

# ENERGY STAR v3.1 Home Report

Property  
1 Bedroom Unit  
Worthington, MN

Organization  
Building Knowledge, Inc.  
952-944-5605  
Pat O'Malley

HERS  
ProjectedWorstCase  
9/28/17  
Rater ID:9377462



Weather:Rochester, MN  
1 BR - Lower Level  
1 BR\_Lower  
Level\_28SEPTEMBER17.blg

Builder  
SW MN Housing

## Projected Rating: Based on Plans - Field Confirmation Required. Normalized, Modified End-Use Loads (MMBtu/yr)

	ENERGY STAR	As Designed
Heating	6.4	6.4
Cooling	3.7	2.8
Water Heating	10.0	1.0
Lights and Appliances	13.5	12.8
Total	33.5	23.0
HERS Index of Reference Design Home	72	48 HERS Index w/o PV
HERS Index Target (SAF Adjusted)	72	48 HERS Index
Size Adjustment Factor	1.00	

## ENERGY STAR v3.1 Mandatory Requirements

X	Duct leakage at post construction better than or equal to ENERGY STAR v3/3.1 requirements.
X	Envelope insulation levels meet or exceed ENERGY STAR v3/3.1 requirements.
X	Slab on Grade Insulation must be > R-5, and at IECC 2009 Depth for Climate Zones 4 and above.
X	Envelope insulation achieves RESNET Grade I installation, or Grade II with insulated sheathing.
X	Windows meet the 2009 IECC Requirements - Table 402.1.1.
X	Duct insulation meets the EPA minimum requirements of R-6.
X	Mechanical ventilation system is installed in the home.
X	ENERGY STAR Checklists fully verified and complete.



This home **MEETS** or **EXCEEDS** the energy efficiency requirements for designation as an EPA ENERGY STAR Version 3.1 Qualified Home.  
HERS Index w/o PV <= HERS Index of Reference Design Home AND HERS Index <= HERS Index Target to comply.

## Pollution Prevented

Type of Emissions	Reduction
Carbon Dioxide (CO2) - tons/yr	3.0
Sulfur Dioxide (SO2) - lbs/yr	3.7
Nitrogen Oxides (NOx) - lbs/yr	7.4

## Energy Cost Savings

	\$/yr
Heating	173
Cooling	33
Water Heating	113
Lights & Appliances	110
Total	429

The energy cost savings and pollution prevented are calculated by comparing the Rated Home to the Reference Home as defined in the Mortgage Industry National Home Energy Rating Systems Standards as promulgated by the Residential Energy Services Network (RESNET). In accordance with these guidelines, building inputs affecting setpoints, infiltration rates, window shading and the existence of mechanical systems may have been changed prior to calculating loads.

## REM/Rate - Residential Energy Analysis and Rating Software v15.3

This information does not constitute any warranty of energy cost or savings.

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Weather:Rochester, MN  
1 BR - Mid Level  
1 BR\_Mid  
Level\_28SEPTEMBER17.blg

Builder  
SW MN Housing

## Projected Rating: Based on Plans - Field Confirmation Required. Normalized, Modified End-Use Loads (MMBtu/yr)

	ENERGY STAR	As Designed
Heating	4.2	4.3
Cooling	4.1	3.2
Water Heating	10.0	1.0
Lights and Appliances	13.5	12.8
Total	31.8	21.3
HERS Index of Reference Design Home	74	47 HERS Index w/o PV
HERS Index Target (SAF Adjusted)	74	47 HERS Index
Size Adjustment Factor	1.00	

## ENERGY STAR v3.1 Mandatory Requirements

X	Duct leakage at post construction better than or equal to ENERGY STAR v3/3.1 requirements.
X	Envelope insulation levels meet or exceed ENERGY STAR v3/3.1 requirements.
X	Slab on Grade Insulation must be > R-5, and at IECC 2009 Depth for Climate Zones 4 and above.
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X	Windows meet the 2009 IECC Requirements - Table 402.1.1.
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X	ENERGY STAR Checklists fully verified and complete.



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HERS Index w/o PV <= HERS Index of Reference Design Home AND HERS Index <= HERS Index Target to comply.

