APPENDIX C – CESI PARAMETRIC MODEL

PRELIMINARY SOLAR MICROGRID ASSESSMENT AND DESIGN REPORT

Sheet	Description
Inputs	User to input values specific to their
Results	Results generated from inputs

Introduction:

The purpose of the Milton Financial Pro Forma Model is threefold:

First, this model is intended for use by Town of Milton personnel to evaluate the feasibility and sustainability of the Milton Community Microgrid, as well as assessing the sensitivity of all relevant variables.

Second, this model is intended to support Town of Milton personnel in gaining authority to proceed with a Pilot Project for the Milton Community Microgrid Pilot.

Third, this model is intended to educate any individuals, organizations, or government administrations aspiring to create or join a community microgrid on how its finances are invested and recouped.

Key	
##	User input
##	Intermediate calculation
##	Inputs outside of the user's control and instead in the control of other parties like utility companies or state and federal governments. Assumptions are made in place.

Milton Town Hall Microgrid Feasibility Model Inputs

Calculation of Clean Peak Standard certificates:			
Average value of each CPS Certificate over 10 year period	$30	*Dollars ($)*	i
Curtailment Service Provider (CSP) Fee	30%	*Percent (%)*	i
System Maintenance Annual Escalator	102%	*Percent (%)*	
Site historic data:			
Peak Building Monthly Demand	54		
Average Building Monthly Demand	28		
Typical use estimate (no electric heating)	12	*kWh per square feet*	
EE Savings estimator:			
Assumptions:			
Electrification of existing loads served by fossil fuels is not included in this analysis.			
If the user included electrification, any fossil fuel cost savings must be offset by electrification of space and water heating (which will reduce electricity savings)			
Values with green cell background are as currently set by the utility and PUC regulation and will change over time.			
Parameters:			
Average savings of electricity	0%	*Percent (%)*	i
Average price of electricity	$0.13	*Dollars per kWh billed ($)*	i
Inflation rate of energy tariffs	2%	*Percent per year (%)*	
Solar energy savings estimator:			
Estimated PV power output, AC	90	*Kilowatt (kW)*	i
Average annual effective hours output	1200	*Hours*	i
Coincidence factor	100%	*Percent (%)*	i
BUILDING kWH as % of SOLAR KWH	100%	*Percent (%) (cannot be greater than 100%)*	
SMART Payment per kWh produced by PV	$0.08	*Dollars per kWh produced*	Refer to SMART website for specific values
Demand charge (distribution and transmision) savings estimator:			
Average customer monthly peak demand	54	*Kilowatt (kW)*	i
Cost per kW from bill analysis	$36	*Dollars per kWh ($)*	
Total T&D charges per monthly peak kW	$1,579	*Dollars per kWh ($)*	
Estimated average demand reduction	75%	*Percent (%)*	i
Number of participating customers	1	*Number of customers*	i
Connected Solutions "Active Demand" response incentive payments for performance:			
Battery Annual Percentage Derate Factor	3%	*Percent (%)*	
Daily dispatch participation (summer)	$200	*Dollars per kWh ($)*	i
Winter targeted dispatch	$50	*Dollars per kWh ($)*	i
% of battery capacity dispatched	90%	*Percent (%)*	i
"SMART" BESS revenue estimator:			
SMART Payment per kWh stored in BESS	$0.04	*Dollars per kWh stored*	Refer to SMART website for specific values
Installed capacity (ICAP) savings estimator:			
% of total ISO-NE load assumed to participate in ICAP savings	50%	*Percent (%)*	i i
ISO-NE average cost/kW-year	$108	*Dollars ($)*	
The ICAP savings potential per customer	75%	*Percent (%)*	i i
Total Investment Estimate:			
Average simple payback	7	*Years*	i
Rate of investment in BESS and microgrid controller	$3,300	*Dollars per kW ($)*	
Duration of BESS and microgrid controller	4	*Hours*	i
Installed cost of solar	$2,500	*Dollars per kW ($)*	
Average peak load displaced with PV potential	100%	*Percent (%)*	
Other investment		*Dollars per kWh ($)*	
Investment Tax Credit available in IRA	30%	*Percent (%)*	
Annual Emission Reduction			
CO2 emissions per MWh of New England grid generation dispatched on average	0.53	*Metric tons per MWh*	i
Resilience Gap/ Cash Flow Shortfall			
Resilience gap or shortfall, as a percent of total upfront investment required for financial feasibility	24%	*Percent (%)*	i

