AG IE SOL

UC DAVIS 2015 SOLAR DECATHLON TEAM

AS-BUILT DOCUMENTATION

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OUR STORY

The University of California, Davis has a strong background in sustainability and zero-net-energy housing. In 2011 the university built the largest planned zero-net-energy community in America, West Village, at cost to similar housing units. Following up in 2013, the Honda Smart Home US achieved zero carbon living using advanced technologies at an above-market-rate cost. The university has since persevered to achieve LEED status and sustainable benchmarks with all new construction on campus.

BACKGROUND

Naming our team the Aggie Sol, students have demonstrated the resourcefulness, innovation, and spirit that UC Davis is renowned for. The first action of our students was to dedicate their house design towards addressing the unique needs of agricultural workers and other low-income families across America. To achieve this ambitious goal, students consulted on-campus resources and research centers including the Energy Efficiency Center, Center for Water-Energy Efficiency, Institute of Transportation Studies, and more.

With the physical and psychological concerns of farmworkers in mind, our designers and n various disciplines to ensure that no unwanted compromises were made in any aspect the home design.

The resulting Aggie Sol home envisions a more comfortable, healthy, and sustainable living environment for the hard-working farmers of the western coast of the United States.

During the design process for the Aggie Sol home, we were highly considerate of the impact of our building materials and made the most sustainable choices among today's conventional building materials. The items selected demonstrate that a home can be built sustainably without forcing builders to work outside of normal conditions. This is an important distinction for the Aggie Sol team, as we work to present a design which is both practical and effective.

To start, the entire home is built without using any vinyl products. While being an affordable material and common for low-income housing, our team chose to demonstrate that sustainability can be achieved affordably without it. Instead, our design team opted for recycled materials that provide the same familiarity as vinyl. These included biobased non-PVC tiles, concrete rainscreen siding, recycled pallette landscaping, renewable sand-based insulation, and more.This rigorous task of identifying the best materials based on their life-cycle was an important step to defining the Aggie Sol project: sustainability and effectiveness are truly in our soul and is highly valued by the students of our university.

MATERIALS

One of the greatest challenges for Team Aggie Sol was to defy the mundane boundaries that is usually affordable housing. We strive to bring adaptable and modular home design in an affordable package without compromising the luxuries of comfort and modern aesthetics. With these goals in mind, the Aggie Sol home was evolved into what it is today. The materials we used for our project were all cost-effective solutions that were carefully selected out of comparable materials in hopes of bringing the best solution to our potential tenants or homeowners. We strongly believe that sustainable, zero-net-energy living should not be exclusive to the wealthy, but that it should be a part of everyone's daily lives.

AFFORDABLE

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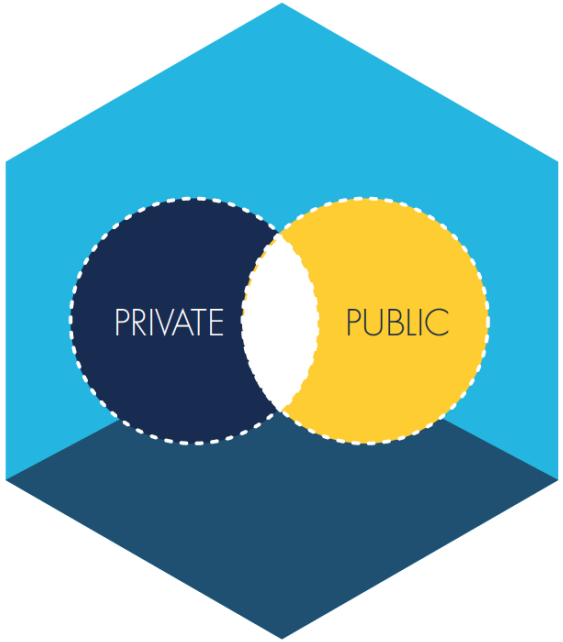
INTERIOR

The floorplan of the Aggie Sol home was deliberately chosen to provide the most usable floor space and features without compromising livability or comfort. This is accomplished by splitting the home between a large public space and smaller, private spaces. By having large, tall windows strategically placed throughout the home, there are great opportunities for visual connections from the interior to the exterior, and allows for more natural daylighting to penetrate the spaces. The public space is designed as a great room which combines the galley kitchen, dining room, and entertainment room.



Utilizing nearly half of the home's square footage and featuring vaulted ceilings, this space provides a sense of comfort and dignity to the owner.

