Green Technology

- Components for green technology (green building technology):
- 1. Design and construction efficiency
- 2. Energy and water efficiency
- 3. Real time load profile(load sharing based on smart load profile)
- 4.Indoor environmental quality enhancement
- 5. Waste and toxic reduction
- 6. operations and maintenance optimization
- 7. Interface with **smart house.** (www.solarcity.com/energy-efficiency/energy-efficient.home.aspx)
- 8. Communication via Powerline, Wi-Fi, ZigBee, GSM, NFC
- 9. Powerline on/off remotely.
- 10. Communication interface for water and gas meter
- 11. Meter and home display
- 12. Advanced tariff system for load balancing.

Objectives

- 1. climate change mitigation
- 2. energy security and resource conservation
- 3. Job creation
- 3. Improved occupant health
- 4. productivity and economic activity
- 5. Long term resilience
- 7. Quality of life.

Important features

- Home automation
  - A) Mobile Application in Home Automation
  - B) Blackout proof Smart meter for efficient power management(records the electricity consumption and server for billing)

Solar energy

Efficient solar charge controller

- A) Hybrid inverter- solar panel create DC current from sun light and hybrid inverter convert it into AC current and fit for utility uses. There is minimum wastage of energy.

Energy harvesting

- 1. Remote patient monitoring
- 2.Efficient office energy control
- 3. Agriculture management
- 4. survillance and security
- 5. Long range asset tracking
- 6. Implantable sensors.
- 7. structural monitoring.

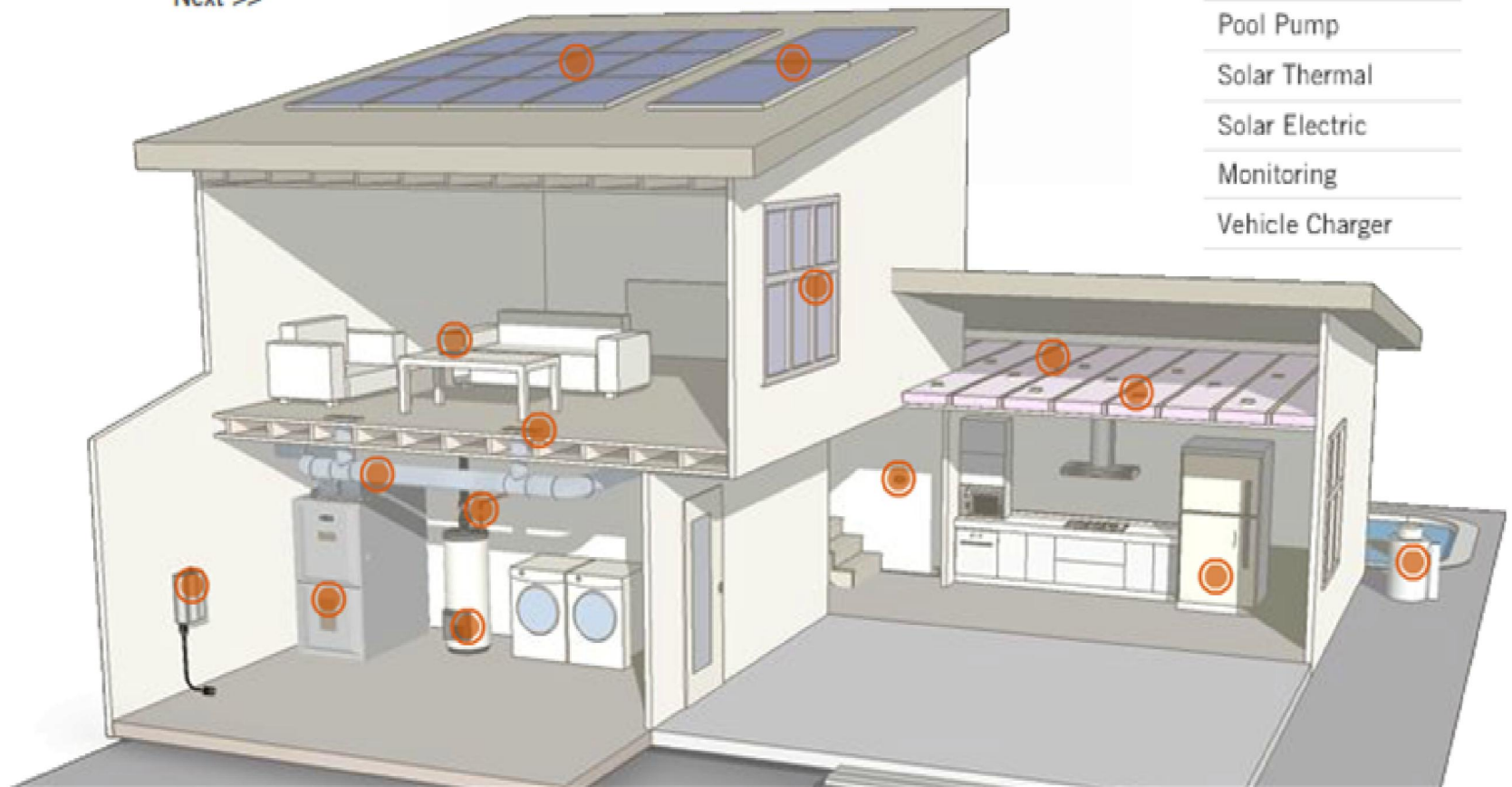
The Energy Efficient Home

SolarCity can recommend and implement energy upgrades and repairs to further improve your home's efficiency, such as insulation, water heaters, high efficiency heating and cooling equipment and even pool pumps.

Explore some of the areas we can help you save money with our Energy Efficiency Services.

Next >>

- Thermostat
- Duct Sealing
- Air Sealing
- Lighting
- Water Heater
- Pipe Insulation
- Heating & Cooling
- Appliances
- Windows
- Insulation
- Pool Pump
- Solar Thermal
- Solar Electric
- Monitoring
- Vehicle Charger



Green world

- -green technology is a global movement now.
- -to create vibrant and sustainable cities.
- -green technology address social, economic and environmental values.
- -green technology create green economy.
- -”Zero carbon house” is the output of green technology.(30% GHG comes from houses)
- -Low carbon development—is the ultimate target.

cost

-50 % less electricity consumption

-40% water consumption reduced

-reduce Carbon-di- oxide emission by 39%

-reduce solid waste by 70%(3R policy)

Programmable Thermostat

A programmable thermostat allows you to adjust the temperature of your home based on your schedule. For instance, in winter your thermostat can warm up your home by 5° just before you wake up in the morning.

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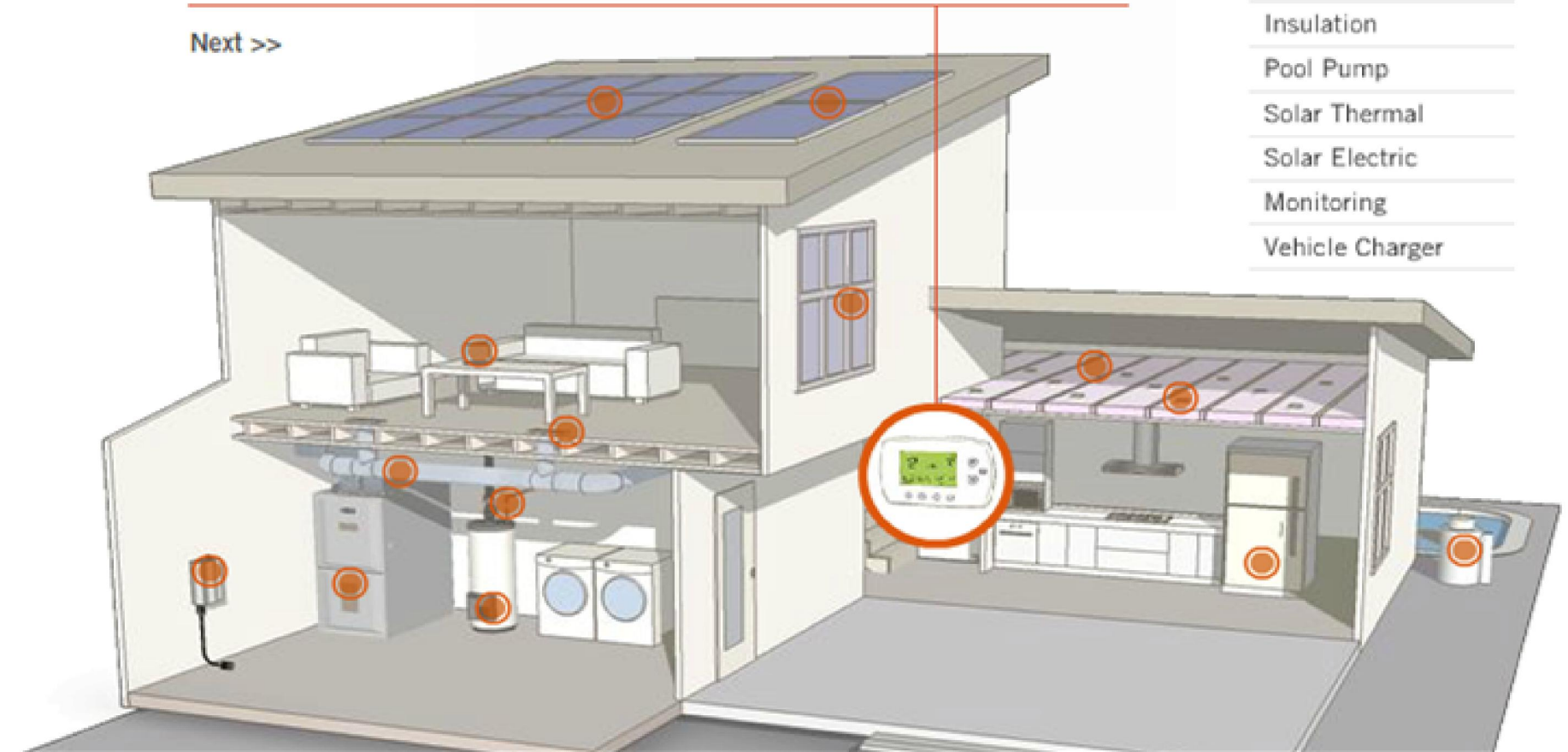

Duct Sealing

The average duct system leaks 30% or more! If your furnace frequently turns on and off or if you have some rooms that are too hot or too cold—these are signs that your ducts may be leaking. Properly sealing your ducts directs the air that you paid to heat or cool inside your home, making you more comfortable and saving you money.

