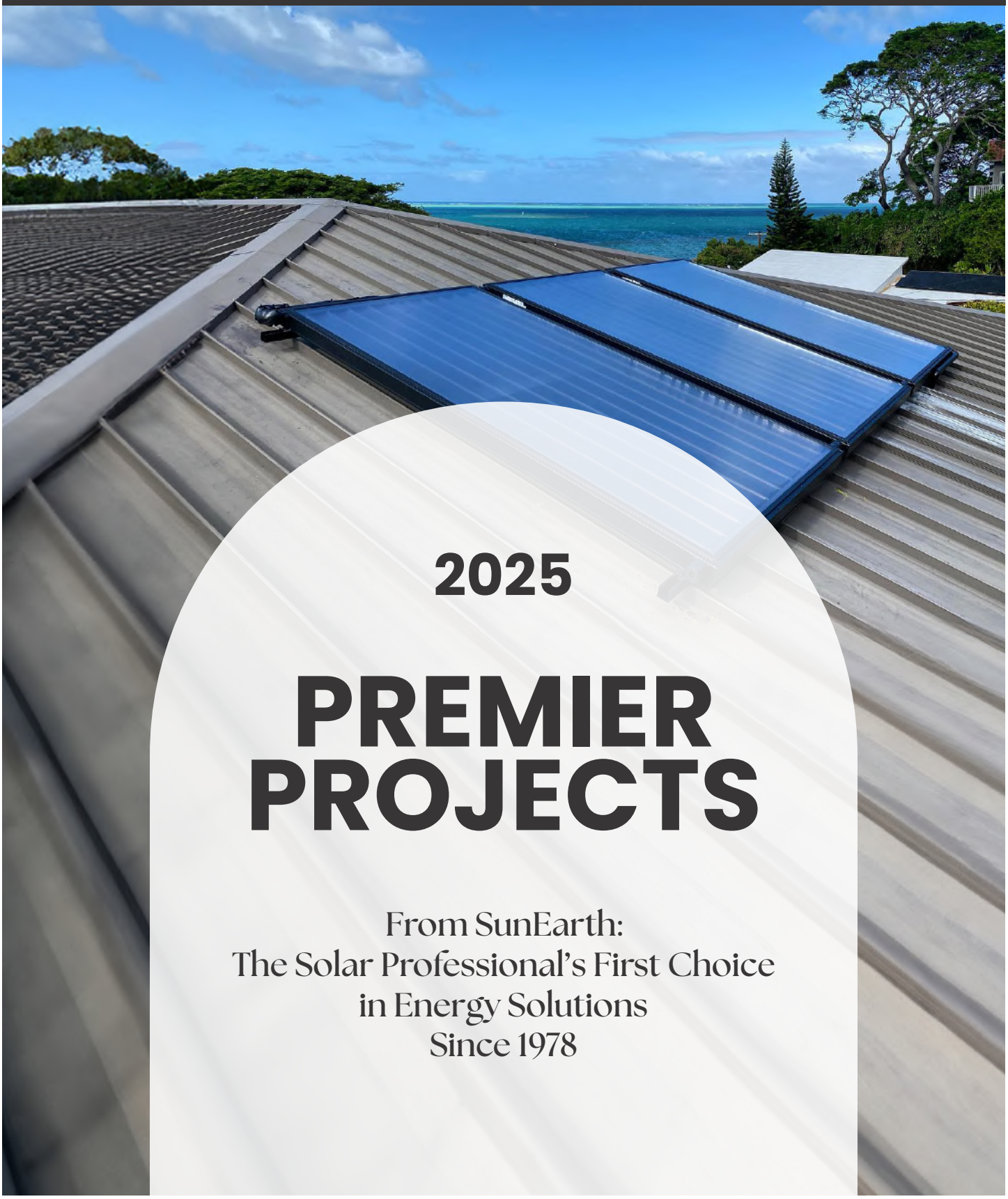
SunEarth®



2025

PREMIER PROJECTS

From SunEarth:
The Solar Professional's First Choice
in Energy Solutions
Since 1978

CONTENTS

ABOUT SUNEARTH, INC.

Since 1978, SunEarth has continuously built industry leading solar hot water collectors, components, and packaged systems. Every SunEarth product is constructed to exacting standards with the world's harshest climates and environmental conditions in mind. Our innovation in residential and commercial solar hot water heating solutions is recognized throughout the industry for performance, durability, and sleek design. SunEarth is a global leader in renewable energy technology, offering more ICC-SRCC certified systems than anyone else in the world.

SunEarth's mission is to educate the residential, commercial, and industrial sectors on the benefits of solar heating systems while manufacturing quality, high-performance products that promote renewable energy as a viable and cost-effective solution.

ADAM CHRISMAN
President, SunEarth, Inc.

QUALITY

We promise to deliver excellence, strive for continuous improvement, and respond vigorously to market needs. Quality is present in every aspect of our day-to-day operations here at SunEarth, from the sales desk to the shipping department. Each of us at SunEarth shares that responsibility. From excellence in materials backed with rigid standards, SunEarth provides quality you can always count on.

RELIABILITY

We intend to be known in the industries we serve as a company that fulfills our commitments and operates to the highest of ethical standards. Each SunEarth employee is held personally accountable for the highest standards of behavior, including honesty and fairness in all aspects of our work. We work hard to fulfill our commitments as responsible citizens and employees at every stage.

DEPENDABILITY

We live up to our word and fulfill our promises. Our customers and employees not only deserve our respect and honesty, but our expert abilities as well. With every product we release, our goal is to be remembered as a trusted partner that delivered the promised results that always meet our clients' expectations. We will consistently treat our customers and vendors with the respect they deserve.

OUR VALUES

Three principles guide SunEarth in all that we do: Quality, Reliability, and Dependability. These core values are reflected at SunEarth in our products, customer service, and company culture. From our inception, this is what we have striven to be.

SUNEARTH: A HISTORY

Key Innovations Since 1978

1978

SunEarth, Inc. is founded in Santa Rosa, California, USA, and begins manufacturing the Empire Collector series of solar water heating systems.

1987–1992

SunEarth acquires assets of Acro Energy and relocates its headquarters to Ontario, California. In 1992, the SolaRay Corporation fully acquires SunEarth, Inc. In the same year, the Oasis all-copper pool collector, the SunSiphon, and the SunBurst absorber hit the market.

2002

SunEarth introduces the RexRack mounting system, CopperStor, and CompRail, the first ever commercial commpressed rail PV rack. In 2003, SunEarth relocates to a 5-acre facility in Fontana, California.

2006–2009

SunEarth begins collaborations with Steca and Rheem for advancements in controllers and water heaters. In 2009, SunEarth wins the Advanced Energy Manufacturing Tax Credit from the ARRA (America Reinvestment and Recovery Act).

2014

The Solaray Corporation, which includes SunEarth, Inc., Inter-Island Solar Supply, and Pacific Liquid & Air Systems, becomes a 100% employee-owned company.

WHAT'S A MEGAWATT (MW)?
A megawatt (MW) is a unit of electric capacity or electric load. A megawatt is equal to 1,000 kilowatts (kW).

2021
SunEarth is awarded "Best Solar Manufacturer in California" in the North America Business Elite Awards, and we unveil our Solar Series Heat Pump Water Heater.

2019
SunEarth hits a milestone of 210MW since 2009!

2018
Global Energy News Magazine announces SunEarth as "Best Solar Heating Manufacturer, Western USA" in the 2018 Global Energy Awards.

2020
SunEarth is awarded "Best Solar Product Manufacturer in the USA" by Corporate Vision Magazine, and our SunWater dual solar/electric water heater is awarded "Most Innovative PV Water Heating Unit" by New World Report.

2022
Our recognition continues in 2022 as we're awarded for "Best Flat Plate Solar Thermal Manufacturer," selected for the 2022 Best of Fontana in the solar energy equipment category, and named #1 of the "Top 10 Renewable Energy Providers" by Energy Tech Magazine.

Commercial Projects

SunEarth specializes in working with contractors and distributors in commercial, government, industrial, and high-end residential projects. In recent years, our commercial property projects include hotels, breweries, military bases, restaurants, and universities. Check out the details of these featured projects.

THE MAGICAL MOON FOUNDATION

Solar Water Heating

Location: Marshfield, Massachusetts
Installer: RES Solar
Installed: October 2024

The Magical Moon Foundation, located in Marshfield, Massachusetts, is a sanctuary dedicated to supporting children battling cancer, providing them and their families with a nurturing retreat. In October 2024, RES Solar, with the generous equipment donation from SunEarth, revitalized the foundation's solar water heating system, which had previously relied on nonfunctional evacuated tube collectors. This upgrade marks an essential step in sustainable operations, supporting the foundation's mission with energy-efficient hot water for daily needs while reducing environmental impact.

A Heartfelt Community Contribution

Through the generosity of SunEarth, which donated the replacement solar water heating equipment, and the dedicated labor contribution from RES Solar, The Magical Moon Foundation now benefits from a reliable solar water heating system. This project involved replacing the outdated evacuated tube collectors, restoring the foundation's ability to generate solar-heated water. The rejuvenated system allows the foundation to operate sustainably, reducing energy costs and environmental footprint, enabling more resources to go directly toward enriching the lives of children and families.

Efficiency with Purpose

With a focus on durability and long-term savings, the new system significantly reduces the foundation's reliance on traditional energy sources, creating a stable, eco-friendly solution. The increase in energy efficiency will enable the foundation to lower operational costs, dedicating more resources toward its mission of providing a comforting and supportive space for young "warriors" and their families. Every detail of the installation was completed with care, underscoring the commitment to sustainability and community impact.

The October 2024 restoration of the solar water heating system at The Magical Moon Foundation is a shining example of how community partnerships can drive positive impact. Thanks to SunEarth's equipment donation and RES Solar's commitment, the foundation now enjoys an efficient and sustainable hot water solution that supports its essential services. This revitalized system stands as a testament to hope, sustainability, and shared dedication to making a difference.

DEFENSE SUPPLY CENTER COLUMBUS

Solar Water Heating Installation

Location: Columbus, Ohio
Installer: John Cecil Construction LLC
Project Manager: Andrew Morgan, PE
Installed: October 2024

The Defense Supply Center Columbus (DSCC) in Ohio stands as a testament to cutting-edge sustainability with its ongoing solar water heating installation. Spearheaded by John Cecil Construction LLC and diligently managed by Andrew Morgan PE, the project promises to be a beacon of energy efficiency and environmental responsibility. The DSCC's commitment to sustainability shines through its adoption of three Solar Station XXLs, leveraging advanced TRB-32 collectors from SunEarth in an indirect drainback configuration. This innovative system promises enhanced energy efficiency and a reduced environmental impact. Stay tuned for further updates as the project nears completion.

SYSTEM SPECIFICATIONS

- **Solar Station:** Three Solar Station XXLs
- **TRB-32 Collectors:** One system with 25 x TRB-32 each, Two systems with 15 x TRB-32 each
- **System Design:** Indirect drainback
- **Storage Tanks:** Unpressurized storage tanks (Hydroflex)

THE RED SEA PROJECT

Solar Water Heating Installation

Location: Red Sea, Saudi Arabia
Installer: Sysilscorp Arabia Co. Ltd.
Installed: 2024

The Red Sea Project is a visionary luxury tourism destination along Saudi Arabia's Red Sea coast, emphasizing sustainable, eco-friendly infrastructure. This exclusive resort project seeks to harmonize luxury with environmental responsibility by integrating renewable energy into its design. In alignment with this mission, Sysilscorp Arabia Co. Ltd. completed a large-scale solar water heating installation in partnership with SunEarth, installing 32 direct solar water heating systems across single-story buildings within the project. This installation is critical to the Red Sea Project's commitment to sustainability, providing renewable hot water for the comfort of guests while minimizing the environmental footprint.

Efficient Direct Solar Water Heating

The direct solar water heating system chosen for the Red Sea Project offers high efficiency, simplicity, and reliability, especially suited to the warm, sunny climate of the Red Sea. SunEarth's solar collectors harness abundant sunlight to heat water directly, ensuring an uninterrupted supply of hot water while reducing the resort's reliance on conventional energy sources. The four-tank configuration optimizes the hot water supply, ensuring that each building can meet high demand sustainably.

Sysilscorp Arabia Co. Ltd.'s installation utilized SunEarth's reliable solar technology to create a system that's not only eco-friendly but also requires minimal maintenance, making it ideal for a high-occupancy setting like the Red Sea Project.

A Commitment to Eco-Conscious Luxury

The solar water heating installation at the Red Sea Project is part of the resort's broader commitment to luxury sustainability. By choosing renewable energy sources for essential operations, the Red Sea Project sets a powerful example in the luxury tourism sector. This installation highlights the synergy between SunEarth's solar technology and the resort's dedication to environmental stewardship, demonstrating how renewable energy can be integrated into upscale developments without compromising guest comfort.

The solar water heating system also contributes to the resort's long-term cost savings by reducing energy costs and reliance on fossil fuels, aligning with the resort's sustainability goals and enhancing its reputation as a world-class destination that respects and protects its natural surroundings.

The Red Sea Project's solar water heating installation exemplifies the potential of renewable energy in luxury developments. With Sysilscorp Arabia Co. Ltd.'s meticulous installation and SunEarth's advanced solar technology, the Red Sea Project not only meets high standards of guest comfort but also underscores its commitment to eco-conscious operations. This project stands as a model for how sustainability and luxury can coexist, further solidifying the Red Sea Project's place as a global leader in environmentally responsible tourism.

SYSTEM CONFIGURATION & COLLECTOR ALLOCATION

Each of the 32 single-story buildings in the Red Sea Project was equipped with a direct solar water heating system comprising three SunEarth solar collectors. To meet the facility's high demand for hot water, especially in guest amenities and restrooms, each building features:

- **Solar Collectors:** 3 collectors per building
- **Hot Water Storage:** Four 80-gallon tanks per building, strategically placed with two on each side of the building to serve the toilet areas efficiently on both left and right sides of each floor

This configuration ensures that each area of the building has access to hot water as needed, maximizing comfort while minimizing energy consumption.

For more information about Sysilscorp Arabia Co. Ltd.'s sustainable installations, please visit their website. To learn more about SunEarth and their solar energy solutions, please visit SunEarth's website. For insights into the Red Sea Project's vision and commitment to sustainability, visit the Red Sea Project's website.

TROJENA ACCOMMODATION CAMP

Solar Water Heating Installation

Location: Trojena, NEOM, Saudi Arabia
Installer: Sysilscorp Arabia Co. Ltd.
Installed: October 2024

Trojena, located within Saudi Arabia's ambitious NEOM region, is designed as a revolutionary mountain destination that combines luxury, sustainability, and innovation. This unique development set in the mountains will feature year-round outdoor activities, including skiing, luxury accommodations, and recreational amenities—all within a setting that embraces environmental responsibility and green technology. In October 2024, Sysilscorp Arabia Co. Ltd. installed SunEarth's high-performance solar water heating systems across the Trojena Accommodation Camp, marking a significant step toward NEOM's goal of sustainable, self-sufficient energy solutions.

