



MINETO-1

Grand Rapids, Michigan

HAS FULFILLED THE REQUIREMENTS OF THE LEED GREEN BUILDING RATING SYSTEM CERTIFICATION ESTABLISHED BY THE U.S. GREEN BUILDING COUNCIL AND VERIFIED BY GREEN BUSINESS CERTIFICATION INC.

LEED v4.1

LEED FOR HOMES SINGLE FAMILY

PLATINUM

April 2026

A handwritten signature in black ink, appearing to read "Peter Templeton".

PETER TEMPLETON, PRESIDENT & CEO
U.S. GREEN BUILDING COUNCIL & GREEN BUSINESS CERTIFICATION INC.

MiNet0-1 (Eastern) Scorecard (ID: 1000181936)



Project Address 1000181936, MiNet0-1 (Eastern), 720 Eastern Avenue NE Grand Rapids, MI

Note: The information on this tab is READ-ONLY. To edit this information, see the Credit Category tabs.

Total		Certification Level:	Platinum	Verified	87
	Integrative Process	Preliminary Y	0 of 2	M 0	Verified 0
IPc	Integrative Process		0 of 2	0	
	Location and Transportation	Preliminary Y	1 of 10	M 0	Verified 8
LTP	Floodplain Avoidance		Required		Verified
LTc	LEED for Neighborhood Development		0 of 10	0	
LTc	Site Selection		1 of 6	0	6
LTc	Compact Development		0 of 1	0	1
LTc	Community Resources		0 of 1	0	1
LTc	Access to Transit		0 of 2	0	
	Sustainable Sites	Preliminary Y	0 of 5	M 0	Verified 2
SSp	Construction Activity Pollution Prevention		Required		Verified
SSc	Heat Island Reduction		0 of 1	0	
SSc	Rainwater Management		0 of 2	0	
SSc	Nontoxic Pest Control		0 of 2	0	2
	Water Efficiency	Preliminary Y	0 of 15	M 0	Verified 12
WEp	Water Use		Required		Verified
WEp	Water Metering		Required		Verified
WEc	Total Water Use		0 of 15	0	
WEc	Indoor Water Use		0 of 11	0	10
WEc	Outdoor Water Use		0 of 4	0	2
	Energy and Atmosphere	Preliminary Y	0 of 40	M 0	Verified 37
EAp	Minimum Energy Performance		Required		Verified
EAp	Energy Metering		Required		Verified
EAp	Education of the Homeowner, Tenant or Building Manager		Required		Verified
EAc	Annual Energy Use		0 of 36	0	36
EAc	Efficient Hot Water Distribution System		0 of 2	0	
EAc	HVAC Start-Up Credentialing		0 of 1	0	
EAc	Refrigerant Management		0 of 1	0	1



Materials and Resources		Preliminary	Y	0 of 12	M	0	Verified	6
MRp	Certified Tropical Wood	Required					Verified	
MRp	Durability Management	Required					Verified	
MRC	Durability Management Verification			0 of 3	0			3
MRC	Environmentally Preferable Products			0 of 5	0			2
MRC	Construction Waste Management			0 of 2	0			
MRC	Material-Efficient Framing			0 of 2	0			1



Indoor Environmental Quality		Preliminary	Y	0 of 16	M	1	Verified	15
EQp	Ventilation	Required					Verified	
EQp	Combustion Venting	Required					Verified	
EQp	Garage Pollutant Protection	Required					Verified	
EQp	Radon-Resistant Construction	Required					Verified	
EQp	Air Filtering	Required					Verified	
EQp	Compartmentalization	Required					Verified	
EQc	Enhanced Ventilation			0 of 3	0			3
EQc	Contaminant Control			0 of 3	0			3
EQc	Balancing of Heating and Cooling Distribution Systems			0 of 6	1			5
EQc	Low-Emitting Products			0 of 4	0			4



Innovation		Preliminary	Y	0 of 6	M	0	Verified	3
INp	Preliminary Rating	Required					Verified	
INc	Innovation			0 of 5	0			2
INc	LEED Accredited Professional			0 of 1	0			1



Regional Priority		Preliminary	Y	0 of 4	M	0	Verified	4
RPC	Regional Priority			0 of 4	0			4

Total		Preliminary	Y	1 of 110	M	1	Verified	87
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Certification Thresholds Certified: 40-49, Silver: 50-59, Gold: 60-79, Platinum: 80-110

The GreenHome Institute Hereby Certifies

MINeto-1

720 EASTERN AVENUE NE
GRAND RAPIDS, MI 49503

FOR A NEW CONSTRUCTION PROJECT, ACHIEVING
GREENSTAR HOMES PLATINUM CERTIFICATION




Date of Certification: April 13th 2026

Version 4 Certification ID# 20230713001



Badges: Zero Energy | All Electric Home | Healthier Home | Resilience | Peak load Shaver



	Project details	Select or enter in
	Project Name	MINet0-1
	Address	720 Eastern Avenue NE
	Address 2	
	City	Grand Rapids
	State	MI
[1]	Zip	49503
	Use	Single Family
	Build	New Construction
	Conditioned Square feet	1516
[2]	Number of bedrooms	3
	Number of living units	1
	Team Leader Contact	
	Name	Dale Hulst
	Company	Michigan Net Zero Home LLC
	Profession / role	Owner/Designer/Builder
	Email	dale@minetzero.com
	Phone	616-260-9711
	Green Home Inspector	
	Name	Jenny Rempert
	Company	Eco Achievers
	Email	jenny@ecoachievers.com
	Phone	314-706-2499
	Project ID #?	
	Certification Goal	Platinum
	Submission Type?	Final Submittal
	Home Water Score?	8.1
	Badges being pursued?	
	Badge #1	GHI Zero Energy
	Badge #2	All Electric
	Badge #3	Healthier Home
	Badge #4	Peak Load Shaver
	Badge #5	Resilience
	Badge #6	
	Badge #7	
	Badge #8	
	<i>Current version</i>	4

GreenStar Homes Measures

Achieving?	Measures (click links for more details on each)
Yes	Determine the project's future climate risks
Yes	Home Energy Cost Rating and Performance Testing Opportunities
Yes	Moisture and wall water leak assessment + repair
Yes	Properly exhausting bath fans in each bathroom
Yes	Electric stove OR Range Hood is tested to vent at 100 CFM outdoors
Yes	No gas leaks found from inspection
Yes	Test combustion based appliances for CO leaks and replace or repair if found
Yes	Carbon Monoxide detectors are installed on all floors and near fireplaces
Yes	No radon detected above PCL 4 when tested or system installed
Yes	Use at least MERV 8 Rated Filters on Ducted Systems
Yes	Shower head(s) are 2.2 Gallons Per Minute (Average) Or Home Water Score of 2
Yes	Bathroom Aerators are 2.0 Gallons Per Minute (Average) Or Home Water Score 2
Yes	Toilets are under 1.6 Gallons per Flush (average) Or Home Water Score of 2
Yes	Plumbing leak and pressure test shows no leaks
Yes	Use steel braided hoses or drain pans under clothes washers
Yes	Drains under tank water heater in or above living space
Yes	Gutter system draining away from home or well-draining sandy soils
Yes	Review and resolve any potential lead issues in pre-1978 homes
Yes	Mitigate any asbestos or ensure none present
Yes	No knob and tube wiring remains in the home