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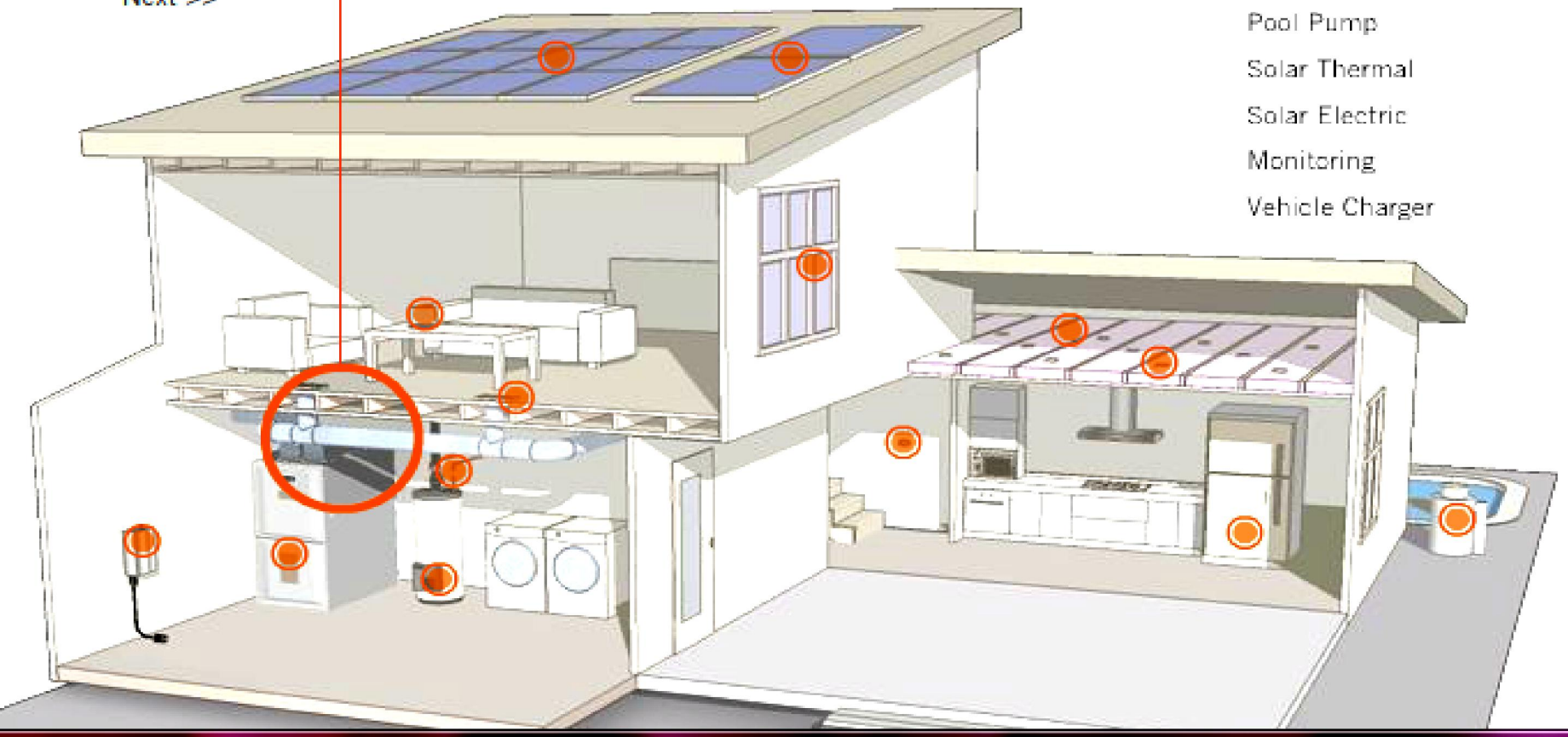

Air Sealing

Most homes have small cracks and holes where the air you paid to heat or cool leaks outside. Sealing your "building envelope" reduces drafts, saves money, and keeps must, mold and allergens out.

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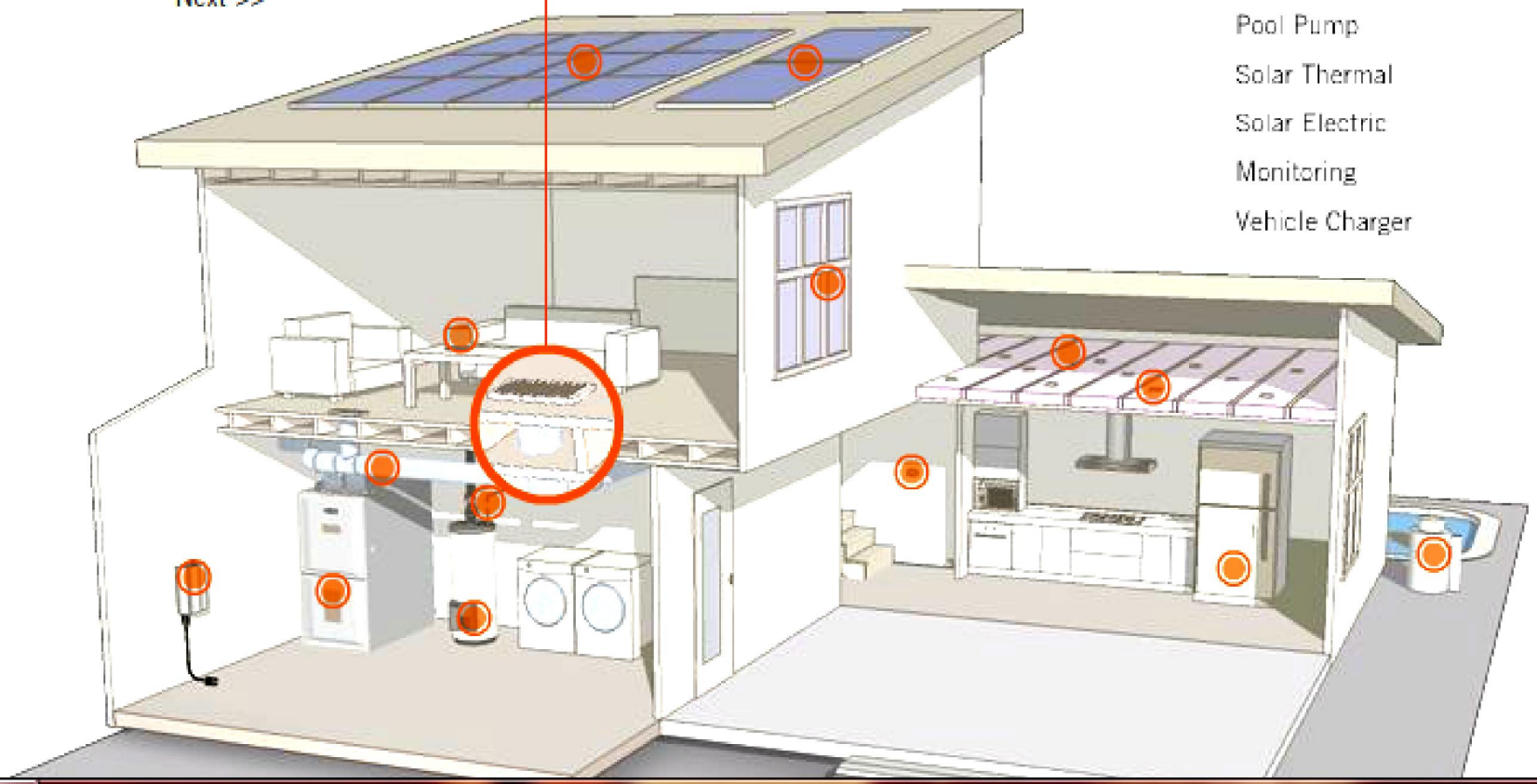

Energy Efficienct Lighting

Lighting consumes about 10% of a household's electricity use. Replacing incandescent bulbs with more efficient CFLs and LED lighting can reduce lighting energy use in homes by 50% - 75%.

