes the UPS system would be installed and functioning prior to January 1, 1996.

2.1.3 Generating Source for Backup Power Source

The UPS system would require a backup power source in the event that electricity could not be supplied to the Space Launch Complexes (SLCs) for more than 30 minutes (the amount of time that the UPS batteries could support the power needs of the SLCs). This could be provided by the SVPP (strategies 2A and 2B) or it could be provided by installation of dedicated generators (strategies 3A and 3B). The UPS batteries would be charged by commercial power supplied by PG&E after restoration of power. The analysis assumes dedicated generators would be installed and functioning prior to January 1, 1996.

2.1.4 Operation of SVPP for Peak Shaving

The SVPP has generating capability in excess of that required for any foreseeable MOSR needs. The SVPP could use its generating capability to produce electricity for other Vandenberg Air Force Base (VAFB) needs, thereby "shaving" the peaks from purchased electricity. Three of the six scenarios assume the SVPP is used for peak shaving (strategies 1A, 2B, and 3B). The analysis assumes peak-shaving generation could occur beginning on January 1, 1994.

2.2 PEAK-SHAVING STRATEGIES

The six operating strategies describe three alternative modes in which the SVPP could be used for peak shaving which are described in subsequent subsections. Before the SVPP can be used as a peak-shaving power generator, PG&E's Rule 21 will have to be satisfied. To meet this PG&E safety rule, grounding transformers will be installed at Substation A so the SVPP can operate parallel to the grid. The current 1993 MILCON (military construction project) will update the 69-kV system and bring VAFB into compliance by June 1994. The analysis assumes the SVPP will operate until January 1994 status quo by providing only primary and backup power for MOSR support. In January 1994, peak-shaving activities begin in strategies 1B, 2B, and 3B. In January 1996, when a UPS system can be operated, strategies 2B and 3B would employ the UPS system as a backup power source in the event of power failure. With strategies 2A and 2B, the SVPP would provide emergency power during power failure as would the dedicated generators in strategies 3A and 3B.

The two benefits of peak shaving are driven by the electric rate structure and include peak demand reduction and displacement of electricity purchases. The electric rate for VAFB includes time-of-day rates (see PG&E Schedule E-20 rate structure defined in Appendix B). The highest time-of-day rate (as defined by the highest 30-minute average consumption during the peak period for the entire month) of $9.00/kW occurs during the summer (May through October) on weekdays between noon and 6:00 p.m. For all other periods, the

rate is $0.60/kW. There is also a standby charge of $0.60/kW for on-site generation that is subtracted from the $9.00/kW demand charge for an effective avoided demand charge of $8.40/kW.

The viability of peak shaving is controlled by the difference between natural gas and electric prices. Anytime that the incremental cost of producing electricity is more expensive than the electricity it displaces (including demand credits), it is uneconomical to operate the plant. Both electricity and natural gas have summer (May through October and April through November, respectively) and winter (November through April and December through March, respectively) prices, with gas costs decreasing in the summer when electricity prices are the highest. This is the most attractive period to peak shave. There are actually 12 potential different electric and gas rate period combinations that combine the three electric time-of-day rates (peak period, partial peak period, and off-peak period) with the four possible combinations of monthly groups (December through March, April, May through October, and November) resulting from the differing periods of electricity and gas rates. Table 2.2 shows how these hours are assumed to be allocated for peak shaving under strategy 1B, and Table 2.3 shows the allocation for peak shaving under strategies 2B and 3B. Under strategy 1B, the SVPP would still be providing

TABLE 2.2. Hours of Cost-Effective Peak-Shaving Generation: Strategy 1B

Year	Peak Apr-Jun Quarterly Total (h)	Peak Jul-Sep Quarterly Total (h)	Peak Oct-Dec Quarterly Total (h)	Partial Peak Apr-Jun Quarterly Total (h)	Partial Peak Jul-Sep Quarterly Total (h)	Partial Peak Oct-Dec Quarterly Total (h)	Annual Total (h)
1993	0	0	0	0	0	0	0
1994	1,234	1,834	613	1,434	630	719	6,464
1995	1,234	1,834	613	1,434	630	719	6,464
1996	1,234	1,834	613	1,434	630	719	6,464
1997	1,234	1,834	613	1,434	630	719	6,464
1998	1,234	1,834	613	1,434	630	719	6,464
1999	1,234	1,834	613	1,434	630	719	6,464
2000	1,234	1,834	613	1,434	630	719	6,464
2001	1,234	1,834	613	513	630	179	5,003
2002	1,234	1,834	613	513	630	179	5,003
2003	1,234	1,834	613	513	630	179	5,003
2004	1,234	1,834	613	513	630	179	5,003
2005	1,234	1,834	613	513	630	179	5,003
2006	1,234	1,834	613	513	630	179	5,003
2007	1,234	1,834	613	513	630	179	5,003
2008	1,234	1,834	613	0	0	0	3,681
2009	1,234	1,834	613	0	0	0	3,681

TABLE 2.3. Hours of Cost-Effective Peak-Shaving Generation: Strategies 2B and 3B

Year	Peak Apr-Jun Quarterly Total (h)	Peak Jul-Sep Quarterly Total (h)	Peak Oct-Dec Quarterly Total (h)	Partial Peak Apr-Jun Quarterly Total (h)	Partial Peak Jul-Sep Quarterly Total (h)	Partial Peak Oct-Dec Quarterly Total (h)	Annual Total (h)
1993	0	0	0	0	0	0	0
1994	1,267	1,911	644	1,641	997	1,295	7,755
1995	1,267	1,911	644	1,641	997	1,295	7,755
1996	1,267	1,911	644	1,641	997	1,295	7,755
1997	1,267	1,911	644	1,641	997	1,295	7,755
1998	1,267	1,911	644	1,641	997	1,295	7,755
1999	1,267	1,911	644	1,641	997	1,295	7,755
2000	1,267	1,911	644	1,641	997	1,295	7,755
2001	1,267	1,911	644	672	997	32	5,816
2002	1,267	1,911	644	672	997	32	5,816
2003	1,267	1,911	644	672	997	32	55,816
2004	1,267	1,911	644	672	997	325	5,816
2005	1,267	1,911	644	672	997	325	5,816
2006	1,267	1,911	644	672	997	325	5,816
2007	1,267	1,911	644	672	997	325	5,816
2008	1,267	1,911	644	0	0	0	3,822
2009	1,267	1,911	644	0	0	0	3,822

MOSR needs, and so the total hours of peak-shaving generation are less than under strategies 2B or 3B. Tables 2.2 and 2.3 only show allocated hours for those periods indicated to be cost-effective.

Peak shaving using diesel fuel was not considered in this analysis because it is always too expensive to generate electricity using diesel fuel and only a limited number of diesel-generating hours are available each quarter. In addition, the limited number of hours required for operation as a backup generator in the event of power outage was not included in this analysis.

2.2.1 Peak Shave Versus Do Not Peak Shave, Given SVPP Open

Choosing between strategies 1A and 1B or 2A and 2B is simply a matter of determining whether the variable costs of using the SVPP to generate electricity are less than the value of the electricity generated. Because the SVPP is assumed to be open for MOSR use, none of the fixed costs of keeping the SVPP open need to be accounted for when determining the cost-effectiveness of generation. It is strictly a question of determining the incremental cost of generating a kilowatt-hour (kWh) of electricity, given that the SVPP is

already open and comparing that incremental cost to the price of the electricity that is displaced by the generation.

The following three tables present the analysis of the cost-effectiveness of generation, based on variable costs only. Table 2.4 shows the variable cost of generation, by year and by month. The table is presented for each of the analysis years, because the real prices of electricity and gas are assumed to change during the analysis, as required by 10 CFR 436. The cost varies according to the month because gas prices vary seasonally. Table 2.5 then presents the value of the generation. The value of the generation is the price that PG&E would charge for the electricity if VAFB had to purchase it. The value varies by year, month, and peak period. Finally, Table 2.6 presents the generation cost differential, which is simply the value of the generation minus the cost to generate. A positive differential indicates a cost-effective generating period, and the higher the differential, the more profitable to generate in that period.

The cost differentials in Table 2.6 indicate that it is always cost-effective to generate in peak electricity periods, given that the plant is

TABLE 2.4. Variable Cost of Generation, By Year and By Month

Year	Dec-Mar Generation Cost ($/kWh)	Apr-Nov Generation Cost ($/kWh)
1993	$0.0556	$0.0418
1994	$0.0562	$0.0422
1995	$0.0572	$0.0429
1996	$0.0582	$0.0437
1997	$0.0593	$0.0445
1998	$0.0608	$0.0456
1999	$0.0629	$0.0471
2000	$0.0650	$0.0487
2001	$0.0671	$0.0502
2002	$0.0696	$0.0521
2003	$0.0712	$0.0533
2004	$0.0733	$0.0548
2005	$0.0754	$0.0563
2006	$0.0769	$0.0575
2007	$0.0785	$0.0586
2008	$0.0805	$0.0602
2009	$0.0831	$0.0621

TABLE 2.5. Value of Generation, By Year, Month, and Period

Year	May-Oct Peak ($/kWh)	May-Oct Partial Peak ($/kWh)	Apr, Nov Partial Peak ($/kWh)	Dec-Mar Partial Peak ($/kWh)	May-Oct Off-Peak ($/kWh)	Apr, Nov Off-Peak ($/kWh)	Dec-Mar Off-Peak ($/kWh)
1993	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1994	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1995	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1996	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1997	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1998	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1999	$0.0849	$0.0576	$0.0492	$0.0492	$0.0440	$0.0427	$0.0427
2000	$0.0857	$0.0582	$0.0497	$0.0497	$0.0444	$0.0431	$0.0431
2001	$0.0857	$0.0582	$0.0497	$0.0497	$0.0444	$0.0431	$0.0431
2002	$0.0865	$0.0587	$0.0502	$0.0502	$0.0448	$0.0435	$0.0435
2003	$0.0865	$0.0587	$0.0502	$0.0502	$0.0448	$0.0435	$0.0435
2004	$0.0874	$0.0593	$0.0507	$0.0507	$0.0453	$0.0439	$0.0439
2005	$0.0874	$0.0593	$0.0507	$0.0507	$0.0453	$0.0439	$0.0439
2006	$0.0874	$0.0593	$0.0507	$0.0507	$0.0453	$0.0439	$0.0439
2007	$0.0882	$0.0599	$0.0512	$0.0512	$0.0457	$0.0444	$0.0444
2008	$0.0882	$0.0599	$0.0512	$0.0512	$0.0457	$0.0444	$0.0444
2009	$0.0891	$0.0605	$0.0517	$0.0517	$0.0462	$0.0448	$0.0448

TABLE 2.6. Generation Cost Differential, Based on Variable Costs

Year	May-Oct Peak ($/kWh)	May-Oct Partial Peak ($/kWh)	Apr, Nov Partial Peak ($/kWh)	Dec-Mar Partial Peak ($/kWh)	May-Oct Off-Peak ($/kWh)	Apr, Nov Off-Peak ($/kWh)	Dec-Mar Off-Peak ($/kWh)
1993	$0.0422	$0.0152	$0.0070	-$0.0069	$0.0017	$0.0004	-$0.0134
1994	$0.0418	$0.0148	$0.0066	-$0.0074	$0.0014	$0.0001	-$0.0139
1995	$0.0411	$0.0141	$0.0058	-$0.0085	$0.0006	-$0.0007	-$0.0150
1996	$0.0403	$0.0133	$0.0050	-$0.0095	-$0.0002	-$0.0015	-$0.0160
1997	$0.0395	$0.0125	$0.0043	-$0.0105	-$0.0009	-$0.0022	-$0.0171
1998	$0.0384	$0.0114	$0.0031	-$0.0121	-$0.0021	-$0.0034	-$0.0186
1999	$0.0377	$0.0104	$0.0021	-$0.0137	-$0.0032	-$0.0045	-$0.0203
2000	$0.0370	$0.0095	$0.0011	-$0.0152	-$0.0043	-$0.0056	-$0.0219
2001	$0.0355	$0.0080	-$0.0005	-$0.0173	-$0.0058	-$0.0071	-$0.0240
2002	$0.0344	$0.0066	-$0.0019	-$0.0194	-$0.0073	-$0.0086	-$0.0261
2003	$0.0333	$0.0055	-$0.0030	-$0.0210	-$0.0084	-$0.0098	-$0.0277
2004	$0.0326	$0.0045	-$0.0041	-$0.0226	-$0.0095	-$0.0109	-$0.0293
2005	$0.0311	$0.0030	-$0.0056	-$0.0246	-$0.0110	-$0.0124	-$0.0314
2006	$0.0299	$0.0018	-$0.0068	-$0.0262	-$0.0122	-$0.0135	-$0.0330
2007	$0.0296	$0.0013	-$0.0074	-$0.0273	-$0.0129	-$0.0143	-$0.0341
2008	$0.0281	-$0.0003	-$0.0089	-$0.0293	-$0.0144	-$0.0158	-$0.0362
2009	$0.0270	-$0.0016	-$0.0104	-$0.0314	-$0.0159	-$0.0173	-$0.0383

open anyway. The cost-effectiveness of generating in the remaining periods depends on the year and on the period. In the operating scenarios that include keeping the SVPP open for MOSR support, peak shaving will always be cost-effective. Hence, operating strategies 1A and 2A are inferior to 1B and 2B, respectively, and 1A and 2A do not need to be analyzed further.

2.2.2 Satisfy MOSR Without SVPP, Keep SVPP Open Strictly to Peak Shave

Determining whether stand-alone peak shaving (strategy 3B) is cost-effective requires a determination as to whether the SVPP can generate enough cost savings to cover not only the variable costs discussed above but also the fixed costs of keeping the plant open. Fixed costs are those that do not vary according to the level of generation but need to be covered on an annual basis to keep the plant functioning. In the previous section, it was assumed the SVPP was open for the purpose of providing MOSR support and, hence, the fixed costs are billed to MOSR. The only requirement for generation is that the cost per kWh be less than the value per kWh. In this section, we discuss the case where the SVPP will be kept open for generation if and only if it can cover all of its costs on an annual basis.

Fixed costs of operating the SVPP fall in four categories:

1. labor costs
2. environmental costs
3. operating costs
4. opportunity costs of emissions permits.

These costs are shown in Table 2.7 (see Appendix B).

TABLE 2.7. Costs of Operating SVPP for Peak Shaving in Strategy 3B

Fixed Costs	
Labor	$249,850
Environmental	$229,950
Operating	$66,843
Total Fixed Costs	$546,643
Opportunity Cost of Emission Permits	
Permit to Operate	$766,730
SVPP Permits	$183,398
Total Opportunity Cost	$950,128
Opportunity Cost Annualized over 17 Years	$77,808
Total Costs	$624,451

The labor costs in Table 2.7 assume the SVPP is staffed only during peak-shaving periods. The opportunity costs of the emissions permits refer to the fact that keeping the SVPP open prevents the sale of the emissions permits held by the SVPP. The opportunity cost is presented as a lump sum as it would be received, but is then converted to an annual figure for accurate comparison against the annual benefits of generation. The annual benefits of generation are reported in Table 2.8, in the form of the net value (value - variable costs) of generation. Table 2.8 assumes that the SVPP is generating electricity all cost-effective hours, within the limits of the permitted operating hours in the 1990 Permit to Operate (PTO) granted by the Santa Barbara Air Pollution Control District (SBAPCD).

The net value of generating at the SVPP clearly exceeds the fixed costs of keeping the plant open, in every year of operation. This allows dismissal of the strategy whereby the SVPP is closed down upon installation of a UPS system with a dedicated generator (strategy 3A) in favor of the scenario where the plant stays open (strategy 3B).

TABLE 2.8. Net Value of Annual Generation

Year	Annual Generation Benefits (1992 $)
1993	$0
1994	$1,248,603
1995	$1,228,568
1996	$1,208,532
1997	$1,188,497
1998	$1,158,444
1999	$1,142,133
2000	$1,125,823
2001	$1,065,367
2002	$1,051,196
2003	$1,031,161
2004	$1,023,668
2005	$996,955
2006	$976,919
2007	$976,105
2008	$950,978
2009	$944,813

2.3 PRINCIPAL OPERATING STRATEGIES

Three strategies (1B, 2B, and 3B) remain to be analyzed upon the dismissal of the three described in Section 2.2 (strategies 1A, 2A, and 3A). The principal operating strategies are defined below.

2.3.1 Strategy 1B: SVPP Operation for Primary MOSR and Backup Power and SVPP Peak Shaving

This strategy starts with status-quo operation of the SVPP through January 1994 by providing primary and backup power for MOSR support. Peak shaving begins in 1994 with completion of installation of necessary safety grounding transformers to fulfill PG&E Rule 21. Primary and backup MOSR support at the primary SLCs (Atlas launches at SLC-3; Titan launches at SLC-4; and occasional Scout launches at SLC-5) is still provided by the SVPP. In addition, the SVPP is used to provide peak-shaving power during cost-effective periods with the remaining available operating hours per quarter as allocated in the PTO granted by the SBAPCD. The SVPP must operate with the full contingent of maintenance and operation personnel.

This strategy is analyzed year by year through the end of turbine life (2009) to determine if and when peak shaving would no longer be cost-effective.

2.3.2 Strategy 2B: Purchased Power for Primary MOSR, UPS with SVPP Generator for Backup Power, and SVPP Peak Shaving

This strategy starts with status-quo operation of the SVPP through January 1994 with primary and backup MOSR support being provided by the SVPP. Peak shaving begins in 1994. Starting in 1996, the primary MOSR support is from PG&E. The SVPP provides generator support for the UPS system, which, as a combined unit, provides backup MOSR support. The SVPP is also used as a peak-shaving power generator when it is cost-effective and up to the maximum hours of operation as defined by the PTO. The SVPP can be operated automatically when it supports the UPS but will need to be operated in a manual mode with a full contingent of operating and maintenance personnel during peak-shaving times.

2.3.3 Strategy 3B: Purchased Power for Primary MOSR, UPS with Dedicated Generator for Backup Power, and SVPP Peak Shaving

This strategy starts with status-quo operation of the SVPP through January 1994 with primary and backup MOSR support being provided by the SVPP. Peak shaving begins in 1994. A new UPS system with associated new generator provides MOSR support, and the SVPP is used for peak shaving.

3.0 ANALYSIS SCENARIOS

Three alternative scenarios were analyzed. Scenario A is the base case with no salvage value for SVPP turbine components upon retirement and current environmental constraints as they exist under the PTO. Scenario B assumed all environmental constraints on hours of operation had been relaxed by the SBAPCD and there was no salvage value on SVPP turbine components. This would allow the SVPP to generate electricity during all cost-effective hours. Scenario C assumed that a salvage value would be realized for the SVPP turbine components upon its retirement. The salvage value was determined according to a linear depreciation scale based upon a 20-year turbine life and is shown in Table 3.1.

TABLE 3.1. Scenario C - SVPP Salvage Value

Year	SVPP Salvage Value
1994	$2,400,000
1995	$2,240,000
1996	$2,080,000
1997	$1,920,000
1998	$1,760,000
1999	$1,600,000
2000	$1,440,000
2001	$1,280,000
2002	$1,120,000
2003	$960,000
2004	$800,000
2005	$640,000
2006	$480,000
2007	$320,000
2008	$160,000
2009	$0

4.0 RESULTS AND CONCLUSIONS

In all scenarios, the minimum life-cycle cost strategy is to continue providing MOSR with the electricity from the SVPP, and peak shave in all cost-effective, permitted hours. Including salvage value for the SVPP in the analysis makes no difference because the SVPP is kept open until 2009 under all strategies, at which point the salvage value is zero. If the environmental constraints limiting the hours of operation were removed, the SVPP would

TABLE 4.1. Analysis Results

Scenario	Strategy	Year of Implementation	Description	Life-Cycle Cost	Net Present Value	Optimal Year to Install UPS
Base Case: Current Environmental Constraints, No SVPP Salvage Value	1A	1994	Status Quo	$13,561,590	NA	2010
	1B	1994	Status Quo+PS	$3,289,468	$10,272,123	2010
	2B	1996	UPS+SVPP+PS	$4,963,101	$8,598,489	2010
	2B	2009	UPS+SVPP+PS	$3,302,691	$10,258,899	2010
	3B	1996	UPS+Gen+PS	$10,148,855	$3,412,735	2010
	3B	2009	UPS+Gen+PS	$3,626,834	$9,934,756	2010
Relaxed Environmental Constraints, No SVPP Salvage Value	1A	1994	Status Quo	$13,561,590	NA	2010
	1B	1994	Status Quo+PS	$2,127,636	$11,433,954	2010
	2B	1996	UPS+SVPP+PS	$3,816,781	$9,744,809	2010
	2B	2009	UPS+SVPP+PS	$2,088,868	$11,472,723	2009
	3B	1996	UPS+Gen+PS	$9,002,535	$4,559,055	2010
	3B	2009	UPS+Gen+PS	$2,413,010	$11,148,580	2010
Current Environmental Constraints, Salvage Value Included	1A	1994	Status Quo	$13,561,590	NA	2010
	1B	1994	Status Quo+PS	$3,289,468	$10,272,123	2010
	2B	1996	UPS+SVPP+PS	$4,963,101	$8,598,489	2010
	2B	2009	UPS+SVPP+PS	$3,302,691	$10,258,899	2010
	3B	1996	UPS+Gen+PS	$10,148,855	$3,412,735	2010
	3B	2009	UPS+Gen+PS	$3,626,834	$9,934,756	2010

Gen = New Dedicated Generator; PS = Peak Shave; SVPP = South Vandenberg Power Plant; UPS = Uninterruptible Power Supply.

be able to peak shave more hours every year, which causes the life-cycle costs of all strategies to fall. This strategy should only be pursued if the necessary permits, required to obtain additional operating hours, can be acquired for less than the net benefit.

5.0 REFERENCE

Keller and Gannon. 1992. Concept Design Study: SLC-4 Uninterruptible Power Supply (UPS) at Vandenberg Air Force Base, 100% Submittal. K&G Engineers and Architects, San Francisco, California.

APPENDIX A

ANALYTICAL METHODOLOGY

APPENDIX A

ANALYTICAL METHODOLOGY

Analysis in support of federal energy decisions must comply with 10 CFR 436, which mandates a life-cycle cost (LCC) analysis and prescribes the approach. This legislation prescribes the methodology and discount rate. This analysis of South Vandenberg Power Plant (SVPP) alternative operating strategies complies with this legislation and is described below.

A.1 LIFE-CYCLE COST RULES

The LCC analysis was conducted according to the following ground rules:

Discount Rate:	4.0% (real discount rate; i.e., adjusted for inflation) mandated by 10 CFR 436 for federal energy decisions in FY 1993.
Evaluation Period:	17 years. The remaining lifetime of the turbines (total life of the five 3-MW Allison 501KB natural gas-fired turbines is 20 years). The analysis starts in 1992 and continues through 2009.
Salvage Value:	For uninterruptible power supply (UPS) items with lives greater than the 17-year analysis period (UPS system, HVAC, and generator system) and the set of natural gas-fired turbines at the SVPP (with an initial investment of $8 million), a straight-line depreciation analysis is used to determine the salvage value of those items that are not used for their entire useful life.
Analysis Mode:	The analysis was performed in constant 1992 dollars (1992$). With this approach, all costs, except fuel and electricity costs, are assumed to increase at the rate of inflation. Fuel and electricity costs are increased at the real escalation rate. The one exception to this is the annual increment fee, which was, because it was determined in 1992$, deflated by the assumed 3.8% inflation rate.

Escalation Rates: The analysis employs Census Region 4 (includes California) fuel price escalators as provided by the National Institute of Standards and Technology[a] for use in federal energy decisions in FY 1993. These energy escalation rates indicate that natural gas will escalate substantially faster than electricity, especially in the latter part of the analysis period (see Figure A.1). The natural gas escalation rate used here, however, is less than that forecast by the Gas Research Institute.

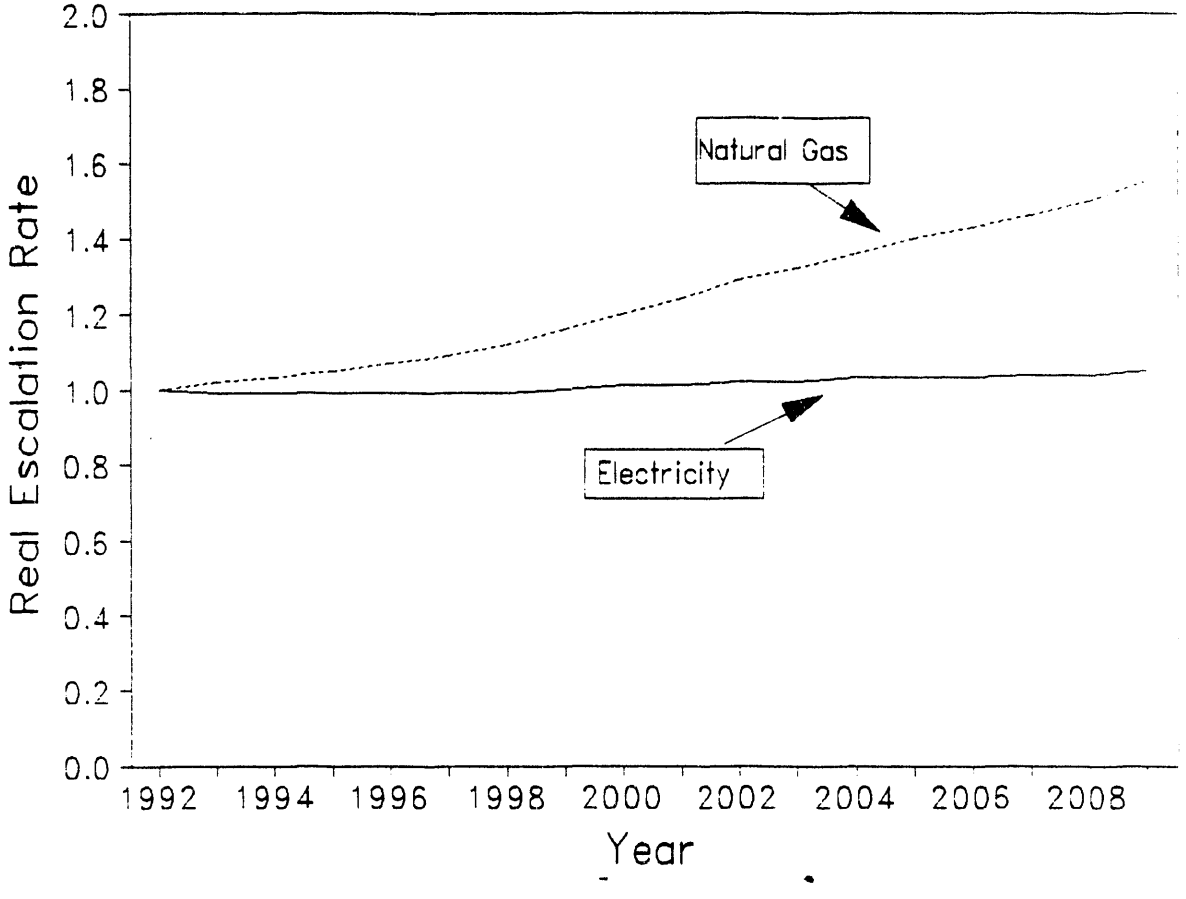

FIGURE A.1. Natural Gas and Electricity Escalation Rates

(a) Lippiatt, B. C. October 1992. Energy Prices and Discount Factors for Life-Cycle Cost Analysis 1993. NISTIR 85-3273-7, National Institute of Standards and Technology, Gaithersburg, Maryland.

PG&E Rule 21: Currently, the SVPP provides power to the Space Launch Complexes (SLCs) which are essentially isolated from the power grid. Because of reliability constraints required for MOSR activity, this will remain so even after the Pacific Gas and Electric (PG&E) Rule 21 is satisfied in January 1994. To meet the SLC's peak demand of approximately 1.5 MW and the reliability requirements, two of the 3-MW turbines operate in a mode that is less than their full capacity. Excess power is dumped to a load bank near the SVPP. By satisfying Rule 21, however, the SVPP will be able to be used for peak shaving. The grounding transformer that will be installed will allow the safe transmission of power generated at the SVPP onto the PG&E power grid.

A.2 RELIABILITY CONSIDERATIONS

Forced outages due to gas turbine failure will affect both the monthly demand charge reduction and energy savings from peak-shaving generation. The ANSI/IEEE Standard 493-1990[a] was used to estimate gas turbine generator reliability. There is a range of performance values given in the standard, based on survey data, for continuous and standby duty gas turbine generators. Continuous-duty gas turbines are generally more reliable than the standby units, and these were used as the category to represent the SVPP because they better reflect the operation of the SVPP in the different strategies. Although these gas turbines have more average hours of annual operation than the SVPP, the standby-duty category had less annual hours than the SVPP would operate for Missile Operation Support Requirement (MOSR) support only (with peak shaving adding more hours). Using these data, the mean time between failure is 1172.6 operating hours, the mean time to repair is 7.2 hours, and the starting reliability is 0.9921. The starting reliability is the ratio of the number of starts to the number of failures.

A.2.1 Energy Production Reliability

Inherent availability accounts for the impact of forced outages on the turbines ability to generate. The availability of the turbines is 99.39% using the performance data given above. Since the SVPP is constrained by a

---

(a) ANSI/IEEE Standard 493-1990: IEEE Recommended Practice for the Design of Reliable Industrial and Commercial Power Systems.

quarterly limit on generation, interruptions due to forced outage would be compensated by generation at another time, resulting in the same quarterly hours of generation. Because only the peak period is fully utilized, availability only impacts this period. Therefore, the effect of turbine reliability on peak-shaving generation is to move turbine hours from the peak period to the next highest priority rate period.

Under the 1990 Memorandum of Agreement with the SBAPCD, 2,908 turbine hours per quarter (11,632 annual turbine hours) are available to the five turbines at the SVPP for electricity generation. These hours apply to natural gas fuel usage only. Based on the analysis of SVPP log forms (Form 1167) for the 1-year period from February 1991 through January 1992, 2,013 annual turbine hours are needed for MOSR support and other miscellaneous operations (including quarterly operation hours required for environmental testing, personnel training, troubleshooting, and reliability). To determine how these hours were annually distributed over the various time-of-day electric rate periods (peak, partial peak, and off peak), weekly increments of hours for each rate period were determined with the assumption that MOSR and miscellaneous operation hours are distributed evenly over the rate periods. The result of this analysis showed that of the 2,013 annual turbine hours of operation, 142 turbine hours would occur during the peak period, 613 turbine hours would occur during the partial peak period, and 1,258 turbine hours would occur during the off-peak period (see Table B.11).

The following tables outline the annual turbine hours of operation available for peak shaving during the three rate periods for the strategies with no MOSR support and with full MOSR support applied to the two scenarios with and without environmental constraints. This analysis assumes that the SVPP will be used for peak shaving for all cost-effective hours under both the with and without environmental constraint scenarios. With five turbines operating at 8,760 hours per year, there is the potential of 43,800 annual turbine operating hours. Of this, 3,840 turbine hours are in the peak period, 12,603 turbine hours are in the partial peak period, and 27,357 turbine hours are in the off-peak period. These are the potential turbine hours that are physically possible to be used for generation during the year. From these

initial potential hours of operation, MOSR, and miscellaneous operation hours for training and annual system testing requirements and hours required for reliability constraints, along with hours that were not cost-effective were subtracted, leaving the total hours available for peak shaving. These results are found in Tables A.1 through A.4. Because gas prices escalate at a faster rate than the potential revenue of electricity, peak shaving in the off-peak and partial peak periods look less attractive over time and, in some cases, eventually drop out of the analysis because peak shaving during these periods is no longer cost-effective.

A.2.1.1 No MOSR Support

There are 3840 annual turbine hours potentially available during the peak period (128 peak period days, 6 hours of daily peak period, and 5 turbines). With reliability constraints included, there are 3822 annual turbine hours available for peak-period generation.

A.2.1.2 Full MOSR Support

During MOSR support, it is assumed that two of the turbines will be operated in a prime power configuration (isolated from the grid) to provide MOSR power. The effect of turbine reliability for this mode of operation includes the availability of the generating turbines as well as the lost generation potential in the event of a MOSR turbine failing during peak shaving (in which case, one of the peak-shaving turbines is moved from peak-shaving duty to MOSR support). Since there are 142 turbine hours of MOSR support during the peak period (using February 1991 through January 1992 as the representative period), there is a total of 3657 annual turbine hours available for peak-period generation (which would have been 3698 annual turbine hours assuming 100% reliability).

A.2.2 Demand Reliability

Peak demand charges are based on the highest 30-minute demand recorded during the peak period for the month. Assuming that the peak consumption for VAFB is constant from one peak period to the next, the demand reduction for the month represents the minimum peak period generation for the month. Therefore, any interruption in peak-period generation is assumed to impact the

TABLE A.1. Annual Peak-Shaving Hours with no MOSR Support and Current Environmental Constraints

Year	Peak Period (turbine hours)	Partial Peak Period (turbine hours)	Off-Peak Period (turbine hours)	Total Operating Turbine Hours	Annual Emissions (tons/yr)				
					NO_x	PM10	ROC	SO_x	Total
1994	3,822	4,739	163	8,724	19.08	2.75	3.18	2.4	27.41
1995	3,822	4,739	163	8,724	19.08	2.75	3.18	2.4	27.41
1996	3,822	4,739	0	8,561	18.73	2.70	3.12	2.36	26.91
1997	3,822	4,739	0	8,561	18.73	2.70	3.12	2.36	26.91
1998	3,822	4,739	0	8,561	18.73	2.70	3.12	3.36	26.91
1999	3,822	4,739	0	8,561	18.73	2.70	3.12	2.36	26.91
2000	3,822	4,739	0	8,561	18.73	2.70	3.12	2.36	26.91
2001	3,822	3,226	0	7,048	15.42	2.23	2.57	1.94	22.16
2002	3,822	3,226	0	7,048	15.42	2.23	2.57	1.94	22.16
2003	3,822	3,226	0	7,048	15.42	2.23	2.57	1.94	22.16
2004	3,822	3,226	0	7,048	15.42	2.23	2.57	1.94	22.16
2005	3,822	3,226	0	7,048	15.42	2.23	2.57	1.94	22.16
2006	3,822	3,226	0	7,048	15.42	2.23	2.57	1.94	22.16
2007	3,822	3,226	0	7,048	15.42	2.23	2.57	1.94	22.16
2008	3,822	0	0	3,822	8.36	1.21	1.39	1.05	12.01
2009	3,822	0	0	3,822	8.36	1.21	1.39	1.05	12.01

TABLE A.2. Annual Peak-Shaving Hours with Full MOSR Support and Current Environmental Constraints

Year	Peak Period (turbine hours)	Partial Peak Period (turbine hours)	Off-Peak Period (turbine hours)	Total Operating Turbine Hours	Annual Emissions (tons/yr)				
					NO_x	PM10	ROC	SO_x	Total
1994	3,657	3,769	0	7,426	16.24	2.34	2.71	2.04	23.33
1995	3,657	3,769	0	7,426	16.24	2.34	2.71	2.04	23.33
1996	3,657	3,769	0	7,426	16.24	2.34	2.71	2.04	23.33
1997	3,657	3,769	0	7,426	16.24	2.34	2.71	2.04	23.33
1998	3,657	3,769	0	7,426	16.24	2.34	2.71	2.04	23.33
1999	3,657	3,769	0	7,426	16.24	2.34	2.71	2.04	23.33
2000	3,657	3,769	0	7,426	16.24	2.34	2.71	2.04	23.33
2001	3,657	2,797	0	6,454	14.12	2.04	2.35	1.78	20.29
2002	3,657	2,797	0	6,454	14.12	2.04	2.35	1.78	20.29
2003	3,657	2,797	0	6,454	14.12	2.04	2.35	1.78	20.29
2004	3,657	2,797	0	6,454	14.12	2.04	2.35	1.78	20.29
2005	3,657	2,797	0	6,454	14.12	2.04	2.35	1.78	20.29
2006	3,657	2,797	0	6,454	14.12	2.04	2.35	1.78	20.29
2007	3,657	2,797	0	6,454	14.12	2.04	2.35	1.78	20.29
2008	3,657	0	0	3,657	8.00	1.15	1.33	1.01	11.49
2009	3,657	0	0	3,657	8.00	1.15	1.33	1.01	11.49

TABLE A.3. Annual Peak-Shaving Hours with No MOSR Support and Relaxed Environmental Constraints

Year	Peak Period (turbine hours)	Partial Peak Period (turbine hours)	Off-Peak Period (turbine hours)	Total Operating Turbine Hours	Annual Emissions				
					NO_x	PM10	ROC	SO_x	Total
1994	3,822	7,158	18,210	29,190	63.85	9.22	10.63	8.03	91.73
1995	3,822	7,158	13,710	24,690	54.01	7.80	8.99	6.80	77.60
1996	3,822	7,158	0	10,980	24.02	3.47	4.00	3.02	34.51
1997	3,822	7,158	0	10,980	24.02	3.47	4.00	3.02	34.51
1998	3,822	7,158	0	10,980	24.02	3.47	4.00	3.02	34.51
1999	3,822	7,158	0	10,980	24.02	3.47	4.00	3.02	34.51
2000	3,822	7,158	0	10,980	24.02	3.47	4.00	3.02	34.51
2001	3,822	4,458	0	8,280	18.11	2.61	3.02	2.28	25.02
2002	3,822	4,458	0	8,280	18.11	2.61	3.02	2.28	25.02
2003	3,822	4,458	0	8,280	18.11	2.61	3.02	2.28	25.02
2004	3,822	4,458	0	8,280	18.11	2.61	3.02	2.28	25.02
2005	3,822	4,458	0	8,280	18.11	2.61	3.02	2.28	25.02
2006	3,822	4,458	0	8,280	18.11	2.61	3.02	2.28	25.02
2007	3,822	4,458	0	8,280	18.11	2.61	3.02	2.28	25.02
2008	3,822	0	0	3,822	8.36	1.21	1.39	1.05	12.01
2009	3,822	0	0	3,822	8.36	1.21	1.39	1.05	12.01

TABLE A.4. Annual Peak-Shaving Hours with Full MOSR Support and Relaxed Environmental Constraints

Year	Peak Period (turbine hours)	Partial Peak Period (turbine hours)	Off-Peak Period (turbine hours)	Total Operating Turbine Hours	Annual Emissions				
					NO_x	PM10	ROC	SO_x	Total
1994	3,657	6,815	17,415	27,887	61.00	8.80	10.16	7.68	87.64
1995	3,657	6,815	13,214	23,686	51.81	7.48	8.63	6.52	74.44
1996	3,657	6,815	0	10,472	22.91	3.31	3.83	2.88	32.93
1997	3,657	6,815	0	10,472	22.91	3.31	3.83	2.88	32.93
1998	3,657	6,815	0	10,472	22.91	3.31	3.83	2.88	32.93
1999	3,657	6,815	0	10,472	22.91	3.31	3.83	2.88	32.93
2000	3,657	6,815	0	10,472	22.91	3.31	3.83	2.88	32.93
2001	3,657	4,294	0	7,951	17.39	2.51	2.90	2.19	24.99
2002	3,657	4,294	0	7,951	17.39	2.51	2.90	2.19	24.99
2003	3,657	4,294	0	7,951	17.39	2.51	2.90	2.19	24.99
2004	3,657	4,294	0	7,951	17.39	2.51	2.90	2.19	24.99
2005	3,657	4,294	0	7,951	17.39	2.51	2.90	2.19	24.99
2006	3,657	4,294	0	7,951	17.39	2.51	2.90	2.19	24.99
2007	3,657	4,294	0	7,951	17.39	2.51	2.90	2.19	24.99
2008	3,657	0	0	3,657	8.00	1.15	1.33	1.01	11.49
2009	3,657	0	0	3,657	8.00	1.15	1.33	1.01	11.49

demand savings for that month in an amount equal to the generation potential unavailable due to outage. This analysis assumes that the five turbines are independent, and that any event that occurs during a peak period impacts the total period (disruption greater than 30 minutes in duration) and that a single outage does not carry over different months.

A.2.2.1 No MOSR Support

Combining the operational reliability of 99.49% (an exponential distribution for 6 turbine hours daily) with the starting reliability of 99.21% results in an overall daily reliability of 98.70% per turbine. Using daily probabilities of the number of failures (using a binomial distribution to determine an integer number of failure rates) and an average of 21.5 peak-period days per month, the probability of no failures occurring in a month is 0.246. Since the probabilities of more than one failure occurring concurrently are small (0.034 for two concurrent failures and 0.00042 for three or more concurrent failures in a single day), the weighted average demand reduction is 12,632 kW per month (see Table A.5).

A.2.2.2 Full MOSR Support

It is assumed that there is at least one MOSR requirement each month, meaning that the maximum demand reduction (with no failures) is 9,000 kW per

TABLE A.5. Determination of Weighted Average Demand Reduction With No MOSR Support

Number of Coincident Failures	Demand Displacement (kW)	Probability of Occurring (per month)	Statistical Demand Reduction (kW/month)
0	15,000	0.246	3,690
1	12,000	0.719	8,633
2	9,000	0.034	307
3 (or more)	6,000 (or less)	0.000	2
Weighted Average Demand Reduction			12,632

month. Any forced outages, which are not concurrent with MOSR support, will not affect the monthly demand reduction. Therefore, the operational reliability was analyzed month by month for concurrent turbine hours of peak shaving and MOSR support during the peak period (defined as 5/2 times the MOSR peak period turbine hours). This results in an annual average of 0.9511, an average demand reduction of 8,560 kW per month.

A.2.3 Reliability Summary

The impact of reliability on SVPP operations is summarized in Table A.6.

TABLE A.6. Reliability Impact on SVPP Peak Shaving

	No Reliability Constraints (100% reliability)	
	No MOSR	Full MOSR
Peak-period generation (annual turbine hours)	3,840	3,698
Average monthly peak demand reduction (kW)	15,000	9,000
	With Reliability Constraints Included	
	No MOSR	Full MOSR
Peak-period generation (annual turbine hours)	3,822	3,657
Average monthly peak demand reduction (kW)	12,632	8,560

APPENDIX B

BASIC COST AND OPERATING ASSUMPTIONS FOR SVPP ANALYSIS

APPENDIX B

BASIC COST AND OPERATING ASSUMPTIONS FOR SVPP ANALYSIS

B.1 SOUTH VANDENBERG POWER PLANT OPERATING COSTS

Table B.1 summarizes the annual fixed and variable costs of operating the South Vandenberg Power Plant (SVPP). Details supporting each element follow in this appendix.

Table B.2 summarizes the Uninterruptible Power Supply (UPS) costs associated with SVPP operating strategies.