Efficiency with Active Drainback Technology

The Active Drainback system installed in Trojena was selected for its high efficiency and adaptability in various climate conditions, making it ideal for NEOM's vision of sustainable innovation. The system drains when not in use, preventing issues like freezing and reducing maintenance needs, which is crucial in the cooler mountainous climate of Trojena. SunEarth's solar collectors are specifically designed for durability and reliable performance, enabling the system to meet the camp's hot water requirements with minimized environmental impact and operational costs.

Leading Sustainability in a Visionary Region

Trojena's commitment to sustainability aligns seamlessly with NEOM's broader vision of a zero-emissions future, and this solar water heating installation reflects that commitment. By replacing traditional energy sources with renewable solar heating, Trojena is positioned as an exemplar of eco-friendly innovation in hospitality and residential infrastructure. This project showcases how large-scale solar installations can reduce energy costs, support environmental goals, and enhance the guest experience, setting a precedent for future NEOM developments.

The solar water heating system at Trojena not only lowers operational expenses but also highlights NEOM's progressive stance on green energy. The project illustrates the value of renewable energy solutions in high-performance, high-demand environments, establishing Trojena as a leader in sustainable mountain resort development.

ACCOMMODATION BREAKDOWN & COLLECTOR ALLOCATION

The solar water heating system installed at Trojena serves various buildings within the accommodation camp, ensuring that each facility has access to energy-efficient hot water:

- **Executive Accommodation (A – Type):**
  16 buildings, each equipped with 2 collectors
- **Executive Special Needs Accommodation (A – 1 Type):**
  2 buildings, each equipped with 2 collectors
- **Executive Accommodation (A – 2 Type):**
  8 buildings, each equipped with 3 collectors
- **Senior Accommodation (B – Type):**
  11 buildings, each equipped with 4 collectors
- **Senior Special Needs Accommodation (B1 – Type):**
  3 buildings, each equipped with 3 collectors
- **Junior Accommodation (C – Type):**
  20 buildings, each equipped with 4 collectors
- **Kitchen and Dining Facility:**
  1 high-demand building equipped with 13 collectors

This allocation ensures each accommodation type within Trojena has sufficient hot water for guests, with each building's hot water system customized to its unique demands.

The solar water heating system installation at Trojena Accommodation Camp is a prime example of how renewable energy can support forward-thinking developments like NEOM. With SunEarth's efficient equipment and Sysilscorp Arabia Co. Ltd.'s precise installation, Trojena benefits from a dependable, sustainable hot water solution that aligns with NEOM's vision of a futuristic, eco-conscious region. This system provides essential energy savings while contributing to Trojena's position as a groundbreaking, sustainable mountain destination.

GREAT BASIN BAKERY

Solar Water Heating

Location: Bishop, California
Installer: Ian Dews Plumbing
Distributor: Western Nevada Supply
Installed: March 2023

Great Basin Bakery, an iconic establishment in Bishop, California, is known for its commitment to quality and expansion. In line with their dedication to environmental responsibility, the bakery has taken a sustainable step by incorporating a cutting-edge domestic hot water solar system. This eco-friendly transformation was facilitated by the expertise of Ian Dews Plumbing.

The newly integrated solar water heating system has been seamlessly incorporated into the bakery's operations, strategically situated in the Bishop Plaza shopping center. The system comprises 4 - 4' x 8' SunEarth Solar collectors, strategically facing south at a 60-degree tilt, complemented by 2 SunEarth 80-gallon storage tanks. Notably, the system operates using a drain-back configuration, ensuring optimal efficiency by only containing fluid when actively operating. During inactive periods, the fluid safely drains back into a dedicated 15-gallon tank.

Great Basin Bakery's decision to embrace the SunEarth solar water heating system reflects a forward-thinking approach to energy efficiency and environmental stewardship. By harnessing solar power for domestic hot water needs, the bakery not only reduces its environmental impact but also realizes substantial long-term cost savings. The drain-back system design ensures no energy goes to waste, maximizing overall efficiency.

As a result of this sustainable investment, Great Basin Bakery can continue to serve its customers with delectable treats while contributing to a greener, more sustainable future.

PROJECT SUMMARY

- **Application:** Solar water heating
- **Solar Collectors:** 4 SunEarth 4' x 8' Solar Collectors
- **System Tilt:** 60 degrees
- **Storage Tanks:** 2 SunEarth 80-gallon Storage Tanks
- **System Type:** Drain-Back Solar Water Heating
- **System Operation:** On-demand fluid circulation

ALILA MAREA
RESORT

Location: Encinitas, California
Developer: JMI Realty
Designer: Joseph Wong Associates
Installer: Arnold Solar
Installed: 2020

Perched majestically along the coastal bluffs and commanding breathtaking views of Grandview and South Ponto Beaches, the Alila Marea Beach Resort Encinitas is a pinnacle of luxury oceanfront hospitality. With 130 guestrooms, including 16 suites, this resort beckons travelers to experience the epitome of coastal elegance. It boasts an ocean-view restaurant with a rooftop patio, a pool complemented by a pool bar and an infinity-edge hot tub, the opulent Spa Alila, and stunning venues for weddings and events, all set against a backdrop of panoramic Pacific Ocean and lagoon vistas.

The 4.3-acre site, situated just west of the intersection of La Costa Avenue and Coast Highway 101, has undergone a remarkable transformation. Originally conceived in the 1980s and later acquired by Fenway Capital Advisors in 2017, JMI Realty collaborated to bring this vision to life. Initially planned as a beach resort sibling to the La Costa Resort & Spa, the project has evolved into a stand-alone luxury hotel, characterized by its distinct coastal charm. Construction commenced in early 2019 and involved meticulous sand replenishment efforts just south of South Point Beach.

Notably, San Diego-based Joseph Wong Design Associates infused an "eco-friendly" ethos into the hotel's design, using natural building materials and colors that seamlessly blend with the existing coastal bluffs.

The integration of SunEarth solar water heating systems at Alila Marea Resort illuminates the commitment to both luxury and sustainability. These solar collectors provide an energy-efficient and eco-conscious solution for the resort, aligning with the coastal beauty and eco-friendly design ethos that define this extraordinary destination.

PROJECT SUMMARY

- **Application:** Solar water heating for the Hotel, Spa, Restaurant, and Resort
- **Solar Collectors:** 20 Sun Earth Thermoray 4' x 10' (TRB-40) Collectors
- **System Format:** Solar pre-heated water
- **Rated Power Output:** 53.22 kW
- **Yearly Energy Output (kWh):** 34,527.57 kWh

HY-POINT DAIRY FARMS

Sustainable Dairy Production

Location: Wilmington, DE
Installer: Solar2Hot
Completed: 2020

Hy-Point Dairy Farms, nestled at 425 Beaver Valley Rd, Wilmington, Delaware 19803, is committed to both sustainability and dairy production excellence. Their dedication to harnessing solar energy has led to the creation of a groundbreaking project that integrates solar hot water systems and solar electric solutions into their daily operations.

Hy-Point Dairy Farms embarked on a remarkable journey toward sustainability. This initiative was sparked by the visionary idea of Danny Meany, the owner's son, who introduced the world's first-ever "solar Truckport" concept.

Solar Truckport Innovation

Three Truckports were constructed to support collectors and solar panels. Two smaller Truckports house 121 KW of solar electric systems, while a larger Truckport hosts the SunEarth solar water heating system. This water heating system efficiently heats 6,000 gallons per day, serving essential functions within the dairy production processes. This includes sterilization, processing lines, water treatment, clean-in-place systems, case washers, and winter space heating.

Economic and Environmental Benefits

The solar Truckport concept offers not only sustainable energy solutions but also cost-saving advantages. Notably, the dairy reefer delivery trucks benefit from the shade provided by the Truckports, resulting in annual electricity cost savings of $13,000.

Cost-Effective Sustainability

The total cost of the project amounted to $1,006,062. The solar hot water component, generating 106 KW, had a total cost of $576,590. The 121 KW solar electric component incurred a total cost of $429,476. Thanks to various incentives, including New President Trump's 100% Bonus Depreciation, a 30% Investment Tax Credit, a USDA Grant, a Delaware Green Grant, and a Sustainable Energy Utility loan, Hy-Point's net cost after incentives is $0.00.

Project Funding

According to energy savings reports provided by Wise Power Systems, Inc., and Solar Unlimited North America, Inc., the combined energy savings from both projects are estimated to reach approximately $57,883. The total combined costs for these two projects amounted to $592,770. Sources of funds included:

- Borrower cash contribution: $ 8,200
- DE Green Grant: $162,000
- Delmarva Power Solar Grant: $ 3,000
- DESEU Loan: $419,000

PROJECT SUMMARY

- **Application:** Industrial Pre-Heat
- **Solar Collectors:** 54 SunEarth 4' x 8' Thermoray (TRB-32) Solar Thermal collectors
- **System Racking:** SunEarth RexRack
- **Solar Pump Station:** SunEarth SolarStation XXL

OFF-GRID RANCH

Solar in the TexanWilderness

Location: Fort Davis, Texas
Installer: Off-Grid Enterprises
Installed: 2020

Nestled in the heart of the Texan wilderness, the Off-Grid Ranch in Fort Davis, Texas, represents a beacon of self-sufficiency and sustainability in a remote, off-grid setting. This captivating case study delves into the remarkable journey of Off-Grid Enterprises, the visionary installer behind this venture, and their integration of SunEarth solar water heating systems.

In the vast expanse of Fort Davis, where conventional utilities are often a challenge to access, Off-Grid Ranch stands as a testament to the boundless potential of renewable energy. The installation of solar water heating technology not only serves as a cost-effective energy solution but also exemplifies the harmonious coexistence of modern comforts and the untouched natural surroundings.

As we explore the Off-Grid Ranch case study, we'll witness how this remarkable project combines eco-friendliness, self-sufficiency, and energy efficiency in a commercial setting, providing invaluable insights into the limitless possibilities of sustainable living. Off-Grid Ranch represents a remarkable venture into sustainable living and off-grid solutions. This project, installed by Off-Grid Enterprises, serves as a testament to the power of renewable energy, especially in remote and self-sufficient locations.

The integration of SunEarth solar water heating systems at Off-Grid Ranch is a prime example of sustainable energy solutions in a commercial setting. The solar collectors provide renewable, cost-effective hot water solutions, significantly reducing energy costs and promoting eco-friendliness in a rural, off-grid environment.

PROJECT SUMMARY

- **Application:** Ranch - Commercial
- **Solar Collectors:** Sun Earth Thermoray 4' x 10' (TRB-40) Collectors
- **System Format:** Solar pre-heated water
- **Rated Power Output:** 53.22 kW
- **Yearly Energy Output (kWh):** 34,527.57 kWh

AMAALA RESORT

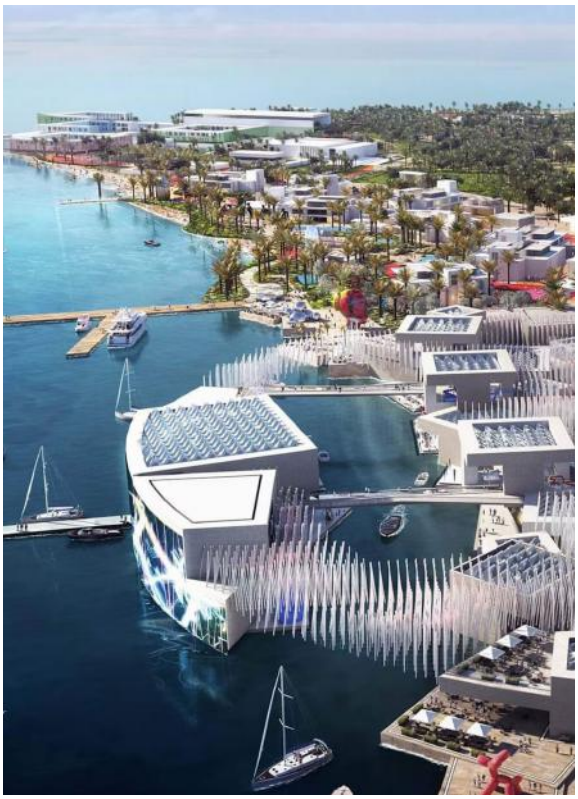
Luxury Family Wellness Destination

Location: Amaala, Saudi Arabia
Developer: Syslis Corporation
General Contractor: TAMIMI Global Co.
Installed: 2022

AMAALA is an ultra-luxury tourism megaproject currently in development along the coast of the Red Sea coast in northwestern Saudi Arabia. Spanning more than 4,000 sq. km, this year-round destination will offer everything from sea and sun to sports, arts, and culture, ensuring that everyone—whatever they love doing—can enjoy the experience of a lifetime.

The first phase of development is set for completion by mid-2024 and will consist of more than 1,300 hotel rooms across eight different resorts. When complete in 2027, Amaala will be home to more than 3,000 hotel rooms across 25 hotels, and approximately 900 luxury residential villas, apartments, and estate homes alongside high-end retail establishments, fine dining, wellness, and recreational facilities.

Solar Water Heating Along the Red Sea Coast
AMAALA looks to run on entirely renewable energy sources, aiming to operate with a zero-carbon footprint and sustainably source 50 percent of all its food by 2030.



Resort rendering from www.amaala.com.

At present, a total of 50 SunEarth solar water heating systems have been installed on site with temperature data monitoring. This monitoring has supported the initial energy savings projections from simulation results. Each system has a rated power of 75 kW and a maximum annual energy savings of 13,155 kWh.

PROJECT SUMMARY

- **Application:** Solar pre-heat for hotels, villas, apartments, luxury estates, restaurants, and recreation
- **Solar Collectors:** 150 SunEarth Thermoray 4′ x 8′ (TRB-32) Collectors
- **System Format:** Solar pre-heated water
- **Rated Power Output per system:** 75 kW
- **Yearly Energy Output (kWh) per system:** 13,155 kwh

Jane's Studio image from Mission Wolf's Facebook Page.

MISSON WOLF

Wolf Eduction & Nature Center

Location: Westcliffe, Colorado
Installer: Metro Solar
Installed: 2019

Mission Wolf is a 501(c)(3) non-profit that has provided a sanctuary home to wolves and wolf-dog crosses for over 30 years. Their mission is to inspire respect for the wild and connect people with nature. Mission Wolf is run by a group of dedicated and hard-working individuals who live and work sustainably in the remote Wet Mountains of Southern Colorado.

Throughout the summer of 2019, Metro Solar designed and installed a solar thermal radiant and domestic hot water heating system for Mission Wolf's visitor center, Jane's Studio. According to Mentro Solar Owner and Installer Dave Woycio, "I had originally planned on ordering used solar collectors for Mission Wolf to help them keep they're costs down, but reached out to SunEarth." The entire Mission Wolf compound is off-grid, and the installed solar equipment will be listed on diagrams for educational purposes.

Jane's Studio
The outer shell of Mission Wolf's new 4,800 square-foot solar-powered agricultural shop and studio is fully standing at the bottom of the hill, complete with a beautiful finished roof. Mission Wolf staff combated fierce snowstorms all year to get this building up, and it will be an incredible addition to Mission Wolf's education efforts. This studio will provide a central location for visitors and volunteers in order to minimize the impact on the refuge and to assure that the shy wolves keep their sanctuary home.