## Pollution Prevented

Type of Emissions	Reduction
Carbon Dioxide (CO2) - tons/yr	2.9
Sulfur Dioxide (SO2) - lbs/yr	3.8
Nitrogen Oxides (NOx) - lbs/yr	7.1

## Energy Cost Savings

	\$/yr
Heating	154
Cooling	33
Water Heating	113
Lights & Appliances	110
Total	411

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1 BR - Top Level  
1 BR\_Top  
Level\_28SEPTEMBER17.blg

Builder  
SW MN Housing

## Projected Rating: Based on Plans - Field Confirmation Required. Normalized, Modified End-Use Loads (MMBtu/yr)

	ENERGY STAR	As Designed
Heating	4.3	5.6
Cooling	4.1	3.3
Water Heating	10.0	1.0
Lights and Appliances	13.5	12.8
Total	31.8	22.7
HERS Index of Reference Design Home	74	47 HERS Index w/o PV
HERS Index Target (SAF Adjusted)	74	47 HERS Index
Size Adjustment Factor	1.00	

## ENERGY STAR v3.1 Mandatory Requirements

X	Duct leakage at post construction better than or equal to ENERGY STAR v3/3.1 requirements.
X	Envelope insulation levels meet or exceed ENERGY STAR v3/3.1 requirements.
X	Slab on Grade Insulation must be > R-5, and at IECC 2009 Depth for Climate Zones 4 and above.
X	Envelope insulation achieves RESNET Grade I installation, or Grade II with insulated sheathing.
X	Windows meet the 2009 IECC Requirements - Table 402.1.1.
X	Duct insulation meets the EPA minimum requirements of R-6.
X	Mechanical ventilation system is installed in the home.
X	ENERGY STAR Checklists fully verified and complete.



This home MEETS or EXCEEDS the energy efficiency requirements for designation as an EPA ENERGY STAR Version 3.1 Qualified Home.  
HERS Index w/o PV <= HERS Index of Reference Design Home AND HERS Index <= HERS Index Target to comply.

## Pollution Prevented

Type of Emissions	Reduction
Carbon Dioxide (CO2) - tons/yr	3.1
Sulfur Dioxide (SO2) - lbs/yr	3.8
Nitrogen Oxides (NOx) - lbs/yr	7.6

## Energy Cost Savings

	\$/yr
Heating	180
Cooling	34
Water Heating	113
Lights & Appliances	110
Total	437

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# ENERGY STAR v3.1 Home Report

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2 Bedroom Unit  
Worthington, MN

Organization  
Building Knowledge, Inc.  
952-944-5605  
Pat O'Malley

HERS  
ProjectedWorstCase  
9/28/17  
Rater ID:9377462



Weather:Rochester, MN  
2 BR - Lower Level  
2 BR\_Lower  
Level\_28SEPTEMBER17.blg

Builder  
SW MN Housing

## Projected Rating: Based on Plans - Field Confirmation Required. Normalized, Modified End-Use Loads (MMBtu/yr)

	ENERGY STAR	As Designed
Heating	6.7	5.9
Cooling	4.8	3.9
Water Heating	13.6	1.6
Lights and Appliances	16.1	15.0
Total	41.1	26.4
HERS Index of Reference Design Home	75	46 HERS Index w/o PV
HERS Index Target (SAF Adjusted)	75	46 HERS Index
Size Adjustment Factor	1.00	

## ENERGY STAR v3.1 Mandatory Requirements

X	Duct leakage at post construction better than or equal to ENERGY STAR v3/3.1 requirements.
X	Envelope insulation levels meet or exceed ENERGY STAR v3/3.1 requirements.
X	Slab on Grade Insulation must be > R-5, and at IECC 2009 Depth for Climate Zones 4 and above.
X	Envelope insulation achieves RESNET Grade I installation, or Grade II with insulated sheathing.
X	Windows meet the 2009 IECC Requirements - Table 402.1.1.
X	Duct insulation meets the EPA minimum requirements of R-6.
X	Mechanical ventilation system is installed in the home.
X	ENERGY STAR Checklists fully verified and complete.