The private sector of the Aggie Sol home can provide an experience starting from the posterior door, where our team provides a secondary entrance for agricultural workers, known as the Cleansing Room. This room combines the amenities of a laundry, a shower, and multiple storage units into a singular, efficient space where a worker can wash themselves and their clothes and retrieve a new, clean set.

This way, a worker can remove all the unwanted elements from their work before entering the rest of their home.

The cleansing room exits to the hallway, which gives the worker the freedom to enter the public space or continue towards their bedroom, if desired. This important distinction gives flexibility to the owner and their lifestyle.These features of the Aggie Sol home help it to best serve the needs of the farmworker, while maintaining an important sense of dignity and comfort in their home.

EXTERIOR

The Aggie Sol home was designed to be bold but liveable, eye-catching but neutral and friendly. Our design decisions were made intentionally to match these criteria while spinning off the criteria of existing farmworker housing and single-family homes. We used James Hardie Fiber Cement Board in a horizontal V-Rustic siding that gives a familiar impression at first glance to provide a visual connection to the farmworker aesthetic. A dark navy blue siding is used as a bold statement to bring a modern twist to this traditional aesthetic.

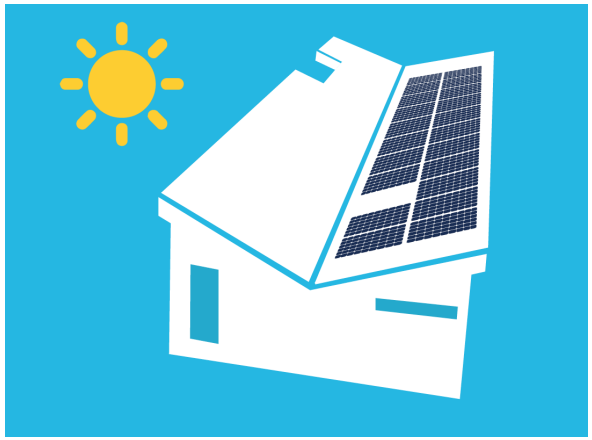
The choice to use aluminum trims for the windows and doors is used to highlight the form and space of the structure in a subtle, but effective manner. Additional highlights are brought in place with the choice of natural cedar exposed rafters, matching adjustable window shaders, and a outward-reaching cedar trellis that will provide ample shading for the Southern facade of the home.

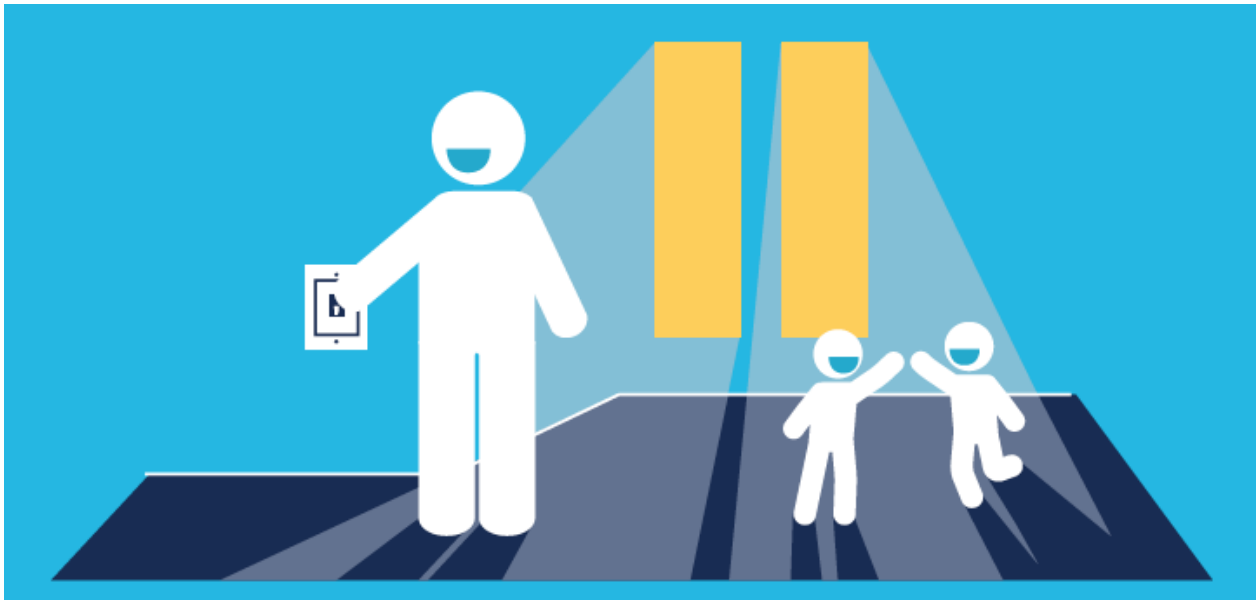
The Aggie Sol home uses drought-resistant landscaping to completment the exterior of the home while not taking away from the main architectural features and highlights. Our chosen landscaping elements also give the home supporting visual context that better helps portray our aesthetic of choice.

