

FROM SACRAMENTO STATE



WWW.SOLARNEST.ORG

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TEAM SOLAR
NEST

reflect home

t|e|c FAMILY LIVING with ENVIRONMENTAL CONSCIOUSNESS

Hello, and Welcome Home

Welcome to Your home - Reflect Home.

As you read through this you will find why we chose to be part of the U.S. Department of Energy Solar Decathlon 2015, what we chose to focus as our goals, and how we hope the City of Trees, our dear Sacramento, is reflected in our home.

We strived to discover the future of sustainable, energy-efficient housing and deliver these innovations to home buyers at an affordable price. To make strategic improvements to conventional building methods with regard to aesthetics, performance, and affordability. Through our efforts, we aspire to redefine the possible by building tomorrow one home at a time.

Do enjoy!





WELCOME HOME!

OUR ARCHITECTURAL APPROACH

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When the design of the home began, the focus was on the end user with the full intention of making the home as functional, livable & comfortable of a space as possible. This is the epitome of the type of living that Sacramento is accustomed to.

This is a home that is easily imagined on any neighborhood street. Team Solar NEST believes net-zero design will achieve widespread application only when future home buyers realize that sustainability can be achieved without sacrificing any common accommodations. The Reflect Home's real innovation lies in its appeal not only to people who prioritize environmentally conscious living, but also to people who may not have yet considered that a net-zero energy home could meet their needs.

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Balancing this sense of openness is a recognizably domestic private sphere that respects traditional patterns of family life. The second bedroom features a sliding wall, allowing the owner a diverse space allowing the room some versatility. When opened up it can be used as an office or playroom. The primary bedroom features a private outdoor room connected by a folding exterior wall. As in the main living space, materials are continued seamlessly from inside to outside.

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The Reflect Home maintains a relatively simple construction method. Our goal is to place emphasis on the fact that with a few strategic enhancements and some creativity, a net-zero envelope can be achieved with a fairly traditional framing system. Advanced framing techniques in use by home builders today reduced the number of studs required in the home. This increases the walls' aggregate R-Value, while at the same time maintaining structural integrity. One of the notable architectural features of the house is the expansive great room with large accordion doors that lead out to the rear deck. Engineering this opening provided an interesting complication to the structural design of the home. To support an opening of this size, a large glue laminated beam was placed to span the opening of both doors. The house however, would also need to be separated into the individual modules to be able to transport. This required the glue-lam beam to be cut into sections, something typically not possible. To find a solution, we reached out to a major structural connector manufacturer. We presented them our problem, and shortly we had a solution. Their engineers helped develop a specialized hinge connector that was removable connecting the beams together, and distributing the load path of the roof across the entire beam.



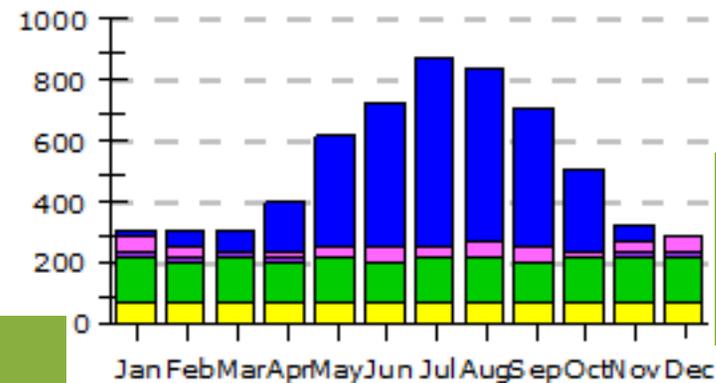
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ENERGY ANALYSIS