This home **MEETS** or **EXCEEDS** the energy efficiency requirements for designation as an EPA ENERGY STAR Version 3.1 Qualified Home.  
HERS Index w/o PV <= HERS Index of Reference Design Home AND HERS Index <= HERS Index Target to comply.

## Pollution Prevented

Type of Emissions	Reduction
Carbon Dioxide (CO2) - tons/yr	3.6
Sulfur Dioxide (SO2) - lbs/yr	4.6
Nitrogen Oxides (NOx) - lbs/yr	8.8

## Energy Cost Savings

	\$/yr
Heating	207
Cooling	34
Water Heating	125
Lights & Appliances	143
Total	509

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9/28/17  
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Weather:Rochester, MN  
2 BR - Mid Level  
2 BR\_Mid  
Level\_28SEPTEMBER17.blg

**Builder**  
SW MN Housing

## Projected Rating: Based on Plans - Field Confirmation Required. Normalized, Modified End-Use Loads (MMBtu/yr)

	ENERGY STAR	As Designed
Heating	5.2	4.4
Cooling	5.1	4.2
Water Heating	13.6	1.6
Lights and Appliances	16.1	15.0
<b>Total</b>	<b>40.0</b>	<b>25.2</b>
<b>HERS Index of Reference Design Home</b>	<b>76</b>	<b>46 HERS Index w/o PV</b>
<b>HERS Index Target (SAF Adjusted)</b>	<b>76</b>	<b>46 HERS Index</b>
<b>Size Adjustment Factor</b>	<b>1.00</b>	

## ENERGY STAR v3.1 Mandatory Requirements

X	Duct leakage at post construction better than or equal to ENERGY STAR v3/3.1 requirements.
X	Envelope insulation levels meet or exceed ENERGY STAR v3/3.1 requirements.
X	Slab on Grade Insulation must be > R-5, and at IECC 2009 Depth for Climate Zones 4 and above.
X	Envelope insulation achieves RESNET Grade I installation, or Grade II with insulated sheathing.
X	Windows meet the 2009 IECC Requirements - Table 402.1.1.
X	Duct insulation meets the EPA minimum requirements of R-6.
X	Mechanical ventilation system is installed in the home.
X	ENERGY STAR Checklists fully verified and complete.



This home **MEETS** or **EXCEEDS** the energy efficiency requirements for designation as an EPA ENERGY STAR Version 3.1 Qualified Home.  
HERS Index w/o PV <= HERS Index of Reference Design Home AND HERS Index <= HERS Index Target to comply.

## Pollution Prevented

Type of Emissions	Reduction
Carbon Dioxide (CO2) - tons/yr	3.5
Sulfur Dioxide (SO2) - lbs/yr	4.6
Nitrogen Oxides (NOx) - lbs/yr	8.7

## Energy Cost Savings

	\$/yr
Heating	195
Cooling	35
Water Heating	125
Lights & Appliances	143
<b>Total</b>	<b>498</b>

The energy cost savings and pollution prevented are calculated by comparing the Rated Home to the Reference Home as defined in the Mortgage Industry National Home Energy Rating Systems Standards as promulgated by the Residential Energy Services Network (RESNET). In accordance with these guidelines, building inputs affecting setpoints, infiltration rates, window shading and the existence of mechanical systems may have been changed prior to calculating loads.

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# ENERGY STAR v3.1 Home Report

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2 Bedroom Unit  
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952-944-5605  
Pat O'Malley

**HERS**  
ProjectedWorstCase  
9/28/17  
Rater ID:9377462



Weather:Rochester, MN  
2 BR - Top Level  
2 BR\_Top  
Level\_28SEPTEMBER17.blg

**Builder**  
SW MN Housing

## Projected Rating: Based on Plans - Field Confirmation Required. Normalized, Modified End-Use Loads (MMBtu/yr)

	ENERGY STAR	As Designed
Heating	5.3	6.1
Cooling	5.0	4.3
Water Heating	13.6	1.6
Lights and Appliances	16.1	15.0
<b>Total</b>	<b>40.0</b>	<b>27.0</b>
<b>HERS Index of Reference Design Home</b>	<b>76</b>	<b>45 HERS Index w/o PV</b>
<b>HERS Index Target (SAF Adjusted)</b>	<b>76</b>	<b>45 HERS Index</b>
<b>Size Adjustment Factor</b>	<b>1.00</b>	