LIGHTING TECHNOLOGY & DAYLIGHTING

As a host of the California Lighting and Technology Center here in Davis, we are proud to say that we have highly considered how to successfully manipulate and utilize lighting technology and daylighting in the Aggie Sol home. Large, tall windows are strategically placed in each room in an effort to reduce the need for use of electrical lighting during the day time. Solar tubes are featured in the hallway of the Western half of the home, bringing daylight into the otherwise darker passageway during the daytime.

Careful daylighting analysis preceeded the final lighting plan for the Aggie Sol home, ensuring that we have our bases covered in terms of providing ample lighting throughout the home. External shaders and Sourthern facing trellis providev appropriate shading during various times of the day.





Market Appeal Narrative

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OUR MARKET APPEAL

Considering UC Davis' traditions as an agricultural school, team Aggie Sol chose to dedicate their design to the unique needs of the farmworker. Today, many farmworkers live in undesired conditions and even less have a sustainable, energy efficient housing alternative. Our home seeks to address these concerns while also providing a basis for sustainable, effective, and attractive low-income housing. Our team has designed a zero-net-energy home that will serve workers at a price that public and private housing providers can afford. In our mission to develop sustainable housing at the lowest price, we have incorporated low-cost energy-efficient technologies pioneered by the cutting-edge research from UC Davis. Our work has focused on innovating the energy collection systems, the heating and cooling solution, and the unique health concerns of the farmworker. As well as reducing the cost of the home, these technologies have the potential to make well designed ZNE housing available to communities of all income levels.

FARMWORKER HOUSING

Research performed by the Department of Sociology at UC Davis identified the main concerns farmworkers face with their living conditions. These included inadequate heating and cooling, undesired particulates and debris entering their living space, and affordability, among many others. Our team persevered to provide these elements in a way that reduced production costs.

By using a double-wide, factory-built home divided into Northern and Southern halves, the Aggie Sol home can be constructed and transported quickly and cost-effectively. The halves are then reconnected on the site in order to have a livable home in a matter of days after delivery.

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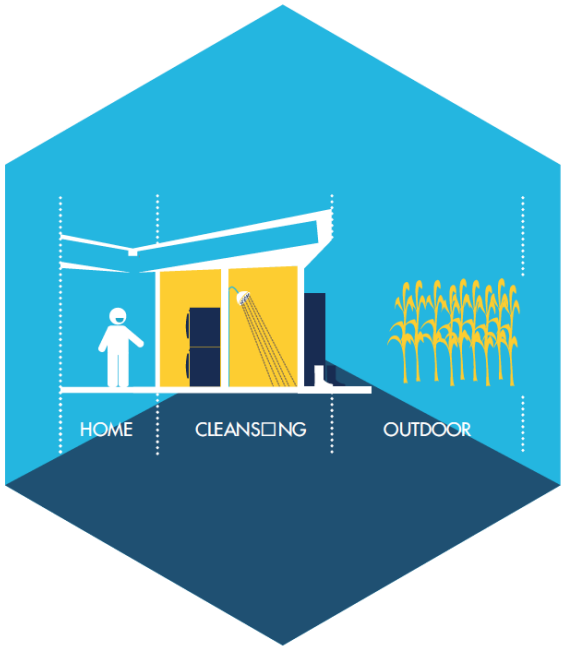
Additionally, a local business who specializes in zero-net-energy residential construction performed a line-item estimate on our home utilizing their facilities and methods, quoting the production cost of our home as demonstrated in the Solar Decathlon to be $180 per square foot. Under various housing options, the post-competition production cost can achieve less than $150 per square foot, lower than market rate for similar housing.

INNOVATIONS

Through the use of in-line framing, the Aggie Sol home uses 15% less materials for framing than conventional construction methods. It allows for 5% more insulation, and reduces the net heating and cooling load by a significant amount compared to the traditional Californian home.