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Zone Checksums

By Glumac

Kitchen

COOLING COIL PEAK					CLG SPACE PEAK					HEATING COIL PEAK					TEMPERATURES		
Peaked at Time: Mo/Hr: 7 / 15					Mo/Hr: 7 / 15					Mo/Hr: Heating Design							
Outside Air: OADB/WB/HR: 85 / 70 / 86					OADB: 85					OADB: 39							
Space Sens. + Lat.	Plenum Sens. + Lat.	Net Total	Percent Of Total		Space Sensible	Percent Of Total			Space Peak	Coil Peak	Percent						
Btu/h	Btu/h	Btu/h	(%)		Btu/h	(%)			Space Sens	Tot Sens	Of Total	(%)					
Envelope Loads					Envelope Loads					Envelope Loads							
Skylite Solar	0	0	0	0	0	0	0	0	0	0	0.00						
Skylite Cond	0	0	0	0	0	0	0	0	0	0	0.00						
Roof Cond	0	306	306	11	0	0	0	0	0	-106	10.84						
Glass Solar	356	0	356	13	356	20	0	0	0	0	0.00						
Glass/Door Cond	84	0	84	3	84	5	0	0	-281	-281	28.85						
Wall Cond	67	23	90	3	67	4	0	0	-111	-153	15.67						
Partition/Door	0	0	0	0	0	0	0	0	0	0	0.00						
Floor	0	0	0	0	0	0	0	0	0	0	0.00						
Adjacent Floor	0	0	0	0	0	0	0	0	0	0	0.00						
Infiltration	0	0	0	0	0	0	0	0	0	0	0.00						
<i>Sub Total ==></i>	508	329	836	30	508	29	0	0	-393	-540	55.36						
Internal Loads					Internal Loads					Internal Loads							
Lights	134	34	168	6	134	8	0	0	0	0	0.00						
People	1,500	0	1,500	54	750	43	0	0	0	0	0.00						
Misc	285	0	285	10	285	16	0	0	0	0	0.00						
<i>Sub Total ==></i>	1,919	34	1,953	70	1,169	67	0	0	0	0	0.00						
Ceiling Load	65	-65	0	0	65	4	0	0	-27	0	0.00						
Ventilation Load	0	0	0	0	0	0	0	0	0	0	0.00						
Adj Air Trans Heat	0	0	0	0	0	0	0	0	0	0	0						
Dehumid. Ov Sizing	0	0	0	0	0	0	0	0	-489	-489	50.15						
Ov/Undr Sizing	0	0	0	0	0	0	0	0	0	0	0.00						
Exhaust Heat	0	0	0	0	0	0	0	0	0	0	0.00						
Sup. Fan Heat	0	0	0	0	0	0	0	0	0	0	0.00						
Ret. Fan Heat	0	0	0	0	0	0	0	0	0	0	0.00						
Duct Heat Pkup	0	0	0	0	0	0	0	0	54	-5.51							
Underflr Sup Ht Pkup	0	0	0	0	0	0	0	0	0	0	0.00						
Supply Air Leakage	0	0	0	0	0	0	0	0	0	0	0.00						
<i>Grand Total ==></i>	2,492	297	2,789	100.00	1,742	100.00	0	0	-909	-975	100.00						