## ENERGY STAR v3.1 Mandatory Requirements

X	Duct leakage at post construction better than or equal to ENERGY STAR v3/3.1 requirements.
X	Envelope insulation levels meet or exceed ENERGY STAR v3/3.1 requirements.
X	Slab on Grade Insulation must be > R-5, and at IECC 2009 Depth for Climate Zones 4 and above.
X	Envelope insulation achieves RESNET Grade I installation, or Grade II with insulated sheathing.
X	Windows meet the 2009 IECC Requirements - Table 402.1.1.
X	Duct insulation meets the EPA minimum requirements of R-6.
X	Mechanical ventilation system is installed in the home.
X	ENERGY STAR Checklists fully verified and complete.



This home **MEETS** or **EXCEEDS** the energy efficiency requirements for designation as an EPA ENERGY STAR Version 3.1 Qualified Home.  
HERS Index w/o PV <= HERS Index of Reference Design Home AND HERS Index <= HERS Index Target to comply.

## Pollution Prevented

Type of Emissions	Reduction
Carbon Dioxide (CO2) - tons/yr	3.8
Sulfur Dioxide (SO2) - lbs/yr	4.6
Nitrogen Oxides (NOx) - lbs/yr	9.3

## Energy Cost Savings

	\$/yr
Heating	233
Cooling	35
Water Heating	125
Lights & Appliances	143
<b>Total</b>	<b>535</b>

The energy cost savings and pollution prevented are calculated by comparing the Rated Home to the Reference Home as defined in the Mortgage Industry National Home Energy Rating Systems Standards as promulgated by the Residential Energy Services Network (RESNET). In accordance with these guidelines, building inputs affecting setpoints, infiltration rates, window shading and the existence of mechanical systems may have been changed prior to calculating loads.

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# ENERGY STAR v3.1 Home Report

**Property**  
3 Bedroom Unit  
Worthington, MN

**Organization**  
Building Knowledge, Inc.  
952-944-5605  
Pat O'Malley

**HERS**  
ProjectedWorstCase  
9/28/17  
Rater ID:9377462



Weather:Rochester, MN  
3 BR - Lower Level  
3 BR\_Lower  
Level\_28SEPTEMBER17.blg

**Builder**  
SW MN Housing

## Projected Rating: Based on Plans - Field Confirmation Required. Normalized, Modified End-Use Loads (MMBtu/yr)

	ENERGY STAR	As Designed
Heating	12.7	11.5
Cooling	6.6	4.8
Water Heating	17.0	2.1
Lights and Appliances	18.6	17.1
<b>Total</b>	<b>55.0</b>	<b>35.6</b>
<b>HERS Index of Reference Design Home</b>	<b>76</b>	<b>47 HERS Index w/o PV</b>
<b>HERS Index Target (SAF Adjusted)</b>	<b>76</b>	<b>47 HERS Index</b>
<b>Size Adjustment Factor</b>	<b>1.00</b>	

## ENERGY STAR v3.1 Mandatory Requirements

X	Duct leakage at post construction better than or equal to ENERGY STAR v3/3.1 requirements.
X	Envelope insulation levels meet or exceed ENERGY STAR v3/3.1 requirements.
X	Slab on Grade Insulation must be > R-5, and at IECC 2009 Depth for Climate Zones 4 and above.
X	Envelope insulation achieves RESNET Grade I installation, or Grade II with insulated sheathing.
X	Windows meet the 2009 IECC Requirements - Table 402.1.1.
X	Duct insulation meets the EPA minimum requirements of R-6.
X	Mechanical ventilation system is installed in the home.
X	ENERGY STAR Checklists fully verified and complete.



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HERS Index w/o PV <= HERS Index of Reference Design Home AND HERS Index <= HERS Index Target to comply.

