

ECOCHATS



CITY OF
Ames™



Ames™
PUBLIC LIBRARY



Kayley Barrios Lain,
Energy Services Coordinator
kayley.lain@cityofames.org
515.239.5177



CITY OF
AmesTM
ELECTRIC SERVICES

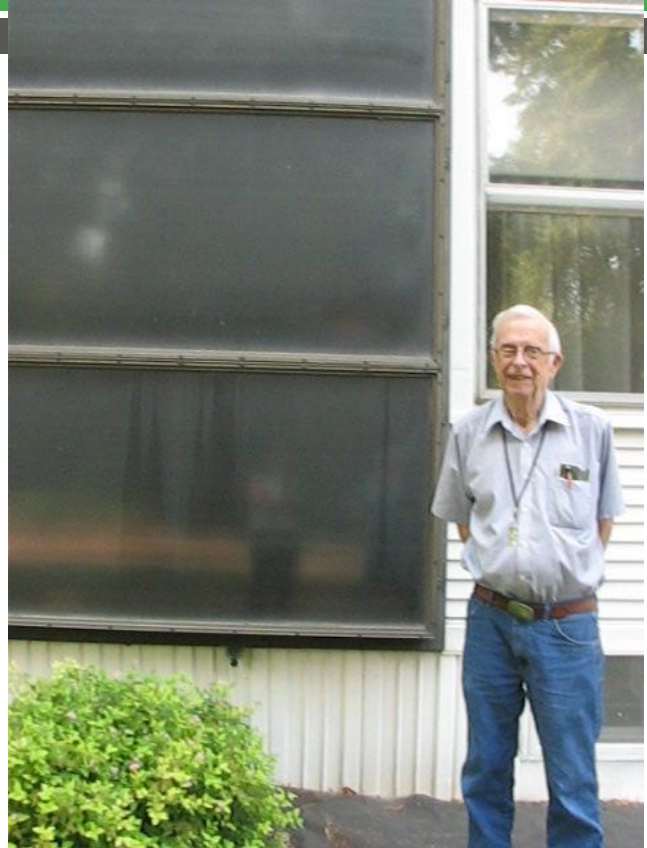
Home Energy Efficiency

Efficient Heating and Cooling

- Solar Thermal Heating Panel
-  □ Geothermal HVAC System
- Avoid Solar Heat Gain in the Summer
-  □ Passive House Certified

Solar Thermal Heating Panel – Ron and Marsha Foderberg

- ❑ Installed in 1984, no repairs or significant maintenance
- ❑ 96 sq ft collector, one circulation fan
- ❑ 25% savings on heating costs
- ❑ 13,000 BTU



Solar Thermal Heating Panel – Ron and Marsha Foderberg



Solar Thermal Heating Panel – Ron and Marsha Foderberg

- Air comes into the panel on the bottom left (when you're looking from the outside) and goes back into the house on the top right of the third panel.
This serves the office/living room that you saw from the inside.
- The very top panel has a separate intake and output in the upstairs bedroom.

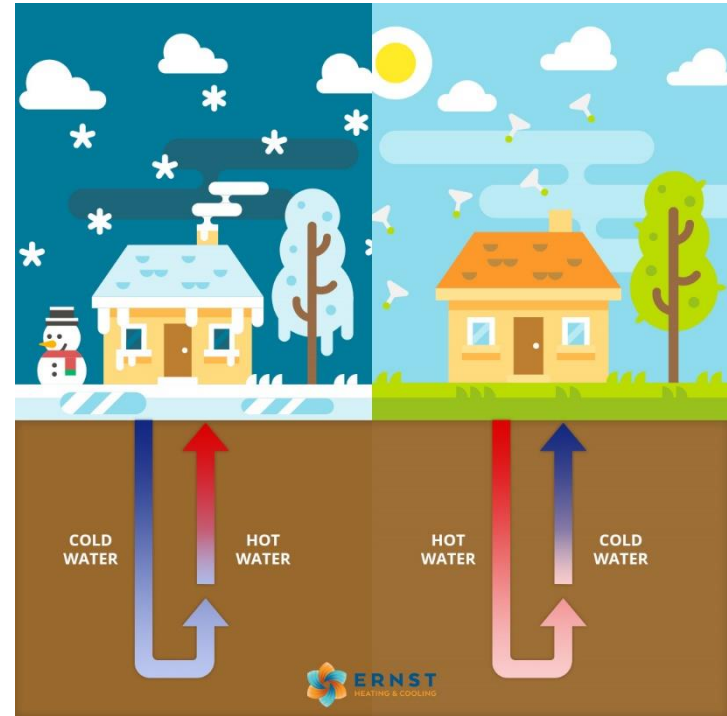


Solar Thermal Heating Panel – Ron and Marsha Foderberg



Geothermal HVAC

- Heat exchange with ground ('free' energy)
- 300-400% efficient
- Geothermal systems are very protected underground and inside your home