Additionally, the Aggie Sol home features a unique radiant heating and cooling solution that leverages the geographical features of the West coast of North America. The solution utilizes a large rainwater reservoir which is cooled by exposing the water to the air during the chill night hours through a sprinkler system on the roof. This chilled water is then filtered and pumped through the radiant floor slab during the day to cool the home. Additionally, small quantities of water can be warmed for radiant heating when needed. This way, the Aggie Sol home efficiently controls temperature throughout the year.

Our Aggie Sol home also utilizes a butterfly roof design to both replenish the rainwater reservoir during rain and funnel the night-sky cooled water back to the radiant cooling system. Additional benefits includes a symmetric module break-point, significantly reduces gutter length, and provides unique and memorable aesthetic value.



INNOVATIVE FEATURES

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Engineering Narrative

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INNOVATION

The Aggie Sol home features technology and designs meant to best benefit agricultural workers, while also seeking to minimize the yearly net energy draw of the house. This is accomplished through a modular design, which enables the Aggie Sol home to deliver comfortable living space in a way that reduces production costs.

Designed to be split into two modules for transportation, the home can be factory-built and shipped right down the highway using similar methods and materials as traditional modular home construction. This method of assembly gives the home mobility, and brings the post-competition production cost to less than $150 per square foot - lower than market rate for similar housing.

When considering the unique needs of the agricultural worker, our team chose to provide an innovative cooling mechanism which leverages the geographical features of the American west coast to provide efficient temperature control at any time of year. A large rainwater reservoir is used to expose water to the night-sky through a sprinkler system on the roof. This chilled water is then filtered and pumped through the radiant floor slab during the day to cool the house.

Moreover, a small quantity of the same water can be warmed to provide radiant heating when needed, maintaining a consistent temperature in the home throughout all hours. Under most weather conditions in the west coast, the system is zero-net-water and does not require additional fluids after the initial installation. This technology is efficient, affordable, and sustainable - making temperature controlled, comfortable living spaces more accessible to farmworkers.

Additionally, the home features a greywater heat-recovery system which uses a specialized heat exchanger to extract energy from out-going greywater. That energy is then used to preheat the domestic supply, recycling the latent energy and reducing the net energy draw on the home for hot domestic supply. This technology offers a sustainable alternative for farmworkers while reducing 80% of the typical energy draw for hot water.

The Aggie Sol team also invested in the advanced In-Line framing technique. This method of assembly aligns the roof, wall, and floor framing at 24 inches on center, while also eliminating headers, fire blocking, and doubled top plates.

This is accomplished by utilizing a thorough structural model that accounts for the added strength of continuous exterior sheathing to provide rigidity, instead of the traditional framing methods. These framing methods make the Aggie Sol home not only stronger, but uses 15% less material, results in 10% less labor, and allows for 5% more insulation.

Our home seeks to achieve more than just sustainable, zero net energy housing. Instead, we propose affordable sustainability as a working solution to the real and current problem of farmworker housing. We believe these technologies will help put a sustainable housing alternative within reach of the workers who need it most. By developing a home which caters to their unique needs, we have introduced an affordable, sustainable, and efficient housing alternative to the western coast of America.

FUNCTIONALITY

In addition to their heating and cooling needs, farmworkers face debris and particulates in a daily struggle to keep their living environment both clean and healthy after a hard day's work. Our home has a solution to these problems integrated into its design.

By selecting a radiant heating and cooling solution, our home avoids filtering large quantities of particulates from the farm setting in an air-mass solution. A single zone thermostat controls the 8 radiant floor zones, allowing for a smooth transition in temperature throughout the home. The small square footage allowed for the home to be accurately and comfortably monitored under a single thermostat, making the system more affordable and easily controlled.

Through the use of powerful, yet quiet vents in the cleansing room and bathroom, we create the needed air ventilation and humidity control which makes the home both comfortable and healthy. Additionally, a deliberate thermal envelope features higher thermal mass, reduced opening-to-wall ratios, and a larger ratio of insulation to framing.

EFFICIENCY

In order to provide the most cost effective housing solution to farmworkers, our team strived to achieve zero-net-energy during a full year of use. Through the above innovations, strong day-light control, and accurate energy modeling we worked to present the most cost-effective, sustainable solution for farmworkers over the life of the home.

The Aggie Sol In-Line framing technique, shown in our energy analysis and discussion, demonstrates a considerable advantage over traditional framing through the introduction of a higher wall-cavity ratio, high-density insulation, and the removal of energy-sensitive headers and beams. When compared to the traditional home, the Aggie Sol home features 28.9% less heating loads, and 43.3% less cooling loads.

