



## Shade Structures (City Transit)-CS3U-375-MB-AG (Bifacial)

Prepared For  
City of Albuquerque (Daytona  
Transit)  
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# 1 Project Summary

Payment Options	NCREB
Monthly Payment	\$5,719
Upfront Payment	-
Loan Term	19 Years
Total Payments	\$1,303,933
Rebates and Incentives	\$16,972
Net Payments	\$1,286,962
30-Year Electric Bill Savings	\$2,745,062
30-Year IRR	0%
30-Year LCOE PV	\$0.056
30-Year NPV	\$487,013

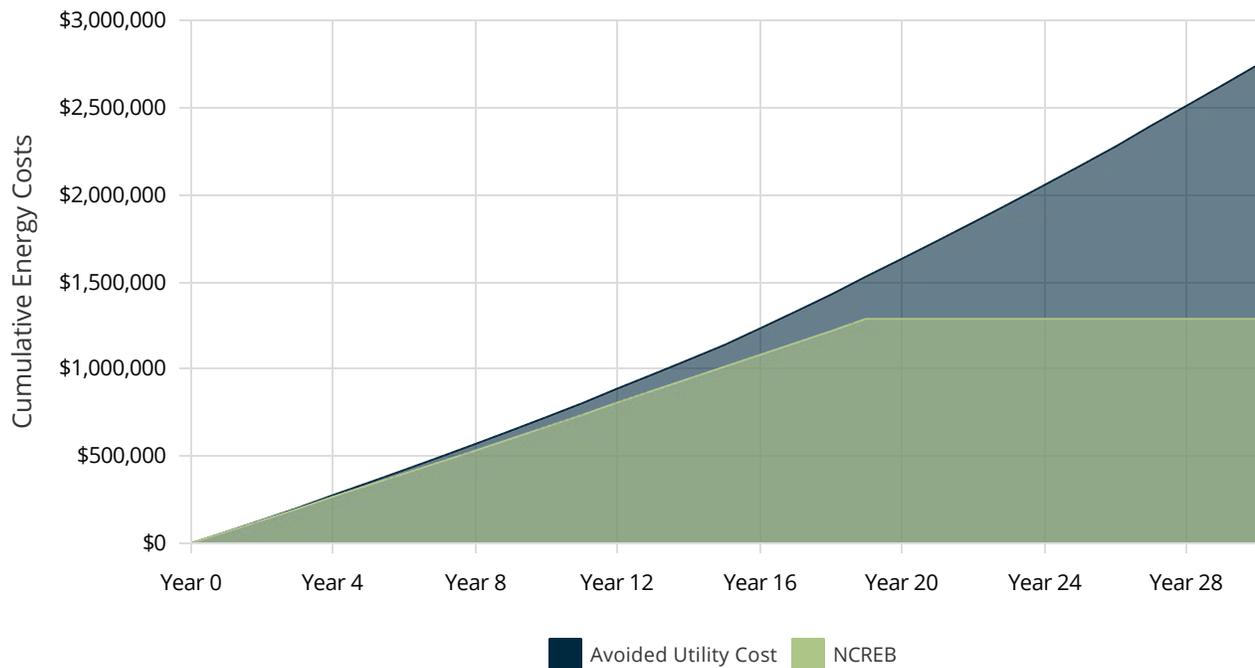
### Combined Solar PV Rating

Power Rating: 465,000 W-DC  
 Power Rating: 405,043 W-AC-CEC

### Combined ESS Ratings

Energy Capacity: 222.0 kWh  
 Power Rating: 111.0 kW

**Cumulative Energy Costs By Payment Option**



## 2.1.1 PV System Details

### General Information

Facility: Facility #1  
 Address: 8001 Daytona Rd NW Albuquerque NM 87121

### Solar PV System Rating

Power Rating: 465,000 W-DC  
 Power Rating: 405,043 W-AC-CEC

### Solar PV Equipment Description

Solar Panels: (1240) Canadian Solar Inc. CS3U-375MB-FG  
 Inverters: (3) SolarEdge SE100KUS, (1) SolarEdge SE66.6KUS