PROJECT SUMMARY

- **Solar Collectors:** 10 SunEarth 4'x 8' Flat Plate Collectors (EP-32)
- **System Format:** Solar pre-heated water
- **Annual Energy Savings:** 6,700 Therms
- **Rated Power Output:** 40.81ft2*56 =2,285.36ft2/10.76 * 0.7 = 148.67kwh

KAWADA HOTEL

Hotel in Downtown L.A.

Location: Los Angeles, California
Installer: All Valley Solar
Installed: 2019

The Kawada Hotel is centrally located at 200 South Hill Street at the corner of 2nd Street in Downtown Los Angeles. Visitors to the vibrant downtown neighborhood of Los Angeles have been choosing the Kawada Hotel as their affordable refuge for decades. The Kawada Hotel is known for its inviting atmosphere. The interior is everything you would expect from a hotel meeting the needs of today's travelers.

In 2019, a SunEarth hot water system comprised of 36 Thermoray (TRB) Flat Plate Collectors was installed by All Valley Solar.

PROJECT SUMMARY

- **Application:** Direct Hot Water
- **Rated Power Output:** 1472.4ft2 / 10.76 * 0.7 = 95.788 kw
- **Solar Collectors:** 36 SunEarth Thermoray (TRB) Flat Plate Collectors
- **System Format:** Closed Loop Drainback

BENEFITS OF SOLAR HEATING FOR HOTEL PROPERTIES

- Solar water heaters completely run on the sun. And the best part of using them is that they even work under a cloudy environment.
- Solar energy is renewable, clean energy.
- These products are easy to install and do not require much maintenance.
- Solar heating lasts longer when compared to other electrical products.
- Once you've paid for the initial installation, your hot water costs will be reduced to an absolute minimum because solar energy is free.
- Not only do solar water heating systems save costs for hotels, it also adds to the green building certifications.

ANDERSON AIR FORCE BASE

United States Air Force Base in Guam

Location: Guam
Installer: Pacific Solar & Photovoltaics
Installed: 2019

Andersen Air Force Base is a United States Air Force base located in the United States territory of Guam. Along with Naval Base Guam, Andersen AFB was placed under the command of Joint Region Marianas on October 1, 2009. The two bases are about 30 miles apart at opposite ends of the island.

Solar Hot Water as Part of the Anderson AFB Joint Region Energy Strategy
Two years after Anderson Airforce Base was placed under the command of the Joint Region Marianas, Patrick Russell stated, "The Department of Defense is one of the largest energy users in the world. Fortunately, energy is an area in which we can easily cut costs simply by being more vigilant. It is a great opportunity to affect change and show our desire to improve stewardship of the taxpayer dollar."

As the cost of energy soars, it has become more and more prevalent that the Air Force's long-term effort to improve energy security through efficiency succeeds. This year, Andersen has spent a reported $50 million to sustain energy on-base, $20 million more than the previous year.

"Energy is becoming more expensive, and we are seeing that increase each fiscal year," Mr. Russell said. "In order to stop the trend, it is important to be aware of energy conservation methods you can implement on a day-to-day basis in your own home."

According to the Energy Policy Act of 2005, Executive Orders 13423 and 13514 and the Energy Independence Act of 2007, all federal agencies are required to reduce their resource consumption, reduce greenhouse gas emissions and increase the use of renewable energy in federal facilities.

According to the mandates, all federal agencies must reduce their energy intensity by three percent per year through 2015, reaching a 30 percent reduction from the 2003 baseline. Additionally, federal agencies must establish benchmarks for renewable energy use.

"By the year 2013, 7.5 percent of a facilities' energy consumption must come from a renewable source," said John Manaloto, 36 CES energy efficiency manager. "Renewable sources include wind, ocean energy, solar energy, municipal solid waste, and landfill gas to name a few. Through a combined effort, these goals are more than attainable. The great thing about it is folks like you and me can make it happen simply by putting forth a little effort. "

As part of these continued efforts to reduce energy consumption and increase renewable sources at Anderson Air Force Base, Pacific Solar & Photovoltaics recently installed an array of Flat Plate Collectors, manufactured by SunEarth to provide pre-heated water for domestic use on base.

PROJECT SUMMARY

- **Application:** Solar Pre-Heat
- **Solar Collectors:** 9 SunEarth Empire Paint (EP) Flat Plate Collectors
- **System Format:** Solar pre-heated water

DEBAKEY VA HOSPITAL

Veterans Affairs Medical Center

Location: Houston, Texas
Installer: Sunshine Plus Solar
Installed: 2018

In 2018, Sunshine Plus Solar was fortunate enough to secure a contract installing a solar thermal project for the Veterans Affairs Medical Center in Houston, Texas. The goal of this installation was to install a sufficient amount of solar hot water panels to provide hot water for the therapeutic pools used for rehabilitation. In all, Sunshine Plus Solar installed forty hot water panels to provide 80% of the medical centers their required hot water production needs throughout the year.

PROJECT SUMMARY

- **Application:** Pool Heating
- **Solar Collectors:** 40 SunEarth ThermoRay 4'x 8' Flat Plate Collectors (TRB-26)
- **System Format:** Solar pre-heated water

HAAS ATHLETIC CENTER

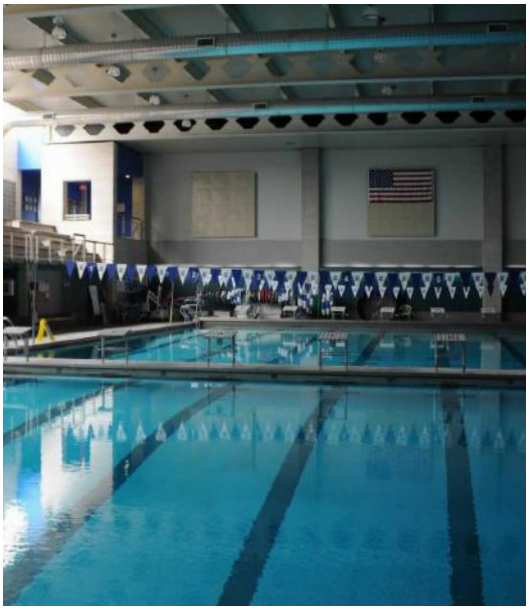
Wheaton College Athletic Center

Location: Norton, Massachusetts
Installer: Renewable Energy Systems
Installed: 2017

In August 2017, Wheaton College's Haas Athletic Center leveraged an $89,600 rebate from the Massachusetts Clean Energy Center's Commercial-Scale Solar Hot Water Program to install solar hot water collectors. The system uses a 1,248 square foot array of SunEarth flat plate collectors installed by Renewable Energy Systems to heat their indoor Olympic-sized pool and locker room, complete with showers and restrooms used by the athletes. The system is expected to save the school $30,000 while reducing carbon and saving up to 3,912 therms per year. Finally, the system's design allows either the pool or the hot water supply to be heated to different temperatures depending on weather conditions, which will greatly increase energy efficiency.

Therm production on the system in the following months is as follows:
September 2017: 255
October 2017: 227
November 2017: 135
December 2017: 78

The drainback system has 360 gallons of DHW storage. The Olympic-sized pool is 75' x 40', heated to 82-85 degrees. Two ONICON revenue grade meters are used for BTU production, one on the DHW side and one on the pool. This data is then sent to the thermal grid web-based platform via the Resol DL2 datalogger.



PROJECT SUMMARY

- **Application:** CombiSystem - Direct Hot Water and Pool
- **Solar Collectors:** 39 SunEarth Thermoray (TRB-32) Flat Plate Collectors
- **System Format:** Closed Loop Drainback
- **Storage Capacity:** The DHW solar storage is 360 gallons. Swimming pool is 75'x40', holding a total of 258,750 gallons
- **Rated Power Output:** 39 x 32.8 ft^2= 1279.2 /10.76 *0.7= 83.2 kw
- **Yearly Energy Output (kWh):** 118.8847583643*3.81*.44*365= 72,744 kwh
- **Metering:** Two ONICON revenue grade meters are used for btu production numbers. One on the DHW side and one on the pool. This data is then sent to the thermal grid web-based platform via the Resol DL2 datalogger

MARRIOTT RESIDENCE INN

Hotel Gets Cost-Effective Water Heating System

Location: San Carlos, California
Installer: Aztec Solar
Installed: 2017

The Marriott Residence Inn in San Carlos, California, stands as a testament to the potential of sustainable and cost-effective water heating systems for hotels. In 2017, Aztec Solar implemented an innovative solar water heating solution for the hotel, offering significant savings and contributing to environmental sustainability.

Solar water heating systems have proven to be a viable solution for reducing water heating costs, often achieving a return on investment in less than 15 months. By harnessing the power of the sun to heat water, the Marriott Residence Inn demonstrates its commitment to environmentally conscious practices, substantial cost savings, and enhancing the guest experience.

PROJECT SUMMARY

- **Application:** Water heating for hotel
- **Solar Collectors:** 60 SunEarth Thermoray 4’ x 10’ (TRB-40) Flat Plate Collectors
- **System Format:** Solar pre-heated water

PROJECT SUMMARY

- **Application:** Restaurant
- **Solar Collectors:** 3 Sun Earth Thermoray 4’ x 10’ (TRB-40) Collectors
- **System Format:** Solar pre-heated water
- **Rated Power Output:** 7.98 kW
- **Yearly Energy Output (kWh):** 5,179.15 kWh

ARBY’S BOZEMAN, MONTANA

Solar Energy Implementation

Location: Bozeman, Montana
Installer: Liquid Solar Systems
Installed: 2015

In the scenic expanse of Bozeman, Montana, a remarkable transformation took place, redefining fast-food dining. This project explores the sustainable innovation at Arby’s, located just southeast of Rosauers. With an investment of $2.25 million, this Arby’s establishment serves as a beacon of energy efficiency, featuring a solar water heating system with a yearly energy output of 5,179 kWh and a roof-mounted 15-kilowatt solar power system.

Arby’s in Bozeman sets a new standard for energy-efficient dining establishments. The integration of solar water heating and solar power systems underscores a commitment to sustainability, cost savings, and reducing the restaurant’s environmental footprint.

BUGGY BATH CAR WASH

Solar Transformation

Location: Bozeman, Montana
Installer: Liquid Solar Systems
Installed: 2009

In the charming city of Bozeman, Montana, the Buggy Bath Car Wash embarked on a remarkable journey towards sustainability, driven by both cost-efficiency and the desire to attract environmentally-conscious customers. This case study delves into the extraordinary installation at the Buggy Bath Car Wash, where a solar water heating system not only lowers operational costs but also proudly showcases its commitment to sustainable practices.

Lynne Hubert, the owner of Buggy Bath Car Wash, made a visionary decision to implement a solar water heating system. Beyond saving money, the system was strategically used as a selling point to attract patrons. A sign outside the car wash proudly proclaims, "We Use Solar Heated Water," capturing the attention of conscientious customers. The solar water heating system features a straightforward drainback design, incorporating a 250-gallon, non-pressurized storage tank for solar-heated water. Operating year-round, the system impressively raises the water temperature from a frigid 39°F to nearly 100°F during Montana's chilly winter months. This energy-efficient system consistently saves hundreds of dollars each month, allowing Buggy Bath to keep its prices competitive and customer-friendly.

Lynne Hubert secured a $20,000 loan to finance the installation of the solar water heating system, which is powered by eight SunEarth solar hot water collectors Prominently placed on the car wash's roof. The decision was driven by rising energy bills, which were threatening to necessitate price hikes.

On a bustling day, Buggy Bath's clientele uses approximately 500 gallons of water, all of which undergoes heating from 39°F to around 100°F, thanks to the Solar Hot Water System. Todd Hoitsma, owner of Liquid Solar Systems, the installation company behind the project, noted that sunny days, when customers frequent the car wash, align ideally with solar energy production, making car washes excellent sites for such systems.

This forward-thinking solar setup is projected to reduce Buggy Bath's heating expenses by 40 percent, with the accrued savings covering the system's cost in a mere 10 years, halfway through its estimated 20-year lifespan.

The Buggy Bath Car Wash project is a shining example of how solar energy can not only reduce operational costs but also enhance a business's appeal to eco-conscious customers. This case study highlights the seamless fusion of economic viability and sustainability, illustrating the enduring benefits of solar water heating systems in everyday businesses.

PROJECT SUMMARY

- **Solar Collectors:** 8 Sun Earth Empire 4' x 10' (EC-40) Collectors
- **System Format:** Solar pre-heated water
- **Rated Power Output:** 21.286 kW
- **Yearly Energy Output (kWh):** 13,811 kWh
- **Estimated annual carbon emissions displaced (metric tons CO2):** 6.8
- **Total cost before incentives:** $17,000
- **Total cost after incentives:** $11,900
- **Estimated annual savings:** $1,400
- **Estimated savings over the life of the system:** $35,000
- **Estimated life of the system (years):** 25
- **Estimated return on investment (years):** 8.5
- **Heat energy generated on an annual basis (BTUs):** 96.2 million

ADDITIONAL COMMERCIAL PROJECTS

Past Premier SunEarth Installs

DALLAS CONVENTION CENTER

- **Location:** Dallas, Texas
- **Completed:** 2011

The Dallas Convention Center is now LEED Silver EB Certified thanks to a determined effort to reduce energy usage through a significant reduction in electrical and water usage, improved temperature control, environmentally safe cleaning supplies and an expanded recycling program. Restoring and repairing the complex prolonged the life of the convention center so it can continue to host a magnitude of people and events, generating revenue that helps the Dallas community continue to thrive.

TAMARACK WELLNESS CENTER

- **Location:** Eugene, Oregon
- **Installer:** Solar Assist
- **Completed:** 2003

The Tamarack Wellness Center warms their water with the second largest Solar Thermal Heating System in the Pacific Northwest. 56 SunEarth Empire Flat Plate collectors were installed in a drain-back configuration with a Morley 600-gallon drain back tank, complete with internal DHW heat exchangers and an external flat plate heat exchanger. The original annual savings that were estimated were 6,700 Therms, with an annual-cost savings of $5,500. Additionally, the pool is part of a renewable energy conscious facility through the use of saltwater and ultraviolet sanitation.

THE WHITE HOUSE

- **Location:** Washington, DC
- **Installer:** Solar Design Associates
- **Completed:** 2002

Two SunEarth solar thermal systems were installed at The White House, one to heat the pool and spa and one to provide domestic hot water. Steven Strong, president of Solar Design Associates, said his company was retained by the National Park Service early in 2002 to design the project.

NORTH BOULDER RECREATION CENTER

- **Location:** Boulder, Colorado
- **Installer:** Industrial Solar Technology
- **Completed:** 2002

Industrial Solar Technology completed the installation of a solar hot water system comprising 142 SunEarth model EC-40-1.5 collectors at the North Boulder Recreation Center in Boulder, Colorado. The solar system was constructed to heat leisure and lap swimming pools while providing domestic hot water for showers and washing. The solar collectors cover all the available space on the roofs of the gym and the lap pool for a gross aperture area of 5,795 square feet.

