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A REPORT ADVOCATING  
FOR SOCIALLY RESPONSIBLE  
SUSTAINABLE DEVELOPMENT

# INSTALLATION OF SOLAR HOT WATER YIELDS A SOUTHWEST GAS REBATE

ENEREF INSTITUTE EXAMINES A RESIDENTIAL HOME USING SOUTHWEST GAS REBATE TO INSTALL SOLAR THERMAL FOR DOMESTIC HOT WATER

**Nevada may be the state best known for fun and entertainment, but they take their responsibility for reducing their environmental footprint quite seriously.** In 2009 Nevada's state legislature created a program for its natural gas utilities to promote

the installation of at least 3,000 solar thermal (solar heating) systems in homes and buildings by 2019. A "solar thermal system," according to the program, is one that uses solar energy to heat water or air.

# OUR HOUSE IS SET UP TO BE VERY AFFORDABLE BECAUSE MOST OF OUR ENERGY REQUIREMENTS ARE HANDLED BY SOLAR.

*During the summer, some months saw a savings as high as 65% in natural gas use.*

In response to the legislation, Southwest Gas, a local distributor of natural gas in the majority of Nevada established a rebate program for households to offset the cost of installing a solar water heating system that reduces their use of natural gas. Qualifying residential customers can expect to receive as much as \$3,000, or up to 30% of the total cost of the system they install. The Southwest Gas *Smarter Greener Better*® Solar Water Heating Program is also available to small businesses, schools, public and non-profit customers as well.

Many states throughout the US have created rebate programs like the Southwest Gas Solar Program for both electricity and natural gas. The benefits can span from cutting CO<sup>2</sup> emissions to lessening energy demand during peak hours of the day.

This is not surprising in a state where the largest city, Las Vegas, renovated their City Hall to qualify for LEED Gold standards. In fact, the state

of Nevada may have more square feet of LEED certified buildings than anywhere in the nation, says Tom Perrigo, Chief Sustainability Officer at City of Las Vegas. LEED (Leadership in Energy and Environmental Design) is the Green Building Council's rating system for the design and construction of energy efficient and high-performing green buildings.

## NEVADA'S FIRST ADOPTERS

One of Nevada's first residents to take advantage of the Solar Program rebate was Steve Rypka, a LEED certified consultant, as well as a writer on such topics. As a vocal advocate for sustainable development, Rypka chose to live in a home with south-facing windows, ENERGY STAR® appliances, and such green alternatives as carpeting made from recycled soda bottles. Rypka says he and his wife have reduced their carbon footprint "by almost 90% since the year 2000," when they

began investing in a more earth-friendly home and lifestyle.

And how did Rypka reduce the hot water bill for his single-story, 2,200 sq. ft. home? With a solar thermal water heating system paid for, in part, by the Southwest Gas rebate. After familiarizing himself with the requirements to qualify for the rebate program, such as employing one of the contractors listed on the utility's rebate program website, Rypka contacted local contractors to gather cost estimates.

## HOW IT WORKS

Solar thermal water heating is a simpler technology than the more common solar photovoltaic, or PV system, which generates electricity. Solar thermal uses the sun's energy to heat water directly by heating liquid inside collector panels mounted on the roof. The heated liquid is then carried through pipes to an insulated water tank, where it heats the domestic water stored for household use.

One of the most obvious benefits of solar thermal heating is that it can cushion consumers against future price hikes of traditional fossil fuel. And especially for larger families that use plenty of hot water for showers, dishwashers and laundry, the investment in solar thermal heating can pay for itself even faster.



#### 4' X 10' SOLAR FLAT PLATE COLLECTOR

*Rypka had the contractor mount the panel flush to his roof*

### INSTALLATION OF THE SYSTEM

Rypka said he had been considering solar thermal heating for over a decade. He knew the time was right to make the improvement when he moved into his new energy efficient home. He spent nearly six months researching his options, but one of his top criteria was to find products that were manufactured locally. That is not a difficult task for Americans, since most manufacturers of solar thermal systems are based in the United States.

There are a variety of systems

designed to transfer the sun's heat into the water tank, and each system has advantages based on everything from local climate to water usage. Rypka chose a closed-loop design, with a Bradford White 75-gallon gas-fired water tank, an external heat exchanger and a traditional 4'x10' solar flat-plate collector. To avoid heat loss, the system was well insulated.

If energy were Rypka's only concern, he would have had the installer tilt the collector panels at just the right angle to take full advantage in the winter months, when the sun is lower on the

horizon. (The difference between the sun's angle at winter solstice and summer solstice is significant when deciding how to orient solar panels.) However, Rypka had the contractor mount the panels flush to his roof, which was more aesthetically pleasing, he said.

The solar heating system is backed up by natural gas when there's not enough sunlight to generate sufficient heat energy. An external monitor allows Rypka to see when he's paying for natural gas to heat his water and when the sun is supplying free solar energy. The system also

# HEATING WATER IS ONE OF THE LARGEST ENERGY CONSUMERS IN YOUR HOME OR BUSINESS.

According to ENERGY STAR®, the use of a solar water heater with a back-up gas heater can cut those costs in half. Southwest Gas is offering rebates for the purchase and installation of solar thermal water heating systems when installed in conjunction with natural gas water heaters.

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includes a controller with a Wi-Fi connection to his local network to monitor it remotely. Some systems can also be monitored externally by the solar panel manufacturer.

## SRCC RATING ASSURED THE QUALITY

Importantly, the system was SRCC certified. The Solar Rating Certification Corporation (SRCC) is a national rating and certification program for solar heating equipment. The non-profit organization has been rating solar thermal systems since 1980, and is recognized as an industry standard in all 50 states to assure customers their system will perform as indicated. For example, the SRCC OG-300 rating can tell you how much energy you can expect your system to displace in the very locality you plan to install it. Virtually all utility rebates, and local and federal tax incentives, require an SRCC rating, including the Southwest Gas Solar Program.

## FINANCIAL PLANNING MADE EASY

Part of the cost for the system was covered by the Nevada Southwest Gas Solar Program in the form

of a rebate check for \$1,650. For Rypka, when the rebate program became available from Southwest Gas, “it made sense economically, so we jumped on it.”

Comparing his home’s average natural gas usage prior to the solar thermal installation against the first full year after the installation reassured Rypka his decision was sound. During the summer, some months saw a savings as high as 65% in natural gas use compared to the previous three-year average. Because the installed panels were not angled towards the winter sun, the savings during those months are not as significant.

But on average, the new solar thermal system saves the home about 50% of natural gas usage annually, “so that is well worth it to me,” said Rypka.

Natural gas still heats the home in the winter, but even with heating fuel cost included in the calculation, the home saw its annual natural gas bill reduced by one-third.

Specific eligibility requirements

and rebate applications can be found at [www.swgasliving.com](http://www.swgasliving.com), or by calling 1-800-654-2765.

## SOLAR THERMAL GOES CITYWIDE

In fact, Rypka could be ahead of the curve in Nevada, as solar thermal grows in popularity because of the Southwest Gas Solar Program. For example, the City of Las Vegas is eligible for the rebate program, and Chief Sustainability Officer Perrigo plans to take advantage of it for future projects.

But with or without a rebate Perrigo said he is convinced that city dollars spent on solar thermal water heating projects are wise investments for reducing the city’s energy costs.

*Research and reporting compiled and provided by Eneref Institute. ([www.eneref.org](http://www.eneref.org))*