Milton Town Hall Microgrid Feasibility Results – 10-year Cash Flow

Results

Insert Label	Output value
Average monthly kWh billed to customer from utility bill analysis	20,440
Average kWh/day	659
Average kWh/hour	27
Average kWh for 4 hours	110
MWh for 1 hour	0.03
MWh for 4 hours	0.11
annual kWh	245280
approximate sqft	20,440

Max CPS if full battery kWh is discharged to cover site historical peaks for all Seasonal and Monthly Peak Events

	Average kWh/ Event Period	Multipliers	Events/ Year	Hours/ Event	Certificates
Summer and Winter	110	4	125	4	13.74
Spring and Fall	110	1	125	4	3.43
Monthly System Peak	27	25	12	1	8.24
Resilience during Four Seasonal Peak Periods only	N/A	1.5			26
Existing	N/A	0.1			0
Contracted	N/A	0.01			0
SMART	N/A	0.3			0
Total Annual Certificates					**51**

Total Investment Estimate:	Output value	Units	Questions?
Total investment estimate in EE	$0	*Dollars ($)*	i
Total investment estimate in BESS and microgrid controller	$178,200	*Dollars ($)*	i
Total investment estimate in Solar	$225,000	*Dollars ($)*	i
Total investment	$403,200	*Dollars ($)*	i
Investment Tax Credit available in IRA	30%	*Percent (%)*	
Upfront or Imputed Present Value of Annual Resilience Gap or Cash Flow Shortfall	$96,768	*Dollars ($)*	

Annual Emissions Reduction Calculation	Output value	Units
EE savings, electric	0	*kWh per year*
Emission reduction from electric EE	0	*metric tons per year*
Solar savings, electric	108,000	*kWh*
Emission reduction from solar displ.	57	*metric tons per year*

MILTON TOWN HALL

	Annual Energy Savings from EE Improvements	Annual energy savings from solar energy production [3] i	T&D Demand Savings	Connected Solutions "Active Demand" Response Savings	ICAP Savings	Clean Peak Standard Certificate (CPS) Revenue [1] i	SMART Revenue PV + BESS	Less: Annual System Maintenance (2% est.)	Less: Curtailment Service Provider (CSP) charge	Less: Debt Service	Annual Cash Flow [2] i	Cumulative Cash Flow	Carbon reduction (metric tons/year)
									Total investment:		$ (214,502)	$ (214,502)	
Year 1	$ -	$ 14,040	$ 14,208	$ 12,150	$ 2,187	$ 1,535	$ 12,960	$ (4,290)	$ (4,106)	$ (26,446)	$ 22,239	$ (192,264)	57
Year 2	$ -	$ 14,321	$ 14,493	$ 11,786	$ 2,187	$ 1,489	$ 12,571	$ (4,376)	$ (3,982)	$ (26,446)	$ 22,042	$ (170,222)	57
Year 3	$ -	$ 14,607	$ 14,783	$ 11,432	$ 2,187	$ 1,444	$ 12,194	$ (4,463)	$ (3,863)	$ (26,446)	$ 21,875	$ (148,347)	57
Year 4	$ -	$ 14,899	$ 15,078	$ 11,089	$ 2,187	$ 1,401	$ 11,828	$ (4,553)	$ (3,747)	$ (26,446)	$ 21,737	$ (126,610)	57
Year 5	$ -	$ 15,197	$ 15,380	$ 10,756	$ 2,187	$ 1,359	$ 11,473	$ (4,644)	$ (3,635)	$ (26,446)	$ 21,628	$ (104,982)	57
Year 6	$ -	$ 15,501	$ 15,687	$ 10,434	$ 2,187	$ 1,318	$ 11,129	$ (4,737)	$ (3,526)	$ (26,446)	$ 21,548	$ (83,434)	57
Year 7	$ -	$ 15,811	$ 16,001	$ 10,121	$ 2,187	$ 1,279	$ 10,795	$ (4,831)	$ (3,420)	$ (26,446)	$ 21,497	$ (61,937)	57
Year 8	$ -	$ 16,128	$ 16,321	$ 9,817	$ 2,187	$ 1,240	$ 10,471	$ (4,928)	$ (3,317)	$ (26,446)	$ 21,473	$ (40,464)	57
Year 9	$ -	$ 16,450	$ 16,647	$ 9,522	$ 2,187	$ 1,203	$ 10,157	$ (5,026)	$ (3,218)	$ (26,446)	$ 21,477	$ (18,987)	57
Year 10	$ -	$ 16,779	$ 16,980	$ 9,237	$ 2,187	$ 1,167	$ 9,853	$ (5,127)	$ (3,121)	$ (26,446)	$ 21,509	$ 2,522	57
Total	$ -	$ 153,734	$ 155,579	$ 106,343	$ 21,870	$ 13,436	$ 113,433	$ (46,975)	$ (35,934)	$ (264,462)	$ 217,024		572