VETERANS' ADMINISTRATION HOSPITALS

- **Location:** San Antonio & Kerrville, Texas
- **Installer:** Industrial Solar Technology
- **Completed:** 2002

A total of 320 model EC-40-1.5 SunEarth flat plate collectors were installed at Veterans' Administration Hospitals in San Antonio and Kerrville, Texas during 2002. Working as a subcontractor to Johnson Controls, Inc. an Energy Service Performance Contractor (ESPC) at these two hospitals, Industrial Solar Technology provided design and start up services, as well as collector mounting hardware and thermal energy storage tanks ranging in volume from 1200 to over 5,000 gallons. All the systems are instrumented and in total have delivered significant reductions in the amount of conventional energy used at the hospitals.

At the Audey Murphy VA hospital in San Antonio, four different solar systems are installed. The largest system comprises 75 flat plate panels in a closed loop glycol system that preheats domestic hot water for the main hospital building. Two drain back systems were installed, one of which is used to preheat feedwater for the hospital's main boiler facility.

The VA hospital in Kerrville now sports a closed loop glycol system consisting of 128 solar collectors arranged in 8 parallel rows. Heat from the solar system is used to deliver hot water to a laundry that serves both hospitals, as well as other federal sites in the San Antonio area. The solar system has had a major impact on the conventional energy requirement at the laundry in spite of an increase in operating hours to cope with increased demands for laundry services.

BEVERLY HOT SPRINGS SPA

- **Location:** Los Angeles, California
- **Installer:** All Valley Solar

AVS installed 24 SunEarth EP40 thermal panels and a High Sierra Drain back tank for the showers at this natural mineral hot spring spa, for an annual energy savings of 4,408 therms; AVS secured a cash rebate of $49,271.

KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

- **Location:** Thuwal, Saudi Arabia

The continuously sunny conditions in Saudi Arabia offer more potential for solar power utilization than in any other place in the world. The monumental roof for the King Abdullah University of Science and Technology (KAUST) campus has been designed to incorporate massive solar thermal arrays to provide domestic hot water to all campus buildings. A SunEarth Solar Thermal Array was factored into the site-responsive design and renewable energy integration. They are coupled with highly efficient mechanical, electrical, and plumbing (MEP) systems to reduce the carbon footprint of the KAUST campus.

THE SENATE GYMNASIUM, ULSTER COUNTY COMMUNITY COLLEGE

- **Location:** Stone Ridge, New York

The Senate Gymnasium at Ulster County Community College (SUNY Ulster) in Stone Ridge, New York, has incorporated solar water heating into its buildings' efficiency plan to employ the most cost-effective strategy for reducing energy costs on the campus. The project was included in an energy efficiency performance contract by Johnson Controls. A drain back configuration was used, because the high limit controls the system without any overheating concerns when school is not in session.

Multi-Family Projects

Multi-family commercial solar water heating units can offset up to 70% of their annual water heating expenses with efficient solar thermal products designed and engineered by SunEarth. Water heating energy use applies a significant portion of total energy use for residential buildings. Learn more about how SunEarth products can help multi-family properties save money with these recent projects.

LAS HACIENDAS
Solar Water Heating

Location: Temecula, California
Developer: Community Housing Works
Installer: California Solar Integrators, "Cal Solar"
Installed: 2024

Las Haciendas, nestled in the scenic city of Temecula, California, is entering its final stages of construction, with completion scheduled for the fall. This sustainable community, developed by Community Housing Works and in collaboration with California Solar Integrators dba Cal Solar and SunEarth, exemplifies the effectiveness of solar water heating technology in providing clean and efficient hot water solutions. Additionally, the project marks another successful venture with Rodrigues Assoc. Architects, emphasizing the continued commitment to sustainable development.

Las Haciendas' incorporation of solar water heating aligns with the broader goal of creating a sustainable living environment. By utilizing clean and renewable energy for water heating, the community contributes significantly to environmental consciousness. The Las Haciendas solar water heating integration promises to be a testament to the effectiveness of sustainable technologies.

BUILDING #1

- **Solar Collectors:** 11 SunEarth Thermoray Blue 4'x10' Collectors (TRB-40-2)
- **Solar Racking:** SunEarth Rexrack
- **Solar Control:** SunEarth Solflux
- **Solar Pumps:** 1 ea. UPS26-150F on the glycol side an 1ea. UPS26-99SF on the tank side. 1 ea. 20 plate double wall heat exchanger - B35TDWM4-20 DW

BUILDING #2

- **Solar Collectors:** 17 SunEarth Thermoray Blue 4'x10' Collectors (TRB-40-2)
- **Solar Racking:** SunEarth Rexrack
- **Solar Control:** SunEarth Solflux
- **Solar Pumps:** 1 ea. UPS26-150F on the glycol side an 1ea. UPS26-99SF on the tank side. 1 ea. 30 plate double wall heat exchanger - B35TDWM4-30 DW

CELESTE APARTMENTS

Sustainable Energy Integration

Location: Davis, California
Developer: Aspen Power
Real Estate Partner: The Michaels Organization
Installed: 2023

Celeste Apartments in Davis, California, now stands as a beacon of sustainable living, thanks to the collaborative efforts of Aspen Power and The Michaels Organization. This transformative project seamlessly integrates solar energy solutions, encompassing both photovoltaic (PV) and solar water heating technologies. With a commitment to environmental responsibility and energy efficiency, Celeste Apartments sets a new standard for sustainable development in the region.

In addition to PV, the Celeste Apartments project incorporates solar water heating technology to meet domestic hot water needs. SunEarth's innovative solar collectors and efficient system design contribute to the overall sustainability goals of the development. The solar integration not only enhances tenant amenities and benefits but also ensures compliance with California's Title 24 requirements, mandating multifamily properties to generate renewable energy on-site.

Celeste Apartments now stands as a testament to sustainable living, seamlessly integrating solar electricity and water heating solutions. Aspen Power's commitment to holistic energy solutions, in collaboration with The Michaels Organization and SunEarth, contributes to a more sustainable and environmentally conscious community.

BUILDING A

- **Solar Collectors:** 29 SunEarth Thermoray Blue (4'x10) TRB-40
- **Solar Racking:** SunEarh Rexrack= 3 banks of 7 collectors & 1 bank of 8 collectors
- **Solar Controller:** 1 ea. SunEarth Solflux

BUILDING B

- **Solar Collectors:** 16 SunEarth Thermoray Blue (4'x10) TRB-40
- **Solar Racking:** SunEarh Rexrack = 2 banks of 8 collectors
- **Solar Controller:** 1 ea. SunEarth Solflux

BUILDING C

- **Solar Collectors:** 12 SunEarth Thermoray Blue (4'x10) TRB-40
- **Solar Racking:** SunEarh Rexrack= 2 banks of 6 collectors
- **Solar Controller:** 1 ea. SunEarth Solflux

HAYWARD MISSION

Affordable Housing Apartments

Location: Hayward, California
Distributor: ELM Distribution
Installer: Aztec Solar
Installed: 2022

Hayward Mission Family Apartments is the new construction of a 140-unit affordable housing community for low-income families and individuals. Located within Alameda County, the property is adjacent to the South Hayward Bart Station and near several local restaurants and retail establishments, as well as the soon-to-be SoHay park.

Hayward Mission will offer 43 one-bedroom units, 55 two-bedroom units, and 42 three-bedroom units. Amenities will include generous common areas and a large central courtyard, including a children's play structure, community garden beds, a movie wall and BBQ. The project will also provide a bike storage room for up to 79 bikes, electric vehicle / car share parking, and a rideshare waiting room to help reduce the dependence on cars.

Not only does Hayward Mission factor in the use of electric vehicles into space, but considerable design was given to the hot water system installed on site. Earl Anderson, Commercial Thermal Division Manager for Aztec Solar states that the pipework for this install was completed last Friday, (December 12, 2022).

All units include solar water heating and storage by SunEarth.

PROJECT SUMMARY

- **Application:** Solar pre-heat for low-income, multi-family housing
- **Solar Collectors:** 45 SunEarth Thermoray 4' x 10' (TRB-40-2) Dual-Glazed Collectors
- **Solar Pump Station:** Solar Station XXL (XXL-2000)
- **System Format:** Solar pre-heated water
- **Rated Power Output:** 45 x 40.9 ft^2 = 1840.5 /10.76 *0.7= 119.74 kw

KAIĀULU O KUPUOHI

Solar Water Heating in Lahaina

Location: Lahaina, Maui, Hawaii
Installer: Maui Plumbing
Completed: 2022

Kaiāulu o Kupuohi stands as a remarkable addition to affordable housing in Lahaina, Maui, Hawaii. This LEED for Homes mid-rise community comprises 89 units designed to provide affordable housing options to families with incomes at 60% or less of the average median income of the County of Maui. The unit distribution includes 20 one-bedroom units, 34 two-bedroom units, and 35 three-bedroom units, making it accessible to a wide range of residents.

The commitment to sustainability and energy efficiency is evident throughout the community. Each unit features energy-efficient enhancements, such as energy star appliances, LED energy star lighting, hard surface flooring, air conditioning, water-wise plumbing fixtures, and ceiling fans. These elements not only reduce energy consumption but also enhance the overall living experience for residents.

One notable feature of the community is the integration of solar water heating, contributing to energy efficiency and reducing operating costs. Residents can enjoy the benefits of solar-heated water, aligning with the project's dedication to sustainability.

The inclusion of solar water heating at Kaiāulu o Kupuohi exemplifies the commitment to sustainable and energy-efficient living. This technology not only benefits residents by providing eco-friendly hot water solutions but also contributes to reducing energy expenses.

PROJECT SUMMARY

- **Application:** Solar water heating for multi-family housing, providing energy-efficient hot water solutions for residents.
- **Amenities:** On-site amenities include a community center with services and on-site management, a tot lot, BBQ-picnic area, laundry facilities, and ample on-site parking.

LA'I 'ŌPUA VILLAGE

Affordable Single-Family Rentals

Location: Kailua-Kona, Hawaii
Distributor: Inter-Island Solar Supply, Kona Branch
Installer: Dorvin Leis
Installed: 2022

The Department of Hawaiian Home Lands (DHHL) broke ground on the vertical construction of 60 homes within the Villages of La'i 'Ōpua in Kealakehe, Hawai'i Island for the Department's second Rent-With-Option-To-Purchase project.

The first 60 homes, a portion of the greater 118-unit La'i 'Ōpua Village 4, were offered to beneficiaries in mid-2021. An additional 103 rent-with-option-to-purchase units will be built subsequently to complete La'i 'Ōpua Village 4 and the current Village 5.

Financing for the project used, in part, federal and state low-income housing tax credit equity secured by Hunt Capital Partners, in collaboration with Ikaika 'Ohana and Urban Housing Communities. The project will ultimately provide affordable single-family rental homes for DHHL Undivided Interest (UI) and Waiting List applicants who may convert their rental into a 99-year homestead lease after 15 years.

All units include solar water heating and storage by SunEarth in one of the following configurations:

SWHS-1 Solar Hot Water System for 2 Bedrooms (27 total)
- 1 ea. SunEarth TRB 32 Panel (4' x 8') with 1" absorber
- 1 ea. SunEarth PP65-12 pre-plumbed solar tank with backup, 65-gallon, 4.5 kw, PTRV (Islander HWS)
- Solar Collectors: 27 Sun Earth Thermoray 4' x 8' (TRB-32) Collectors
- Rated Power Output per SWHS-1 Solar Hot Water System for 2 Bedrooms: 27 x 32.8 ft^2= 885.6 /10.76 *0.7= 57.61 kw

SWHS-2 Solar Hot Water System for 3 Bedrooms (27 total)
- 1 ea. SunEarth TRB 40 Panel (4' x 10') with 1" absorber
- 1 ea. SunEarth PP80-12 pre-plumbed solar tank with backup, 80-gallon, 4.5 kw, PTRV (Islander HWS)
- Solar Collectors: 27 Sun Earth Thermoray 4' x 10' (TRB-40) Collectors
- Rated Power Output per SWHS-2 Solar Hot Water System for 3 Bedrooms: 27 x 40.9 ft^2= 1,104.3/10.76 *0.7= 71.84 kw

SWHS-3 Solar Hot Water System for 4 or more Bedrooms (6 total)
- 2 ea. SunEarth EP32 Panel (4' x 8') with 1" absorber
- 1 ea. SunEarth PP120-12 pre-plumbed solar tank with backup, 120-gallon, 4.5 kw, PTRV (Islander HWS)
- Solar Collectors: 12 Sun Earth Empire Paint 4' x 8' (EP-32) Collectors
- Rated Power Output per SWHS-2 Solar Hot Water System for 3 Bedrooms: 12 x 32.8 ft^2= 393.6 /10.76 *0.7= 25.61 kw

NANAKULI HOMESTEAD

Eco-Friendly Community Addition

Location: Nanakuli, Wai'anae, O'ahu
Distribution Partner: Inter-Island Solar Supply
Installer: HI Tech Plumbing
Completed: 2022

Nanakuli Homestead, located in Wai'anae, O'ahu, represents a transformative project aimed at addressing overcrowded living conditions, beach evictions, and neglected homes in the Nanakuli Homestead community. In response to these challenges, a cooperative effort was initiated involving various organizations, including the Nanakuli Hawaiian Homestead Community Association (the neighborhood association), Urban Housing Communities (UHC), USDA Rural Development, Department of Hawaiian Homelands, Hawaiian Housing Finance and Development Corporation, and Hawaiian Community Development.

This initiative serves as a lifeline for Oahu's most vulnerable families, providing them with homes in a community that beautifully reflects Hawaii's cultural heritage.

The project, part of the larger Nanakuli "village center," offers a range of on-site amenities, including a resource center, BBQ/picnic area, tot lot, laundry facilities, secure gated access, onsite security, and a dedicated manager. These features create a welcoming and safe environment for residents.

The project incorporates solar water heating technology using SunEarth Empire solar thermal collectors. This eco-friendly addition aligns with the community's commitment to sustainability while providing residents with energy-efficient hot water solutions, reducing energy costs and contributing to a more comfortable living environment.

PROJECT SUMMARY

- **Application:** Multi-Family housing
- **Solar Collectors:** SunEarth Empire 4' x 10' Solar Thermal collectors
- **System Format:** Solar pre-heated water

COURTYARD WEST

Sustainable Apartment Complex

Location: Woodland, California
Installer: Aztec Solar
Installed: 2020

Courtyard West Apartments in Woodland, California, has exemplified the integration of sustainable technologies to improve energy efficiency and minimize environmental impact. In 2020, Aztec Solar undertook a project to enhance the complex's energy infrastructure by installing a solar water heating system. This technology harnesses the sun's power to heat water for residents, thereby decreasing their reliance on gas-heated water, reducing utility costs, and adopting cleaner energy alternatives.

Courtyard West Apartments' adoption of solar water heating underscores the importance of utilizing sustainable energy practices in residential communities. By capturing the sun's energy to heat water, this initiative not only benefits residents but also makes a significant contribution to the broader goal of reducing the carbon footprint associated with traditional energy sources.