GreenStar Homes Measures

Yes	A majority of lighting should be LED
Yes	Attached Housing Only - Reduce air leaks between units
Yes	If fireplace exists ensure occupants are not exposed to bad air quality
Yes	Evaluate embodied carbon
Yes	DOE Home Energy Score of 6 <= 30.6 mbtu/year of energy use on New Builds
Yes	Shower head(s) are 2.0 Gallons Per Minute (Average) or Home Water Score of 3
Yes	Bathroom Aerators are 1.75 Gallons Per Minute (Average) or Home Water Score of 3
Yes	Toilets are under 1.3 Gallons per Flush (average) or Home Water Score of 3
Yes	Properly sized cooling equipment
Yes	Use at least MERV 10 Rated Filters on Ducted Systems
Yes	Moisture resistant flooring in bathroom, kitchen & main entry ways
Yes	Bath Fans must be tested to at least 50 CFM or more in each bathroom
Yes	Whole-house fresh air supply provided
Yes	New gas appliances must be sealed/vented or all electric
Yes	The kitchen must have proper ventilation through rangehood or outdoor air system or monitor
Yes	Refrigerant charge test completed on all AC / Heatpumps
Yes	Create instructions documenting how to maintain the building
Yes	Homeowner or tenant trained on how to maintain the building
Yes	No new ducts in floor panned in joists
Yes	New shower/tub surrounds use certified wallboard, coating or is drywall free
Yes	Reduce embodied carbon in materials
Yes	Further reduced air leakage in attached housing to .3 for new and .4 for existing
Yes	Grading slopes away from home or french drains are added in new construction
Yes	DOE Home Energy Score of 8 <= 24.5 mbtu/year of energy use on New Builds
Yes	Shower head(s) are = or < 1.5 Gallons Per Minute (Average) or home water score of 5
Yes	Bathroom Aerators are = or < 1 Gallons Per Minute (Average) or home water score of 5

GreenStar Homes Measures

Yes	Toilets are = or < 1 Gallon per Flush (average) or home water score of 5
Yes	Balanced fresh air system installed and tested
Yes	Add an air quality sensor to the main the living area or ducts
Yes	Insulate cold water pipes or keep them out of unconditioned space
Yes	Water heating is all electric or solar
Yes	Cooking is all electric
Yes	Dryer is all-electric
Yes	Heating is dual fuel/hybrid or all-electric
Yes	Use at least MERV 13 Rated Filters on Ducted Systems
Yes	Tap water filtration added that is appropriate to the area
Yes	Well water systems must use on demand softeners when present
Yes	If installing new wood product do not use tropical OR make sure it is certified
Yes	Attached Housing Only - Reduce air leaks between units - .23 New .3 Renovation
Yes	Reduce embodied energy or upfront carbon in materials by 15%
Yes	DOE Home Energy Score of 10 on existing or 17.5 mbtu/year of energy use on New Builds
Yes	All ducts are fully ducted and none are panned in the joists
Yes	All Heating is all electric
Yes	Use at least MERV 16 Rated Filters on Ducted Systems
Yes	Ventilation includes energy/heat recovery or smart features
Yes	Humidity control is present where appropriate by climate
Yes	Advanced plumbing or hot water test passed
Yes	Shower head(s) are = or < 1.25 Gallons Per Minute (Average) or Home Water Score of 6
Yes	Toilets are < 1 Gallon per Flush (average) or Home Water Score of 6
Yes	Bathroom Aerators are = or < .5 Gallons Per Minute (Average) or Home Water Score of 6
Yes	Water leak detection and real time metering
Yes	No combustion fireplace present indoors
Yes	Home appliances made for time of use / peak load avoidance
Yes	Home breaker box 200 amp and can fit future solar & electric car chargers
Yes	Floorscore or Green Label Plus on new carpet

GreenStar Homes Measures

Yes	Attached Housing Only - Reduce air leaks between units - .15 New .23 Renovations
Yes	Reduce embodied energy or upfront carbon in materials by 25%

Areas	Baseline in gallons of water per year	Baseline Starting Assumptions	Measurements	Enter Average flow rate of installed or proposed devices
Toilet	18,980.00	1.6	Enter Gallons Per Flush >	0.8
Shower	4,125.30	2.5	Enter Gallons Per Minute >	1.5
Bathroom	3,650.00	2.2	Enter Gallons Per Minute >	0.5 [1]
Kitchen aerator	3,650.00	2.5	Enter Gallons Per Minute >	1.5
Clothes Washer	3,394.50	10	Enter in Water Factor >	3.5
Dishwasher	379.60	6.1	Enter Gallons Per Cycle >	3.2
Leaks	3,110.67	2,681.57	Enter in 0 when no leaks detected >	0
Outdoor water use (EPA Baseline) vs Landscape Water Requirements	13,873		Learn How to Use the Home Water Score here	6,644
Total Usage Before	51,163			
Grey Water Usage gallons >	0			
Rain water / Ground Water Usage >	0			
Gallons offset by grey/rain water	0.00			
% saved from rain/grey water	0.00%			Home Water Score
Total Gallons Saved in %	81.07%			8.1
Total Indoor Usage excluding leaks	16,372			
Total Indoor Usage with leaks	37,290.07			



Usage of water pre construction / renovation



Usage

Outdoor
30.6%

Home Energy Rating Certificate

Final Report

Rating Date: 2025-11-07
 Registry ID: 917324602
 Ekotrope ID: dG5yy012



HERS® Index Score:
-28
 Your home's HERS score is a relative performance score. The lower the number, the more energy efficient the home. To learn more, visit www.hersindex.com

Annual Savings
\$6,479
 *Relative to an average U.S. home

Home:
 720 Eastern Ave, NE
 Grand Rapids, MI 49503
Builder:
 Michigan Net Zero Homes LLC

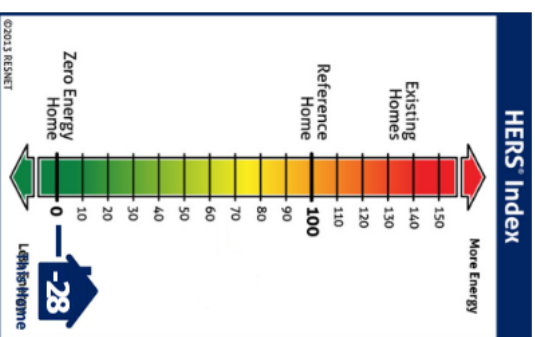
Your Home's Estimated Energy Use:

Use [MBtu]	Annual Cost
Heating	\$461
Cooling	\$57
Hot Water	\$107
Lights/Appliances	\$895
Service Charges	\$96
Generation (e.g. Solar)	-\$1,520
Total:	-\$26.9

This home meets or exceeds the criteria of the following:

- ENERGY STAR v3.3
- ENERGY STAR v3.2
- ENERGY STAR v3.1
- ENERGY STAR v3
- 2015 Michigan Energy Code

HERS® Index



Home Feature Summary:

Home Type:	Single family detached
Model:	N/A
Community:	N/A
Conditioned Floor Area:	1,512 ft ²
Number of Bedrooms:	3
Primary Heating System:	Air Source Heat Pump • Electric • 10.4 HSPF2
Primary Cooling System:	Air Source Heat Pump • Electric • 26.3 SEER2
Primary Water Heating:	Residential Water Heater • Electric • 3.7 UEF
House Tightness:	158 CFM50 (0.40 ACH50)
Ventilation:	125 CFM • 63 Watts • ERV
Duct Leakage to Outside:	Forced Air Ductless
Above Grade Walls:	R-49
Ceiling:	Vaulted Roof / Exposed Exterior, R-88
Window Type:	U-Value: 0.13, SHGC: 0.36
Foundation Walls:	N/A
Framed Floor:	N/A

Rating Completed by:

Energy Rater: Jenny Rempert
 RESNET ID: 8270545
Rating Company: Eco Achievers
 415 North Sangamon Street, Chicago IL 60642
Rating Provider: Building Efficiency Resources
 PO Box 1769 Brevard, NC 28712
 800-399-9620



Jenny Rempert, Certified Energy Rater
 Date: 1/6/26 at 12:41 PM



ENERGY STAR V3.1 Home Report



Property
720 Eastern Ave, NE
Grand Rapids, MI 49503

Organization
Eco Achievers
Jenny Rempert

Inspection Status
2025-11-07
Rater ID (RTIN): 8270545
RESNET Registered
(Confirmed)

MiNetZero Home- 720 Eastern Ave
MiNetZero

Builder
Michigan Net Zero Homes
LLC

Mandatory Requirements

- ✓ Duct leakage at post construction better than or equal to applicable requirements.
- ✓ Total building thermal envelope UA meets or exceeds applicable requirements.
- ✓ Slab on Grade Insulation must be > R-5, and at IECC 2009 Depth for Climate Zones 4 and above.
- ✓ Envelope insulation achieves RESNET Grade I installation, or uses exceptions in footnote 5.
- ✓ Total window thermal properties meet or exceed the applicable requirements
- ✓ Duct insulation meets the EPA minimum requirements of R-6.
- ✓ Mechanical ventilation system is installed in the home.
- ✓ ENERGY STAR Checklists fully verified and complete.