The thermal mass introduced by the concrete radiant flooring solution also assists with the energy efficiency of the home. Our home is expecting 16.4% less heating demand and 7.4% less cooling demand as a result of this feature. Additionally, the deliberately controlled day lighting plan allowed for significantly reduced annual cooling loads, and minorly reduced heating loads of 47.9% and 2.5% respectively.

The overall construction techniques and innovations of the Aggie Sol home are demonstrated in our energy analysis as having a 31.3% lower heating load and 97.3% lower cooling load than the traditional Californian household. By utilizing traditional materials in a new way, team Aggie Sol presents a solution which is effective, energy efficient, and practical.

RELIABILITY

(cont.)
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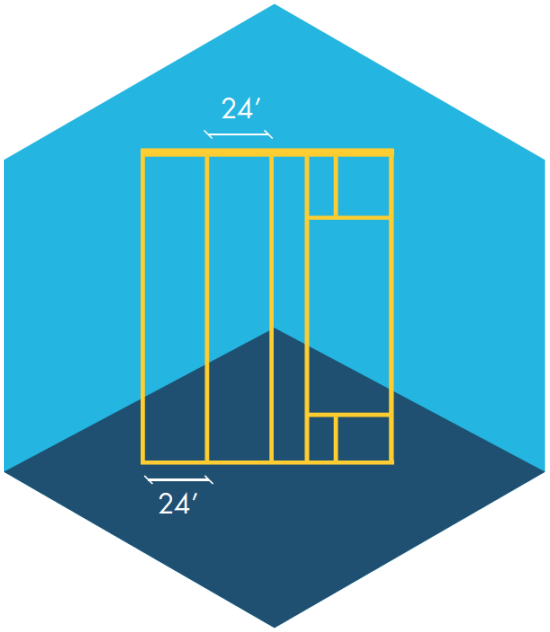
The Aggie Sol home is deliberately designed to resemble and operate similarly to the traditional Californian home. Featuring operable windows and external shaders, an owner has large flexibility in the control of their window openings and performance. An active owner has the option to notably impact their energy performance through a strong utilization of the external shaders and single-zone thermostat programming.

Additionally, the single galley kitchen, ADA-compliant bathroom, and cleansing room all feature easily-cleaned and maintained solid surfacing, fixtures, and equipment. Ample space is provided in the great room and bedrooms for freestanding storage as needed.

Mechanical equipment, including the greywater heat recovery system and water heaters, are easily accessible from the back deck for any owner-performed or contracted repairs and upkeep. The electric vehicle charging station is positioned conveniently outside the eastern exterior wall, where a parked car can easily manipulate the charger and plug in their vehicle.

The night-sky radiant heating and cooling system is conveniently designed for user access and understanding. The radiant floor manifolds are safely accessible from the mechanical room and from below the home, allowing for easy pipe flushing and upkeep. The night-sky sprinkler filter is conveniently located behind the rainwater reservoir, making the routine filter replacement an easy process for the owner.



ENERGY ANALYSIS & DISCUSSION

INTRODUCTION

The 2015 UC Davis Solar Decathlon Team has designed an affordable, sustainable prototype home for California farmworkers which will be showcased on the UC Davis campus after the competition. The house was modeled using BEopt and Excel for year-round operation under the Davis climate. Each major energy-efficient feature of the home was separately analyzed in order to gauge its energy savings impact. The construction strategy of balloon framing, low window to wall ratio, and thermal mass in the floor saves a significant quantity of energy in space conditioning. We developed an equation to score appliances on water efficiency, energy efficiency, and affordability—this "appliance scoring equation" yielded an overall annual energy savings exceeding 400 kWh. The Nexus eWater greywater heat recovery system saved roughly 3500 kWh of electricity compared to an electric resistance water heater. The combined radiant/night sky system reduced the space conditioning energy of the home by nearly 1,400 kWh. Over a full year, the Aggie Sol home is 1.9% energy positive and consumes 42.5% less energy than a conventional home exposed to the Davis climate and also built with the same floor plan.

DISCUSSION

The 2015 UC Davis Solar Decathlon Team, "Team Aggie Sol," designed a roughly 1000 ft2 house as a prototype home for farmworkers in California. The final resting location for the competition home will be on the UC Davis campus. As such, our energy model considered year-round operation in Davis under typical climate conditions.

The Aggie Sol home will provide below market-rate sustainable housing through a detailed, multi-faceted approach to energy efficiency. This report will discuss how the following five choices allowed our home to achieve net-zero energy.