TABLE B.1. Annual Costs Associated with Operating the South Vandenberg Power Plant

Annual Fee	Fixed Cost (1992$)	Variable Cost (1992$)	Eliminated with SVPP Closure
A. Environmental Costs:			
1. Increment Fee		Table B.4	Yes
2. Emissions Fee		104/ton	Yes
3. Air Toxic Fee		14/ton	Yes
4. Air Quality Attainment Plan		47/ton	Yes
5. CEMS O&M	77,000	Yes	
6. DAS O&M Prorate	125,851	(a)	
7. SBAPCD Cost Reimbursable Budget	82,000	(b)	
8. Annual Source Test	70,000	Yes	
B. Operation Costs:			
1. Calibration Gas	24,000		Yes
2. Gas Line Maintenance	35,000		No
3. Catalytic Reducer Maintenance		2.43/tb.-h[c]	Yes
4. Annual Labor		Calculated	Yes
5. Fuel Costs - Gas		Calculated	Yes
6. Fuel Costs - Diesel		Calculated	Yes
7. Bench Stock	42,431	5.23/tb.-h	Yes

(a) This budget will be reduced by one-third with SVPP shut-down.
(b) This budget will be reduced by one-half with SVPP shut-down.
(c) Tb-h: turbine hours of operation.

TABLE B.2. UPS Costs Associated with SVPP Strategies

Cost	Fixed Cost (1992$)	Variable Cost (1992$)
A. UPS Costs:[a]		
1. UPS and New Backup Generator	10,925,200[b]	90,000[c]
3. UPS with Automated SVPP as Backup Generator	4,557,200[b]	60,000[c]

(a) UPS options for changing the current SVPP mission.
(b) One-time capital expense; $200,000 will be required to automate operation of the SVPP.
(c) Annual Operation and Maintenance expense.

B.2 CASH FLOWS ASSOCIATED WITH ENVIRONMENTAL MANAGEMENT

The following sections provide descriptions of each of the major environmental costs.

B.2.1 Opportunity Costs of Emission Rights

While there is currently no market for emissions rights in the Santa Barbara Air Pollution Control District (SBAPCD), the SBAPCD is developing regulations that would allow the trading of emissions rights, starting in 1993. Any potential market value of the emissions rights connected with the SVPP constitute a cost to keeping the SVPP open, so long as the rights could be sold and a monetary gain realized if the plant were to be closed down. This cost is called the "opportunity cost" of the SVPP emissions rights.

The value of the emissions rights associated with the SVPP will depend on the level of operation of the SVPP. Under the most likely market structure, the SVPP could only sell emissions rights up to the level at which it was actually operating. This analysis includes the estimated value of the emissions rights as a cash flow in the life-cycle cost (LCC) calculations. The market value of the emissions reduction credits (ERCs) in the 1990 Permit to Operate (PTO) would be realized upon SVPP closure. Other ERCs depend on the level of plant operation for the specific scenario being analyzed. The estimated value of the SVPP emissions rights are shown in Table B.3 for two levels of operation: status quo operation which provides for the missile

TABLE B.3. Value of SVPP Emissions Rights

	Status Quo (1992 $)	Full Operation (1992 $)
1990 PTO ERCs	766,730	766,730
ERCs from closing SVPP	68,116	307,387
Total	834,886	1,074,117

operation support requirement (MOSR) and full permitted operation. See Appendix C for a full discussion of the elements of Table B.3.

B.2.2 Increment Fee

This is a set annual fee (paid by 28 November) decreasing at a rate of 10% per year for the 10 years starting in 1988 and ending in 1997 (see Table B.4). The 10-year total for the fees is $318,827. There is a small "rebate" associated with this increment fee but it is negligible and will not be included with this analysis.[a]

B.2.3 Emission Fee

This is an annual fee dependent on the actual level (not the permitted level) of emissions (sum of NO_x, PM10, ROC, and SO_x) generated by the SVPP (see Table B.5).[b]

In calendar year (CY) 1991, the SVPP operated for a total of 2,156.6 hours (2094.1 hours using natural gas and 62.5 hours using diesel fuel), and the emissions were 20.36% of the total 37.08 tons of emissions (as measured by

TABLE B.4. Annual Increment Fee Schedule (1988 - 1997)

1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
48,951	44,056	39,650	35,685	32,116	28,905	26,014	23,413	21,072	18,965

(a) PNL conference call (Keith K. Daellenbach, Jeff E. Dagle) with Lt. Col. Van Mullem, Col. Jones (VAFB ET Manager), Master Sargent John Woods, Mike Silvia (EMC), 23 June 1992.
(b) Personal communication with Master Sargent John Woods, 12 June 1992.

TABLE B.5. Annual Emissions Fee

Tons of Emissions	Cost ($/ton)
0 - 10	250 (total amount)
>10 - 25	69
>25 - 100	104
>100	138

the sum of NO_x, PM10, ROC, and SO_x) generated at VAFB.[a] Because this fee is based on the total VAFB emissions, the 7.55 tons of emissions released by the SVPP (see Table B.6) would incur an incremental emission fee of $785. Operation anywhere within the limit of hours currently permitted would not change the fee schedule applicable to the plant.

If the SVPP were to operate at its regulated limit of 2,9[illegible] urbine hours per calendar quarter (11,632 h/yr) using natural gas and 180 turbine hours per calendar quarter (720 h/yr) using diesel fuel, a total of 38.82 tons of emissions (sum of NO_x, PM10, ROC, and SO_x) would be the maximum limitation on SVPP emissions (see Table B.7).[b] The 38.82 tons of emissions released by the SVPP would incur an incremental emission fee of $4037. Operation anywhere within the limit of hours currently permitted would not change the fee schedule applicable to the plant.

TABLE B.6. CY 1991 Annual Emission Fees (tons/year)

Fuel Type	NO_x	PM10	ROC	SO_x	Total Emissions	Total Incremental Fee (1992$)
Natural Gas	6.27	0.29	0.10	0.02	6.68	
Diesel	0.27	0.02	0.02	0.56	0.87	
Total	6.54	0.31	0.12	0.58	7.55	785

(a) Personal communication with Master Sargent John Woods, 12 June 1992.
(b) Permit to Operate Number 6117, County of Santa Barbara, Air Pollution Control District, Goleta, California, 19 November 1990.

TABLE B.7. Limit of Annual Emissions (tons/year) and Associated Annual Emission Fee

Fuel Type	NO_x	PM10	ROC	SO_x	Total Emissions	Total Incremental Fee (1992 $)
Gas, Diesel	27.02	3.9	4.5	3.4	38.82	4037

B.2.4 Annual Air Toxic Fee

This annual fee is dependent on the actual level (not the permitted) of air toxics emitted (sum of NO_x, PM10, ROC, and SO_x) generated by the SVPP (see Table B.8).[a] In CY 1991, the incremental air toxic fee was $106, and at maximum operating capacity the incremental air toxic fee would be $543. Operation anywhere within the limit of hours currently permitted would not change the fee schedule applicable to the plant.

B.2.5 Air Quality Attainment Plan

This annual fee is dependent on the actual level (not the permitted level) of emissions (sum of NO_x, PM10, ROC, and SO_x) generated by the SVPP (see Table B.9).[b] In CY 1991, the Air Quality Attainment Plan (AQAP) fee was zero, and at maximum operating capacity the AQAP fee would be $1824.

TABLE B.8. Annual Air Toxic Fee

Tons of Emissions	Cost ($/ton)
0 - 10	0
>10 - 25	9
>25 - 100	14
>100	18

(a) Personal communication with Master Sargent John Woods, 12 June 1992.
(b) Personal communication with Master Sargent John Woods, 12 June 1992.

TABLE B.9. Air Quality Attainment Plan (AQAP) Fee

Tons of Emissions	Cost ($/ton)
0 - 10	no charge
>10 - 25	31
>25 - 100	47
>100	62

B.2.6 CEMS Maintenance

A 15-channel Continuous Emission Monitoring System (CEMS) monitors NO_x, PM10, ROC, SO_x, and CO for each of the five gas turbines at the SVPP and via telemetry equipment, transfers real-time output to the SBAPCD. The annual fee for this maintenance is $77,000.[a] This fee includes the CEMS operating budget, CEMS calibration, and quarterly reporting.[b]

B.2.7 DAS Operation and Maintenance Prorate

There are two 21-channel (10 pollutant channels and 11 meteorological channels) Data Acquisition Systems (DASs) currently operating on the Base: one at the Watt Road Site in the north Base and the other near the SVPP. The annual Operation and Maintenance (O&M) prorate fee is $125,851.[c] These Prevention of Significant Deterioration (PSD) air monitoring systems are an asset to the Base as they provide historical air quality data that could be used to speed initiation of new projects. Site O&M fees for PSD have been discontinued with the Memorandum of Agreement dated 19 July 1992.[d] If the SVPP were shut-down, the DAS O&M prorate fee would decrease by one-third.[e]

(a) Personal communication with Lt. Col. Van Mullem and Kevin Wright during PNL visit to VAFB on 21 April 1991.
(b) Personal communication with Master Sargent John Woods, 12 June 1992.
(c) Personal communication with Lt. Col. Van Mullem, 25 June 1992.
(d) PNL conference call (Keith K. Daellenbach, Jeff E. Dagle) with Lt. Col. Van Mullem, Col. Jones (VAFB ET Manager), MSGT John Woods, Mike Silvia (EMC), 23 June 1992.
(e) Personal communication with Lt. Col. Van Mullem and Kevin Wright during PNL visit to VAFB on 21 April 1991.

B.2.8 Spaced Cost Reimbursable Budget

Between July 1991 and June 1992, a total of $555,000 was charged to VAFB for engineering service and program fees. Of this, $400,000 was charged in a cost reimbursable manner.[a] A budget of $82,000 represents the cost reimbursable fees to the SBAPCD for items directly affected by SVPP operation. This includes inspecting the 55,000-gallon fuel tank, inspecting the SVPP to check compliance with the PTO, contracting for expert contractor assistance, modifying to the SVPP PTO, entering emissions data received from the Base into a mainframe computer, and writing necessary reports. While this reimbursable amount varies widely (in 1989 it was $44,300 and in 1990 it was $150,700), the 1991 budget of $82,000 will be used as a proxy for all years in this analysis because it represents a year that will be the most similar to what would occur in 1993.[b] This budget would be reduced by one-half if the SVPP were shut-down.[c] In addition, in the event of SVPP shut-down, there would be no cost savings due to reduced staff in the Environmental Management Division at VAFB.

B.2.9 Annual Source Test

Annual SVPP facility inspection by the SBAPCD includes source testing for emission limits and calculating emissions for each turbine. The gas turbine stacks are tested quarterly by a certified contractor (certified by the State Air Quality Board). The annual fee for these tests is $70,000.[d]

B.3 OPERATING COST ASSUMPTIONS

The following sections provide the assumptions of the major operating costs.

(a) Audit Report, 4 November 1992, Air Force Auditing Agency, Vandenberg Air Force Base, California.
(b) Personal communication with Lt. Col. Van Mullem, 25 June 1992.
(c) Personal communication with Master Sargent John Woods, 12 June 1992.
(d) Personal communication with Lt. Col. Van Mullem, 13 November 1992.

B.3.1 Calibration Gas

This is required for gas turbine operation and has a fixed cost of $24,000 per year.[a]

B.3.2 Gas Line Maintenance

VAFB owns the high-pressure gas line after it enters VAFB and is responsible for the costs to maintain the line. Because other facilities in south VAFB are using gas (e.g., the boilers at SLC 4 use natural gas from the main line), the line will need to be maintained regardless of the SVPP operation scenario. This maintenance includes cost of monitoring valve connections and venting systems, natural gas VRC (vapor recuperative system), and oil relief valve monitoring.[b,c,d]

B.3.3 Catalytic Reducer Maintenance

Regular maintenance of the flue stacks is performed by maintenance staff assigned to the power plant. This maintenance is included in the annual labor cost. The maintenance of the catalytic reducers was initially anticipated to cost $60,000 every 2 years when the plant is operated at its full permitted level of 11,632 turbine hours per year.[e] The variable cost of $2.43 per turbine hour was determined by dividing the 2-year catalytic overhaul cost of $60,000 by the total of 2 years of permitted operating hours or 24,704 turbine hours.

B.3.4 Annual SVPP Labor Costs

Table B.10 displays the annual SVPP labor costs. These labor costs were provided by Chief Fowler during an August 1992 visit to VAFB by PNL staff.

(a) Personal communication with Lt. Col. Van Mullem and Kevin Wright during PNL visit to VAFB on 21 April 1991.
(b) Personal communication with Lt. Col. Van Mullem and Kevin Wright during PNL visit to VAFB on 21 April 1991.
(c) Personal communication with Chief Master Sargent Wayne H. Fowler, 12 June 1992.
(d) Personal communication with Chief Master Sargent Wayne H. Fowler, 26 June 1992.
(e) Personal communication with Chief Master Sargent Wayne H. Fowler, 12 June 1992.

TABLE B.10. Annual SVPP Labor Costs for SVPP Operating Strategies

Strategy	Maintenance Labor Cost ($/yr)	Operation Labor Cost ($/yr)	Total Labor Cost ($/yr)
SVPP Primary Power SVPP Backup Power No Peak Shave with SVPP No UPS	166,127[a]	417,295[b]	583,422
SVPP Primary Power SVPP Backup Power Peak Shave with SVPP No UPS	166,127	417,215	583,422
Purchased Primary Power UPS Backup Power SVPP Backup Generator No Peak Shave with SVPP	166,127	0	166,127
Purchased Primary Power UPS Backup Power SVPP Backup Generator Peak Shave with SVPP	166,127	139,098[c]	305,225
Purchased Primary Power UPS Backup Power New Dedicated Generator No Peak Shave with SVPP	0	0	0[d]
Purchased Primary Power UPS Backup Power New Dedicated Generator Peak Shave with SVPP	110,751[e]	139,098	249,850

TABLE B.10. (contd)

(a) Maintenance labor cost for strategies requiring a full contingent of maintenance personnel (four people) at the SVPP for a full year.
(b) Operation labor cost for strategies requiring a full contingent of operation personnel (12 people) at the SVPP for a full year.
(c) Operation labor cost for strategies requiring a half contingent of operation personnel (six people) at the SVPP for 8 months of the year when it is used solely for peak shaving. During the remaining 4 months of the year, only four maintenance personnel are required to operate the SVPP when it is being used solely to backup the UPS. This is possible because the SVPP can be automated for the intermittent power needs of the UPS.
(d) In this particular strategy the SVPP is shut down therefore, there are no corresponding labor costs associated with maintaining or operating the SVPP.
(e) Maintenance labor cost for strategy, requiring a full contingent of maintenance personnel (four people) at the SVPP for the 8 months of the year when it is used solely for peak shaving.

B.3.5 Fuel Costs (Natural Gas, Diesel) and Electricity Production

The operation schedule in Table B.11 will be a proxy for the mission support part of the operation scenarios and is based on compiled turbine hours of operations.[a] The heat rate for mission support is assumed to remain the same as in the February 1991 to January 1992 historical record. This heat rate is substantially higher than that measured for the turbines at full capacity. The full load heat rate has been measured on the site as 13,902 Btu/kWh.[b] This heat rate is used for all peak-shaving activity.

B.3.6 Bench Stock

The bench and emergency stock costs have both a fixed and variable portion. These are based on actual costs for the 1831.9 turbine hours of operation from April 1991 through April 1992.[c] During this period, the

(a) South Vandenberg Power Plant Operating Logs (SVPP A, B, C, D, and E) Form 1167, February 1991 through January 1992.
(b) Personal communication with SSGT John R. Dick, Jr., 9 November 1992.
(c) Calderon, Anthony R., SVPP Maintenance Supervisor. Memo dated 22 April 1992. Vandenberg Air Force Base, California.

TABLE B.11. Proxy Fuel Use in Million Btu (MBtu) and Electrical Production in kilowatt-hours (kWh) for Mission-Support Operation of the SVPP

Month	Gas hours of operation (turbine hours)	Gas fuel consump. (MBtu)	Diesel hours of operation (turbine hours)	Diesel fuel consump. (MBtu)	Electricity Produced (kWh)
Feb. 91	338.4	9,087.3	0.0	0.0	342,000
Mar. 91	362.0	9,397.8	0.0	0.0	384,000
Apr. 91	48.5	1,252.4	0.0	0.0	48,000
May 91	84.5	2,649.6	28.6	456.5	216,000
Jun. 91	107.5	3,074.0	0.0	0.0	156,000
Jul. 91	260.0	6,510.2	14.9	237.8	324,000
Aug. 91	128.1	3,405.2	2.2	35.1	168,000
Sep. 91	55.1	1,832.0	9.1	145.2	132,000
Oct. 91	177.5	4,885.2	0.0	0.0	216,000
Nov. 91	429.0	11,592.0	0.0	0.0	522,000
Dec. 91	7.1	517.5	0.0	0.0	18,000
Jan. 92	14.8	403.6	7.5	119.7	42,000
Total	2,012.5	54,606.8	62.3	994.3	2,568,000

total cost of all parts and supplies was $52,002.95. This includes turbine nozzles, which are replaced every 8,000 hours of operation.[a] At $300 per nozzle and six nozzles per turbine, this is $0.23 per turbine-hour. An additional $5.00 per turbine-hour is allocated for other variable supplies. The fixed portion is $42,431 per year.

Bench Stock Cost (1993$) = 42,431 + 5.23 * (turbine-hours of operation)

B.4 UPS COST ASSUMPTIONS

In the event of SVPP closure, UPS systems must be installed to provide the necessary highly reliable power required during missile preparation and launch activities at the various Space Launch Complexes (SLCs). Currently, the SVPP provides this reliable power for activities at SLC-3 (used for Atlas launches), SLC-4 (Titan launches), and SLC-5 (Scout launches). Future activities at these SLCs are uncertain, accentuated by the fact that current plans

(a) Personal communication with SSGT John R. Dick, Jr., 9 November 1992.

call for only one more launch at SLC-5 before the Scout program is terminated. However, some future mission at SLC-5 could require highly reliable power at that site, which at the present time could be provided by the SVPP.[a]

It is the current policy of Space Command to use UPS system and diesel generators to provide backup redundancy for reliability enhancement for critical launch activities. These systems have many advantages, which include reduced operating costs and circumventing the need for an environmental permit to operate (since the backup generators operate less than 200 hours per year[b]). However, the UPS systems require an extensive capital expense for equipment acquisition and installation.

A study of using UPS at SLC-4 was recently completed by Keller and Gannon Engineers and Architects.[c] Of the various scenarios presented in this study, the base has tentatively selected a centralized static UPS system located at Switchouse M.[d,e]

This option has two alternatives for satisfying the backup generation requirement. New diesel generators can be installed at the UPS location or the SVPP can be utilized to provide backup generation in a similar fashion. The differences in cost are provided in Table B.12.

Operating and maintenance cost for the UPS and generator sets are not discussed in the Keller and Gannon report. Using an estimate of about $400/unit/month[f] with 25% contingency added, the O&M cost of the UPS system would be about $60,000 per year. If the new backup diesel generators are

---

(a) Personal communication with Chief Master Sargent Wayne H. Fowler 26 June 1992.
(b) PNL conference call (Keith K. Daellenbach, Jeff E. Dagle) with Lt. Col. Van Mullem, Col. Jones (VAFB ET Manager), MSGT John Woods, Mike Silvia (EMC), 23 June 1992.
(c) Keller and Gannon, Concept Design Study: SLC-4 Uninterruptible Power Supply (UPS) at Vandenberg Air Force Base, 100% Submittal.
(d) PNL conference call (Keith K. Daellenbach and Jeff E. Dagle) with Lt. Ron Zawadzke, September 11, 1992.
(e) PNL conference call (Keith K. Daellenbach and Jeff E. Dagle) with CMSGT Wayne H. Fowler, September 16, 1992.
(f) Personal communication with Fred Tamjidi, Teledyne INET, Torrance, California, 29 June 1992.

TABLE B.12. Cost (in 1992 $) of Centralized UPS at Switchouse M

	Life (yr)	New Diesel Generators	SVPP Backup
UPS System	12[a]	1,800,000	1,800,000
Building	25	1,782,200	1,782,200
Switchgear	25	550,000	550,000
HVAC	12	225,000	225,000
Subtotal		4,357,200	4,357,200
Generator System	12	3,600,000	200,000[b]
Building	25	2,318,000	0
Switchgear	25	650,000	0
Subtotal		6,568,000	200,000
Total Cost of Alternative		10,925,200	4,557,200

Source: Keller and Gannon, 1992
(a) The lifetime of a UPS system is approximately 100,000 hours of operation or about 12 years.
(b) Cost of automation.

installed, this would represent an additional $30,000 per year or a total of $90,000 per year for generator O&M. These O&M costs include the annual labor costs to operated the UPS.

B.5 UTILITY RATE INFORMATION

The following describes the utility rate structures at VAFB.

B.5.1 Rate Periods

```
      Jan   Feb   Mar   Apr   May   Jun   Jul   Aug   Sep   Oct   Nov   Dec
Elec  ---- WINTER --------->|<-------- SUMMER ----------------->|<-----------
Gas   ---- WINTER --->|<-------------- SUMMER ----------------------->|<-----
```

B.5.2 Gas Rate Structure

	Summer	Winter
Gas Rates (per therm):		
Procurement Charge:	15.829¢	22.733¢
Transmission Charge:	11.438¢	14.307¢
plus tariff:	0.266¢	0.266¢
Customer Charge (per meter per month):		
0 - 5,000 therms	$ 150	
5,001 - 30,000 therms	350	
30,001 - 200,000 therms	750	
200,001 - 1,000,000 therms	1,000	
1,000,001 or more therms	3,500	
(based on previous 12 months)		

B.5.3 Electric Rate Structure

Electrical Rates:		
Maximum Peak-Period Demand:	$ 9.00/kW	N/A
AND		
Maximum Demand:	$ 0.60/kW	$ 0.60/kW
Energy Charges:		
Peak-Period:	$ 0.08485/kWh	N/A
Partial Peak-Period:	0.05759	$ 0.04924/kWh
Off-Peak Period:	0.04397	0.04265
Standby Charge: $ 0.60/kW	$ 0.60/kW	

Definitions of Electrical Service Time Periods:		
Peak:	noon-6p.m. M-F	N/A
Partial-Peak:	8:30a.m.-noon & 6p.m.-9:30p.m. M-F	8:30a.m.-9:30p.m. M-F
Off Peak:	9:30p.m.-8:30a.m. M-F All Day S,S, Hol.	9:30p.m.-8:30a.m. M-F All Day S, S, Hol.

B.5.4 Utility References

Gas: Schedule GN-32 (Natural Gas Core Service for Large Commercial and Industrial), Southern California Gas Company, Rates Effective June 1, 1992.

Electricity: Schedule E-20 (Service to Customers with Maximum Demands of 1,000 Kilowatts or more), Pacific Gas and Electric Company, Rates Effective January 1, 1992.

Schedule S (Standby Service), Pacific Gas and Electric Company, Rate Effective January 1, 1992.

APPENDIX C

EMISSIONS TRADING AT VANDENBERG AIR FORCE BASE

APPENDIX C

EMISSIONS TRADING AT VANDENBERG AIR FORCE BASE

SUMMARY

This discussion paper investigates the impact of emissions rights in the analysis of options for the South Vandenberg Power Plant (SVPP). In the early stages of the SVPP analysis, it was felt that the market value of the emissions rights connected with the SVPP was potentially quite large. While there is currently no market for emissions rights in the Santa Barbara Air Pollution Control District (SBAPCD), the SBAPCD is developing regulations that would allow the trading of emissions rights, starting in 1993. Any potential market value of the emissions rights connected with the SVPP constitute a cost to keeping the SVPP open, so long as the rights could be sold and a monetary gain realized if the plant were to be closed down. This cost is called the "opportunity cost" of the SVPP emissions rights.

The value of the emissions rights associated with the SVPP may depend on the level of operation of the SVPP. Under the most likely market structure, the SVPP could only sell emissions rights up to the level at which it was actually operating. The plant is currently operating at less than 20% of its permitted level, and so would require a significant increase in operations to realize the full value of the emissions rights.

The recommendations of this paper are that the ongoing SVPP options analysis should include the estimated value of the emissions rights in the analysis, as a line item in the life-cycle cost calculations. The value of the rights, given the current level of operation of the plant, should be included as a scenario, and the value of the rights, given increased operating levels, should be included as a scenario. That said, the estimated value of the emissions rights is low, relative to other costs of operating the plant. The estimated value of the SVPP emissions rights are shown in Table C.1. See Sections C.5 and C.6 for a detailed discussion of the entries in the table.

TABLE C.1. Value of SVPP Emissions Rights

	Status Quo (1992 $)	Full Operation (1992 $)
1990 PTO ERCs	760,328	760,328
ERCs from closing SVPP	68,156	367,620
Total	828,484	1,127,948

It is likely that the SVPP would need to operate at an increased level for a few years to lay claim to the higher level of emissions rights. The analysis should incorporate this aspect of the value of the rights. This should be done by calculating the life-cycle cost of a series of strategies, where each strategy includes keeping the plant open one more year. The value of the emissions rights would change, depending on how many years the plant is operated at an increased level.

C.1 INTRODUCTION

This discussion paper is intended to lay out Pacific Northwest Laboratory's (PNL's) understanding of the issues underlying the trading of emissions rights at Vandenberg Air Force Base (VAFB). PNL's interest in this area derives from our analysis of the options available for future operations at the SVPP. The value of the emissions rights connected with the SVPP potentially constitutes a significant opportunity cost to keeping the plant open. PNL is working with Mike Silvia of Environmental Management Consultants, Inc. (EMC) to develop an estimate of the opportunity cost represented by the emissions rights.

Historically, electricity generators such as the SVPP were able to emit pollutants at no cost, avoiding the expense of disposing unwanted byproducts from the generation process. This lack of a direct cost to the generator results in relatively lower investment in technologies to control emissions and, hence, a higher level of pollution than may be socially desirable. The traditional regulatory response has been command and control, whereby regulatory agencies prescribe specific control measures that a generator will undertake. Economic theory suggests that the alternative approach of

establishing a market in emissions rights will result in lower total costs for similar levels of emissions reductions. The idea is that generators who are able to reduce their emissions at low cost (either through the addition of control technologies or through reductions in operations) will do so and will sell the resulting emissions credits to generators who would otherwise face high costs to reduce their emissions.

C.2 STRUCTURE OF EMISSIONS RIGHTS MARKETS

The emissions affected by the sets of rules and regulations to be discussed in this paper fall into five categories: nitrogen oxides (NO_x), sulfur oxides (SO_x), carbon monoxide (CO), reactive organic compounds (ROCs), and particulate matter (PM). Of particular interest to the County of Santa Barbara are the precursors to ozone, NO_x and ROCs, which contribute to the formation of ozone under certain conditions.

There is currently a nationwide system of marketable permits for SO_x, established by the U.S. Environmental Protection Agency (EPA) under Federal Clean Air Act legislation. Regional markets are being established in California for the pollutants listed above. The SBAPCD is currently in the process of establishing a market for NO_x, SO_x, ROCs, and PM. It is likely that the market will resemble that of the South Coast Air Quality Management District, which has established a program called RECLAIM (Regional Clean Air Incentives Market) for the marketing of NO_x and ROCs. It is expected that a market will be established in Santa Barbara sometime in 1993.[a]

None of the markets mentioned above attempt to setup a physical market for actually trading emissions rights. Rather, these markets define a set of structures required to allow suppliers and demanders to trade emissions rights. In the true spirit of capitalism, a number of brokerage firms are actively engaged in setting up trades of emissions rights in those jurisdictions that have defined the necessary structures, and the Chicago Board of Trade is considering involvement in the national SO_x market being established

---

(a) Personal communication, Mike Silvia, September 11, 1992.

by EPA. The RECLAIM program makes no attempt to determine a price for emissions rights, as this too will be determined by market forces.

C.2.1 Allocation of Emissions Rights

A primary requirement for a market is that sellers in the market have some allocation of the good to be traded. This is not a trivial matter in the case of emissions rights. Generally, regulators involved in establishing an emissions rights market determine a baseline level of actual emissions for a facility and grant the facility the rights to those emissions. Emissions rights are generally expressed in pounds per calendar quarter for affected pollutants. The baseline level can be calculated in a number of ways. The RECLAIM market is considering two methods of defining the baseline. The first is to take a 3-year average of actual emissions, from 1989 through 1991. The downfall to this method is that there is no allowance for the slow economy during much of the 3-year period, which led to lower production and, hence, lower emissions for many facilities. The alternate proposal being considered by RECLAIM is to take the maximum actual annual emissions during the same 3-year period.[a]

The SBAPCD is currently discussing three alternatives: averaging actual emissions over 5 years, over 3 years, or over 1 year.[b] The averaging period is important because of the incentives created by the allocation mechanisms. A longer averaging period would tend to provide a truer picture of actual emissions at a facility. However, the allocation mechanism provides an incentive for facilities that are emitting below their permitted levels (such as the SVPP) to increase emissions closer to the permitted maximum, so as to obtain rights to the larger amount. It is felt that this is inevitable to some degree, and setting a shorter period for determination of the baseline mitigates the damage.

A key stimulus to the development of emissions rights markets is the requirement that districts achieve mandated air quality levels. The SBAPCD is

---

(a) Regional Clean Air Incentives Market, RECLAIM. South Coast Air Quality Management District Summary Recommendations. Spring, 1992.
(b) Personal communication, Mike Silvia, September 11, 1992.

currently a nonattainment area for ozone, meaning that ozone levels must be reduced to comply with legislated air quality requirements. Reductions in emissions are achieved through markets in two ways: mandated annual reductions in the permitted levels of emissions and through the use of an offset ratio. The offset ratio is discussed in Section C.2.3. The RECLAIM market is using the mandated reduction in permitted emissions mechanism. NO_x permit levels will be reduced by 8% annually through the year 2005, and ROCs permit levels will be reduced by 5% annually through the year 2000. The SBAPCD already requires the use of an offset ratio in its permitting activities and is likely to include an offset ratio mechanism in its market structure.

C.2.2 ERCS, Offsets and Emissions Banking

A key feature of emissions rights markets is the emissions reduction credit (ERC). It is ERCs that are actually traded in emissions rights markets. In areas such as the SBAPCD, which are characterized by rules requiring no net increase of certain emissions, increased emissions from one source must be "offset" by emissions reductions from other sources. Current regulations in the SBAPCD allow for a facility that permanently decreases emissions to earn an ERC equal to the decrease in emissions. The ERCs are measured in pounds per quarter of a specific pollutant. The term "offset" is used interchangeably with ERC: the ERCs earned by a facility can be used to offset increased emissions by the facility.

Emissions rights markets must contain provisions for the storing of ERCs for future use, called "banking" of ERCs. Typically, ERCs earned by reduced emissions in one quarter can be banked to offset increased emissions in a future quarter. The ERCs generally expire after some period of time, however, and so cannot be built up indefinitely. The SBAPCD had rules allowing for the banking of ERCs in 1984, when a Memorandum of Agreement (MOA) on Emission Banking and Offsets was signed with VAFB. At that time, a set of ERCs was created by agreeing to permanently reduce operations at power plant 2 and paving the landfill road. The actual ERCs resulting from the reduced operations and road paving are calculated each quarter. A baseline level of emissions from the power plant and the road was established in the MOA. Each quarter, the actual emissions from the power plant and from the road are

calculated from the actual fuel used at the power plant and the actual number of vehicles using the landfill road. The ERCs earned in a quarter are the difference between the baseline emissions level and the actual emissions. The ERCs earned in a quarter can be banked for two consecutive quarters and then they expire.

In November 1990, when the SVPP Permit to Operate (PTO) was signed, banking of new ERCs was no longer allowed (although the ERC bank set up under the MOA was and is still valid). The PTO established an additional set of ERCs, specifically intended to offset SVPP emissions. The PTO ERCs were obtained by shutting down power plants 4 and 6 and by installing vapor recovery systems at the North and South Motor Vehicle Fuel Facilities (MVFF). These ERCs exceed SVPP-permitted NO_x and SO_x emissions by a factor of two, and offset approximately 90% of permitted ROCs and PM emissions. Under the PTO, the ERCs are used to offset emissions from the SVPP, allowing VAFB to save most of the MOA ERCs for other projects. The small potential SVPP ROCs and PM deficit must be made up with the MOA ERCs. The PTO NO_x and SO_x ERCs in excess of the actual level of emissions from the SVPP cannot be banked as a result of the SBAPCD rescinding the rule allowing banking of new ERCs.

The emissions rights market structure currently being considered by the SBAPCD would reinstate the banking of new ERCs.

C.2.3 Offset Ratios

As mentioned above, a key stimulus to the development of emissions rights markets is the requirement that districts reduce the level of air pollution. The SBAPCD achieves this, in part, through the use of the "offset ratio." An offset ratio is a multiplier that is used when calculating the quantity of ERCs needed to offset emissions from a newly permitted source. For example, the SVPP was permitted to emit 13,512 lb of NO_x per quarter. The current offset ratio is 1.2, so that 16,214 lb per quarter of ERCs would be required (13,512 x 1.2). The offset ratio results in a net reduction in emissions, by requiring reductions in emissions that exceed increases in emissions. The higher the offset ratio, the greater the decrease in overall emissions.

C.3 VAFB ALLOCATION OF EMISSION REDUCTION CREDITS

VAFB has four potential sources of emissions reductions credits. These are:

1. 1984 MOA emission banking agreement offsets
2. ERC bank balances
3. 1990 PTO offsets
4. ERCs resulting from suspension of operations at SVPP.

Each of these sources is discussed in detail in the remainder of this section. Pricing of the ERCs is considered in Section C.4, and the relevance of these ERCs in the analysis of SVPP options is discussed in Section C.5.

C.3.1 1984 MOA Emission Banking Agreement Offsets

An emissions bank was set up at VAFB under the 1984 MOA emission banking agreement. Two sets of ERCs were established at that time to support space shuttle activities at the VAFB: one set resulted from permanently reducing operations at power plant 2 by 85% and the other set was obtained by paving a landfill road. These ERCs can be banked for two quarters to offset any VAFB operations. The actual ERCs earned by this agreement fluctuate every quarter, as they are based on the difference between the 1984 baseline levels of operation and current actual utilization of the power plant and the landfill road. Table C.2 gives the actual levels of these ERCs. Three quarters of values are presented to illustrate the variability of the ERCs.

C.3.2 ERC Bank Balances

The 1984 MOA ERCs discussed in the previous section are eligible to be stored to offset future emissions or banked. The accounting procedure followed in each quarter in determining bank balances is illustrated in Figure C.1, using current pounds of NO_x emissions and credits as an example.

In the example illustrated in Figure C.1, the SVPP emits 2,505 lb of NO_x in a quarter. The offset ratio is used to calculate the ERCs required to offset the SVPP emissions: 3,006 lb of ERCs are needed (2,505 x 1.2). The SVPP PTO makes available nearly 31,000 lb of NO_x ERCs per quarter (see

TABLE C.2. 1984 MOA ERCs

Pollutant	Emission Reduction Credits (pounds per quarter) 1991 Q1[a]	1992 Q1[b]	1992 Q2[b]
ROC	1,794	1,751	1,813
NO_x	64,058	62,539	64,736
SO_x	7,687	7,505	7,768
CO	16,655	16,260	16,831
PM	6,406	14,358	13,446

(a) February, 1992 Amendment to the 1984 Emission Banking and Offset Agreement, Appendix A.
(b) VAFB Emission Banking and Offset Report Appendix D 1992.

Section C.3.3 for discussion of the PTO ERCs). These ERCs can be used to offset SVPP emissions, but they cannot be banked. If the PTO ERCs are insufficient to offset the SVPP emissions, then the deficit is drawn from the bank. In this example, the deficit is zero.

In the same quarter, other VAFB-permitted sources emitted 3,211 lb of NO_x, which required 3,853 lb of ERCs (3,211 x 1.2). The 1984 MOA (described in Section C.3.1) makes nearly 65,000 lb of NO_x ERCs available each quarter. These are applied to the actual, non-SVPP emissions, and any SVPP deficit is subtracted. The result is the current quarter excess and is added to the previous quarter's excess to get the bank balance for the current quarter.

While the banking rules may well change under the new SBAPCD rules, it is unlikely that the unused SVPP PTO ERCs (discussed in Section C.3.3) would be eligible for banking. ERCs are typically governed under the rules that existed when they were created, so it is likely that the PTO ERCs would continue to be used as offsets for the SVPP, but that the excess (nearly 27,000 lb of NO_x alone in the above example) would not be eligible for banking. On the other hand, any permanent reductions in the operation of the SVPP would probably be construed as forming new ERCs, which would be eligible for banking. A key issue here is what the baseline level of operation of the SVPP is at the time of the permanent reduction in operations.

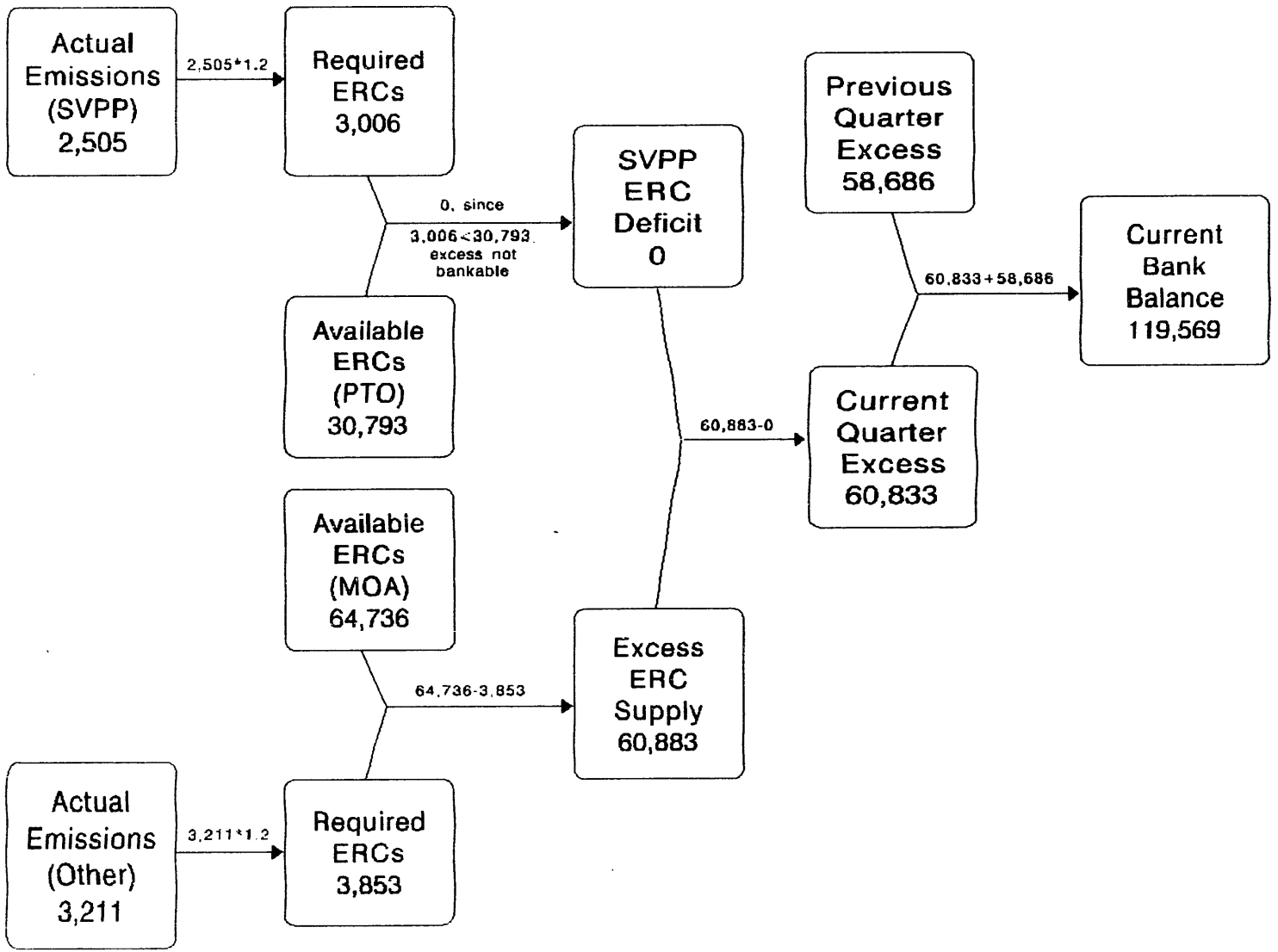

FIGURE C.1. Illustration of Accounting Procedure, NO_x Example

C.3.3 1990 PTO Offsets

The 1990 PTO is the agreement between VAFB and the SBAPCD that spells out the conditions under which the SVPP will operate. The PTO documents the maximum permitted emissions from the plant and establishes a set of ERCs to offset the emissions from the plant. The ERCs were established by closing power plants 4 and 6 and installing vapor recovery systems at the North and South MVFFs.[a] Establishment of the ERCs was required prior to commencing operations at the SVPP so as to comply with regulations preventing any net increase in emissions. At the time these ERCs were established, the SBAPCD did not allow the banking of new ERCs. Even though the ERCs considerably exceed the maximum permitted emissions for NO_x and SO_x, there is no banking of the excess. It is unlikely that this arrangement would change under new banking rules being considered by the SBAPCD. Table C.3 shows the ERCs as documented in the PTO.

C.3.4 ERCS Resulting from Suspension of Operations at SVPP

It is likely that, under the new banking rules being considered by the SBAPCD, any permanent reduction in operations at the SVPP would result in bankable, tradeable ERCs. The key issue here is the baseline level of

TABLE C.3. 1990 SVPP PTO ERCs[a]

Pollutant	Emission Reduction Credits (pounds per quarter)		
	Power Plants 4 and 6	North and South MVFFs	Total
ROC	801	2,677	3,478
NO_x	30,793	0	30,793
SO_x	4,619	0	4,619
CO	8,006	0	8,006
PM	2,063	0	2,063

(a) Permit to Operate Number 6117, County of Santa Barbara Air Pollution Control District. Goleta, CA. November, 1990.

(a) Permit to Operate Number 6117, County of Santa Barbara Air Pollution Control District. Goleta, California. November 1990.

emissions from which the reduction in operations would be calculated. This discussion paper will use emissions from current status-quo operation and from fully permitted operation as reasonable operating scenarios. Table C.4 gives estimates of the ERCs earned by shutting down the SVPP, for both of the operating scenarios.

C.4 PRICE OF EMISSIONS PERMITS

It is necessary to estimate the market price that can be obtained by selling ERCs to determine the value of the VAFB allocation. The market price of ERCs will be determined by supply and demand. The major factors affecting the supply and demand for ERCs are the existing quantity of emissions, the number of sources seeking to increase emissions, the price of controls, the offset ratio, and the SBAPCD regulations requiring the offsetting of new emissions.