ERI (HERS) Index Target

Reference Home ERI (HERS)	68
SAF (Size Adjustment Factor)	1.00
SAF Adjusted ERI (HERS) Target	<u>68</u>
As Designed Home ERI (HERS)	-28
As Designed Home ERI (HERS) w/o PV	28

Normalized, Modified End-Use Loads (MBtu / year)

	ENERGY STAR	As Designed
Heating	35.9	9.9
Cooling	3.8	1.8
Water Heating	10.6	1.7
Lights and Appliances	18.0	15.7
Total	68.3	29.1



This home **MEETS** or **EXCEEDS** the energy efficiency requirements for designation as an EPA ENERGY STAR Qualified Home under Version 3.1

Pollution Prevented

Type of Emissions	Reduction
Carbon Dioxide (CO ₂) - tons/yr	22.3

Energy Cost Savings

	\$/yr
Heating	1,693
Cooling	63
Water Heating	556
Lights & Appliances	130
Generation Savings	1,532
Total	3,975

The energy savings and pollution prevented are calculated by comparing the Rated Home to the ENERGY STAR Version 3.1 Reference Home as defined in the ENERGY STAR Qualified Homes ERI (HERS) Target Procedure for National Program Requirements, Version 3.1 promulgated by the Environmental Protection Agency (EPA). In accordance with the ANSI/RESNET/ICC 301 Standard, building inputs affecting setpoints infiltration rates, window shading and the existence of mechanical systems may have been changed prior to calculating loads

LEED for Homes Source Energy Budget



Property

720 Eastern Ave, NE
Grand Rapids, MI 49503

MiNetZero Home- 720 Eastern Ave
MiNetZero

Organization

Eco Achievers
Jenny Rempert

Builder

Michigan Net Zero Homes
LLC

Inspection Status

2025-11-07
Rater ID (RTIN): 8270545
RESNET Registered
(Confirmed)

This home will consume 118% less source energy than the LEED Source Energy Budget limit.

Source Energy Consumption (MBtu / year)*

	LEED Reference	As Designed
Heating	391.3	22.7
Cooling	9.4	2.8
Hot Water	38.8	6.0
Lights and Appliances	68.3	50.3
Onsite Generation	0.0	-171.5
Total	507.7	-89.7

*Source Energy is determined by multiplying site energy electric use by 3.2 and fossil fuel use by 1.05. Note that if there are major energy consumers not included in this energy rating (e.g. pool pumps), they must be included separately.

Home Feature Summary:

Home Type:	Single family detached
Model:	N/A
Community:	N/A
Conditioned Floor Area:	1,512 ft ²
Number of Bedrooms:	3
Primary Heating System:	Air Source Heat Pump • Electric • 10.4 HSPF2
Primary Cooling System:	Air Source Heat Pump • Electric • 26.3 SEER2
Primary Water Heating:	Residential Water Heater • Electric • 3.7 UEF
House Tightness:	158 CFM50 (0.40 ACH50)
Ventilation:	125 CFM • 63 Watts • ERV
Duct Leakage to Outside:	Forced Air Ductless
Above Grade Walls:	R-49
Ceiling:	Vaulted Roof / Exposed Exterior, R-88
Window Type:	U-Value: 0.13, SHGC: 0.36
Foundation Walls:	N/A
Framed Floor:	N/A

Building Summary

Property
720 Eastern Ave, NE
Grand Rapids, MI 49503

Organization
Eco Achievers
Jenny Rempert

Inspection Status
2025-11-07
Rater ID (RTIN): 8270545
RESNET Registered (Confirmed)



MiNetZero Home- 720 Eastern Ave
MiNetZero

Builder
Michigan Net Zero Homes LLC

General Building Information

Number Of Bedrooms: 3	Number Of Floors: 2
Conditioned Floor Area [sq. ft.]: 1,512	Has Electric Vehicle Ready Space: Yes
Unconditioned, attached garage? No	Conditioned Volume [cu. ft.]: 23,616
Total Units in Building: 1	Residence Type: Single family detached
Number of Floors in Building: N/A	Floor Number: N/A
Model: N/A	Community:
RESNET/IECC 2006-2018 Climate Zone: 5A	IECC 2021 Climate Zone: 5A

Envelope Components

Slab

Name	Library Type	Perimeter	Floor Grade	Carpet R	Exposed Masonry Area	Surface Area	Location	Enclosing
Slab	19" Glavel insulation	144	On Grade	0	0	1,040.0 ft²	Exposed Exterior	Conditioned Space

Slab Library List

Name	Wall Construction Type	Slab Completely Insulated?	Underslab Insulation Width [ft]	Perimeter Insulation Depth [ft]	Perimeter Insulation R Value	Perimeter Insulation Is Exterior	Thermal Break	Effective R-value
19" Glavel insulation	Wood Frame / Other	Yes	0	3.5	6.8	Yes	No	32.30

Wall

Name	Library Type	Orientation	Surface Color	Solar Absorptance	Surface Area	Location	Effective R-value
Exterior Walls	MiNet0 ext wall	Unspecified	Medium	0.75	2,802.0 ft²	Exposed Exterior	49.852

Glazing

Name	Library Type	Wall Assignment	Foundation Wall Assignment	Is Operable	Overhang Depth	Overhang Ft To Top	Overhang Ft To Bottom	Orientation	Surface Area
EAST W08	.13/.36	Exterior Walls		Yes	0	0	0	East	13.0 ft²
EAST W14	.13/.36	Exterior Walls		Yes	0	0	0	East	26.0 ft²
NORTH W03	.13/.36	Exterior Walls		Yes	0	0	0	North	26.0 ft²
NORTH W07	.13/.36	Exterior Walls		Yes	0	0	0	North	12.0 ft²
NORTH W10 (door)	.17/.39	Exterior Walls		Yes	4	1.33	8.33	North	23.3 ft²
NORTH W12	.13/.36	Exterior Walls		Yes	1.33	2.33	4.33	North	12.3 ft²
NORTH W13	.13/.36	Exterior Walls		Yes	1.33	2.25	6.25	North	24.0 ft²
NORTH W15	.13/.36	Exterior Walls		Yes	1.33	2.33	4.33	North	12.3 ft²
SOUTH W04	.13/.36	Exterior Walls		Yes	1.94	0	4.33	South	13.0 ft²
SOUTH W05	.13/.36	Exterior Walls		Yes	1.94	0	4.33	South	26.0 ft²
SOUTH W06	.13/.36	Exterior Walls		Yes	1.94	0	4.33	South	13.0 ft²
SOUTH W09	.13/.36	Exterior Walls		Yes	1.94	0	4.33	South	13.0 ft²
WEST W01	.13/.36	Exterior Walls		Yes	9.33	0.5	6	West	33.0 ft²
WEST W02 (door)	.17/.39	Exterior Walls		Yes	9.33	0.5	7.5	West	23.3 ft²
WEST W11	.13/.36	Exterior Walls		Yes	0	0	0	West	26.0 ft²