Results	Output value	Units
Total Savings Year 11 (no debt payment)	$ 48,914	*Dollars ($)*
Approximate total years to $0 cumulative cash flow	9.9	*Years*
Cumulative cash flow over 15 years	$ 461,594	*Dollars ($)*

Milton Police Department Microgrid Feasibility Model Inputs

Basic information			
MILTON POLICE DEPARTMENT	DATE:	8/14/23	
Interest rate:	4%	*Percent (%)*	
Term:	10	*Years*	
Calculation of Clean Peak Standard certificates:			
Average value of each CPS Certificate over 10 year period	$30	*Dollars ($)*	i
Curtailment Service Provider (CSP) Fee	30%	*Percent (%)*	i
System Maintenance Annual Escalator	102%	*Percent (%)*	
Site historic data:			
Peak Building Monthly Demand	40		
Average Building Monthly Demand	20		
Typical use estimate (no electric heating)	12	*kWh per square feet*	
EE Savings estimator:			
Assumptions:			
Electrification of existing loads served by fossil fuels is not included in this analysis.			
If the user included electrification, any fossil fuel cost savings must be offset by electrification of space and water heating (which will reduce electricity savings)			
Values with green cell background are as currently set by the utility and PUC regulation and will change over time.			
Parameters:			
Average savings of electricity	0%	*Percent (%)*	i
Average price of electricity	$0.13	*Dollars per kWh billed ($)*	i
Inflation rate of energy tariffs	2%	*Percent per year (%)*	
Solar energy savings estimator:			
Estimated PV power output, AC	177	*Kilowatt (kW)*	i
Average annual effective hours output	1200	*Hours*	i
Coincidence factor	100%	*Percent (%)*	i
BUILDING kWH as % of SOLAR KWH	100%	*Percent (%) (cannot be greater than 100%)*	
SMART Payment per kWh produced by PV	$0.08	*Dollars per kWh produced*	Refer to SMART website for specific values
Demand charge (distribution and transmision) savings estimator:			
Average customer monthly peak demand	40	*Kilowatt (kW)*	i
Cost per kW from bill analysis	$36	*Dollars per kWh ($)*	
Total T&D charges per monthly peak kW	$1,076	*Dollars per kWh ($)*	
Estimated average demand reduction	75%	*Percent (%)*	i
Number of participating customers	1	*Number of customers*	i
Connected Solutions "Active Demand" response incentive payments for performance:			
Battery Annual Percentage Derate Factor	3%	*Percent (%)*	
Daily dispatch participation (summer)	$200	*Dollars per kWh ($)*	i
Winter targeted dispatch	$50	*Dollars per kWh ($)*	i
% of battery capacity dispatched	90%	*Percent (%)*	i
"SMART" BESS revenue estimator:			
SMART Payment per kWh stored in BESS	$0.04	*Dollars per kWh stored*	Refer to SMART website for specific values
Installed capacity (ICAP) savings estimator:			
% of total ISO-NE load assumed to participate in ICAP savings	50%	*Percent (%)*	i i
ISO-NE average cost/kW-year	$108	*Dollars ($)*	
The ICAP savings potential per customer	75%	*Percent (%)*	i i
Total Investment Estimate:			
Average simple payback	7	*Years*	i
Rate of investment in BESS and microgrid controller	$3,240	*Dollars per kW ($)*	
Duration of BESS and microgrid controller	4	*Hours*	i
Installed cost of solar	$2,000	*Dollars per kW ($)*	
Average peak load displaced with PV potential	100%	*Percent (%)*	
Other investment	0	*Dollars per kWh ($)*	
Investment Tax Credit available in IRA	30%	*Percent (%)*	
Annual Emission Reduction			
CO2 emissions per MWh of New England grid generation dispatched on average	0.53	*Metric tons per MWh*	i
Resilience Gap/ Cash Flow Shortfall			
Resilience gap or shortfall, as a percent of total upfront investment required for financial feasibility	15%	*Percent (%)*	i