PROJECT SUMMARY

- **Solar Collectors:** 16 SunEarth Thermoray 4' x 10' (TRB-40) Flat Plate Collectors
- **System Format:** Solar pre-heated water

ELLIOT CROSSING

Solar-Infused Sustainability

Location: Woodland, California
Installer: Aztec Solar
Installed: 2020

Elliot Crossing Apartments, situated in Woodland, California, is a testament to the harmonious blend of residential comfort and sustainable technology.

This apartment community, established in 1973 and comprising 116 units across two stories, sought to enhance its sustainability practices by embracing a solar water heating system. The system was seamlessly installed in 2020 by Aztec Solar, contributing to increased energy efficiency and the reduction of environmental impact.

Elliot Crossing Apartments' commitment to sustainable living and forward-looking technologies showcases a conscientious effort to minimize environmental impact. This environmentally friendly approach not only reduces energy costs but also underscores the importance of adopting cleaner and greener energy solutions in residential communities.

PROJECT SUMMARY

- **Solar Collectors:** SunEarth 4' x 10' Flat Plate Collectors
- **System Format:** Solar pre-heated water

HALE KAMAOLE

Solar in the Heart of Paradise

Location: Kihei, Maui, Hawaii
Distribution Partner: Inter-Island Solar Supply
Installer: Rising Sun Solar
Completed: 2020

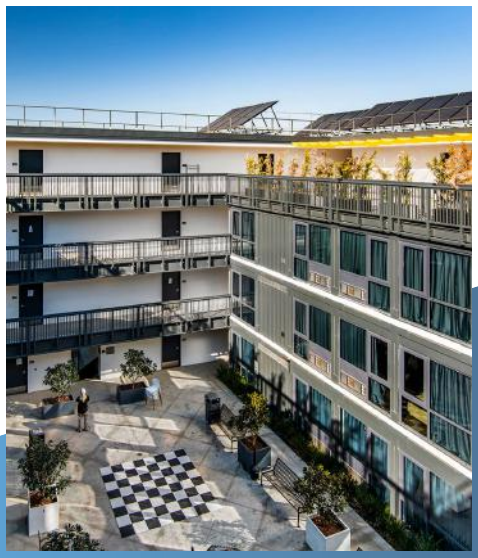
Hale Kamaole, a serene oasis in Kihei, Maui, Hawaii, exemplifies the perfect fusion of leisure and eco-conscious living. This beautifully landscaped property comprises spacious one and two-bedroom condominiums, each uniquely decorated and equipped with all the comforts of home. Every condo is individually owned, providing a personalized and homely experience for visitors. Each unit features a private lanai that offers breathtaking views of the expansive lawns, pools, and the lush tropical landscape that defines the complex's interior.

The integration of SunEarth solar water heating systems at Hale Kamaole is a prime example of sustainability and energy efficiency in the heart of paradise. The solar collectors provide an eco-friendly, cost-effective hot water solution, reducing energy expenses while harmonizing with the tropical surroundings.

This case study showcases the profound impact of solar water heating technology in a multifamily, vacation-oriented setting like Hale Kamaole, providing insights into the synergy of eco-conscious living and leisure.

PROJECT SUMMARY

- **Application:** Multi-Family Commercial
- **Solar Collectors:** 96 SunEarth Empire 4' x 10' Solar Thermal collectors
- **System Format:** Solar pre-heated water



HOPE ON ALVARADO

Modular Supportive Housing for L.A.'s Homeless Population

Location: Los Angeles, California
Developer: 166 Alvarado, LLC
Architect: KTGY Architecture + Planning
Installer: All Valley Solar
Installed: 2020

Designated as Permanent Supportive Housing (PSH) in the City of Los Angeles, the Hope on Alvarado project provides fully ADA-compliant housing for the transitional homeless population in Los Angeles. 84 dwelling units with floor-to-ceiling glass surround an inner courtyard and the rooftop garden and deck create outdoor zones for lounging and socializing. Completed in 2020, Hope on Alvarado provides much-needed housing for numerous people experiencing chronic homelessness in Los Angeles.

From the outside, the Hope on Alvarado apartments look like any new development. Northwest of downtown, the building is five stories high. Its floor-to-ceiling windows and steel exterior giving it a modern-industrial feel.

But inside, things look different than your average apartment complex. The units are steel containers (much like the shipping containers you see loaded at the docks of the Port of Los Angeles) that have been converted into micro-apartments.

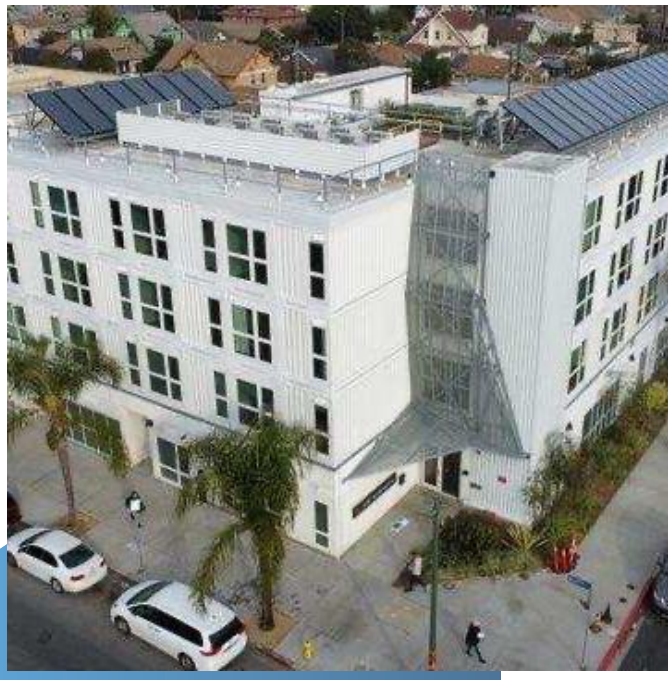
Modular construction has come a long way over the past decade with improvements to the speed and cost of delivery, quality control, and a dramatic reduction to on-site disruption. The constructed building is often indistinguishable from an entirely site-built product. Utilizing modular construction methods, including both panelized and volumetric modular systems, can lead to several advantages and benefits.

PROJECT FACTS

- Density: 190 du/ac
- Unit Plan Sizes: 400 - 480 sq. ft.
- Number of Units: 84 du
- Site Area: 0.44 ac
- Number of Stories: 5
- Parking: 10 spaces
- Construction Type: IIB

PROJECT SUMMARY

- **Application:** Apartments, Multi-Family
- **Solar Collectors:** 20 Sun Earth Thermoray 4' x 10' (TRB-40) Collectors
- **System Format:** Solar pre-heated water
- **Rated Power Output:** 818ft2 / 10.76 * 0.7 = 53.22 kW
- **Yearly Energy Output (kWh):** 53.22*4.04*.44*365 = 34,527.57 kwh



HOPE ON BROADWAY

Modular Supportive Housing for L.A.'s Homeless Population

Location: Los Angeles, California
Developer: Hope Street Development Group
Architect: KTGY Architecture + Planning
Installer: All Valley Solar
Installed: 2020

Hope on Broadway at 52nd and South Broadway in South Los Angeles will offer 49 residential units on a quarter-acre lot in a transit-oriented community (TOC). Ground breaking is set for early 2020 with grand opening in 2021. The building will offer supportive services for the formerly homeless, a roof deck, and a ground-floor podium that contains resident gathering space and offices for supportive services. The modern building design uses extensive glazing, metal siding, and perforated metal in a monochromatic palette to emphasize the structural texture of the modular construction. Additional architectural detail is added on site, including a perforated steel entry canopy and sunshading.

PROJECT FACTS

- Density: 181 du/ac
- Unit Plan Sizes: 320 - 750 sq. ft.
- Number of Units: 49 du
- Site Area: 0.27 ac
- Number of Stories: 4
- Parking: 5 spaces (0.10 sp./unit)
- Construction Type: I, II

HOPE ON HYDE PARK

Modular Supportive Housing for L.A.'s Homeless Population

Location: Los Angeles, California
Developer: Hope Street Development Group
Architect: KTGY Architecture + Planning
Installer: All Valley Solar
Installed: 2020

Hope on Hyde Park is a 60,000 SF five-story affordable housing building and community located on a 1/2-acre site along the Crenshaw Corridor. The building is constructed from locally fabricated modular building units, and will include 98 steel modular units with studio and one-bedroom options ranging from 400 to 480 SF. When completed, the community will also have residential services, a boxing gym, parking, and storage space. The project will be constructed around courtyard with outdoor community space and provide access to the new K-Line, an 8.5-mile light rail that connects the Crenshaw district to Leimert Park, the City of Inglewood, and the Los Angeles International Airport. Hope on Hyde Park is supported by the Los Angeles County Department of Health Services and the nonprofit Brilliant Corners.

Located at 6501 Crenshaw Boulevard, the intersection of Hyde Park and near the Crenshaw Line light rail, Hope on Hyde Park uses modules to create modern and affordable supportive housing for the Los Angeles chronically homeless population. The building is constructed around a central courtyard for privacy, safety, and a deepened sense of community. Residential services and a small neighborhood-serving retail space are located on the ground floor. Floor to ceiling glazing along the amenity space engages the community and brings movement to the street.

NATOMAS CROSSING

Apartments' Solar-Heated Sustainability

Location: Sacramento, California
Installer: Aztec Solar
Installed: 2020

Natomas Crossing Apartments, nestled in the heart of Sacramento, California, stands as a beacon of modern sustainability. This forward-thinking project, completed in 2020 with Aztec Solar at the helm, reflects a commitment to the environment and the well-being of its residents. At the core of its green initiatives is a solar water heating system that exemplifies eco-friendly and cost-effective technology for commercial applications.

Natomas Crossing Apartments' installation is a testament to the alignment of sustainability, technology, and forward-thinking in the heart of California's capital. The successful implementation of this solar water heating system stands as an example of how modern residential communities can prioritize both eco-friendly solutions and cost savings.

PROJECT SUMMARY

- **Solar Collectors:** SunEarth Thermoray 4' x 10' (TRB-40) Flat Plate Collectors
- **System Format:** Solar pre-heated water
- **Solar Pump Station:** SunEarth Solar Station XL

PLACENTIA VETERANS VILLAGE

Supportive Housing for Homeless of Disabled Military Veterans

Location: Placentia, California
Installer: California Solar Integrators, Inc. dba Cal Solar
Installed: 2020

The City of Placentia partnered with Orange County, Mercy Housing California, and New Directions to plan, design, construct, and administer the Placentia Veterans Village, a permanent supportive housing development that serves military veterans who are homeless or disabled. California is home to nearly 2 million veterans. Approximately 137,000 veterans live in Orange County. There is an estimated 3,500 homeless veterans in Orange County and over 6,000 Orange County veterans are unemployed at any given time.

The development site is a 3.65-acre unimproved site comprised of two parcels. One is owned by the Orange County Flood Control District and the adjacent parcel is owned by a private party. The development is located adjacent to a newly constructed street located near the intersection of Orangethorpe Avenue and Lakeview Avenue, north of the Atwood Flood Control Channel. The current property is vacant and has frequently been used for illegal dumping. This new development will improve the property significantly while addressing a need in Orange County and in our country.

The Placentia development includes 50 furnished apartments (49 for veterans and 1 for one-site management), a courtyard, community garden, recreation room, energy efficient design and appliances, computer room, and resident services offices. The state-of-the-art development is LEED Gold, utilizing energy efficient design principles and building materials. Funding for the project came from a variety of sources, including a federal low income housing tax credit, California Proposition 41, a conventional mortgage (relying on a HUD VASH subsidy), project-based HUD VASH and Project Based Section 8 – Orange County Housing Authority, and a pending City of Placentia Development Impact Fee Deferral.

PROJECT SUMMARY

- **System Format:** Solar pre-heated water
- **Pump Station:** SunEarth Solar Station XL
- **Yearly Energy Output:** 21.29*5.13*.44*365 = 17,540.36 kwh
- **Solar Collectors:** (8) 4’ x 10’ SunEarth Thermoray (TRB-40) Flat Plate Collectors
- **Rated Power Output Per Thermal System:** 327.2ft2 / 10.76 * 0.7 = 21.29kW

ROSEFIELD VILLAGE

Solar-Heated Affordability

Location: Alameda, California
Installer: Aztec Solar
Installed: 2020

Rosefield Village is a testament to Alameda's commitment to community development and sustainability. Located on a 2.4-acre site, this new construction project exemplifies the city's dedication to providing high-quality, independent, and affordable housing options. The development features 82 restricted rental units, along with 9 market-rate units and one unrestricted manager's unit. Among the residential offerings are 7 SRO/studio units, 36 one-bedroom units, 26 two-bedroom units, and 23 three-bedroom units. Residents can also enjoy an array of common amenities, including a community room, outdoor play area, 73 on-site open parking stalls, and 78 bike parking spaces.

The project's commitment to sustainable living is evident through the incorporation of a solar-hot water heating system. This system not only enhances residents' quality of life but also helps offset water heating costs. Beyond the solar heating, each unit offers upgraded kitchen and bathroom fixtures, ensuring modern, comfortable living spaces.

Public Benefit

The impact of the Rosefield Village project extends to 91 households, reaffirming the city's dedication to facilitating high-quality, independent, and affordable housing. Every aspect of this development is geared toward providing a welcoming environment for its residents, with the following key details:

- Percent of Restricted Rental Units in the Project: 100%. All 91 units are restricted to 50% or less of area median income households.
- Unit Mix: The project offers a diverse selection of 1-, 2-, and 4-bedroom units to cater to various household needs.
- Term of Restriction: The commitment to affordable housing is upheld for an impressive 55 years.

Construction of Rosefield Village commenced in July 2020 and was successfully completed in June 2022, marking a significant milestone in the city's ongoing mission to provide affordable housing to its residents.

PROJECT SUMMARY

- Solar Collectors: SunEarth 4' x 10' Flat Plate Collectors
- System Format: Solar pre-heated water

ISLA VILLAS

A CNMI Green-Focused Affordable Housing Complex

Location: Saipan, Commonwealth of the Northern Mariana Islands
Installer: Pacific Solar & Photovoltaics
Installed: 2019

Capitol Hill is a settlement on the island of Saipan in the Northern Mariana Islands. It has a population of just over 1,000. Capitol Hill has been the territory's seat of government since 1962. It lies on the cross-island road between Tanapag and San Vicente.

On February 16, 2018, ground was broken for Isla Villas on Capitol Hill by Governor Ralph Torres, Isa Villa Partners LLC, Pacific Rim Land Development LLC, and Northern Marianas Housing Corp.

Green-Focused, Affordable Housing in Two Phases

Isa Villas is the first affordable housing project along Guguan and Anatahan Drive on Capitol Hill, Saipan. Constructed in two phases, the first phase involved the construction of 2- and 3-story multi-family apartment buildings interconnected by a pedestrian bridge. The buildings have a total of 27 units. The units are designed to accommodate large families without burdening them with high utility costs, which is where Pacific Solar & Photovoltaics oversaw the installation of a solar hot water system manufactured by SunEarth. The solar array of 20 collectors provide pre-heated water to the units year round.