Building Summary

Property
720 Eastern Ave, NE
Grand Rapids, MI 49503

Project & Plan
MiNetZero Home- 720 Eastern Ave
MiNetZero

Organization
Eco Achievers
Jenny Rempert

Inspection Status
2025-11-07 Rater ID (RTIN): 827054
Builder
Michigan Net Zero Homes LLC

Glazing Library List

Name	Shgc	U-factor
.13/.36	0.36	0.130
.17/.39	0.39	0.170

Roof Insulation

Name	Library Type	Attic Exterior Area [ft ²]	Clay or Concrete Roof Tiles	Does the Roof have Eaves?	Effective R-Value after eaves	Surface Color	Solar Absorptance	Surface Area	Location
Cathedral Ceiling	2x4,12" open web,2x4	1,474	No	No	-	Medium	0.75	1,474.0 ft ²	Vaulted Roof / Exposed Exterior

Roof Insulation Library List

Name	Has Radiant Barrier	Effective R-value
2x4,12" open web,2x4	No	87.599

Whole House Infiltration

Infiltration	Measurement Type	Shelter Class
158 CFM at 50 Pa	Blower-door tested	4

Mechanicals, Lights & Water

Mechanical Ventilation

Ventilation Type	Ventilation Rate [ft ³ / Minute]	Operational hours per day	Fan Watts	Runs once every three hours	Energy Recovery Percent	Model Number	Manufacturer
ERV	125 CFM	24	63 Watts	Yes	82	COMFOAIR Q450	ZEHNDER

Lighting

% Interior Fluorescent Lighting	% Interior LED Lighting	% Exterior Fluorescent Lighting	% Exterior LED Lighting	% Garage Fluorescent Lighting	% Garage LED Lighting
0	100	0	100	0	100

Solar Generation

Index	Track Mode	Nameplate Capacity (kWdc)	Derate Factor	Orientation (deg)	Tilt (deg)
1	Fixed	12.5 kW	0.83	180°	45°

Dehumidifier

Name	Library Type	Equipment Type	Capacity [pints/day]	Integrated Energy Factor [iters/kWh]
Dehumidifier	MiNetZero Dehumidifier	Portable	50	1.79999995

Conditioning Equipment

Name	Library Type	Serial Number	Heating Percent Load	Cooling Percent Load	Hot Water Percent Load	Location
HP	MiNetZero		100%	100%	0%	Conditioned Space
Water Heater	43 gal. 3.7 UEF		0%	0%	100%	Conditioned Space

Building Summary

Property
720 Eastern Ave, NE
Grand Rapids, MI 49503

Project & Plan
MiNetZero Home- 720 Eastern Ave
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Inspection Status
2025-11-07 Rater ID (RTIN): 827054
Builder
Michigan Net Zero Homes LLC

Equipment Type: 43 gal. 3.7 UEF

Equipment Type	Residential Water Heater
Fuel Type	Electric
Distribution Type	Hydronic Delivery (Radiant)
Hot Water Efficiency	3.7 UEF
Tank Capacity (gal.)	43

Equipment Type: MiNetZero

Equipment Type	Air Source Heat Pump
Fuel Type	Electric
Distribution Type	Forced Air Ductless
Motor Type	ECM (Variable Speed)
Heat Pump System Type	Ducted Split System
Heating Efficiency	10.4 HSPF2
Heating Capacity [kBtu/h]	12.3
Backup Fuel Type	Electric
Switchover Temperature [°F]	0
Backup Heating Efficiency	1 Adjusted Efficiency
Use default Supplemental Heat	Yes
Cooling Efficiency	26.3 SEER2
Cooling Capacity [kBtu/h]	12

Distribution System

Distribution Type	Forced Air Ductless
Heating Equipment	HP
Cooling Equipment	HP
Is All Equipment In Conditioned Space	Yes
Leakage Default	HERS Default Leakage
Duct System Efficiency	1

Ceiling Fan

Has Ceiling Fan	Yes
Cfm Per Watt	85

Water Distribution

Water Fixture Type	Low-flow
Use Default Hot Water Pipe Length	No
Hot Water Pipe Length [ft]	28
At Least R3 Pipe Insulation?	Yes
Hot Water Recirculation System?	No
Drain Water Heat Recovery?	No

Appliances & Notes

Clothes Dryer

Cef	6.97
Fuel Type	Electric
Field Utilization	Moisture Sensing
Is Outside Conditioned Space	No
Defaults Type	Custom
Is Ventless	Yes
Is Heat Pump	Yes
Clothes Dryer Available	Yes

Clothes Washer

Label Energy Rating	118 kWh/Year
Annual Gas Cost	\$11.00
Electric Rate	\$0.14/kWh
Gas Rate	\$1.21/Therm
Capacity	2.4
Imef	2.72
Defaults Type	Custom
Load Type	Front-load
Loads Per Week	6
Is Outside Conditioned Space	No
Clothes Washer Available	Yes

Building Summary

Property
720 Eastern Ave, NE
Grand Rapids, MI 49503

Project & Plan
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MiNetZero

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2025-11-07 Rater ID (RTIN): 827054
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Michigan Net Zero Homes LLC

Dishwasher

Dishwasher Defaults Type	Custom
Dishwasher Size	Standard
Dishwasher Efficiency	240 kWh
Annual Gas Cost	\$26.00
Electric Rate	\$0.14/kWh
Gas Rate	\$1.21/Therm
Is Outside Conditioned Space	No
Dishwasher Available	Yes

Appliances and Controls

Programmable thermostat?	Yes
Range/Oven Fuel	Electric
Convection Oven?	Yes
Induction Range?	Yes
Range/Oven Outside Conditioned Space?	No
Refrigerator Consumption	568 kWh/Year
Refrigerator Outside Conditioned Space?	No

Building Summary

Property
720 Eastern Ave, NE
Grand Rapids, MI 49503

Project & Plan
MiNetZero Home- 720 Eastern Ave
MiNetZero

Organization
Eco Achievers
Jenny Rempert

Inspection Status
2025-11-07 Rater ID (RTIN): 827054
Builder
Michigan Net Zero Homes LLC

Notes

GL 11/17/25 QA notes: Print permission enabled for this ESv32 rating file

Notes for Consumers Energy: no gas, no applicable Model/Community/Lot names or numbers.

11/11/25 JR -FINAL UPDATES

General Info

updated CFA to exclude areas where ceiling <7"
using total volume and enclosure area (to secondary air barrier) - closer alignment to WUFI model
checked box for EV

Envelope

updated areas for everything
Rim Joist is N/A because the AGW type is continuous throughout the whole wall. The floor joists do not interrupt either air barrier or the wall cavity (basically one tall wall from ground to attic).

Fenestration

window values verified on site

Mechanical

updated HP, DWH, ERV
no AHRI # available for this DWH
ERV energy recovery % based on ASRE @ 123 CFM heating
measured flow rate: average between supply (127.2) and exhaust (122.7).
Measured in duct at unit.
Added dehumidifier and ceiling fans
ceiling fan CFM/W based on high speed

Water

check pipe ins & length

Lighting & Appliances

updated appliances
no Energy Guide available yet for washer

Infiltration

average between depressurization (129 CFM) and pressurization (187 CFM)

Onsite Generation

Codes & Programs

ESTAR Cx checklist not required for this system type
switched to ZERH v2

JR 2/13/24

Envelope

Compacted Glavel is R-1.7 per inch, uncompacted Glavel is R-1.3 per inch.
Compacted Glavel of slab is 19", R-32.3 total.
using R-1 for 3.5" airspace in wall

Notes (continued)

Rim joist is same R-value as wall, minus 3.5" service cavity

Fenestration

windows: 0.13/0.36
doors: 0.17/0.39
doors are ~70% glazing. U-val includes framing.