### Energy Consumption Mix

Annual Energy Use: 2,678,469 kWh

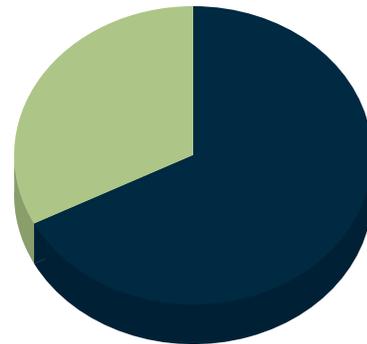
### Solar PV Equipment Typical Lifespan

Solar Panels: Greater than 30 Years  
 Inverters: 15 Years

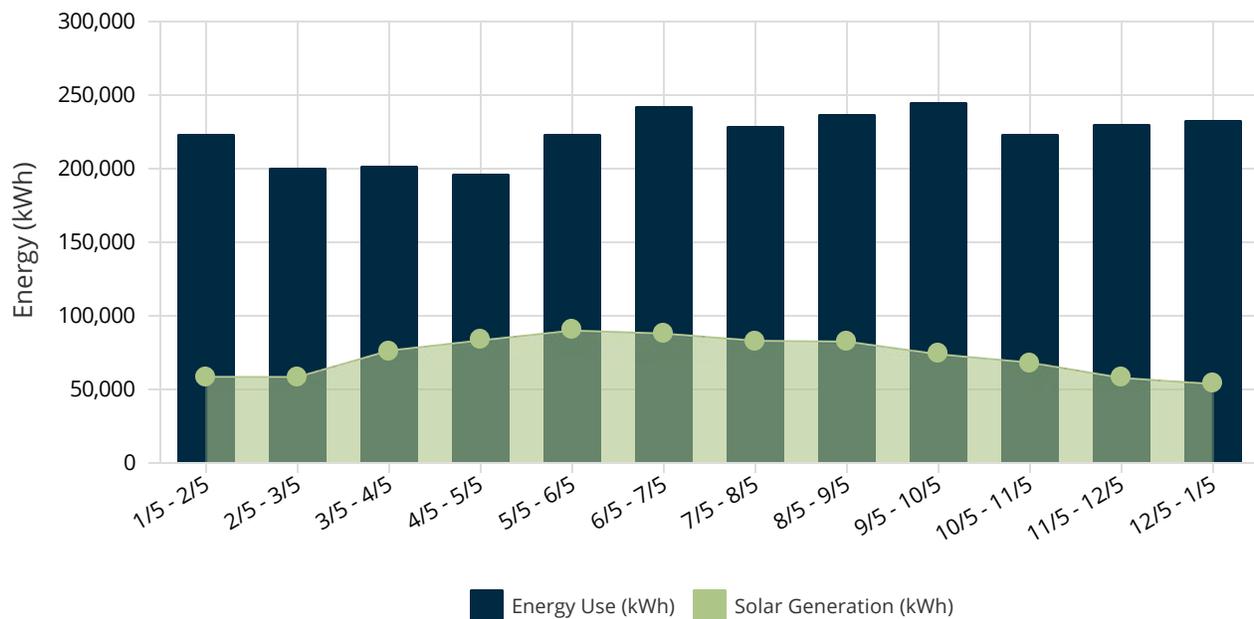
### Solar PV System Cost And Incentives

Solar PV System Cost	\$936,098
REC \$.0025 - PNM	<b>-\$16,972</b>

**Net Solar PV System Cost: \$919,126**



Monthly Energy Use vs Solar Generation



## 2.1.2 Energy Storage System (ESS) Details

### General Information

Facility: Facility #1  
 Address: Albuquerque NM 87121

### ESS System Ratings

Energy Capacity: 222.0 kWh  
 Power Rating: 111.0 kW

### ESS Equipment Description

Battery 111kw/222kWh Energy Storage  
 Banks: System  
 Inverters: 111kw/222kWh Energy Storage System

