

# Lifecycle Summary

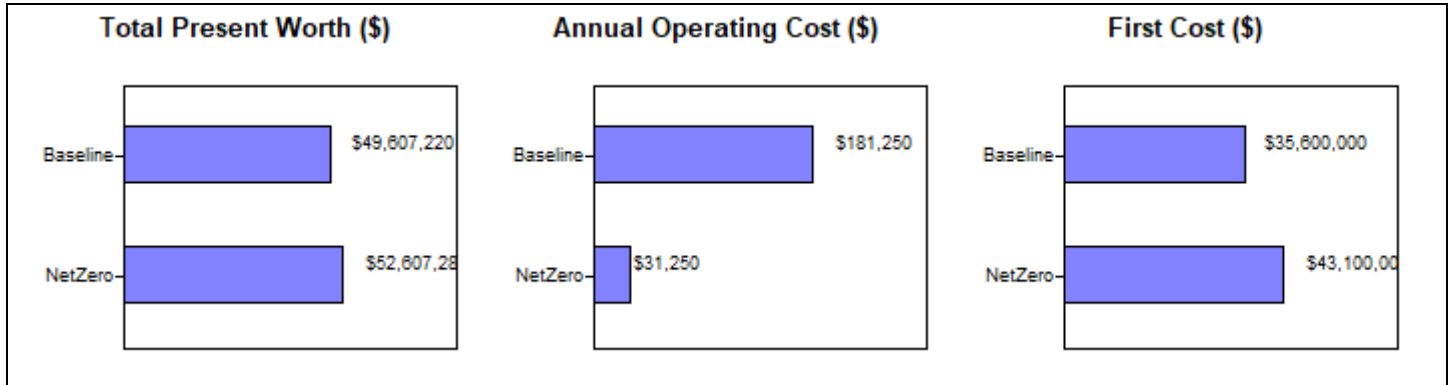
Project: 60-18-409 Wahconah Regional High School  
 Prepared By: BALA

11/15/2018  
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## Building Life Cycle Cost Analysis w/PV

30 year life-cycle cost analysis for a Net Zero building compared to a Baseline building.

Type of Analysis ..... Public Sector Lifecycle Analysis  
 Type of Design Alternatives ..... Independent  
 Length of Analysis ..... 30 yrs  
 Discount Rate ..... 2.75 %



**Table 1. Executive Summary**

Economic Criteria	Best Design Case for Each Criteria	Value (\$)
Lowest Total Present Worth	Baseline Building	\$49,607,218
Lowest Annual Operating Cost	Net Zero Building	\$31,250
Lowest First Cost	Baseline Building	\$35,600,000

**Table 2. Design Cases Ranked by Total Present Worth**

Design Case Name	Design Case Short Name	Total Present Worth (\$)	Annual Operating Cost (\$/yr)	First Cost (\$)
Baseline Building	Baseline	\$49,607,218	\$181,250	\$35,600,000
Net Zero Building	NetZero	\$52,607,280	\$31,250	\$43,100,000

## Study Inputs

Project: 60-18-409 Wahconah Regional High School  
Prepared By: BALA

11/15/2018  
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Study Title ..... Building Life Cycle Cost Analysis w/PV  
Study Description :  
    30 year life-cycle cost analysis for a Net Zero building compared to a  
    Baseline building.  
  
Type of Analysis ..... Public Sector Lifecycle Analysis  
Type of Design Alternatives ..... Independent  
Base Year ..... 1  
Currency Symbol ..... \$  
Length of Analysis ..... 30 yrs  
Discount Rate ..... 2.75 %

## Design Case Inputs

Project: 60-18-409 Wahconah Regional High School  
 Prepared By: BALA

11/15/2018  
 8:58:21 AM

Type of Analysis.....Public Sector Lifecycle Analysis  
 Length of Analysis.....30 yrs  
 Income Taxes ..... Not Considered

**General Information :**

Design Case Name ..... Baseline Building  
 Design Case Short Name ... Baseline  
 Description :

Baseline building meeting the minimum efficiency requirements of the MSBA guideline for additional 2% reimbursement.

**Investment Costs :**

Cost Item	Cost (\$)	Year Incurred	Esc Rate (%/yr)	Salvage Value (\$)	Useful Life (yrs)
Baseline Building Cost 1	\$ 9,500,000	0	0.00	\$ 0	30
Baseline Building Cost 2	\$ 9,500,000	0	0.00	\$ 0	30
Baseline Building Cost 3	\$ 9,500,000	0	0.00	\$ 0	30
Baseline Building Cost 4	\$ 7,100,000	0	0.00	\$ 0	30
Partial System Replacement Cost	\$ 1,310,000	20	0.00	\$ 0	10

**Loans :**

Loan Item	Start Year	Investment In Start Year (\$)	Percent Financed	Term Of Loan (Years)	Interest Rate (%/yr)	Payment Method
Municipal Bond Financing for Bldg	0	\$ 36,910,000	100	30	4.00	Equal Payments
Replacement Cost Financing	20	\$ 36,910,000	100	10	5.50	Equal Payments

**Annual Operating Costs :**

Cost Item	Cost (\$)	Start Year	Number Of Years	Esc Rate (%/yr)
Annual Energy Costs	\$ 150,000	1	30	4.50
Annual Maintenance Costs	\$ 31,250	1	30	4.00

*There are no non-annual operating cost inputs*

## Design Case Inputs

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 8:58:21 AM

Type of Analysis.....Public Sector Lifecycle Analysis  
 Length of Analysis.....30 yrs  
 Income Taxes ..... Not Considered

**General Information :**

Design Case Name ..... Net Zero Building  
 Design Case Short Name ... NetZero  
 Description :

Building with geothermal and solar PV systems resulting in a zero net energy building.

**Investment Costs :**

Cost Item	Cost (\$)	Year Incurred	Esc Rate (%/yr)	Salvage Value (\$)	Useful Life (yrs)
Net Zero Building Cost 1	\$ 9,500,000	0	0.00	\$ 0	30
Net Zero Building Cost 2	\$ 9,500,000	0	0.00	\$ 0	30
Net Zero Building Cost 3	\$ 9,500,000	0	0.00	\$ 0	30
Net Zero Building Cost 4	\$ 9,500,000	0	0.00	\$ 0	30
Net Zero Building Cost 5	\$ 5,100,000	0	0.00	\$ 0	30
Partial System Replacement Cost	\$ 1,500,000	20	0.00	\$ 0	10

**Loans :**

Loan Item	Start Year	Investment In Start Year (\$)	Percent Financed	Term Of Loan (Years)	Interest Rate (%/yr)	Payment Method
Municipal Bond Financing for NZB	0	\$ 44,600,000	100	30	4.00	Equal Payments
Replacement Cost Financing	20	\$ 44,600,000	100	10	5.50	Equal Payments

**Annual Operating Costs :**

Cost Item	Cost (\$)	Start Year	Number Of Years	Esc Rate (%/yr)
Annual Energy Costs	\$ 0	1	30	0.00
Annual Maintenance Costs	\$ 31,250	1	30	4.00

<i>There are no non-annual operating cost inputs</i>
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