Mechanical

need to confirm backup elec heat /switchover temp
does ERV need to be included in heating/cooling loads? No info about capacity in plans/product lit
Using ASRE and watts at 138 CFM heating per HVI. Actual constant rate is 120 CFM.

Water

Appliances

updated with 1/25 CD set (using plan dishwasher, not spec)

Infiltration

0.060 CFM/sf shell threshold per PHIUS

Onsite Generation

derate factor is default

Components Not Found: Foundation Wall, Foundation Wall Library List, Framed Floor, Rim Joist, Skylight, Opaque Door, Onsite Generation, Whole House Fan, Whole House Fan Library List, HVAC Grading (Not Conducted)



AI Reports®
Form 820.07*

Client File #:		Appraisal File #:	
Residential Green and Energy Efficient Addendum			
Client: Michigan Net Zero Homes LLC			
Subject Property: 720 Eastern Ave NE (MiNet0-1)			
City: Grand Rapids	State: MI	Zip: 49503	

Additional resources to aid in the valuation of green properties and the completion of this form can be found at http://www.appraisalinstitute.org/education/green_energy_addendum.aspx

The appraiser hereby certifies that the information provided within this addendum:

- has been considered in the appraiser's development of the appraisal of the subject property only for the client and intended user(s) identified in the appraisal report and only for the intended use stated in the report.
- is not provided by the appraiser for any other purpose and should not be relied upon by parties other than those identified by the appraiser as the client or intended user(s) in the report.
- is the result of the appraiser's routine inspection of and inquiries about the subject property's green and energy efficient features. Extraordinary assumption: Data provided herein is assumed to be accurate and if found to be in error could alter the appraiser's opinions or conclusions. Use of an extraordinary assumption may affect the assignment results.
- is not made as a representation or as a warranty as to the efficiency, quality, function, operability, reliability or cost savings of the reported items or of the subject property in general, and this addendum should not be relied upon for such assessments.

Green Building: The practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's lifecycle from siting to design, construction, operation, maintenance, renovation, and deconstruction. This practice expands and complements the classic building design concerns of economy, utility, durability, and comfort (US EPA). High Performance building and green building are often used interchangeably.

Six Elements of Green Building: A green building has attributes that fall into the six elements of green building known as (1) site, (2) water, (3) energy, (4) materials, (5) indoor environmental quality, and (6) maintenance and operation. The energy and water elements are the most measurable elements of green or high performance housing. Appraisers need savings amounts to develop an income approach to support energy efficient contributory value.

THIRD-PARTY VERIFICATIONS (See types defined in glossary).

The following verified items are considered within the appraisal analysis of the subject property:

Green Certification Certifications attest that the home meets certain minimum thresholds.	Environmental Protection Agency (EPA): <input checked="" type="checkbox"/> Indoor airPLUS <input type="checkbox"/> WaterSense <input checked="" type="checkbox"/> ENERGY STAR	
	Energy Department (DOE): <input checked="" type="checkbox"/> Zero Energy Ready Home (ZERH)	
	Home Innovation Research Labs NGBS Home Remodel:	
	Home Innovation Research Labs NGBS New Home: <input type="checkbox"/> Bronze <input type="checkbox"/> Silver <input type="checkbox"/> Gold <input type="checkbox"/> Emerald	
	Living Building Challenge (LBC): <input type="checkbox"/> Living Building Certified <input type="checkbox"/> Petal Certification	
	Passivhaus Standard: <input type="checkbox"/> PHI Low Energy <input type="checkbox"/> EnerPhit <input type="checkbox"/> Passive House	
	Passive House Institute US: Phius Zero <input checked="" type="checkbox"/> PHIUS+ 2015 <input type="checkbox"/> 2024	
USGBC LEED: <input type="checkbox"/> Certified <input type="checkbox"/> Silver <input type="checkbox"/> Gold <input checked="" type="checkbox"/> Platinum		
Other: Greenstar v4 Platinum		
Date Verified: 3 / 27 / 2026	Green Certification Version: LEED 4.1 Phius 2024 Greenstar v4 Organization URL: https://ecoachievers.com/	ABOVE VALID ONLY IF CHECKED: <input checked="" type="checkbox"/> Verification reviewed on site <input checked="" type="checkbox"/> Verification attached to this report

Energy Label Labels disclose the state the home's energy assets.	RESNET's HERS Rating (0 to 150): -28 <input type="checkbox"/> Sampling Rating <input type="checkbox"/> Projected Rating <input checked="" type="checkbox"/> Confirmed Rating	Estimated energy savings for this home: \$ ¹⁹¹⁶ /year 18.6 ¢kWh rate dated 5 / 14 / 2024 <i>Energy Savings includes electricity, heating & Cooling.</i> Score below 100 indicates energy costs are expected to be lower than average local code home per square foot. HERS Index Report estimates energy cost based on number of bedrooms plus one. Only a "confirmed rating" is a diagnostic test.
	DOE's Home Energy Score (1 to 10): _____ <input type="checkbox"/> Official Score <input type="checkbox"/> Unofficial Score	Estimated energy savings for this home: \$____/year ____ ¢kWh rate dated ____/____/____ <i>Energy Savings includes electricity, heating & Cooling.</i> Score above five indicates energy costs are expected to be lower than average local home. Home Energy Score estimates energy cost based on state average energy rates and the home's energy features.
	Other Energy Score: Range (____ to ____):	Estimated energy savings: \$____/year ____ ¢ kWh rate dated ____/____/____ Describe energy label system:
	Date Verified: 11 / 07 / 2025	Score or Rating Version: 3.2 Organization URL: <input checked="" type="checkbox"/> www.resnet.us/ <input type="checkbox"/> www.homeenergyscore.gov <input type="checkbox"/> Other: _____

Verified Energy Improvements Only include improvements with verified documentation.	Explain energy-related improvements: Highly insulated and airtight enclosure, Energy Star Appliances, Zehnder ERV, Mitsubishi and Sanden Heat Pumps, SPAN panels, Solar, Batteries Cost of improvements: \$200,000	
	Date Verified: ____/____/____	Certificate of Efficiency Improvements Version: _____ Organization URL: <input type="checkbox"/> Other: _____ <input type="checkbox"/> energystar.gov/homeperformance
ABOVE VALID ONLY IF CHECKED: <input type="checkbox"/> Verification reviewed on site <input type="checkbox"/> Verification attached to this report		

Completed by: _____ Title: _____ Date: _____

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Client:	MiNet0-1	Client File #:	
Subject Property:	720 Eastern Ave NE, Grand Rapids, MI 49503	Appraisal File #:	

Solar Panels

The following items are considered within the appraisal analysis of the subject property:

Solar Photovoltaic (Electric) System

	Array # <u>1</u>	Array # <u> </u> (if applicable)	
Type of Ownership	<input type="checkbox"/> Leased <input checked="" type="checkbox"/> Owned <input type="checkbox"/> * Solar Loan with UCC Filing <input type="checkbox"/> Power Purchase Agreement (PPA) If solar loan has UCC Filing, it is considered personal property and should not be included in market value.	<input type="checkbox"/> Leased <input type="checkbox"/> Owned <input type="checkbox"/> Solar Loan <input type="checkbox"/> UCC Filing <input type="checkbox"/> Power Purchase Agreement (PPA)	
Panel Specifications	System Size: <u>12.48</u> kWp (1kW = 1000 Watts) Year Installed: <u>2025</u> Energy Production: <u>15,046</u> kWh Source of Energy Source of Energy Production Estimate: <u>Absolute Solar (Aurora Software including shading)</u> Manufacturer: <u>Meyer Burger</u> : Qty = <u>32</u> Warranty on Panels: <u>25</u> years	System Size: _____ kW (1kW = 1000 Watts) Year Installed: _____ Energy Production: _____ kWh Source of Energy Production Estimate: _____ Manufacturer: _____ Warranty on Panels: _____ years	
Array Placement Affects energy production. *Orientation	<input checked="" type="checkbox"/> Fixed Mount <input type="checkbox"/> Tracking Mount Tilt / Slope: <u>45</u> (12/12 roof) Azimuth: <u>181</u> (south)	Fixed Mount Tracking Mount Tilt / Slope: _____ Azimuth: _____	
Inverter Specifications	Number of Inverters per Array: <u>32</u> Year Installed: <u>2025</u> Wattage: <u>325</u> watts (IQ8M) Manufacturer: <u>Enphase</u> Warranty Term: <u>25</u> years	Number of Inverters per Array: _____ Year Installed: _____ Wattage: _____ watts Manufacturer: _____ Warranty Term: _____ years	
Energy Storing Batteries	Battery Type: <input checked="" type="checkbox"/> Lithium-ion <input type="checkbox"/> Lithium-ion Polymer <input type="checkbox"/> Lead Acid <input type="checkbox"/> Lead Calcium <input type="checkbox"/> AGM <input type="checkbox"/> GEL Manufacturer: <u>Enphase IQ5P LFP chemistry</u> Storage Capacity: <u>40</u> kWh Warranty Term: <u>15</u> years Year Installed: <u>2025</u>		
Name of Utility Company:	Consumers Energy	Charge / kWh from Utility	\$ 0.205 / kWh

Solar Thermal Water Heating System

Type of System	Active: <input type="checkbox"/> Direct <input type="checkbox"/> Indirect Passive: <input type="checkbox"/> Integral collector <input type="checkbox"/> Thermo-syphon	Storage Tank Size	Gallons: _____
Collector Type	<input type="checkbox"/> Flat-Plat <input type="checkbox"/> Integral <input type="checkbox"/> Evacuated-Tube Solar	System Age	Year Installed: _____
Back-Up System	<input type="checkbox"/> Conventional Water Heater <input type="checkbox"/> Tankless On Demand <input type="checkbox"/> Tankless Heat Pump	Warranty Term	
Solar Energy Factor (SEF)	*Rating ranges 1 to 11. Higher number is more efficient.	Manufacturer	

Proposed Solar Installation

Roof Shape:	<input checked="" type="checkbox"/> Pitched <input type="checkbox"/> Flat <input type="checkbox"/> Rounded <input type="checkbox"/> Multiple <u>special attic truss</u>
Rafters:	<input checked="" type="checkbox"/> Typical <input type="checkbox"/> Engineered Wood Trim <input type="checkbox"/> Rough Sawn <input type="checkbox"/> Structured Insulated Panel Roof <input type="checkbox"/> Metal <input type="checkbox"/> TJI Rafters
Decking:	<input type="checkbox"/> No decking <input checked="" type="checkbox"/> Plywood <input type="checkbox"/> Tongue & Groove <input type="checkbox"/> OSB <input type="checkbox"/> Skip sheathing/Purlin <input type="checkbox"/> Structured Insulated Panel
Slope/Roof Pitch:	<u>12/12 with 5/8" plywood</u> (example: S1_6/12_)
Roof Material:	<input type="checkbox"/> Comp Shingle <input type="checkbox"/> Rolled Asphalt <input type="checkbox"/> Concrete Tile <input type="checkbox"/> Clay Tile <input type="checkbox"/> Slate <input type="checkbox"/> Corrugated Metal <input checked="" type="checkbox"/> Standing Seam Metal <input type="checkbox"/> Polycarbonate/fiberglass <input type="checkbox"/> Foam <input type="checkbox"/> Tar and Gravel <input type="checkbox"/> Wood Shake
Number of layers of roof material:	<u>2</u> : metal, Titanium PSU (45 mil) (Attach photographs of roof and attic)
Electrical Service:	<input checked="" type="checkbox"/> Overhead <input type="checkbox"/> Underground
Main Electrical Panel:	<input type="checkbox"/> Main Breaker Panel <input checked="" type="checkbox"/> MB & Sub Panel <input type="checkbox"/> Fuse Box Amperage: <u>200A SPAN panel and subpanel in garage</u>
Remaining spaces in main service panel (MSP), subpanel (if in garage), and utility meter (if located separate from MSP): <u> </u> (Attach photograph of inside of electrical panel and door closed and a picture of three feet back to show space around the main service panel (and subpanel))	
Red flag – <input type="checkbox"/> Gas line within 3' of electrical panel <input type="checkbox"/> More than 3 layers of roof covering <input type="checkbox"/> Wood Shake Shingles <input type="checkbox"/> Composition Shingle over Wood Shake <input type="checkbox"/> Tile Roof Without Decking <input type="checkbox"/> Composition Shingle less than 2:12 pitch <input type="checkbox"/> Roof section over 12:12 pitch <input type="checkbox"/> Unpermitted structure/addition <input type="checkbox"/> Metal Trusses <input type="checkbox"/> No permanent foundation <input type="checkbox"/> Carport may not be structurally sound <input type="checkbox"/> SIP Roofing may not be structurally sound <input type="checkbox"/> Open/No walls (Patio)	

Completed by: Dale Hulst Title: CPHC, Builder Date: 5-4-2026

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Client:		Client File #:	
Subject Property:		Appraisal File #:	

Location - Site			
The following items are considered within the appraisal analysis of the subject property:			
Walk Score	Score: 71	Source: <input checked="" type="checkbox"/> http://www.walkscore.com <input type="checkbox"/> Other: _____	
Public Transportation	<input checked="" type="checkbox"/> Bus Distance: 6 Blocks	<input type="checkbox"/> Train: Distance: _____ Blocks	<input type="checkbox"/> Subway Distance: _____ Blocks
Site	Orientation (front faces): <input checked="" type="checkbox"/> East / West <input type="checkbox"/> North / South	Landscaping: <input type="checkbox"/> Water Efficient <input checked="" type="checkbox"/> Natural <input type="checkbox"/> Pond/Lake on site <input checked="" type="checkbox"/> Rain Garden	
Comments			

Incentives – Amount of Incentive and Terms	
The following items are considered within the appraised value of the subject property and based on effective date of value.	
Federal	30% ITC off \$81,571 = \$24,471
State	none
Local	\$20,000 high efficiency home rebate from Consumer's Energy (for Phius Zero certification)
Comments	Incentives offset cost and should be reported and described in the cost approach section of the report. Clearly identify the incentives that offset the gross cost of construction to meet appraisal standards. Incentives are typically not a sales concession in sales comparison approach since they do not transfer with the property and are not paid by the seller. Incentives are typically for a specified period and only those available as of the date of value should be addressed in the appraisal process. Incentives may be available to offset repairs or deferred maintenance items as well. Incentives, rebates, and tax credits for most U.S. properties can be found at www.dsireusa.org The above incentives were taken by the builder and reduced the sell price.

The objective of this Addendum is to standardize the communication of the high performing features of residential properties. Identifying the features not found on the appraisal form provides a basis for comparable selection and analysis of the features.

- Builders, contractors, homeowners, and third party verifiers are encouraged to complete this Addendum and present to appraisers, agents, lenders, and homeowners. Appraisers typically do not have sufficient information to complete this addendum without builder, contractor, or third party verifier documentation.
- Attach this completed document to the MLS listing to provide sufficient detail on sales and listings to assist buyers, appraisers, and real estate agents in understanding the high performance features of the property.
- Complete the pages that apply to the property appraised and provide to appraiser prior to the completion of an appraisal.
- Provide the Addendum to the lender at the time of loan application to assist them in understanding the property type so an appraiser with sufficient knowledge of this property type will be engaged to provide an appraisal to meet secondary mortgage market guidelines.