In addition to the spacious units and high-quality finishes, the project will feature a community center for programs and services, multiple recreational areas including playground equipment, and ample shared green space for the community. The project is located within walking distance to most of the Commonwealth's government offices.

Phase Two Continues with Typhoon-Resilient Housing

With the first phase of the project done, Pacific Rim will move on to Phase 2.

"This is the start of what we plan to do to help the housing issues here in the CNMI," says company president Keith Stewart. "Phase 2 will have four buildings and we're still finalizing the number of units. The property overall will have an approximate number of over 100 units."

Stewart said the first phase involved 27 units and that there has already been tremendous interest for them. He added that Isa Villas will not only help ease the CNMI's housing shortage but also feature typhoon-resilient homes. "It's not just getting a temporary relief in the housing need, but having quality housing where the applicants will feel safe in case of another strong typhoon."

"We've built a property building with typhoon shutters. We've done everything throughout the project to make sure all will remain safe, even in cases of flying debris. Typhoons will happen again, but the product quality is sustainable and long-term," Stewart added.

PROJECT SUMMARY

- Application: Multi-Family Residential
- Solar Collectors: 20 Empire Paint (EP) SunEarth Flat Plate Collectors
- Solar Contractor: Pacific Solar & Photovoltaics
- System Format: Solar Pre-Heated Water for Domestic Use

LINDEN FLATS

Multi-Family Affordable Housing in Seattle

Location: Seattle, Washington
Developer: GMD Development
Installed: 2018

Located in North Seattle, Linden Flats is a six-story affordable housing complex comprised of 170 apartments and several large community spaces. Featuring a Solar Thermal System comprised of 70 EP-40 Flat Plate Collectors manufactured by SunEarth of Fontana, California. The Empire Series of Flat Plate Collectors sets the industry standard for quality, performance, durability and value, and will help to offset utility costs at Linden Flats.

Linden Flats at Bitter Lake, 13280 Linden Ave N (GMD Development, $34 million tax-exempt bond, $17.9 million estimated tax-credit equity).

100 Percent Affordable

Linden Flats is "100 percent affordable," said GMD's Rebecca Ralston. Rents are at or below 60 percent of area median income. The project team plans to use the city's multifamily tax exemption (MFTE) program and low-income bonds from the Washington State Housing Finance Commission. Units are a mix of sizes, with 18 percent having three bedrooms. "We're not doing micro-units," she added. GMD specializes in affordable housing, but Ralston said this project is "a little different in that we've designed it to look like market-rate."

PROJECT SUMMARY

- **Application:** Solar water heating for affordable housing complex
- **System Format:** Solar pre-heated water for tenant's water heaters
- **Solar Collectors:** 70 SunEarth EP-40 Collectors
- **Rated Power Output:** 2863ft2 / 10.76 * 0.7 = 186.25 kwh
- **Yearly Energy Output (kWh):** 186.25*3.36*.44*365 = 100,503.48 kwh

KAHAUIKI VILLAGE

Affordable Housing Complex in Honolulu

Location: Honolulu, Hawaii
Installer: PhotonWorks
Installed: 2018

"It took a consortium of volunteers to build Kahauiki Village and provide families with hope and opportunity for the future," says Dexter Kubota of Bowers + Kubota Consulting. More than 75 local businesses, individuals, and organizations have contributed to Kahauiki Village. Kahauiki Village was built to home 153 families that currently live in transitional housing on Oahu. It will also provide child care, preschool facilities, and job opportunities for families, allowing residents the chance to earn income and be self-sufficient. And the clean energy system that's powering all of this? Well, it's the first of its kind in the world. The homes—prefabricated, steel-framed boxes manufactured by a Japanese company called System House and purchased by Kurisu—are repurposed emergency housing units, originally deployed after the 2011 tsunami in Japan. The one- and two-bedroom units will rent for $725 and $900 a month, respectively, including gas, electricity and water—a fraction of the market rate. Renters will have a kitchen and bath, and access to outdoor fire pits, vegetable gardens, a communal laundry facility, and a childcare center, as well as a variety of other on-site services.

Sun Kind of Wonderful

The creation of a microgrid and energy storage facility will allow Kahauiki Village to operate almost entirely off the grid. PhotonWorks, a design-build general contractor with a focus on electrical- and energy-related projects and a passion for affordable and sustainable housing, worked closely with InSynergy Engineering on the microgrid design. Solar thermal with propane backup systems were installed at each residence. They were built in two floorplans: 2 bedroom 1 bath 1 kitchen units, and duplexes that contained 2 connected 1br/1ba/1 kitchen units. 30 units total for phase 1, with 120 or so additional planned for phase 2.

Two-Bedroom System

- Solar Collectors: (1) SunEarth EP-40 Collector
- Storage: (1) SunEarth 80gal EC80-6 & (1) AO Smith 30gal LT PreMax
- Rated Power Output Per Thermal System: 40.9ft2 / 10.76 * 0.7 = 2.66 kW
- Yearly Energy Output (kWh): 2.66*5.91*.44*365 = 2524.73 kwh (per system)

Duplex System

- Solar Collectors: (2) SunEarth SB-32 Collectors
- Storage: (1) SunEarth 120gal SE120-6 & (1) AO Smith 40gal LT Premax
- Rated Power Output Per Thermal System: 65.72ft2 / 10.76 * 0.7 = 4.28kW
- Yearly Energy Output (kWh): 4.28*5.91*.44*365 = 4062.34 kwh (per system)

Double System for the Laundromat

- Solar Collectors: (3) SunEarth EP-40 Collectors
- Storage: (2) SunEarth 120gal SE120-6 & (2) each AO Smith 40gal LT Premax
- Rated Power Output Per Thermal System: 122.7ft2 / 10.76 * 0.7 = 7.98kW
- Yearly Energy Output (kWh): 7.98*5.91*.44*365 = 7574.18 kwh (per system)

PROJECT SUMMARY

- **Application:** Solar water heating for affordable housing complex (Comprised of 153 units)
- **System Format:** Solar pre-heated water for tenant's water heaters

LARKSPUR COMMONS

Renewable Energy for Bozeman Affordable Housing

Location: Bozeman, Montana
Installer: Liquid Solar Systems
Installed: 2016

Bozeman, Montana has more than 200 sunny days per year. The Larkspur owners are committed to using renewable energy systems on their projects across Montana. Solar saves tenants money on utility bills, reduces operating costs for the property owners, and lowers our reliance on fossil fuels.

Rent in Bozeman has risen incredibly as the town continues to grow at a rapid pace. The lack of affordable housing pushes valuable community members out of town to face long commutes or forces them to relocate completely. The good folks at Homeword have been working to solve this problem by developing sustainably built, affordable housing throughout the state. Together with GMD Development, Rotherham Construction, the City of Bozeman and many others, Homeword led the way on the Larkspur Commons project in Bozeman.

Larkspur Commons has 136 units ranging from 1-3 bedrooms that are rented out to families earning less than 50-60% of the area median income. To help keep utility costs low, the development features a 4,000 square foot solar hot water system comprised of 16 solar thermal systems using SunEarth EC-40 Collectors, each with 216 gallons of storage (the largest in the state of Montana!) and installed by our friends at Liquid Solar Systems. At present, the system is meeting 60% to 75% of its annual hot water load.

PROJECT SUMMARY

- **Application:** Solar water heating for affordable housing complex (8 buildings; 150 apartments)
- **Solar Collectors:** Sun Earth EC40
- **System Format:** Solar pre-heated water for tenant's water heaters
- **Storage Capacity:** 16 solar thermal systems; Each with 216 gallons of storage
- **Rated Power Output:** 204.5ft2 / 10.76 * 0.7 = 13.30kW (per system)
- **Yearly Energy Output (kWh):** 13.30*4.04*.44*365 = 8,631 kwh (per system)
- **Metering:** Done monthly as readings of BTU metering on solar controls

COUNTRY CLUB VILLAGE

High-Rise Condominiums Decide Strictly Solar

Location: Honolulu, Hawaii
Installer: Adroit Energy Inc.
Installed: 2016

Not one, but two innovative Solar Hot Water Systems were designed and installed at the Country Club Village in Honolulu, HI thanks to the team at Adroit Energy, Inc. This $1.5 Million project spread over two high-rise condominium buildings, 21 and 22 floors respectively, saw completion of a Solar Hot Water system in just 6 weeks' time!

Both Solar Hot Water Systems installed at the Country Club Villages in Honolulu, Hawaii utilize Haase solar thermal storage tanks connected to six 199,000 Btu/hr high-efficiency condensing tankless water heaters. Additionally, the systems were designed for 360 gallons of backup storage capacity. including two 119 Gallon Solar Mixing Tanks. Sixteen monitoring and control data points were installed on each building so that we can continue to watch the performance of the SunEarth Solar Hot Water Systems at Country Club Villages in the years to come.

PROJECT SUMMARY

- **Solar Collectors:** 196 SunEarth EC-40 Solar Thermal collectors
- **Storage Capacity:** 10,700 gallons

Building 4
• Floors: 22 Floors
• Units: 239 Units
• Collectors: (100) SunEarth EC-40 Solar Thermal Collectors
• Rated Power Output: 4,090ft2 / 10.76 * 0.7 = 266kW
• Thermal Storage Tank: 5,500 Gallon Haase Thermal Energy Storage Tank
• Estimated Annual Therms: 12,000 Therms

Building 5
• Floors: 21 Floors
• Units: 230 Units
• Collectors: (96) SunEarth EC-40 Solar Thermal Collectors
• Rated Power Output: 3,926.4ft2 / 10.76 * 0.7 = 255kW
• Thermal Storage Tank: (2) 2,600 Gallon Haase Thermal Energy Storage Tanks
• Estimated Annual Therms: 12,000 Therms

NORTH SANTA FE APARTMENTS

Solar Water Heating for Affordable Rental Complex

Location: Vista, California
Installer: Adroit Energy
Installed: 2016

North Santa Fe Apartments is certified as Green Point Rated, with 201 points (Platinum level), and is part of the SDG&E California Advanced Home design program. It's a high-performance development, with ratings approximately 40% above California's energy code. The high efficiency reduces the operating costs for long term ownership, keeps the apartments comfortable in all weather, and mitigates utility costs for households so they can invest in their future

Apartments include Energy Star appliances, heat pumps, pin fluorescent lighting. Roof-mounted solar thermal preheats water for the high efficiency gas-fired central hot water boilers. Similarly, photovoltaic panels will support at least 50% of the common area electric load.

Performing Above the California Energy Code Title 24 Standards

A LEED Platinum project, the North Santa Fe Apartments is an affordable rental community by the nationally recognized non-profit developer, Community Housing Works. Designed and Installed by Adroit Energy of San Diego, CA, a solar hot water system comprised of (8) SunEarth EP-40 Flat Plate Collectors will supply the hot water load for the demands of the project. The system also includes a photovoltaic (PV) system on the roof that will offset at least 50% of the common area load. The 68-unit development performs 40% above the California Energy Code Title 24 standards.

The City of Vista provided a 62-year ground lease for the site. Union Bank is the construction and permanent lender and is also the tax credit investor for the $16.6 million of low-income housing tax credits. The City of Carlsbad provided $370,000 of CDBG funds; additionally, financing included NeighborWorks funds which will be replaced by $670,000 of Federal Home Loan Bank of San Francisco AHP funds at conversion. Solar and energy program rebates, together with reimbursement from the City of Vista for community upgrades of the sewer in the public alley, complete the project funding.

PROJECT SUMMARY

- **Application:** Solar water heating for affordable housing complex (8 buildings; 150 apartments)
- **Solar Collectors:** 8 SunEarth EP-40
- **System Format:** Solar pre-heated water for tenant's water heaters
- **Rated Power Output Per Thermal System:** 327.2ft2 / 10.76 * 0.7 = 21.29kW
- **Yearly Energy Output (kWh):** 21.29*5.13*.44*365 = 17,540 kwh

CORAL WOOD COURT APARTMENTS

Sustainable Solar Solutions in Reseda

Location: Reseda, California
Installer: All Valley Solar
Installed: 2014

In the heart of Reseda, California, an inspiring commitment to sustainability and community well-being came to life. This case study illuminates the impressive installation at the Coral Wood Court Apartments, where renewable energy and affordable housing unite for the benefit of low-income residents. The solar hot water system, fully financed and installed by Skyline Innovations for WNC Community Preservation Partners, heralds a new era of green energy accessibility.

Community leaders and esteemed representatives from Los Angeles Mayor Eric Garcetti's and Congressman Brad Sherman's offices gathered to unveil this remarkable solar hot water system. Located at the Coral Wood Court Apartments, this system empowers low-income residents in Reseda to harness renewable energy, reduce energy costs, and nurture the growth of local green jobs. This financed system employs price-indexed energy, ensuring energy savings for the host low-income housing community compared to standard utility rates. Over the course of 30 years, this initiative is projected to save more than $175,000, a testament to its long-term sustainability impact. Kara Seward, a representative from State Senator Fran Pavley's office, bestowed a sustainability award upon the project, recognizing its contribution to a greener and more affordable future for the community.

The heart of this system lies in its 42 flat plate solar thermal collectors, which utilize the power of sunlight to heat water for the complex's residents. By reducing their reliance on gas-heated water, this installation stands as a beacon of the harmonious relationship between solar technology and affordable housing.

Zack Axelrod, CEO of Skyline Innovations, commented, "This installation is a great example of why solar and affordable housing work so well together. All communities can benefit from smart policies and invest in technologies like Skyline's. This project demonstrates what is possible when partners work together, and we are grateful for their hard work to make this project happen."

Anand Kannan, President of Community Preservation Partners, praised the seamless transition to solar energy, stating, "Skyline Innovations made going solar a seamless process. This system continues our commitment to providing a comfortable and healthy community for our residents."

The event witnessed the presence of other distinguished attendees, including Community Preservation Partners Founder Will Cooper Sr., All Valley Solar CEO Ted Bavin, and SunEarth President and CEO Rick Reed.

This project not only exemplifies the potential of the California solar thermal industry but also highlights the comprehensive approach to energy efficiency implemented by the building.

The Coral Wood Court Apartments project showcases the extraordinary potential of solar technology in the affordable housing sector. It is a testament to the seamless partnership between sustainability and community well-being, offering a glimpse into a greener, more energy-efficient future for low-income residents in Reseda, California.

HILL VIEW APARTMENTS

Energy Efficient Upgrades at Hill View Apartments

Location: Havre, MT
Installer: Liquid Solar Systems
Installed: 2014

Residents of the low-income Hill View Apartments in Havre, Montana are enjoying double the benefits of solar energy. Solar photovoltaic panels and solar thermal collectors will work side-by-side to produce electricity and hot water for the 52-unit complex. The new solar arrays are part of a complete renovation of the complex with an eye toward energy efficiency, including added insulation, new windows, and replaced boilers. The project also features construction of a new, energy-efficient community building, which includes meeting rooms, laundry facilities, and a Head Start school and playground.