Milton Police Department Microgrid Feasibility Results – 10-year Cash Flow

Results

Insert Label	Output value
Average monthly kWh billed to customer from utility bill analysis	14,600
Average kWh/day	471
Average kWh/hour	20
Average kWh for 4 hours	78
MWh for 1 hour	0.02
MWh for 4 hours	0.08
annual kWh	175200
approximate sqft	14,600

Max CPS if full battery kWh is discharged to cover site historical peaks for all Seasonal and Monthly Peak Events

	Average kWh/ Event Period	Multipliers	Events/ Year	Hours/ Event	Certificates
Summer and Winter	78	4	125	4	9.81
Spring and Fall	78	1	125	4	2.45
Monthly System Peak	20	25	12	1	5.89
Resilience during Four Seasonal Peak Periods only	N/A	1.5			18
Existing	N/A	0.1			0
Contracted	N/A	0.01			0
SMART	N/A	0.3			0
Total Annual Certificates					**37**

Total Investment Estimate:	Output value	Units	Questions?
Total investment estimate in EE	$0	*Dollars ($)*	i
Total investment estimate in BESS and microgrid controller	$129,600	*Dollars ($)*	i
Total investment estimate in Solar	$354,000	*Dollars ($)*	i
Total investment	$483,600	*Dollars ($)*	i
Investment Tax Credit available in IRA	30%	*Percent (%)*	
Upfront or Imputed Present Value of Annual Resilience Gap or Cash Flow Shortfall	$72,540	*Dollars ($)*	

Annual Emissions Reduction Calculation	Output value	Units
EE savings, electric	0	*kWh per year*
Emission reduction from electric EE	0	*metric tons per year*
Solar savings, electric	212,400	*kWh*
Emission reduction from solar displ.	113	*metric tons per year*