Geothermal HVAC

- Can work even in small yards
- 33-65% energy savings, 25-65% reduction in greenhouse gas emissions

Source:

<https://www.energy.gov/eere/articles/making-difference-geothermal-heat-pumps>



Geothermal HVAC and Desuperheater – Linda and Vince Sullivan

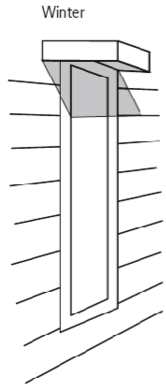


- ❑ Tax credits
- ❑ Easy Installation and only preventative maintenance
- ❑ Savings of at least \$100 per month
- ❑ Heat pump fits in basement closet

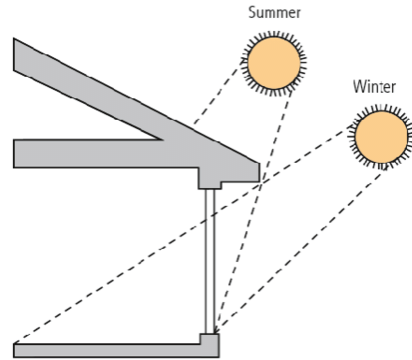
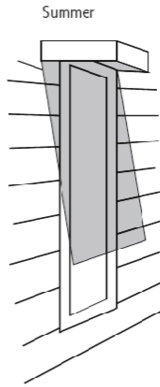
Avoid Solar Heat Gain in the Summer

- Save up to 25% on cooling energy/costs by blocking solar gain
- Seasonal solutions also allow helpful solar gain in the winter
- More information:
<https://www.energy.gov/energysaver/energy-efficient-window-attachments>

Avoid Solar Heat Gain in the Summer

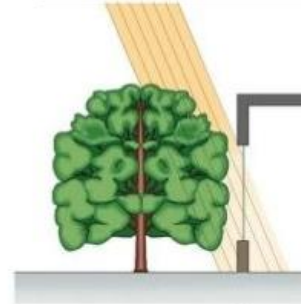


Window overhangs

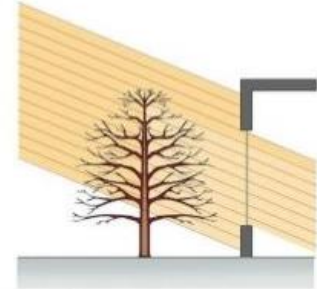


Seasonal position of the sun

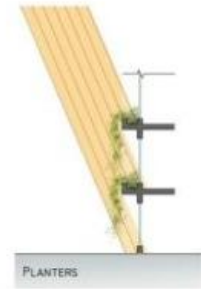
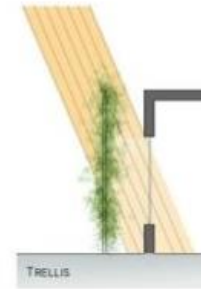
SOLAR TRANSMISSION CAN BE AS LOW AS 20% FOR A MATURE TREE IN THE SUMMER