The supply of ERCs is determined by the total existing quantity of emissions in the region. At some sufficiently high price, all existing sources would be willing to shut down and sell off their emissions rights as ERCs.

The demand for ERCs is determined by the number of sources that would like to increase emissions and the number of new sources that would like to move into the area. The demand by sources desiring to increase emissions is affected by the cost of reducing emissions. A source can increase emissions in one process if it can reduce emissions in another. The market price of ERCs is, therefore, mitigated by the cost of emissions reduction technology.

TABLE C.4. ERCs from Shutting Down SVPP

	Emission Reduction Credits (pounds per quarter)	
Pollutant	Status Quo	Full Operation
ROC	60	324
NO_x	3,270	17,637
SO_x	290	1,564
PM	155	836

Another factor affecting the market price of ERCs is the offset ratio, discussed in Section C.2.3. The offset ratio is a device used by the APCD to reduce total emissions. All permitted emissions require offsets equal to the actual emissions multiplied by the offset ratio. The current offset ratio is 1.2, so that if a source desired to increase emissions, it would need to acquire ERCs equal to 1.2 times the desired level of emissions. The SBAPCD is currently considering raising the offset ratio to 1.5. This would most likely raise the market price of ERCs in two ways. The strongest price effect would likely be through increased demand. Facilities desiring to increase emissions would need to purchase 25% more ERCs with a 1.5 offset ratio than they would with a 1.2 offset ratio. The increased demand would lead potential buyers to bid up the price of ERCs. A secondary price impact would be felt through a reduction in supply. One impact of the offset ratio is that every time a trade occurs, the total quantity of emissions in the region is reduced. For example, if a facility earns ERCs for reducing emissions by 120 lb per quarter and sells the ERCs to a new facility, the new facility can only increase emissions by 100 lb. The total quantity of emissions has been reduced and, hence, the total potential supply of ERCs is reduced. The higher the offset ratio, the faster the total potential supply of ERCs falls. As the supply decreases, we would again expect to see potential buyers bidding up the price of ERCs.

A final factor affecting the price of ERCs is the SBAPCD regulations governing the pollutant of interest. The SBAPCD requires that sources offset their emissions only because the SBAPCD is not in compliance with state or federal regulations governing air quality. The SBAPCD is currently a non-attainment area (it is out of compliance) for federal standards governing ozone levels, which leads to the offsetting requirements for the ozone precursors ROCs and NO_x. The SBAPCD is also a non-attainment area for state regulations governing PM. The SBAPCD is in compliance with SO_x and CO regulations.

Our best estimates of existing market prices for ERCs were provided by EMC, Inc., and are contained in Table C.5. Prices are normally quoted in dollars per ton, and are also given in dollars per pound.

TABLE C.5. Estimated Market Prices for Emissions Permits[a]

Pollutant	Price ($/ton)	Price ($/pound)
ROC	20,000	10.00
NO_x	10,000	5.00
SO_x	400	0.20
CO	400	0.20
PM	400	0.20

(a) Personal communication, Mike Silvia, September 11, 1992.

The $20,000-per-ton price for ROC is based upon an actual sale that occurred in nearby Ventura County APCD. The $10,000-per-ton price for NO_x is a prediction, based upon the ROC sales price and the price of control technologies. There is a low, but non-zero estimated price for SO_x and CO, even though these are nonregulated pollutants. This is presumably due to some speculative demand to offset potential future regulations. This is a new, highly volatile market. As such, these price estimates should be treated as approximate.

C.5 ERC OPPORTUNITY COST ASSOCIATED WITH SVPP OPERATIONS

As detailed in Section C.3, the ERCs at VAFB come from four sources. Neither the 1984 MOA emission banking agreement offsets nor the existing bank balances are specifically linked to the level of operations at the SVPP. Presumably, these ERCs would be held, available for sale, regardless of SVPP operations. As such, these ERCs do not constitute an opportunity cost of keeping the SVPP open, and should not be included in the analysis of SVPP options.

The 1990 PTO offsets are explicitly linked to the SVPP, as the SVPP PTO requires the maintenance of these ERCs throughout the life of the SVPP. Whether these offsets could be sold or banked for future VAFB use would be up to the SBAPCD, and would presumably be a matter of negotiation between VAFB and the SBAPCD. This analysis will assume that VAFB is able to negotiate with the SBAPCD to maintain these ERCs for trading upon closure of the SVPP. Under

this assumption, these ERCs would only be made available upon closing the SVPP and, hence, would constitute an opportunity cost of keeping the SVPP open.

When ERCs are offered for sale, the existing quantities must be quadrupled to represent the annual quantity.[a] The magnitude of the opportunity cost represented by these ERCs, given the assumption that they can be traded, is then given by applying the prices presented in Table C.5 to four times the quantities of ERCs given in Table C.3. The resulting value of the PTO ERCs is given in Table C.6.

Potential ERCs resulting from suspension of operations at SVPP would most likely be bankable and saleable under the forthcoming SBAPCD rules and would, therefore, represent an opportunity cost of keeping the SVPP open. These ERCs are discussed in Section C.3.4. The quantity of ERCs earned depends on the baseline level of operations at the SVPP. Table C.7 gives estimates of the ERCs earned by shutting down the SVPP, for both of the operating scenarios discussed in Section C.3.4.

Using the estimated ERC prices documented in Section C.4, and converting the ERCs in Table C.7 to annual values, the value of the ERCs earned by shutting down the SVPP is presented in Table C.8.

TABLE C.6. Value of PTO ERCs

Pollutant	Value of ERCs (1992 $)
ROC	139,120
NO_x	615,860
SO_x	3,696
PM	1,652
Total	760,328

(a) Personal communication, Mike Silvia.

TABLE C.7. ERCs from Shutting Down SVPP

Pollutant	Emission Reduction Credits (pounds per quarter) Status Quo	Full Operation
ROC	60	324
NO_x	3,270	17,637
SO_x	290	1,564
PM	155	836

Source: PNL Interim Report.

Table C.8. Value of ERCs Earned by Closing SVPP

Pollutant	Status Quo (1992 $)	Full Operation (1992 $)
ROC	2,400	12,960
NO_x	65,400	352,740
SO_x	232	1,252
PM	124	668
Total	68,156	367,620

C.6 CONCLUSIONS

The opportunity cost of the ERCs connected with the SVPP depends on the trading and banking rules established by the SBAPCD, and on the operating regime of the SVPP. We assume that the 1990 PTO ERCs and the ERCs resulting from shutting down the SVPP could be banked, sold, or used at any time in the future. Under the current operating regime, the opportunity cost is approximately $828,000. If the SVPP were operating at fully permitted capacity, the opportunity cost would be approximately $1,128,000. Note that over $760,000 of this value is contingent upon the assumption that the 1990 PTO ERCs could be traded. If this assumption is incorrect, the value of the ERCs is only $68,000 to $368,000. These values are summarized in Table C.9.

It is currently uncertain what length of time would be required by the SBAPCD to establish the baseline emissions level. The SBAPCD has discussed requiring 1, 3, and 5 years of data to establish a baseline, as discussed in

TABLE C.9. Value of SVPP Emissions Rights

	Status Quo (1992 $)	Full Operation (1992 $)
1990 PTO ERCs	760,328	760,328
ERCs from closing SVPP	68,156	367,620
Total	828,484	1,127,948

Section C.2.1. Assuming 3 years for analysis purposes would minimize the potential error. Under this assumption, the SVPP would need to operate at its fully permitted level for 3 years in order to realize a value of $1,128,000 for the ERCs. It is possible that the SBAPCD would not allow the SVPP to increase its operations and use the higher level as a baseline. If the SBAPCD were to prevent this, the value of the ERCs would be $828,000, assuming the 1990 PTO ERCs could be sold.

A potentially higher valued use of the ERCs would be to bank them for future VAFB activities. This would ensure the availability of the ERCs to VAFB, without requiring VAFB to depend on the market. It would also most likely speed up any permitting process.

APPENDIX D

OPERATING STRATEGY SPREADSHEETS

Strategy 1A

BASE CASE SCENARIO

Case 1: Never replace SVPP with UPS + Gen
LCC: $13,561,590
NPV OVER CASE 1: $0

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$126,228	$1,264,075	-$1,137,847
1994	$126,228	$0	2,013	$0	$0	$0	$0	$187,809	$0	$1,074,190	$126,228	$1,261,999	-$1,135,771
1995	$126,228	$0	2,013	$0	$0	$0	$0	$191,319	$0	$1,070,867	$126,228	$1,262,186	-$1,135,958
1996	$126,228	$0	2,013	$0	$0	$0	$0	$194,829	$0	$1,067,985	$126,228	$1,262,814	-$1,136,586
1997	$126,228	$0	2,013	$0	$0	$0	$0	$198,339	$0	$1,065,484	$126,228	$1,263,823	-$1,137,595
1998	$126,228	$0	2,013	$0	$0	$0	$0	$203,604	$0	$1,049,116	$126,228	$1,252,720	-$1,126,492
1999	$127,503	$0	2,013	$0	$0	$0	$0	$210,624	$0	$1,049,116	$127,503	$1,259,740	-$1,132,237
2000	$128,778	$0	2,013	$0	$0	$0	$0	$217,644	$0	$1,049,116	$128,778	$1,266,760	-$1,137,981
2001	$128,778	$0	2,013	$0	$0	$0	$0	$224,664	$0	$1,049,116	$128,778	$1,273,780	-$1,145,001
2002	$130,053	$0	2,013	$0	$0	$0	$0	$233,439	$0	$1,049,116	$130,053	$1,282,555	-$1,152,501
2003	$130,053	$0	2,013	$0	$0	$0	$0	$238,703	$0	$1,049,116	$130,053	$1,287,819	-$1,157,766
2004	$131,328	$0	2,013	$0	$0	$0	$0	$245,723	$0	$1,049,116	$131,328	$1,294,839	-$1,163,511
2005	$131,328	$0	2,013	$0	$0	$0	$0	$252,743	$0	$1,049,116	$131,328	$1,301,859	-$1,170,531
2006	$131,328	$0	2,013	$0	$0	$0	$0	$258,008	$0	$1,049,116	$131,328	$1,307,124	-$1,175,796
2007	$132,603	$0	2,013	$0	$0	$0	$0	$263,273	$0	$1,049,116	$132,603	$1,312,389	-$1,179,786
2008	$132,603	$0	2,013	$0	$0	$0	$0	$270,293	$0	$1,049,116	$132,603	$1,319,409	-$1,186,805
2009	$133,879	$0	2,013	$831,567	$0	$0	$0	$279,068	$0	$1,049,116	$965,446	$1,328,184	-$362,738
PV	$1,565,409	$0		$428,904	$0	$0	$0	$2,690,812	$0	$12,863,092	$1,992,314	$15,553,904	-$13,561,590

Strategy 1B

BASE CASE SCENARIO

Case 1: Never replace SVPP with UPS + Gen
LCC: $3,289,468
NPV OVER CASE 1: $0

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$126,228	$1,264,075	-$1,137,847
1994	$126,228	$1,975,316	# 9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,101,544	$2,204,511	-$102,967
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,101,544	$2,221,809	-$120,265
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,101,544	$2,239,547	-$138,002
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,101,544	$2,257,666	-$156,122
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,101,544	$2,272,229	-$170,684
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,122,772	$2,313,469	-$190,697
2000	$128,778	$2,015,221	9,439	$31,324	$0	$0	$0	$217,644	$1,087,949	$1,049,116	$2,175,324	$2,354,709	-$179,386
2001	$128,778	$1,870,133	8,467	$0	$0	$0	$0	$224,664	$975,697	$1,049,116	$1,998,911	$2,249,477	-$250,565
2002	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$233,439	$1,012,889	$1,049,116	$2,018,702	$2,295,444	-$276,741
2003	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$238,703	$1,035,204	$1,049,116	$2,018,702	$2,323,024	-$304,322
2004	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$245,723	$1,064,958	$1,049,116	$2,038,494	$2,359,798	-$321,304
2005	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$252,743	$1,094,712	$1,049,116	$2,038,494	$2,396,571	-$358,078
2006	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$258,008	$1,117,027	$1,049,116	$2,038,494	$2,424,151	-$385,658
2007	$132,603	$1,925,681	8,467	$90,094	$0	$0	$0	$263,273	$1,139,343	$1,049,116	$2,148,379	$2,451,732	-$303,353
2008	$132,603	$1,423,109	5,670	$0	$0	$0	$0	$270,293	$664,299	$1,049,116	$1,555,713	$1,983,708	-$427,995
2009	$133,879	$1,436,793	5,670	$949,356	$0	$0	$0	$279,068	$685,432	$1,049,116	$2,520,027	$2,013,616	$506,411
PV	$1,565,409	$21,265,569		$560,288	$0	$0	$0	$2,690,812	$11,126,830	$12,863,092	$23,391,266	$26,680,734	-$3,289,468

Strategy 2B

BASE CASE SCENARIO

Case 1: Never replace SVPP with UPS + SVPP
LCC: $3,289,468
NPV OVER CASE 1: $0

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$126,228	$1,264,075	-$1,137,847
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,101,544	$2,204,511	-$102,967
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,101,544	$2,221,809	-$120,265
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,101,544	$2,239,547	-$138,002
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,101,544	$2,257,666	-$156,122
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,101,544	$2,272,229	-$170,684
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,122,772	$2,313,469	-$190,697
2000	$128,778	$2,015,221	9,439	$31,324	$0	$0	$0	$217,644	$1,087,949	$1,049,116	$2,175,324	$2,354,709	-$179,386
2001	$128,778	$1,870,133	8,467	$0	$0	$0	$0	$224,664	$975,697	$1,049,116	$1,998,911	$2,249,477	-$250,565
2002	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$233,439	$1,012,889	$1,049,116	$2,018,702	$2,295,444	-$276,741
2003	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$238,703	$1,035,204	$1,049,116	$2,018,702	$2,323,024	-$304,322
2004	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$245,723	$1,064,958	$1,049,116	$2,038,494	$2,359,798	-$321,304
2005	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$252,743	$1,094,712	$1,049,116	$2,038,494	$2,396,571	-$358,078
2006	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$258,008	$1,117,027	$1,049,116	$2,038,494	$2,424,151	-$385,658
2007	$132,603	$1,925,681	8,467	$90,094	$0	$0	$0	$263,273	$1,139,343	$1,049,116	$2,148,379	$2,451,732	-$303,353
2008	$132,603	$1,423,109	5,670	$0	$0	$0	$0	$270,293	$664,299	$1,049,116	$1,555,713	$1,983,708	-$427,995
2009	$133,879	$1,436,793	5,670	$949,356	$0	$0	$0	$279,068	$685,432	$1,049,116	$2,520,027	$2,013,616	$506,411
PV	$1,565,409	$21,265,569		$560,288	$0	$0	$0	$2,690,812	$11,126,830	$12,863,092	$23,391,266	$26,680,734	-$3,289,468

Case 2: Replace SVPP with UPS + SVPP in 1996
LCC: $4,963,101
NPV OVER CASE 1: -$1,673,633

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$126,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$28,416	$0	$4,557,200	$0	$191,319	$959,623	$1,070,867	$2,139,400	$6,779,009	-$4,639,609
1996	$0	$2,166,504	8,557	$0	$0	$0	$60,000	$126,228	$1,124,968	$789,788	$2,175,061	$2,100,984	$74,077
1997	$0	$2,166,504	8,557	$0	$0	$0	$60,000	$126,228	$1,144,674	$787,288	$2,175,061	$2,118,190	$56,871
1998	$0	$2,166,504	8,557	$0	$0	$0	$60,000	$126,228	$1,174,235	$770,919	$2,175,061	$2,131,383	$43,678
1999	$0	$2,188,388	8,557	$0	$0	$0	$60,000	$127,503	$1 213,649	$770,919	$2,196,945	$2,172,072	$24,873
2000	$0	$2,210,272	8,557	$48,992	$0	$0	$60,000	$128,778	$1,253,063	$770,919	$2,267,821	$2,212,761	$55,060
2001	$0	$1,983,343	7,036	$0	$0	$0	$60,000	$128,778	$1,063,383	$770,919	$1,990,379	$2,023,080	-$32,702
2002	$0	$2,002,980	7,036	$0	$0	$0	$60,000	$130,053	$1,103,917	$770,919	$2,010,016	$2,064,890	-$54,874
2003	$0	$2,002,980	7,036	$0	$0	$0	$60,000	$130,053	$1,128,238	$770,919	$2,010,016	$2,089,211	-$79,195
2004	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,160,666	$770,919	$2,029,653	$2,122,914	-$93,261
2005	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,193,094	$770,919	$2,029,653	$2,155,341	-$125,689
2006	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,217,414	$770,919	$2,029,653	$2,179,662	-$150,009
2007	$0	$2,042,254	7,036	$104,313	$0	$2,225,000	$60,000	$132,603	$1,241,735	$770,919	$2,153,603	$4,430,258	-$2,276,655
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$2,880,335	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$1,203,898	$3,571,154
PV	$350,295	$22,569,606		$575,397	$0	$3,808,111	$563,435	$1,737,735	$12,186,208	$10,250,665	$23,583,053	$28,546,154	-$4,963,101

Case 3: Replace SVPP with UPS+SVPP in 1997
LCC: $4,790,872
NPV OVER CASE 1: -$1,501,405

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$28,416	$0	$4,557,200	$0	$194,829	$976,733	$1,067,985	$2,139,400	$6,796,747	-$4,657,347
1997	$0	$2,166,504	8,557	$0	$0	$0	$60,000	$126,228	$1,144,674	$787,288	$2,175,061	$2,118,190	$56,871
1998	$0	$2,166,504	8,557	$0	$0	$0	$60,000	$126,228	$1,174,235	$770,919	$2,175,061	$2,131,383	$43,678
1999	$0	$2,188,388	8,557	$0	$0	$0	$60,000	$127,503	$1,213,649	$770,919	$2,196,945	$2,172,072	$24,873
2000	$0	$2,210,272	8,557	$48,992	$0	$0	$60,000	$128,778	$1,253,063	$770,919	$2,267,821	$2,212,761	$55,060
2001	$0	$1,983,343	7,036	$0	$0	$0	$60,000	$128,778	$1,063,383	$770,919	$1,990,379	$2,023,080	-$32,702
2002	$0	$2,002,980	7,036	$0	$0	$0	$60,000	$130,053	$1,103,917	$770,919	$2,010,016	$2,064,890	-$54,874
2003	$0	$2,002,980	7,036	$0	$0	$0	$60,000	$130,053	$1,128,238	$770,919	$2,010,016	$2,089,211	-$79,195
2004	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,160,666	$770,919	$2,029,653	$2,122,914	-$93,261
2005	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,193,094	$770,919	$2,029,653	$2,155,341	-$125,689
2006	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,217,414	$770,919	$2,029,653	$2,179,662	-$150,009
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$60,000	$132,603	$1,241,735	$770,919	$2,153,603	$2,205,258	-$51,655
2008	$0	$1,460,364	3,798	$0	$0	$2,225,000	$60,000	$132,603	$689,697	$770,919	$1,464,162	$3,878,220	-$2,414,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$3,159,039	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$1,482,603	$3,849,859
PV	$458,196	$22,406,178		$574,425	$0	$3,461,693	$512,146	$1,796,375	$12,059,497	$10,488,469	$23,527,307	$28,318,180	-$4,790,872

Case 4: Replace SVPP with UPS+SVPP in 1998
LCC: $4,620,516
NPV OVER CASE 1: -$1,331,048

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$28,416	$0	$4,557,200	$0	$198,339	$993,843	$1,065,484	$2,139,400	$6,814,866	-$4,675,467
1998	$0	$2,166,504	8,557	$0	$0	$0	$60,000	$126,228	$1,174,235	$770,919	$2,175,061	$2,131,383	$43,678
1999	$0	$2,188,388	8,557	$0	$0	$0	$60,000	$127,503	$1,213,649	$770,919	$2,196,945	$2,172,072	$24,873
2000	$0	$2,210,272	8,557	$48,992	$0	$0	$60,000	$128,778	$1,253,063	$770,919	$2,267,821	$2,212,761	$55,060
2001	$0	$1,983,343	7,036	$0	$0	$0	$60,000	$128,778	$1,063,383	$770,919	$1,990,379	$2,023,080	-$32,702
2002	$0	$2,002,980	7,036	$0	$0	$0	$60,000	$130,053	$1,103,917	$770,919	$2,010,016	$2,064,890	-$54,874
2003	$0	$2,002,980	7,036	$0	$0	$0	$60,000	$130,053	$1,128,238	$770,919	$2,010,016	$2,089,211	-$79,195
2004	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,160,666	$770,919	$2,029,653	$2,122,914	-$93,261
2005	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,193,094	$770,919	$2,029,653	$2,155,341	-$125,689
2006	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,217,414	$770,919	$2,029,653	$2,179,662	-$150,009
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$60,000	$132,603	$1,241,735	$770,919	$2,153,603	$2,205,258	-$51,655
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$1,212,744	$60,000	$133,879	$711,638	$770,919	$2,367,256	$463,692	$1,903,563
PV	$561,946	$22,249,036		$573,491	$0	$3,123,096	$462,831	$1,855,645	$11,935,524	$10,717,126	$23,473,706	$28,094,222	-$4,620,516

Case 5: Replace SVPP with UPS+SVPP in 1999
LCC: $4,496,223
NPV OVER CASE 1: -$1,208,756

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$28,416	$0	$4,557,200	$0	$203,604	$1,019,509	$1,049,116	$2,139,400	$6,829,429	-$4,690,029
1999	$0	$2,188,388	8,557	$0	$0	$0	$60,000	$127,503	$1,213,649	$770,919	$2,196,945	$2,172,072	$24,873
2000	$0	$2,210,272	8,557	$48,992	$0	$0	$60,000	$128,778	$1,253,063	$770,919	$2,267,821	$2,212,761	$55,060
2001	$0	$1,983,343	7,036	$0	$0	$0	$60,000	$128,778	$1,063,383	$770,919	$1,990,379	$2,023,080	-$32,702
2002	$0	$2,002,980	7,036	$0	$0	$0	$60,000	$130,053	$1,103,917	$770,919	$2,010,016	$2,064,890	-$54,874
2003	$0	$2,002,980	7,036	$0	$0	$0	$60,000	$130,053	$1,128,238	$770,919	$2,010,016	$2,089,211	-$79,195
2004	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,160,666	$770,919	$2,029,653	$2,122,914	-$93,261
2005	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,193,094	$770,919	$2,029,653	$2,155,341	-$125,689
2006	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,217,414	$770,919	$2,029,653	$2,179,662	-$150,009
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$60,000	$132,603	$1,241,735	$770,919	$2,153,603	$2,205,258	-$51,655
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$1,491,449	$60,000	$133,879	$711,638	$770,919	$2,367,256	$184,988	$2,182,268
PV	$661,706	$22,097,937		$572,593	$0	$2,835,952	$415,412	$1,916,796	$11,813,242	$10,936,989	$23,422,167	$27,918,390	-$4,496,223

Case 6: Replace SVPP with UPS+SVPP in 2000
LCC: $4,372,126
NPV OVER CASE 1: -$1,082,659

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,110,984	$2,272,229	-$161,245
1999	$127,503	$1,995,269	9,439	$28,416	$0	$4,557,200	$0	$210,624	$1,053,729	$1,049,116	$2,160,628	$6,870,669	-$4,710,041
2000	$0	$2,210,272	8,557	$48,992	$0	$0	$60,000	$128,778	$1,253,063	$770,919	$2,267,821	$2,212,761	$55,060
2001	$0	$1,983,343	7,036	$0	$0	$0	$60,000	$128,778	$1,063,383	$770,919	$1,990,379	$2,023,080	-$32,702
2002	$0	$2,002,980	7,036	$0	$0	$0	$60,000	$130,053	$1,103,917	$770,919	$2,010,016	$2,064,890	-$54,874
2003	$0	$2,002,980	7,036	$0	$0	$0	$60,000	$130,053	$1,128,238	$770,919	$2,010,016	$2,089,211	-$79,195
2004	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,160,666	$770,919	$2,029,653	$2,122,914	-$93,261
2005	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,193,094	$770,919	$2,029,653	$2,155,341	-$125,689
2006	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,217,414	$770,919	$2,029,653	$2,179,662	-$150,009
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$60,000	$132,603	$1,241,735	$770,919	$2,153,603	$2,205,258	-$51,655
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$1,770,153	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$93,717	$2,460,973
PV	$758,598	$21,951,183		$571,729	$0	$2,554,348	$369,817	$1,979,961	$11,691,716	$11,148,395	$23,372,111	$27,744,237	-$4,372,126

Case 7: Replace SVPP with UPS + SVPP in 2001
LCC: $4,248,181
NPV OVER CASE 1: -$958,713

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,110,984	$2,272,229	-$161,245
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,132,211	$2,313,469	-$181,258
2000	$128,778	$2,015,221	9,439	$77,409	$0	$4,557,200	$0	$217,644	$1,087,949	$1,049,116	$2,230,848	$6,911,909	-$4,681,061
2001	$0	$1,983,343	7,036	$0	$0	$0	$60,000	$128,778	$1,063,383	$770,919	$1,990,379	$2,023,080	-$32,702
2002	$0	$2,002,980	7,036	$0	$0	$0	$60,000	$130,053	$1,103,917	$770,919	$2,010,016	$2,064,890	-$54,874
2003	$0	$2,002,980	7,036	$0	$0	$0	$60,000	$130,053	$1,128,238	$770,919	$2,010,016	$2,089,211	-$79,195
2004	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,160,666	$770,919	$2,029,653	$2,122,914	-$93,261
2005	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,193,094	$770,919	$2,029,653	$2,155,341	-$125,689
2006	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,217,414	$770,919	$2,029,653	$2,179,662	-$150,009
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$60,000	$132,603	$1,241,735	$770,919	$2,153,603	$2,205,258	-$51,655
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$2,048,858	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$372,422	$2,739,677
PV	$852,695	$21,808,662		$570,898	$0	$2,278,073	$325,975	$2,044,894	$11,571,069	$11,351,671	$23,323,501	$27,571,682	-$4,248,181

Case 8: Replace SVPP with UPS + SVPP in 2002
LCC: $4,125,443
NPV OVER CASE 1: -$835,976

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,110,984	$2,272,229	-$161,245
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,132,211	$2,313,469	-$181,258
2000	$128,778	$2,015,221	9,439	$31,324	$0	$0	$0	$217,644	$1,087,949	$1,049,116	$2,184,763	$2,354,709	-$169,947
2001	$128,778	$1,870,133	8,467	$46,085	$0	$4,557,200	$0	$224,664	$975,697	$1,049,116	$2,053,463	$6,806,677	-$4,753,214
2002	$0	$2,002,980	7,036	$0	$0	$0	$60,000	$130,053	$1,103,917	$770,919	$2,010,016	$2,064,890	-$54,874
2003	$0	$2,002,980	7,036	$0	$0	$0	$60,000	$130,053	$1,128,238	$770,919	$2,010,016	$2,089,211	-$79,195
2004	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,160,666	$770,919	$2,029,653	$2,122,914	-$93,261
2005	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,193,094	$770,919	$2,029,653	$2,155,341	-$125,689
2006	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,217,414	$770,919	$2,029,653	$2,179,662	-$150,009
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$60,000	$132,603	$1,241,735	$770,919	$2,153,603	$2,205,258	-$51,655
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$2,327,563	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$651,126	$3,018,382
PV	$943,173	$21,729,122		$569,603	$0	$2,006,920	$283,820	$2,112,262	$11,509,462	$11,547,128	$23,334,149	$27,459,592	-$4,125,443

Case 9: Replace SVPP with UPS + SVPP in 2003
LCC: $4,004,627
NPV OVER CASE 1: -$715,160

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,110,984	$2,272,229	-$161,245
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,132,211	$2,313,469	-$181,258
2000	$128,778	$2,015,221	9,439	$31,324	$0	$0	$0	$217,644	$1,087,949	$1,049,116	$2,184,763	$2,354,709	-$169,947
2001	$128,778	$1,870,133	8,467	$0	$0	$0	$0	$224,664	$975,697	$1,049,116	$2,007,378	$2,249,477	-$242,099
2002	$130,053	$1,888,649	8,467	$46,085	$0	$4,557,200	$0	$233,439	$1,012,889	$1,049,116	$2,073,254	$6,852,644	-$4,779,389
2003	$0	$2,002,980	7,036	$0	$0	$0	$60,000	$130,053	$1,128,238	$770,919	$2,010,016	$2,089,211	-$79,195
2004	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,160,666	$770,919	$2,029,653	$2,122,914	-$93,261
2005	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,193,094	$770,919	$2,029,653	$2,155,341	-$125,689
2006	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,217,414	$770,919	$2,029,653	$2,179,662	-$150,009
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$60,000	$132,603	$1,241,735	$770,919	$2,153,603	$2,205,258	-$51,655
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$2,606,267	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$929,831	$3,297,087
PV	$1,031,033	$21,651,884		$568,358	$0	$1,740,693	$242,286	$2,182,105	$11,447,967	$11,735,068	$23,344,492	$27,349,119	-$4,004,627

Case 10: Replace SVPP with UPS + SVPP in 2004
LCC: $3,885,072
NPV OVER CASE 1: -$595,605

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,110,984	$2,272,229	-$161,245
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,132,211	$2,313,469	-$181,258
2000	$128,778	$2,015,221	9,439	$31,324	$0	$0	$0	$217,644	$1,087,949	$1,049,116	$2,184,763	$2,354,709	-$169,947
2001	$128,778	$1,870,133	8,467	$0	$0	$0	$0	$224,664	$975,697	$1,049,116	$2,007,378	$2,249,477	-$242,099
2002	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$233,439	$1,012,889	$1,049,116	$2,027,169	$2,295,444	-$268,275
2003	$130,053	$1,888,649	8,467	$46,085	$0	$4,557,200	$0	$238,703	$1,035,204	$1,049,116	$2,073,254	$6,880,224	-$4,806,970
2004	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,160,666	$770,919	$2,029,653	$2,122,914	-$93,261
2005	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,193,094	$770,919	$2,029,653	$2,155,341	-$125,689
2006	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,217,414	$770,919	$2,029,653	$2,179,662	-$150,009
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$60,000	$132,603	$1,241,735	$770,919	$2,153,603	$2,205,258	-$51,655
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$2,884,972	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$1,208,536	$3,575,791
PV	$1,115,513	$21,577,617		$567,161	$0	$1,479,203	$204,312	$2,252,682	$11,387,534	$11,915,779	$23,354,437	$27,239,509	-$3,885,072

Case 11: Replace SVPP with UPS + SVPP in 2005
LCC: $3,766,434
NPV OVER CASE 1: -$476,967

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,110,984	$2,272,229	-$161,245
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,132,211	$2,313,469	-$181,258
2000	$128,778	$2,015,221	9,439	$31,324	$0	$0	$0	$217,644	$1,087,949	$1,049,116	$2,184,763	$2,354,709	-$169,947
2001	$128,778	$1,870,133	8,467	$0	$0	$0	$0	$224,664	$975,697	$1,049,116	$2,007,378	$2,249,477	-$242,099
2002	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$233,439	$1,012,889	$1,049,116	$2,027,169	$2,295,444	-$268,275
2003	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$238,703	$1,035,204	$1,049,116	$2,027,169	$2,323,024	-$295,855
2004	$131,328	$1,907,165	8,467	$46,085	$0	$4,557,200	$0	$245,723	$1,064,958	$1,049,116	$2,093,045	$6,916,998	-$4,823,952
2005	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,193,094	$770,919	$2,029,653	$2,155,341	-$125,689
2006	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,217,414	$770,919	$2,029,653	$2,179,662	-$150,009
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$60,000	$132,603	$1,241,735	$770,919	$2,153,603	$2,205,258	-$51,655
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$3,163,677	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$1,487,240	$3,854,496
PV	$1,197,540	$21,505,506		$566,009	$0	$1,222,267	$166,836	$2,324,133	$11,327,755	$12,089,540	$23,364,096	$27,130,530	-$3,766,434

Case 12: Replace SVPP with UPS + SVPP in 2006
LCC: $3,649,466
NPV OVER CASE 1: -$359,999

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,110,984	$2,272,229	-$161,245
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,132,211	$2,313,469	-$181,258
2000	$128,778	$2,015,221	9,439	$31,324	$0	$0	$0	$217,644	$1,087,949	$1,049,116	$2,184,763	$2,354,709	-$169,947
2001	$128,778	$1,870,133	8,467	$0	$0	$0	$0	$224,664	$975,697	$1,049,116	$2,007,378	$2,249,477	-$242,099
2002	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$233,439	$1,012,889	$1,049,116	$2,027,169	$2,295,444	-$268,275
2003	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$238,703	$1,035,204	$1,049,116	$2,027,169	$2,323,024	-$295,855
2004	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$245,723	$1,064,958	$1,049,116	$2,046,900	$2,359,798	-$312,837
2005	$131,328	$1,907,165	8,467	$46,085	$0	$4,557,200	$0	$252,743	$1,094,712	$1,049,116	$2,093,045	$6,953,771	-$4,860,726
2006	$0	$2,022,617	7,036	$0	$0	$0	$60,000	$131,328	$1,217,414	$770,919	$2,029,653	$2,179,662	-$150,009
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$60,000	$132,603	$1,241,735	$770,919	$2,153,603	$2,205,258	-$51,655
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$3,442,381	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$1,765,945	$4,133,201
PV	$1,276,413	$21,436,169		$564,902	$0	$969,710	$130,801	$2,397,051	$11,268,670	$12,256,618	$23,373,383	$27,022,850	-$3,649,466

Case 13: Replace SVPP with UPS + SVPP in 2007
LCC: $3,533,376
NPV OVER CASE 1: -$243,909

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,110,984	$2,272,229	-$161,245
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,132,211	$2,313,469	-$181,258
2000	$128,778	$2,015,221	9,439	$31,324	$0	$0	$0	$217,644	$1,087,949	$1,049,116	$2,184,763	$2,354,709	-$169,947
2001	$128,778	$1,870,133	8,467	$0	$0	$0	$0	$224,664	$975,697	$1,049,116	$2,007,378	$2,249,477	-$242,099
2002	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$233,439	$1,012,889	$1,049,116	$2,027,169	$2,295,444	-$268,275
2003	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$238,703	$1,035,204	$1,049,116	$2,027,169	$2,323,024	-$295,855
2004	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$245,723	$1,064,958	$1,049,116	$2,046,960	$2,359,798	-$312,837
2005	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$252,743	$1,094,712	$1,049,116	$2,046,960	$2,396,571	-$349,611
2006	$131,328	$1,907,165	8,467	$46,085	$0	$4,557,200	$0	$258,008	$1,117,027	$1,049,116	$2,093,045	$6,981,351	-$4,888,306
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$60,000	$132,603	$1,241,735	$770,919	$2,153,603	$2,205,258	-$51,655
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$3,721,086	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$2,044,650	$4,411,905
PV	$1,352,252	$21,369,498		$563,838	$0	$721,363	$96,153	$2,470,206	$11,210,698	$12,417,269	$23,382,313	$26,915,690	-$3,533,376

Case 14: Replace SVPP with UPS + SVPP in 2008
LCC: $3,417,265
NPV OVER CASE 1: -$127,797

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,110,984	$2,272,229	-$161,245
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,132,211	$2,313,469	-$181,258
2000	$128,778	$2,015,221	9,439	$31,324	$0	$0	$0	$217,644	$1,087,949	$1,049,116	$2,184,763	$2,354,709	-$169,947
2001	$128,778	$1,870,133	8,467	$0	$0	$0	$0	$224,664	$975,697	$1,049,116	$2,007,378	$2,249,477	-$242,099
2002	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$233,439	$1,012,889	$1,049,116	$2,027,169	$2,295,444	-$268,275
2003	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$238,703	$1,035,204	$1,049,116	$2,027,169	$2,323,024	-$295,855
2004	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$245,723	$1,064,958	$1,049,116	$2,046,960	$2,359,798	-$312,837
2005	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$252,743	$1,094,712	$1,049,116	$2,046,960	$2,396,571	-$349,611
2006	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$258,008	$1,117,027	$1,049,116	$2,046,960	$2,424,151	-$377,191
2007	$132,603	$1,925,681	8,467	$150,398	$0	$4,557,200	$0	$263,273	$1,139,343	$1,049,116	$2,217,150	$7,008,932	-$4,791,782
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$3,999,791	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$2,323,354	$4,690,610
PV	$1,425,882	$21,304,770		$562,814	$0	$477,066	$62,837	$2,542,762	$11,153,843	$12,571,742	$23,390,986	$26,808,250	-$3,417,265

Case 15: Replace SVPP with UPS + SVPP in 2009

LCC: $3,302,691
NPV OVER CASE 1: -$13,224

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,110,984	$2,272,229	-$161,245
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,132,211	$2,313,469	-$181,258
2000	$128,778	$2,015,221	9,439	$31,324	$0	$0	$0	$217,644	$1,087,949	$1,049,116	$2,184,763	$2,354,709	-$169,947
2001	$128,778	$1,870,133	8,467	$0	$0	$0	$0	$224,664	$975,697	$1,049,116	$2,007,378	$2,249,477	-$242,099
2002	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$233,439	$1,012,889	$1,049,116	$2,027,169	$2,295,444	-$268,275
2003	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$238,703	$1,035,204	$1,049,116	$2,027,169	$2,323,024	-$295,855
2004	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$245,723	$1,064,958	$1,049,116	$2,046,960	$2,359,798	-$312,837
2005	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$252,743	$1,094,712	$1,049,116	$2,046,960	$2,396,571	-$349,611
2006	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$258,008	$1,117,027	$1,049,116	$2,046,960	$2,424,151	-$377,191
2007	$132,603	$1,925,681	8,467	$90,094	$0	$0	$0	$263,273	$1,139,343	$1,049,116	$2,156,846	$2,451,732	-$294,886
2008	$132,603	$1,423,109	5,670	$60,304	$0	$4,557,200	$0	$270,293	$664,299	$1,049,116	$1,621,686	$6,540,908	-$4,919,222
2009	$0	$1,474,406	3,798	$889,052	$0	-$4,278,495	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$2,602,059	$4,969,315
PV	$1,496,680	$21,284,879		$561,526	$0	$236,661	$30,802	$2,616,275	$11,140,283	$12,720,274	$23,441,604	$26,744,296	-$3,302,691

Strategy 3B

BASE CASE SCENARIO

Case 1: Never replace SVPP with UPS + GEN
LCC: $3,289,468
NPV OVER CASE 1: $0

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$126,228	$1,264,075	-$1,137,847
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,101,544	$2,204,511	-$102,967
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,101,544	$2,221,809	-$120,265
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,101,544	$2,239,547	-$138,002
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,101,544	$2,257,666	-$156,122
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,101,544	$2,272,229	-$170,684
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,122,772	$2,313,469	-$190,697
2000	$128,778	$2,015,221	9,439	$31,324	$0	$0	$0	$217,644	$1,087,949	$1,049,116	$2,175,324	$2,354,709	-$179,386
2001	$128,778	$1,870,133	8,467	$0	$0	$0	$0	$224,664	$975,697	$1,049,116	$1,998,911	$2,249,477	-$250,565
2002	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$233,439	$1,012,889	$1,049,116	$2,018,702	$2,295,444	-$276,741
2003	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$238,703	$1,035,204	$1,049,116	$2,018,702	$2,323,024	-$304,322
2004	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$245,723	$1,064,958	$1,049,116	$2,038,494	$2,359,798	-$321,304
2005	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$252,743	$1,094,712	$1,049,116	$2,038,494	$2,396,571	-$358,078
2006	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$258,008	$1,117,027	$1,049,116	$2,038,494	$2,424,151	-$385,658
2007	$132,603	$1,925,681	8,467	$90,094	$0	$0	$0	$263,273	$1,139,343	$1,049,116	$2,148,379	$2,451,732	-$303,353
2008	$132,603	$1,423,109	5,670	$0	$0	$0	$0	$270,293	$664,299	$1,049,116	$1,555,713	$1,983,708	-$427,995
2009	$133,879	$1,436,793	5,670	$949,356	$0	$0	$0	$279,068	$685,432	$1,049,116	$2,520,027	$2,013,616	$506,411
PV	$1,565,409	$21,265,569		$560,288	$0	$0	$0	$2,690,812	$11,126,830	$12,863,092	$23,391,266	$26,680,734	-$3,289,468

Case 2: Replace SVPP with UPS + GEN in 1996
LCC: $10,148,855
NPV OVER CASE 1: -$6,859,388

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$28,416	$0	$10,925,200	$0	$191,319	$959,623	$1,070,867	$2,139,400	$13,147,009	-$11,007,609
1996	$0	$2,166,504	8,557	$0	$0	$0	$90,000	$126,228	$1,124,968	$734,412	$2,175,061	$2,075,608	$99,453
1997	$0	$2,166,504	8,557	$0	$0	$0	$90,000	$126,228	$1,144,674	$731,912	$2,175,061	$2,092,815	$82,246
1998	$0	$2,166,504	8,557	$0	$0	$0	$90,000	$126,228	$1,174,235	$715,544	$2,175,061	$2,106,007	$69,054
1999	$0	$2,188,388	8,557	$0	$0	$0	$90,000	$127,503	$1,213,649	$715,544	$2,196,945	$2,146,696	$50,249
2000	$0	$2,210,272	8,557	$48,992	$0	$0	$90,000	$128,778	$1,253,063	$715,544	$2,267,821	$2,187,385	$80,436
2001	$0	$1,983,343	7,036	$0	$0	$0	$90,000	$128,778	$1,063,383	$715,544	$1,990,379	$1,997,705	-$7,326
2002	$0	$2,002,980	7,036	$0	$0	$0	$90,000	$130,053	$1,103,917	$715,544	$2,010,016	$2,039,514	-$29,499
2003	$0	$2,002,980	7,036	$0	$0	$0	$90,000	$130,053	$1,128,238	$715,544	$2,010,016	$2,063,835	-$53,819
2004	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,160,666	$715,544	$2,029,653	$2,097,538	-$67,885
2005	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,193,094	$715,544	$2,029,653	$2,129,966	-$100,313
2006	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,217,414	$715,544	$2,029,653	$2,154,287	-$124,634
2007	$0	$2,042,254	7,036	$104,313	$0	$5,625,000	$90,000	$132,603	$1,241,735	$715,544	$2,153,603	$7,804,882	-$5,651,279
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$7,019,588	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$5,368,527	$7,735,783
PV	$350,295	$22,569,606		$575,397	$0	$9,232,157	$845,152	$1,737,735	$12,186,208	$9,730,655	$23,583,053	$33,731,908	-$10,148,855

Case 3: Replace SVPP with UPS + GEN in 1997
LCC: $9,501,567
NPV OVER CASE 1: -$6,212,100