In the construction phase, utilizing the balloon framing method, the home requires substantially less lumber, as well as allowing more room for insulation, thereby reducing both lumber costs and heating and cooling loads. By reducing the window to wall ratio, the home also eliminated significant heat loss during the winter and heat gain during the winter. The last major construction choice was utilizing gypsum concrete as thermal mass in the floor in order to cover the radiant system.

By replacing a traditional forced air HVAC system with a combined radiant/night sky system, Team Aggie Sol considerably cut down annual energy consumption. The radiant system completely eliminates duct losses, replaces an air handler with a small circulating water pump, and expands the range of acceptable indoor air temperature. The night sky system uses a 1500 gallon chilled water storage tank (CWST), a small water circulator, and rooftop sprinklers to take advantage of radiative cooling. The night sky system eliminates the energy intensive reversible air source heat pumps used for air conditioning.

The Aggie Sol home's night sky cooling system was originally patented and developed as the "Cool Storage Roof" by Richard Bourne, founder of the Davis Energy Group. Our night sky cooling system utilizes conventional lawn sprinklers to spray the water stored in a highly insulated CWST into a thin mist that spreads across the roof surface. Richard Bourne has developed the system to require a flowrate of 1 GPM for 100 ft2 of roof area . Since our roof is roughly 1000 ft2, our design flowrate is 10 GPM. The main cooling method for the CWST is radiation to the clear night sky although evaporation and convection also contribute to the cooling effect.

Radiative cooling to the sky occurs when the "effective sky temperature" is lower than the temperature of the rooftop water. The night sky temperature, Tsky, is usually lower than the ambient air temperature T_a because atmospheric temperature falls with increasing elevation. T_{sky} is a function of the clear sky emissivity, e_{sky}, and T_a. The clear sky emissivity is in turn a function of the dew point temperature T_{dp}.

We can represent radiative heat loss in W/m^2 to the night sky as R where εr is the emissivity of the water, T_{pond} is the temperature of the water, σ is the Stefan-Boltzmann constant. Thus the driving force behind the night sky cooling system is the temperature gradient between the night sky and the roof "pond." Since Davis enjoys clear skies, low dew point and ambient temperatures during summer nights, in practice, this temperature gradient is large enough to eliminate a conventional air conditioning system.

The controls of the night sky system consume negligible electricity and the energy usage is purely a product of the pump power draw and the number of spray hours.

We assume that the temperature of the CWST, T_{CWST},1 , drops to 55 °F after the night sky system has finished running. Since the CWST is insulated with R-30 fiberglass batts and water has a high specific heat, we assume only 1°F temperature rise due to solar radiation. The radiant heating system will dump the home's daily cooling load into the CWST and raise the water temperature to $T_{CWST,2}$.the CWST, QCWST, and restore the CWST to 55 F:

The night sky sprinklers spray over the entire roof surface to more quickly dissipate the heat carried by the CWST, QCWST, and restore the CWST to 55 F:

After cooling, this water collects in the gutter, enters the downspout, where a cartridge filter removes any particulates that it has picked up on the roof. The water then returns to the CWST, where it is recirculated by the night sky pump until the CWST's temperature falls to 55 °F.

Team Aggie Sol carefully selected home appliances by using an appliance scoring equation that evaluated water efficiency, energy efficiency, aesthetics, cost, and availability. Increased energy efficiency means less electricity consumed and smaller internal gains, while improved water efficiency translates into hot water energy savings.

Instead of using a standard electric resistance water heater (energy factor of 1.0 or less), the Aggie Sol home used the Nexus eWater greywater heat recovery system which features an overall energy factor (EF) of 4.0. The system consists of a collection tank which captures heat from incoming graywater and transfers it to the 80 gallon NEXheater via refrigerant. The NEXheater proceeds to heat incoming cold water to generate the home's domestic hot water.

The Aggie Sol home features twenty-one E20-327 photovoltaic panels. With a 20.4% nominal efficiency, these panels are currently the eighth-most efficient panels among hundreds of other alternatives available.

In addition to cooling the home, the night sky sprinklers perform an important second function—washing the panels and removing dust that would otherwise accumulate and reduce system efficiency by up to 40%.

The home was modeled in BEopt, a free energy modeling program provided by NREL. A few aspects of the home, such as the radiant system, night sky cooling system, and Nexus system, could not be simulated in BEopt so external Excel calculations were utilized to supplement the BEopt model. BEopt allows accurate modeling of the home's footprint, but its 3D modeling capabilities are limited.

Individual rooms cannot be modeled nor can the specific positions of doors and windows be assigned. However, these limitations do not affect the accuracy of the energy simulation because the user can manually input the surface area of each wall occupied by windows. Additionally, our HVAC control system treats the home as a single zone so individual room loads are irrelevant.