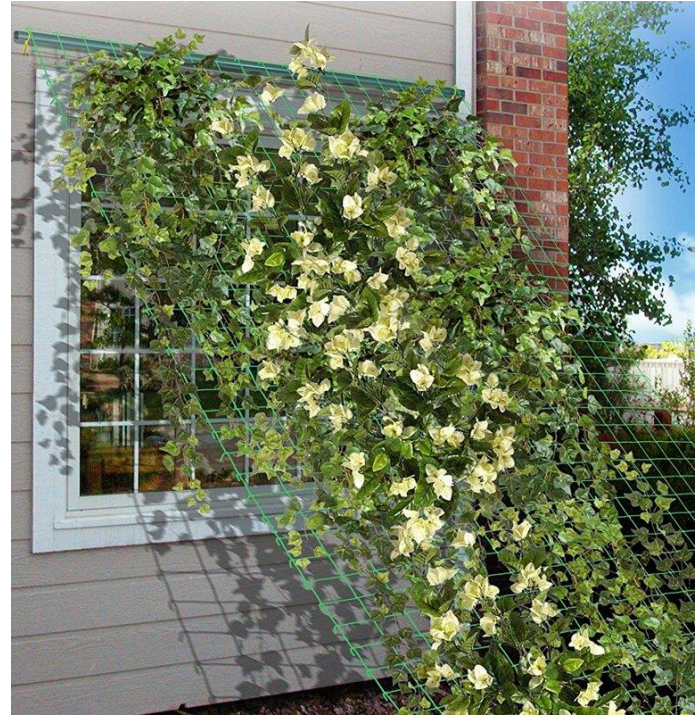
SOLAR TRANSMISSION CAN BE AS HIGH AS 70% FOR A MATURE TREE IN THE WINTER



OTHER LIVING SHADE OPTIONS:



Avoid Solar Heat Gain in the Summer



Avoid Solar Heat Gain in the Summer

SUSTAINABLE BY DESIGN SEATTLE, WASHINGTON

tools consulting about contact

Overhang Analysis

This tool provides visual feedback about the performance of a horizontal window overhang. Please read the [introduction](#) before using this tool.

NOTE: This is a new overhang analysis tool, providing visual feedback of the overhang shade at the selected date & time, as well as an annual performance chart. This tool may not work in certain old browsers, so in that case you may wish to try a different browser, or use the [old version](#). Feedback is welcome on this new tool, and improvements continue to be made. [\[hide tip\]](#)

VISUALIZATION

BASICS

latitude: 60° 60°N 30°N Equator 30°S 60°S 90° 45° N

date: Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jul 2

time: 0 2 4 6 8 10 12 14 16 18 20 22 24 13:10

measurement scale: 10 25 100 250 1000 2500

WINDOW

window faces: N NE E SE SW W NW N South

window width: 0 1 2 3 4 5 6 7 8 9 10 3

WINDOW

window faces: N NE E SE SW W NW N South

window width: 0 1 2 3 4 5 6 7 8 9 10 3

window height: 0 1 2 3 4 5 6 7 8 9 10 5

OVERHANG

overhang width: 0 1 2 3 4 5 6 7 8 9 10 7

overhang depth: 0 1 2 3 4 5 6 7 8 9 10 5

above window: 0 1 2 3 4 5 6 7 8 9 10 1.9

horizontal offset: -10 -8 -6 -4 -2 2 4 6 8 10 0

CHART

display: shading % sun % heat gain avoided heat gain

sun mode: direct + diffuse + reflected direct sunlight only

heat gain units: kwh / m2 kBtu / ft2

	MORNING												AFTERNOON								MONTHLY
	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00				
Jan				2%	2%	2%	6%	7%	6%	2%	2%						Jan 3%				
Feb				4%	3%	4%	16%	23%	24%	23%	16%	4%	3%	4%			Feb 11%				
Mar				7%	4%	11%	35%	48%	48%	48%	35%	11%	4%	7%			Mar 23%				
Apr				21%	15%	9%	21%	52%	80%	80%	80%	52%	21%	9%	15%	21%	Apr 37%				
May	22%	18%	16%	14%	25%	53%	72%	73%	72%	53%	25%	14%	16%	18%	22%	May 34%					
Jun	21%	18%	16%	15%	24%	50%	65%	67%	65%	50%	24%	15%	16%	18%	21%	Jun 32%					
Jul	22%	18%	16%	15%	25%	51%	68%	69%	68%	51%	25%	15%	16%	18%	22%	Jul 33%					
Aug				20%	17%	13%	24%	53%	76%	76%	53%	24%	13%	17%	20%	Aug 37%					
Sep				24%	10%	6%	16%	44%	62%	62%	62%	44%	16%	6%	10%	24%	Sep 30%				
Oct				5%	3%	7%	24%	33%	33%	33%	24%	7%	3%	5%			Oct 16%				
Nov						3%	2%	6%	11%	13%	11%	6%	2%	3%			Nov 6%				
Dec						2%	2%	2%	2%	4%	2%	2%	2%				Dec 2%				
	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00				
	MORNING												AFTERNOON								ANNUAL
																					22%

<https://susdesign.com/overhang/>

Avoid Solar Heat Gain in the Summer



Ames Lowe's > Open until 9 PM

Lowes Credit Cards Order Status Weekly Ad

Shop Savings Services Ideas

What are you looking for today?