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$28,416	$0	$10,925,200	$0	$194,829	$976,733	$1,067,985	$2,139,400	$13,164,747	-$11,025,347
1997	$0	$2,166,504	8,557	$0	$0	$0	$90,000	$126,228	$1,144,674	$731,912	$2,175,061	$2,092,815	$82,246
1998	$0	$2,166,504	8,557	$0	$0	$0	$90,000	$126,228	$1,174,235	$715,544	$2,175,061	$2,106,007	$69,054
1999	$0	$2,188,388	8,557	$0	$0	$0	$90,000	$127,503	$1,213,649	$715,544	$2,196,945	$2,146,696	$50,249
2000	$0	$2,210,272	8,557	$48,992	$0	$0	$90,000	$128,778	$1,253,063	$715,544	$2,267,821	$2,187,385	$80,436
2001	$0	$1,983,343	7,036	$0	$0	$0	$90,000	$128,778	$1,063,383	$715,544	$1,990,379	$1,997,705	-$7,326
2002	$0	$2,002,980	7,036	$0	$0	$0	$90,000	$130,053	$1,103,917	$715,544	$2,010,016	$2,039,514	-$29,499
2003	$0	$2,002,980	7,036	$0	$0	$0	$90,000	$130,053	$1,128,238	$715,544	$2,010,016	$2,063,835	-$53,819
2004	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,160,666	$715,544	$2,029,653	$2,097,538	-$67,885
2005	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,193,094	$715,544	$2,029,653	$2,129,966	-$100,313
2006	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,217,414	$715,544	$2,029,653	$2,154,287	-$124,634
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$90,000	$132,603	$1,241,735	$715,544	$2,153,603	$2,179,882	-$26,279
2008	$0	$1,460,364	3,798	$0	$0	$5,625,000	$90,000	$132,603	$689,697	$715,544	$1,464,162	$7,252,844	-$5,788,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$7,700,346	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$6,049,285	$8,416,541
PV	$458,196	$22,406,178		$574,425	$0	$8,388,989	$768,220	$1,796,375	$12,059,497	$10,015,794	$23,527,307	$33,028,874	-$9,501,567

Case 4: Replace SVPP with UPS + GEN in 1998
LCC: $8,866,484
NPV OVER CASE 1: -$5,577,016

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$28,416	$0	$10,925,200	$0	$198,339	$993,843	$1,065,484	$2,139,400	$13,182,866	-$11,043,467
1998	$0	$2,166,504	8,557	$0	$0	$0	$90,000	$126,228	$1,174,235	$715,544	$2,175,061	$2,106,007	$69,054
1999	$0	$2,188,388	8,557	$0	$0	$0	$90,000	$127,503	$1,213,649	$715,544	$2,196,945	$2,146,696	$50,249
2000	$0	$2,210,272	8,557	$48,992	$0	$0	$90,000	$128,778	$1,253,063	$715,544	$2,267,821	$2,187,385	$80,436
2001	$0	$1,983,343	7,036	$0	$0	$0	$90,000	$128,778	$1,063,383	$715,544	$1,990,379	$1,997,705	-$7,326
2002	$0	$2,002,980	7,036	$0	$0	$0	$90,000	$130,053	$1,103,917	$715,544	$2,010,016	$2,039,514	-$29,499
2003	$0	$2,002,980	7,036	$0	$0	$0	$90,000	$130,053	$1,128,235	$715,544	$2,010,016	$2,063,835	-$53,819
2004	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,160,666	$715,544	$2,029,653	$2,097,538	-$67,885
2005	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,193,094	$715,544	$2,029,653	$2,129,966	-$100,313
2006	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,217,414	$715,544	$2,029,653	$2,154,287	-$124,634
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$90,000	$132,603	$1,241,735	$715,544	$2,153,603	$2,179,882	-$26,279
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$2,756,104	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$1,105,043	$3,472,299
PV	$561,946	$22,249,036		$573,491	$0	$7,564,808	$694,246	$1,855,645	$11,935,524	$10,289,967	$23,473,706	$32,340,190	-$8,866,484

Case 5: Replace SVPP with UPS + GEN in 1999
LCC: $8,354,534
NPV OVER CASE 1: -$5,065,066

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$28,416	$0	$10,925,200	$0	$203,604	$1,019,509	$1,049,116	$2,139,400	$13,197,429	-$11,058,029
1999	$0	$2,188,388	8,557	$0	$0	$0	$90,000	$127,503	$1,213,649	$715,544	$2,196,945	$2,146,696	$50,249
2000	$0	$2,210,272	8,557	$48,992	$0	$0	$90,000	$128,778	$1,253,063	$715,544	$2,267,821	$2,187,385	$80,436
2001	$0	$1,983,343	7,036	$0	$0	$0	$90,000	$128,778	$1,063,383	$715,544	$1,990,379	$1,997,705	-$7,326
2002	$0	$2,002,980	7,036	$0	$0	$0	$90,000	$130,053	$1,103,917	$715,544	$2,010,016	$2,039,514	-$29,499
2003	$0	$2,002,980	7,036	$0	$0	$0	$90,000	$130,053	$1,128,235	$715,544	$2,010,016	$2,063,835	-$53,819
2004	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,160,666	$715,544	$2,029,653	$2,097,538	-$67,885
2005	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,193,094	$715,544	$2,029,653	$2,129,966	-$100,313
2006	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,217,414	$715,544	$2,029,653	$2,154,287	-$124,634
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$90,000	$132,603	$1,241,735	$715,544	$2,153,603	$2,179,882	-$26,279
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$3,436,862	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$1,785,801	$4,153,057
PV	$661,706	$22,097,937		$572,593	$0	$6,869,951	$623,118	$1,916,796	$11,813,242	$10,553,594	$23,422,167	$31,776,701	-$8,354,534

Case 6: Replace SVPP with UPS + GEN in 2000
LCC: $7,849,750
NPV OVER CASE 1: -$4,560,283

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,110,984	$2,272,229	-$161,245
1999	$127,503	$1,995,269	9,439	$28,416	$0	$10,925,200	$0	$210,624	$1,053,729	$1,049,116	$2,160,628	$13,238,669	-$11,078,041
2000	$0	$2,210,272	8,557	$48,992	$0	$0	$90,000	$128,778	$1,253,063	$715,544	$2,267,821	$2,187,385	$80,436
2001	$0	$1,983,343	7,036	$0	$0	$0	$90,000	$128,778	$1,063,383	$715,544	$1,990,379	$1,997,705	-$7,326
2002	$0	$2,002,980	7,036	$0	$0	$0	$90,000	$130,053	$1,103,917	$715,544	$2,010,016	$2,039,514	-$29,499
2003	$0	$2,002,980	7,036	$0	$0	$0	$90,000	$130,053	$1,128,238	$715,544	$2,010,016	$2,063,835	-$53,819
2004	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,160,666	$715,544	$2,029,653	$2,097,538	-$67,885
2005	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,193,094	$715,544	$2,029,653	$2,129,966	-$100,313
2006	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,217,414	$715,544	$2,029,653	$2,154,287	-$124,634
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$90,000	$132,603	$1,241,735	$715,544	$2,153,603	$2,179,882	-$26,279
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$4,117,620	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$2,466,559	$4,833,815
PV	$758,598	$21,951,183		$571,729	$0	$6,188,378	$554,725	$1,979,961	$11,691,716	$10,807,081	$23,372,111	$31,221,861	-$7,849,750

Case 7: Replace SVPP with UPS + GEN in 2001
LCC: $7,351,822
NPV OVER CASE 1: -$4,062,355

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,110,984	$2,272,229	-$161,245
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,132,211	$2,313,469	-$181,258
2000	$128,778	$2,015,221	9,439	$77,409	$0	$10,925,200	$0	$217,644	$1,087,949	$1,049,116	$2,230,848	$13,279,909	-$11,049,061
2001	$0	$1,983,343	7,036	$0	$0	$0	$90,000	$128,778	$1,063,383	$715,544	$1,990,379	$1,997,705	-$7,326
2002	$0	$2,002,980	7,036	$0	$0	$0	$90,000	$130,053	$1,103,917	$715,544	$2,010,016	$2,039,514	-$29,499
2003	$0	$2,002,980	7,036	$0	$0	$0	$90,000	$130,053	$1,128,238	$715,544	$2,010,016	$2,063,835	-$53,819
2004	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,160,666	$715,544	$2,029,653	$2,097,538	-$67,885
2005	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,193,094	$715,544	$2,029,653	$2,129,966	-$100,313
2006	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,217,414	$715,544	$2,029,653	$2,154,287	-$124,634
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$90,000	$132,603	$1,241,735	$715,544	$2,153,603	$2,179,882	-$26,279
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$4,798,378	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$3,147,317	$5,514,573
PV	$852,695	$21,808,662		$570,898	$0	$5,519,578	$488,963	$2,044,894	$11,571,069	$11,050,819	$23,323,501	$30,675,323	-$7,351,822

Case 8: Replace SVPP with UPS + GEN in 2002
LCC: $6,861,546
NPV OVER CASE 1: -$3,572,079

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,110,984	$2,272,229	-$161,245
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,132,211	$2,313,469	-$181,258
2000	$128,778	$2,015,221	9,439	$31,324	$0	$0	$0	$217,644	$1,087,949	$1,049,116	$2,184,763	$2,354,709	-$169,947
2001	$128,778	$1,870,133	8,467	$46,085	$0	$10,925,200	$0	$224,664	$975,697	$1,049,116	$2,053,463	$13,174,677	-$11,121,214
2002	$0	$2,002,980	7,036	$0	$0	$0	$90,000	$130,053	$1,103,917	$715,544	$2,010,016	$2,039,514	-$29,499
2003	$0	$2,002,980	7,036	$0	$0	$0	$90,000	$130,053	$1,128,238	$715,544	$2,010,016	$2,063,835	-$53,819
2004	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,160,666	$715,544	$2,029,653	$2,097,538	-$67,885
2005	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,193,094	$715,544	$2,029,653	$2,129,966	-$100,313
2006	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,217,414	$715,544	$2,029,653	$2,154,287	-$124,634
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$90,000	$132,603	$1,241,735	$715,544	$2,153,603	$2,179,882	-$26,279
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$5,479,136	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$3,828,075	$6,195,331
PV	$943,173	$21,729,122		$569,603	$0	$4,863,059	$425,730	$2,112,262	$11,509,462	$11,285,183	$23,334,149	$30,195,696	-$6,861,546

Case 9: Replace SVPP with UPS + GEN in 2003
LCC: $6,379,390
NPV OVER CASE 1: -$3,089,923

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,110,984	$2,272,229	-$161,245
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,132,211	$2,313,469	-$181,258
2000	$128,778	$2,015,221	9,439	$31,324	$0	$0	$0	$217,644	$1,087,949	$1,049,116	$2,184,763	$2,354,709	-$169,947
2001	$128,778	$1,870,133	8,467	$0	$0	$0	$0	$224,664	$975,697	$1,049,116	$2,007,378	$2,249,477	-$242,099
2002	$130,053	$1,888,649	8,467	$46,085	$0	$10,925,200	$0	$233,439	$1,012,889	$1,049,116	$2,073,254	$13,220,644	-$11,147,389
2003	$0	$2,002,980	7,036	$0	$0	$0	$90,000	$130,053	$1,128,238	$715,544	$2,010,016	$2,063,835	-$53,819
2004	$0	[illegible]	7,036	$0	$0	$0	$90,000	$131,328	$1,160,666	$715,544	$2,029,653	$2,097,538	-$67,885
2005	$0	[illegible]	7,036	$0	$0	$0	$90,000	$131,328	$1,193,094	$715,544	$2,029,653	$2,129,966	-$100,313
2006	$0	[illegible]	7,036	$0	$0	$0	$90,000	$131,328	$1,217,414	$715,544	$2,029,653	$2,154,287	-$124,634
2007	$0	[illegible]	7,036	$104,313	$0	$0	$90,000	$132,603	$1,241,735	$715,544	$2,153,603	$2,179,882	-$26,279
2008	$0	[illegible]	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$6,159,894	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$4,508,833	$6,876,089
PV	$1,031,033	$21,857,564		$568,358	$0	$4,218,349	$364,930	$2,182,105	$11,447,967	$11,510,532	$23,344,492	$29,723,882	-$6,379,390

Case 10: Replace SVPP with UPS + GEN in 2004
LCC: $5,904,454
NPV OVER CASE 1: -$2,614,987

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,110,984	$2,272,229	-$161,245
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,132,211	$2,313,469	-$181,258
2000	$128,778	$2,015,221	9,439	$31,324	$0	$0	$0	$217,644	$1,087,949	$1,049,116	$2,184,763	$2,354,709	-$169,947
2001	$128,778	$1,870,133	8,467	$0	$0	$0	$0	$224,664	$975,697	$1,049,116	$2,007,378	$2,249,477	-$242,099
2002	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$233,439	$1,012,889	$1,049,116	$2,027,169	$2,295,444	-$268,275
2003	$130,053	$1,888,649	8,467	$46,085	$0	$10,925,200	$0	$238,703	$1,035,204	$1,049,116	$2,073,254	$13,248,224	-$11,174,970
2004	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,160,666	$715,544	$2,029,653	$2,097,538	-$67,885
2005	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,193,094	$715,544	$2,029,653	$2,129,966	-$100,313
2006	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,217,414	$715,544	$2,029,653	$2,154,287	-$124,634
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$90,000	$132,603	$1,241,735	$715,544	$2,153,603	$2,179,882	-$26,279
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$6,840,652	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$5,189,591	$7,556,847
PV	$1,115,513	$21,577,617		$567,161	$0	$3,584,994	$306,467	$2,252,682	$11,387,534	$11,727,214	$23,354,437	$29,258,891	-$5,904,454

Case 11: Replace SVPP with UPS + GEN in 2005
LCC: $5,436,165
NPV OVER CASE 1: -$2,146,698

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,110,984	$2,272,229	-$161,245
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,132,211	$2,313,469	-$181,258
2000	$128,778	$2,015,221	9,439	$31,324	$0	$0	$0	$217,644	$1,087,949	$1,049,116	$2,184,763	$2,354,709	-$169,947
2001	$128,778	$1,870,133	8,467	$0	$0	$0	$0	$224,664	$975,697	$1,049,116	$2,007,378	$2,249,477	-$242,099
2002	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$233,439	$1,012,889	$1,049,116	$2,027,169	$2,295,444	-$268,275
2003	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$238,703	$1,035,204	$1,049,116	$2,027,169	$2,323,024	-$295,855
2004	$131,328	$1,907,165	8,467	$46,085	$0	$10,925,200	$0	$245,723	$1,064,958	$1,049,116	$2,093,045	$13,284,998	-$11,191,952
2005	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,193,094	$715,544	$2,029,653	$2,129,966	-$100,313
2006	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,217,414	$715,544	$2,029,653	$2,154,287	-$124,634
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$90,000	$132,603	$1,241,735	$715,544	$2,153,603	$2,179,882	-$26,279
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$7,521,410	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$5,870,349	$8,237,605
PV	$1,197,540	$21,505,506		$566,009	$0	$2,962,557	$250,254	$2,324,133	$11,327,755	$11,935,563	$23,364,096	$28,800,261	-$5,436,165

Case 12: Replace SVPP with UPS+GEN in 2006
LCC: $4,975,056
NPV OVER CASE 1: -$1,685,588

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,110,984	$2,272,229	-$161,245
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,132,211	$2,313,469	-$181,258
2000	$128,778	$2,015,221	9,439	$31,324	$0	$0	$0	$217,644	$1,087,949	$1,049,116	$2,184,763	$2,354,709	-$169,947
2001	$128,778	$1,870,133	8,467	$0	$0	$0	$0	$224,664	$975,697	$1,049,116	$2,007,378	$2,249,477	-$242,099
2002	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$233,439	$1,012,889	$1,049,116	$2,027,169	$2,295,444	-$268,275
2003	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$238,703	$1,035,204	$1,049,116	$2,027,169	$2,323,024	-$295,855
2004	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$245,723	$1,064,958	$1,049,116	$2,046,960	$2,359,798	-$312,837
2005	$131,328	$1,907,165	8,467	$46,085	$0	$10,925,200	$0	$252,743	$1,094,712	$1,049,116	$2,093,045	$13,321,771	-$11,228,726
2006	$0	$2,022,617	7,036	$0	$0	$0	$90,000	$131,328	$1,217,414	$715,544	$2,029,653	$2,154,287	-$124,634
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$90,000	$132,603	$1,241,735	$715,544	$2,153,603	$2,179,882	-$26,279
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$8,202,168	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$6,551,107	$8,918,363
PV	$1,276,413	$21,436,169		$564,902	$0	$2,350,618	$196,202	$2,397,051	$11,268,670	$12,135,898	$23,373,383	$28,348,439	-$4,975,056

Case 13: Replace SVPP with UPS+GEN in 2007
LCC: $4,520,121
NPV OVER CASE 1: -$1,230,654

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,110,984	$2,272,229	-$161,245
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,132,211	$2,313,469	-$181,258
2000	$128,778	$2,015,221	9,439	$31,324	$0	$0	$0	$217,644	$1,087,949	$1,049,116	$2,184,763	$2,354,709	-$169,947
2001	$128,778	$1,870,133	8,467	$0	$0	$0	$0	$224,664	$975,697	$1,049,116	$2,007,378	$2,249,477	-$242,099
2002	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$233,439	$1,012,889	$1,049,116	$2,027,169	$2,295,444	-$268,275
2003	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$238,703	$1,035,204	$1,049,116	$2,027,169	$2,323,024	-$295,855
2004	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$245,723	$1,064,958	$1,049,116	$2,046,960	$2,359,798	-$312,837
2005	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$252,743	$1,094,712	$1,049,116	$2,046,960	$2,396,571	-$349,611
2006	$131,328	$1,907,165	8,467	$46,085	$0	$10,925,200	$0	$258,008	$1,117,027	$1,049,116	$2,093,045	$13,349,351	-$11,256,306
2007	$0	$2,042,254	7,036	$104,313	$0	$0	$90,000	$132,603	$1,241,735	$715,544	$2,153,603	$2,179,882	-$26,279
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$8,882,926	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$7,231,865	$9,599,121
PV	$1,352,252	$21,369,498		$563,838	$0	$1,748,774	$144,229	$2,470,206	$11,210,698	$12,328,527	$23,382,313	$27,902,435	-$4,520,121

Case 14: Replace SVPP with UPS+GEN in 2008
LCC: $4,070,260
NPV OVER CASE 1: -$780,792

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,110,984	$2,272,229	-$161,245
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,132,211	$2,313,469	-$181,258
2000	$128,778	$2,015,221	9,439	$31,324	$0	$0	$0	$217,644	$1,087,949	$1,049,116	$2,184,763	$2,354,709	-$169,947
2001	$128,778	$1,870,133	8,467	$0	$0	$0	$0	$224,664	$975,697	$1,049,116	$2,007,378	$2,249,477	-$242,099
2002	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$233,439	$1,012,889	$1,049,116	$2,027,169	$2,295,444	-$268,275
2003	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$238,703	$1,035,204	$1,049,116	$2,027,169	$2,323,024	-$295,855
2004	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$245,723	$1,064,958	$1,049,116	$2,046,960	$2,359,798	-$312,837
2005	$131,328	$1,907,165.	8,467	$0	$0	$0	$0	$252,743	$1,094,712	$1,049,116	$2,046,960	$2,396,571	-$349,611
2006	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$258,008	$1,117,027	$1,049,116	$2,046,960	$2,424,151	-$377,191
2007	$132,603	$1,925,681	8,467	$150,398	$0	$10,925,200	$0	$263,273	$1,139,343	$1,049,116	$2,217,150	$13,376,932	-$11,159,782
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$9,563,684	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$7,912,623	$10,279,879
PV	$1,425,882	$21,304,770		$562,814	$0	$1,156,636	$94,255	$2,542,762	$11,153,843	$12,513,748	$23,390,986	$27,461,245	-$4,070,260

Case 15: Replace SVPP with UPS+GEN in 2009
LCC: $3,626,834
NPV OVER CASE 1: -$337,367

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$187,809	$942,512	$1,074,190	$2,110,984	$2,204,511	-$93,528
1995	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$191,319	$959,623	$1,070,867	$2,110,984	$2,221,809	-$110,825
1996	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$194,829	$976,733	$1,067,985	$2,110,984	$2,239,547	-$128,563
1997	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$198,339	$993,843	$1,065,484	$2,110,984	$2,257,666	-$146,683
1998	$126,228	$1,975,316	9,439	$0	$0	$0	$0	$203,604	$1,019,509	$1,049,116	$2,110,984	$2,272,229	-$161,245
1999	$127,503	$1,995,269	9,439	$0	$0	$0	$0	$210,624	$1,053,729	$1,049,116	$2,132,211	$2,313,469	-$181,258
2000	$128,778	$2,015,221	9,439	$31,324	$0	$0	$0	$217,644	$1,087,949	$1,049,116	$2,184,763	$2,354,709	-$169,947
2001	$128,778	$1,870,133	8,467	$0	$0	$0	$0	$224,664	$975,697	$1,049,116	$2,007,378	$2,249,477	-$242,099
2002	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$233,439	$1,012,889	$1,049,116	$2,027,169	$2,295,444	-$268,275
2003	$130,053	$1,888,649	8,467	$0	$0	$0	$0	$238,703	$1,035,204	$1,049,116	$2,027,169	$2,323,024	-$295,855
2004	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$245,723	$1,064,958	$1,049,116	$2,046,960	$2,359,798	-$312,837
2005	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$252,743	$1,094,712	$1,049,116	$2,046,960	$2,396,571	-$349,611
2006	$131,328	$1,907,165	8,467	$0	$0	$0	$0	$258,008	$1,117,027	$1,049,116	$2,046,960	$2,424,151	-$377,191
2007	$132,603	$1,925,681	8,467	$90,094	$0	$0	$0	$263,273	$1,139,343	$1,049,116	$2,156,846	$2,451,732	-$294,886
2008	$132,603	$1,423,109	5,670	$60,304	$0	$10,925,200	$0	$270,293	$664,299	$1,049,116	$1,621,686	$12,908,908	-$11,287,222
2009	$0	$1,474,406	3,798	$889,052	$0	-$10,244,442	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$8,593,381	$10,960,637
PV	$1,496,680	$21,284,879		$561,526	$0	$573,831	$46,204	$2,616,275	$11,140,283	$12,691,845	$23,441,604	$27,068,439	-$3,626,834

Strategy 1A - Relaxed Constraints

RELAXED ENVIRONMENTAL CONSTRAINTS SCENARIO

Case 1: Never replace SVPP with UPS + Gen
LCC: $13,661,590
NPV OVER CASE 1: $0

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$126,228	$1,264,075	-$1,137,847
1994	$126,228	$0	2,013	$0	$0	$0	$0	$187,809	$0	$1,074,190	$126,228	$1,261,999	-$1,135,771
1995	$126,228	$0	2,013	$0	$0	$0	$0	$191,319	$0	$1,070,867	$126,228	$1,262,186	-$1,135,958
1996	$126,228	$0	2,013	$0	$0	$0	$0	$194,829	$0	$1,067,985	$126,228	$1,262,814	-$1,136,586
1997	$126,228	$0	2,013	$0	$0	$0	$0	$198,339	$0	$1,065,484	$126,228	$1,263,823	-$1,137,595
1998	$126,228	$0	2,013	$0	$0	$0	$0	$203,604	$0	$1,049,116	$126,228	$1,252,720	-$1,126,492
1999	$127,503	$0	2,013	$0	$0	$0	$0	$210,624	$0	$1,049,116	$127,503	$1,259,740	-$1,132,237
2000	$128,778	$0	2,013	$0	$0	$0	$0	$217,644	$0	$1,049,116	$128,778	$1,266,760	-$1,137,981
2001	$128,778	$0	2,013	$0	$0	$0	$0	$224,664	$0	$1,049,116	$128,778	$1,273,780	-$1,145,001
2002	$130,053	$0	2,013	$0	$0	$0	$0	$233,439	$0	$1,049,116	$130,053	$1,282,555	-$1,152,501
2003	$130,053	$0	2,013	$0	$0	$0	$0	$238,703	$0	$1,049,116	$130,053	$1,287,819	-$1,157,766
2004	$131,328	$0	2,013	$0	$0	$0	$0	$245,723	$0	$1,049,116	$131,328	$1,294,839	-$1,163,511
2005	$131,328	$0	2,013	$0	$0	$0	$0	$252,743	$0	$1,049,116	$131,328	$1,301,859	-$1,170,531
2006	$131,328	$0	2,013	$0	$0	$0	$0	$258,008	$0	$1,049,116	$131,328	$1,307,124	-$1,175,796
2007	$132,603	$0	2,013	$0	$0	$0	$0	$263,273	$0	$1,049,116	$132,603	$1,312,389	-$1,179,786
2008	$132,603	$0	2,013	$0	$0	$0	$0	$270,293	$0	$1,049,116	$132,603	$1,319,409	-$1,186,805
2009	$133,879	$0	2,013	$831,567	$0	$0	$0	$279,068	$0	$1,049,116	$965,446	$1,328,184	-$362,738
PV	$1,565,409	$0		$426,904	$0	$0	$0	$2,690,812	$0	$12,863,092	$1,992,314	$15,553,904	-$13,661,590

Strategy 1B - Relaxed Constraints

RELAXED ENVIRONMENTAL CONSTRAINTS SCENARIO

Case 1: Never replace SVPP with UPS + Gen
LCC: $2,127,636
NPV OVER CASE 1: $0

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$126,228	$1,264,075	-$1,137,847
1994	$126,228	$4,715,683	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$4,977,244	$4,792,977	$184,267
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,735,320	$4,316,090	$419,230
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,584,091	$2,638,841	-$54,750
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,584,091	$2,663,955	-$79,864
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,584,091	$2,689,009	-$104,919
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,610,193	$2,744,239	-$134,047
2000	$128,778	$2,507,516	12,485	$81,201	$0	$0	$0	$217,644	$1,532,709	$1,049,116	$2,717,496	$2,799,469	-$81,973
2001	$128,778	$2,131,399	9,964	$0	$0	$0	$0	$224,664	$1,201,214	$1,049,116	$2,260,178	$2,474,993	-$214,816
2002	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$233,439	$1,247,002	$1,049,116	$2,282,556	$2,529,557	-$247,001
2003	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$238,703	$1,274,476	$1,049,116	$2,282,556	$2,562,295	-$279,739
2004	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$245,723	$1,311,106	$1,049,116	$2,304,934	$2,605,946	-$301,012
2005	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$252,743	$1,347,737	$1,049,116	$2,304,934	$2,649,597	-$344,663
2006	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$258,008	$1,375,211	$1,049,116	$2,304,934	$2,682,335	-$377,401
2007	$132,603	$2,194,708	9,964	$138,322	$0	$0	$0	$263,273	$1,402,684	$1,049,116	$2,465,633	$2,715,073	-$249,439
2008	$132,603	$1,423,109	5,670	$0	$0	$0	$0	$270,293	$664,299	$1,049,116	$1,555,713	$1,983,708	-$427,995
2009	$133,879	$1,436,793	5,670	$949,356	$0	$0	$0	$279,068	$685,432	$1,049,116	$2,520,027	$2,013,616	$506,411
PV	$1,565,409	$28,845,691		$1,127,017	$0	$0	$0	$2,690,812	$18,111,849	$12,863,092	$31,538,117	$33,665,753	-$2,127,636

Strategy 2B - Relaxed Constraints

RELAXED ENVIRONMENTAL CONSTRAINTS SCENARIO

Case 1: Never replace SVPP with UPS+SVPP
LCC: $2,127,636
NPV OVER CASE 1: $0

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$126,228	$1,264,075	-$1,137,847
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$4,977,244	$4,792,977	$184,267
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,735,320	$4,316,090	$419,230
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,584,091	$2,638,841	-$54,750
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,584,091	$2,663,955	-$79,864
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,584,091	$2,689,009	-$104,919
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,610,193	$2,744,239	-$134,047
2000	$128,778	$2,507,516	12,485	$81,201	$0	$0	$0	$217,644	$1,532,709	$1,049,116	$2,717,496	$2,799,469	-$81,973
2001	$128,778	$2,131,399	9,964	$0	$0	$0	$0	$224,664	$1,201,214	$1,049,116	$2,260,178	$2,474,993	-$214,816
2002	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$233,439	$1,247,002	$1,049,116	$2,282,556	$2,529,557	-$247,001
2003	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$238,703	$1,274,476	$1,049,116	$2,282,556	$2,562,295	-$279,739
2004	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$245,723	$1,311,106	$1,049,116	$2,304,934	$2,605,946	-$301,012
2005	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$252,743	$1,347,737	$1,049,116	$2,304,934	$2,649,597	-$344,663
2006	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$258,008	$1,375,211	$1,049,116	$2,304,934	$2,682,335	-$377,401
2007	$132,603	$2,194,708	9,964	$138,322	$0	$0	$0	$263,273	$1,402,684	$1,049,116	$2,465,633	$2,715,073	-$249,439
2008	$132,603	$1,423,109	5,670	$0	$0	$0	$0	$270,293	$664,299	$1,049,116	$1,555,713	$1,983,708	-$427,995
2009	$133,879	$1,436,793	5,670	$949,356	$0	$0	$0	$279,068	$685,432	$1,049,116	$2,520,027	$2,013,616	$506,411
PV	$1,565,409	$28,845,691		$1,127,017	$0	$0	$0	$2,690,812	$18,111,849	$12,863,092	$31,538,117	$33,665,753	-$2,127,636

Case 2: Replace SVPP with UPS+SVPP in 1996
LCC: $3,816,781
NPV OVER CASE 1: -$1,689,145

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$474,874	$0	$4,557,200	$0	$191,319	$3,053,904	$1,070,867	$4,810,267	$8,873,290	-$4,063,023
1996	$0	$2,547,596	10,956	$0	$0	$0	$60,000	$126,228	$1,439,476	$789,788	$2,558,552	$2,415,492	$143,059
1997	$0	$2,547,596	10,956	$0	$0	$0	$60,000	$126,228	$1,464,692	$787,288	$2,558,552	$2,438,208	$120,343
1998	$0	$2,547,596	10,956	$0	$0	$0	$60,000	$126,228	$1,502,517	$770,919	$2,558,552	$2,459,665	$98,887
1999	$0	$2,573,329	10,956	$0	$0	$0	$60,000	$127,503	$1,552,950	$770,919	$2,584,285	$2,511,373	$72,912
2000	$0	$2,599,062	10,956	$86,969	$0	$0	$60,000	$128,778	$1,603,383	$770,919	$2,696,987	$2,563,081	$133,906
2001	$0	$2,196,230	8,256	$0	$0	$0	$60,000	$128,778	$1,247,140	$770,919	$2,204,486	$2,206,838	-$2,352
2002	$0	$2,217,975	8,256	$0	$0	$0	$60,000	$130,053	$1,294,679	$770,919	$2,226,231	$2,255,652	-$29,421
2003	$0	$2,217,975	8,256	$0	$0	$0	$60,000	$130,053	$1,323,203	$770,919	$2,226,231	$2,284,176	-$57,945
2004	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,361,234	$770,919	$2,247,976	$2,323,482	-$75,506
2005	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,399,266	$770,919	$2,247,976	$2,361,513	-$113,538
2006	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,427,789	$770,919	$2,247,976	$2,390,037	-$142,061
2007	$0	$2,261,464	8,256	$143,610	$0	$2,225,000	$60,000	$132,603	$1,456,313	$770,919	$2,413,331	$4,644,836	-$2,231,505
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$2,880,335	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$1,203,898	$3,571,154
PV	$350,295	$29,530,595		$1,146,990	$0	$3,808,111	$563,435	$1,737,735	$18,620,687	$10,250,665	$31,163,852	$34,980,633	-$3,816,781

Case 3: Replace SVPP with UPS + SVPP in 1997
LCC: $3,630,463
NPV OVER CASE 1: -$1,502,827

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$49,248	$0	$4,557,200	$0	$194,829	$1,376,027	$1,067,985	$2,645,823	$7,196,041	-$4,550,217
1997	$0	$2,547,596	10,956	$0	$0	$0	$60,000	$126,228	$1,464,692	$787,288	$2,558,552	$2,438,208	$120,343
1998	$0	$2,547,596	10,956	$0	$0	$0	$60,000	$126,228	$1,502,517	$770,919	$2,558,552	$2,459,665	$98,887
1999	$0	$2,573,329	10,956	$0	$0	$0	$60,000	$127,503	$1,552,950	$770,919	$2,584,285	$2,511,373	$72,912
2000	$0	$2,599,062	10,956	$86,969	$0	$0	$60,000	$128,778	$1,603,383	$770,919	$2,696,987	$2,563,081	$133,906
2001	$0	$2,196,230	8,256	$0	$0	$0	$60,000	$128,778	$1,247,140	$770,919	$2,204,486	$2,206,838	-$2,352
2002	$0	$2,217,975	8,256	$0	$0	$0	$60,000	$130,053	$1,294,679	$770,919	$2,226,231	$2,255,652	-$29,421
2003	$0	$2,217,975	8,256	$0	$0	$0	$60,000	$130,053	$1,323,203	$770,919	$2,226,231	$2,284,176	-$57,945
2004	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,361,234	$770,919	$2,247,976	$2,323,482	-$75,506
2005	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,399,266	$770,919	$2,247,976	$2,361,513	-$113,538
2006	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,427,789	$770,919	$2,247,976	$2,390,037	-$142,061
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$60,000	$132,603	$1,456,313	$770,919	$2,413,331	$2,419,836	-$6,505
2008	$0	$1,460,364	3,798	$0	$0	$2,225,000	$60,000	$132,603	$689,697	$770,919	$1,464,162	$3,878,220	-$2,414,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$3,159,039	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$1,482,603	$3,849,859
PV	$458,196	$29,453,891		$1,145,306	$0	$3,461,693	$512,146	$1,796,375	$18,566,451	$10,488,469	$31,194,671	$34,825,134	-$3,630,463

Case 4: Replace SVPP with UPS + SVPP in 1998
LCC: $3,447,780
NPV OVER CASE 1: -$1,320,143

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$49,248	$0	$4,557,200	$0	$198,339	$1,400,132	$1,065,484	$2,645,823	$7,221,155	-$4,575,332
1998	$0	$2,547,596	10,956	$0	$0	$0	$60,000	$126,228	$1,502,517	$770,919	$2,558,552	$2,459,665	$98,887
1999	$0	$2,573,329	10,956	$0	$0	$0	$60,000	$127,503	$1,552,950	$770,919	$2,584,285	$2,511,373	$72,912
2000	$0	$2,599,062	10,956	$86,969	$0	$0	$60,000	$128,778	$1,603,383	$770,919	$2,696,987	$2,563,081	$133,906
2001	$0	$2,196,230	8,256	$0	$0	$0	$60,000	$128,778	$1,247,140	$770,919	$2,204,486	$2,206,838	-$2,352
2002	$0	$2,217,975	8,256	$0	$0	$0	$60,000	$130,053	$1,294,679	$770,919	$2,226,231	$2,255,652	-$29,421
2003	$0	$2,217,975	8,256	$0	$0	$0	$60,000	$130,053	$1,323,203	$770,919	$2,226,231	$2,284,176	-$57,945
2004	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,361,234	$770,919	$2,247,976	$2,323,482	-$75,506
2005	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,399,266	$770,919	$2,247,976	$2,361,513	-$113,538
2006	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,427,789	$770,919	$2,247,976	$2,390,037	-$142,061
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$60,000	$132,603	$1,456,313	$770,919	$2,413,331	$2,419,836	-$6,505
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$1,212,744	$60,000	$133,879	$711,638	$770,919	$2,367,256	$463,692	$1,903,563
PV	$561,946	$29,380,137		$1,143,687	$0	$3,123,096	$462,831	$1,855,645	$18,513,387	$10,717,126	$31,224,305	$34,672,084	-$3,447,780

Case 5: Replace SVPP with UPS + SVPP in 1999
LCC: $3,313,395
NPV OVER CASE 1: -$1,185,759

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$49,248	$0	$4,557,200	$0	$203,604	$1,436,289	$1,049,116	$2,645,823	$7,246,209	-$4,600,386
1999	$0	$2,573,329	10,956	$0	$0	$0	$60,000	$127,503	$1,552,950	$770,919	$2,584,285	$2,511,373	$72,912
2000	$0	$2,599,062	10,956	$86,969	$0	$0	$60,000	$128,778	$1,603,383	$770,919	$2,696,987	$2,563,081	$133,906
2001	$0	$2,196,230	8,256	$0	$0	$0	$60,000	$128,778	$1,247,140	$770,919	$2,204,486	$2,206,838	-$2,352
2002	$0	$2,217,975	8,256	$0	$0	$0	$60,000	$130,053	$1,294,679	$770,919	$2,226,231	$2,255,652	-$29,421
2003	$0	$2,217,975	8,256	$0	$0	$0	$60,000	$130,053	$1,323,203	$770,919	$2,226,231	$2,284,176	-$57,945
2004	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,361,234	$770,919	$2,247,976	$2,323,482	-$75,506
2005	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,399,266	$770,919	$2,247,976	$2,361,513	-$113,538
2006	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,427,789	$770,919	$2,247,976	$2,390,037	-$142,061
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$60,000	$132,603	$1,456,313	$770,919	$2,413,331	$2,419,836	-$6,505
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$1,491,449	$60,000	$133,879	$711,638	$770,919	$2,367,256	$184,988	$2,182,268
PV	$661,706	$29,309,219		$1,142,130	$0	$2,835,952	$415,412	$1,916,796	$18,461,046	$10,936,989	$31,252,799	$34,566,194	-$3,313,395

Case 6: Replace SVPP with UPS + SVPP in 2000
LCC: $3,181,073
NPV OVER CASE 1: -$1,053,437

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,596,576	$2,689,009	-$92,434
1999	$127,503	$2,482,689	12,485	$49,248	$0	$4,557,200	$0	$210,624	$1,484,499	$1,049,116	$2,671,925	$7,301,439	-$4,629,514
2000	$0	$2,599,062	10,956	$86,969	$0	$0	$60,000	$128,778	$1,603,383	$770,919	$2,696,987	$2,563,081	$133,906
2001	$0	$2,196,230	8,256	$0	$0	$0	$60,000	$128,778	$1,247,140	$770,919	$2,204,486	$2,206,838	-$2,352
2002	$0	$2,217,975	8,256	$0	$0	$0	$60,000	$130,053	$1,294,679	$770,919	$2,226,231	$2,255,652	-$29,421
2003	$0	$2,217,975	8,256	$0	$0	$0	$60,000	$130,053	$1,323,203	$770,919	$2,226,231	$2,284,176	-$57,945
2004	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,361,234	$770,919	$2,247,976	$2,323,482	-$75,506
2005	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,399,266	$770,919	$2,247,976	$2,361,513	-$113,538
2006	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,427,789	$770,919	$2,247,976	$2,390,037	-$142,061
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$60,000	$132,603	$1,456,313	$770,919	$2,413,331	$2,419,836	-$6,505
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$1,770,153	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$93,717	$2,460,973
PV	$758,598	$29,240,341		$1,140,633	$0	$2,554,348	$369,817	$1,979,961	$18,409,029	$11,148,395	$31,280,477	$34,461,550	-$3,181,073

Case 7: Replace SVPP with UPS+SVPP in 2001
LCC: $3,050,641
NPV OVER CASE 1: -$923,005

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,596,576	$2,689,009	-$92,434
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,622,678	$2,744,239	-$121,562
2000	$128,778	$2,507,516	12,485	$136,217	$0	$4,557,200	$0	$217,644	$1,532,709	$1,049,116	$2,784,996	$7,356,669	-$4,571,673
2001	$0	$2,196,230	8,256	$0	$0	$0	$60,000	$128,778	$1,247,140	$770,919	$2,204,486	$2,206,838	-$2,352
2002	$0	$2,217,975	8,256	$0	$0	$0	$60,000	$130,053	$1,294,679	$770,919	$2,226,231	$2,255,652	-$29,421
2003	$0	$2,217,975	8,256	$0	$0	$0	$60,000	$130,053	$1,323,203	$770,919	$2,226,231	$2,284,176	-$57,945
2004	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,361,234	$770,919	$2,247,976	$2,323,482	-$75,506
2005	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,399,266	$770,919	$2,247,976	$2,361,513	-$113,538
2006	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,427,789	$770,919	$2,247,976	$2,390,037	-$142,061
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$60,000	$132,603	$1,456,313	$770,919	$2,413,331	$2,419,836	-$6,505
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$2,048,858	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$372,422	$2,739,677
PV	$852,695	$29,173,449		$1,139,194	$0	$2,278,073	$325,975	$2,044,894	$18,357,388	$11,351,671	$31,307,360	$34,358,001	-$3,050,641

Case 8: Replace SVPP with UPS+SVPP in 2002
LCC: $2,923,308
NPV OVER CASE 1: -$795,672

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,596,576	$2,689,009	-$92,434
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,622,678	$2,744,239	-$121,562
2000	$128,778	$2,507,516	12,485	$81,201	$0	$0	$0	$217,644	$1,532,709	$1,049,116	$2,729,981	$2,799,469	-$69,488
2001	$128,778	$2,131,399	9,964	$55,015	$0	$4,557,200	$0	$224,664	$1,201,214	$1,049,116	$2,325,157	$7,032,193	-$4,707,036
2002	$0	$2,217,975	8,256	$0	$0	$0	$60,000	$130,053	$1,294,679	$770,919	$2,226,231	$2,255,652	-$29,421
2003	$0	$2,217,975	8,256	$0	$0	$0	$60,000	$130,053	$1,323,203	$770,919	$2,226,231	$2,284,176	-$57,945
2004	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,361,234	$770,919	$2,247,976	$2,323,482	-$75,506
2005	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,399,266	$770,919	$2,247,976	$2,361,513	-$113,538
2006	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,427,789	$770,919	$2,247,976	$2,390,037	-$142,061
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$60,000	$132,603	$1,456,313	$770,919	$2,413,331	$2,419,836	-$6,505
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$2,327,563	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$651,126	$3,018,382
PV	$943,173	$29,127,900		$1,137,648	$0	$2,006,920	$283,820	$2,112,262	$18,325,121	$11,547,128	$31,351,943	$34,275,251	-$2,923,308

Case 9: Replace SVPP with UPS + SVPP in 2003
LCC: $2,798,826
NPV OVER CASE 1: -$671,190