Choosing energy efficient appliances is critical to maximizing energy savings. However, Team Aggie Sol wanted to choose appliances that were not only energy efficient, but also water efficient, aesthetically pleasing, readily available for purchase (in order to avoid long lead times during construction), and affordable.

We consulted Energy Star to obtain spreadsheets containing data on dishwashers, refrigerators, clothes washers, and televisions. Before utilizing our appliance scoring equations, we considered the following selection criteria:

(1) Dishwashers—ADA compliant, Energy Star compliant, counter-depth
(2) Refrigerators—ADA compliant, counter-depth, total capacity exceeding 16 ft3
(3) Clothes washers—ADA compliant, counter-depth, stackable. We selected a clothes dryer that matched the washer.
(4) Televisions—50 inch screen size, vertical resolution of 1080p

The appliance scoring equation was not applied to the range because annual electricity consumption data was not available from Energy Star for residential cooking appliances. Our team selected a slide-in, ADA compliant cooking range, Frigidaire LFES3025PF based on aesthetics and cost. This model is a regular electric cooking range—our BEopt indicates that electric induction ovens consume only 27 Kwh per year less than their non-induction counterparts.

Additionally, since the washer and dryer needed to be bought together, their combined cost, availability and aesthetic appeal, as opposed to the cost, availability and aesthetic appeal of just the washer alone, were considered in the analysis. The energy usage of the dryer was not considered in the analysis because at the time of the analysis, annual electricity consumption data was not available from Energy Star.

In order to evaluate these five parameters, (1) E= energy efficiency, (2) W= water efficiency, (3) C= cost, (4) A= availability, (5) and L= aesthetic appeal (looks), we developed an appliance scoring equation to rate each appliance from 0 to 10 in each respective parameter, with 0 being the lowest and 10 being the highest score:
(1) E was categorized by annual electricity consumption in kWh.
(2) W was categorized by annual water consumption in gallons. In the case of refrigerators and televisions, which do not utilize water, water efficiency was disregarded.
(3) C was categorized by manufacturer suggested retail price in dollars.
(4) A was categorized by the ease with which the appliance could be procured in the United States. Appliances not available in the United States were assigned a zero, appliances not available at a local retailer but available via shipping were assigned a 5, and Appliances ready for pick-up at local retailers were assigned a 10.
(5) L was determined by our design team, who assigned a score from 0 to 10.
In order to achieve a continuous scoring spectrum from 0 to 10, the energy efficiency, water efficiency, and cost of the appliances had to be normalized. We have shown below the normalization process for assigning a cost score to the dishwasher (in reality 43 dishwashers were scored, but for simplicity the example below shows only five dishwashers).

Let Xi and Ci represent the cost ($) and cost score, respectively, of the dishwasher with appliance ID. Xmin and Xmax represent the costs of the least and most expensive dishwashers, respectively.

Note that since lower cost, energy consumption, and water consumption are desirable, these parameters result in higher scores. After normalization, we assign weights to each of the scores and then use the appliance scoring equation, excluding aesthetics, to obtain an overall pre-aesthetic score. In order to evaluate the viability of appliances under different circumstances, three sets of weighting factors were assigned:

(1) All parameters were treated equally.

(2) Affordability is weighted double the other parameters.

(3) Affordability and energy efficiency are weighted double the other parameters.

Our design team reviewed the appliances under each weighting scenario with the top ten pre-aesthetic scores. The design team then assigned an aesthetic score to these appliances, after which the appliances were re-ranked with the overall scoring equation:

Under the weighting scenarios important to the team, thankfully the top scoring appliance did not change, which made selection much easier. However, depending on a team's particular circumstances, the weighting factors could be adjusted with an even greater emphasis on affordability, which could certainly change the top scoring appliance.

While the Aggie Sol home is almost invariably energy positive from March to October, the conventional home is not—in fact the conventional home is energy negative during the summer months when photovoltaic production peaks. Thus during both the hottest and coldest time of the year, the conventional home possesses a large electricity gap that it must make up—this electricity will be provided by the grid and will cost the occupant substantially. By contrast, the Aggie Sol home provides the occupant with the opportunity to sell electricity back to the grid for much of the year.