MILTON POLICE DEPARTMENT

	Annual Energy Savings from EE Improvements	Annual energy savings from solar energy production [2] i	T&D Demand Savings	Connected Solutions "Active Demand" Response Savings	ICAP Savings	Clean Peak Standard Certificate (CPS) Revenue [1] i	SMART Revenue PV + BESS	Less: Annual System Maintenance (2% est.)	Less: Curtailment Service Provider (CSP) charge	Less: Debt Service	Annual Cash Flow [2] i	Cumulative Cash Flow	Carbon reduction (metric tons/year)
									Total investment:		$ (287,742)	$ (287,742)	
Year 1	$ -	$ 27,612	$ 9,688	$ 9,000	$ 1,620	$ 1,096	$ 25,488	$ (5,755)	$ (3,029)	$ (35,476)	$ 30,244	$ (257,498)	113
Year 2	$ -	$ 28,164	$ 9,881	$ 8,730	$ 1,620	$ 1,064	$ 24,723	$ (5,870)	$ (2,938)	$ (35,476)	$ 29,899	$ (227,599)	113
Year 3	$ -	$ 28,728	$ 10,079	$ 8,468	$ 1,620	$ 1,032	$ 23,982	$ (5,987)	$ (2,850)	$ (35,476)	$ 29,595	$ (198,004)	113
Year 4	$ -	$ 29,302	$ 10,281	$ 8,214	$ 1,620	$ 1,001	$ 23,262	$ (6,107)	$ (2,764)	$ (35,476)	$ 29,332	$ (168,672)	113
Year 5	$ -	$ 29,888	$ 10,486	$ 7,968	$ 1,620	$ 971	$ 22,564	$ (6,229)	$ (2,682)	$ (35,476)	$ 29,110	$ (139,562)	113
Year 6	$ -	$ 30,486	$ 10,696	$ 7,729	$ 1,620	$ 942	$ 21,887	$ (6,354)	$ (2,601)	$ (35,476)	$ 28,929	$ (110,634)	113
Year 7	$ -	$ 31,096	$ 10,910	$ 7,497	$ 1,620	$ 913	$ 21,231	$ (6,481)	$ (2,523)	$ (35,476)	$ 28,786	$ (81,847)	113
Year 8	$ -	$ 31,718	$ 11,128	$ 7,272	$ 1,620	$ 886	$ 20,594	$ (6,611)	$ (2,447)	$ (35,476)	$ 28,683	$ (53,164)	113
Year 9	$ -	$ 32,352	$ 11,351	$ 7,054	$ 1,620	$ 859	$ 19,976	$ (6,743)	$ (2,374)	$ (35,476)	$ 28,619	$ (24,545)	113
Year 10	$ -	$ 32,999	$ 11,578	$ 6,842	$ 1,620	$ 834	$ 19,377	$ (6,878)	$ (2,303)	$ (35,476)	$ 28,593	$ 4,048	113
Total	$ -	$ 302,344	$ 106,077	$ 78,773	$ 16,200	$ 9,597	$ 223,084	$ (63,014)	$ (26,511)	$ (354,760)	$ 291,790		1,126

Results	Output value	Units
Total Savings Year 11 (no debt payment)	$ 65,350	*Dollars ($)*
Approximate total years to $0 cumulative cash flow	9.9	*Years*
Cumulative cash flow over 15 years	$ 618,540	*Dollars ($)*