Completed by: <u>Dale Hulst</u>	Title: <u>CPHC, Builder</u>	Date: <u>5-4-2026</u>
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Client:		Client File #:	
Subject Property:		Appraisal File #:	

Residential Green and Energy Efficient Addendum Additional Resources

Appraised Value and Energy Efficiency: Getting it Right. This document provides links to resources in understanding the secondary mortgage market guidelines on appraisals of energy efficient and green features. It addresses the following:

- What can builders do?
- For Buyers: Assuring a competent appraiser for your home
- For Lenders: A sample letter that should be completed and provided to the lender at the time of mortgage application alerts the lender to the special features that requires an appraiser with knowledge of the property type.

https://www.appraisalinstitute.org/assets/1/29/AI-BCAP_Flyer.pdf

Residential Green Valuation Tools. A textbook resource for completing the AI Residential Green and Energy Efficient Addendum is available. It can be purchased at the following website: <http://www.appraisalinstitute.org/residential-green-valuation-tools/>

Glossary

ASHRAE 700 / ICC National Green Building Standard (NGBS): An ANSI-approved residential green building standard developed by the National Association of Home Builders (NAHB) and the International Code Council (ICC). It is applicable to single and multifamily projects, renovations and additions and residential land development. To comply, all buildings must incorporate sustainable lot development techniques and address energy, water & material resource efficiency and indoor environmental quality. Also, all owners must be educated about building operation and maintenance.

<https://www.nahb.org/en/research/nahb-priorities/green-building-remodeling-and-development/icc-700-national-green-building-standard.aspx>

Building Envelope: The building envelope is everything that separates the building's interior from the exterior. This includes the foundation, exterior walls, roof, doors and windows. The envelope rating should be compared to the local building code requirements for this rating to identify a structure that exceeds the building code.

Energy Recovery Ventilation System (ERV) or Heat Recovery Ventilators (HRV): These systems provide fresh air without wasting all the energy already used to heat the indoor air. By recovering sensible (heat) or latent (moisture) energy from the stale indoor air, they offer fresh air ventilation with reduced energy loss.

ENERGY STAR Certified New Homes: EPA's ENERGY STAR certified homes are independently verified to be at least 15 percent more efficient than code-built homes, and include additional energy efficiency measures that can deliver savings of up to 30 percent compared to standard new homes. More than just a collection of ENERGY STAR products, an ENERGY STAR certified home includes a comprehensive package of energy efficiency systems and features that work together to deliver better performance, including a High-Efficiency Heating & Cooling System, a Complete Thermal Enclosure System; a Water Protection System; and Efficient Lighting & Appliances. www.energystar.gov/newhomes

ENERGY STAR Products: Behind each blue label is a product, building, or home that is independently certified to use less energy and cause fewer of the emissions that contribute to climate change. Today, ENERGY STAR is the most widely recognized symbol for energy efficiency in the world. In order to earn the label, ENERGY STAR products must be third-party certified based on testing in EPA-recognized laboratories. In addition to up-front testing, a percentage of all ENERGY STAR products are subject to "off-the-shelf" verification testing each year. The goal of this testing is to ensure that changes or variations in the manufacturing process do not undermine a product's qualification with ENERGY STAR requirements. https://www.energystar.gov/about/origins_mission

Geothermal: A geothermal heat pump uses the constant below ground temperature of soil or water to heat and cool your home. <http://energy.gov/energysaver/articles/geothermal-heat-pumps>

HERS Index: The Home Energy Rating System (HERS) Index is an industry standard by which a home's energy efficiency is measured. It's also the nationally recognized system for inspecting and calculating a home's energy performance. A qualified third party certifier assesses the house based on its physical characteristics. The energy estimates from this assessment may vary depending on the lifestyle of the occupants, increasing utility expenses, and changes in the maintenance or characteristics of the energy features. There are three rating types: sampling rating, projected rating, and confirmed rating. A **Sampling Rating** is an application of the Home Energy Rating process whereby fewer than 100% of a builder's new homes are randomly inspected and tested to evaluate compliance with a set of threshold specifications. A **Projected Rating:** A Rating Type that encompasses one individual dwelling or dwelling unit and is conducted in accordance with Section 5.1.4.3.1 through 5.1.4.3.5 of the ANSI/RESNET/ICC Standard 301. A **Confirmed Rating** is a rating type that encompasses one individual dwelling or dwelling unit and is conducted in accordance with Sections 5.1.4.1.1 through 5.1.4.1.3. More information: <http://www.resnet.us/hers-index>. The ANSI standard utilized in the HERS Index is posted at http://codes.iccsafe.org/app/book/content/PDF/ICC%20Standards/ICC_301-2014/ICC_RESNET_301.pdf.

Home Energy Score (HES): The Home Energy Score, developed and managed by the U.S. Department of Energy (DOE), is a national system that allows homes to receive an energy rating, like the MPG rating available for cars. The Home Energy Score uses a 10-point scale to reflect how much energy a home is expected to use under standard operating conditions. The Home Energy Score uses a standard calculation method and considers the home's structure and envelope (walls, windows, foundation) and its heating, cooling, and hot water systems. Only Assessors who pass DOE's Simulation Training can provide the Home Energy Score.

www.HomeEnergyScore.gov

Indoor airPLUS: EPA's Indoor airPLUS is a voluntary EPA label for new homes that integrate a set of construction practices and technologies to reduce indoor air pollutants and improve the indoor air quality in a new home beyond minimum code requirements. It is only available to homes that first meet ENERGY STAR® Certified Home requirements. <http://www.epa.gov/indoorairplus>

LEED: Leadership in Energy and Environmental Design is a green certification program created by the U.S. Green Building Council (USGBC). As an internationally recognized mark of excellence, LEED provides building owners and operators with a framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions. <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1988>

Living Building Challenge: Created by the Living Future Institute, the Living Building Challenge is the world's most rigorous proven performance standard for buildings. People can use the regenerative design framework to create spaces that, like a flower, give more than they take. Living Building Challenge certification requires actual rather than modeled performance. Therefore, projects must be operational for at least twelve consecutive months prior to evaluation. <https://living-future.org/lbc/basics/>

Low E: "Low emissivity" indicates a coating is added to the glass surface. The coating allows visible light to pass through the glass while stopping radiant heat energy from entering the building by passing through the glass. Approximately 40% of the sun's harmful ultra violet rays are blocked and insulation enhanced. <https://energy.gov/energysaver/energy-efficient-windows>

NGBS Small Project Remodel: Run by the Home Innovation Research Labs, this program certifies whole house and small project remodels as energy efficient. Unlike the Whole-House Remodel, the Small Project certification is prescriptive. Chapter 12 of the National Green Building Standard includes a list of mandatory practices, related to materials use, sustainable products, energy efficiency, and indoor environmental quality. A Home Innovation Accredited NGBS Green Verifier gives a final inspection to verify Small Project certification. During inspection, the Verifier will ensure the applicable practices have been met. http://www.homeinnovation.com/services/certification/green_homes/remodeling_certification/remodel_home_certification_process

NGBS Whole Home Remodel: Run by the Home Innovation Research Labs, this program certifies whole house and small project remodels as energy efficient. Certification of a whole-building remodel requires demonstrating that there has been a minimum of a 15% reduction in energy consumption and at least a 20% reduction in water consumption over the pre-remodel condition. There are some mandatory practices that must be met. A minimum number of points must be obtained from practices related to Lot Design, Resource Efficiency, Indoor Environmental Quality, and Homeowner Education. http://www.homeinnovation.com/services/certification/green_homes/remodeling_certification/remodel_home_certification_process