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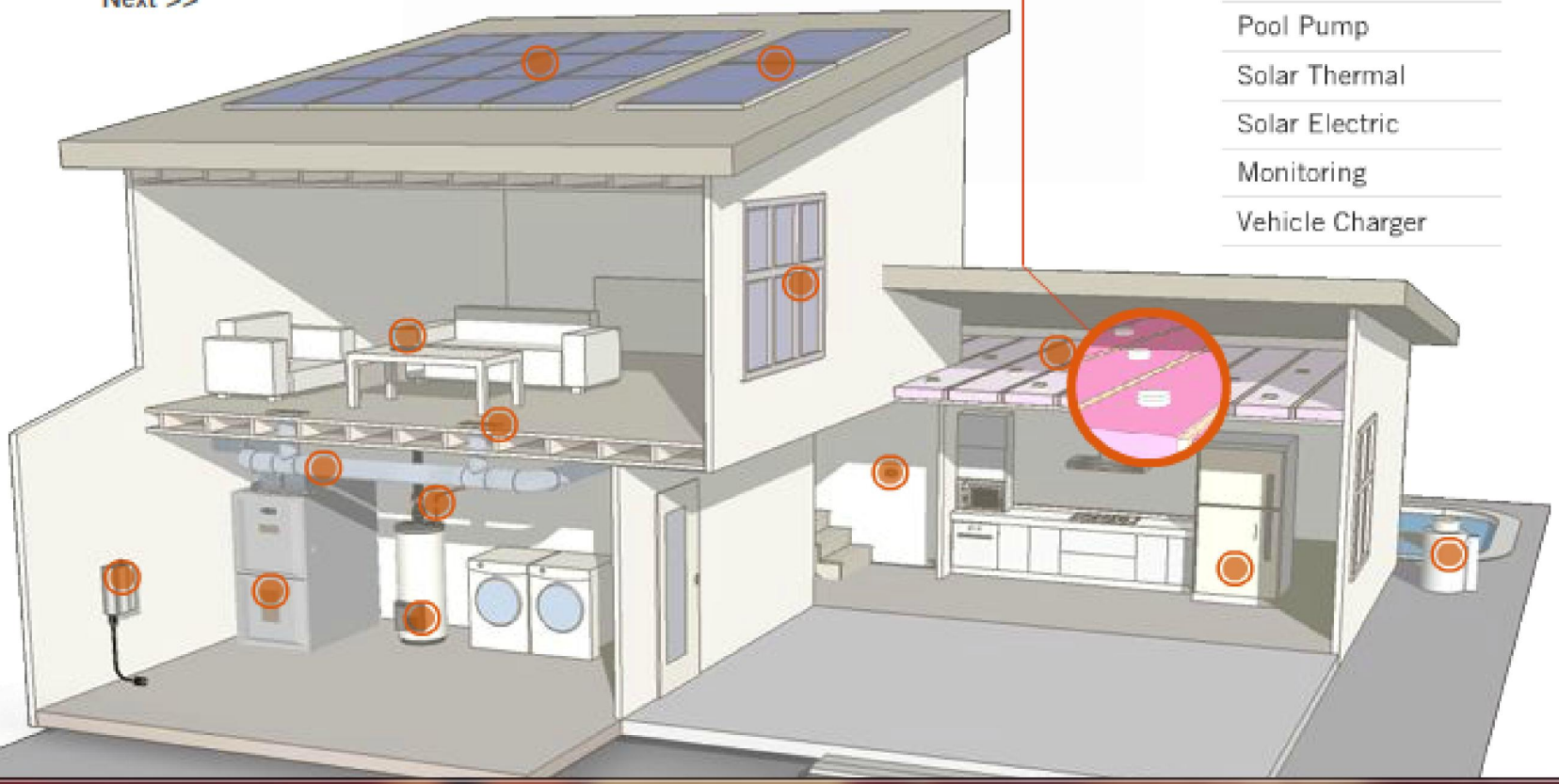

High Efficiency Water Heaters

Heating water can account for 15% - 25% of the energy consumed in your home. Reduce your monthly water heating bills by selecting a high efficiency or a tankless water heater.

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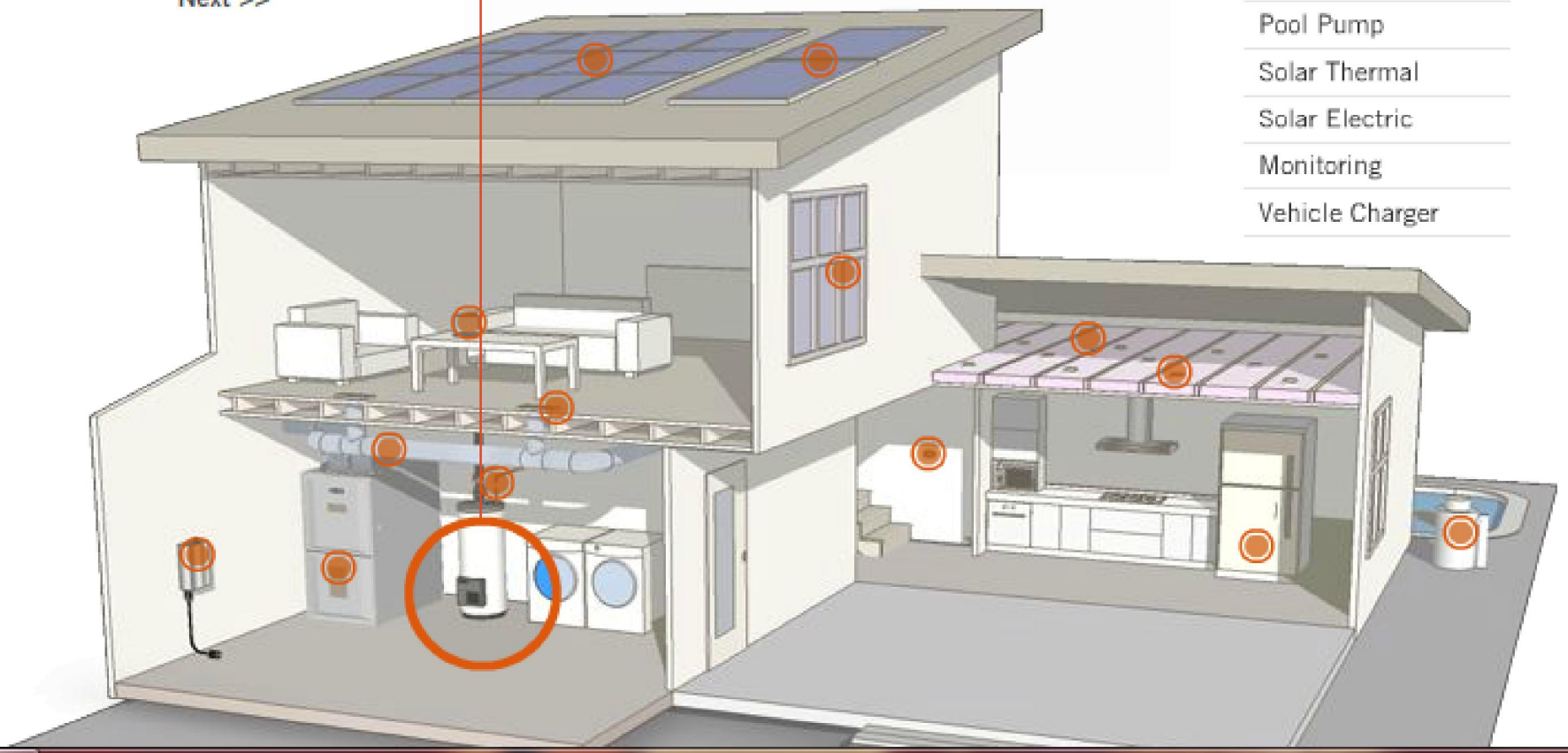

Pipe Insulation

Insulated pipes to and from the water heater reduce heat loss and can provide water 2° - 4°F hotter than bare pipes. And you can conserve water by not having to wait as long for hot water to come out of the tap.

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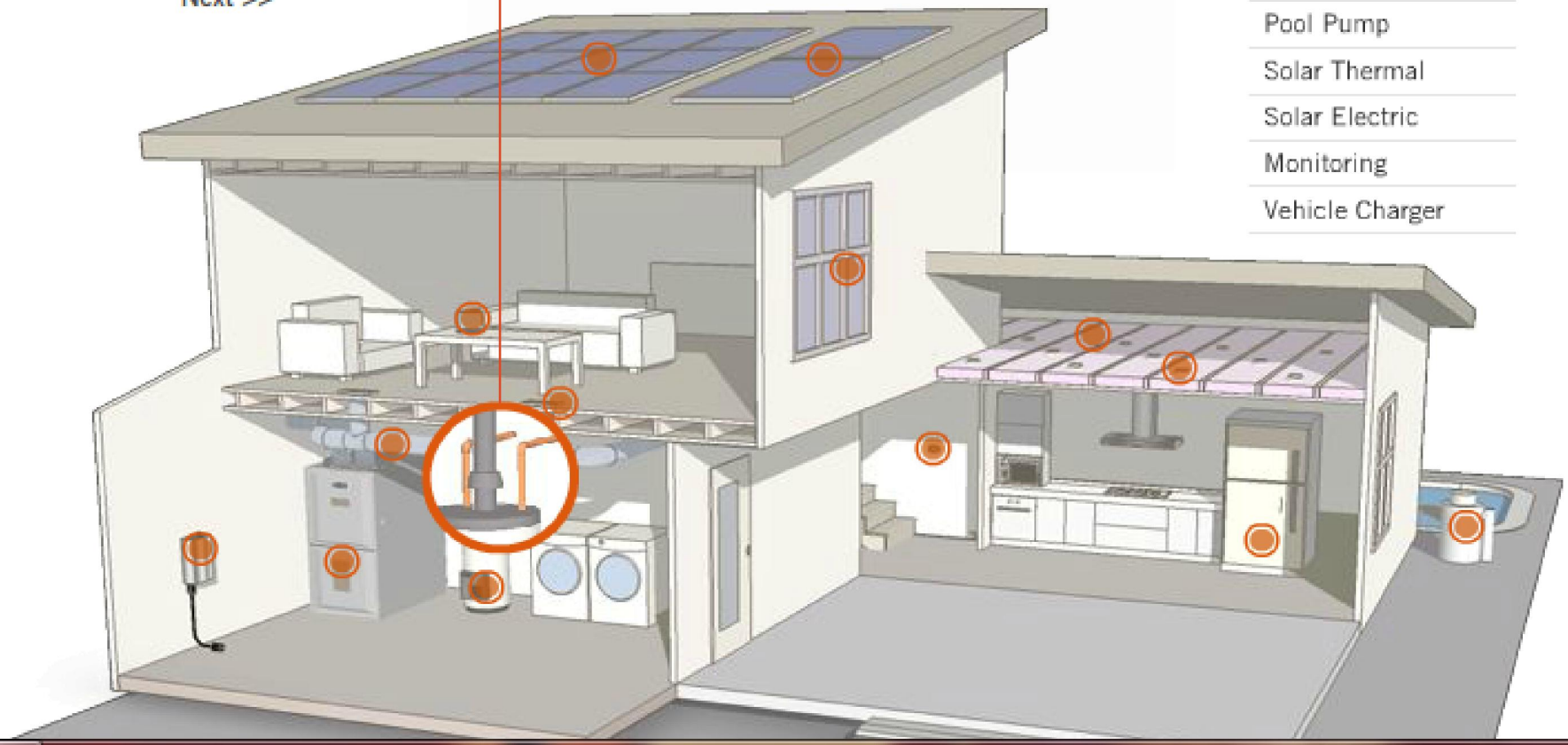

High Efficiency Heating & Cooling Systems

Heating and cooling equipment use more energy and money than any other part of your home, about 55% in a typical U.S. home. An oversized heater will frequently turn on & off, operating very inefficiently. A properly sized high efficiency unit provides heat and cooling at the lowest operational cost.