### ESS Equipment Typical Lifespan

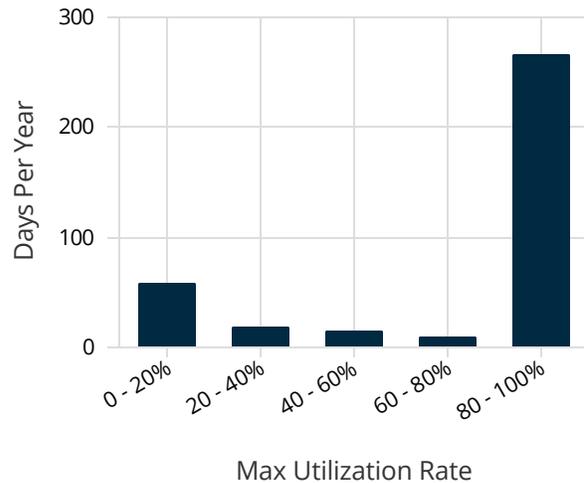
Battery Banks: 15 Years  
 Inverters: 15 Years

### ESS Cost And Incentives

ESS System Cost \$221,900

**Net ESS System Cost: \$221,900**

Energy Storage Annual Utilization



Energy Output and Demand Savings From Solar PV and Energy Storage				
Date Range	ESS Energy Discharge	Solar PV Generation	ESS Energy as % of PV Energy	Total Demand Savings
1/5/2019 - 2/5/2019	1,942	58,479	3.32%	\$1,276
2/5/2019 - 3/5/2019	1,965	58,388	3.37%	\$1,414
3/5/2018 - 4/5/2018	1,690	76,301	2.21%	\$1,669
4/5/2018 - 5/5/2018	1,343	83,273	1.61%	\$1,650
5/5/2018 - 6/5/2018	1,724	89,948	1.92%	\$1,933
6/5/2018 - 7/5/2018	1,729	87,899	1.97%	\$2,498
7/5/2018 - 8/5/2018	1,947	82,996	2.35%	\$3,051
8/5/2018 - 9/5/2018	1,260	82,407	1.53%	\$2,152
9/5/2018 - 10/5/2018	1,970	73,830	2.67%	\$1,650
10/5/2018 - 11/5/2018	2,236	68,156	3.28%	\$1,669
11/5/2018 - 12/5/2018	1,560	57,745	2.70%	\$1,296
12/5/2018 - 1/5/2019	1,931	53,602	3.60%	\$1,178
-	21,297	873,024	2.44%	\$21,437

## 2.1.3 Rebates and Incentives

This section summarizes all incentives available for this project. The actual rebate and incentive amounts for this project are shown in each example.

### **Renewable Energy Credits (REC) - PNM**

Assumptions: \$2.5/REC, 8-year term, 0% de-escalation rate. A REC represents the property rights to the environmental, social, and other nonpower qualities of renewable electricity generation. A REC, and its associated attributes and benefits, can be sold separately from the underlying physical electricity associated with a renewable-based generation source. As renewable generators produce electricity, they create one REC for every 1,000 kilowatt-hours (or 1 megawatt-hour) of electricity placed on the grid.

Total Incentive Value: \$16,972

## 2.1.4 Utility Rates

The table below shows the rates associate with your current utility rate schedule (3D (Command Center)). Your estimated electric bills after solar are shown on the following page.

Fixed Charges		Energy Charges		Demand Charges	
Type	3D (Command Center)	Type	3D (Command Center)	Type	3D (Command Center)
W Monthly	\$84.24	W On Peak	\$0.05466	W On Peak	\$19.64
S Monthly	\$84.24	W Off Peak	\$0.04235	S On Peak	\$26.30
		S On Peak	\$0.06048		
		S Off Peak	\$0.04235		

## 2.1.5 Current Electric Bill

The table below shows your annual electricity costs based on the most current utility rates and your previous 12 months of electrical usage.