The last phase of the energy model involved combining all the factors discussed earlier in this report in order to judge the energy efficiency of the Aggie Sol Home compared to a conventionally built home with the same floor plan also exposed to the Davis climate. While the Aggie Sol home features a combined radiant/night sky system, balloon framing, thermal mass in the floor, energy and water efficient appliances, and a low window to wall ratio, the conventional home would not. The Aggie Sol home uses 5945 kWh of electricity, making it 1.9% energy positive. By contrast, the conventional home uses 8472 kWh and even with 21 high efficiency SunPower solar panels, it consumes 28.7% more electricity than it produces.

Communications Narrative

AG IE SOL

OUR STRATEGY

Our strategy for sharing our key message was three-fold; we started with social media as a way of engaging our peers and those that were not locally involved in our project. We accomplished this through consistent Facebook, Instagram, and Twitter posts of our daily team activities and events. Posting relevant and informative material and the daily happenings of the team helped involve our followers and promote recruitment and interest.

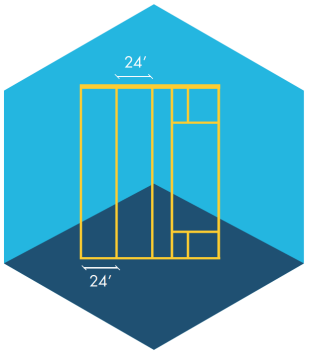
Secondly, we fostered the interest of local businesses and organizations that helped influence the direction of our project. Our project was heavily supported by local businesses that allowed us to construct with locally sourced materials. Team Aggie Sol was inspired by the hardworking farm-workers and we used this motivation to cultivate a community that we feel is both strongly interested and invested in our home.

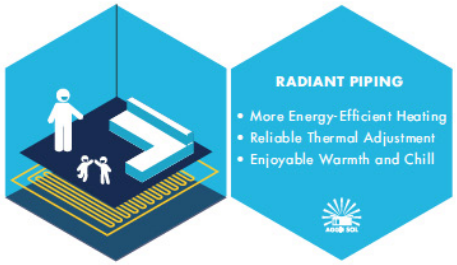
Finally, we leveraged the name and brand of the University of California, Davis by not only staying consistent with the school graphic standards and branding, but also involving each of the colleges and departments that have similar precedences. This allowed for our team to gain momentum within the University's academic sphere to give us credibility and a significant audience to our communication tactics.

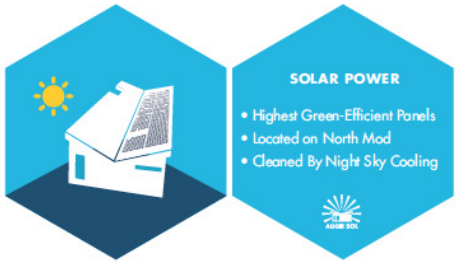
TARGET AUDIENCE

Aggie Sol aimed to communication to those who make up the community in our vicinity. We hoped to engage students, faculty, and the locals of Davis. Using that as a starting point, we spread our teams goals and aspirations to others in relevant network. We made sure our mission and key messages made lasting impressions on our targeted regional and local organizations.

For our printed communications material, we hope to bring understanding and education to a general audience. Throughout the house we have signage that will help highlight the various technologies and innovations that our home utilizes. We intend on providing enough information to avoid any need for prior knowledge to fully understand what we are communicating.







KEY MESSAGES

Team Aggie Sol started with a passion for sustainability. We want to share our passion for sustainability with others and help them realize why it is important in all of our lives. By projecting our team's goals through our exhibition and signage material, we want to impact the way people think of their everyday environment, starting with their homes.

When it comes to the Aggie Sol home, we want to convey these three key words: Affordable, Sustainable, and Deliberate. The Aggie Sol home serves to not only fulfill a call for more sustainable living, but to do so while serving as a solution to problems that we as a community are all facing. With regional farmworkers, and other across the nation, making barely enough to survive, their living conditions have become deplorable and unsanitary. Our home was made to be affordable and to answer the problems associated with this type of low-income living, while still championing sustainability.

METRICS FOR SUCCESS

As an integral part of Team Aggie Sol, the Communications has defined standards for metrics of our success that ensure we succeed in educating others on our home and team mantra, as well as bring to attention the causes we are working towards. On the social media platforms used by our team, we have been working to increase our audience in terms of views and interactions. As a team, we consider our endeavors to be successful in terms of educating our followers on how are making a difference with the techniques implemented in the Aggie Sol home. We measure our success on campus through the integration of the Solar Decathlon/Aggie Sol effort throughout the entire University. Our campus presence has infiltrated over __ departments and all four colleges. At the end of this project, we hope that the Solar Decathlon ideal and Team Aggie Sol mantra will have an impact on the entire University.