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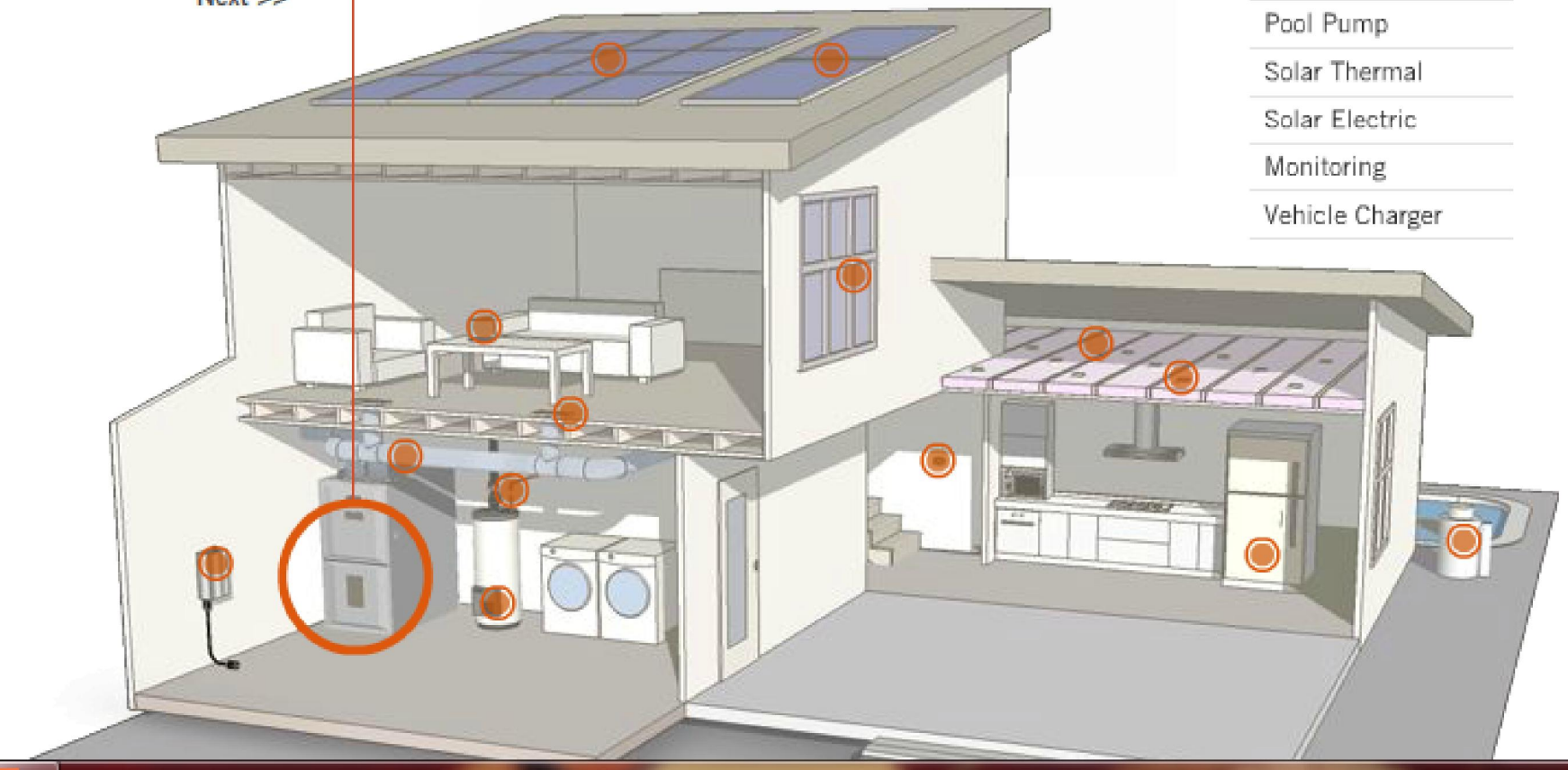

Energy Star Appliances

Your washer, dryer and refrigerator probably accounts for almost 90% of your appliance energy bill. New Energy Star models can reduce the amount of energy use by half compared to models that are over 10 years old.

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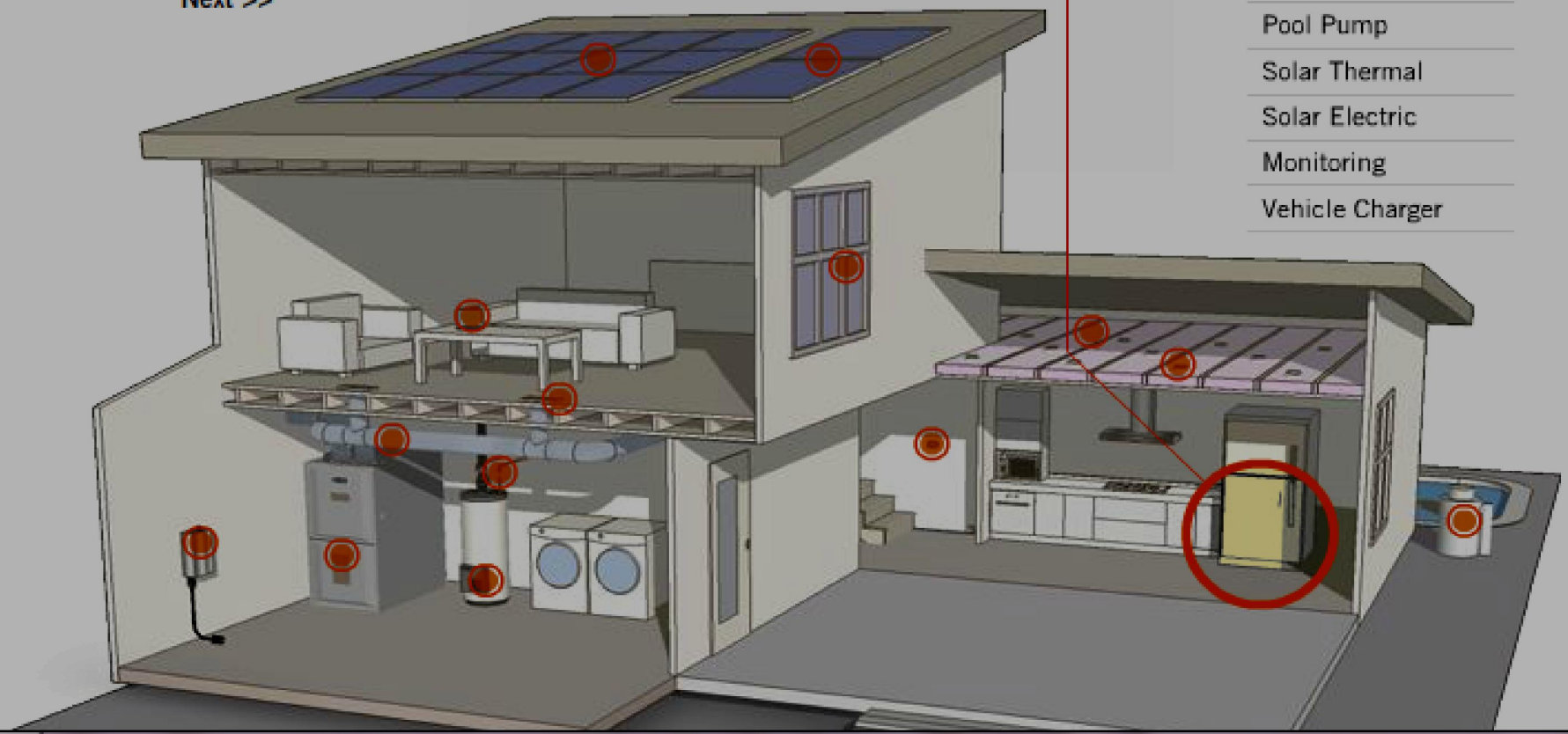

Window Replacement

Double pane, low emissivity (low-e) windows can help reduce outside noise, drafts, heating and cooling costs.