The project was developed by MT Preservation HV LLLP, a partnership which includes HomeWORD, a nonprofit developer of affordable and sustainable housing headquartered in Missoula, Montana, and GMD Development of Seattle. Hill View is one of five low-income housing complexes around the state of Montana that are being renovated by this partnership.

Julie Stiteler, Housing Project Manager with HomeWORD, explains that Hill View residents will benefit in numerous ways from the project. The energy efficiency upgrades make the apartments more comfortable year-round—cooler in summer and warmer in winter. While the property owner pays utility bills for the complex, the fact that those bills are lower due to the efficiency upgrades and solar arrays means that more money is available month-to-month to keep the property well-maintained for its residents.

PROJECT SUMMARY

- **Application:** Solar water heating for affordable housing complex
- **Solar Collectors:** Sun Earth EC40
- **System Format:** Solar pre-heated water
- **Rated Power Output:** 122.7ft2 / 10.76 * 0.7 = 7.982kW
- **Yearly Energy Output (kWh):** 7.982*4.04*.44*365 = 5178.91 kwh (per system)
- **Metering:** Done monthly as readings of BTU metering on solar controls

WAIKIKI SHORE APARTMENTS

Solar Water Heating Triumph

Location: Honolulu, Hawaii
Installer: Green Energy Solutions
Completed: 2010

In 2010, Waikiki Shore Apartments, situated in the heart of Hawaii's iconic Waikiki, faced a common challenge: soaring water heating costs. Seeking an efficient and sustainable solution, the apartment management took a leap into the world of solar technology, a proven cost-effective alternative for commercial applications. Anticipating cost reductions, they were pleasantly surprised by the system's remarkable efficiency. The solar water heating system not only drastically lowered gas consumption but also exceeded expectations to the extent that the utility company dispatched technicians to verify the meters' accuracy.

Waikiki Shore Apartments achieved a remarkable feat, reducing gas consumption so dramatically that the utility company dispatched technicians to validate the system's performance. As a result, the apartments continue to enjoy an estimated 50 percent reduction in their gas bills since the installation of the solar water heating system. This significant cost savings not only benefits the apartments but also contributes to the broader objective of reducing dependence on fossil fuels and lowering CO2 emissions, aligning with Hawaii's commitment to environmental sustainability.

To realize this project, Waikiki Shore Apartments partnered with Current Capital and Consulting to secure financing for the solar system through a unique true lease arrangement. In this setup, the Bank of Hawaii served as the legal and tax owner of the system, which allowed the project to leverage federal and state tax credits and take advantage of equipment depreciation. The resulting monthly lease payments proved to be more economical than a conventional loan, making the transition to solar water heating financially attractive.

PROJECT SUMMARY

- **Application:** Multi-Family Commercial
- **Solar Collectors:** 60 SunEarth Empire 4' x 10' Solar Thermal collectors
- **System Format:** Solar pre-heated water
- Estimated carbon emissions displaced over the life of the system (metric tons CO2): 230
- **Total cost before incentives:** $505,000
- **Total cost after incentives:** $176,750
- **Estimated annual savings:** $35,000
- **Estimated annual savings over the life of the system:** $875,000
- **Estimated life of the system (years):** 25
- **Estimated return on investment (years):** 5
- **Heat energy generated on an annual basis (BTUs):** 895 million

ADDITIONAL MULTI-FAMILY PROJECTS

Past Premier SunEarth Installs

PALO VERDE APARTMENTS

- **Location:** Los Angeles, California
- **Installer:** Promise Energy
- **Completed:** 2017

The affordable housing development was made possible in part by financing from the voter-approved Veterans Housing and Homeless Prevention Bond of 2014, Proposition 41.

"The board and staff of Hollywood Community Housing Corporation are thrilled to break ground on 49 new units of affordable rental housing," said Sarah Letts, Executive Director, the developer of the project. "We find that every household has an extraordinary story to tell, and we look forward to getting to know the families and veterans who will call Palo Verde Apartments their home."

Twenty-five units of the Palo Verde Apartments will be reserved for homeless veterans, while some 23 will be reserved for families who meet income level requirements. In addition, the mixed-use complex will also house services provided by Housing Works for residents to receive recovery and wellness support.

GRESHAM VALLEY VILLAGE POOL

- **Location:** Los Angeles, California
- **Installer:** All Valley Solar
- **Completed:** 2016

A LEED Platinum project, the North Santa Fe Apartments is an affordable rental community by the nationally recognized non-profit developer, Community Housing Works. Designed and Installed by Adroit Energy of San Diego, CA, a solar hot water system comprised of (8) SunEarth EP-40 Flat Plate Collectors will supply the hot water load for the demands of the project. The system also includes a photovoltaic (PV) system on the roof that will offset at least 50% of the common area load. The 68-unit development performs 40% above the California Energy Code Title 24 standards.

ASBURY, WOODLAND TRIO, & YOUNG APARTMENTS

- **Location:** Los Angeles, California
- **Installer:** All Valley Solar

All Valley Solar replaced twenty-four old solar panels in the Asbury apartment complex with twenty-four new SunEarth EP40 solar thermal panels on the roof of this fifteen-story high rise and reconditioned the large tanks in the basement for this 99-unit apartment complex for an annual energy savings of 3,777 therms; and secured a rebate of $77,000. Now this pre-1985 system is ready to last another 30 years.

All Valley Solar installed twenty-four SunEarth EP32 solar thermal panels and a drain back tank at the 36-unit Woodland Trio apartment complex, with an annual energy savings of 2,497 Therms. All Valley Solar secured a rebate of $36,281.

In the Young apartment complex, All Valley Solar installed thirty-five SunEarth EP40 solar thermal panels as a drain back-type system with 9 - 200g tanks for 67 unis, with an annual energy savings of 3,974 therms. All Valley Solar secured a rebate of $76,420.

TILDEN OAKS APARTMENTS

- **Location:** Sherman Oaks, California
- **Installer:** All Valley Solar

AVS installed eight SunEarth EP40 solar thermal panels with a drain back tank at this 14-unit apartment building, with an annual energy savings of 1,045 therms. AVS secured a rebate of $20,095.

SINGLE-FAMILY SOLAR SOLUTIONS

Solar water heating isn't just about saving energy; it's about transforming your home into a sanctuary of warmth and serenity. It's an investment in everyday luxury.

ADAM CHRISMAN
President, SunEarth, Inc.

SUNEARTH SOLAR WATER HEATING

The Sustainable Energy Storage Solution

In the quest for sustainable energy solutions, innovation takes center stage. We've witnessed the rise of batteries as a means of storing energy for later use, but there's another player in the field that often goes overlooked: solar water heating. SunEarth's solar water heating systems are transforming the energy landscape, not just as a green way to heat water, but as an exceptional form of energy storage that surpasses traditional batteries in terms of environmental friendliness and efficiency.

The Solar Water Heating Difference
Solar water heating may not be your typical energy storage system, but it functions in a similar way – it captures, stores, and efficiently utilizes energy, making it, in essence, a sustainable battery. Unlike conventional batteries, which rely on chemicals and metals that have environmental implications in their production and disposal, solar water heating leverages the power of the sun to heat water, which is then stored for various applications. Here's why it stands out:

1. Environmental Friendliness

The environmental impact of solar water heating is significantly lower than that of batteries. Battery production involves resource-intensive mining, materials processing, and potentially hazardous waste. SunEarth's solar water heating systems harness clean, renewable solar energy, contributing to a substantial reduction in carbon emissions.

2. Higher Efficiency

While some energy is lost during the storage process, solar water heating systems boast higher efficiency levels compared to batteries. The U.S. Department of Energy notes that solar water heating systems are up to 70-90% efficient, a remarkable figure that outpaces most battery technologies (DOE, "Solar Water Heaters," 2023).

Data & Sources
To shed light on the comparison, it's essential to rely on data and authoritative sources. The U.S. Department of Energy's comprehensive research showcases the outstanding efficiency of solar water heating systems when it comes to energy utilization. This data underscores their potential to outperform traditional water heaters by a staggering 70-90% (DOE, "Solar Water Heaters," 2023).

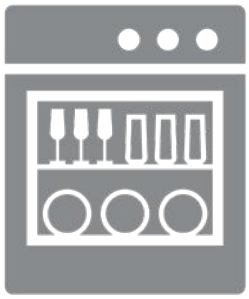
Beyond efficiency, the environmental aspects are equally crucial. A study published in the Environmental Science & Technology Journal highlights the positive impact of solar water heating on greenhouse gas emissions. The technology has the potential to reduce carbon dioxide emissions by approximately 1.5 to 3 tons annually per household, significantly reducing the carbon footprint (Eckhouse, "Energy and Climate Impacts of Solar Water Heaters," Environmental Science & Technology, 2021).

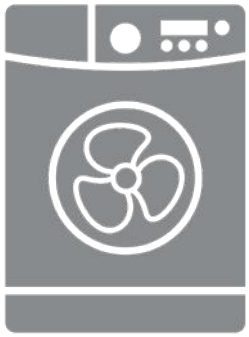
The SunEarth COMMITMENT

SunEarth's dedication to sustainability goes beyond providing efficient solar water heating solutions. It extends to the fundamental principle of environmentally responsible energy storage. By choosing SunEarth, you're not only opting for an efficient and eco-friendly energy storage system, but you're also making a significant contribution to reducing your carbon footprint.

In a world where sustainability is paramount, it's time to recognize the potential of solar water heating as an energy storage solution. It's not just a sustainable way to heat water; it's a smart and responsible way to store and utilize energy. With data-driven evidence and authoritative sources, the case for SunEarth's solar water heating as an eco-friendly, high-efficiency energy storage solution is clear. It's a choice that benefits both individuals and the planet.

Embrace the future of energy storage with SunEarth's solar water heating – your sustainable, efficient, and eco-conscious solution.





Which Appliances Use
HOT WATER IN A HOME?

Several appliances in a house use hot water, including showers, bathtubs, sinks, dishwashers, washing machines, and boilers. According to the U.S. Department of Energy, hot water usage typically accounts for about 18% of a household's energy bills. This can vary depending on factors such as the size of the household, the type of water heater, and the temperature setting.

Here are some additional points to consider about hot water usage in your home:

- It's true that showers and bathtubs tend to use the most hot water in a home. On average, a shower uses about 2.5 gallons of water per minute, while a bath can use between 30 and 50 gallons of water. Depending on the number of people in the home, this can add up to a significant amount of water usage.
- Sinks also use hot water, particularly if you frequently wash dishes by hand. The average *flow rate for a sink faucet is around 1.5-2.2 gallons per minute.
- Heating water for your washing machine can significantly increase your energy usage and your energy bill. In fact, according to the World Health Organization approximately 90% of the energy used in washing machines goes towards heating water.
- The cost of heating water with a water heater varies depending on factors such as the type of water heater, the size of the household, and the energy rates in your area. On average, it can cost anywhere from $20 to $100 per month. However, it is recommended to check with your local utility company for more accurate pricing information.
- In the case of natural gas and electricity, the cost can vary with fuel price volatility as well. If the price of natural gas goes up, then the cost to power a gas water heater goes up as well.

When it comes to water heaters, there are a few different types to consider. Here are some additional factors to keep in mind when calculating the cost of heating water:

- **Tankless water heaters.** These units are more energy-efficient than traditional tank-style heaters because they only heat water as it is needed. Although they may have a higher upfront cost, they can save you money in the long run by reducing energy consumption.
- **Electric vs. gas.** The type of fuel your water heater uses can also impact the cost of heating water. Electric water heaters tend to be more expensive to operate than gas heaters, but they may be a better option if natural gas is not available in your area.
- **Size.** The size of your household and the amount of hot water you use can also impact your water heating costs. A larger household with high hot water demand will require a larger water heater, which will consume more energy and cost more to operate.

By being mindful of your hot water usage and making conscious decisions to conserve energy and resources, you can make a positive impact on both your wallet and the environment.

Which Appliances Use
ELECTRICITY IN A HOME?

Most appliances in a house use electricity, such as refrigerators, light fixtures, televisions, washing machines, dryers, computers, and air conditioners.

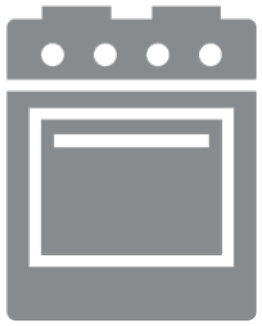
Electricity is an essential part of our everyday lives, and we rely heavily on it to power our homes and appliances. The cost of running an air conditioner varies depending on factors such as the size of the unit, its energy efficiency, and the cost of electricity in your area. On average, it can cost between $0.06 to $0.88 per hour to run a central air conditioner. It's best to check your electricity bill for a more accurate estimate based on your specific unit and usage.

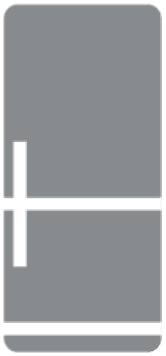
It's important to note that the cost of running an air conditioner is not just limited to the electricity bill. Here are some additional factors that can impact the cost of running an air conditioner:

- **The age and condition of the unit.** Older units may not be as energy-efficient and could end up costing more to run.
- **The temperature you set.** The lower you set the temperature, the more energy the unit will need to use to maintain it.
- **The size of your home.** A larger home will require a larger unit, which will likely cost more to run.
- **The climate in your area.** If you live in an area with high temperatures and humidity, your A/C may need to work harder to keep your home cool, which can drive up costs.

The cost of running TVs and computers varies depending on their power usage and the cost of electricity in your area. The data that powers these devices comes from a variety of sources including the internet, cable or satellite providers, and local networks. In addition to the sources mentioned, there are many other factors that can impact the cost of running TVs and computers. Here are some additional points to consider:

- **Screen size.** Generally speaking, larger screens will require more power to run than smaller ones. This means that if you're trying to save on energy costs, it might be worth investing in a smaller TV or monitor.
- **Display technology.** Different types of displays can have vastly different power requirements. For example, an OLED TV will typically use less power than a comparable LCD TV, since OLEDs only draw power on the pixels that are lit up.
- **Standby power.** Even when a device is turned off, it may still be drawing a small amount of power. This is often referred to as "standby power" or "phantom power," and it can add up over time. To save on energy costs, it's a good idea to unplug devices when they're not in use.
- **Energy-saving features.** Many modern TVs and computers come with built-in energy-saving features that can help reduce their power usage. For example, some TVs will automatically adjust their brightness based on the ambient lighting in the room, while some computers will enter a low-power "sleep" mode when they're not being used.
- **Time of use.** Some electricity providers offer "time of use" pricing, where the cost of electricity varies depending on the time of day. If you're able to shift your TV and computer usage to off-peak hours, you may be able to save on your energy bill.





HOME APPLIANCES: THE HIDDEN OPPORTUNITY COST

& the Solar Water Heating Solution

Unlocking Utility Savings in an Uncertain Market with Long-Term Investments

From dishwashers and washing machines to refrigerators and water heaters, appliances are the unsung heroes of modern living. But have you ever considered the opportunity cost they represent over their lifespan, and how solar water heating can be the overlooked solution to slash utility bills amidst market uncertainty and rising energy costs?