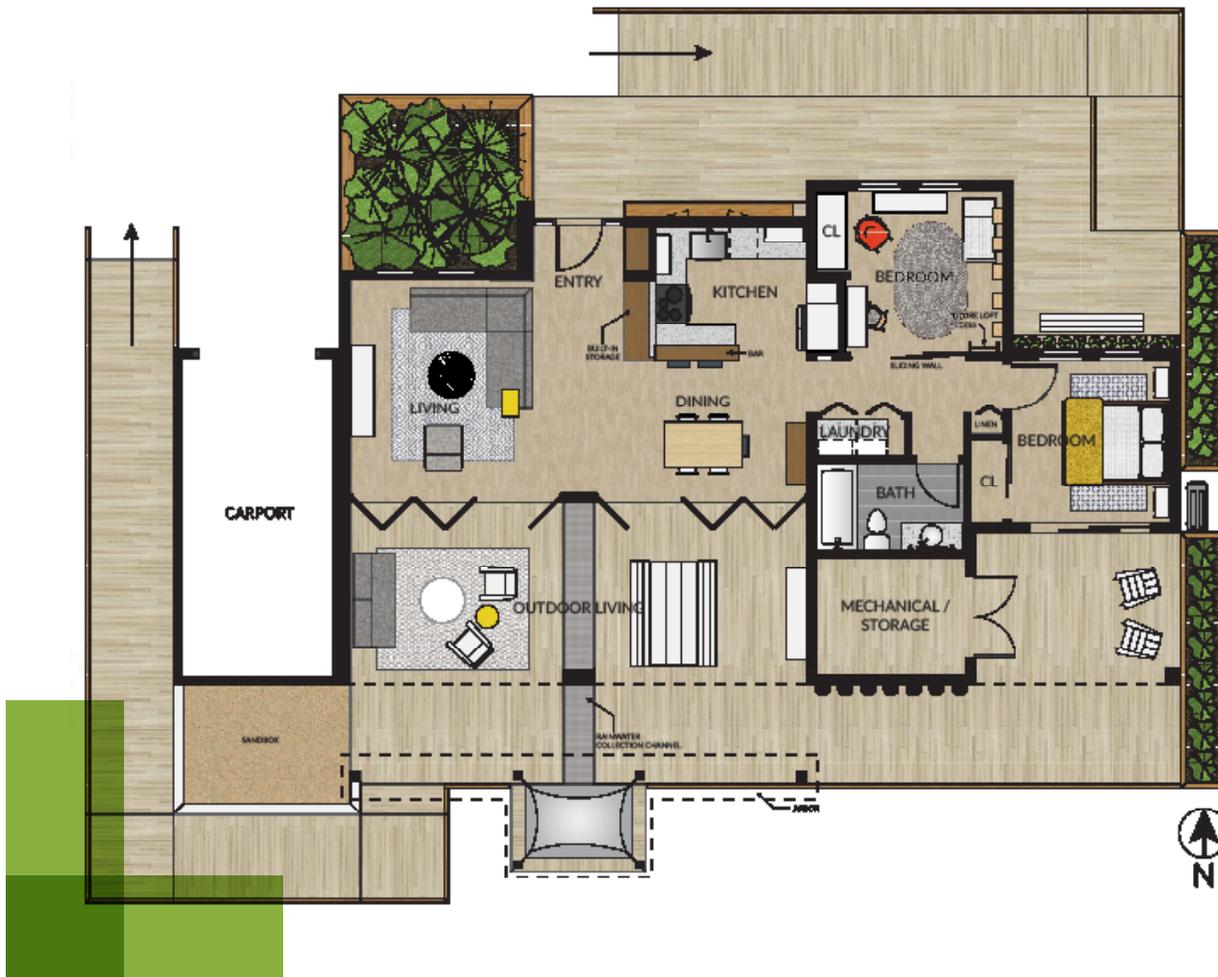
AIRFLOWS		
	Cooling	Heating
Diffuser	68	68
Terminal	68	68
Main Fan	68	68
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	0	0
MinStop/Rh	7	7
Return	68	68
Exhaust	0	0
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS		
	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	0.69	0.69
cfm/ton	292.79	
ft²/ton	422.94	
Btu/hr-ft²	28.37	-9.92
No. People	3	

	Total Capacity		Sens Cap.		Coil Airflow	Enter DB/WB/HR		Leave DB/WB/HR			
	ton	MBh	MBh	MBh		°F	°F	gr/lb	°F	°F	gr/lb
Main Clg	0.2	2.8	2.0	2.0	68	77.1	64.0	68.5	52.0	49.9	50.0
Aux Clg	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Total</i>	0.2	2.8									

	Gross Total		Glass	
	Area	ft²	Area	(%)
Floor	98			
Part	0			
Int Door	0			
ExFlr	0			
Roof	98	0	0	
Wall	147	41	28	
Ext Door	0	0	0	

	Capacity		Coil Airflow	Ent °F	Lvg °F
	MBh	MBh			
Main Htg	-1.0		68	69.1	82.0
Aux Htg	0.0		0	0.0	0.0
Preheat	0.0		0	0.0	0.0
Humidif	0.0		0	0.0	0.0
Opt Vent	0.0		0	0.0	0.0
<i>Total</i>	-1.0				



Team Solar NEST is attempting to use a communications strategy that is interaction based. Our main goal is to show our community and our partners that this project is more than about us. It is about the future and the very essence of what it can look like from a housing perspective. Because of our commitment to our community and boosting them up, we hope to see a reciprocation from them not because we asked, but because they see the value in our work. Through the use of online mediums like facebook, twitter and instagram. we hope to encapsulate our targets audiences by using them in different ways to provide perspective and fresh content on every medium.

Facebook is our community catalyst. It allows us to reach a broad spectrum of people, businesses and community partners. We tend to cater our content on Facebook to be more interactive and end with a question. This is all in hopes of encouraging interaction. With Twitter, we are engaging with our university and its ever changing need for information. It is also used as a way to share important articles about sustainability and generally be a beacon of information, often times leading to other sites and news bits.