### Rate Schedule: PNM - 3D (Command Center)

Time Periods	Energy Use (kWh)		Max Demand (kW)	Charges			
	On Peak	Off Peak	On Peak	Other	Energy	Demand	Total
1/5/2019 - 2/5/2019 W	76,943	145,593	358	\$84	\$10,371	\$7,030	\$17,486
2/5/2019 - 3/5/2019 W	73,067	126,470	354	\$84	\$9,350	\$6,952	\$16,386
3/5/2018 - 4/5/2018 W	74,486	126,906	343	\$84	\$9,446	\$6,736	\$16,266
4/5/2018 - 5/5/2018 W	72,548	123,002	356	\$84	\$9,174	\$6,991	\$16,250
5/5/2018 - 6/5/2018 W/S	77,634	144,713	377	\$84	\$10,419	\$7,693	\$18,196
6/5/2018 - 7/5/2018 S	90,786	151,668	409	\$84	\$11,913	\$10,756	\$22,753
7/5/2018 - 8/5/2018 S	85,880	143,081	368	\$84	\$11,253	\$9,677	\$21,015
8/5/2018 - 9/5/2018 S/W	87,099	149,407	419	\$84	\$11,549	\$10,534	\$22,168
9/5/2018 - 10/5/2018 W	91,796	152,833	396	\$84	\$11,490	\$7,777	\$19,350
10/5/2018 - 11/5/2018 W	78,233	144,158	366	\$84	\$10,381	\$7,187	\$17,653
11/5/2018 - 12/5/2018 W	86,524	143,096	412	\$84	\$10,789	\$8,091	\$18,964
12/5/2018 - 1/5/2019 W	87,163	145,385	371	\$84	\$10,921	\$7,286	\$18,291
Totals:	982,159	1,696,312	-	\$1,011	\$127,055	\$96,711	\$224,777

## 2.1.6 New Electric Bill

### Rate Schedule: PNM - 3D (Command Center)

Time Periods Bill Ranges & Seasons	Energy Use (kWh)		Max Demand (kW)	Charges			
	On Peak	Off Peak	On Peak	Other	Energy	Demand	Total
1/5/2019 - 2/5/2019 W	37,340	127,131	293	\$84	\$7,425	\$5,754	\$13,263
2/5/2019 - 3/5/2019 W	32,840	108,745	282	\$84	\$6,400	\$5,538	\$12,022
3/5/2018 - 4/5/2018 W	18,610	106,754	258	\$84	\$5,538	\$5,067	\$10,689
4/5/2018 - 5/5/2018 W	12,169	100,400	272	\$84	\$4,917	\$5,342	\$10,343
5/5/2018 - 6/5/2018 W/S	15,951	116,781	283	\$84	\$5,837	\$5,760	\$11,681
6/5/2018 - 7/5/2018 S	25,846	129,173	314	\$84	\$7,033	\$8,257	\$15,375
7/5/2018 - 8/5/2018 S	25,984	120,491	252	\$84	\$6,674	\$6,627	\$13,385
8/5/2018 - 9/5/2018 S/W	29,452	124,779	334	\$84	\$7,050	\$8,382	\$15,517
9/5/2018 - 10/5/2018 W	37,242	134,085	312	\$84	\$7,714	\$6,127	\$13,925
10/5/2018 - 11/5/2018 W	30,771	123,993	281	\$84	\$6,933	\$5,518	\$12,535
11/5/2018 - 12/5/2018 W	44,091	128,061	346	\$84	\$7,833	\$6,795	\$14,712
12/5/2018 - 1/5/2019 W	46,021	133,267	311	\$84	\$8,159	\$6,107	\$14,351
Totals:	356,317	1,453,660	-	\$1,011	\$81,513	\$75,274	\$157,799