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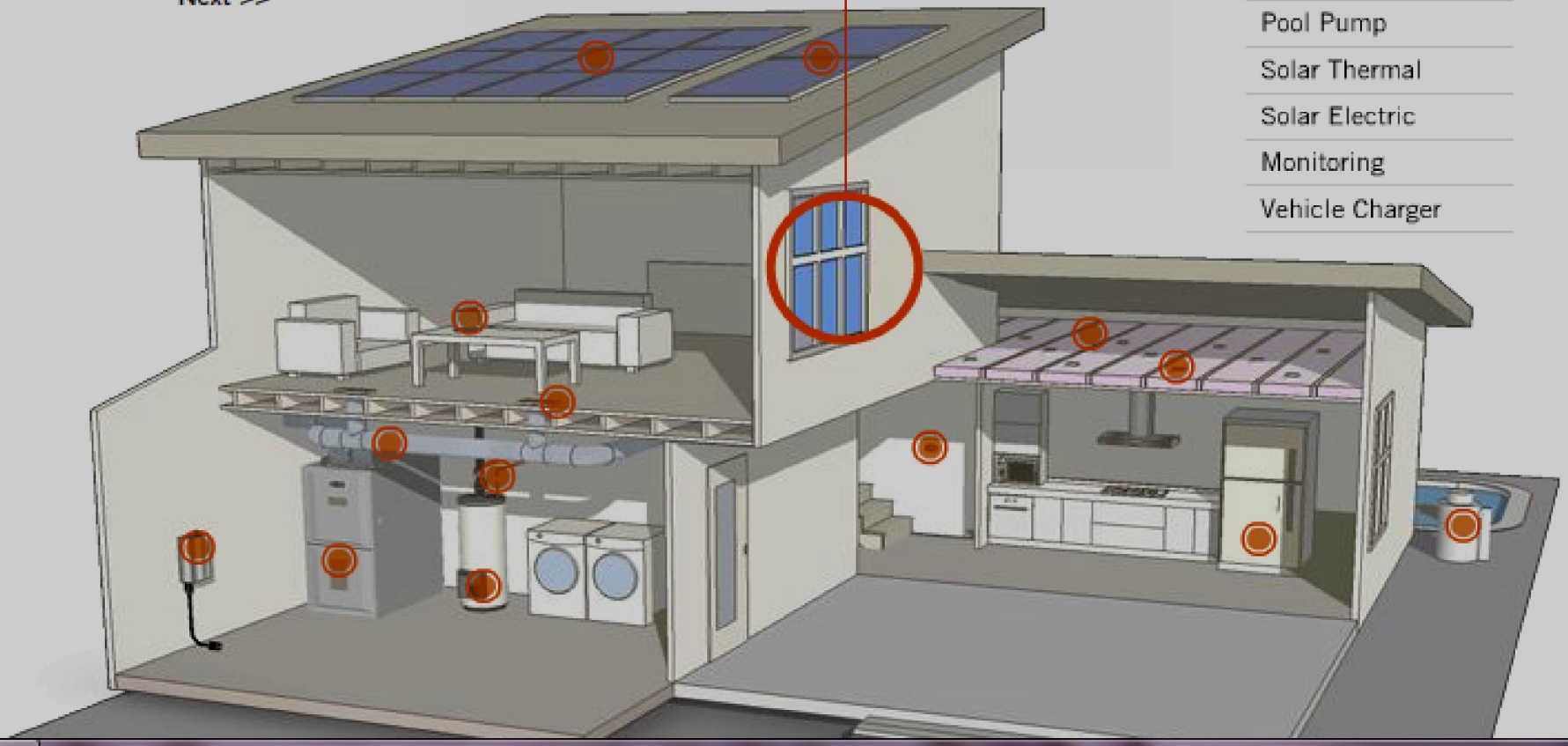

Home Insulation

Properly insulating your home will not only help reduce your heating and cooling costs but also make your home quieter and more comfortable.

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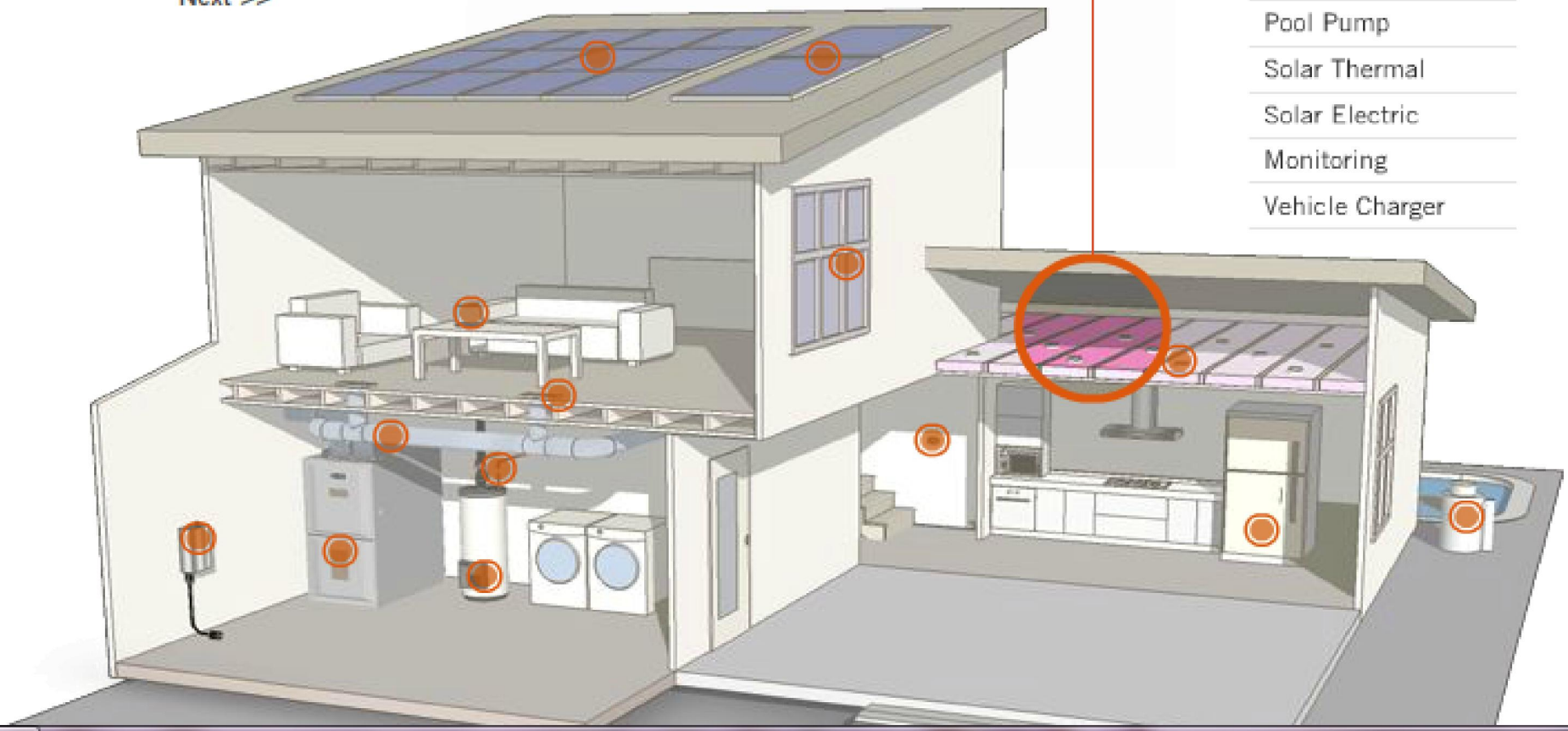

Pool Pumps

You can save energy and maintain a comfortable swimming pool temperature by using a smaller, higher efficiency pump and running it for less time and during "off-peak" hours at a lower utility rate.

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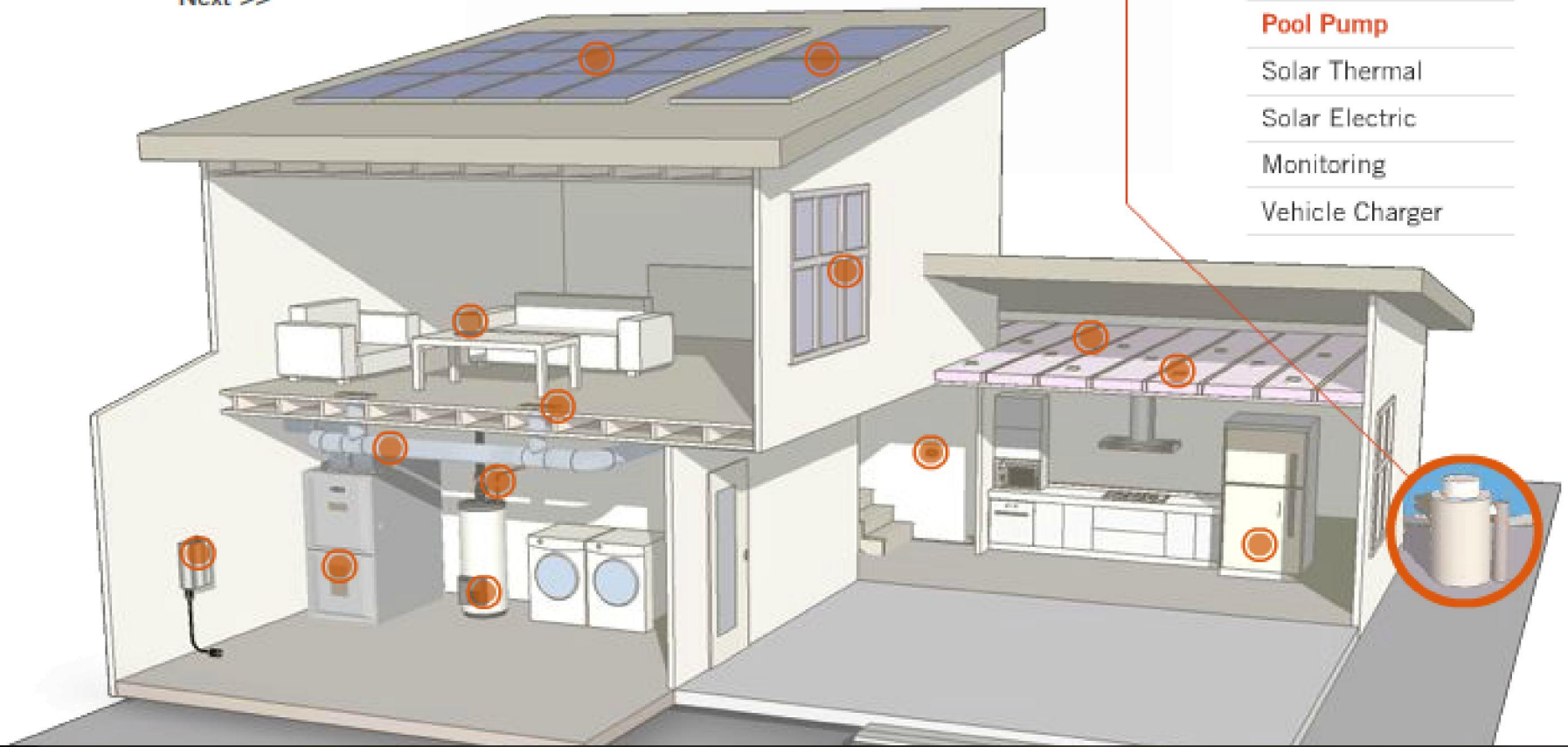

Solar Thermal

Solar thermal systems allow you to harness the power of the sun to both heat water and your home.