## Pollution Prevented

Type of Emissions	Reduction
Carbon Dioxide (CO2) - tons/yr	4.5
Sulfur Dioxide (SO2) - lbs/yr	5.4
Nitrogen Oxides (NOx) - lbs/yr	11.0

## Energy Cost Savings

	\$/yr
Heating	286
Cooling	39
Water Heating	136
Lights & Appliances	175
<b>Total</b>	<b>636</b>

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Weather:Rochester, MN  
3 BR - Mid Level  
3 BR\_Mid  
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Builder  
SW MN Housing

## Projected Rating: Based on Plans - Field Confirmation Required. Normalized, Modified End-Use Loads (MMBtu/yr)

	ENERGY STAR	As Designed
Heating	9.7	7.8
Cooling	7.3	6.4
Water Heating	17.0	2.1
Lights and Appliances	18.6	17.1
Total	52.6	33.5
HERS Index of Reference Design Home	77	47 HERS Index w/o PV
HERS Index Target (SAF Adjusted)	77	47 HERS Index
Size Adjustment Factor	1.00	

## ENERGY STAR v3.1 Mandatory Requirements

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HERS Index w/o PV <= HERS Index of Reference Design Home AND HERS Index <= HERS Index Target to comply.

## Pollution Prevented

Type of Emissions	Reduction
Carbon Dioxide (CO2) - tons/yr	4.3
Sulfur Dioxide (SO2) - lbs/yr	5.2
Nitrogen Oxides (NOx) - lbs/yr	10.7

## Energy Cost Savings

	\$/yr
Heating	272
Cooling	32
Water Heating	136
Lights & Appliances	175
Total	614

The energy cost savings and pollution prevented are calculated by comparing the Rated Home to the Reference Home as defined in the Mortgage Industry National Home Energy Rating Systems Standards as promulgated by the Residential Energy Services Network (RESNET). In accordance with these guidelines, building inputs affecting setpoints, infiltration rates, window shading and the existence of mechanical systems may have been changed prior to calculating loads.

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Weather:Rochester, MN  
3 BR - Top Level  
3 BR\_Top  
Level\_28SEPTEMBER17.blg

**Builder**  
SW MN Housing

## Projected Rating: Based on Plans - Field Confirmation Required. Normalized, Modified End-Use Loads (MMBtu/yr)

	ENERGY STAR	As Designed
Heating	9.8	9.9
Cooling	7.2	6.5
Water Heating	17.0	2.1
Lights and Appliances	18.6	17.1
<b>Total</b>	<b>52.7</b>	<b>35.6</b>
<b>HERS Index of Reference Design Home</b>	<b>77</b>	<b>46 HERS Index w/o PV</b>
<b>HERS Index Target (SAF Adjusted)</b>	<b>77</b>	<b>46 HERS Index</b>
<b>Size Adjustment Factor</b>	<b>1.00</b>	

## ENERGY STAR v3.1 Mandatory Requirements

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X	Windows meet the 2009 IECC Requirements - Table 402.1.1.
X	Duct insulation meets the EPA minimum requirements of R-6.
X	Mechanical ventilation system is installed in the home.
X	ENERGY STAR Checklists fully verified and complete.



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HERS Index w/o PV <= HERS Index of Reference Design Home AND HERS Index <= HERS Index Target to comply.

## Pollution Prevented

Type of Emissions	Reduction
Carbon Dioxide (CO2) - tons/yr	4.7
Sulfur Dioxide (SO2) - lbs/yr	5.2
Nitrogen Oxides (NOx) - lbs/yr	11.5

## Energy Cost Savings

	\$/yr
Heating	322
Cooling	32
Water Heating	136
Lights & Appliances	175
<b>Total</b>	<b>664</b>

The energy cost savings and pollution prevented are calculated by comparing the Rated Home to the Reference Home as defined in the Mortgage Industry National Home Energy Rating Systems Standards as promulgated by the Residential Energy Services Network (RESNET). In accordance with these guidelines, building inputs affecting setpoints, infiltration rates, window shading and the existence of mechanical systems may have been changed prior to calculating loads.

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