**Annual Electricity Savings: \$66,978**

# 3.1 NCREB

## Inputs and Key Financial Metrics

Interest Rate	1.27%	Upfront Payment	\$0	Electricity Escalation Rate	3%
Monthly Payment	\$5,719	Loan Term	19	Federal Income Tax Rate	0%
Total Project Cost	\$1,157,998	PV Degradation Rate	0.8%	State Income Tax Rate	0%

Years	Financing Payments Including O&M	REC \$,0025 - PNM	Electric Bill Savings	Change in State Tax Liability	Change in Federal Tax Liability	Total Cash Flow	Cumulative Cash Flow
Upfront	-	-	-	-	-	-	-
1	-\$68,628	\$2,183	\$66,978	-	-	\$533	\$533
2	-\$68,628	\$2,165	\$68,197	-	-	\$1,734	\$2,266
3	-\$68,628	\$2,148	\$69,428	-	-	\$2,948	\$5,214
4	-\$68,628	\$2,130	\$70,673	-	-	\$4,175	\$9,389
5	-\$68,628	\$2,113	\$71,929	-	-	\$5,414	\$14,803
6	-\$68,628	\$2,095	\$73,197	-	-	\$6,664	\$21,467
7	-\$68,628	\$2,078	\$74,476	-	-	\$7,926	\$29,393
8	-\$68,628	\$2,060	\$75,767	-	-	\$9,199	\$38,592
9	-\$68,628	-	\$77,067	-	-	\$8,439	\$47,031
10	-\$68,628	-	\$78,378	-	-	\$9,750	\$56,781
11	-\$68,628	-	\$79,698	-	-	\$11,070	\$67,850
12	-\$68,628	-	\$81,026	-	-	\$12,398	\$80,249
13	-\$68,628	-	\$82,363	-	-	\$13,735	\$93,983
14	-\$68,628	-	\$83,706	-	-	\$15,078	\$109,061
15	-\$68,628	-	\$85,057	-	-	\$16,428	\$125,490
16	-\$68,628	-	\$95,438	-	-	\$26,810	\$152,300
17	-\$68,628	-	\$97,069	-	-	\$28,441	\$180,741
18	-\$68,628	-	\$98,713	-	-	\$30,085	\$210,826
19	-\$68,628	-	\$100,367	-	-	\$31,739	\$242,565
20	-	-	\$102,033	-	-	\$102,033	\$344,597
21	-	-	\$103,707	-	-	\$103,707	\$448,305
22	-	-	\$105,391	-	-	\$105,391	\$553,695
23	-	-	\$107,082	-	-	\$107,082	\$660,777
24	-	-	\$108,779	-	-	\$108,779	\$769,556
25	-	-	\$110,482	-	-	\$110,482	\$880,038
26	-	-	\$112,190	-	-	\$112,190	\$992,228
27	-	-	\$113,900	-	-	\$113,900	\$1,106,128
28	-	-	\$115,612	-	-	\$115,612	\$1,221,741
29	-	-	\$117,324	-	-	\$117,324	\$1,339,065
30	-	-	\$119,035	-	-	\$119,035	\$1,458,101
Totals:	-\$1,303,933	\$16,972	\$2,745,062	-	-	\$1,458,101	-

## 4.1 NCREB

### Inputs and Key Financial Metrics

Interest Rate	1.27%	Upfront Payment	\$0	PV Degradation Rate	0.8%	State Income Tax Rate	0%
Monthly Payment	\$5,719	Loan Term	19	Electricity Escalation Rate	3%		
Total Project Cost	\$1,157,998			Federal Income Tax Rate	0%		

