What is Zero Net Energy?

Zero Net Energy (ZNE) describes a building that has a very low annual energy usage and generates energy on site through solar panels to match that total annual usage. Over the course of a full year, the amount of energy used and the amount of energy generated will be equal in a ZNE building.

ZERO

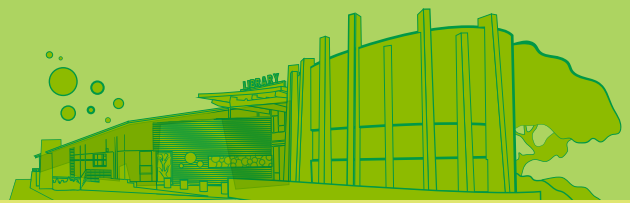
NET ENERGY

Why Zero Net Energy?

Reducing energy use, will help lower the effect of human activities on climate change and help preserve the quality of life in San Diego County that makes this a great place to live and work ZNE supports the County's budget in the long term through greatly reduced life cycle costs and facilities that hold their value. In addition to being environmentally responsible, this library will be saving on the cost of electricity by generating 100% of the energy used on site.

THE ALPINE LIBRARY

1752 Alpine Blvd. Alpine, CA 91901
(619) 445-4221



THE ALPINE LIBRARY

ZERO

NET ENERGY

sandiegocountylibrary

Heating and Cooling

The building is heated and cooled by a Variable Refrigerant Flow system, which is a very energy-efficient space conditioning system that brings hot or cold fluid to precise locations only when it is needed.

Lighting

Light fixtures are highly energy efficient LED. They are controlled by sensors that detect when a space is not occupied or when there is enough daylight, and will turn lights off.

Building Orientation

The long side of the building faces south, taking advantage of north exposure for daylight and south exposure for the solar array.

Windows

Large windows in the reading room maximize daylight, saving up to 30% of energy use from artificial lighting. The glass is thermally resistant so it won't easily transfer heat into or out of the building.

Plug Receptacles

Outlets throughout the library are equipped with occupancy sensors which shut off power to the outlets when the space is not being used.

Building Insulation

The walls and roof are custom insulated for this location and occupancy, reducing the loss of heating and cooling energy.

Water Heating

Solar thermal panels on the roof provide hot water for hand washing and a kitchen sink, saving on the cost of natural gas to heat water.

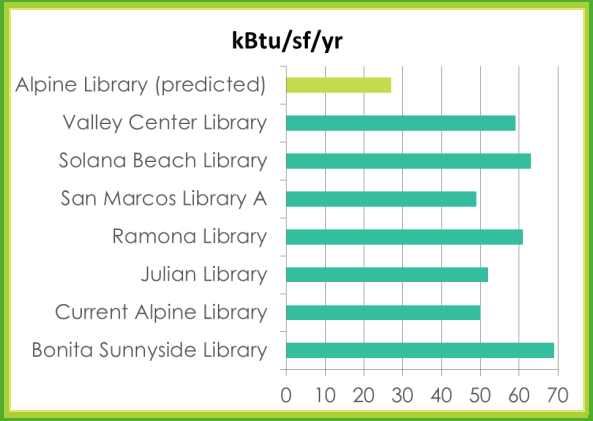
Solar Power

The photovoltaic solar panels on the roof have a real-time power generating capacity of 72 kW, and are predicted to produce about 108,500 kWh per year, enough for 10 average households. At certain times of the year, the panels will provide more electricity than the building uses, so electricity will go back into the grid and SDGE will pay the County for this extra electricity.

How You Can Help

The Alpine Library is a community resource, and we are happy to provide you with power outlets to run your electronic devices. Please be aware of how much power you are using —everyone needs to do their part to conserve electricity!

How will we know if it is successful?

The entire energy-using network in this library will be closely watched through a "smart building" monitoring system to insure that systems are running at maximum efficiency. County personnel can read this information remotely and will insure that the building is only using as much energy as designed.

The County has produced some very high performing Libraries in the past but the Alpine Library has taken it to a new level. By producing a ZNE building we have been able to double the energy performance.