Passivhaus Standard: German standard for low energy homes that began in the 1980s. Passivhaus is a rigorous, voluntary standard for energy efficiency in a building, reducing its ecological footprint. It results in ultra-low energy buildings that require little energy for space heating or cooling. The Passive House Institute (PHI) is an independent research institute that has played an especially crucial role in the development of the Passive House concept - the only internationally recognized, performance-based energy standard in construction. <http://passiv.de/en/>

Passive House Institute US (PHIUS): Buildings designed and built to the PHIUS+ 2015 Passive Building Standard consume 86% less energy for heating and 46% less energy for cooling (depending on climate zone and building type) when compared to a code-compliant building. PHIUS+ 2015 is the first and only passive building standard based upon climate-specific comfort and performance criteria aimed at presenting a cost-optimized solution to achieving the most durable, resilient, and energy-efficient building possible for a specific location. <http://www.phius.org/home-page>

Passive Solar: Passive solar is technology for using sunlight to light and heat buildings with no circulating fluid or energy conversion system. <http://rredc.nrel.gov/solar/glossary>. A complete passive solar building design has the following five elements: (1) aperture (collector) (2) absorber (3) thermal mass (4) distribution (5) control. <http://www.nrel.gov/docs/fy01osti/27954.pdf>

Rain Garden: A rain garden is a depressed area in the landscape that collects rain water from a roof, driveway or street and allows it to soak into the ground. Planted with grasses and flowering perennials, rain gardens can be a cost effective and beautiful way to reduce runoff from your property. Rain gardens can also help filter out pollutants in runoff and provide food and shelter for butterflies, songbirds and other wildlife. More complex rain gardens with drainage systems and amended soils are referred to as bio-retention. <https://www.epa.gov/soakuptherain/rain-gardens>

SEER: Seasonal energy efficiency ratio - The higher the SEER rating, the more energy efficient the equipment is. A higher SEER can result in lower energy costs. <https://energystar.zendesk.com/hc/en-us/articles/212111387-What-is-SEER-EER-HSPF->

Smart House: A smart house is a home that has highly advanced, automated systems to control and monitor any function of a house – lighting, temperature control, multi-media, security, window and door operations, air quality, or any other task of necessity or comfort performed by a home's resident. <http://architecture.about.com/od/buildyourhous1/g/smarthouse.htm>

Water Heaters: Types are described here: <http://energy.gov/energysaver/articles/solar-water-heaters>.

WaterSense: EPA released its Final Version 1.1 WaterSense New Home Specification. This specification will be effective January 1, 2013 and establishes the criteria for new homes labeled under the WaterSense program and is applicable to newly constructed single-family and multi-family homes. http://www.epa.gov/watersense/new_homes/homes_final.html

Whole Building Ventilation System: A whole building ventilation system assists in a controlled movement of air in tight envelope construction. Whole building ventilation equipment is often a part of the forced air heating or cooling systems. There are various methods of providing whole home ventilation including a heat recovery ventilator (HRV) or an energy recovery ventilator (ERV). Four primary types of systems here: <https://energy.gov/energysaver/whole-house-ventilation>

Zero Energy Ready Home (ZERH): To qualify as a DOE Zero Energy Ready Home, a home shall meet certain minimum requirements, be verified and field-tested in accordance with HERS Standards by an approved verifier, and meet all applicable codes. Builders may meet the requirements of either the Performance Path or the Prescriptive path to qualify a home. <http://energy.gov/eere/buildings/zero-energy-ready-home>

Relevant Photographs:

<https://minetzero-my.sharepoint.com/:f/p/dale/lgBPtjyFQZfSQ5sZTJLGuB4eAc6hBYPuve29Plmy3KD4Dms?e=xyiwYj>



Pearl Certification Discounted Cash Flow Details

Overview

The values presented here are calculated using the Income-Based Approach where our algorithm looks at the total future benefits that the homeowner will receive from the photovoltaic system over its useful life, and calculates what the value of those future benefits is right now.

The useful life of the photovoltaic system is determined by the length of the power production warranty. A system will likely continue to operate after the warranty has expired and in that sense the value presented here is a conservative estimate of the potential value of the system.

System Information	
Ownership Type	Owned
Total System Size (kW)	12.48
Discounted Cash Flow Range	\$33,188 - \$40,921
Discounted Cash Flow	\$37,054

Rates and Costs	
Utility Provider	Consumers Energy Co - (MI)
Electricity Rate	0.1882 \$/kWh
Discount Rate	6.51%
Electricity Escalation Rate	2.56%
Operations & Maintenance Costs	\$11.50 per kW per year

Solar Panel Array	
Installed Date	Dec. 1, 2025
Manufacturer	Meyer Burger
Model Number	Meyer Burger Black Heterojunction 390W
Array Size (kW)	12.48
Tilt	20
Azimuth	180
Panel efficiency rating	21.20%
Array Type	Roof Mounted - Fixed
Reported Installation Cost	None
Panel warranty (years)	25

Inverter	
Inverter Type	Micro-Inverter
Age Of Inverter	1 year
Warranty (years)	25
Manufacturer	Enphase Energy Inc.
Model Number	IQ8PLUS-72-2-US [240V]

Power Production Warranty	
Warranty (years)	25
Power at the end of the warranty	92.00



Total Discounted Cash Flow

Year	Low	Expected	High
2026	\$33,187.51	\$37,054.38	\$40,921.24
2027	\$31,042.75	\$34,657.26	\$38,271.75
2028	\$28,985.43	\$32,358.14	\$35,730.85
2029	\$27,012.02	\$30,153.08	\$33,294.13
2030	\$25,119.16	\$28,038.26	\$30,957.36
2031	\$23,303.59	\$26,010.05	\$28,716.49
2032	\$21,562.21	\$24,064.93	\$26,567.63
2033	\$19,892.02	\$22,199.53	\$24,507.03
2034	\$18,290.15	\$20,410.63	\$22,531.10
2035	\$16,753.83	\$18,695.12	\$20,636.41
2036	\$15,280.42	\$17,050.03	\$18,819.63
2037	\$13,867.36	\$15,472.48	\$17,077.60
2038	\$12,512.22	\$13,959.74	\$15,407.26
2039	\$11,212.64	\$12,509.17	\$13,805.70
2040	\$9,966.37	\$11,118.24	\$12,270.10
2041	\$8,771.25	\$9,784.52	\$10,797.78
2042	\$7,625.21	\$8,505.68	\$9,386.14
2043	\$6,526.23	\$7,279.47	\$8,032.70
2044	\$5,472.42	\$6,103.76	\$6,735.08
2045	\$4,461.93	\$4,976.48	\$5,491.01
2046	\$3,493.00	\$3,895.65	\$4,298.28
2047	\$2,563.94	\$2,859.37	\$3,154.79
2048	\$1,673.11	\$1,865.82	\$2,058.53
2049	\$818.96	\$913.26	\$1,007.55

Source Details:

- 1) Electricity Rate:** This calculation applies an average dollar per kWh rate for electricity. The average \$/kWh rate is sourced on a per utility basis from the Energy Information Administration's (EIA) forms EIA-861- schedules 4A & 4D and EIA-861S.
- 2) Discount Rate:** As a default, this calculation uses the weekly published 30 year mortgage rate from Freddie Mac
- 3) Electricity Escalation Rate:** This calculation pulls in the specific state's average percentage electricity rate increase over the past 30 years, and applies this rate as a constant year-over-year increase to the electricity rate
- 4) Operation and Maintenance Costs:** This calculation assumes an O&M cost of \$11.50 per kW per year. The \$11.50 rate is sourced from the two system benchmark studies from NREL, one from 2018 and the other from 2020.

For further details on the methodology used in these calculations please visit:

<https://resources.pearlcertification.com/solar-equity-calculator/methodology-for-calculator>