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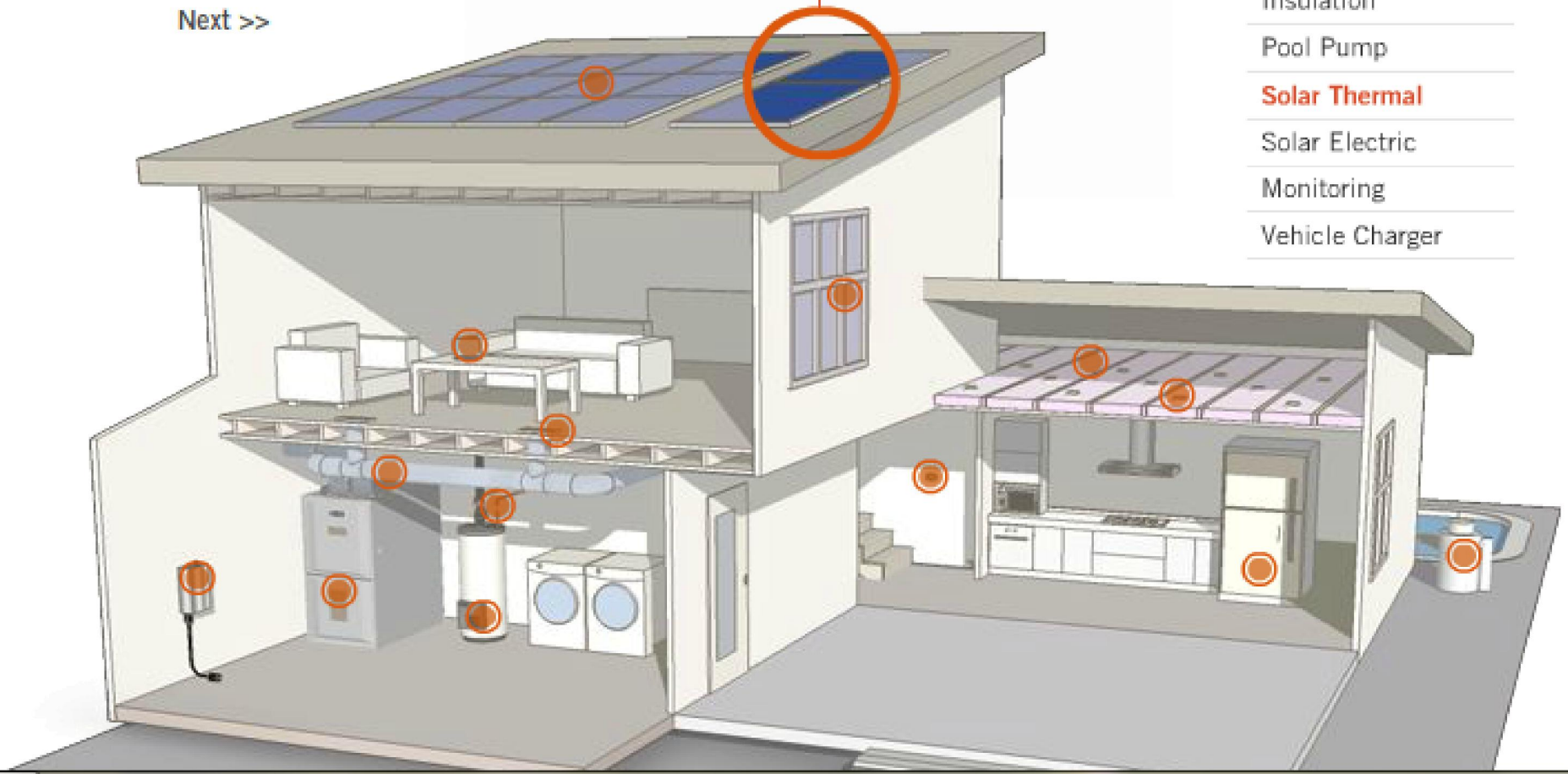


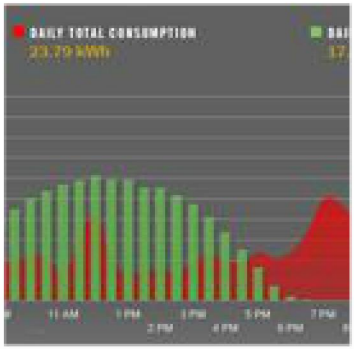
Solar Electric Panels

When you convert sunlight into electricity you reduce our collective dependence on fossil fuel. Solar can immediately lower your energy costs and protect yourself from rising electricity rates.

Next >>

Electricity Usage Monitoring

PowerGuide™ home energy monitoring constantly measures and displays when electricity is used throughout your home, so you can better manage your energy consumption and save money.



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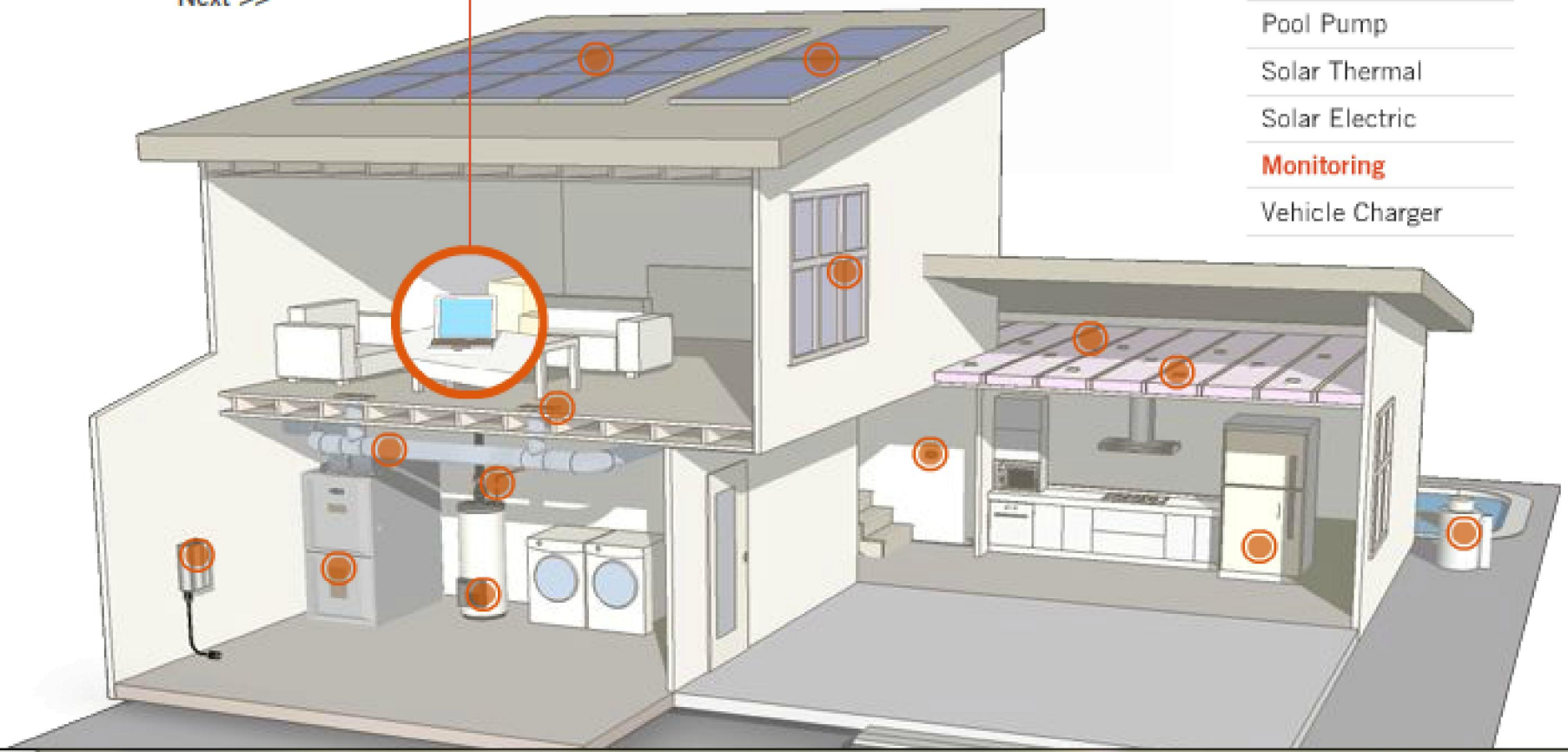

Electric Vehicle Charging

Electric vehicles use less energy to run and reduce our need for foreign oil. With an electric vehicle charging station you recharge at night and be on your way in the morning.