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,596,576	$2,689,009	-$92,434
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,622,678	$2,744,239	-$121,562
2000	$128,778	$2,507,516	12,485	$81,201	$0	$0	$0	$217,644	$1,532,709	$1,049,116	$2,729,981	$2,799,469	-$69,488
2001	$128,778	$2,131,399	9,964	$0	$0	$0	$0	$224,664	$1,201,214	$1,049,116	$2,270,142	$2,474,993	-$204,852
2002	$130,053	$2,152,502	9,964	$55,015	$0	$4,557,200	$0	$233,439	$1,247,002	$1,049,116	$2,347,535	$7,086,757	-$4,739,222
2003	$0	$2,217,975	8,256	$0	$0	$0	$60,000	$130,053	$1,323,203	$770,919	$2,226,231	$2,284,176	-$57,945
2004	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,361,234	$770,919	$2,247,976	$2,323,482	-$75,506
2005	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,399,266	$770,919	$2,247,976	$2,361,513	-$113,538
2006	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,427,789	$770,919	$2,247,976	$2,390,037	-$142,061
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$60,000	$132,603	$1,456,313	$770,919	$2,413,331	$2,419,836	-$6,505
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$2,606,267	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$929,831	$3,297,087
PV	$1,031,033	$29,083,669		$1,136,161	$0	$1,740,693	$243,286	$2,182,105	$18,292,913	$11,735,068	$31,395,239	$34,194,065	-$2,798,826

Case 10: Replace SVPP with UPS + SVPP in 2004
LCC: $2,676,366
NPV OVER CASE 1: -$548,730

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,596,576	$2,689,009	-$92,434
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,622,678	$2,744,239	-$121,562
2000	$128,778	$2,507,516	12,485	$81,201	$0	$0	$0	$217,644	$1,532,709	$1,049,116	$2,729,981	$2,799,469	-$69,488
2001	$128,778	$2,131,399	9,964	$0	$0	$0	$0	$224,664	$1,201,214	$1,049,116	$2,270,142	$2,474,993	-$204,852
2002	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$233,439	$1,247,002	$1,049,116	$2,292,520	$2,529,557	-$237,037
2003	$130,053	$2,152,502	9,964	$55,015	$0	$4,557,200	$0	$238,703	$1,274,476	$1,049,116	$2,347,535	$7,119,495	-$4,771,960
2004	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,361,234	$770,919	$2,247,976	$2,323,482	-$75,506
2005	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,399,266	$770,919	$2,247,976	$2,361,513	-$113,538
2006	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,427,789	$770,919	$2,247,976	$2,390,037	-$142,061
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$60,000	$132,603	$1,456,313	$770,919	$2,413,331	$2,419,836	-$6,505
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$2,884,972	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$1,208,536	$3,575,791
PV	$1,115,513	$29,041,140		$1,134,732	$0	$1,479,203	$204,312	$2,252,682	$18,261,260	$11,915,779	$31,436,870	$34,113,236	-$2,676,366

Case 11: Replace SVPP with UPS + SVPP in 2005
LCC: $2,555,431
NPV OVER CASE 1: -$427,795

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,596,576	$2,689,009	-$92,434
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,622,678	$2,744,239	-$121,562
2000	$128,778	$2,507,516	12,485	$81,201	$0	$0	$0	$217,644	$1,532,709	$1,049,116	$2,729,981	$2,799,469	-$69,488
2001	$128,778	$2,131,399	9,964	$0	$0	$0	$0	$224,664	$1,201,214	$1,049,116	$2,270,142	$2,474,993	-$204,852
2002	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$233,439	$1,247,002	$1,049,116	$2,292,520	$2,529,557	-$237,037
2003	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$238,703	$1,274,476	$1,049,116	$2,292,520	$2,562,295	-$269,775
2004	$131,328	$2,173,605	9,964	$55,015	$0	$4,557,200	$0	$245,723	$1,311,106	$1,049,116	$2,369,913	$7,163,146	-$4,793,233
2005	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,399,266	$770,919	$2,247,976	$2,361,513	-$113,538
2006	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,427,789	$770,919	$2,247,976	$2,390,037	-$142,061
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$60,000	$132,603	$1,456,313	$770,919	$2,413,331	$2,419,836	-$6,505
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$3,163,677	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$1,487,240	$3,854,496
PV	$1,197,540	$28,999,845		$1,133,357	$0	$1,222,267	$166,836	$2,324,133	$18,229,951	$12,089,540	$31,477,295	$34,032,726	-$2,555,431

Case 12: Replace SVPP with UPS + SVPP in 2006
LCC: $2,437,020
NPV OVER CASE 1: -$309,383

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,596,576	$2,689,009	-$92,434
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,622,678	$2,744,239	-$121,562
2000	$128,778	$2,507,516	12,485	$81,201	$0	$0	$0	$217,644	$1,532,709	$1,049,116	$2,729,981	$2,799,469	-$69,488
2001	$128,778	$2,131,399	9,964	$0	$0	$0	$0	$224,664	$1,201,214	$1,049,116	$2,270,142	$2,474,993	-$204,852
2002	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$233,439	$1,247,002	$1,049,116	$2,292,520	$2,529,557	-$237,037
2003	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$238,703	$1,274,476	$1,049,116	$2,292,520	$2,562,295	-$269,775
2004	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$245,723	$1,311,106	$1,049,116	$2,314,898	$2,605,946	-$291,048
2005	$131,328	$2,173,605	9,964	$55,015	$0	$4,557,200	$0	$252,743	$1,347,737	$1,049,116	$2,369,913	$7,206,797	-$4,836,883
2006	$0	$2,239,720	8,256	$0	$0	$0	$60,000	$131,328	$1,427,789	$770,919	$2,247,976	$2,390,037	-$142,061
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$60,000	$132,603	$1,456,313	$770,919	$2,413,331	$2,419,836	-$6,505
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$3,442,381	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$1,765,945	$4,133,201
PV	$1,276,413	$28,960,138		$1,132,036	$0	$969,710	$130,801	$2,397,051	$18,199,004	$12,256,618	$31,516,165	$33,953,184	-$2,437,020

Case 13: Replace SVPP with UPS+SVPP in 2007
LCC: $2,320,093
NPV OVER CASE 1: -$192,457

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,596,576	$2,689,009	-$92,434
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,622,678	$2,744,239	-$121,562
2000	$128,778	$2,507,516	12,485	$81,201	$0	$0	$0	$217,644	$1,532,709	$1,049,116	$2,729,981	$2,799,469	-$69,488
2001	$128,778	$2,131,399	9,964	$0	$0	$0	$0	$224,664	$1,201,214	$1,049,116	$2,270,142	$2,474,993	-$204,852
2002	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$233,439	$1,247,002	$1,049,116	$2,292,520	$2,529,557	-$237,037
2003	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$238,703	$1,274,476	$1,049,116	$2,292,520	$2,562,295	-$269,775
2004	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$245,723	$1,311,106	$1,049,116	$2,314,898	$2,605,946	-$291,048
2005	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$252,743	$1,347,737	$1,049,116	$2,314,898	$2,649,597	-$334,699
2006	$131,328	$2,173,605	9,964	$55,015	$0	$4,557,200	$0	$258,008	$1,375,211	$1,049,116	$2,369,913	$7,239,535	-$4,869,621
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$60,000	$132,603	$1,456,313	$770,919	$2,413,331	$2,419,836	-$6,505
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$3,721,086	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$2,044,650	$4,411,905
PV	$1,352,252	$28,921,959		$1,130,765	$0	$721,363	$96,153	$2,470,206	$18,168,641	$12,417,269	$31,553,540	$33,873,633	-$2,320,093

Case 14: Replace SVPP with UPS+SVPP in 2008
LCC: $2,203,441
NPV OVER CASE 1: -$75,805

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,596,576	$2,689,009	-$92,434
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,622,678	$2,744,239	-$121,562
2000	$128,778	$2,507,516	12,485	$81,201	$0	$0	$0	$217,644	$1,532,709	$1,049,116	$2,729,981	$2,799,469	-$69,488
2001	$128,778	$2,131,399	9,964	$0	$0	$0	$0	$224,664	$1,201,214	$1,049,116	$2,270,142	$2,474,993	-$204,852
2002	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$233,439	$1,247,002	$1,049,116	$2,292,520	$2,529,557	-$237,037
2003	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$238,703	$1,274,476	$1,049,116	$2,292,520	$2,562,295	-$269,775
2004	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$245,723	$1,311,106	$1,049,116	$2,314,898	$2,605,946	-$291,048
2005	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$252,743	$1,347,737	$1,049,116	$2,314,898	$2,649,597	-$334,699
2006	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$258,008	$1,375,211	$1,049,116	$2,314,898	$2,682,335	-$367,437
2007	$132,603	$2,194,708	9,964	$198,626	$0	$4,557,200	$0	$263,273	$1,402,684	$1,049,116	$2,535,901	$7,272,273	-$4,736,371
2008	$0	$1,460,364	3,798	$0	$0	$0	$60,000	$132,603	$689,697	$770,919	$1,464,162	$1,653,220	-$189,058
2009	$0	$1,474,406	3,798	$889,052	$0	-$3,999,791	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$2,323,354	$4,690,610
PV	$1,425,882	$28,884,892		$1,129,543	$0	$477,066	$62,837	$2,542,762	$18,138,863	$12,571,742	$31,589,829	$33,793,270	-$2,203,441

Case 15: Replace SVPP with UPS + SVPP in 2009

LCC: $2,088,868
NPV OVER CASE 1: $38,769

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,578	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,596,576	$2,689,009	-$92,434
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,622,678	$2,744,239	-$121,562
2000	$128,778	$2,507,516	12,485	$81,201	$0	$0	$0	$217,644	$1,532,709	$1,049,116	$2,729,981	$2,799,469	-$69,488
2001	$128,778	$2,131,399	9,964	$0	$0	$0	$0	$224,664	$1,201,214	$1,049,116	$2,270,142	$2,474,993	-$204,852
2002	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$233,439	$1,247,002	$1,049,116	$2,292,520	$2,529,557	-$237,037
2003	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$238,703	$1,274,476	$1,049,116	$2,292,520	$2,562,295	-$269,775
2004	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$245,723	$1,311,106	$1,049,116	$2,314,898	$2,605,946	-$291,048
2005	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$252,743	$1,347,737	$1,049,116	$2,314,898	$2,649,597	-$334,699
2006	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$258,008	$1,375,211	$1,049,116	$2,314,898	$2,682,335	-$367,437
2007	$132,603	$2,194,708	9,964	$138,322	$0	$0	$0	$263,273	$1,402,684	$1,049,116	$2,475,597	$2,715,073	-$239,475
2008	$132,603	$1,423,109	5,670	$60,304	$0	$4,557,200	$0	$270,293	$664,299	$1,049,116	$1,621,686	$6,540,908	-$4,919,222
2009	$0	$1,474,406	3,798	$889,052	$0	-$4,278,495	$60,000	$133,879	$711,638	$770,919	$2,367,256	-$2,602,059	$4,969,315
PV	$1,496,680	$28,865,001		$1,128,255	$0	$236,661	$30,802	$2,616,275	$18,125,303	$12,720,274	$31,640,448	$33,729,315	-$2,088,868

Strategy 38 - Relaxed Constraints

RELAXED ENVIRONMENTAL CONSTRAINTS SCENARIO

Case 1: Never replace SVPP with UPS + GEN
LCC: $2,127,636
NPV OVER CASE 1: $0

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$126,228	$1,264,075	-$1,137,847
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$4,977,244	$4,792,977	$184,267
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,735,320	$4,316,090	$419,230
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,584,091	$2,638,841	-$54,750
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,584,091	$2,663,955	-$79,864
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,584,091	$2,689,009	-$104,919
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,610,193	$2,744,239	-$134,047
2000	$128,778	$2,507,516	12,485	$81,201	$0	$0	$0	$217,644	$1,532,709	$1,049,116	$2,717,496	$2,799,469	-$81,973
2001	$128,778	$2,131,399	9,964	$0	$0	$0	$0	$224,664	$1,201,214	$1,049,116	$2,260,178	$2,474,993	-$214,816
2002	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$233,439	$1,247,002	$1,049,116	$2,282,556	$2,529,557	-$247,001
2003	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$238,703	$1,274,476	$1,049,116	$2,282,556	$2,562,295	-$279,739
2004	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$245,723	$1,311,106	$1,049,116	$2,304,934	$2,605,946	-$301,012
2005	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$252,743	$1,347,737	$1,049,116	$2,304,934	$2,649,597	-$344,663
2006	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$258,008	$1,375,211	$1,049,116	$2,304,934	$2,682,335	-$377,401
2007	$132,603	$2,194,708	9,964	$138,322	$0	$0	$0	$263,273	$1,402,684	$1,049,116	$2,465,633	$2,715,073	-$249,439
2008	$132,603	$1,423,109	5,670	$0	$0	$0	$0	$270,293	$664,299	$1,049,116	$1,555,713	$1,983,708	-$427,995
2009	$133,879	$1,436,793	5,670	$949,356	$0	$0	$0	$279,068	$685,432	$1,049,116	$2,520,027	$2,013,616	$506,411
PV	$1,565,409	$28,845,691		$1,127,017	$0	$0	$0	$2,690,812	$18,111,849	$12,863,092	$31,538,117	$33,665,753	-$2,127,636

Case 2: Replace SVPP with UPS + GEN in 1996
LCC: $9,002,535
NPV OVER CASE 1: -$6,874,899

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$474,874	$0	$10,925,200	$0	$191,319	$3,053,904	$1,070,867	$4,810,267	$15,241,290	-$10,431,023
1996	$0	$2,547,596	10,956	$0	$0	$0	$90,000	$126,228	$1,439,476	$734,412	$2,558,552	$2,390,117	$168,435
1997	$0	$2,547,596	10,956	$0	$0	$0	$90,000	$126,228	$1,464,692	$731,912	$2,558,552	$2,412,833	$145,719
1998	$0	$2,547,596	10,956	$0	$0	$0	$90,000	$126,228	$1,502,517	$715,544	$2,558,552	$2,434,289	$124,263
1999	$0	$2,573,329	10,956	$0	$0	$0	$90,000	$127,503	$1,552,950	$715,544	$2,584,285	$2,485,997	$98,288
2000	$0	$2,599,062	10,956	$86,969	$0	$0	$90,000	$128,778	$1,603,383	$715,544	$2,696,987	$2,537,705	$159,282
2001	$0	$2,196,230	8,256	$0	$0	$0	$90,000	$128,778	$1,247,140	$715,544	$2,204,486	$2,181,462	$23,024
2002	$0	$2,217,975	8,256	$0	$0	$0	$90,000	$130,053	$1,294,679	$715,544	$2,226,231	$2,230,276	-$4,046
2003	$0	$2,217,975	8,256	$0	$0	$0	$90,000	$130,053	$1,323,203	$715,544	$2,226,231	$2,258,800	-$32,569
2004	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,361,234	$715,544	$2,247,976	$2,298,106	-$50,131
2005	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,399,266	$715,544	$2,247,976	$2,336,138	-$88,162
2006	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,427,789	$715,544	$2,247,976	$2,364,661	-$116,686
2007	$0	$2,261,464	8,256	$143,610	$0	$5,625,000	$90,000	$132,603	$1,456,313	$715,544	$2,413,331	$8,019,460	-$5,606,129
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$7,019,588	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$5,368,527	$7,735,783
PV	$350,295	$29,530,595		$1,146,990	$0	$9,232,157	$845,152	$1,737,735	$18,620,687	$9,730,655	$31,163,852	$40,166,387	-$9,002,535

Case 3: Replace SVPP with UPS + GEN in 1997
LCC: $8,341,158
NPV OVER CASE 1: -$6,213,521

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$49,248	$0	$10,925,200	$0	$194,829	$1,376,027	$1,067,985	$2,645,823	$13,564,041	-$10,918,217
1997	$0	$2,547,596	10,956	$0	$0	$0	$90,000	$126,228	$1,464,692	$731,912	$2,558,552	$2,412,833	$145,719
1998	$0	$2,547,596	10,956	$0	$0	$0	$90,000	$126,228	$1,502,517	$715,544	$2,558,552	$2,434,289	$124,263
1999	$0	$2,573,329	10,956	$0	$0	$0	$90,000	$127,503	$1,552,950	$715,544	$2,584,285	$2,485,997	$98,288
2000	$0	$2,599,062	10,956	$86,969	$0	$0	$90,000	$128,778	$1,603,383	$715,544	$2,696,987	$2,537,705	$159,282
2001	$0	$2,196,230	8,256	$0	$0	$0	$90,000	$128,778	$1,247,140	$715,544	$2,204,486	$2,181,462	$23,024
2002	$0	$2,217,975	8,256	$0	$0	$0	$90,000	$130,053	$1,294,679	$715,544	$2,226,231	$2,230,276	-$4,046
2003	$0	$2,217,975	8,256	$0	$0	$0	$90,000	$130,053	$1,323,203	$715,544	$2,226,231	$2,258,800	-$32,569
2004	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,361,234	$715,544	$2,247,976	$2,298,106	-$50,131
2005	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,399,266	$715,544	$2,247,976	$2,336,138	-$88,162
2006	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,427,789	$715,544	$2,247,976	$2,364,661	-$116,686
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$90,000	$132,603	$1,456,313	$715,544	$2,413,331	$2,394,460	$18,871
2008	$0	$1,460,364	3,798	$0	$0	$5,625,000	$90,000	$132,603	$689,697	$715,544	$1,464,162	$7,252,844	-$5,788,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$7,700,346	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$6,049,285	$8,416,541
PV	$458,196	$29,453,891		$1,145,306	$0	$8,388,989	$768,220	$1,796,375	$18,566,451	$10,015,794	$31,194,671	$39,535,829	-$8,341,158

Case 4: Replace SVPP with UPS+GEN in 1998
LCC: $7,693,748
NPV OVER CASE 1: -$5,566,111

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$49,248	$0	$10,925,200	$0	$198,339	$1,400,132	$1,065,484	$2,645,823	$13,589,155	-$10,943,332
1998	$0	$2,547,596	10,956	$0	$0	$0	$90,000	$126,228	$1,502,517	$715,544	$2,558,552	$2,434,289	$124,263
1999	$0	$2,573,329	10,956	$0	$0	$0	$90,000	$127,503	$1,552,950	$715,544	$2,584,285	$2,485,997	$98,288
2000	$0	$2,599,062	10,956	$86,969	$0	$0	$90,000	$128,778	$1,603,383	$715,544	$2,696,987	$2,537,705	$159,282
2001	$0	$2,196,230	8,256	$0	$0	$0	$90,000	$128,778	$1,247,140	$715,544	$2,204,486	$2,181,462	$23,024
2002	$0	$2,217,975	8,256	$0	$0	$0	$90,000	$130,053	$1,294,679	$715,544	$2,226,231	$2,230,276	-$4,046
2003	$0	$2,217,975	8,256	$0	$0	$0	$90,000	$130,053	$1,323,203	$715,544	$2,226,231	$2,258,800	-$32,569
2004	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,361,234	$715,544	$2,247,976	$2,298,106	-$50,131
2005	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,399,266	$715,544	$2,247,976	$2,336,138	-$88,162
2006	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,427,789	$715,544	$2,247,976	$2,364,661	-$116,686
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$90,000	$132,603	$1,456,313	$715,544	$2,413,331	$2,394,460	$18,871
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$2,756,104	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$1,105,043	$3,472,299
PV	$561,946	$29,380,137		$1,143,687	$0	$7,564,808	$694,246	$1,855,645	$18,513,387	$10,289,967	$31,224,305	$38,918,052	-$7,693,748

Case 5: Replace SVPP with UPS+GEN in 1999
LCC: $7,171,706
NPV OVER CASE 1: -$5,044,070

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$49,248	$0	$10,925,200	$0	$203,604	$1,436,289	$1,049,116	$2,645,823	$13,614,209	-$10,968,386
1999	$0	$2,573,329	10,956	$0	$0	$0	$90,000	$127,503	$1,552,950	$715,544	$2,584,285	$2,485,997	$98,288
2000	$0	$2,599,062	10,956	$86,969	$0	$0	$90,000	$128,778	$1,603,383	$715,544	$2,696,987	$2,537,705	$159,282
2001	$0	$2,196,230	8,256	$0	$0	$0	$90,000	$128,778	$1,247,140	$715,544	$2,204,486	$2,181,462	$23,024
2002	$0	$2,217,975	8,256	$0	$0	$0	$90,000	$130,053	$1,294,679	$715,544	$2,226,231	$2,230,276	-$4,046
2003	$0	$2,217,975	8,256	$0	$0	$0	$90,000	$130,053	$1,323,203	$715,544	$2,226,231	$2,258,800	-$32,569
2004	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,361,234	$715,544	$2,247,976	$2,298,106	-$50,131
2005	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,399,266	$715,544	$2,247,976	$2,336,138	-$88,162
2006	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,427,789	$715,544	$2,247,976	$2,364,661	-$116,686
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$90,000	$132,603	$1,456,313	$715,544	$2,413,331	$2,394,460	$18,871
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$3,436,862	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$1,785,801	$4,153,057
PV	$661,706	$29,309,219		$1,142,130	$0	$6,869,951	$623,118	$1,916,796	$18,461,046	$10,553,594	$31,252,799	$38,424,505	-$7,171,706

Case 6: Replace SVPP with UPS+GEN in 2000
LCC: $6,658,697
NPV OVER CASE 1: -$4,531,061

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,595,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,596,576	$2,689,009	-$92,434
1999	$127,503	$2,482,689	12,485	$49,248	$0	$10,925,200	$0	$210,624	$1,484,499	$1,049,116	$2,671,925	$13,669,439	-$10,997,514
2000	$0	$2,599,062	10,956	$86,969	$0	$0	$90,000	$128,778	$1,603,383	$715,544	$2,696,987	$2,537,705	$159,282
2001	$0	$2,196,230	8,256	$0	$0	$0	$90,000	$128,778	$1,247,140	$715,544	$2,204,486	$2,181,462	$23,024
2002	$0	$2,217,975	8,256	$0	$0	$0	$90,000	$130,053	$1,294,679	$715,544	$2,226,231	$2,230,276	-$4,046
2003	$0	$2,217,975	8,256	$0	$0	$0	$90,000	$130,053	$1,323,203	$715,544	$2,226,231	$2,258,800	-$32,569
2004	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,361,234	$715,544	$2,247,976	$2,298,106	-$50,131
2005	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,399,266	$715,544	$2,247,976	$2,336,138	-$88,162
2006	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,427,789	$715,544	$2,247,976	$2,364,661	-$116,686
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$90,000	$132,603	$1,456,313	$715,544	$2,413,331	$2,394,460	$18,871
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$4,117,620	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$2,466,559	$4,833,815
PV	$758,598	$29,240,341		$1,140,633	$0	$6,188,378	$554,725	$1,979,961	$18,409,029	$10,807,081	$31,280,477	$37,939,175	-$6,658,697

Case 7: Replace SVPP with UPS+GEN in 2001
LCC: $6,154,282
NPV OVER CASE 1: -$4,026,646

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,596,576	$2,689,009	-$92,434
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,622,678	$2,744,239	-$121,562
2000	$128,778	$2,507,516	12,485	$136,217	$0	$10,925,200	$0	$217,644	$1,532,709	$1,049,116	$2,784,996	$13,724,669	-$10,939,673
2001	$0	$2,196,230	8,256	$0	$0	$0	$90,000	$128,778	$1,247,140	$715,544	$2,204,486	$2,181,462	$23,024
2002	$0	$2,217,975	8,256	$0	$0	$0	$90,000	$130,053	$1,294,679	$715,544	$2,226,231	$2,230,276	-$4,046
2003	$0	$2,217,975	8,256	$0	$0	$0	$90,000	$130,053	$1,323,203	$715,544	$2,226,231	$2,258,800	-$32,569
2004	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,361,234	$715,544	$2,247,976	$2,298,106	-$50,131
2005	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,399,266	$715,544	$2,247,976	$2,336,138	-$88,162
2006	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,427,789	$715,544	$2,247,976	$2,364,661	-$116,686
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$90,000	$132,603	$1,456,313	$715,544	$2,413,331	$2,394,460	$18,871
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$4,798,378	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$3,147,317	$5,514,573
PV	$852,695	$29,173,449		$1,139,194	$0	$5,519,578	$488,963	$2,044,894	$18,357,388	$11,050,819	$31,307,360	$37,461,643	-$6,154,282

Case 8: Replace SVPP with UPS+GEN in 2002
LCC: $5,659,412
NPV OVER CASE 1: -$3,531,776

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,596,576	$2,689,009	-$92,434
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,622,678	$2,744,239	-$121,562
2000	$128,778	$2,507,516	12,485	$81,201	$0	$0	$0	$217,644	$1,532,709	$1,049,116	$2,729,981	$2,799,469	-$69,488
2001	$128,778	$2,131,399	9,964	$55,015	$0	$10,925,200	$0	$224,664	$1,201,214	$1,049,116	$2,325,157	$13,400,193	-$11,075,036
2002	$0	$2,217,975	8,256	$0	$0	$0	$90,000	$130,053	$1,294,679	$715,544	$2,226,231	$2,230,276	-$4,046
2003	$0	$2,217,975	8,256	$0	$0	$0	$90,000	$130,053	$1,323,203	$715,544	$2,226,231	$2,258,800	-$32,569
2004	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,361,234	$715,544	$2,247,976	$2,298,106	-$50,131
2005	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,399,266	$715,544	$2,247,976	$2,336,138	-$88,162
2006	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,427,789	$715,544	$2,247,976	$2,364,661	-$116,686
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$90,000	$132,603	$1,456,313	$715,544	$2,413,331	$2,394,460	$18,871
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$5,479,136	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$3,828,075	$6,195,331
PV	$943,173	$29,127,900		$1,137,648	$0	$4,863,059	$425,730	$2,112,262	$18,325,121	$11,285,183	$31,351,943	$37,011,355	-$5,659,412

Case 9: Replace SVPP with UPS+GEN in 2003
LCC: $5,173,589
NPV OVER CASE 1: -$3,045,953

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,596,576	$2,589,009	-$92,434
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,622,678	$2,744,239	-$121,562
2000	$128,778	$2,507,516	12,485	$81,201	$0	$0	$0	$217,644	$1,532,709	$1,049,116	$2,729,981	$2,799,469	-$69,488
2001	$128,778	$2,131,399	9,964	$0	$0	$0	$0	$224,664	$1,201,214	$1,049,116	$2,270,142	$2,474,993	-$204,852
2002	$130,053	$2,152,502	9,964	$55,015	$0	$10,925,200	$0	$233,439	$1,247,002	$1,049,116	$2,347,535	$13,454,757	-$11,107,222
2003	$0	$2,217,975	8,256	$0	$0	$0	$90,000	$130,053	$1,323,203	$715,544	$2,226,231	$2,258,800	-$32,569
2004	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,361,234	$715,544	$2,247,976	$2,298,106	-$50,131
2005	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,399,266	$715,544	$2,247,976	$2,336,138	-$88,162
2006	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,427,789	$715,544	$2,247,976	$2,364,661	-$116,686
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$90,000	$132,603	$1,456,313	$715,544	$2,413,331	$2,394,460	$18,871
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$6,159,894	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$4,508,833	$6,876,089
PV	$1,031,033	$29,083,669		$1,136,161	$0	$4,218,349	$364,930	$2,182,105	$18,292,913	$11,510,532	$31,395,239	$36,568,828	-$5,173,589

Case 10: Replace SVPP with UPS + GEN in 2004
LCC: $4,695,748
NPV OVER CASE 1: -$2,568,112

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,596,576	$2,689,009	-$92,434
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,622,678	$2,744,239	-$121,562
2000	$128,778	$2,507,516	12,485	$81,201	$0	$0	$0	$217,644	$1,532,709	$1,049,116	$2,729,981	$2,799,469	-$69,488
2001	$128,778	$2,131,399	9,964	$0	$0	$0	$0	$224,664	$1,201,214	$1,049,116	$2,270,142	$2,474,993	-$204,852
2002	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$233,439	$1,247,002	$1,049,116	$2,292,520	$2,529,557	-$237,037
2003	$130,053	$2,152,502	9,964	$55,015	$0	$10,925,200	$0	$238,703	$1,274,476	$1,049,116	$2,347,535	$13,487,495	-$11,139,960
2004	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,361,234	$715,544	$2,247,976	$2,298,106	-$50,131
2005	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,399,266	$715,544	$2,247,976	$2,336,138	-$88,162
2006	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,427,789	$715,544	$2,247,976	$2,364,661	-$116,686
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$90,000	$132,603	$1,456,313	$715,544	$2,413,331	$2,394,460	$18,871
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$6,840,652	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$5,189,591	$7,556,847
PV	$1,115,513	$29,041,140		$1,134,732	$0	$3,584,994	$306,467	$2,252,682	$18,261,260	$11,727,214	$31,436,870	$36,132,618	-$4,695,748

Case 11: Replace SVPP with UPS + GEN in 2005
LCC: $4,225,162
NPV OVER CASE 1: -$2,097,526

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,596,576	$2,689,009	-$92,434
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,622,678	$2,744,239	-$121,562
2000	$128,778	$2,507,516	12,485	$81,201	$0	$0	$0	$217,644	$1,532,709	$1,049,116	$2,729,981	$2,799,469	-$69,488
2001	$128,778	$2,131,399	9,964	$0	$0	$0	$0	$224,664	$1,201,214	$1,049,116	$2,270,142	$2,474,993	-$204,852
2002	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$233,439	$1,247,002	$1,049,116	$2,292,520	$2,529,557	-$237,037
2003	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$238,703	$1,274,476	$1,049,116	$2,292,520	$2,562,295	-$269,775
2004	$131,328	$2,173,605	9,964	$55,015	$0	$10,925,200	$0	$245,723	$1,311,106	$1,049,116	$2,369,913	$13,531,146	-$11,161,233
2005	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,399,266	$715,544	$2,247,976	$2,336,138	-$88,162
2006	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,427,789	$715,544	$2,247,976	$2,364,661	-$116,686
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$90,000	$132,603	$1,456,313	$715,544	$2,413,331	$2,394,460	$18,871
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$7,521,410	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$5,870,349	$8,237,605
PV	$1,197,540	$28,999,845		$1,133,357	$0	$2,962,557	$250,254	$2,324,133	$18,225,951	$11,935,563	$31,477,295	$35,702,457	-$4,225,162

Case 12: Replace SVPP with UPS + GEN in 2006
LCC: $3,762,609
NPV OVER CASE 1: -$1,634,973

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,596,576	$2,689,009	-$92,434
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,622,678	$2,744,239	-$121,562
2000	$128,778	$2,507,516	12,485	$81,201	$0	$0	$0	$217,644	$1,532,709	$1,049,116	$2,729,981	$2,799,469	-$69,488
2001	$128,778	$2,131,399	9,964	$0	$0	$0	$0	$224,664	$1,201,214	$1,049,116	$2,270,142	$2,474,993	-$204,852
2002	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$233,439	$1,247,002	$1,049,116	$2,292,520	$2,529,557	-$237,037
2003	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$238,703	$1,274,476	$1,049,116	$2,292,520	$2,562,295	-$269,775
2004	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$245,723	$1,311,106	$1,049,116	$2,314,898	$2,605,946	-$291,048
2005	$131,328	$2,173,605	9,964	$55,015	$0	$10,925,200	$0	$252,743	$1,347,737	$1,049,116	$2,369,913	$13,574,797	-$11,204,883
2006	$0	$2,239,720	8,256	$0	$0	$0	$90,000	$131,328	$1,427,789	$715,544	$2,247,976	$2,364,661	-$116,686
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$90,000	$132,603	$1,456,313	$715,544	$2,413,331	$2,394,460	$18,871
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$8,202,168	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$6,551,107	$8,918,363
PV	$1,276,413	$28,960,138		$1,132,036	$0	$2,350,618	$196,202	$2,397,051	$18,199,004	$12,135,898	$31,516,165	$35,278,773	-$3,762,609

Case 13: Replace SVPP with UPS + GEN in 2007
LCC: $3,306,838
NPV OVER CASE 1: -$1,179,202

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,226	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,596,576	$2,689,009	-$92,434
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,622,678	$2,744,239	-$121,562
2000	$128,778	$2,507,516	12,485	$81,201	$0	$0	$0	$217,644	$1,532,709	$1,049,116	$2,729,981	$2,799,469	-$69,488
2001	$128,778	$2,131,399	9,964	$0	$0	$0	$0	$224,664	$1,201,214	$1,049,116	$2,270,142	$2,474,993	-$204,852
2002	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$233,439	$1,247,002	$1,049,116	$2,292,520	$2,529,557	-$237,037
2003	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$238,703	$1,274,476	$1,049,116	$2,292,520	$2,562,295	-$269,775
2004	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$245,723	$1,311,106	$1,049,116	$2,314,898	$2,605,946	-$291,048
2005	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$252,743	$1,347,737	$1,049,116	$2,314,898	$2,649,597	-$334,699
2006	$131,328	$2,173,605	9,964	$55,015	$0	$10,925,200	$0	$258,008	$1,375,211	$1,049,116	$2,369,913	$13,607,535	-$11,237,621
2007	$0	$2,261,464	8,256	$143,610	$0	$0	$90,000	$132,603	$1,456,313	$715,544	$2,413,331	$2,394,460	$18,871
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$8,882,926	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$7,231,865	$9,599,121
PV	$1,352,252	$28,921,959		$1,130,765	$0	$1,748,774	$144,229	$2,470,206	$18,168,641	$12,328,527	$31,553,540	$34,860,378	-$3,306,838

Case 14: Replace SVPP with UPS + GEN in 2008
LCC: $2,856,436
NPV OVER CASE 1: -$728,800

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,596,576	$2,689,009	-$92,434
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,622,678	$2,744,239	-$121,562
2000	$128,778	$2,507,516	12,485	$81,201	$0	$0	$0	$217,644	$1,532,709	$1,049,116	$2,729,981	$2,799,469	-$69,488
2001	$128,778	$2,131,399	9,964	$0	$0	$0	$0	$224,664	$1,201,214	$1,049,116	$2,270,142	$2,474,993	-$204,852
2002	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$233,439	$1,247,002	$1,049,116	$2,292,520	$2,529,557	-$237,037
2003	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$238,703	$1,274,476	$1,049,116	$2,292,520	$2,562,295	-$269,775
2004	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$245,723	$1,311,106	$1,049,116	$2,314,898	$2,605,946	-$291,048
2005	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$252,743	$1,347,737	$1,049,116	$2,314,898	$2,649,597	-$334,699
2006	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$258,008	$1,375,211	$1,049,116	$2,314,898	$2,682,335	-$367,437
2007	$132,603	$2,194,708	9,964	$198,626	$0	$10,925,200	$0	$263,273	$1,402,684	$1,049,116	$2,535,901	$13,640,273	-$11,104,371
2008	$0	$1,460,364	3,798	$0	$0	$0	$90,000	$132,603	$689,697	$715,544	$1,464,162	$1,627,844	-$163,682
2009	$0	$1,474,406	3,798	$889,052	$0	-$9,563,684	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$7,912,623	$10,279,879
PV	$1,425,882	$28,884,892		$1,129,543	$0	$1,156,636	$94,255	$2,542,762	$18,138,863	$12,513,748	$31,589,829	$34,446,265	-$2,856,436

Case 15: Replace SVPP with UPS + GEN in 2009
LCC: $2,413,010
NPV OVER CASE 1: -$285,374

Year	Value of MOSR Electricity (1992 $)	Value of Peak-Shave Electricity (1992 $)	Annual Hours of Operation (Hours)	Value of Permit Sales (1992 $)	Salvage Value (1992 $)	UPS Installation Cost (1992 $)	UPS Operating Cost (1992 $)	Cost of Generating MOSR Electricity (1992 $)	Cost of Generating Peak-Shave Electricity (1992 $)	Fixed Cost of Keeping SVPP Open (1992 $)	Total Value (1992 $)	Total Cost (1992 $)	Net Value (1992 $)
1993	$126,228	$0	2,013	$0	$0	$0	$0	$186,054	$0	$1,078,021	$128,241	$1,264,075	-$1,135,834
1994	$126,228	$4,715,680	29,900	$135,335	$0	$0	$0	$187,809	$3,530,978	$1,074,190	$5,007,144	$4,792,977	$214,167
1995	$126,228	$4,183,466	25,699	$425,626	$0	$0	$0	$191,319	$3,053,904	$1,070,867	$4,761,019	$4,316,090	$444,929
1996	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$194,829	$1,376,027	$1,067,985	$2,596,576	$2,638,841	-$42,265
1997	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$198,339	$1,400,132	$1,065,484	$2,596,576	$2,663,955	-$67,379
1998	$126,228	$2,457,862	12,485	$0	$0	$0	$0	$203,604	$1,436,289	$1,049,116	$2,596,576	$2,689,009	-$92,434
1999	$127,503	$2,482,689	12,485	$0	$0	$0	$0	$210,624	$1,484,499	$1,049,116	$2,622,678	$2,744,239	-$121,562
2000	$128,778	$2,507,516	12,485	$81,201	$0	$0	$0	$217,644	$1,532,709	$1,049,116	$2,729,981	$2,799,469	-$69,488
2001	$128,778	$2,131,399	9,964	$0	$0	$0	$0	$224,664	$1,201,214	$1,049,116	$2,270,142	$2,474,993	-$204,852
2002	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$233,439	$1,247,002	$1,049,116	$2,292,520	$2,529,557	-$237,037
2003	$130,053	$2,152,502	9,964	$0	$0	$0	$0	$238,703	$1,274,476	$1,049,116	$2,292,520	$2,562,295	-$269,775
2004	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$245,723	$1,311,106	$1,049,116	$2,314,898	$2,605,946	-$291,048
2005	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$252,743	$1,347,737	$1,049,116	$2,314,898	$2,649,597	-$334,699
2006	$131,328	$2,173,605	9,964	$0	$0	$0	$0	$258,008	$1,375,211	$1,049,116	$2,314,898	$2,682,335	-$367,437
2007	$132,603	$2,194,708	9,964	$138,322	$0	$0	$0	$263,273	$1,402,684	$1,049,116	$2,475,597	$2,715,073	-$239,475
2008	$132,603	$1,423,109	5,670	$60,304	$0	$10,925,200	$0	$270,293	$664,299	$1,049,116	$1,621,686	$12,908,908	-$11,287,222
2009	$0	$1,474,406	3,798	$889,052	$0	-$10,244,442	$90,000	$133,879	$711,638	$715,544	$2,367,256	-$8,593,381	$10,960,637
PV	$1,496,680	$28,865,001		$1,128,255	$0	$573,831	$46,204	$2,616,275	$18,125,303	$12,691,845	$31,640,448	$34,053,458	-$2,413,010

BASIC COST AND OPERATING ASSUMPTIONS

Discount Rate (%)	4.0%
Analysis Period (Yrs)	17
Inflation Rate (%)	3.8%
Heat Rate (Btu/kWh)	13,902
Emission Rate (Tons/Hour)	0.00350
Energy Utilization Factor (%)	100%
Demand Utilization Factor (%)	57%
Turbine Size (kW)	3,000
Turbines	5

Cost Assumptions	SVPP Operating	SVPP Closed-Down	
Environmental Costs	Annual Fixed Cost	Annual Variable Cost	Annual Variable Fixed Cost Cost Units
1. Increment Fee (See Schedule below)	$0	$0	$0
2. Emissions Fee	$0	$104	$0 $/ton
3. Air Toxic Fee	$0	$14	$0 $/ton
4. Air Qual. Attain. Plan	$0	$47	$0 $/ton
5. CEMS O&M	$77,000	$0	$0 $/ton
7. DAS O&M Prorate	$125,851	$0	$83,901
9. SBAPCD Cost Reim.	82000	0	41000
10 Annual Source Test	$70,000	$0	$0
Total Environmental Costs	$354,851	$165	$124,901 $/ton
Non-Fuel Operation Costs			
1. Calibration Gas	$24,000	$0	$0
2. Gas Line Maintenance	$35,000	$0	$35,000
3. Stack Maintenance	$0	$2	$0 $/(turbine hour)
4. Turbine Maintenance	$0	$0	$0
5. Annual O&M Labor	$0	$0	$0
8. Bench Stock	$42,843	$5	$0 $/(turbine hour)
Total Non-fuel Operation Costs	$101,843	$8	$35,000 $/(turbine hour)

UPS Costs	Life	Diesel Gen	SVPP Gen
UPS System	12	$1,800,000	$1,800,000
Building	25	$1,782,200	$1,782,200
Switchgear	25	$550,000	$550,000
HVAC	12	$225,000	$225,000
Subtotal		$4,357,200	$4,357,200
Generator	12	$3,600,000	$200,000
Building	25	$2,318,000	$0
Switchgear	25	$650,000	$0
Subtotal		$6,568,000	$200,000
Total		$10,925,200	$4,557,200
UPS Operations Includes labor		$90,000	$60,000

SVPP Labor Costs

Automation Capital Cost:	$200,000		
Annual Labor Costs Based on Full Annual Manual Operation		FTE	Cost Per FTE
Annual Operations Cost:	$417,295	12.00	$34,776
Annual Maintenence Cost:	$166,127	4.00	$41,532
Annual Total Cost:	$583,422		

Annual Labor Costs ($/Yr)

Maintenence

Scenario	Personnel	Months	Daily Fraction	Maintenance (FTE)
1. MOSR support No peak shave No UPS	4.00	12.00	1.00	4.00
2. MOSR support Peak shave No UPS	4.00	12.00	1.00	4.00
3. UPS backup Peak shave	4.00	12.00	1.00	4.00
4. Peak shave only UPS has generator	4.00	8.00	1.00	2.67
5. UPS support only No peak shave	4.00	12.00	1.00	4.00

Operations

Scenario	Personnel	Months	Daily Fraction	Operation (FTE)
1. MOSR support No peak shave No UPS	12.00	12.00	1.00	12.00
2. MOSR support Peak shave No UPS	12.00	12.00	1.00	12.00
3. UPS backup Peak shave	12.00	8.00	0.50	4.00
4. Peak shave only UPS has generator	12.00	8.00	0.50	4.00
5. UPS support only No peak shave	0.00	12.00	1.00	0.00

Scenario	Maintenance Cost ($/Yr)	Operation Cost ($/Yr)	Total Cost ($/Yr)	
1. MOSR support No peak shave No UPS	$166,127	$417,295	$583,422	
2. MOSR support Peak shave No UPS	$166,127	$417,295	$583,422	$0
3. UPS backup Peak shave	$166,127	$139,098	$305,225	$139,098
4. Peak shave only UPS has generator	$110,751	$139,098	$249,850	
5. UPS support only No peak shave	$166,127	$0	$166,127	

Opportunity Costs of Emissions Rights $766,730

Values for Permits

Pollutant	Market Price ($/Pound)	Fixed: PTO Emissions (Pounds/Yr)	Fixed: PTO Value ($)
ROC	$10.00	13,912	$139,120
NOx	$5.00	123,172	$615,860
SOx	$0.20	18,478	$3,695
CO	$0.20	32,024	$6,405
PM	$0.20	8,252	$1,650
Total			$766,730

Emissions Rates (Pounds/Turbine Hour)

Fuel	ROC	NOx	SOx	PM
Natural Gas	0.10	6.23	0.02	0.29
Diesel	0.64	8.67	17.98	0.64

Emissions Variable Costs ($/Turbine Hour)