Winter Valley, Milton MA Microgrid Feasibility Model Inputs

Metric	Input value	Units	Questions
Basic information			
WINTER VALLEY - MILTON MA - AVERAGE OF THE 6 BUILDINGS AT WINTER VALUE	DATE:	8/17/23	
Interest rate:	4%	Percent (%)	
Term:	10	Years	
Calculation of Clean Peak Standard certificates:			
Average value of each CPS Certificate over 10 year period	$30	Dollars ($)	i
Curtailment Service Provider (CSP) Fee	30%	Percent (%)	i
System Maintenance Annual Escalator	102%	Percent (%)	
Site historic data:			
Peak Building Monthly Demand	40	SUM OF THE SIX COMMON AREA ACCOUNTS	
Average Building Monthly Demand	10	25 % OF MAX	
Typical use estimate (no electric heating)	12	kWh per square feet	
EE Savings estimator:			
Assumptions:			
Electrification of existing loads served by fossil fuels is not included in this analysis.			
If the user included electrification, any fossil fuel cost savings must be offset by electrification of space and water heating (which will reduce electricity savings)			
Values with green cell background are as currently set by the utility and PUC regulation and will change over time.			
Parameters:			
Average savings of electricity	0%	Percent (%)	i
Average price of electricity	$0.13	Dollars per kWh billed ($)	i
Inflation rate of energy tariffs	2%	Percent per year (%)	
Solar energy savings estimator:			
Estimated PV power output, AC	23	Kilowatt (kW)	i
Average annual effective hours output	1200	Hours	i
Coincidence factor	100%	Percent (%)	i
BUILDING kWH as % of SOLAR KWH	100%	Percent (%) (cannot be greater than 100%)	
SMART Payment per kWh produced by PV	$0.08	Dollars per kWh produced	Refer to SMART website for specific values
Demand charge (distribution and transmision) savings estimator:			
Average customer monthly peak demand	40	Kilowatt (kW)	i
Cost per kW from bill analysis	$36	Dollars per kWh ($)	
Total T&D charges per monthly peak kW	$1,064	Dollars per kWh ($)	
Estimated average demand reduction	75%	Percent (%)	i
Number of participating customers	1	Number of customers	i
Connected Solutions "Active Demand" response incentive payments for performance:			
Battery Annual Percentage Derate Factor	3%	Percent (%)	
Daily dispatch participation (summer)	$200	Dollars per kWh ($)	i
Winter targeted dispatch	$50	Dollars per kWh ($)	i
% of battery capacity dispatched	90%	Percent (%)	i
"SMART" BESS revenue estimator:			
SMART Payment per kWh stored in BESS	$0.04	Dollars per kWh stored	Refer to SMART website for specific values
Installed capacity (ICAP) savings estimator:			
% of total ISO-NE load assumed to participate in ICAP savings	50%	Percent (%)	i i
ISO-NE average cost/kW-year	$108	Dollars ($)	
The ICAP savings potential per customer	75%	Percent (%)	i i
Total Investment Estimate:			
Average simple payback	7	Years	i
Rate of investment in BESS and microgrid controller	$3,200	Dollars per kW ($)	
Duration of BESS and microgrid controller	4	Hours	i
Installed cost of solar	$2,500	Dollars per kW ($)	
Average peak load displaced with PV potential	100%	Percent (%)	
Other investment	0	Dollars per kWh ($)	
Investment Tax Credit available in IRA	30%	Percent (%)	
Annual Emission Reduction			
CO2 emissions per MWh of New England grid generation dispatched on average	0.53	Metric tons per MWh	i
Resilience Gap/ Cash Flow Shortfall			
Resilience gap or shortfall, as a percent of total upfront investment required for financial feasibility	23%	Percent (%)	i

Winter Valley, Milton, MA Microgrid Feasibility Results – 10-year Cash Flow

Results

Insert Label	Output value
Average monthly kWh billed to customer from utility bill analysis	7,239
Average kWh/day	234
Average kWh/hour	10
Average kWh for 4 hours	39
MWh for 1 hour	0.01
MWh for 4 hours	0.04
annual kWh	86870
approximate sqft	7,239

Max CPS if full battery kWh is discharged to cover site historical peaks for all Seasonal and Monthly Peak Events

	Average kWh/ Event Period	Multipliers	Events/ Year	Hours/ Event	Certificates
Summer and Winter	39	4	125	4	4.87
Spring and Fall	39	1	125	4	1.22
Monthly System Peak	10	25	12	1	2.92
Resilience during Four Seasonal Peak Periods only	N/A	1.5			9
Existing	N/A	0.1			0
Contracted	N/A	0.01			0
SMART	N/A	0.3			0
Total Annual Certificates					**18**

Total Investment Estimate:	Output value AVG/BLDG	Units	Questions?	TOTAL PROJECT (ALL 6 BUILDINGS)	
Total investment estimate in EE	$0	Dollars ($)	i	$ -	
Total investment estimate in BESS and microgrid controller	$126,933	Dollars ($)	i	$ 761,600	
Total investment estimate in Solar	$57,917	Dollars ($)	i	$ 347,500	
Total investment	$184,850	Dollars ($)	i	$ 1,109,100	
Investment Tax Credit available in IRA	30%	Percent (%)			
Upfront or Imputed Present Value of Annual Resilience Gap or Cash Flow Shortfall	$42,516	Dollars ($)		$ 255,093	23%