My Lists Sign In Cart

Search / phifer

263 results in relevant departments

Search all departments for 'phifer'

Sort By Featured

Pick it up Today at Ames Lowe's

departments

- Windows & Doors (251)
- Outdoors (13)
- Home Decor (6)

availability

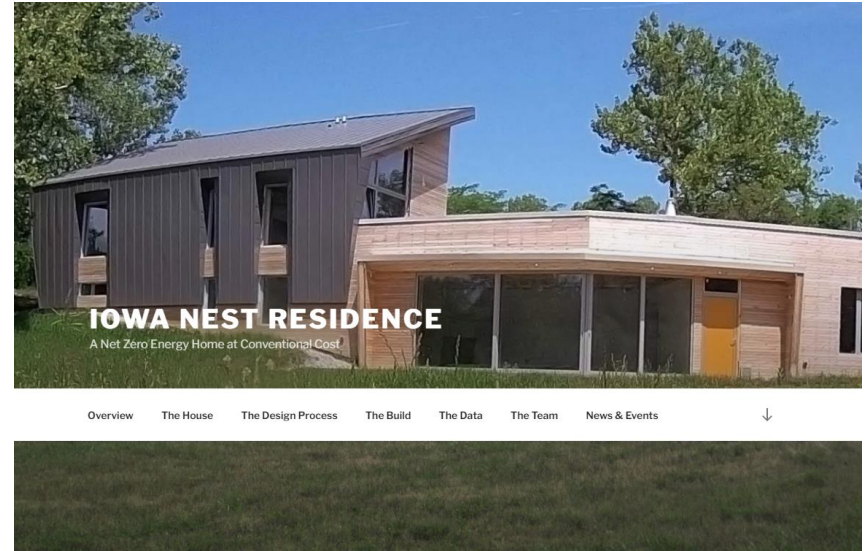
Hide Unavailable Products

savings

Product Name	Price	Rating
Phifer TuffScreen, 4-ft x 100-ft Black Polyester Screen Mesh	\$226.25	
Phifer Pool and Patio 8-ft x 100-ft Charcoal Fiberglass Screen...	\$179.00	★★★★★ 20
Phifer Super Solar 3-ft x 25-ft Charcoal Fiberglass Screen Mesh	\$57.98	★★★★★ 22
Phifer Super Solar 5-ft x 100-ft Charcoal Fiberglass Screen Mesh	\$395.46	

Passive Solar House – Iowa Nest Residence

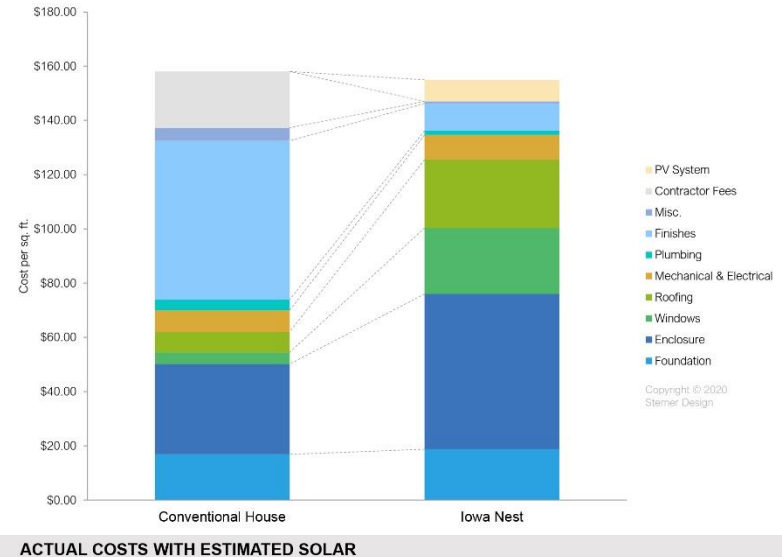
- 460 kWh/month
- “During the polar vortex in January 2019, the home was complete but not yet occupied. With outdoor temperatures dipping to -26 degF, the home’s interior temperatures averaged 50-60 degF — with NO heating. That’s a delta of ~80 degF through passive design alone.”