Years	Upfront	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Cash</b>											
Financing Payments Including O&M	-	-\$68,628	-\$68,628	-\$68,628	-\$68,628	-\$68,628	-\$68,628	-\$68,628	-\$68,628	-\$68,628	-\$68,628
REC \$.0025 - PNM	-	\$2,183	\$2,165	\$2,148	\$2,130	\$2,113	\$2,095	\$2,078	\$2,060	-	-
Electric Bill Savings	-	\$66,978	\$68,197	\$69,428	\$70,673	\$71,929	\$73,197	\$74,476	\$75,767	\$77,067	\$78,378
<b>Cash</b>	-	\$533	\$1,734	\$2,948	\$4,175	\$5,414	\$6,664	\$7,926	\$9,199	\$8,439	\$9,750
<b>State Taxes</b>											
Income Decrease (Financing Payments Including O&M)	-	\$14,392	\$13,699	\$12,997	\$12,286	\$11,567	\$10,838	\$10,100	\$9,352	\$8,595	\$7,828
Income Increase (REC \$.0025 - PNM)	-	-\$2,183	-\$2,165	-\$2,148	-\$2,130	-\$2,113	-\$2,095	-\$2,078	-\$2,060	-	-
Change in Taxable Income	-	\$12,209	\$11,534	\$10,849	\$10,156	\$9,454	\$8,743	\$8,022	\$7,292	\$8,595	\$7,828
<b>Change in State Tax Liability</b>	-	-	-	-	-	-	-	-	-	-	-
<b>Federal Taxes</b>											
Income Decrease (Financing Payments Including O&M)	-	\$14,392	\$13,699	\$12,997	\$12,286	\$11,567	\$10,838	\$10,100	\$9,352	\$8,595	\$7,828
Income Increase (REC \$.0025 - PNM)	-	-\$2,183	-\$2,165	-\$2,148	-\$2,130	-\$2,113	-\$2,095	-\$2,078	-\$2,060	-	-
Change in State Tax Liability	-	-	-	-	-	-	-	-	-	-	-
Change in Taxable Income	-	\$12,209	\$11,534	\$10,849	\$10,156	\$9,454	\$8,743	\$8,022	\$7,292	\$8,595	\$7,828
<b>Change in Federal Tax Liability</b>	-	-	-	-	-	-	-	-	-	-	-
<b>Total Cash Flow</b>	-	\$533	\$1,734	\$2,948	\$4,175	\$5,414	\$6,664	\$7,926	\$9,199	\$8,439	\$9,750
<b>Cumulative Cash Flow</b>	-	\$533	\$2,266	\$5,214	\$9,389	\$14,803	\$21,467	\$29,393	\$38,592	\$47,031	\$56,781

## 4.1 NCREB

### Inputs and Key Financial Metrics

Interest Rate	1.27%	Upfront Payment	\$0	PV Degradation Rate	0.8%	State Income Tax Rate	0%
Monthly Payment	\$5,719	Loan Term	19	Electricity Escalation Rate	3%		
Total Project Cost	\$1,157,998			Federal Income Tax Rate	0%		