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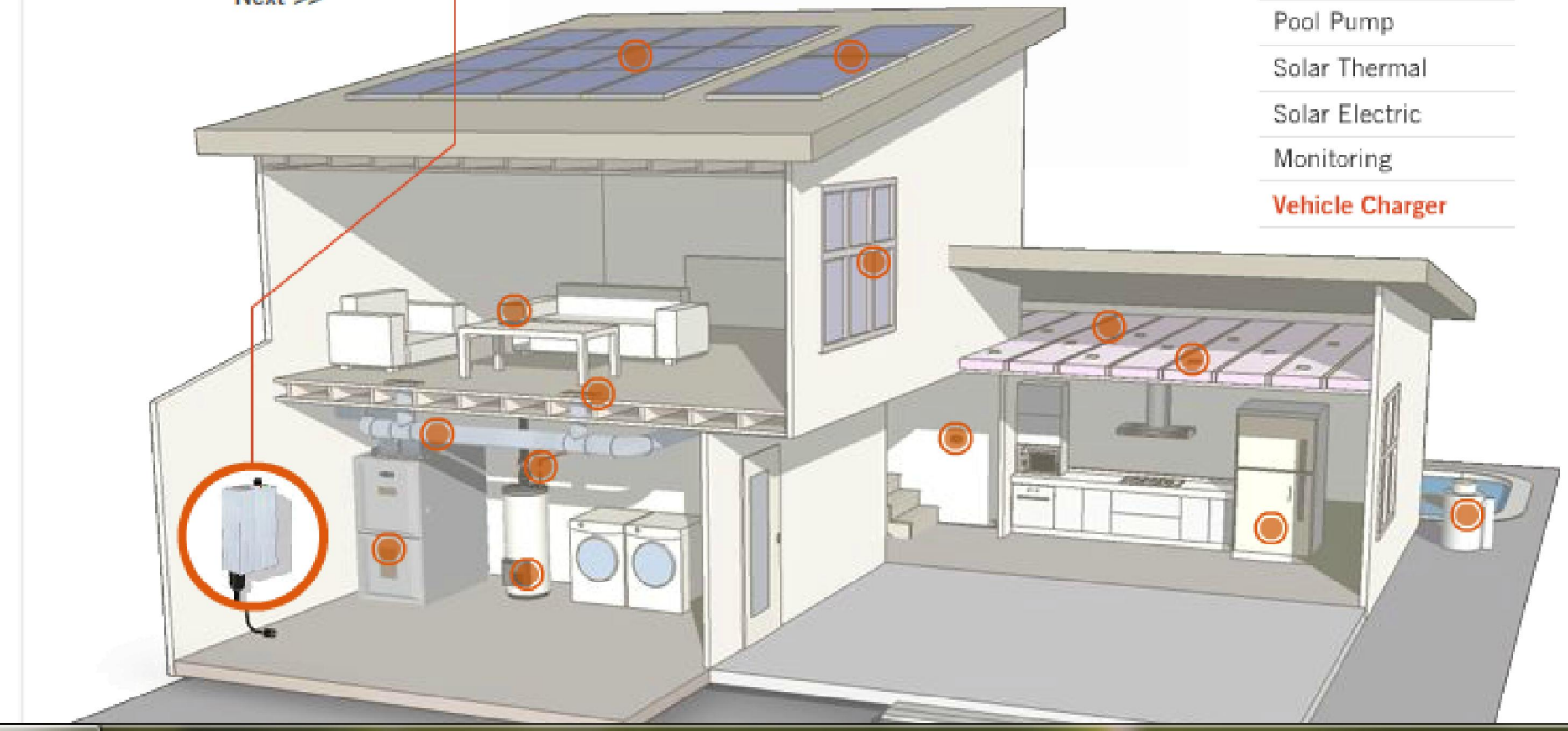
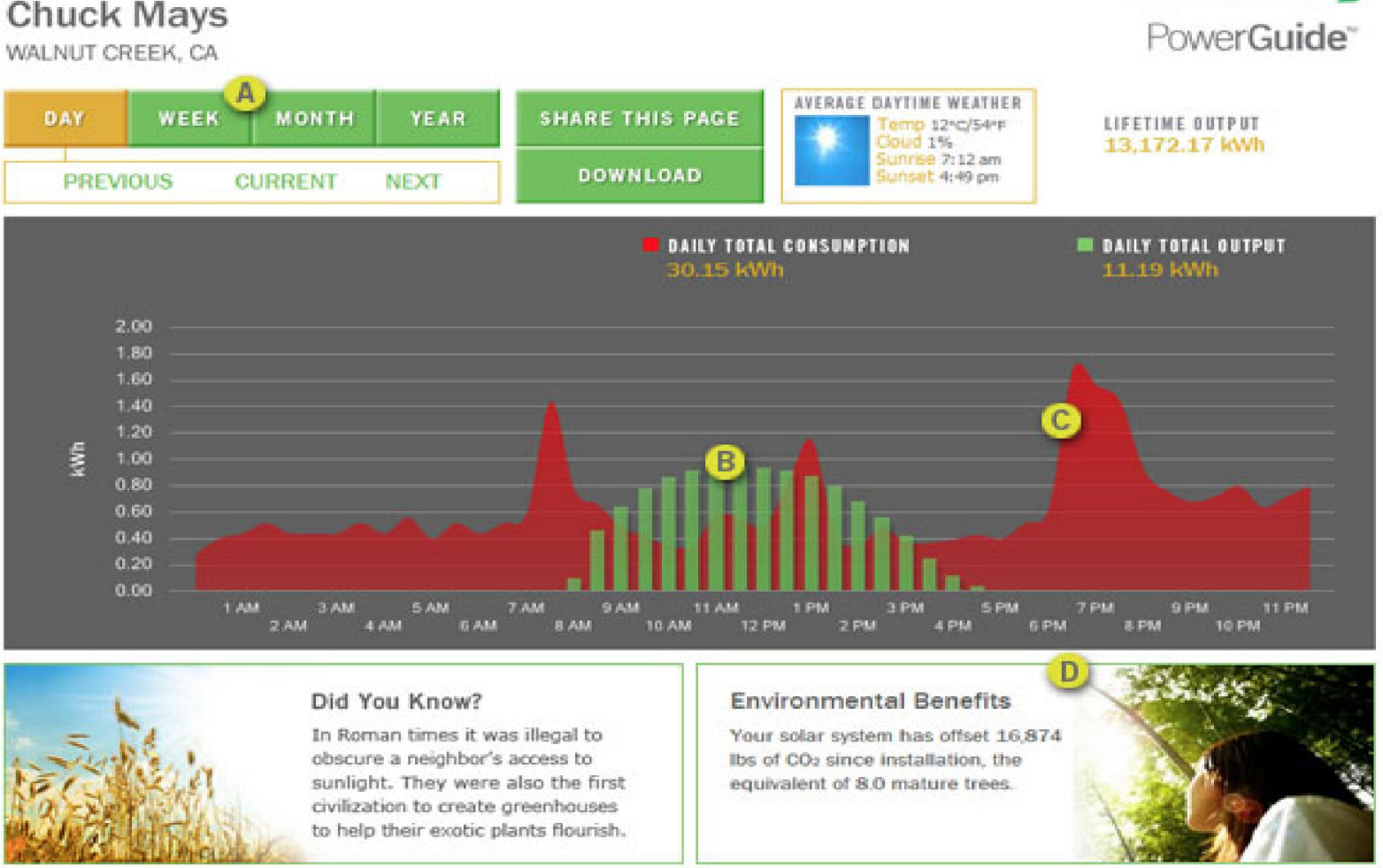




- **A** Real-time or historical data
- **B** Green bars indicate your solar energy production
- **C** Red area indicates your home energy consumption
- **D** Environmental benefits

PowerGuide

PowerGuide™ Monitoring Demo

This is a live demo of a solar system monitored via SolarGuard® with home energy consumption monitored by PowerGuide. Click the Day, Week, Month or Year buttons to view the amount of power this solar system generated and the amount of power consumed by the home.

Return to SolarCity.com

DAY | WEEK | MONTH | YEAR

DOWNLOAD

PREVIOUS CURRENT NEXT

AVERAGE DAYTIME WEATHER

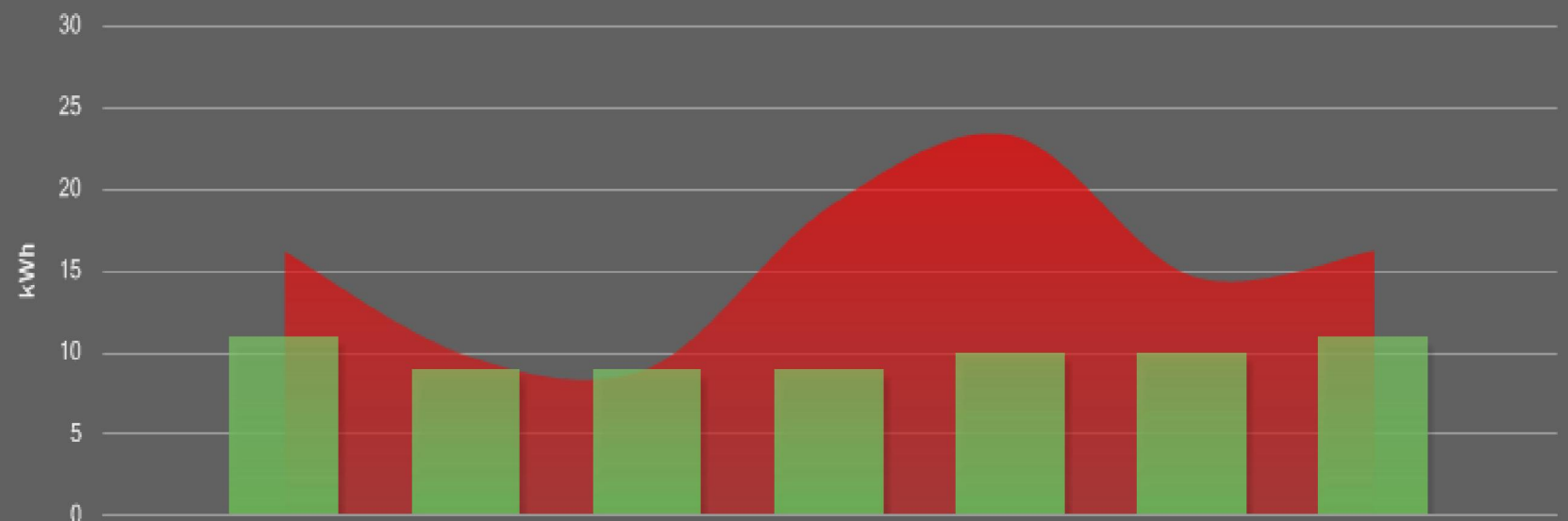
Temp 13°C/55°F
Cloud 42%
Sunrise 7:24 am
Sunset 5:01 pm