<http://www.iowanest.com/>

Passive Solar House – Iowa Nest Residence

- With solar panels, the house is still 2% less than conventional.
- “Here’s a full cost breakdown, and the seven strategies we used to get there:
<http://www.iowanest.com/index.php/2019/08/05/seven-strategies-for-net-zero-energy-at-net-zero-cost/#more-585>



Passive House Institute US

						Source Zero Renewable Energy System
					Balanced Ventilation HRV/ERV	Balanced Ventilation HRV/ERV
				SOLAR READY <small>Depends on climate</small>	SOLAR READY ALWAYS	SOLAR READY ALWAYS
				Eff. Comps. & H ₂ O Distrib	Eff. Comps. & H ₂ O Distrib	Eff. Comps. & H ₂ O Distrib
				 EPA Indoor airPLUS	 EPA Indoor airPLUS	 EPA Indoor airPLUS
				Ducts in Condit. Space	Ducts in Condit. Space	Ducts in Condit. Space
		HVAC QI w/WHV	HVAC QI w/WHV	HVAC QI w/WHV	Micro-load HVAC QI	Micro-load HVAC QI
		Water Management	Water Management	Water Management	Water Management	Water Management
		Independent Verification	Independent Verification	Independent Verification	Independent Verification	Independent Verification
IECC 2009 Enclosure	IECC 2012 Enclosure	IECC 2009 Enclosure	IECC 2012 Enclosure	IECC 2012/15 Encl./ES Win.	Ultra-Efficient Enclosure	Ultra-Efficient Enclosure
HERS 85-90	HERS 70-80	HERS 65-75	HERS 55-65	HERS 48-55	HERS 35-45	HERS < 0
 IECC 2009	 IECC 2012	 ENERGY STAR v3	ENERGY STAR v3.1	 ZERH	 PHIUS PHIUS+	 PHIUS+ SourceZero

Passive House Institute US

PHIUS Certified Builders

Iowa

Ambient Control Systems

Brian McDonald #1685
ambient@lisco.com

609 Pleasant Plain Rd.
Fairfield, Iowa 52556

Oak Tree Homes

Daniel Marine #2643
dan@oaktreehomesiowa.com

1834 330th St
Wilton, Iowa 52778

<https://www.phius.org/find-a-professional>

PHIUS Certified Consultants

EPICx Studio

Janna Alampi #3337
janna.alampi@epicxstudio.com

1002 NE 24th Ct
Ankeny, Iowa 50021

Hoeper Green Power

Shane Hoeper #2075
shane@hoepergreenpower.com

2520 N Grandview
Dubuque, Iowa 52001

Horizon Architecture

Michael Nolan #2252
michael@horizon-architecture.com

3116 Alpine Court
Iowa City, Iowa 52245

Neumann Monson Architects

Eric Neuhaus #2537
eneuhaus92@gmail.com

111 E Grand Ave.
Suite 105
Des Moines, Iowa 50309

Pella Corporation

Matt Hoksbergen #2739
HoksbergenMD@Pella.com



102 Main Street
Pella, Iowa 50219

Shive-Hattery

Jakub Skalik #2219
jakubskalik@gmail.com

4461 Ushers Ferry Rd
Cedar Rapids, Iowa 52411

Efficient Appliances

- 
- Heat Pump Water Heater – \$300 savings/year
 - Energy efficient Laundry
 - “Energy Star Most Efficient” Appliances
 - Wash with cold - \$60 savings/year
 - Air dry clothes- \$100 savings/year
 - Switch to LED light bulbs - \$180 savings/year
 - Shut down computer & printer - \$200 savings/year
- 

Renewable Generation – SunSmart or Home Solar Installation



COMMUNITY SOLAR PROJECT

- \$300 purchase price, average \$1/month bill credit for 20 years
- Open to all Ames Electric customers
- Buy back rate at 40% of retail electric rate + 2.5¢
- CityofAmes.org/solar



ECOCHATS



CITY OF
Ames™



Ames™
PUBLIC LIBRARY