

# GLOBAL WARMING SOLUTIONS

A DIVISION OF  
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Our **Integrated Sustainable Solutions™** system is a widely applicable approach to reduce the carbon footprint to the maximum possible degree in new construction, remodel, and retrofit applications.

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A. The first step is the **Energy Analysis**, which takes 12 months of electric, gas, and water bills and forensically examines all the loads to separate the bills into all their component use categories for mitigation. Even for new construction it is helpful to look at the former dwelling. This provides insight into the habits of the client. The past is a forecast of the future.

B. Step 2: **Classifications**

1. At the heart of this system is major reduction of the largest most energy intensive component of a dwellings carbon footprint in the Southwestern U.S.- **AIR CONDITIONING**

This component is first addressed through mitigation of thermal loading through walls, windows, skylights, and trapped heat in attics.

In new construction through design in remodel, retrofit situations through shading, active and passive, venting active and passive, insulation, etc. In coastal and mountain zones we use nature's diurnal swing between day and night to night cool the home with our unique patent pending Silent Aire™ Horizontal Axis Ventilation System which provides induced air at a high volume, low rpm. The system is quiet and does double duty cooling for the home and attic.

The Silent Aire™ Horizontal Axis Ventilation System flushes the home with 50° to 60° air at night while you sleep. This system

converts your home into a passive cooling system during the daytime you will sleep with blankets during the summer at night.

In new construction we integrated passive thermal absorptive materials, rock, tile, marble, etc. In desert zones, we use a combination of the Silent Aire™ Horizontal Axis Ventilation System and another unique patented system Core Cool™.

This is an evaporative indirect-direct pre-cooler that is installed as a surround around an air conditioner raising its seer level by 25 to 50%. Modulating between systems according to temperatures at night, the Core Cool™ pre-cooler and Silent Aire™ tandem reduces air-conditioning loads from 60% to 80% in the summer season in the coastal, valley, and mountain zones to 50% to 75% in the desert zone. In coastal and mountain zones, the Silent Aire™ alone can provide 80% to 100% of the cooling. See [www.marksnyderelectric.com](http://www.marksnyderelectric.com) for additional product information.

## **2. Winter Heating**

Winter heating, the next largest component, is addressed through high efficiency furnaces, ductwork mitigation (in remodel, retrofit), passive solar, winter sun, summer shading, insulation, solar thermal hot air systems, and solar thermal hot water heater systems.

In California, with Governor Schwarzenegger's new Bioenergy initiative, soon there will be a market for recycled pellet fuels in zero emission furnaces like those presently in use in Europe for home heating and domestic water heating.

These sustainable fuels will replace natural gas in the future as fuel becomes more plentiful in the U.S. Over 30 million homes use recycled biomass fuel pellets in Europe at this time. This is saving billions of cubic feet of gas and emission per year. The fuel is from the waste stream and is a sustainable resource.

## **3. Appliances**

We advocate a concept utilizing Smart Electronics™. Technology is advancing now so rapidly that every 3-4 years the efficiency of

equipment improves by 30% to 50%. At the high cost of energy it makes sense to evaluate your appliances every 5 years and see if it is cost effective to change them especially if you are contemplating adding an energy intensive appliance like a pool, portable Jacuzzi, etc. As part of our system we evaluate all electric and gas appliances and choose the appropriate high efficiency appliances that meets the clients aesthetic and design criteria.

Energy Star appliances are from 25% to 300% more efficient than conventional appliances. These Energy Star appliances and efficient HVAC equipment each allow more useful work to be done for each kilowatt of electricity used. This is what we call using Smart Electrons™.

#### **4. Parasitic Loads**

Examples of parasitic loads are electronics and appliances that use power when they are not doing any useful work. Televisions, satellite receivers, computers, printers, faxes, routers, Instahots, water coolers, ice machines, are a few devices that use power when they are in an idle mode. We have a number of effective techniques for reducing and eliminating parasitic loads.

A bill is in the California legislature to require manufacturers to declare parasitic loads (also known as “Vampires”), and to eliminate them by 2010. This would not be difficult but it would require an extra microprocessor or a programmable on/off function.

For now, we have methods to give the client choice as to when they use equipment to cut parasitic loads by 50% to 100%.

#### **5. Water Heating**

Water is a silent and largely overlooked major energy component.

We advocate use of solar thermal energy for domestic hot water in conjunction with water efficiency devices that circulate water rather than wasting it down the drain while we wait for it to become hot.