Fuel	ROC	NOx	SOx	PM	Total	Current Value
Natural Gas	$0.99	$31.16	$0.00	$0.06	$32.21	$304,054.76
Diesel	$6.42	$43.34	$3.80	$0.13	$53.48	$3,332.00
Total	$7.41	$74.49	$3.60	$0.19	$85.69	$307,386.76
						$76,846.69

Fuel Costs	Summer	Winter
Gas Rates ($/therm)	$0.28	$0.37
Gas Customer Charge, 200k-1M Therms ($/month	$750.00	$750.00
Diesel Rate ($/MMbtu)	$4.83	$4.83
Electrical Rates		
Peak Demand ($/kW)	$9.00	$0.00
Standby Charge ($/kW)	$0.60	$0.60
Net Demand ($/kW)	$8.40	-$0.60
Maximum Demand	$0.60	$0.60
Peak Energy ($/kWh)	$0.0949	$0.0000
Partial Peak Energy ($/kWh)	$0.0576	$0.0492
Off-Peak Energy ($/kWh)	$0.0440	$0.0427

Gas Cust. Charge Based On Monthly Average Throughput of: 45,506

Increment Fee Schedule

Year	Nominal Fee	Real Fee
1993	$28,905	$28,905
1994	$26,014	$25,074
1995	$23,413	$21,761
1996	$21,072	$18,869
1997	$18,965	$16,368

Electrical Service Periods: Hours Per Category

	Peak	Partial	Off-Peak	Total
Summer (May-Oct)				
Holiday	0	0	96	96
Weekend	0	0	1,248	1,248
Weekday	756	882	1,386	3,024
Winter (Nov-Apr)				
Holiday	0	0	96	96
Weekend	0	0	1,248	1,248
Weekday	0	1,638	1,386	3,024
Total	756	2,520	5,460	8,736

PLANT SALVAGE VALUE

Year	SVPP Salvage Value
1994	$2,400,000
1995	$2,240,000
1996	$2,080,000
1997	$1,920,000
1998	$1,760,000
1999	$1,600,000
2000	$1,440,000
2001	$1,280,000
2002	$1,120,000
2003	$960,000
2004	$800,000
2005	$640,000
2006	$480,000
2007	$320,000
2008	$160,000
2009	$0

SVPP Mission Support

Month	Gas Turbine Hours	Gas Use (MMBtu)	Diesel Turbine Hours	Diesel Use (MMBtu)	Electricity Generated (kWh)	1994 Gas Cost	1994 Diesel Cost
Feb 91	338	9,087	0	0	342,000	$34,918	$0
Mar 91	362	9,398	0	0	384,000	$38,111	$0
Apr 91	49	1,252	0	0	48,000	$4,812	$0
May 91	85	2,650	29	457	216,000	$10,181	$2,292
Jun 91	108	3,074	0	0	156,000	$11,812	$0
Jul 91	260	6,510	15	238	324,000	$25,016	$1,194
Aug 91	128	3,405	2	35	168,000	$13,085	$176
Sep 91	56	1,832	9	145	132,000	$7,039	$729
Oct 91	178	4,885	0	0	216,000	$18,771	$0
Nov 91	429	11,592	0	0	522,000	$44,542	$0
Dec 91	7	518	0	0	18,000	$1,989	$0
Jan 91	15	404	8	120	42,000	$1,551	$601
	2,013	54,607	62	994	2,568,000	$209,828	$4,992

REPRESENTATIVE YEAR (1994)

Month	Hours	Peak Hours	Partial Pk Hours	Off Peak Hours	Mission Support Peak Gas Hours	Mission Support Partial Pk Gas Hours	Mission Support Off Peak Gas Hours
Feb	672	0	252	420	0	127	212
Mar	744	0	279	465	0	136	226
Apr	720	0	270	450	0	18	30
May	744	129	150	465	15	17	53
Jun	720	125	145	450	19	22	67
Jul	744	129	150	465	45	53	163
Aug	744	129	150	465	22	26	80
Sep	720	125	145	450	10	11	35
Oct	744	129	150	465	31	36	111
Nov	720	0	270	450	0	161	268
Dec	744	0	279	465	0	3	4
Jan	744	0	279	465	0	6	9
Total	8,760	764	2,521	5,475	141	614	1,258

Month	Mission Support Gas Use (MMBtu)	Mission Support Gas Cost ($)	Mission Support Peak Diesel Hours	Mission Support Partial Pk Diesel Hours	Mission Support Off Peak Diesel Hours	Mission Support Diesel Use (MMBtu)	Mission Support Diesel Cost ($)
Feb	9,087	$34,918	0	0	0	0	$0
Mar	9,398	$36,111	0	0	0	0	$0
Apr	1,252	$4,812	0	0	0	0	$0
May	3,003	$8,268	5	6	18	457	$2,292
Jun	2,169	$5,971	0	0	0	0	$0
Jul	4,504	$12,402	3	3	9	238	$1,194
Aug	2,336	$6,430	0	0	1	35	$176
Sep	1,836	$5,052	2	2	6	145	$729
Oct	4,885	$13,450	0	0	0	0	$0
Nov	11,592	$44,542	0	0	0	0	$0
Dec	518	$1,989	0	0	0	0	$0
Jan	404	$1,551	0	3	5	120	$601
Total	50,982	$175,497	9	14	39	994	$4,992

Month	Mission Support Electricity (kWh)	Electricity Generation Peak Hours	Electricity Generation Partial Pk Hours	Electricity Generation Off Peak Hours	Electricity Generation Peak (kWh)	Electricity Generation Partial Pk (kWh)	Electricity Generation Off Peak (kWh)
Feb	342,000	0	0	0	0	0	0
Mar	384,000	0	0	0	0	0	0
Apr	48,000	0	5	0	0	15,000	0
May	216,000	624	728	0	1,872,813	2,184,949	0
Jun	156,000	604	705	0	1,813,413	2,115,649	0
Jul	324,000	596	196	0	1,788,802	587,936	0
Aug	168,000	621	225	0	1,863,883	675,530	0
Sep	132,000	612	214	0	1,835,688	642,637	0
Oct	216,000	613	715	0	1,839,375	2,145,938	0
Nov	522,000	0	966	0	0	2,898,375	0
Dec	18,000	0	0	0	0	0	0
Jan	42,000	0	0	0	0	0	0
Total	2,568,000	3,671	3,755	0	11,013,975	11,266,013	0

Month	Peak Demand Avoided (kW)	Electricity Generation Gas Use (MMBtu)	Electricity Generation Gas Cost ($)	Value of Peak Electricity ($)	Value of Partial Peak Electricity ($)	Value of Off Peak Electricity ($)	Value of Pk Demand Avoided ($)
Feb	0	0	$0	$0	$0	$0	$0
Mar	0	0	$0	$0	$0	$0	$0
Apr	0	209	$574	$0	$739	$0	$0
May	8,560	56,411	$155,316	$158,908	$125,831	$0	$71,904
Jun	8,560	54,622	$150,390	$153,868	$121,840	$0	$71,904
Jul	8,560	33,041	$90,973	$151,780	$33,859	$0	$71,904
Aug	8,560	35,303	$97,200	$158,150	$38,904	$0	$71,904
Sep	8,560	34,454	$94,861	$155,758	$37,009	$0	$71,904
Oct	8,560	55,404	$152,543	$158,071	$123,585	$0	$71,904
Nov	0	40,293	$110,939	$0	$142,716	$0	$0
Dec	0	0	$0	$0	$0	$0	$0
Jan	0	0	$0	$0	$0	$0	$0
Total		309,736	$852,797	$934,536	$624,483	$0	$431,424

Month	Value of Mi. Support Electricity ($)	Total Turbine Gas Hours	Quarterly Turbine Gas Hours	Permitted Turbine Gas Hours	Total Turbine Diesel Hours	Quarterly Turbine Diesel Hours	Permitted Turbine Diesel Hours
Feb	$15,714	338			0		
Mar	$17,643	362	715	2,908	0	8	180
Apr	$2,205	54			0		
May	$11,620	1,437			29		
Jun	$8,392	1,417	2,908	2,908	0	29	180
Jul	$17,430	1,052			15		
Aug	$9,038	975			2		
Sep	$7,101	882	2,908	2,908	9	26	180
Oct	$11,620	1,506			0		
Nov	$23,984	1,395			0		
Dec	$827	7	2,908	2,908	0	0	180
Jan	$1,930	15			8		
Total	$127,503	9,440	9,440	11,632	62	62	720

Real Fuel Escalation Rates

Year	Gas	Electricity	Diesel
1992	1.00	1.00	1.00
1993	1.02	0.99	1.01
1994	1.03	0.99	1.04
1995	1.05	0.99	1.07
1996	1.07	0.99	1.12
1997	1.09	0.99	1.16
1998	1.12	0.99	1.21
1999	1.16	1.00	1.26
2000	1.20	1.01	1.31
2001	1.24	1.01	1.34
2002	1.29	1.02	1.38
2003	1.32	1.02	1.41
2004	1.36	1.03	1.44
2005	1.40	1.03	1.46
2006	1.43	1.03	1.49
2007	1.46	1.04	1.52
2008	1.50	1.04	1.54
2009	1.55	1.05	1.56
2010	1.59	1.05	1.58
2011	1.61	1.06	1.61
2012	1.64	1.07	1.64
2013	1.67	1.07	1.67
2014	1.70	1.08	1.70
2015	1.73	1.09	1.72
2016	1.76	1.09	1.75
2017	1.78	1.10	1.78

GENERATION COST EFFECTIVENESS: FULL MOSR

BASE CASE SCENARIO

Variable Costs of Generation

Environmental Costs ($/ton)	$165.0000
Bench Stock ($/hour)	$7.6550

Variable Cost of Generation, By Year and By Season

Year	Gas Esc	Elec Esc	Dec-Mar Gas Cost ($/MBtu)	Apr-Nov Gas Cost ($/MBtu)	Dec-Mar Gas Cost ($/kWh)	Apr-Nov Gas Cost ($/kWh)	Emissions Cost ($/kWh)	Bench Stock ($/kWh)	Dec-Mar Generation Cost ($/kWh)	Apr-Nov Generation Cost ($/kWh)
1993	1.02	0.99	$3.8052	$2.8084	$0.0529	$0.0390	$0.0002	$0.0026	$0.0556	$0.0418
1994	1.03	0.99	$3.8425	$2.8359	$0.0534	$0.0394	$0.0002	$0.0026	$0.0562	$0.0422
1995	1.05	0.99	$3.9171	$2.8910	$0.0545	$0.0402	$0.0002	$0.0026	$0.0572	$0.0429
1996	1.07	0.99	$3.9917	$2.9460	$0.0555	$0.0410	$0.0002	$0.0026	$0.0582	$0.0437
1997	1.09	0.99	$4.0664	$3.0011	$0.0565	$0.0417	$0.0002	$0.0026	$0.0593	$0.0445
1998	1.12	0.99	$4.1783	$3.0837	$0.0581	$0.0429	$0.0002	$0.0026	$0.0608	$0.0456
1999	1.16	1.00	$4.3275	$3.1938	$0.0602	$0.0444	$0.0002	$0.0026	$0.0629	$0.0471
2000	1.20	1.01	$4.4767	$3.3040	$0.0622	$0.0459	$0.0002	$0.0026	$0.0650	$0.0487
2001	1.24	1.01	$4.6259	$3.4141	$0.0643	$0.0475	$0.0002	$0.0026	$0.0671	$0.0502
2002	1.29	1.02	$4.8125	$3.5518	$0.0669	$0.0494	$0.0002	$0.0026	$0.0696	$0.0521
2003	1.32	1.02	$4.9244	$3.6344	$0.0685	$0.0505	$0.0002	$0.0026	$0.0712	$0.0533
2004	1.36	1.03	$5.0736	$3.7445	$0.0705	$0.0521	$0.0002	$0.0026	$0.0733	$0.0548
2005	1.40	1.03	$5.2228	$3.8546	$0.0726	$0.0536	$0.0002	$0.0026	$0.0754	$0.0563
2006	1.43	1.03	$5.3348	$3.9372	$0.0742	$0.0547	$0.0002	$0.0026	$0.0769	$0.0575
2007	1.46	1.04	$5.4467	$4.0198	$0.0757	$0.0559	$0.0002	$0.0026	$0.0785	$0.0586
2008	1.50	1.04	$5.5959	$4.1300	$0.0778	$0.0574	$0.0002	$0.0026	$0.0805	$0.0602
2009	1.55	1.05	$5.7824	$4.2676	$0.0804	$0.0593	$0.0002	$0.0026	$0.0831	$0.0621

Value of Generation, By Year, Season, and Period

Year	May-Oct Peak ($/kWh)	May-Oct Par. Peak ($/kWh)	Apr,Nov Par. Peak ($/kWh)	Dec-Mar Par. Peak ($/kWh)	May-Oct Off Peak ($/kWh)	Apr,Nov Off Peak ($/kWh)	Dec-Mar Off Peak ($/kWh)
1993	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1994	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1995	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1996	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1997	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1998	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1999	$0.0845	$0.0576	$0.0492	$0.0492	$0.0440	$0.0427	$0.0427
2000	$0.0857	$0.0582	$0.0497	$0.0497	$0.0444	$0.0431	$0.0431
2001	$0.0857	$0.0582	$0.0497	$0.0497	$0.0444	$0.0431	$0.0431
2002	$0.0865	$0.0587	$0.0502	$0.0502	$0.0448	$0.0435	$0.0435
2003	$0.0865	$0.0587	$0.0502	$0.0502	$0.0448	$0.0435	$0.0435
2004	$0.0874	$0.0593	$0.0507	$0.0507	$0.0453	$0.0439	$0.0439
2005	$0.0874	$0.0593	$0.0507	$0.0507	$0.0453	$0.0439	$0.0439
2006	$0.0874	$0.0593	$0.0507	$0.0507	$0.0453	$0.0439	$0.0439
2007	$0.0882	$0.0599	$0.0512	$0.0512	$0.0457	$0.0444	$0.0444
2008	$0.0882	$0.0599	$0.0512	$0.0512	$0.0457	$0.0444	$0.0444
2009	$0.0891	$0.0605	$0.0517	$0.0517	$0.0462	$0.0448	$0.0448

Cost-effective Generation Periods, Based on Variable Costs
0 = Not Cost-effective, 1 = Cost-effective

Year	May-Oct Peak (0/1)	May-Oct Par. Peak (0/1)	Apr,Nov Par. Peak (0/1)	Dec-Mar Par. Peak (0/1)	May-Oct Off Peak (0/1)	Apr,Nov Off Peak (0/1)	Dec-Mar Off Peak (0/1)
1993	0	0	0	0	0	0	0
1994	1	1	1	0	1	1	0
1995	1	1	1	0	1	0	0
1996	1	1	1	0	0	0	0
1997	1	1	1	0	0	0	0
1998	1	1	1	0	0	0	0
1999	1	1	1	0	0	0	0
2000	1	1	1	0	0	0	0
2001	1	1	0	0	0	0	0
2002	1	1	0	0	0	0	0
2003	1	1	0	0	0	0	0
2004	1	1	0	0	0	0	0
2005	1	1	0	0	0	0	0
2006	1	1	0	0	0	0	0
2007	1	1	0	0	0	0	0
2008	1	0	0	0	0	0	0
2009	1	0	0	0	0	0	0

Generation Cost Differential, Based on Variable Costs

Year	May-Oct Peak ($/kWh)	May-Oct Par. Peak ($/kWh)	Apr,Nov Par. Peak ($/kWh)	Dec-Mar Par. Peak ($/kWh)	May-Oct Off Peak ($/kWh)	Apr,Nov Off Peak ($/kWh)	Dec-Mar Off Peak ($/kWh)
1993	$0.0422	$0.0152	$0.0070	-$0.0069	$0.0017	$0.0004	-$0.0134
1994	$0.0418	$0.0148	$0.0066	-$0.0074	$0.0014	$0.0001	-$0.0139
1995	$0.0411	$0.0141	$0.0058	-$0.0085	$0.0006	-$0.0007	-$0.0150
1996	$0.0403	$0.0133	$0.0050	-$0.0095	-$0.0002	-$0.0015	-$0.0160
1997	$0.0395	$0.0125	$0.0043	-$0.0105	-$0.0009	-$0.0022	-$0.0171
1998	$0.0384	$0.0114	$0.0031	-$0.0121	-$0.0021	-$0.0034	-$0.0186
1999	$0.0377	$0.0104	$0.0021	-$0.0137	-$0.0032	-$0.0045	-$0.0203
2000	$0.0370	$0.0095	$0.0011	-$0.0152	-$0.0043	-$0.0056	-$0.0219
2001	$0.0355	$0.0080	-$0.0005	-$0.0173	-$0.0058	-$0.0071	-$0.0240
2002	$0.0344	$0.0066	-$0.0019	-$0.0194	-$0.0073	-$0.0086	-$0.0261
2003	$0.0333	$0.0055	-$0.0030	-$0.0210	-$0.0084	-$0.0098	-$0.0277
2004	$0.0326	$0.0045	-$0.0041	-$0.0226	-$0.0095	-$0.0109	-$0.0293
2005	$0.0311	$0.0030	-$0.0056	-$0.0246	-$0.0110	-$0.0124	-$0.0314
2006	$0.0299	$0.0018	-$0.0068	-$0.0262	-$0.0122	-$0.0135	-$0.0330
2007	$0.0296	$0.0013	-$0.0074	-$0.0273	-$0.0129	-$0.0143	-$0.0341
2008	$0.0281	-$0.0003	-$0.0089	-$0.0293	-$0.0144	-$0.0158	-$0.0362
2009	$0.0270	-$0.0016	-$0.0104	-$0.0314	-$0.0159	-$0.0173	-$0.0383

Prioritization of Generation Periods, Based on Variable Costs

Year	May-Oct Peak	May-Oct Par. Peak	Apr,Nov Par. Peak	Dec-Mar Par. Peak	May-Oct Off Peak	Apr,Nov Off Peak	Dec-Mar Off Peak
1993	1	2	3	6	4	5	7
1994	1	2	3	6	4	5	7
1995	1	2	3	6	4	5	7
1996	1	2	3	6	4	5	7
1997	1	2	3	6	4	5	7
1998	1	2	3	6	4	5	7
1999	1	2	3	6	4	5	7
2000	1	2	3	6	4	5	7
2001	1	2	3	6	4	5	7
2002	1	2	3	6	4	5	7
2003	1	2	3	6	4	5	7
2004	1	2	3	6	4	5	7
2005	1	2	3	6	4	5	7
2006	1	2	3	6	4	5	7
2007	1	2	3	6	4	5	7
2008	1	2	3	6	4	5	7
2009	1	2	3	6	4	5	7

Total Hours in Each Generation Period, By Month

	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
Peak	0	0	0	0	129	125	129	129	125	129	0	0	764
Par. Peak	279	252	279	270	150	145	150	150	145	150	270	279	2,521
Off Peak	465	420	465	450	465	450	465	465	450	465	450	465	5,475
Total	744	672	744	720	744	720	744	744	720	744	720	744	8,760

Turbine Hours x Energy Utilization in Each Generation Period, By Month

	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
Peak	0	0	0	0	644	623	644	644	623	644	0	0	3,822
Par. Peak	1,395	1,260	1,395	1,350	751	727	751	751	727	751	1,350	1,395	12,603
Off Peak	2,325	2,100	2,325	2,250	2,325	2,250	2,325	2,325	2,250	2,325	2,250	2,325	27,375
Total	3,720	3,360	3,720	3,600	3,720	3,600	3,720	3,720	3,600	3,720	3,600	3,720	43,800

Permitted Hours, By Quarter

Qtr1	2,908
Qtr2	2,908
Qtr3	2,908
Qtr4	2,908
Annual	11,632

Mission Support Gas Turbine Hours, in Each Generation Period, By Month

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)
Peak	0	0	0	0	15	19	45	22	10	31	0	0	141
Par. Peak	6	127	136	18	17	22	53	26	11	36	161	3	614
Off Peak	9	212	226	30	53	67	163	80	35	111	268	4	1,258
Total	15	338	362	49	85	108	260	128	56	178	429	7	2,013
Quar. Totals			715			241			444			614	

Utilized Turbine Hours Remaining After MOSR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)
Peak	0	0	0	0	629	604	599	622	613	613	0	0	3,681
Par. Peak	1,389	1,133	1,259	1,332	734	705	699	725	716	715	1,189	1,392	11,989
Off Peak	2,316	1,889	2,099	2,220	2,272	2,183	2,163	2,245	2,215	2,214	1,982	2,321	26,117
Total	3,705	3,022	3,358	3,552	3,636	3,493	3,460	3,592	3,545	3,543	3,171	3,713	41,787

Permitted Hours Remaining After MOSR, By Quarter

Qtr1	2,193
Qtr2	2,668
Qtr3	2,464
Qtr4	2,294
Annual	9,619

Peak Generation Turbine Hours, By Month and Year, w/o Permitted Restrictions

Priority	0	0	0	0	1	1	1	1	1	1	0	0

Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	629	604	599	622	613	613	0	0	3,681
1995	0	0	0	0	629	604	599	622	613	613	0	0	3,681
1996	0	0	0	0	629	604	599	622	613	613	0	0	3,681
1997	0	0	0	0	629	604	599	622	613	613	0	0	3,681
1998	0	0	0	0	629	604	599	622	613	613	0	0	3,681
1999	0	0	0	0	629	604	599	622	613	613	0	0	3,681
2000	0	0	0	0	629	604	599	622	613	613	0	0	3,681
2001	0	0	0	0	629	604	599	622	613	613	0	0	3,681
2002	0	0	0	0	629	604	599	622	613	613	0	0	3,681
2003	0	0	0	0	629	604	599	622	613	613	0	0	3,681
2004	0	0	0	0	629	604	599	622	613	613	0	0	3,681
2005	0	0	0	0	629	604	599	622	613	613	0	0	3,681
2006	0	0	0	0	629	604	599	622	613	613	0	0	3,681
2007	0	0	0	0	629	604	599	622	613	613	0	0	3,681
2008	0	0	0	0	629	604	599	622	613	613	0	0	3,681
2009	0	0	0	0	629	604	599	622	613	613	0	0	3,681

Peak Generation Turbine Hours, By Month and Year, with Permitted Restrictions

Priority	0	0	0	0	1	1	1	1	1	1	0	0	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	625	600	595	618	609	609	0	0	3,657
1995	0	0	0	0	625	600	595	618	609	609	0	0	3,657
1996	0	0	0	0	625	600	595	618	609	609	0	0	3,657
1997	0	0	0	0	625	600	595	618	609	609	0	0	3,657
1998	0	0	0	0	625	600	595	618	609	609	0	0	3,657
1999	0	0	0	0	625	600	595	618	609	609	0	0	3,657
2000	0	0	0	0	625	600	595	618	609	609	0	0	3,657
2001	0	0	0	0	625	600	595	618	609	609	0	0	3,657
2002	0	0	0	0	625	600	595	618	609	609	0	0	3,657
2003	0	0	0	0	625	600	595	618	609	609	0	0	3,657
2004	0	0	0	0	625	600	595	618	609	609	0	0	3,657
2005	0	0	0	0	625	600	595	618	609	609	0	0	3,657
2006	0	0	0	0	625	600	595	618	609	609	0	0	3,657
2007	0	0	0	0	625	600	595	618	609	609	0	0	3,657
2008	0	0	0	0	625	600	595	618	609	609	0	0	3,657
2009	0	0	0	0	625	600	595	618	609	609	0	0	3,657

Permitted Hours Remaining After MOSR and Peak, By Quarter and Year

Year	Qtr1	Qtr2	Qtr3	Qtr4	Annual
1993	2,193	2,668	2,464	2,294	9,619
1994	2,193	1,442	642	1,685	5,962
1995	2,193	1,442	642	1,685	5,962
1996	2,193	1,442	642	1,685	5,962
1997	2,193	1,442	642	1,685	5,962
1998	2,193	1,442	642	1,685	5,962
1999	2,193	1,442	642	1,685	5,962
2000	2,193	1,442	642	1,685	5,962
2001	2,193	1,442	642	1,685	5,962
2002	2,193	1,442	642	1,685	5,962
2003	2,193	1,442	642	1,685	5,962
2004	2,193	1,442	642	1,685	5,962
2005	2,193	1,442	642	1,685	5,962
2006	2,193	1,442	642	1,685	5,962
2007	2,193	1,442	642	1,685	5,962
2008	2,193	1,442	642	1,685	5,962
2009	2,193	1,442	642	1,685	5,962

Partial Peak Generation Turbine Hours, By Month and Year, w/o Permitted Restrictions

Priority	6	6	6	3	2	2	2	2	2	2	3	6	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
1995	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
1996	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
1997	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
1998	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
1999	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
2000	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
2001	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2002	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2003	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2004	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2005	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2006	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2007	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2008	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0

Partial Peak Generation Turbine Hours, By Month and Year, with Permitted Restrictions

Priority	6	6	6	3	2	2	2	2	2	2	3	6	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	2	734	705	642	0	0	715	970	0	3,769
1995	0	0	0	2	734	705	642	0	0	715	970	0	3,769
1996	0	0	0	2	734	705	642	0	0	715	970	0	3,769
1997	0	0	0	2	734	705	642	0	0	715	970	0	3,769
1998	0	0	0	2	734	705	642	0	0	715	970	0	3,769
1999	0	0	0	2	734	705	642	0	0	715	970	0	3,769
2000	0	0	0	2	734	705	642	0	0	715	970	0	3,769
2001	0	0	0	0	734	705	642	0	0	715	0	0	2,797
2002	0	0	0	0	734	705	642	0	0	715	0	0	2,797
2003	0	0	0	0	734	705	642	0	0	715	0	0	2,797
2004	0	0	0	0	734	705	642	0	0	715	0	0	2,797
2005	0	0	0	0	734	705	642	0	0	715	0	0	2,797
2006	0	0	0	0	734	705	642	0	0	715	0	0	2,797
2007	0	0	0	0	734	705	642	0	0	715	0	0	2,797
2008	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0

Permitted Hours Remaining After MOSR, Peak, and Partial Peak, By Quarter and Year

Year	Qtr1	Qtr2	Qtr3	Qtr4	Annual
1993	2,193	2,668	2,464	2,294	9,619
1994	2,193	0	0	0	2,193
1995	2,193	0	0	0	2,193
1996	2,193	0	0	0	2,193
1997	2,193	0	0	0	2,193
1998	2,193	0	0	0	2,193
1999	2,193	0	0	0	2,193
2000	2,193	0	0	0	2,193
2001	2,193	3	0	970	3,165
2002	2,193	3	0	970	3,165
2003	2,193	3	0	970	3,165
2004	2,193	3	0	970	3,165
2005	2,193	3	0	970	3,165
2006	2,193	3	0	970	3,165
2007	2,193	3	0	970	3,165
2008	2,193	1,442	642	1,685	5,962
2009	2,193	1,442	642	1,685	5,962

Off Peak Generation Turbine Hours, By Month and Year, w/o Permitted Restrictions

Priority	7	7	7	5	4	4	4	4	4	4	5	7	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	2,220	2,272	2,183	2,163	2,245	2,215	2,214	1,982	0	17,493
1995	0	0	0	0	2,272	2,183	2,163	2,245	2,215	2,214	0	0	13,292
1996	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0

Off Peak Generation Turbine Hours, By Month and Year, with Permitted Restrictions

Priority	7	7	7	5	4	4	4	4	4	4	5	7	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0

Generating Quarterly Summary

Year	Peak Jan-Mar Quarterly Total (Hours)	Peak Apr-Jun Quarterly Total (Hours)	Peak Jul-Sep Quarterly Total (Hours)	Peak Oct-Dec Quarterly Total (Hours)	Par Peak Jan-Mar Quarterly Total (Hours)	Par Peak Apr-Jun Quarterly Total (Hours)	Par Peak Jul-Sep Quarterly Total (Hours)	Par Peak Oct-Dec Quarterly Total (Hours)	Off Peak Jan-Mar Quarterly Total (Hours)	Off Peak Apr-Jun Quarterly Total (Hours)	Off Peak Jul-Sep Quarterly Total (Hours)	Off Peak Oct-Dec Quarterly Total (Hours)	Total Jan-Mar Quarterly Total (Hours)	Total Apr-Jun Quarterly Total (Hours)	Total Jul-Sep Quarterly Total (Hours)	Total Oct-Dec Quarterly Total (Hours)	Annual Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	1,226	1,822	609	0	1,442	642	1,685	0	0	0	0	0	2,668	2,464	2,294	7,426
1995	0	1,226	1,822	609	0	1,442	642	1,685	0	0	0	0	0	2,668	2,464	2,294	7,426
1996	0	1,226	1,822	609	0	1,442	642	1,685	0	0	0	0	0	2,668	2,464	2,294	7,426
1997	0	1,226	1,822	609	0	1,442	642	1,685	0	0	0	0	0	2,668	2,464	2,294	7,426
1998	0	1,226	1,822	609	0	1,442	642	1,685	0	0	0	0	0	2,668	2,464	2,294	7,426
1999	0	1,226	1,822	609	0	1,442	642	1,685	0	0	0	0	0	2,668	2,464	2,294	7,426
2000	0	1,226	1,822	609	0	1,442	642	1,685	0	0	0	0	0	2,668	2,464	2,294	7,426
2001	0	1,226	1,822	609	0	1,439	642	715	0	0	0	0	0	2,665	2,464	1,324	6,454
2002	0	1,226	1,822	609	0	1,439	642	715	0	0	0	0	0	2,665	2,464	1,324	6,454
2003	0	1,226	1,822	609	0	1,439	642	715	0	0	0	0	0	2,665	2,464	1,324	6,454
2004	0	1,226	1,822	609	0	1,439	642	715	0	0	0	0	0	2,665	2,464	1,324	6,454
2005	0	1,226	1,822	609	0	1,439	642	715	0	0	0	0	0	2,665	2,464	1,324	6,454
2006	0	1,226	1,822	609	0	1,439	642	715	0	0	0	0	0	2,665	2,464	1,324	6,454
2007	0	1,226	1,822	609	0	1,439	642	715	0	0	0	0	0	2,665	2,464	1,324	6,454
2008	0	1,226	1,822	609	0	0	0	0	0	0	0	0	0	1,226	1,822	609	3,657
2009	0	1,226	1,822	609	0	0	0	0	0	0	0	0	0	1,226	1,822	609	3,657

Generating and Mission Support Quarterly Summary

Year	Peak Jan-Mar Quarterly Total (Hours)	Peak Apr-Jun Quarterly Total (Hours)	Peak Jul-Sep Quarterly Total (Hours)	Peak Oct-Dec Quarterly Total (Hours)	Par Peak Jan-Mar Quarterly Total (Hours)	Par Peak Apr-Jun Quarterly Total (Hours)	Par Peak Jul-Sep Quarterly Total (Hours)	Par Peak Oct-Dec Quarterly Total (Hours)	Off Peak Jan-Mar Quarterly Total (Hours)	Off Peak Apr-Jun Quarterly Total (Hours)	Off Peak Jul-Sep Quarterly Total (Hours)	Off Peak Oct-Dec Quarterly Total (Hours)	Total Jan-Mar Quarterly Total (Hours)	Total Apr-Jun Quarterly Total (Hours)	Total Jul-Sep Quarterly Total (Hours)	Total Oct-Dec Quarterly Total (Hours)	Annual Total (Hours)
1993	0	33	77	31	268	57	90	199	447	150	277	384	715	241	444	614	2,013
1994	0	1,259	1,899	640	268	1,499	732	1,885	447	150	277	384	715	2,908	2,908	2,908	9,439
1995	0	1,259	1,899	640	268	1,499	732	1,885	447	150	277	384	715	2,908	2,908	2,908	9,439
1996	0	1,259	1,899	640	268	1,499	732	1,885	447	150	277	384	715	2,908	2,908	2,908	9,439
1997	0	1,259	1,899	640	268	1,499	732	1,885	447	150	277	384	715	2,908	2,908	2,908	9,439
1998	0	1,259	1,899	640	268	1,499	732	1,885	447	150	277	384	715	2,908	2,908	2,908	9,439
1999	0	1,259	1,899	640	268	1,499	732	1,885	447	150	277	384	715	2,908	2,908	2,908	9,439
2000	0	1,259	1,899	640	268	1,499	732	1,885	447	150	277	384	715	2,908	2,908	2,908	9,439
2001	0	1,259	1,899	640	268	1,496	732	915	447	150	277	384	715	2,906	2,908	1,938	8,467
2002	0	1,259	1,899	640	268	1,496	732	915	447	150	277	384	715	2,906	2,908	1,938	8,467
2003	0	1,259	1,899	640	268	1,496	732	915	447	150	277	384	715	2,906	2,908	1,938	8,467
2004	0	1,259	1,899	640	268	1,496	732	915	447	150	277	384	715	2,906	2,908	1,938	8,467
2005	0	1,259	1,899	640	268	1,496	732	915	447	150	277	384	715	2,906	2,908	1,938	8,467
2006	0	1,259	1,899	640	268	1,496	732	915	447	150	277	384	715	2,906	2,908	1,938	8,467
2007	0	1,259	1,899	640	268	1,496	732	915	447	150	277	384	715	2,906	2,908	1,938	8,467
2008	0	1,259	1,899	640	268	57	90	199	447	150	277	384	715	1,466	2,266	1,223	5,670
2009	0	1,259	1,899	640	268	57	90	199	447	150	277	384	715	1,466	2,266	1,223	5,670

Annual Generation, By Generation Period

Year	May-Oct Peak (MWh)	May-Oct Par. Peak (MWh)	Apr,Nov Par. Peak (MWh)	Dec-Mar Par. Peak (MWh)	May-Oct Off Peak (MWh)	Apr,Nov Off Peak (MWh)	Dec-Mar Off Peak (MWh)	Total (MWh)
1993	0	0	0	0	0	0	0	0
1994	11,042	8,391	2,917	0	0	0	0	22,351
1995	11,042	8,391	2,917	0	0	0	0	22,351
1996	11,042	8,391	2,917	0	0	0	0	22,351
1997	11,042	8,391	2,917	0	0	0	0	22,351
1998	11,042	8,391	2,917	0	0	0	0	22,351
1999	11,042	8,391	2,917	0	0	0	0	22,351
2000	11,042	8,391	2,917	0	0	0	0	22,351
2001	11,042	8,391	0	0	0	0	0	19,434
2002	11,042	8,391	0	0	0	0	0	19,434
2003	11,042	8,391	0	0	0	0	0	19,434
2004	11,042	8,391	0	0	0	0	0	19,434
2005	11,042	8,391	0	0	0	0	0	19,434
2006	11,042	8,391	0	0	0	0	0	19,434
2007	11,042	8,391	0	0	0	0	0	19,434
2008	11,042	0	0	0	0	0	0	11,042
2009	11,042	0	0	0	0	0	0	11,042

Net Value of Annual Generation, By Generation Period

Year	May-Oct Peak (1992 $)	May-Oct Par. Peak (1992 $)	Apr,Nov Par. Peak (1992 $)	Dec-Mar Par. Peak (1992 $)	May-Oct Off Peak (1992 $)	Apr,Nov Off Peak (1992 $)	Dec-Mar Off Peak (1992 $)	Avoided Demand (1992 $)	Total (1992 $)
1993	$0	$0	$0	$0	$0	$0	$0	$0	$0
1994	$461,934	$124,567	$19,193	$0	$0	$0	$0	$427,110	$1,032,804
1995	$453,480	$118,144	$16,959	$0	$0	$0	$0	$427,110	$1,015,693
1996	$445,027	$111,720	$14,726	$0	$0	$0	$0	$427,110	$998,583
1997	$436,574	$105,297	$12,493	$0	$0	$0	$0	$427,110	$981,473
1998	$423,894	$95,661	$9,143	$0	$0	$0	$0	$427,110	$955,808
1999	$416,357	$87,646	$6,112	$0	$0	$0	$0	$431,424	$941,540
2000	$408,820	$79,632	$3,082	$0	$0	$0	$0	$435,738	$927,272
2001	$391,913	$66,784	$0	$0	$0	$0	$0	$435,738	$894,436
2002	$380,150	$55,558	$0	$0	$0	$0	$0	$440,052	$875,760
2003	$367,470	$45,922	$0	$0	$0	$0	$0	$440,052	$853,445
2004	$359,933	$37,908	$0	$0	$0	$0	$0	$444,367	$842,207
2005	$343,026	$25,060	$0	$0	$0	$0	$0	$444,367	$812,453
2006	$330,346	$15,425	$0	$0	$0	$0	$0	$444,367	$790,138
2007	$327,036	$10,622	$0	$0	$0	$0	$0	$448,681	$786,339
2008	$310,129	$0	$0	$0	$0	$0	$0	$448,681	$758,810
2009	$298,365	$0	$0	$0	$0	$0	$0	$452,995	$751,361

In all years, net value sufficient to cover all incremental labor costs.