Instagram is our “show me” medium. This allows us to “pull back the curtain” and show our followers a more intimate and less serious side of our team. Pictures are always a great way to tell a story, thus Instagram is seen as an important part of our strategy as we move into the final phase of our competition. By diversifying how we use these mediums, we can cover more ground and produce more compelling content, instead of just rehashing the same stuff on all three mediums.

The measurement of success with these goals is simple. Does our community engage with us and find our content to be fulfilling their need for all things Team Solar Nest? Are our partners pleased with the level of “shout-outs” and praise they are receiving? These are ultimately what we believe to be the measures of success.



COMMUNICATIONS APPROACH



CONTACT

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GARETH FIGGESS

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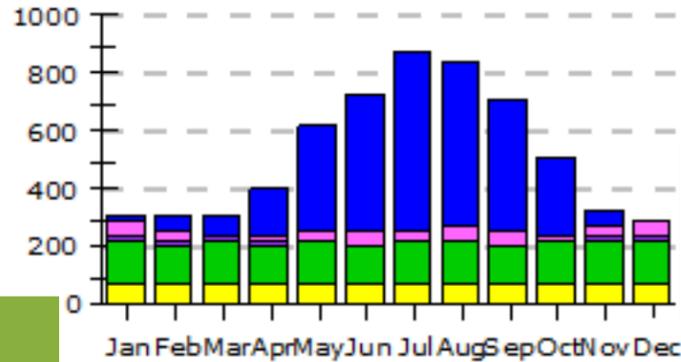
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Outside Air: OADB/WB/HR: 85 / 70 / 86				OADB: 85				OADB: 39				SADB 52.0 82.0		
Space Sens. + Lat. Btu/h	Plenum Sens. + Lat. Btu/h	Net Total Btu/h	Percent Of Total (%)	Space Sensible Btu/h	Percent Of Total (%)	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)	Cooling Heating					
Envelope Loads				Envelope Loads				Envelope Loads				AIRFLOWS		
Skylite Solar	0	0	0	0	0	0	0	0.00	Cooling Heating					
Skylite Cond	0	0	0	0	0	0	0	0.00	Diffuser 68 68					
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Adjacent Floor	0	0	0	0	0	0	0	0.00	MinStop/Rh 7 7					
Infiltration	0	0	0	0	0	0	0	0.00	Return 68 68					
Sub Total ==>	508	329	836	30	508	29	-393	55.36	Exhaust 0 0					
Internal Loads				Internal Loads				Internal Loads				ENGINEERING CKS		
Lights	134	34	168	6	134	8	0	0.00	% OA 0.0 0.0					
People	1,500	0	1,500	54	750	43	0	0.00	cfm/ft² 0.69 0.69					
Misc	285	0	285	10	285	16	0	0.00	cfm/ton 292.79					
Sub Total ==>	1,919	34	1,953	70	1,169	67	0	0.00	ft²/ton 422.94					
Ceiling Load	65	-65	0	0	65	4	-27	0.00	Btu/hr-ft² 28.37 -9.92					
Ventilation Load	0	0	0	0	0	0	0	0.00	No. People 3					
Adj Air Trans Heat	0	0	0	0	0	0	0	0.00						
Dehumid. Ov Sizing	0	0	0	0	0	0	-489	50.15						
Ov/Undr Sizing	0	0	0	0	0	0	0	0.00						
Exhaust Heat	0	0	0	0	0	0	0	0.00						
Sup. Fan Heat	0	0	0	0	0	0	0	0.00						
Ret. Fan Heat	0	0	0	0	0	0	0	0.00						
Duct Heat Pkup	0	0	0	0	0	0	54	-5.51						
Underflr Sup Ht Pkup	0	0	0	0	0	0	0	0.00						
Supply Air Leakage	0	0	0	0	0	0	0	0.00						
Grand Total ==>	2,492	297	2,789	100.00	1,742	100.00	-909	-975	100.00					