Years	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	Year 21
<b>Cash</b>											
Financing Payments Including O&M	-\$68,628	-\$68,628	-\$68,628	-\$68,628	-\$68,628	-\$68,628	-\$68,628	-\$68,628	-\$68,628	-	-
REC \$.0025 - PNM	-	-	-	-	-	-	-	-	-	-	-
Electric Bill Savings	\$79,698	\$81,026	\$82,363	\$83,706	\$85,057	\$95,438	\$97,069	\$98,713	\$100,367	\$102,033	\$103,707
<b>Cash</b>	\$11,070	\$12,398	\$13,735	\$15,078	\$16,428	\$26,810	\$28,441	\$30,085	\$31,739	\$102,033	\$103,707
<b>State Taxes</b>											
Income Decrease (Financing Payments Including O&M)	\$7,051	\$6,265	\$5,468	\$4,661	\$3,844	\$3,016	\$2,178	\$1,329	\$470	-	-
Income Increase (REC \$.0025 - PNM)	-	-	-	-	-	-	-	-	-	-	-
Change in Taxable Income	\$7,051	\$6,265	\$5,468	\$4,661	\$3,844	\$3,016	\$2,178	\$1,329	\$470	-	-
<b>Change in State Tax Liability</b>	-	-	-	-	-	-	-	-	-	-	-
<b>Federal Taxes</b>											
Income Decrease (Financing Payments Including O&M)	\$7,051	\$6,265	\$5,468	\$4,661	\$3,844	\$3,016	\$2,178	\$1,329	\$470	-	-
Income Increase (REC \$.0025 - PNM)	-	-	-	-	-	-	-	-	-	-	-
Change in State Tax Liability	-	-	-	-	-	-	-	-	-	-	-
Change in Taxable Income	\$7,051	\$6,265	\$5,468	\$4,661	\$3,844	\$3,016	\$2,178	\$1,329	\$470	-	-
<b>Change in Federal Tax Liability</b>	-	-	-	-	-	-	-	-	-	-	-
<b>Total Cash Flow</b>	\$11,070	\$12,398	\$13,735	\$15,078	\$16,428	\$26,810	\$28,441	\$30,085	\$31,739	\$102,033	\$103,707
<b>Cumulative Cash Flow</b>	\$67,850	\$80,249	\$93,983	\$109,061	\$125,490	\$152,300	\$180,741	\$210,826	\$242,565	\$344,597	\$448,305

## 4.1 NCREB

### Inputs and Key Financial Metrics

Interest Rate	1.27%	Upfront Payment	\$0	PV Degradation Rate	0.8%	State Income Tax Rate	0%
Monthly Payment	\$5,719	Loan Term	19	Electricity Escalation Rate	3%		
Total Project Cost	\$1,157,998			Federal Income Tax Rate	0%		

Years	Year 22	Year 23	Year 24	Year 25	Year 26	Year 27	Year 28	Year 29	Year 30	Totals
<b>Cash</b>										
Financing Payments Including O&M	-	-	-	-	-	-	-	-	-	-\$1,303,933
REC \$.0025 - PNM	-	-	-	-	-	-	-	-	-	\$16,972
Electric Bill Savings	\$105,391	\$107,082	\$108,779	\$110,482	\$112,190	\$113,900	\$115,612	\$117,324	\$119,035	\$2,745,062
<b>Cash</b>	\$105,391	\$107,082	\$108,779	\$110,482	\$112,190	\$113,900	\$115,612	\$117,324	\$119,035	\$1,458,101
<b>State Taxes</b>										
Income Decrease (Financing Payments Including O&M)	-	-	-	-	-	-	-	-	-	\$145,935
Income Increase (REC \$.0025 - PNM)	-	-	-	-	-	-	-	-	-	-\$16,972
Change in Taxable Income	-	-	-	-	-	-	-	-	-	\$128,964
<b>Change in State Tax Liability</b>	-	-	-	-	-	-	-	-	-	-
<b>Federal Taxes</b>										
Income Decrease (Financing Payments Including O&M)	-	-	-	-	-	-	-	-	-	\$145,935
Income Increase (REC \$.0025 - PNM)	-	-	-	-	-	-	-	-	-	-\$16,972
Change in State Tax Liability	-	-	-	-	-	-	-	-	-	-
Change in Taxable Income	-	-	-	-	-	-	-	-	-	\$128,964
<b>Change in Federal Tax Liability</b>	-	-	-	-	-	-	-	-	-	-
<b>Total Cash Flow</b>	\$105,391	\$107,082	\$108,779	\$110,482	\$112,190	\$113,900	\$115,612	\$117,324	\$119,035	\$1,458,101
<b>Cumulative Cash Flow</b>	\$553,695	\$660,777	\$769,556	\$880,038	\$992,228	\$1,106,128	\$1,221,741	\$1,339,065	\$1,458,101	-