Summary of Annual Generation

Year	Variable Cost of Generation (1992 $)	M-O Pk Value of Generation (1992 $)	M-O PPk Value of Generation (1992 $)	A,N PPk Value of Generation (1992 $)	D-M PPk Value of Generation (1992 $)	M-O OP Value of Generation (1992 $)	A,N OP Value of Generation (1992 $)	D-M OP Value of Generation (1992 $)	Avoided Demand (1992 $)	Total Value of Generation (1992 $)
1993	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
1994	$942,512	$927,581	$478,410	$142,216	$0	$0	$0	$0	$427,110	$1,975,316
1995	$959,623	$927,581	$478,410	$142,216	$0	$0	$0	$0	$427,110	$1,975,316
1996	$976,733	$927,581	$478,410	$142,216	$0	$0	$0	$0	$427,110	$1,975,315
1997	$993,843	$927,581	$478,410	$142,216	$0	$0	$0	$0	$427,110	$1,975,316
1998	$1,019,509	$927,581	$478,410	$142,216	$0	$0	$0	$0	$427,110	$1,975,316
1999	$1,053,729	$936,950	$483,243	$143,652	$0	$0	$0	$0	$431,424	$1,995,269
2000	$1,087,949	$946,320	$488,075	$145,089	$0	$0	$0	$0	$435,738	$2,015,221
2001	$975,697	$946,320	$488,075	$0	$0	$0	$0	$0	$435,738	$1,870,133
2002	$1,012,889	$955,689	$492,907	$0	$0	$0	$0	$0	$440,052	$1,888,649
2003	$1,035,204	$955,689	$492,907	$0	$0	$0	$0	$0	$440,052	$1,888,649
2004	$1,064,958	$965,059	$497,740	$0	$0	$0	$0	$0	$444,367	$1,907,165
2005	$1,094,712	$965,059	$497,740	$0	$0	$0	$0	$0	$444,367	$1,907,165
2006	$1,117,027	$965,059	$497,740	$0	$0	$0	$0	$0	$444,367	$1,907,165
2007	$1,139,343	$974,428	$502,572	$0	$0	$0	$0	$0	$448,681	$1,925,681
2008	$664,299	$974,428	$0	$0	$0	$0	$0	$0	$448,681	$1,423,109
2009	$685,432	$983,798	$0	$0	$0	$0	$0	$0	$452,995	$1,436,793

GENERATION COST EFFECTIVENESS: NO MOSR

BASE CASE SCENARIO

Variable Costs of Generation

Environmental Costs ($/ton)	$165.0000
Bench Stock ($/hour)	$7.6550

Variable Cost of Generation, By Year and By Season

Year	Gas Eec	Elec Eec	Dec-Mar Gas Cost ($/MBtu)	Apr-Nov Gas Cost ($/MBtu)	Dec-Mar Gas Cost ($/kWh)	Apr-Nov Gas Cost ($/kWh)	Emissions Cost ($/kWh)	Bench Stock ($/kWh)	Dec-Mar Generation Cost ($/kWh)	Apr-Nov Generation Cost ($/kWh)
1993	1.02	0.99	$3.8052	$2.8084	$0.0529	$0.0390	$0.0002	$0.0026	$0.0556	$0.0418
1994	1.03	0.99	$3.8425	$2.8359	$0.0534	$0.0394	$0.0002	$0.0026	$0.0562	$0.0422
1995	1.05	0.99	$3.9171	$2.8910	$0.0545	$0.0402	$0.0002	$0.0026	$0.0572	$0.0429
1996	1.07	0.99	$3.9917	$2.9460	$0.0555	$0.0410	$0.0002	$0.0026	$0.0582	$0.0437
1997	1.09	0.99	$4.0664	$3.0011	$0.0565	$0.0417	$0.0002	$0.0026	$0.0593	$0.0445
1998	1.12	0.99	$4.1783	$3.0837	$0.0581	$0.0429	$0.0002	$0.0026	$0.0608	$0.0456
1999	1.16	1.00	$4.3275	$3.1938	$0.0602	$0.0444	$0.0002	$0.0026	$0.0629	$0.0471
2000	1.20	1.01	$4.4767	$3.3040	$0.0622	$0.0459	$0.0002	$0.0026	$0.0650	$0.0487
2001	1.24	1.01	$4.6259	$3.4141	$0.0643	$0.0475	$0.0002	$0.0026	$0.0671	$0.0502
2002	1.29	1.02	$4.8125	$3.5518	$0.0669	$0.0494	$0.0002	$0.0026	$0.0696	$0.0521
2003	1.32	1.02	$4.9244	$3.6344	$0.0685	$0.0505	$0.0002	$0.0026	$0.0712	$0.0533
2004	1.36	1.03	$5.0736	$3.7445	$0.0705	$0.0521	$0.0002	$0.0026	$0.0733	$0.0548
2005	1.40	1.03	$5.2228	$3.8546	$0.0726	$0.0536	$0.0002	$0.0026	$0.0754	$0.0563
2006	1.43	1.03	$5.3348	$3.9372	$0.0742	$0.0547	$0.0002	$0.0026	$0.0769	$0.0575
2007	1.46	1.04	$5.4467	$4.0198	$0.0757	$0.0559	$0.0002	$0.0026	$0.0785	$0.0586
2008	1.50	1.04	$5.5959	$4.1300	$0.0778	$0.0574	$0.0002	$0.0026	$0.0805	$0.0602
2009	1.55	1.05	$5.7824	$4.2676	$0.0804	$0.0593	$0.0002	$0.0026	$0.0831	$0.0621

Value of Generation, By Year, Season, and Period

Year	May-Oct Peak ($/kWh)	May-Oct Par. Peak ($/kWh)	Apr,Nov Par. Peak ($/kWh)	Dec-Mar Par. Peak ($/kWh)	May-Oct Off Peak ($/kWh)	Apr,Nov Off Peak ($/kWh)	Dec-Mar Off Peak ($/kWh)
1993	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1994	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1995	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1996	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1997	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1998	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1999	$0.0849	$0.0576	$0.0492	$0.0492	$0.0440	$0.0427	$0.0427
2000	$0.0857	$0.0582	$0.0497	$0.0497	$0.0444	$0.0431	$0.0431
2001	$0.0857	$0.0582	$0.0497	$0.0497	$0.0444	$0.0431	$0.0431
2002	$0.0865	$0.0587	$0.0502	$0.0502	$0.0448	$0.0435	$0.0435
2003	$0.0865	$0.0587	$0.0502	$0.0502	$0.0448	$0.0435	$0.0435
2004	$0.0874	$0.0593	$0.0507	$0.0507	$0.0453	$0.0439	$0.0439
2005	$0.0874	$0.0593	$0.0507	$0.0507	$0.0453	$0.0439	$0.0439
2006	$0.0874	$0.0593	$0.0507	$0.0507	$0.0453	$0.0439	$0.0439
2007	$0.0882	$0.0599	$0.0512	$0.0512	$0.0457	$0.0444	$0.0444
2008	$0.0882	$0.0599	$0.0512	$0.0512	$0.0457	$0.0444	$0.0444
2009	$0.0891	$0.0605	$0.0517	$0.0517	$0.0462	$0.0448	$0.0448

Cost-effective Generation Periods, Based on Variable Costs
0 = Not Cost-effective, 1 = Cost-effective

Year	May-Oct Peak (0/1)	May-Oct Par. Peak (0/1)	Apr,Nov Par. Peak (0/1)	Dec-Mar Par. Peak (0/1)	May-Oct Off Peak (0/1)	Apr,Nov Off Peak (0/1)	Dec-Mar Off Peak (0/1)
1993	0	0	0	0	0	0	0
1994	1	1	1	0	1	1	0
1995	1	1	1	0	1	0	0
1996	1	1	1	0	0	0	0
1997	1	1	1	0	0	0	0
1998	1	1	1	0	0	0	0
1999	1	1	1	0	0	0	0
2000	1	1	1	0	0	0	0
2001	1	1	0	0	0	0	0
2002	1	1	0	0	0	0	0
2003	1	1	0	0	0	0	0
2004	1	1	0	0	0	0	0
2005	1	1	0	0	0	0	0
2006	1	1	0	0	0	0	0
2007	1	1	0	0	0	0	0
2008	1	0	0	0	0	0	0
2009	1	0	0	0	0	0	0

Generation Cost Differential, Based on Variable Costs

Year	May-Oct Peak ($/kWh)	May-Oct Par. Peak ($/kWh)	Apr,Nov Par. Peak ($/kWh)	Dec-Mar Par. Peak ($/kWh)	May-Oct Off Peak ($/kWh)	Apr,Nov Off Peak ($/kWh)	Dec-Mar Off Peak ($/kWh)
1993	$0.0422	$0.0152	$0.0070	-$0.0069	$0.0017	$0.0004	-$0.0134
1994	$0.0418	$0.0148	$0.0066	-$0.0074	$0.0014	$0.0001	-$0.0139
1995	$0.0411	$0.0141	$0.0058	-$0.0085	$0.0006	-$0.0007	-$0.0150
1996	$0.0403	$0.0133	$0.0050	-$0.0095	-$0.0002	-$0.0015	-$0.0160
1997	$0.0395	$0.0125	$0.0043	-$0.0105	-$0.0009	-$0.0022	-$0.0171
1998	$0.0384	$0.0114	$0.0031	-$0.0121	-$0.0021	-$0.0034	-$0.0186
1999	$0.0377	$0.0104	$0.0021	-$0.0137	-$0.0032	-$0.0045	-$0.0203
2000	$0.0370	$0.0095	$0.0011	-$0.0152	-$0.0043	-$0.0056	-$0.0219
2001	$0.0355	$0.0080	-$0.0005	-$0.0173	-$0.0058	-$0.0071	-$0.0240
2002	$0.0344	$0.0086	-$0.0019	-$0.0194	-$0.0073	-$0.0086	-$0.0261
2003	$0.0333	$0.0055	-$0.0030	-$0.0210	-$0.0084	-$0.0098	-$0.0277
2004	$0.0326	$0.0045	-$0.0041	-$0.0226	-$0.0095	-$0.0109	-$0.0293
2005	$0.0311	$0.0030	-$0.0056	-$0.0246	-$0.0110	-$0.0124	-$0.0314
2006	$0.0299	$0.0018	-$0.0068	-$0.0262	-$0.0122	-$0.0135	-$0.0330
2007	$0.0296	$0.0013	-$0.0074	-$0.0273	-$0.0129	-$0.0143	-$0.0341
2008	$0.0281	-$0.0003	-$0.0089	-$0.0293	-$0.0144	-$0.0150	-$0.0362
2009	$0.0270	-$0.0016	-$0.0104	-$0.0314	-$0.0159	-$0.0173	-$0.0383

Prioritization of Generation Periods, Based on Variable Costs

Year	May-Oct Peak	May-Oct Par. Peak	Apr,Nov Par. Peak	Dec-Mar Par. Peak	May-Oct Off Peak	Apr,Nov Off Peak	Dec-Mar Off Peak
1993	1	2	3	6	4	5	7
1994	1	2	3	6	4	5	7
1995	1	2	3	6	4	5	7
1996	1	2	3	6	4	5	7
1997	1	2	3	6	4	5	7
1998	1	2	3	6	4	5	7
1999	1	2	3	6	4	5	7
2000	1	2	3	6	4	5	7
2001	1	2	3	6	4	5	7
2002	1	2	3	6	4	5	7
2003	1	2	3	6	4	5	7
2004	1	2	3	6	4	5	7
2005	1	2	3	6	4	5	7
2006	1	2	3	6	4	5	7
2007	1	2	3	6	4	5	7
2008	1	2	3	6	4	5	7
2009	1	2	3	6	4	5	7

Total Hours in Each Generation Period, By Month

	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
Peak	0	0	0	0	129	125	129	129	125	129	0	0	764
Par. Peak	279	252	279	270	150	145	150	150	145	150	270	279	2,521
Off Peak	465	420	465	450	465	450	465	465	450	465	450	465	5,475
Total	744	672	744	720	744	720	744	744	720	744	720	744	8,760

Turbine Hours x Energy Utilization in Each Generation Period, By Month

	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
Peak	0	0	0	0	644	623	644	644	623	644	0	0	3,822
Par. Peak	1,395	1,260	1,395	1,350	751	727	751	751	727	751	1,350	1,395	12,603
Off Peak	2,325	2,100	2,325	2,250	2,325	2,250	2,325	2,325	2,250	2,325	2,250	2,325	27,375
Total	3,720	3,360	3,720	3,600	3,720	3,600	3,720	3,720	3,600	3,720	3,600	3,720	43,800

Permitted Hours, By Quarter

Qtr1	2,908
Qtr2	2,908
Qtr3	2,908
Qtr4	2,908
Annual	11,632

Mission Support Gas Turbine Hours, in Each Generation Period, By Month

	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
Peak	0	0	0	0	0	0	0	0	0	0	0	0	0
Par. Peak	0	0	0	0	0	0	0	0	0	0	0	0	0
Off Peak	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Quar. Totals			0			0			0			0	

Utilized Turbine Hours Remaining After MOSR

	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
Peak	0	0	0	0	644	623	644	644	623	644	0	0	3,822
Par. Peak	1,395	1,260	1,395	1,350	751	727	751	751	727	751	1,350	1,395	12,603
Off Peak	2,325	2,100	2,325	2,250	2,325	2,250	2,325	2,325	2,250	2,325	2,250	2,325	27,375
Total	3,720	3,360	3,720	3,600	3,720	3,600	3,720	3,720	3,600	3,720	3,600	3,720	43,800

Permitted Hours Remaining After MOSR, By Quarter

Qtr1	2,908
Qtr2	2,908
Qtr3	2,908
Qtr4	2,908
Annual	11,632

Peak Generation Turbine Hours, By Month and Year, w/o Permitted Restrictions

Priority	0	0	0	0	1	1	1	1	1	1	0	0

Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	644	623	644	644	623	644	0	0	3,822
1995	0	0	0	0	644	623	644	644	623	644	0	0	3,822
1996	0	0	0	0	644	623	644	644	623	644	0	0	3,822
1997	0	0	0	0	644	623	644	644	623	644	0	0	3,822
1998	0	0	0	0	644	623	644	644	623	644	0	0	3,822
1999	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2000	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2001	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2002	0	0	0	0	644	623	644	[illegible]	623	644	0	0	3,822
2003	0	0	0	0	644	623	644	[illegible]	623	644	0	0	3,822
2004	0	0	0	0	644	623	644	[illegible]	623	644	0	0	3,822
2005	0	0	0	0	644	623	644	[illegible]	623	644	0	0	3,822
2006	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2007	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2008	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2009	0	0	0	0	644	623	644	644	623	644	0	0	3,822

Peak Generation Turbine Hours, By Month and Year, with Permitted Restrictions

Priority	0	0	0	0	1	1	1	1	1	1	0	0	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	644	623	644	644	623	644	0	0	3,822
1995	0	0	0	0	644	623	644	644	623	644	0	0	3,822
1996	0	0	0	0	644	623	644	644	623	644	0	0	3,822
1997	0	0	0	0	644	623	644	644	623	644	0	0	3,822
1998	0	0	0	0	644	623	644	644	623	644	0	0	3,822
1999	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2000	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2001	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2002	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2003	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2004	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2005	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2006	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2007	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2008	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2009	0	0	0	0	644	623	644	644	623	644	0	0	3,822

Permitted Hours Remaining After MOSR and Peak, By Quarter and Year

Year	Qtr1	Qtr2	Qtr3	Qtr4	Annual
1993	2,908	2,908	2,908	2,908	11,632
1994	2,908	1,641	997	2,264	7,810
1995	2,908	1,641	997	2,264	7,810
1996	2,908	1,641	997	2,264	7,810
1997	2,908	1,641	997	2,264	7,810
1998	2,908	1,641	997	2,264	7,810
1999	2,908	1,641	997	2,264	7,810
2000	2,908	1,641	997	2,264	7,810
2001	2,908	1,641	997	2,264	7,810
2002	2,908	1,641	997	2,264	7,810
2003	2,908	1,641	997	2,264	7,810
2004	2,908	1,641	997	2,264	7,810
2005	2,908	1,641	997	2,264	7,810
2006	2,908	1,641	997	2,264	7,810
2007	2,908	1,641	997	2,264	7,810
2008	2,908	1,641	997	2,264	7,810
2009	2,908	1,641	997	2,264	7,810

Partial Peak Generation Turbine Hours, By Month and Year, w/o Permitted Restrictions

Priority	6	6	6	3	2	2	2	2	2	2	3	6	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
1995	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
1996	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
1997	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
1998	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
1999	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
2000	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
2001	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2002	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2003	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2004	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2005	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2006	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2007	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2008	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0

Partial Peak Generation Turbine Hours, By Month and Year, with Permitted Restrictions

Priority	6	8	6	3	2	2	2	2	2	2	3	6	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	163	751	727	751	246	0	751	1,350	0	4,739
1995	0	0	0	163	751	727	751	246	0	751	1,350	0	4,739
1996	0	0	0	163	751	727	751	246	0	751	1,350	0	4,739
1997	0	0	0	163	751	727	751	246	0	751	1,350	0	4,739
1998	0	0	0	163	751	727	751	246	0	751	1,350	0	4,739
1999	0	0	0	163	751	727	751	246	0	751	1,350	0	4,739
2000	0	0	0	163	751	727	751	246	0	751	1,350	0	4,739
2001	0	0	0	0	751	727	751	246	0	751	0	0	3,226
2002	0	0	0	0	751	727	751	246	0	751	0	0	3,226
2003	0	0	0	0	751	727	751	246	0	751	0	0	3,226
2004	0	0	0	0	751	727	751	246	0	751	0	0	3,226
2005	0	0	0	0	751	727	751	246	0	751	0	0	3,226
2006	0	0	0	0	751	727	751	246	0	751	0	0	3,226
2007	0	0	0	0	751	727	751	246	0	751	0	0	3,226
2008	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0

Permitted Hours Remaining After MOSR, Peak, and Partial Peak, By Quarter and Year

Year	Qtr1	Qtr2	Qtr3	Qtr4	Annual
1993	2,908	2,908	2,908	2,908	11,632
1994	2,908	0	0	163	3,071
1995	2,908	0	0	163	3,071
1996	2,908	0	0	163	3,071
1997	2,908	0	0	163	3,071
1998	2,908	0	0	163	3,071
1999	2,908	0	0	163	3,071
2000	2,908	0	0	163	3,071
2001	2,908	163	0	1,513	4,584
2002	2,908	163	0	1,513	4,584
2003	2,908	163	0	1,513	4,584
2004	2,908	163	0	1,513	4,584
2005	2,908	163	0	1,513	4,584
2006	2,908	163	0	1,513	4,584
2007	2,908	163	0	1,513	4,584
2008	2,908	1,641	997	2,264	7,810
2009	2,908	1,641	997	2,264	7,810

Off Peak Generation Turbine Hours, By Month and Year, w/o Permitted Restrictions

Priority	7	7	7	5	4	4	4	4	4	4	5	7	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	2,250	2,325	2,250	2,325	2,325	2,250	2,325	2,250	0	18,300
1995	0	0	0	0	2,325	2,250	2,325	2,325	2,250	2,325	0	0	13,800
1996	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0

Off Peak Generation Turbine Hours, By Month and Year, with Permitted Restrictions

Priority	7	7	7	5	4	4	4	4	4	4	5	7	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	163	0	0	163
1995	0	0	0	0	0	0	0	0	0	163	0	0	163
1996	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0

Generating Quarterly Summary

Year	Peak Jan-Mar Quarterly Total (Hours)	Peak Apr-Jun Quarterly Total (Hours)	Peak Jul-Sep Quarterly Total (Hours)	Peak Oct-Dec Quarterly Total (Hours)	Par Peak Jan-Mar Quarterly Total (Hours)	Par Peak Apr-Jun Quarterly Total (Hours)	Par Peak Jul-Sep Quarterly Total (Hours)	Par Peak Oct-Dec Quarterly Total (Hours)	Off Peak Jan-Mar Quarterly Total (Hours)	Off Peak Apr-Jun Quarterly Total (Hours)	Off Peak Jul-Sep Quarterly Total (Hours)	Off Peak Oct-Dec Quarterly Total (Hours)	Total Jan-Mar Quarterly Total (Hours)	Total Apr-Jun Quarterly Total (Hours)	Total Jul-Sep Quarterly Total (Hours)	Total Oct-Dec Quarterly Total (Hours)	Annual Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	1,267	1,911	644	0	1,641	997	2,101	0	0	0	163	0	2,908	2,908	2,908	8,724
1995	0	1,267	1,911	644	0	1,641	997	2,101	0	0	0	163	0	2,908	2,908	2,908	8,724
1996	0	1,267	1,911	644	0	1,641	997	2,101	0	0	0	0	0	2,908	2,908	2,745	8,561
1997	0	1,267	1,911	644	0	1,641	997	2,101	0	0	0	0	0	2,908	2,908	2,745	8,561
1998	0	1,267	1,911	644	0	1,641	997	2,101	0	0	0	0	0	2,908	2,908	2,745	8,561
1999	0	1,267	1,911	644	0	1,641	997	2,101	0	0	0	0	0	2,908	2,908	2,745	8,561
2000	0	1,267	1,911	644	0	1,641	997	2,101	0	0	0	0	0	2,908	2,908	2,745	8,561
2001	0	1,267	1,911	644	0	1,478	997	751	0	0	0	0	0	2,745	2,908	1,395	7,048
2002	0	1,267	1,911	644	0	1,478	997	751	0	0	0	0	0	2,745	2,908	1,395	7,048
2003	0	1,267	1,911	644	0	1,478	997	751	0	0	0	0	0	2,745	2,908	1,395	7,048
2004	0	1,267	1,911	644	0	1,478	997	751	0	0	0	0	0	2,745	2,908	1,395	7,048
2005	0	1,267	1,911	644	0	1,478	997	751	0	0	0	0	0	2,745	2,908	1,395	7,048
2006	0	1,267	1,911	644	0	1,478	997	751	0	0	0	0	0	2,745	2,908	1,395	7,048
2007	0	1,267	1,911	644	0	1,478	997	751	0	0	0	0	0	2,745	2,908	1,395	7,048
2008	0	1,267	1,911	644	0	0	0	0	0	0	0	0	0	1,267	1,911	644	3,822
2009	0	1,267	1,911	644	0	0	0	0	0	0	0	0	0	1,267	1,911	644	3,822

Generating and Mission Support Quarterly Summary

Year	Peak Jan-Mar Quarterly Total (Hours)	Peak Apr-Jun Quarterly Total (Hours)	Peak Jul-Sep Quarterly Total (Hours)	Peak Oct-Dec Quarterly Total (Hours)	Par Peak Jan-Mar Quarterly Total (Hours)	Par Peak Apr-Jun Quarterly Total (Hours)	Par Peak Jul-Sep Quarterly Total (Hours)	Par Peak Oct-Dec Quarterly Total (Hours)	Off Peak Jan-Mar Quarterly Total (Hours)	Off Peak Apr-Jun Quarterly Total (Hours)	Off Peak Jul-Sep Quarterly Total (Hours)	Off Peak Oct-Dec Quarterly Total (Hours)	Total Jan-Mar Quarterly Total (Hours)	Total Apr-Jun Quarterly Total (Hours)	Total Jul-Sep Quarterly Total (Hours)	Total Oct-Dec Quarterly Total (Hours)	Annual Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	1,267	1,911	644	0	1,641	997	2,101	0	0	0	163	0	2,908	2,908	2,908	8,724
1995	0	1,267	1,911	644	0	1,641	997	2,101	0	0	0	163	0	2,908	2,908	2,908	8,724
1996	0	1,267	1,911	644	0	1,641	997	2,101	0	0	0	0	0	2,908	2,908	2,745	8,561
1997	0	1,267	1,911	644	0	1,641	997	2,101	0	0	0	0	0	2,908	2,908	2,745	8,561
1998	0	1,267	1,911	644	0	1,641	997	2,101	0	0	0	0	0	2,908	2,908	2,745	8,561
1999	0	1,267	1,911	644	0	1,641	997	2,101	0	0	0	0	0	2,908	2,908	2,745	8,561
2000	0	1,267	1,911	644	0	1,641	997	2,101	0	0	0	0	0	2,908	2,908	2,745	8,561
2001	0	1,267	1,911	644	0	1,478	997	751	0	0	0	0	0	2,745	2,908	1,395	7,048
2002	0	1,267	1,911	644	0	1,478	997	751	0	0	0	0	0	2,745	2,908	1,395	7,048
2003	0	1,267	1,911	644	0	1,478	997	751	0	0	0	0	0	2,745	2,908	1,395	7,048
2004	0	1,267	1,911	644	0	1,478	997	751	0	0	0	0	0	2,745	2,908	1,395	7,048
2005	0	1,267	1,911	644	0	1,478	997	751	0	0	0	0	0	2,745	2,908	1,395	7,048
2006	0	1,267	1,911	644	0	1,478	997	751	0	0	0	0	0	2,745	2,908	1,395	7,048
2007	0	1,267	1,911	644	0	1,478	997	751	0	0	0	0	0	2,745	2,908	1,395	7,048
2008	0	1,267	1,911	644	0	0	0	0	0	0	0	0	0	1,267	1,911	644	3,822
2009	0	1,267	1,911	644	0	0	0	0	0	0	0	0	0	1,267	1,911	644	3,822

Annual Generation, By Generation Period

Year	May-Oct Peak (MWh)	May-Oct Par. Peak (MWh)	Apr,Nov Par. Peak (MWh)	Dec-Mar Par. Peak (MWh)	May-Oct Off Peak (MWh)	Apr,Nov Off Peak (MWh)	Dec-Mar Off Peak (MWh)	Total (MWh)
1993	0	0	0	0	0	0	0	0
1994	11,465	9,679	4,539	0	489	0	0	26,172
1995	11,465	9,679	4,539	0	489	0	0	26,172
1996	11,465	9,679	4,539	0	0	0	0	25,683
1997	11,465	9,679	4,539	0	0	0	0	25,683
1998	11,465	9,679	4,539	0	0	0	0	25,683
1999	11,465	9,679	4,539	0	0	0	0	25,683
2000	11,465	9,679	4,539	0	0	0	0	25,683
2001	11,465	9,679	0	0	0	0	0	21,144
2002	11,465	9,679	0	0	0	0	0	21,144
2003	11,465	9,679	0	0	0	0	0	21,144
2004	11,465	9,679	0	0	0	0	0	21,144
2005	11,465	9,679	0	0	0	0	0	21,144
2006	11,465	9,679	0	0	0	0	0	21,144
2007	11,465	9,679	0	0	0	0	0	21,144
2008	11,465	0	0	0	0	0	0	11,465
2009	11,465	0	0	0	0	0	0	11,465

Net Value of Annual Generation, By Generation Period

Year	May-Oct Peak (1992 $)	May-Oct Par. Peak (1992 $)	Apr,Nov Par. Peak (1992 $)	Dec-Mar Par. Peak (1992 $)	May-Oct Off Peak (1992 $)	Apr,Nov Off Peak (1992 $)	Dec-Mar Off Peak (1992 $)	Avoided Demand (1992 $)	Total (1992 $)
1993	$0	$0	$0	$0	$0	$0	$0	$0	$0
1994	$479,595	$143,693	$29,861	$0	$666	$0	$0	$427,110	$1,080,924
1995	$470,818	$136,283	$26,386	$0	$291	$0	$0	$427,110	$1,060,888
1996	$462,042	$128,873	$22,911	$0	$0	$0	$0	$427,110	$1,040,936
1997	$453,265	$121,463	$19,437	$0	$0	$0	$0	$427,110	$1,021,275
1998	$440,101	$110,348	$14,225	$0	$0	$0	$0	$427,110	$991,783
1999	$432,275	$101,103	$9,510	$0	$0	$0	$0	$431,424	$974,313
2000	$424,450	$91,858	$4,796	$0	$0	$0	$0	$435,738	$956,842
2001	$406,897	$77,038	$0	$0	$0	$0	$0	$435,738	$919,674
2002	$394,684	$64,088	$0	$0	$0	$0	$0	$440,052	$898,824
2003	$381,519	$52,973	$0	$0	$0	$0	$0	$440,052	$874,545
2004	$373,694	$43,728	$0	$0	$0	$0	$0	$444,367	$861,788
2005	$356,141	$28,908	$0	$0	$0	$0	$0	$444,367	$829,416
2006	$342,976	$17,793	$0	$0	$0	$0	$0	$444,367	$805,136
2007	$339,539	$12,253	$0	$0	$0	$0	$0	$448,681	$800,473
2008	$321,986	$0	$0	$0	$0	$0	$0	$448,681	$770,667
2009	$309,773	$0	$0	$0	$0	$0	$0	$452,995	$762,768

In all years, net value sufficient to cover all incremental labor costs.

Summary of Annual Generation

Year	Variable Cost of Generation (1992 $)	M-O Pk Value of Generation (1992 $)	M-O PPk Value of Generation (1992 $)	A,N PPk Value of Generation (1992 $)	D-M PPk Value of Generation (1992 $)	M-O OP Value of Generation (1992 $)	A,N OP Value of Generation (1992 $)	D-M OP Value of Generation (1992 $)	Avoided Demand (1992 $)	Total Value of Generation (1992 $)
1993	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
1994	$1,103,544	$963,045	$551,861	$221,265	$0	$21,286	$0	$0	$427,110	$2,184,568
1995	$1,123,679	$963,045	$551,861	$221,265	$0	$21,286	$0	$0	$427,110	$2,184,568
1996	$1,122,346	$963,045	$551,861	$221,265	$0	$0	$0	$0	$427,110	$2,163,281
1997	$1,142,007	$963,045	$551,861	$221,265	$0	$0	$0	$0	$427,110	$2,163,281
1998	$1,171,498	$963,045	$551,861	$221,265	$0	$0	$0	$0	$427,110	$2,163,281
1999	$1,210,820	$972,773	$557,436	$223,500	$0	$0	$0	$0	$431,424	$2,185,133
2000	$1,250,142	$982,500	$563,010	$225,735	$0	$0	$0	$0	$435,738	$2,206,984
2001	$1,061,575	$982,500	$563,010	$0	$0	$0	$0	$0	$435,738	$1,981,249
2002	$1,102,041	$992,228	$568,584	$0	$0	$0	$0	$0	$440,052	$2,000,865
2003	$1,126,320	$992,228	$568,584	$0	$0	$0	$0	$0	$440,052	$2,000,865
2004	$1,158,693	$1,001,956	$574,159	$0	$0	$0	$0	$0	$444,367	$2,020,481
2005	$1,191,066	$1,001,956	$574,159	$0	$0	$0	$0	$0	$444,367	$2,020,481
2006	$1,215,345	$1,001,956	$574,159	$0	$0	$0	$0	$0	$444,367	$2,020,481
2007	$1,239,625	$1,011,684	$579,733	$0	$0	$0	$0	$0	$448,681	$2,040,098
2008	$689,697	$1,011,684	$0	$0	$0	$0	$0	$0	$448,681	$1,460,364
2009	$711,638	$1,021,411	$0	$0	$0	$0	$0	$0	$452,995	$1,474,406

GENERATION COST EFFECTIVENESS: FULL MOSR

RELAXED ENVIRONMENTAL CONSTRAINTS SCENARIO

Variable Costs of Generation

Environmental Costs ($/ton)	$165.0000
Bench Stock ($/hour)	$7.6550

Variable Cost of Generation, By Year and By Season

Year	Gas Esc	Elec Esc	Dec-Mar Gas Cost ($/MBtu)	Apr-Nov Gas Cost ($/MBtu)	Dec-Mar Gas Cost ($/kWh)	Apr-Nov Gas Cost ($/kWh)	Emissions Cost ($/kWh)	Bench Stock ($/kWh)	Dec-Mar Generation Cost ($/kWh)	Apr-Nov Generation Cost ($/kWh)
1993	1.02	0.99	$3.8052	$2.8084	$0.0529	$0.0390	$0.0002	$0.0026	$0.0556	$0.0418
1994	1.03	0.99	$3.8425	$2.8359	$0.0534	$0.0394	$0.0002	$0.0026	$0.0562	$0.0422
1995	1.05	0.99	$3.9171	$2.8910	$0.0545	$0.0402	$0.0002	$0.0026	$0.0572	$0.0429
1996	1.07	0.99	$3.9917	$2.9460	$0.0555	$0.0410	$0.0002	$0.0026	$0.0582	$0.0437
1997	1.09	0.99	$4.0664	$3.0011	$0.0565	$0.0417	$0.0002	$0.0026	$0.0593	$0.0445
1998	1.12	0.99	$4.1783	$3.0837	$0.0581	$0.0429	$0.0002	$0.0026	$0.0608	$0.0456
1999	1.16	1.00	$4.3275	$3.1938	$0.0602	$0.0444	$0.0002	$0.0026	$0.0629	$0.0471
2000	1.20	1.01	$4.4767	$3.3040	$0.0622	$0.0459	$0.0002	$0.0026	$0.0650	$0.0487
2001	1.24	1.01	$4.6259	$3.4141	$0.0643	$0.0475	$0.0002	$0.0026	$0.0671	$0.0502
2002	1.29	1.02	$4.8125	$3.5518	$0.0669	$0.0494	$0.0002	$0.0026	$0.0696	$0.0521
2003	1.32	1.02	$4.9244	$3.6344	$0.0685	$0.0505	$0.0002	$0.0026	$0.0712	$0.0533
2004	1.36	1.03	$5.0736	$3.7445	$0.0705	$0.0521	$0.0002	$0.0026	$0.0733	$0.0548
2005	1.40	1.03	$5.2228	$3.8546	$0.0726	$0.0536	$0.0002	$0.0026	$0.0754	$0.0563
2006	1.43	1.03	$5.3348	$3.9372	$0.0742	$0.0547	$0.0002	$0.0026	$0.0769	$0.0575
2007	1.46	1.04	$5.4467	$4.0198	$0.0757	$0.0559	$0.0002	$0.0026	$0.0785	$0.0586
2008	1.50	1.04	$5.5959	$4.1300	$0.0778	$0.0574	$0.0002	$0.0026	$0.0805	$0.0602
2009	1.55	1.05	$5.7824	$4.2676	$0.0804	$0.0593	$0.0002	$0.0026	$0.0831	$0.0621

Value of Generation, By Year, Season, and Period

Year	May-Oct Peak ($/kWh)	May-Oct Par. Peak ($/kWh)	Apr,Nov Par. Peak ($/kWh)	Dec-Mar Par. Peak ($/kWh)	May-Oct Off Peak ($/kWh)	Apr,Nov Off Peak ($/kWh)	Dec-Mar Off Peak ($/kWh)
1993	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1994	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1995	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1996	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1997	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1998	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1999	$0.0849	$0.0576	$0.0492	$0.0492	$0.0440	$0.0427	$0.0427
2000	$0.0857	$0.0582	$0.0497	$0.0497	$0.0444	$0.0431	$0.0431
2001	$0.0857	$0.0582	$0.0497	$0.0497	$0.0444	$0.0431	$0.0431
2002	$0.0865	$0.0587	$0.0502	$0.0502	$0.0448	$0.0435	$0.0435
2003	$0.0865	$0.0587	$0.0502	$0.0502	$0.0448	$0.0435	$0.0435
2004	$0.0874	$0.0593	$0.0507	$0.0507	$0.0453	$0.0439	$0.0439
2005	$0.0874	$0.0593	$0.0507	$0.0507	$0.0453	$0.0439	$0.0439
2006	$0.0874	$0.0593	$0.0507	$0.0507	$0.0453	$0.0439	$0.0439
2007	$0.0882	$0.0599	$0.0512	$0.0512	$0.0457	$0.0444	$0.0444
2008	$0.0882	$0.0599	$0.0512	$0.0512	$0.0457	$0.0444	$0.0444
2009	$0.0891	$0.0605	$0.0517	$0.0517	$0.0462	$0.0448	$0.0448

Cost-effective Generation Periods, Based on Variable Costs
0 = Not Cost-effective, 1 = Cost-effective

Year	May-Oct Peak (0/1)	May-Oct Par. Peak (0/1)	Apr,Nov Par. Peak (0/1)	Dec-Mar Par. Peak (0/1)	May-Oct Off Peak (0/1)	Apr,Nov Off Peak (0/1)	Dec-Mar Off Peak (0/1)
1993	0	0	0	0	0	0	0
1994	1	1	1	0	1	1	0
1995	1	1	1	0	1	0	0
1996	1	1	1	0	0	0	0
1997	1	1	1	0	0	0	0
1998	1	1	1	0	0	0	0
1999	1	1	1	0	0	0	0
2000	1	1	1	0	0	0	0
2001	1	1	0	0	0	0	0
2002	1	1	0	0	0	0	0
2003	1	1	0	0	0	0	0
2004	1	1	0	0	0	0	0
2005	1	1	0	0	0	0	0
2006	1	1	0	0	0	0	0
2007	1	1	0	0	0	0	

Generation Cost Differential, Based on Variable Costs

Year	May-Oct Peak ($/kWh)	May-Oct Par. Peak ($/kWh)	Apr,Nov Par. Peak ($/kWh)	Dec-Mar Par. Peak ($/kWh)	May-Oct Off Peak ($/kWh)	Apr,Nov Off Peak ($/kWh)	Dec-Mar Off Peak ($/kWh)
1993	$0.0422	$0.0152	$0.0070	-$0.0069	$0.0017	$0.0004	-$0.0134
1994	$0.0418	$0.0148	$0.0066	-$0.0074	$0.0014	$0.0001	-$0.0139
1995	$0.0411	$0.0141	$0.0058	-$0.0085	$0.0006	-$0.0007	-$0.0150
1996	$0.0403	$0.0133	$0.0050	-$0.0095	-$0.0002	-$0.0015	-$0.0160
1997	$0.0395	$0.0125	$0.0043	-$0.0105	-$0.0009	-$0.0022	-$0.0171
1998	$0.0384	$0.0114	$0.0031	-$0.0121	-$0.0021	-$0.0034	-$0.0186
1999	$0.0377	$0.0104	$0.0021	-$0.0137	-$0.0032	-$0.0045	-$0.0203
2000	$0.0370	$0.0095	$0.0011	-$0.0152	-$0.0043	-$0.0056	-$0.0219
2001	$0.0355	$0.0080	-$0.0005	-$0.0173	-$0.0058	-$0.0071	-$0.0240
2002	$0.0344	$0.0066	-$0.0019	-$0.0194	-$0.0073	-$0.0086	-$0.0261
2003	$0.0333	$0.0055	-$0.0030	-$0.0210	-$0.0084	-$0.0098	-$0.0277
2004	$0.0326	$0.0045	-$0.0041	-$0.0226	-$0.0095	-$0.0109	-$0.0293
2005	$0.0311	$0.0030	-$0.0056	-$0.0246	-$0.0110	-$0.0124	-$0.0314
2006	$0.0299	$0.0018	-$0.0068	-$0.0262	-$0.0122	-$0.0135	-$0.0330
2007	$0.0296	$0.0013	-$0.0074	-$0.0273	-$0.0129	-$0.0143	-$0.0341
2008	$0.0281	-$0.0003	-$0.0089	-$0.0293	-$0.0144	-$0.0158	-$0.0362
2009	$0.0270	-$0.0016	-$0.0104	-$0.0314	-$0.0159	-$0.0173	-$0.0383

Prioritization of Generation Periods, Based on Variable Costs

Year	May-Oct Peak	May-Oct Par. Peak	Apr,Nov Par. Peak	Dec-Mar Par. Peak	May-Oct Off Peak	Apr,Nov Off Peak	Dec-Mar Off Peak
1993	1	2	3	6	4	5	7
1994	1	2	3	6	4	5	7
1995	1	2	3	6	4	5	7
1996	1	2	3	6	4	5	7
1997	1	2	3	6	4	5	7
1998	1	2	3	6	4	5	7
1999	1	2	3	6	4	5	7
2000	1	2	3	6	4	5	7
2001	1	2	3	6	4	5	7
2002	1	2	3	6	4	5	7
2003	1	2	3	6	4	5	7
2004	1	2	3	6	4	5	7
2005	1	2	3	6	4	5	7
2006	1	2	3	6	4	5	7
2007	1	2	3	6	4	5	7
2008	1	2	3	6	4	5	7
2009	1	2	3	6	4	5	7

Total Hours in Each Generation Period, By Month

	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
Peak	0	0	0	0	129	125	129	129	125	129	0	0	764
Par. Peak	279	252	279	270	150	145	150	150	145	150	270	279	2,521
Off Peak	465	420	465	450	465	450	465	465	450	465	450	465	5,475
Total	744	672	744	720	744	720	744	744	720	744	720	744	8,760

Turbine Hours x Energy Utilization in Each Generation Period, By Month

	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
Peak	0	0	0	0	644	623	644	644	623	644	0	0	3,822
Par. Peak	1,395	1,260	1,395	1,350	751	727	751	751	727	751	1,350	1,395	12,603
Off Peak	2,325	2,100	2,325	2,250	2,325	2,250	2,325	2,325	2,250	2,325	2,250	2,325	27,375
Total	3,720	3,360	3,720	3,600	3,720	3,600	3,720	3,720	3,600	3,720	3,600	3,720	43,800

Permitted Hours, By Quarter

Qtr1	10,950
Qtr2	10,950
Qtr3	10,950
Qtr4	10,950
Annual	43,800

Mission Support Gas Turbine Hours, in Each Generation Period, By Month

	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
Peak	0	0	0	0	15	19	45	22	10	31	0	0	141
Par. Peak	6	127	136	18	17	22	53	26	11	36	161	3	614
Off Peak	9	212	226	30	53	67	163	80	35	111	268	4	1,258
Total	15	338	362	49	85	108	260	128	56	178	429	7	2,013
Quar. Totals			715			241			444			614	

Utilized Turbine Hours Remaining After MOSR

	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
Peak	0	0	0	0	629	604	599	622	613	613	0	0	3,681
Par. Peak	1,389	1,133	1,259	1,332	734	705	699	725	716	715	1,189	1,392	11,989
Off Peak	2,316	1,889	2,099	2,220	2,272	2,183	2,163	2,245	2,215	2,214	1,982	2,321	26,117
Total	3,705	3,022	3,358	3,552	3,636	3,493	3,460	3,592	3,545	3,543	3,171	3,713	41,787

Permitted Hours Remaining After MOSR, By Quarter

Qtr1	10,235
Qtr2	10,710
Qtr3	10,506
Qtr4	10,336
Annual	41,787

Peak Generation Turbine Hours, By Month and Year, w/o Permitted Restrictions

Priority	0	0	0	0	1	1	1	1	1	1	0	0	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	629	604	599	622	613	613	0	0	3,681
1995	0	0	0	0	629	604	599	622	613	613	0	0	3,681
1996	0	0	0	0	629	604	599	622	613	613	0	0	3,681
1997	0	0	0	0	629	604	599	622	613	613	0	0	3,681
1998	0	0	0	0	629	604	599	622	613	613	0	0	3,681
1999	0	0	0	0	629	604	599	622	613	613	0	0	3,681
2000	0	0	0	0	629	604	599	622	613	613	0	0	3,681
2001	0	0	0	0	629	604	599	622	613	613	0	0	3,681
2002	0	0	0	0	629	604	599	622	613	613	0	0	3,681
2003	0	0	0	0	629	604	599	622	613	613	0	0	3,681
2004	0	0	0	0	629	604	599	622	613	613	0	0	3,681
2005	0	0	0	0	629	604	599	622	613	613	0	0	3,681
2006	0	0	0	0	629	604	599	622	613	613	0	0	3,681
2007	0	0	0	0	629	604	599	622	613	613	0	0	3,681
2008	0	0	0	0	629	604	599	622	613	613	0	0	3,681
2009	0	0	0	0	629	604	599	622	613	613	0	0	3,681

Peak Generation Turbine Hours, By Month and Year, with Permitted Restrictions

Priority	0	0	0	0	1	1	1	1	1	1	0	0	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	625	600	595	618	609	609	0	0	3,657
1995	0	0	0	0	625	600	595	618	609	609	0	0	3,657
1996	0	0	0	0	625	600	595	618	609	609	0	0	3,657
1997	0	0	0	0	625	600	595	618	609	609	0	0	3,657
1998	0	0	0	0	625	600	595	618	609	609	0	0	3,657
1999	0	0	0	0	625	600	595	618	609	609	0	0	3,657
2000	0	0	0	0	625	600	595	618	609	609	0	0	3,657
2001	0	0	0	0	625	600	595	618	609	609	0	0	3,657
2002	0	0	0	0	625	600	595	618	609	609	0	0	3,657
2003	0	0	0	0	625	600	595	618	609	609	0	0	3,657
2004	0	0	0	0	625	600	595	618	609	609	0	0	3,657
2005	0	0	0	0	625	600	595	618	609	609	0	0	3,657
2006	0	0	0	0	625	600	595	618	609	609	0	0	3,657
2007	0	0	0	0	625	600	595	618	609	609	0	0	3,657
2008	0	0	0	0	625	600	595	618	609	609	0	0	3,657
2009	0	0	0	0	625	600	595	618	609	609	0	0	3,657

Permitted Hours Remaining After MOSR and Peak, By Quarter and Year

Year	Qtr1	Qtr2	Qtr3	Qtr4	Annual
1993	10,235	10,710	10,506	10,336	41,787
1994	10,235	9,484	8,684	9,727	38,130
1995	10,235	9,484	8,684	9,727	38,130
1996	10,235	9,484	8,684	9,727	38,130
1997	10,235	9,484	8,684	9,727	38,130
1998	10,235	9,484	8,684	9,727	38,130
1999	10,235	9,484	8,684	9,727	38,130
2000	10,235	9,484	8,684	9,727	38,130
2001	10,235	9,484	8,684	9,727	38,130
2002	10,235	9,484	8,684	9,727	38,130
2003	10,235	9,484	8,684	9,727	38,130
2004	10,235	9,484	8,684	9,727	38,130
2005	10,235	9,484	8,684	9,727	38,130
2006	10,235	9,484	8,684	9,727	38,130
2007	10,235	9,484	8,684	9,727	38,130
2008	10,235	9,484	8,684	9,727	38,130
2009	10,235	9,484	8,684	9,727	38,130

Partial Peak Generation Turbine Hours, By Month and Year, w/o Permitted Restrictions

Priority	6	6	6	3	2	2	2	2	2	2	3	6	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
1995	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
1996	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
1997	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
1998	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
1999	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
2000	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
2001	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2002	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2003	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2004	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2005	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2006	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2007	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2008	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0

Partial Peak Generation Turbine Hours, By Month and Year, with Permitted Restrictions

Priority	6	6	6	3	2	2	2	2	2	2	3	6	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
1995	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
1996	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
1997	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
1998	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
1999	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
2000	0	0	0	1,332	734	705	699	725	716	715	1,189	0	6,815
2001	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2002	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2003	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2004	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2005	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2006	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2007	0	0	0	0	734	705	699	725	716	715	0	0	4,294
2008	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0

Permitted Hours Remaining After MOSR, Peak, and Partial Peak, By Quarter and Year

Year	Qtr1	Qtr2	Qtr3	Qtr4	Annual
1993	10,235	10,710	10,506	10,336	41,787
1994	10,235	6,713	6,545	7,823	31,315
1995	10,235	6,713	6,545	7,823	31,315
1996	10,235	6,713	6,545	7,823	31,315
1997	10,235	6,713	6,545	7,823	31,315
1998	10,235	6,713	6,545	7,823	31,315
1999	10,235	6,713	6,545	7,823	31,315
2000	10,235	6,713	6,545	7,823	31,315
2001	10,235	8,045	6,545	9,012	33,836
2002	10,235	8,045	6,545	9,012	33,836
2003	10,235	8,045	6,545	9,012	33,836
2004	10,235	8,045	6,545	9,012	33,836
2005	10,235	8,045	6,545	9,012	33,836
2006	10,235	8,045	6,545	9,012	33,836
2007	10,235	8,045	6,545	9,012	33,836
2008	10,235	9,484	8,684	9,727	38,130
2009	10,235	9,484	8,684	9,727	38,130

Off Peak Generation Turbine Hours, By Month and Year, w/o Permitted Restrictions

Priority	7	7	7	5	4	4	4	4	4	4	5	7	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	2,220	2,272	2,183	2,163	2,245	2,215	2,214	1,982	0	17,493
1995	0	0	0	0	2,272	2,183	2,163	2,245	2,215	2,214	0	0	13,292
1996	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0

Off Peak Generation Turbine Hours, By Month and Year, with Permitted Restrictions

Priority	7	7	7	5	4	4	4	4	4	4	5	7	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	2,220	2,272	2,183	2,163	2,245	2,137	2,214	1,982	0	17,415
1995	0	0	0	0	2,272	2,183	2,163	2,245	2,137	2,214	0	0	13,214
1996	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0