LIFETIME OUTPUT
17,470.00 kWh

December 29, 2013 — January 04, 2014

WEEKLY TOTAL CONSUMPTION
108.40 kWh

WEEKLY TOTAL OUTPUT
69.00 kWh



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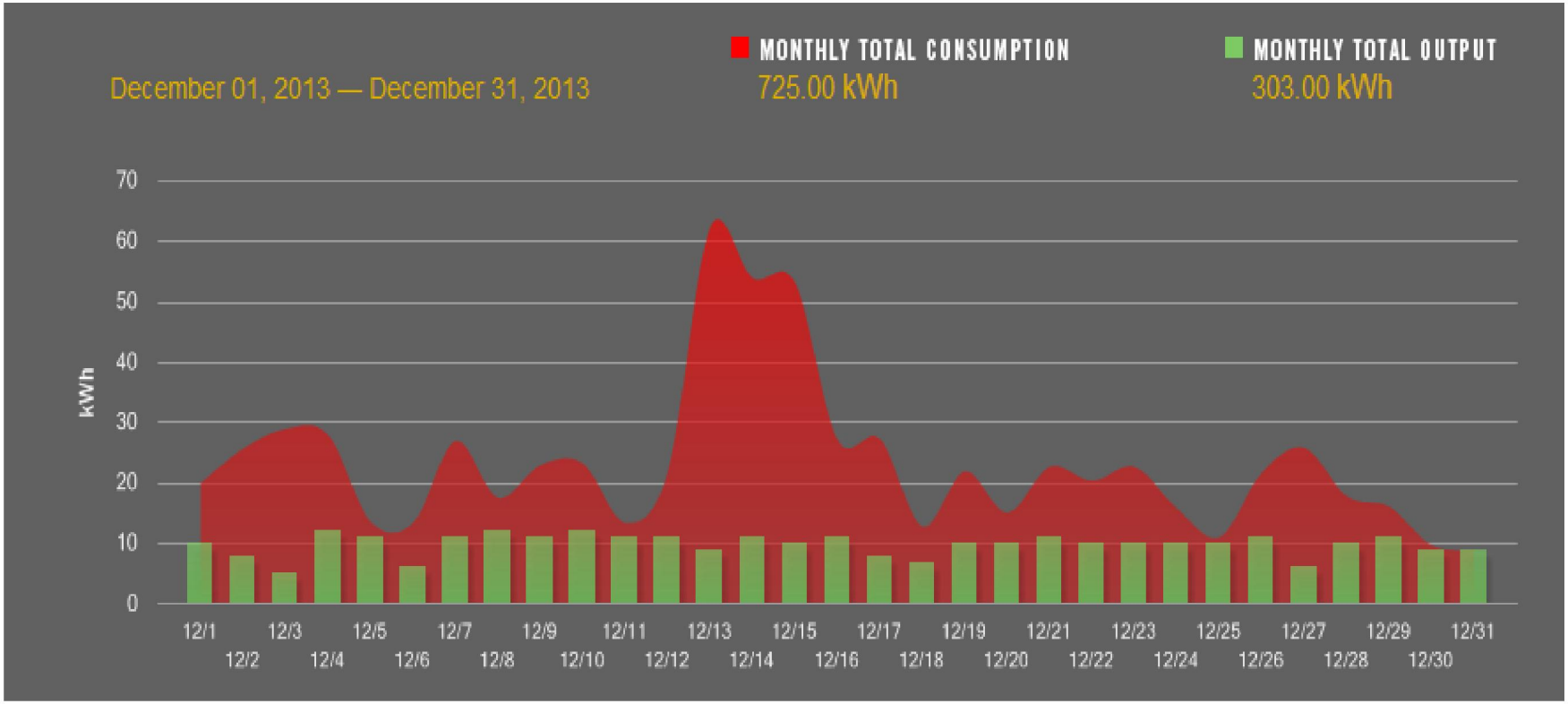

Did You Know?

In 40 minutes of daylight on earth, the sun releases the amount of energy consumed by the entire population of the planet in 1 year.

Environmental Benefits

Your solar system has offset 22,379 lbs of CO_2 since installation, the equivalent of 10.7 mature trees.

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Return to SolarCity.com

DAY | WEEK | MONTH | YEAR

DOWNLOAD

PREVIOUS CURRENT NEXT

AVERAGE DAYTIME WEATHER

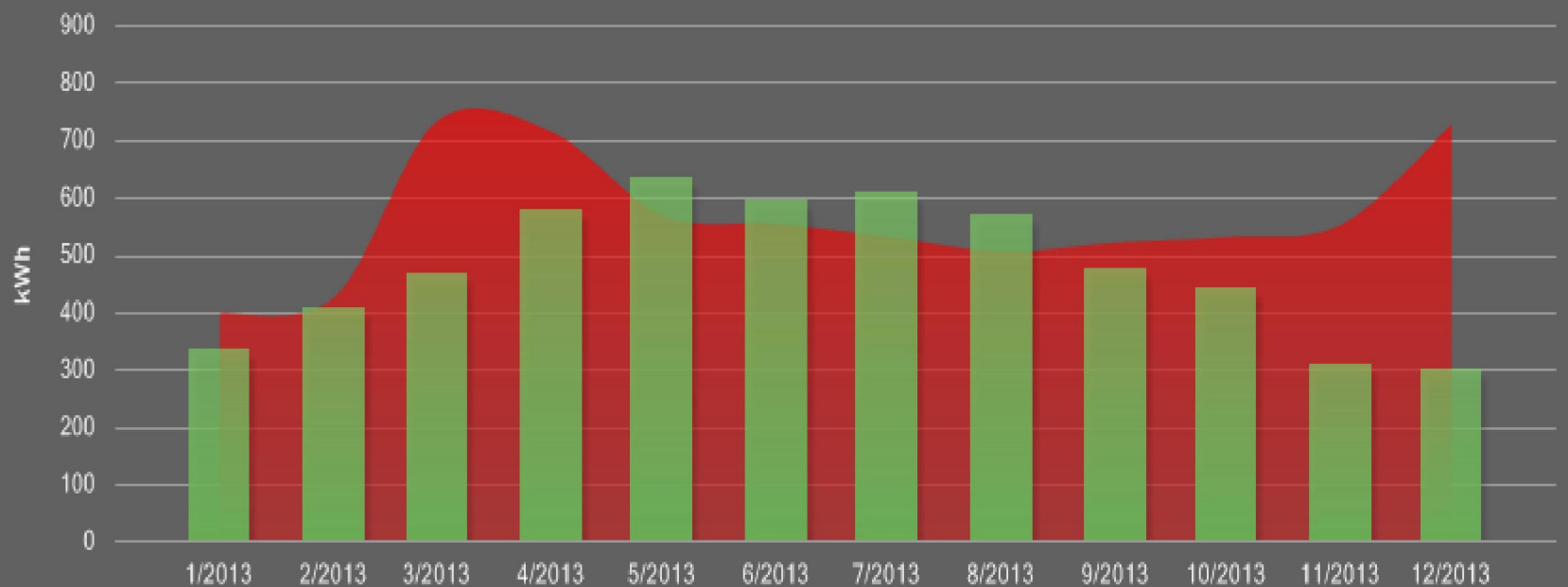
Temp 16°C/61°F
Cloud 41%

LIFETIME OUTPUT
17,470.00 kWh

January 01, 2013 — December 31, 2013

ANNUAL TOTAL CONSUMPTION
6,788.04 kWh

ANNUAL TOTAL OUTPUT
5,741.00 kWh



Green city index

1. Energy and CO_2
2. Land use and building
3. Transport
4. Waste
5. Water
6. Sanitation
7. Air quality
8. Environmental governance.

Asian 22 cities

- Beijing– Eco building policy by energy efficient code(Insulation for outer walls to conserve heat and energy efficient doors and windows), Water meter, “Euro 4” emission regulation for passenger car, “cash for clunkers”(To buy old cars), 26 degree celsius.
- Tokyo—”Ten year project for a carbon minus Tokyo”(2007), Tokyo greenship action program(govt buy green area), water quality standard higher than national standard, environmental lesson at public elementary school.

Asian 22 cities

- **Singapore**—80% building meet “Green mark certified” by 2030 (energy efficiency), Increasing park spaces from 3300 ha to 4200 ha by 2020, 5 world renowned water treatment plant(NEWater factory) which treat waste water through micro-filtration, reverse osmosis, ultraviolet technology(No water from Malayasia by 2030)
- **Kuala lumpur-** RE from 1% to 5.5% by 2015, waste to energy in national curriculum.

LGED- some proposals

- **Energy smart building**–piloting one district xen office(no power from national grid, only solar system), rainwater harvesting and pond sand filter(PSF),
- Proper layout of UP complex building and schools(cyclone shelter) with solar system and PSF.(specially in saline zone).
- 100% plantation for all LGED roads and every three year replantation, CDM(clean dev project and carbon credit), plantation in school.
- Reduce water loss in Upazila complex, no overflow, no leakage, efficient gate bulb operation
- Biogas for MSW (municipal solid waste)by fiber glass.
- LEED certification(leadership in energy and environmental design.
- ISO 14001: 2004 –environmental management.

Some reference

- www.opower.com
- www.energylivenews.com
- www.energystar.gov
- www.worldgbc.org