$ 597,805 Total Debt

Annual Emissions Reduction Calculation	Output value	Units
EE savings, electric	0	*kWh per year*
Emission reduction from electric EE	0	*metric tons per year*
Solar savings, electric	27,800	*kWh*
Emission reduction from solar displ.	15	*metric tons per year*

THIS IS THE AVERAGE CASH FLOW FOR EACH OF THE 6 BUILDINGS AT WINTER VALUE - ENTIRE PROJECT WOULD BE 6 TIMES GREATER THAN SHOWN

	Annual Energy Savings from EE Improvements	Annual energy savings from solar energy production [3] i	T&D Demand Savings	Connected Solutions "Active Demand" Response Savings	ICAP Savings	Clean Peak Standard Certificate (CPS) Revenue [1] i	SMART Revenue PV + BESS	Less: Annual System Maintenance (2% est.)	Less: Curtailment Service Provider (CSP) charge	Less: Debt Service	Annual Cash Flow [2] i	Cumulative Cash Flow	Carbon reduction (metric tons/year)
									Total investment:		$ (99,634)	$ (99,634)	
Year 1	$ -	$ 3,614	$ 9,580	$ 8,925	$ 1,607	$ 544	$ 3,336	$ (1,993)	$ (2,841)	$ (12,284)	$ 10,488	$ (89,146)	15
Year 2	$ -	$ 3,686	$ 9,772	$ 8,657	$ 1,607	$ 527	$ 3,236	$ (2,033)	$ (2,755)	$ (12,284)	$ 10,413	$ (78,733)	15
Year 3	$ -	$ 3,760	$ 9,967	$ 8,398	$ 1,607	$ 512	$ 3,139	$ (2,073)	$ (2,673)	$ (12,284)	$ 10,352	$ (68,382)	15
Year 4	$ -	$ 3,835	$ 10,166	$ 8,146	$ 1,607	$ 496	$ 3,045	$ (2,115)	$ (2,593)	$ (12,284)	$ 10,303	$ (58,078)	15
Year 5	$ -	$ 3,912	$ 10,370	$ 7,901	$ 1,607	$ 481	$ 2,953	$ (2,157)	$ (2,515)	$ (12,284)	$ 10,268	$ (47,810)	15
Year 6	$ -	$ 3,990	$ 10,577	$ 7,664	$ 1,607	$ 467	$ 2,865	$ (2,200)	$ (2,439)	$ (12,284)	$ 10,246	$ (37,564)	15
Year 7	$ -	$ 4,070	$ 10,789	$ 7,434	$ 1,607	$ 453	$ 2,779	$ (2,244)	$ (2,366)	$ (12,284)	$ 10,237	$ (27,327)	15
Year 8	$ -	$ 4,151	$ 11,004	$ 7,211	$ 1,607	$ 439	$ 2,695	$ (2,289)	$ (2,295)	$ (12,284)	$ 10,240	$ (17,087)	15
Year 9	$ -	$ 4,234	$ 11,224	$ 6,995	$ 1,607	$ 426	$ 2,615	$ (2,335)	$ (2,226)	$ (12,284)	$ 10,256	$ (6,831)	15
Year 10	$ -	$ 4,319	$ 11,449	$ 6,785	$ 1,607	$ 413	$ 2,536	$ (2,381)	$ (2,160)	$ (12,284)	$ 10,284	$ 3,453	15
Total	$ -	$ 39,572	$ 104,898	$ 78,116	$ 16,065	$ 4,758	$ 29,198	$ (21,819)	$ (24,862)	$ (122,840)	$ 103,087		147

Results	Output value	Units		
		Total Yr 1 Savings	$ 165,630.76	Total Yr. 1 Exper $ 102,703.63
Total Savings Year 11 (no debt payment)	$ 23,019	*Dollars ($)*		
Approximate total years to $0 cumulative cash flow	9.9	*Years*		
Cumulative cash flow over 15 years	$ 218,184	*Dollars ($)*		