For back up when solar thermal is not sufficient we use 90% efficient hybrid water heaters. We also advocate new heat recovery systems that take hot water from shower drains and use it to preheat cold water on the input side of the water heater. These systems could save 10% to 15% of energy use during high demand periods.

In the future biomass-pelletized fuel will be a sustainable, recycled energy source for home hot water heating and other home and community power needs. These systems are in extensive use in Europe now. These are highly efficient systems with very low to zero emissions. See <http://www.novator.se/bioint/bioint19/bioint19.pdf>

Water is a precious commodity and has a large energy component in its acquisition transporting and purification. We advocate low flow toilets, showerheads, and all the Energy Star appliances that have a much smaller water resource impact.

## **6. Exterior Landscape**

We recommend microclimate specific landscaping xeroscaping and natives for our Southern California environs. For fruit trees and gardens, composting, drip irrigation, night watering, rain sensors, and moisture level sensing are recommended. Integrated pest management and organic methods are recommended to reduce or eliminate carbon footprint from petrol products.

Pool heating and therapy pools can be heated very easily with solar thermal. The season can be extended by 1½ to 2 months. Efficient two-speed or variable speed pumps and designs including pool covers for heat, water, and chemical conservation is essential. Fountains and water features should be timed for daytime use nighttime off.

## **7. Interior and Exterior Lighting**

- a. Low impact high efficiency color corrected compact fluorescent lighting is recommended for general lighting and small area lighting outdoors.
- b. Ultra low impact led lighting system are recommended for architectural lighting, artwork, statuary, etc.

- c. Ultra low impact led lighting is recommended for outdoors and landscape lighting.
- d. Metal halide HID lighting is recommended for parking or large area lighting, sport court areas, etc.

## **8. Cooking and Food Preparation**

Use low impact gas and electric appliances that are Energy Star rated. Ceramic design, convection and advanced high efficient designs are recommended.

## **9. Solar PV Power**

Energy from the sun reaches the earth's surface in an abundance that is so great that it surpasses our entire annual electrical demand every second.

This raw energy is in part captured by living plants, which use the process of natural photosynthesis to convert that energy into usable power for their growth. Plants store much of that energy as oil seed and are sometimes harvested for the purpose of extracting the oil for use in human industry as ethanol and biodiesel.

Solar Photovoltaic power, PV, is an artificial way for humans to use the energy of the sun by converting it into electricity with solar panels and laminates.

The process of creating photovoltaic devices and installing them requires a significant upfront cost. By using Solar PV though, the owners are actually prepaying their electricity as a hedge against the staggering growth of cost in money, pollution, and green house emissions produced from electricity otherwise purchased off the grid.

With prop design, scale, and warranty, today's clean PV systems will displace those costs during the useful lifetime of the installation.

We know that the upfront monetary cost solar PV power can be brought down by scaling the amount of panels needed after energy efficient improvements are made in the property, which reduces the

amount of work the PV system will have to do. It is less expensive to reduce each watt of demand than it is to create a watt of generation.

### **10. Hybrid Plug in Vehicles- Alternate Fuels**

Hybrid plug in electric vehicles are an essential part of the global warming solution. This is especially true when plug-ins are charged by locally produced energy from Solar PV systems, which eliminates Global Warming gas emissions caused by fuels burned by the utilities to produce electricity on the grid.

The second essential part of this solution is use of locally produced alternative fuels such as biodiesel and ethanol from local recycled home cooking oils, local produce waste, recycled home waste etc.

Homes should be designed to anticipate these new applications.

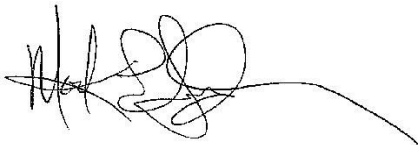
### **11. Recycling in the Home**

It is important to make the residences recycling friendly. Recycling home cooking oils, paper, plastic, compost green waste, and metals should have a sanitary simple drop style system this is advocated for all homes. This will lower impact on the sewerage system and landfill.

Disposal and reduction of solid waste is an important Global Warming solution.

Recycling of gray water, collecting it in a tank and oxygenating and recycling onto suitably acceptable plantings is a high value solution.

Sincerely,



**Mark E. Snyder**

- Master Electrician
- Alternative Energy Expert
- Energy Systems Consultant
- Energy Efficiency Expert
- Fire Investigation Expert
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