Generating Quarterly Summary

Year	Peak Jan-Mar Quarterly Total (Hours)	Peak Apr-Jun Quarterly Total (Hours)	Peak Jul-Sep Quarterly Total (Hours)	Peak Oct-Dec Quarterly Total (Hours)	Par Peak Jan-Mar Quarterly Total (Hours)	Par Peak Apr-Jun Quarterly Total (Hours)	Par Peak Jul-Sep Quarterly Total (Hours)	Par Peak Oct-Dec Quarterly Total (Hours)	Off Peak Jan-Mar Quarterly Total (Hours)	Off Peak Apr-Jun Quarterly Total (Hours)	Off Peak Jul-Sep Quarterly Total (Hours)	Off Peak Oct-Dec Quarterly Total (Hours)	Total Jan-Mar Quarterly Total (Hours)	Total Apr-Jun Quarterly Total (Hours)	Total Jul-Sep Quarterly Total (Hours)	Total Oct-Dec Quarterly Total (Hours)	Annual Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	1,226	1,822	609	0	2,771	2,140	1,904	0	6,675	6,545	4,196	0	10,672	10,506	6,710	27,887
1995	0	1,226	1,822	609	0	2,771	2,140	1,904	0	4,455	6,545	2,214	0	8,452	10,506	4,728	23,686
1996	0	1,226	1,822	609	0	2,771	2,140	1,904	0	0	0	0	0	3,997	3,962	2,514	10,472
1997	0	1,226	1,822	609	0	2,771	2,140	1,904	0	0	0	0	0	3,997	3,962	2,514	10,472
1998	0	1,226	1,822	609	0	2,771	2,140	1,904	0	0	0	0	0	3,997	3,962	2,514	10,472
1999	0	1,226	1,822	609	0	2,771	2,140	1,904	0	0	0	0	0	3,997	3,962	2,514	10,472
2000	0	1,226	1,822	609	0	2,771	2,140	1,904	0	0	0	0	0	3,997	3,962	2,514	10,472
2001	0	1,226	1,822	609	0	1,439	2,140	715	0	0	0	0	0	2,665	3,962	1,324	7,951
2002	0	1,226	1,822	609	0	1,439	2,140	715	0	0	0	0	0	2,665	3,962	1,324	7,951
2003	0	1,226	1,822	609	0	1,439	2,140	715	0	0	0	0	0	2,665	3,962	1,324	7,951
2004	0	1,226	1,822	609	0	1,439	2,140	715	0	0	0	0	0	2,665	3,962	1,324	7,951
2005	0	1,226	1,822	609	0	1,439	2,140	715	0	0	0	0	0	2,665	3,962	1,324	7,951
2006	0	1,226	1,822	609	0	1,439	2,140	715	0	0	0	0	0	2,665	3,962	1,324	7,951
2007	0	1,226	1,822	609	0	1,439	2,140	715	0	0	0	0	0	2,665	3,962	1,324	7,951
2008	0	1,226	1,822	609	0	0	0	0	0	0	0	0	0	1,226	1,822	609	3,657
2009	0	1,226	1,822	609	0	0	0	0	0	0	0	0	0	1,226	1,822	609	3,657

Generating and Mission Support Quarterly Summary

Year	Peak Jan-Mar Quarterly Total (Hours)	Peak Apr-Jun Quarterly Total (Hours)	Peak Jul-Sep Quarterly Total (Hours)	Peak Oct-Dec Quarterly Total (Hours)	Par Peak Jan-Mar Quarterly Total (Hours)	Par Peak Apr-Jun Quarterly Total (Hours)	Par Peak Jul-Sep Quarterly Total (Hours)	Par Peak Oct-Dec Quarterly Total (Hours)	Off Peak Jan-Mar Quarterly Total (Hours)	Off Peak Apr-Jun Quarterly Total (Hours)	Off Peak Jul-Sep Quarterly Total (Hours)	Off Peak Oct-Dec Quarterly Total (Hours)	Total Jan-Mar Quarterly Total (Hours)	Total Apr-Jun Quarterly Total (Hours)	Total Jul-Sep Quarterly Total (Hours)	Total Oct-Dec Quarterly Total (Hours)	Annual Total (Hours)
1993	0	33	77	31	268	57	90	199	447	150	277	384	715	241	444	614	2,013
1994	0	1,259	1,899	640	268	2,828	2,229	2,104	447	6,825	6,822	4,579	715	10,912	10,950	7,323	29,900
1995	0	1,259	1,899	640	268	2,828	2,229	2,104	447	4,605	6,822	2,598	715	8,692	10,950	5,341	25,699
1996	0	1,259	1,899	640	268	2,828	2,229	2,104	447	150	277	384	715	4,237	4,405	3,127	12,485
1997	0	1,259	1,899	640	268	2,828	2,229	2,104	447	150	277	384	715	4,237	4,405	3,127	12,485
1998	0	1,259	1,899	640	268	2,828	2,229	2,104	447	150	277	384	715	4,237	4,405	3,127	12,485
1999	0	1,259	1,899	640	268	2,828	2,229	2,104	447	150	277	384	715	4,237	4,405	3,127	12,485
2000	0	1,259	1,899	640	268	2,828	2,229	2,104	447	150	277	384	715	4,237	4,405	3,127	12,485
2001	0	1,259	1,899	640	268	1,496	2,229	915	447	150	277	384	715	2,906	4,405	1,938	9,964
2002	0	1,259	1,899	640	268	1,496	2,229	915	447	150	277	384	715	2,906	4,405	1,938	9,964
2003	0	1,259	1,899	640	268	1,496	2,229	915	447	150	277	384	715	2,906	4,405	1,938	9,964
2004	0	1,259	1,899	640	268	1,496	2,229	915	447	150	277	384	715	2,906	4,405	1,938	9,964
2005	0	1,259	1,899	640	268	1,496	2,229	915	447	150	277	384	715	2,906	4,405	1,938	9,964
2006	0	1,259	1,899	640	268	1,496	2,229	915	447	150	277	384	715	2,906	4,405	1,938	9,964
2007	0	1,259	1,899	640	268	1,496	2,229	915	447	150	277	384	715	2,906	4,405	1,938	9,964
2008	0	1,259	1,899	640	268	57	90	199	447	150	277	384	715	1,466	2,266	1,223	5,670
2009	0	1,259	1,899	640	268	57	90	199	447	150	277	384	715	1,466	2,266	1,223	5,670

Annual Generation, By Generation Period

Year	May-Oct Peak (MWh)	May-Oct Par. Peak (MWh)	Apr,Nov Par. Peak (MWh)	Dec-Mar Par. Peak (MWh)	May-Oct Off Peak (MWh)	Apr,Nov Off Peak (MWh)	Dec-Mar Off Peak (MWh)	Total (MWh)
1993	0	0	0	0	0	0	0	0
1994	11,042	12,883	7,563	0	39,641	12,605	0	83,734
1995	11,042	12,883	7,563	0	39,641	0	0	71,130
1996	11,042	12,883	7,563	0	0	0	0	31,488
1997	11,042	12,883	7,563	0	0	0	0	31,488
1998	11,042	12,883	7,563	0	0	0	0	31,488
1999	11,042	12,883	7,563	0	0	0	0	31,488
2000	11,042	12,883	7,563	0	0	0	0	31,488
2001	11,042	12,883	0	0	0	0	0	23,925
2002	11,042	12,883	0	0	0	0	0	23,925
2003	11,042	12,883	0	0	0	0	0	23,925
2004	11,042	12,883	0	0	0	0	0	23,925
2005	11,042	12,883	0	0	0	0	0	23,925
2006	11,042	12,883	0	0	0	0	0	23,925
2007	11,042	12,883	0	0	0	0	0	23,925
2008	11,042	0	0	0	0	0	0	11,042
2009	11,042	0	0	0	0	0	0	11,042

Net Value of Annual Generation, By Generation Period

Year	May-Oct Peak (1992 $)	May-Oct Par. Peak (1992 $)	Apr,Nov Par. Peak (1992 $)	Dec-Mar Par. Peak (1992 $)	May-Oct Off Peak (1992 $)	Apr,Nov Off Peak (1992 $)	Dec-Mar Off Peak (1992 $)	Avoided Demand (1992 $)	Total (1992 $)
1993	$0	$0	$0	$0	$0	$0	$0	$0	$0
1994	$461,934	$191,248	$49,754	$0	$53,969	$688	$0	$427,110	$1,184,702
1995	$453,480	$181,386	$43,964	$0	$23,622	$0	$0	$427,110	$1,129,562
1996	$445,027	$171,524	$38,175	$0	$0	$0	$0	$427,110	$1,081,836
1997	$436,574	$161,662	$32,385	$0	$0	$0	$0	$427,110	$1,057,731
1998	$423,894	$146,869	$23,701	$0	$0	$0	$0	$427,110	$1,021,573
1999	$416,357	$134,564	$15,846	$0	$0	$0	$0	$431,424	$998,190
2000	$408,820	$122,259	$7,990	$0	$0	$0	$0	$435,738	$974,807
2001	$391,913	$102,534	$0	$0	$0	$0	$0	$435,738	$930,186
2002	$380,150	$85,298	$0	$0	$0	$0	$0	$440,052	$905,500
2003	$367,470	$70,505	$0	$0	$0	$0	$0	$440,052	$878,027
2004	$359,933	$58,200	$0	$0	$0	$0	$0	$444,367	$862,499
2005	$343,026	$38,475	$0	$0	$0	$0	$0	$444,367	$825,868
2006	$330,346	$23,682	$0	$0	$0	$0	$0	$444,367	$798,395
2007	$327,036	$16,308	$0	$0	$0	$0	$0	$448,681	$792,025
2008	$310,129	$0	$0	$0	$0	$0	$0	$448,681	$758,810
2009	$298,365	$0	$0	$0	$0	$0	$0	$452,995	$751,361

In all years, net value sufficient to cover all incremental labor costs.

Summary of Annual Generation

Year	Variable Cost of Generation (1992 $)	M-O Pk Value of Generation (1992 $)	M-O PPk Value of Generation (1992 $)	A,N PPk Value of Generation (1992 $)	D-M PPk Value of Generation (1992 $)	M-O OP Value of Generation (1992 $)	A,N OP Value of Generation (1992 $)	D-M OP Value of Generation (1992 $)	Avoided Demand (1992 $)	Total Value of Generation (1992 $)
1993	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
1994	$3,530,978	$927,581	$734,503	$368,669	$0	$1,725,604	$532,214	$0	$427,110	$4,715,680
1995	$3,053,904	$927,581	$734,503	$368,669	$0	$1,725,604	$0	$0	$427,110	$4,183,466
1996	$1,376,027	$927,581	$734,503	$368,669	$0	$0	$0	$0	$427,110	$2,457,862
1997	$1,400,132	$927,581	$734,503	$368,669	$0	$0	$0	$0	$427,110	$2,457,862
1998	$1,436,289	$927,581	$734,503	$368,669	$0	$0	$0	$0	$427,110	$2,457,862
1999	$1,484,499	$936,950	$741,922	$372,393	$0	$0	$0	$0	$431,424	$2,482,689
2000	$1,532,709	$946,320	$749,342	$376,117	$0	$0	$0	$0	$435,738	$2,507,516
2001	$1,201,214	$946,320	$749,342	$0	$0	$0	$0	$0	$435,738	$2,131,399
2002	$1,247,002	$955,689	$756,761	$0	$0	$0	$0	$0	$440,052	$2,152,502
2003	$1,274,476	$955,689	$756,761	$0	$0	$0	$0	$0	$440,052	$2,152,502
2004	$1,311,106	$965,059	$764,180	$0	$0	$0	$0	$0	$444,367	$2,173,605
2005	$1,347,737	$965,059	$764,180	$0	$0	$0	$0	$0	$444,367	$2,173,605
2006	$1,375,211	$965,059	$764,180	$0	$0	$0	$0	$0	$444,367	$2,173,605
2007	$1,402,684	$974,428	$771,599	$0	$0	$0	$0	$0	$448,681	$2,194,708
2008	$664,299	$974,428	$0	$0	$0	$0	$0	$0	$448,681	$1,423,109
2009	$685,432	$983,798	$0	$0	$0	$0	$0	$0	$452,995	$1,436,793

GENERATION COST EFFECTIVENESS: NO MOSR

RELAXED ENVIRONMENTAL CONSTRAINTS SCENARIO

Variable Costs of Generation

Environmental Costs ($/ton)	$165.0000
Bench Stock ($/hour)	$7.6550

Variable Cost of Generation, By Year and By Season

Year	Gas Esc	Elec Esc	Dec-Mar Gas Cost ($/MBtu)	Apr-Nov Gas Cost ($/MBtu)	Dec-Mar Gas Cost ($/kWh)	Apr-Nov Gas Cost ($/kWh)	Emissions Cost ($/kWh)	Bench Stock ($/kWh)	Dec-Mar Generation Cost ($/kWh)	Apr-Nov Generation Cost ($/kWh)
1993	1.02	0.99	$3.8052	$2.8084	$0.0529	$0.0390	$0.0002	$0.0026	$0.0556	$0.0418
1994	1.03	0.99	$3.8425	$2.8359	$0.0534	$0.0394	$0.0002	$0.0026	$0.0562	$0.0422
1995	1.05	0.99	$3.9171	$2.8910	$0.0545	$0.0402	$0.0002	$0.0026	$0.0572	$0.0429
1996	1.07	0.99	$3.9917	$2.9460	$0.0555	$0.0410	$0.0002	$0.0026	$0.0582	$0.0437
1997	1.09	0.99	$4.0664	$3.0011	$0.0565	$0.0417	$0.0002	$0.0026	$0.0593	$0.0445
1998	1.12	0.99	$4.1783	$3.0837	$0.0581	$0.0428	$0.0002	$0.0026	$0.0608	$0.0456
1999	1.16	1.00	$4.3275	$3.1938	$0.0602	$0.0444	$0.0002	$0.0026	$0.0629	$0.0471
2000	1.20	1.01	$4.4767	$3.3040	$0.0622	$0.0459	$0.0002	$0.0026	$0.0650	$0.0487
2001	1.24	1.01	$4.6259	$3.4141	$0.0643	$0.0475	$0.0002	$0.0026	$0.0671	$0.0502
2002	1.29	1.02	$4.8125	$3.5518	$0.0669	$0.0494	$0.0002	$0.0026	$0.0696	$0.0521
2003	1.32	1.02	$4.9244	$3.6344	$0.0685	$0.0505	$0.0002	$0.0026	$0.0712	$0.0533
2004	1.36	1.03	$5.0736	$3.7445	$0.0705	$0.0521	$0.0002	$0.0026	$0.0733	$0.0548
2005	1.40	1.03	$5.2228	$3.8546	$0.0726	$0.0536	$0.0002	$0.0026	$0.0754	$0.0563
2006	1.43	1.03	$5.3348	$3.9372	$0.0742	$0.0547	$0.0002	$0.0026	$0.0769	$0.0575
2007	1.46	1.04	$5.4467	$4.0198	$0.0757	$0.0559	$0.0002	$0.0026	$0.0785	$0.0586
2008	1.50	1.04	$5.5959	$4.1300	$0.0778	$0.0574	$0.0002	$0.0026	$0.0805	$0.0602
2009	1.55	1.05	$5.7824	$4.2676	$0.0804	$0.0593	$0.0002	$0.0026	$0.0831	$0.0621

Value of Generation, By Year, Season, and Period

Year	May-Oct Peak ($/kWh)	May-Oct Par. Peak ($/kWh)	Apr,Nov Par. Peak ($/kWh)	Dec-Mar Par. Peak ($/kWh)	May-Oct Off Peak ($/kWh)	Apr,Nov Off Peak ($/kWh)	Dec-Mar Off Peak ($/kWh)
1993	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1994	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1995	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1996	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1997	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1998	$0.0840	$0.0570	$0.0487	$0.0487	$0.0435	$0.0422	$0.0422
1999	$0.0849	$0.0576	$0.0492	$0.0492	$0.0440	$0.0427	$0.0427
2000	$0.0857	$0.0582	$0.0497	$0.0497	$0.0444	$0.0431	$0.0431
2001	$0.0857	$0.0582	$0.0497	$0.0497	$0.0444	$0.0431	$0.0431
2002	$0.0865	$0.0587	$0.0502	$0.0502	$0.0448	$0.0435	$0.0435
2003	$0.0865	$0.0587	$0.0502	$0.0502	$0.0448	$0.0435	$0.0435
2004	$0.0874	$0.0593	$0.0507	$0.0507	$0.0453	$0.0439	$0.0439
2005	$0.0874	$0.0593	$0.0507	$0.0507	$0.0453	$0.0439	$0.0439
2006	$0.0874	$0.0593	$0.0507	$0.0507	$0.0453	$0.0439	$0.0439
2007	$0.0882	$0.0599	$0.0512	$0.0512	$0.0457	$0.0444	$0.0444
2008	$0.0882	$0.0599	$0.0512	$0.0512	$0.0457	$0.0444	$0.0444
2009	$0.0891	$0.0605	$0.0517	$0.0517	$0.0462	$0.0448	$0.0448

Cost-effective Generation Periods, Based on Variable Costs
0 = Not Cost-effective, 1 = Cost-effective

Year	May-Oct Peak (0/1)	May-Oct Par. Peak (0/1)	Apr,Nov Par. Peak (0/1)	Dec-Mar Par. Peak (0/1)	May-Oct Off Peak (0/1)	Apr,Nov Off Peak (0/1)	Dec-Mar Off Peak (0/1)
1993	0	0	0	0	0	0	0
1994	1	1	1	0	1	1	0
1995	1	1	1	0	1	0	0
1996	1	1	1	0	0	0	0
1997	1	1	1	0	0	0	0
1998	1	1	1	0	0	0	0
1999	1	1	1	0	0	0	0
2000	1	1	1	0	0	0	0
2001	1	1	0	0	0	0	0
2002	1	1	0	0	0	0	0
2003	1	1	0	0	0	0	0
2004	1	1	0	0	0	0	0
2005	1	1	0	0	0	0	0
2006	1	1	0	0	0	0	0
2007	1	1	0	0	0	0	0
2008	1	0	0	0	0	0	0
2009	1	0	0	0	0	0	0

Generation Cost Differential, Based on Variable Costs

Year	May-Oct Peak ($/kWh)	May-Oct Par. Peak ($/kWh)	Apr,Nov Par. Peak ($/kWh)	Dec-Mar Par. Peak ($/kWh)	May-Oct Off Peak ($/kWh)	Apr,Nov Off Peak ($/kWh)	Dec-Mar Off Peak ($/kWh)
1993	$0.0422	$0.0152	$0.0070	-$0.0069	$0.0017	$0.0004	-$0.0134
1994	$0.0418	$0.0148	$0.0066	-$0.0074	$0.0014	$0.0001	-$0.0139
1995	$0.0411	$0.0141	$0.0058	-$0.0085	$0.0006	-$0.0007	-$0.0150
1996	$0.0403	$0.0133	$0.0050	-$0.0095	-$0.0002	-$0.0015	-$0.0160
1997	$0.0395	$0.0125	$0.0043	-$0.0105	-$0.0009	-$0.0022	-$0.0171
1998	$0.0384	$0.0114	$0.0031	-$0.0121	-$0.0021	-$0.0034	-$0.0186
1999	$0.0377	$0.0104	$0.0021	-$0.0137	-$0.0032	-$0.0045	-$0.0203
2000	$0.0370	$0.0095	$0.0011	-$0.0152	-$0.0043	-$0.0056	-$0.0219
2001	$0.0355	$0.0080	-$0.0005	-$0.0173	-$0.0058	-$0.0071	-$0.0240
2002	$0.0344	$0.0066	-$0.0019	-$0.0194	-$0.0073	-$0.0086	-$0.0261
2003	$0.0333	$0.0055	-$0.0030	-$0.0210	-$0.0084	-$0.0098	-$0.0277
2004	$0.0326	$0.0045	-$0.0041	-$0.0226	-$0.0095	-$0.0109	-$0.0293
2005	$0.0311	$0.0030	-$0.0056	-$0.0246	-$0.0110	-$0.0124	-$0.0314
2006	$0.0299	$0.0018	-$0.0068	-$0.0262	-$0.0122	-$0.0135	-$0.0330
2007	$0.0298	$0.0013	-$0.0074	-$0.0273	-$0.0129	-$0.0143	-$0.0341
2008	$0.0281	-$0.0003	-$0.0039	-$0.0293	-$0.0144	-$0.0158	-$0.0362
2009	$0.0270	-$0.0016	-$0.0104	-$0.0314	-$0.0159	-$0.0173	-$0.0383

Prioritization of Generation Periods, Based on Variable Costs

Year	May-Oct Peak	May-Oct Par. Peak	Apr,Nov Par. Peak	Dec-Mar Par. Peak	May-Oct Off Peak	Apr,Nov Off Peak	Dec-Mar Off Peak
1993	1	2	3	6	4	5	7
1994	1	2	3	6	4	5	7
1995	1	2	3	6	4	5	7
1996	1	2	3	6	4	5	7
1997	1	2	3	6	4	5	7
1998	1	2	3	6	4	5	7
1999	1	2	3	6	4	5	7
2000	1	2	3	6	4	5	7
2001	1	2	3	6	4	5	7
2002	1	2	3	6	4	5	7
2003	1	2	3	6	4	5	7
2004	1	2	3	6	4	5	7
2005	1	2	3	6	4	5	7
2006	1	2	3	6	4	5	7
2007	1	2	3	6	4	5	7
2008	1	2	3	6	4	5	7
2009	1	2	3	6	4	5	7

Total Hours in Each Generation Period, By Month

	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
Peak	0	0	0	0	129	125	129	129	125	129	0	0	764
Par. Peak	279	252	279	270	150	145	150	150	145	150	270	279	2,521
Off Peak	465	420	465	450	465	450	465	465	450	465	450	465	5,475
Total	744	672	744	720	744	720	744	744	720	744	720	744	8,760

Turbine Hours x Energy Utilization in Each Generation Period, By Month

	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
Peak	0	0	0	0	644	623	644	644	623	644	0	0	3,822
Par. Peak	1,395	1,260	1,395	1,350	751	727	751	751	727	751	1,350	1,395	12,603
Off Peak	2,325	2,100	2,325	2,250	2,325	2,250	2,325	2,325	2,250	2,325	2,250	2,325	27,375
Total	3,720	3,360	3,720	3,600	3,720	3,600	3,720	3,720	3,600	3,720	3,600	3,720	43,800

Permitted Hours, By Quarter

Qtr1	10,950
Qtr2	10,950
Qtr3	10,950

Mission Support Gas Turbine Hours, in Each Generation Period, By Month

	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
Peak	0	0	0	0	0	0	0	0	0	0	0	0	0
Par. Peak	0	0	0	0	0	0	0	0	0	0	0	0	0
Off Peak	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Quar. Totals			0			0			0			0	

Utilized Turbine Hours Remaining After MOSR

	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
Peak	0	0	0	0	644	623	644	644	623	644	0	0	3,822
Par. Peak	1,395	1,260	1,395	1,350	751	727	751	751	727	751	1,350	1,395	12,603
Off Peak	2,325	2,100	2,325	2,250	2,325	2,250	2,325	2,325	2,250	2,325	2,250	2,325	27,375
Total	3,720	3,360	3,720	3,600	3,720	3,600	3,720	3,720	3,600	3,720	3,600	3,720	43,800

Permitted Hours Remaining After MOSR, By Quarter

Qtr1	10,950
Qtr2	10,950
Qtr3	10,950
Qtr4	10,950
Annual	43,800

Peak Generation Turbine Hours, By Month and Year, w/o Permitted Restrictions

Priority	0	0	0	0	1	1	1	1	1	1	0	0	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	644	623	644	644	623	644	0	0	3,822
1995	0	0	0	0	644	623	644	644	623	644	0	0	3,822
1996	0	0	0	0	644	623	644	644	623	644	0	0	3,822
1997	0	0	0	0	644	623	644	644	623	644	0	0	3,822
1998	0	0	0	0	644	623	644	644	623	644	0	0	3,822
1999	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2000	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2001	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2002	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2003	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2004	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2005	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2006	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2007	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2008	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2009	0	0	0	0	644	623	644	644	623	644	0	0	3,822

Peak Generation Turbine Hours, By Month and Year, with Permitted Restrictions

Priority	0	0	0	0	1	1	1	1	1	1	0	0	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	644	623	644	644	623	644	0	0	3,822
1995	0	0	0	0	644	623	644	644	623	644	0	0	3,822
1996	0	0	0	0	644	623	644	644	623	644	0	0	3,822
1997	0	0	0	0	644	623	644	644	623	644	0	0	3,822
1998	0	0	0	0	644	623	644	644	623	644	0	0	3,822
1999	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2000	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2001	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2002	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2003	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2004	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2005	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2006	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2007	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2008	0	0	0	0	644	623	644	644	623	644	0	0	3,822
2009	0	0	0	0	644	623	644	644	623	644	0	0	3,822

Permitted Hours Remaining After MOSR and Peak, By Quarter and Year

Year	Qtr1	Qtr2	Qtr3	Qtr4	Annual
1993	10,950	10,950	10,950	10,950	43,800
1994	10,950	9,683	9,039	10,306	39,978
1995	10,950	9,683	9,039	10,306	39,978
1996	10,950	9,683	9,039	10,306	39,978
1997	10,950	9,683	9,039	10,306	39,978
1998	10,950	9,683	9,039	10,306	39,978
1999	10,950	9,683	9,039	10,306	39,978
2000	10,950	9,683	9,039	10,306	39,978
2001	10,950	9,683	9,039	10,306	39,978
2002	10,950	9,683	9,039	10,306	39,978
2003	10,950	9,683	9,039	10,306	39,978
2004	10,950	9,683	9,039	10,306	39,978
2005	10,950	9,683	9,039	10,306	39,978
2006	10,950	9,683	9,039	10,306	39,978
2007	10,950	9,683	9,039	10,306	39,978
2008	10,950	9,683	9,039	10,306	39,978
2009	10,950	9,683	9,039	10,306	39,978

Partial Peak Generation Turbine Hours, By Month and Year, w/o Permitted Restrictions

Priority	6	6	6	3	2	2	2	2	2	2	3	6	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
1995	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
1996	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
1997	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
1998	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
1999	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
2000	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
2001	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2002	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2003	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2004	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2005	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2006	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2007	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2008	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0

Partial Peak Generation Turbine Hours, By Month and Year, with Permitted Restrictions

Priority	6	6	6	3	2	2	2	2	2	2	3	6	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
1995	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
1996	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
1997	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
1998	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
1999	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
2000	0	0	0	1,350	751	727	751	751	727	751	1,350	0	7,158
2001	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2002	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2003	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2004	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2005	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2006	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2007	0	0	0	0	751	727	751	751	727	751	0	0	4,458
2008	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0

Permitted Hours Remaining After MOSR, Peak, and Partial Peak, By Quarter and Year

Year	Qtr1	Qtr2	Qtr3	Qtr4	Annual
1993	10,950	10,950	10,950	10,950	43,800
1994	10,950	6,855	6,810	8,205	32,820
1995	10,950	6,855	6,810	8,205	32,820
1996	10,950	6,855	6,810	8,205	32,820
1997	10,950	6,855	6,810	8,205	32,820
1998	10,950	6,855	6,810	8,205	32,820
1999	10,950	6,855	6,810	8,205	32,820
2000	10,950	6,855	6,810	8,205	32,820
2001	10,950	8,205	6,810	9,555	35,520
2002	10,950	8,205	6,810	9,555	35,520
2003	10,950	8,205	6,810	9,555	35,520
2004	10,950	8,205	6,810	9,555	35,520
2005	10,950	8,205	6,810	9,555	35,520
2006	10,950	8,205	6,810	9,555	35,520
2007	10,950	8,205	6,810	9,555	35,520
2008	10,950	9,683	9,039	10,306	39,978
2009	10,950	9,683	9,039	10,306	39,978

Off Peak Generation Turbine Hours, By Month and Year, w/o Permitted Restrictions

Priority	7	7	7	5	4	4	4	4	4	4	5	7	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	2,250	2,325	2,250	2,325	2,325	2,250	2,325	2,250	0	18,300
1995	0	0	0	0	2,325	2,250	2,325	2,325	2,250	2,325	0	0	13,800
1996	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0

Off Peak Generation Turbine Hours, By Month and Year, with Permitted Restrictions

Priority	7	7	7	5	4	4	4	4	4	4	5	7	
Year	Jan (Hours)	Feb (Hours)	Mar (Hours)	Apr (Hours)	May (Hours)	Jun (Hours)	Jul (Hours)	Aug (Hours)	Sep (Hours)	Oct (Hours)	Nov (Hours)	Dec (Hours)	Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	2,250	2,325	2,250	2,325	2,325	2,160	2,325	2,250	0	18,210
1995	0	0	0	0	2,325	2,250	2,325	2,325	2,160	2,325	0	0	13,710
1996	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0

Generating Quarterly Summary

Year	Peak Jan-Mar Quarterly Total (Hours)	Peak Apr-Jun Quarterly Total (Hours)	Peak Jul-Sep Quarterly Total (Hours)	Peak Oct-Dec Quarterly Total (Hours)	Par Peak Jan-Mar Quarterly Total (Hours)	Par Peak Apr-Jun Quarterly Total (Hours)	Par Peak Jul-Sep Quarterly Total (Hours)	Par Peak Oct-Dec Quarterly Total (Hours)	Off Peak Jan-Mar Quarterly Total (Hours)	Off Peak Apr-Jun Quarterly Total (Hours)	Off Peak Jul-Sep Quarterly Total (Hours)	Off Peak Oct-Dec Quarterly Total (Hours)	Total Jan-Mar Quarterly Total (Hours)	Total Apr-Jun Quarterly Total (Hours)	Total Jul-Sep Quarterly Total (Hours)	Total Oct-Dec Quarterly Total (Hours)	Annual Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	1,267	1,911	644	0	2,828	2,229	2,101	0	6,825	6,810	4,575	0	10,920	10,950	7,320	29,190
1995	0	1,267	1,911	644	0	2,828	2,229	2,101	0	4,575	6,810	2,325	0	8,670	10,950	5,070	24,690
1996	0	1,267	1,911	644	0	2,828	2,229	2,101	0	0	0	0	0	4,095	4,140	2,745	10,980
1997	0	1,267	1,911	644	0	2,828	2,229	2,101	0	0	0	0	0	4,095	4,140	2,745	10,980
1998	0	1,267	1,911	644	0	2,828	2,229	2,101	0	0	0	0	0	4,095	4,140	2,745	10,980
1999	0	1,267	1,911	644	0	2,828	2,229	2,101	0	0	0	0	0	4,095	4,140	2,745	10,980
2000	0	1,267	1,911	644	0	2,828	2,229	2,101	0	0	0	0	0	4,095	4,140	2,745	10,980
2001	0	1,267	1,911	644	0	1,478	2,229	751	0	0	0	0	0	2,745	4,140	1,395	8,280
2002	0	1,267	1,911	644	0	1,478	2,229	751	0	0	0	0	0	2,745	4,140	1,395	8,280
2003	0	1,267	1,911	644	0	1,478	2,229	751	0	0	0	0	0	2,745	4,140	1,395	8,280
2004	0	1,267	1,911	644	0	1,478	2,229	751	0	0	0	0	0	2,745	4,140	1,395	8,280
2005	0	1,267	1,911	644	0	1,478	2,229	751	0	0	0	0	0	2,745	4,140	1,395	8,280
2006	0	1,267	1,911	644	0	1,478	2,229	751	0	0	0	0	0	2,745	4,140	1,395	8,280
2007	0	1,267	1,911	644	0	0	0	0	0	0	0	0	0	1,267	1,911	644	3,822
2008	0	1,267	1,911	644	0	0	0	0	0	0	0	0	0	1,267	1,911	644	3,822
2009	0	1,267	1,911	644	0	0	0	0	0	0	0	0	0	1,267	1,911	644	3,822

Generating and Mission Support Quarterly Summary

Year	Peak Jan-Mar Quarterly Total (Hours)	Peak Apr-Jun Quarterly Total (Hours)	Peak Jul-Sep Quarterly Total (Hours)	Peak Oct-Dec Quarterly Total (Hours)	Par Peak Jan-Mar Quarterly Total (Hours)	Par Peak Apr-Jun Quarterly Total (Hours)	Par Peak Jul-Sep Quarterly Total (Hours)	Par Peak Oct-Dec Quarterly Total (Hours)	Off Peak Jan-Mar Quarterly Total (Hours)	Off Peak Apr-Jun Quarterly Total (Hours)	Off Peak Jul-Sep Quarterly Total (Hours)	Off Peak Oct-Dec Quarterly Total (Hours)	Total Jan-Mar Quarterly Total (Hours)	Total Apr-Jun Quarterly Total (Hours)	Total Jul-Sep Quarterly Total (Hours)	Total Oct-Dec Quarterly Total (Hours)	Annual Total (Hours)
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	1,267	1,911	644	0	2,828	2,229	2,101	0	6,825	6,810	4,575	0	10,920	10,950	7,320	29,190
1995	0	1,267	1,911	644	0	2,828	2,229	2,101	0	4,575	6,810	2,325	0	8,670	10,950	5,070	24,690
1996	0	1,267	1,911	644	0	2,828	2,229	2,101	0	0	0	0	0	4,095	4,140	2,745	10,980
1997	0	1,267	1,911	644	0	2,828	2,229	2,101	0	0	0	0	0	4,095	4,140	2,745	10,980
1998	0	1,267	1,911	644	0	2,828	2,229	2,101	0	0	0	0	0	4,095	4,140	2,745	10,980
1999	0	1,267	1,911	644	0	2,828	2,229	2,101	0	0	0	0	0	4,095	4,140	2,745	10,980
2000	0	1,267	1,911	644	0	2,828	2,229	2,101	0	0	0	0	0	4,095	4,140	2,745	10,980
2001	0	1,267	1,911	644	0	1,478	2,229	751	0	0	0	0	0	2,745	4,140	1,395	8,280
2002	0	1,267	1,911	644	0	1,478	2,229	751	0	0	0	0	0	2,745	4,140	1,395	8,280
2003	0	1,267	1,911	644	0	1,478	2,229	751	0	0	0	0	0	2,745	4,140	1,395	8,280
2004	0	1,267	1,911	644	0	1,478	2,229	751	0	0	0	0	0	2,745	4,140	1,395	8,280
2005	0	1,267	1,911	644	0	1,478	2,229	751	0	0	0	0	0	2,745	4,140	1,395	8,280
2006	0	1,267	1,911	644	0	1,478	2,229	751	0	0	0	0	0	2,745	4,140	1,395	8,280
2007	0	1,267	1,911	644	0	1,478	2,229	751	0	0	0	0	0	2,745	4,140	1,395	8,280
2008	0	1,267	1,911	644	0	0	0	0	0	0	0	0	0	1,267	1,911	644	3,822
2009	0	1,267	1,911	644	0	0	0	0	0	0	0	0	0	1,267	1,911	644	3,822

Annual Generation, By Generation Period

Year	May-Oct Peak (MWh)	May-Oct Par. Peak (MWh)	Apr,Nov Par. Peak (MWh)	Dec-Mar Par. Peak (MWh)	May-Oct Off Peak (MWh)	Apr,Nov Off Peak (MWh)	Dec-Mar Off Peak (MWh)	Total (MWh)
1993	0	0	0	0	0	0	0	0
1994	11,465	13,375	8,100	0	41,130	13,500	0	87,570
1995	11,465	13,375	8,100	0	41,130	0	0	74,070
1996	11,465	13,375	8,100	0	0	0	0	32,940
1997	11,465	13,375	8,100	0	0	0	0	32,940
1998	11,465	13,375	8,100	0	0	0	0	32,940
1999	11,465	13,375	8,100	0	0	0	0	32,940
2000	11,465	13,375	8,100	0	0	0	0	32,940
2001	11,465	13,375	0	0	0	0	0	24,840
2002	11,465	13,375	0	0	0	0	0	24,840
2003	11,465	13,375	0	0	0	0	0	24,840
2004	11,465	13,375	0	0	0	0	0	24,840
2005	11,465	13,375	0	0	0	0	0	24,840
2006	11,465	13,375	0	0	0	0	0	24,840
2007	11,465	13,375	0	0	0	0	0	24,840
2008	11,465	0	0	0	0	0	0	11,465
2009	11,465	0	0	0	0	0	0	11,465

Net Value of Annual Generation, By Generation Period

Year	May-Oct Peak (1992 $)	May-Oct Par. Peak (1992 $)	Apr,Nov Par. Peak (1992 $)	Dec-Mar Par. Peak (1992 $)	May-Oct Off Peak (1992 $)	Apr,Nov Off Peak (1992 $)	Dec-Mar Off Peak (1992 $)	Avoided Demand (1992 $)	Total (1992 $)
1993	$0	$0	$0	$0	$0	$0	$0	$0	$0
1994	$479,595	$198,560	$53,288	$0	$55,995	$737	$0	$427,110	$1,215,285
1995	$470,818	$188,321	$47,087	$0	$24,509	$0	$0	$427,110	$1,157,845
1996	$462,042	$178,082	$40,886	$0	$0	$0	$0	$427,110	$1,108,120
1997	$453,265	$167,843	$34,685	$0	$0	$0	$0	$427,110	$1,082,903
1998	$440,101	$152,484	$25,384	$0	$0	$0	$0	$427,110	$1,045,079
1999	$432,275	$139,708	$16,971	$0	$0	$0	$0	$431,424	$1,020,379
2000	$424,450	$126,933	$8,558	$0	$0	$0	$0	$435,738	$995,679
2001	$406,897	$106,454	$0	$0	$0	$0	$0	$435,738	$949,090
2002	$394,684	$88,559	$0	$0	$0	$0	$0	$440,052	$923,296
2003	$381,519	$73,200	$0	$0	$0	$0	$0	$440,052	$894,772
2004	$373,694	$60,425	$0	$0	$0	$0	$0	$444,367	$878,485
2005	$356,141	$39,946	$0	$0	$0	$0	$0	$444,367	$840,454
2006	$342,976	$24,588	$0	$0	$0	$0	$0	$444,367	$811,930
2007	$339,539	$16,932	$0	$0	$0	$0	$0	$448,681	$805,152
2008	$321,986	$0	$0	$0	$0	$0	$0	$448,681	$770,667
2009	$309,773	$0	$0	$0	$0	$0	$0	$452,995	$762,768

In all years, net value sufficient to cover all incremental labor costs.

Summary of Annual Generation

Year	Variable Cost of Generation (1992 $)	M-O Pk Value of Generation (1992 $)	M-O PPk Value of Generation (1992 $)	A,N PPk Value of Generation (1992 $)	D-M PPk Value of Generation (1992 $)	M-O OP Value of Generation (1992 $)	A,N OP Value of Generation (1992 $)	D-M OP Value of Generation (1992 $)	Avoided Demand (1992 $)	Total Value of Generation (1992 $)
1993	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
1994	$3,692,729	$963,045	$762,586	$394,856	$0	$1,790,401	$570,017	$0	$427,110	$4,908,014
1995	$3,180,152	$963,045	$762,586	$394,856	$0	$1,790,401	$0	$0	$427,110	$4,337,997
1996	$1,439,476	$963,045	$762,586	$394,856	$0	$0	$0	$0	$427,110	$2,547,596
1997	$1,464,692	$963,045	$762,586	$394,856	$0	$0	$0	$0	$427,110	$2,547,596
1998	$1,502,517	$963,045	$762,586	$394,856	$0	$0	$0	$0	$427,110	$2,547,596
1999	$1,552,950	$972,773	$770,288	$398,844	$0	$0	$0	$0	$431,424	$2,573,329
2000	$1,603,383	$982,500	$777,991	$402,832	$0	$0	$0	$0	$435,738	$2,599,062
2001	$1,247,140	$982,500	$777,991	$0	$0	$0	$0	$0	$435,738	$2,196,230
2002	$1,294,679	$992,228	$785,694	$0	$0	$0	$0	$0	$440,052	$2,217,975
2003	$1,323,203	$992,228	$785,694	$0	$0	$0	$0	$0	$440,052	$2,217,975
2004	$1,361,234	$1,001,956	$793,397	$0	$0	$0	$0	$0	$444,367	$2,239,720
2005	$1,399,266	$1,001,956	$793,397	$0	$0	$0	$0	$0	$444,367	$2,239,720
2006	$1,427,789	$1,001,956	$793,397	$0	$0	$0	$0	$0	$444,367	$2,239,720
2007	$1,456,313	$1,011,684	$801,100	$0	$0	$0	$0	$0	$448,681	$2,261,464
2008	$689,697	$1,011,684	$0	$0	$0	$0	$0	$0	$448,681	$1,460,364
2009	$711,638	$1,021,411	$0	$0	$0	$0	$0	$0	$452,995	$1,474,406

DISTRIBUTION

No. of Copies

OFFSITE

12 DOE/Office of Scientific and Technical Information

20 R. Zawadzki
30th CES/CEOEO
1172 Iceland
Vandenberg Air Force Base
CA 93437

2 K. Padilla
30th CES/CEOEO
1172 Iceland
Vandenberg Air Force Base
CA 93437

M. Ginsberg
Federal Energy Management Program
U.S. Department of Energy
CE-44
1000 Independence Avenue, S.W.
Washington, DC 20585

L Harris
Federal Energy Management Program
U.S. Department of Energy
CE-44
1000 Independence Avenue, S.W.
Washington, DC 20585

J. R. Brodrick
U.S. Department of Energy
54-048, CE-422
1000 Independence Avenue, S.W.
Washington, DC 20585

A. Miller
Headquarters AFSPACECOM/DEEM
Peterson AFB CO 80914

No. of Copies

Keller and Gannon
1453 Mission Street
P.O. Box 422430
San Francisco, CA 94142-2430

M. B. Hammarstedt
1453 Mission Street
P.O. Box 422430
San Francisco, CA 94142-2430

N. Kayser
1453 Mission Street
P.O. Box 422430
San Francisco, CA 94142-2430

M. J. Silvia
Environmental Management Consultants, Inc.
Lompoc, CA 93438

K. Wright
Environmental Manag[illegible] Consultants, Inc.
Lompoc, CA 93438

ONSITE

DOE Richland Field Office

D. R. Segna

25 Pacific Northwest Laboratory

J. W. Currie (K7-82)
K. K. Daellenbach (K6-61) (5)
J. E. Dagle (K5-20)
J. A. Dirks (K6-61)
C. M. Griswold (K6-61)
M. A. Halverson (K5-08)
B. J. Hickman (K5-25)
L. L. Larson (K6-61)

No. of Copies	
	G. B. Parker (K7-82)
	R. W. Reilly (K7-82)
	E. E. Richman (K5-08)
	W. F. Sandusky (K5-06)
	S. A. Shankle (K6-57)
	D. S. Stucky (K5-57)
	G. P. Sullivan (K6-61)
	Publishing Coordination
	Technical Report Files (5)

END

DATE FILMED

5/6/93