COOLING COIL SELECTION										AREAS			HEATING COIL SELECTION						
	Total ton	Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB/WB/HR °F °F gr/lb			Leave DB/WB/HR °F °F gr/lb			Gross Total	Glass ft² (%)	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F			
Main Clg	0.2	2.8	2.0	68	77.1	64.0	68.5	52.0	49.9	50.0	Floor	98		Main Htg	-1.0	68	69.1	82.0	
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	Part	0		Aux Htg	0.0	0	0.0	0.0	
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	Int Door	0		Preheat	0.0	0	0.0	0.0	
Total	0.2	2.8									ExFlr	0		Humidif	0.0	0	0.0	0.0	
											Roof	98	0	0	Opt Vent	0.0	0	0.0	0.0
											Wall	147	41	28	Total	-1.0			
											Ext Door	0	0	0					

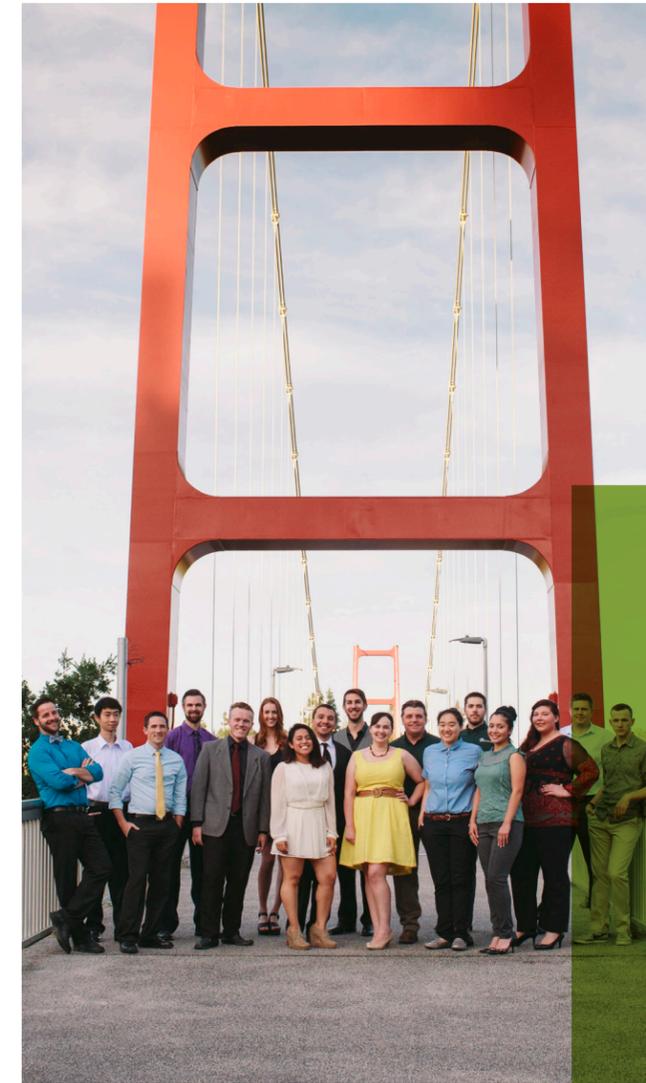


Team Solar NEST is attempting to use a communications strategy that is interaction based. Our main goal is to show our community and our partners that this project is more than about us. It is about the future and the very essence of what it can look like from a housing perspective. Because of our commitment to our community and boosting them up, we hope to see a reciprocation from them not because we asked, but because they see the value in our work. Through the use of online mediums like facebook, twitter and instagram. we hope to encapsulate our targets audiences by using them in different ways to provide perspective and fresh content on every medium.

Facebook is our community catalyst. It allows us to reach a broad spectrum of people, businesses and community partners. We tend to cater our content on Facebook to be more interactive and end with a question. This is all in hopes of encouraging interaction. With Twitter, we are engaging with our university and its ever changing need for information. it is also used as a way to share important articles about sustainability and generally be a beacon of information, often times leading to other sites and news bits.

Intstagram is our "show me" medium. This allows us to "pull back the curtain" and show our followers a more intimate and less serious side of our team. Pictures are always a great way to tell a story, thus instagram is seen as a important part of our strategy as we move into the final phase of our competition. By diversifying how we use these mediums, we can cover more ground and produce more compelling content, instead of just rehashing the same stuff on all three mediums.

The measurement of success with these goals is simple. Does our community engage with us and find our content to be fulfilling their need for all things Team Solar Nest? Are our partners pleased with the level of "shout-outs" and praise they are receiving? These are ultimately what we believe to be the measures of success.



OUR COMMUNICATIONS APPROACH



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