The Cost of Comfort: Heating Water
Hot water is an essential commodity that we often take for granted. However, it comes at a cost. According to the U.S. Department of Energy, hot water usage typically accounts for about 18% of a household's energy bills. This cost varies based on factors like the size of the household, the type of water heater, and temperature settings.

The Opportunity Cost of Appliances
We pay attention to the ENERGY STAR ratings of our dishwashers, washing machines, refrigerators, and water heaters, and rightly so. These ratings promise energy savings, but it's essential to understand the full picture. These appliances are not only an investment in savings but also an opportunity cost waiting to be calculated.

The Lifespan of Appliances and Replacement Frequency
Appliances have a limited lifespan, and homeowners often underestimate the cumulative impact of replacing them over the years.

- **Dishwashers:** On average, a dishwasher lasts around 9-12 years.
- **Washing Machines:** The lifespan of a washer is about 10-15 years.
- **Refrigerators:** A refrigerator's lifespan can range from 10-20 years.
- **Water Heaters:** Traditional tank water heaters typically last 8-12 years.
- **Solar Water Heaters:** Systems are designed with an expected minimum lifespan of 20 years.

The Solar Water Heating Solution
While we scrutinize the energy efficiency ratings of these appliances, we often overlook the practicality of solar water heating. Here's where solar water heating shines as a long-term investment:

1. **Slashing Utility Bills:** Solar water heating systems harness the sun's energy to heat water, reducing the reliance on electricity or gas. Over
2. time, this results in substantial utility bill savings.
   Market Uncertainty and Rising Energy Costs: The energy market is notorious for its volatility, with fluctuating prices that can wreak havoc on monthly expenses. Solar water heating offers a stable and cost-effective alternative, free from the uncertainty of market dynamics.
3. **Overlooked but Practical:** Solar water heating may not be in the limelight like other appliances, but it's a practical and sustainable solution that can significantly impact a home's energy consumption.

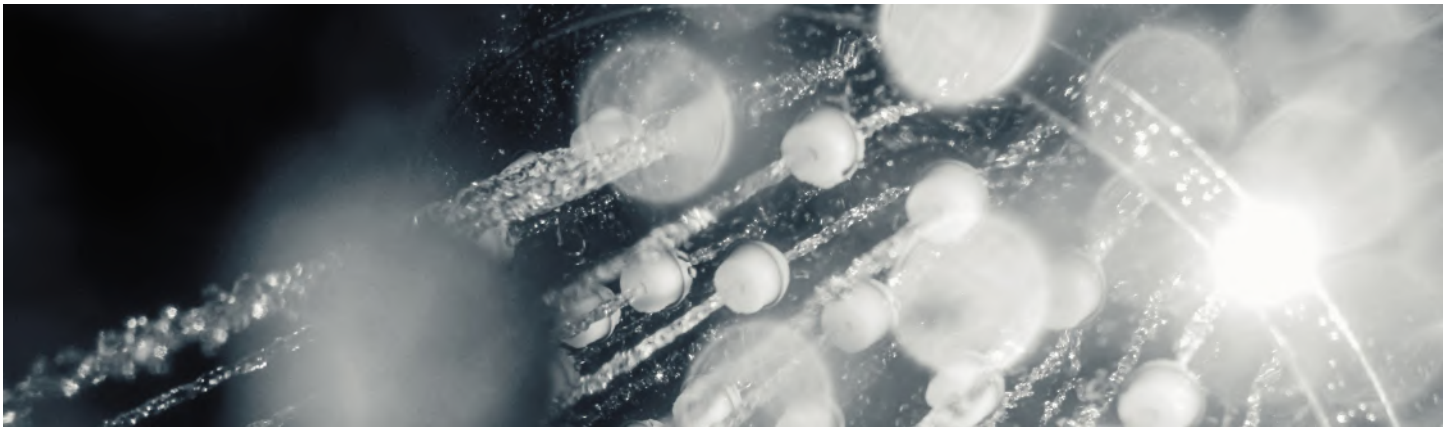
Now, check out the calculation of potential savings to the right!

CALCULATING THE OPPORTUNITY COST

Consider the following cost comparison to understand the opportunity solar water heating represents:

- An ENERGY STAR-rated dishwasher may save you $30-$40 annually.
- A solar water heating system can save you up to $300-600 annually, depending on your location and usage.
- Over a decade, the dishwasher may save you around $300-400. In contrast, solar water heating can save you $3,000-$6,000 or more.

In conclusion, while we meticulously assess the energy efficiency of household appliances, we often overlook the cumulative opportunity cost they represent over their lifespan. Solar water heating stands as a practical, long-term investment that not only slashes utility bills but also offers stability in an uncertain energy market. It's time to consider the full picture and unlock the potential for savings in every drop of hot water.



HOT WATER SAVINGS

Solar Water Heating: Your Gateway to Comfort and Serenity

Unleashing Comfort and Peace with Solar-Powered Warmth

In your home's bustling symphony of daily life, hot water stands as the quiet maestro, orchestrating showers, baths, dishes, and laundry. Yet, did you know that hot water consumption typically accounts for about 18% of your energy bills? While this percentage varies based on factors like household size, water heater type, and temperature settings, there's a solution that can transform your home into a haven of comfort and sustainability: solar water heating.

Hot Water: The Key to Everyday Bliss
Hot water is a cherished luxury, essential for showers, baths, dishwashing, laundry, and more. However, its convenience often comes at an energy cost. Here's why you should consider solar water heating as the gateway to unrivaled comfort and serenity in your home.

1. The Usual Suspects of Hot Water Usage: Showers, Baths, Sinks, and More

It's no secret that showers and baths are the undisputed champions of hot water consumption. On average, a shower consumes about 2.5 gallons of water per minute, while a bath can luxuriate in 30 to 50 gallons. Depending on your household size, this can quickly accumulate into a substantial water usage footprint.

Even the humble sink plays a vital role, particularly if you prefer handwashing dishes. Sink faucets typically maintain a flow rate of around 1.5-2.2 gallons per minute, further contributing to your hot water demand.

2. Washing Machines: The Energy-Hungry Giants

On laundry day, your washing machine transforms into an energy powerhouse. In fact, approximately 90% of the energy used in washing machines is dedicated to heating water, according to the World Health Organization. The cost of heating water with a water heater can vary but may range from $20 to $100 per month, depending on factors like your water heater type, household size, and local energy rates.

3. Variables That Shape Water Heating Costs

Several factors come into play when calculating your water heating expenses:

- **Tankless Water Heaters:** These energy-efficient units heat water on demand, reducing energy consumption over time, despite a higher upfront cost.
- **Electric vs. Gas:** The fuel your water heater uses can impact costs. Electric heaters tend to be more expensive to operate but may be necessary in areas without natural gas.
- **Household Size:** The more hot water you use, the more energy you consume, affecting your costs.

Solar Water Heating: Your Gateway to Comfort and Serenity

Solar water heating is the key to experiencing unparalleled comfort and peace in your home. For all of the reasons you should consider a solar water heating system for your home, check out Page 50.

Solar water heating is the astute choice for households looking to elevate their comfort and serenity while embracing sustainability. It unlocks the warmth and peace you deserve, one drop of hot water at a time.

SOLAR WATER HEATING IS YOUR ANSWER

A Comfortable Path to Sustainable Home Living

Unlocking Utility Savings in an Uncertain Market with Long-Term Investments

Solar water heating is a viable and effective way to reduce household utility costs. By harnessing the sun's energy to heat water, households can save money on energy bills and reduce their dependence on traditional heating methods. It's also a sustainable and eco-friendly option that contributes to a greener future.

In recent years, solar water heating has become increasingly popular due to its many benefits. Consider the following points:

- Increased Property Value. A solar water heater is a worthwhile household investment that can provide a return in the form of a 4% increase in property value, which is not offered by traditional or tankless water heaters.
- Abundant Sunshine, Abundant Comfort. Areas with abundant sunshine can provide up to 80% of a household's hot water needs. solar water heating is an effective form of water heating that works in all regions, just like a gas, electric, or tankless water heater. Being that a solar water heater utilizes thermal energy, it is true that in areas that receive more sunshine than others, the efficiency rates are higher.
- Climate and Fuel Independence. Reducing reliance on traditional heating methods helps to decrease greenhouse gas emissions and fight climate change. They also protect you from volatile fuel prices. If the cost of gas increases due to cold weather, or electricity prices sky rocket, you won't be charged more for heating your water. Solar energy is always free.
- Government Incentives. Governments may offer financial incentives, such as tax credits or rebates, to households that install solar water heating systems.
- Versatile Integration. Solar water heating systems can be tailored to fit the needs of a household and improves the efficiency and lifespan of other heating systems such as radiant, geothermal, or heat pump water heaters.
- Durability. Solar water heaters on average last longer than other types of water heating technology. Many collectors are built to last at least 20 years, with some going well past 25, 30, or even 40 years. Traditional tanked gas and electric, tankless, and heat pump water heaters typically last between 8 and 15 years.

Overall, solar water heating is the smartest choice for households seeking to lower their utility bills and reduce their environmental impact.

Residential Projects

SunEarth has been manufacturing solar hot water systems that easily and efficiently meeting residential heating needs since 1978. Here are some of our premier single-family residential projects.

SOLAR WATER HEATING IN COLORADO

Resolution Energy's Residential Solar Projects in CO

Location: Denver, Colorado
Installer: Resolution Energy
Installed: 2018

Resolution Energy designs and installs high-efficiency heating systems that provide superior comfort compared to traditional home mechanical systems. The innovative solutions they have installed can be found all along the Colorado Front Range and into the surrounding mountain communities.

Hydronic Heating in Colorado
The system is comprised of four SunEarth 4' x 8' drainback collectors with a storage capacity of 119 gallons. The heat in turn is being transferred to the radiant system, with a back up heat source being from a propane-fired Polaris.

Radiant heat is the most comfortable type of heat with surfaces being heated with omni-directional infrared energy heating surfaces. This sreamlined system allows for optimization of solar thermal systems with automatic interface.

Controlling it all is a Steca TR501 Controller.

PROJECT SUMMARY

- Application: Domestic Hot Water
- Solar Collectors: 4 SunEarth (4' x 8') EP-32 Collectors
- Controller: Steca TR501
- Storage: 119 Gallons
- Rated Power Output: 4 x 32.8 ft^2= 131.2 /10.76 *0.7= 8.54 kw

FOUST FAMILY INSTALLATION

Single-Family solar in Bozeman, Montana

Property Owners: Karen and Jan Foust
Installer: Liquid Solar Systems
Installed: 2014

Karen and Jan Foust of Bozeman have always had an interest in solar energy. Their water heater runs off propane, and the thought of using free energy from the sun to reduce their propane use always appealed to them. With Bozeman having more than 200 sunny days per year, a hot water system just makes sense.

"Solar is a gift from God. As much as we can use it, it's free!"
In 2014, the Foust Family got in touch with Todd Hoitsma, owner of Liquid Solar Systems of Bozeman. After considering their needs, Todd recommended a 35,000 BTU solar hot water collector coupled with a 60-gallon solar storage tank. This system would provide about 10,000 gallons of hot water per year, which would be expected to meet about 70% of the Fousts' annual hot water needs.

The total cost of the system was $5,900, but Todd explained that the state Alternative Energy Tax Credit as well as a federal tax credit would take a significant chunk out of that price. Karen says, "We don't make a lot of money, and [the tax credits] were one of the things that sold us."

The installation was completed in March 2014, and years later, the Fousts are pleased with their solar water heating system. Karen enjoys checking the temperature of the solar-heated water – on a recent chilly February morning, the sensors were reporting a temperature of 115 degrees in the solar storage tank. As Karen puts it, "Solar is a gift from God. As much as we can use it, it's free!"

PROJECT SUMMARY

- Application: Solar water heating - Residential
- Solar Collectors: SunEarth EC40
- System Format: Solar pre-heated water
- Storage Capacity: 60 gallons
- Rated Power Output: 40.9ft2 / 10.76 * 0.7 = 2.66kW
- Yearly Energy Output (kWh): 2.66*4.04*.44*365 = 1726 kwh

ADDITIONAL SINGLE-FAMILY PROJECTS

Past Premier SunEarth Installs

BUCHANAN PRIVATE RESIDENCE

- **Location:** Buchanan, New York
- **Installer:** Solar Living, Inc.
- **Completed:** 2019

Replaced a solar water heating system that was originally installed by a company about 10 years ago and went out of business shortly after. Solar Living, Inc. replaced the serpentine Schuco brand panels and tank with two SunEarth EC24 collectors and a SunEarth private labeled Rheem Manufacturing tank.

SPARTA PRIVATE RESIDENCE

- **Location:** Sparta, New Jersey
- **Installer:** Solar Living, Inc.
- **Completed:** 2018

A new SunEarth EC-40 domestic water heating collector wasinstalled on this home in Sparta, New Jersey.

MASSACHUSETTS PRIVATE RESIDENCE

- **Location:** Massachusetts
- **Installer:** Renewable Energy Systems, LLC
- **Completed:** 2018

Turnkey roof mounted solar hot water system and solar pool heating, replacing the old solar hot water system that is over 40 years old. Scope included complete removal/disposal of the existing systems basement components.

- New solar hot water collectors mounted on south facing roof
- System is drain back using propylene glycol for freeze protection
- 120 Gallon solar tank was installed in the basement mechanical room
- Solar differential controller operates the system
- Web-based monitoring 24/7 used for optimization & maintenance
- Solar Pool Heating system, mounted on pool house

TOWACO PRIVATE RESIDENCE

- **Location:** Towaco, New Jersey
- **Installer:** Solar Living, Inc.
- **Completed:** 2018

Two new SunEarth EC-32 solar hot water collectors installed for longtime customers in Towaco, NJ. They opted to take advantage of the last year of the 30% federal income tax credit and replace their original collectors when they had their roof redone.

SUCCASUNNA PRIVATE RESIDENCE

- **Location:** Succasunna, New Jersey
- **Installer:** Solar Living, Inc.
- **Completed:** 2017

A new solar water heating system was installed using SunEarth EC-32 collectors and a 80 gallon Rheem Manufacturing tank made for SunEarth. This system offset oil used by the furnace to heat this family's water. System will conservatively reduce oil consumption by approximately 200 gallons per year.

FORD ISLAND

- **Location:** Honolulu, Hawaii
- **Installer:** Inter-Island Solar Supply

The Ford Island Navy Military Construction Project is in the East Loch of Pearl Harbor and involved the design and construction of 140 housing units on Ford Island and 30 additional housing units at Radford Terrance. The $35 million contract was awarded to Lend Lease Actus, LLC, with headquarters in Napa, California.

Each of the new homes is equipped with either a one or two panel SunEarth solar water heating system. The SunEarth collectors and balance of system components were supplied by Inter-Island Solar Supply, SunEarth's exclusive representative in the Hawaiian Islands and Pacific Basin. The Hawaiian Electric Company (HECO), which provided incentives for the installations, estimates the benefits of the project to be: annual energy savings of 416 MWh, peak coincident load reduction of 114 kW, and CO2 reductions of 400 tons annually.

SunEarth®

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