

## Press Release

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**Subject:** *WaterSmart Environmental, Inc.* announces its intention to construct **SuperGreen™** Homes and Larger Buildings. In carrying out its intention the company has formed *WaterSmart Realty*, A Division of WaterSmart Environmental, Inc.

*WaterSmart Environmental, Inc.* announces its intention to enter the real estate business having formed *WaterSmart Realty*, A Division of WaterSmart Environmental, Inc. The realty division will become active at each of the company's waste-to-energy project sites. Each of the project sites provide **renewable energy, biofuels, organic foods, and water independence technology**. The buildings will be very strong since they will be built using precast concrete panels. Small buildings will be **SuperGreen™** since they will be using renewable energy and renewable natural gas for their electricity and appliances. Very large buildings will also be **SuperGreen™** by generating their own energy and fuels. Very large buildings can be retrofitted to become **SuperGreen™** by adding specific equipment to their roof and/or their basement. The waste-to-energy project sites engage in total recycling of all byproducts. The byproducts end up as aggregate in the manufacture of precast concrete panels and precast concrete piping. The very inexpensive concrete panels and concrete piping will be used in the construction of both small and very large buildings. **The marketplace price of the SuperGreen™ real estate is estimated at 1/3 that of existing marketplace pricing. Attached WSE Publication No. 1598 provides more details on SuperGreen™ construction. Widespread use of the technology carries with it the potential for contributing substantially to the reversing of global warming.**

WaterSmart Environmental is marketing its Kyoto Protocol compliant wastes-to-energy technology on an economic development platform to concentrated animal feeding operators and to municipalities. Animal farmers benefit by purchasing biodiesel, electricity, and natural gas (methane) at a 20% discount from retail. Municipalities also benefit by making biodiesel, electricity, natural gas, and potable water available to its citizens and businesses at a 20% discount from existing prices. The technology is marketed on a build-own-operate basis thereby eliminating the necessity for local sales and property tax increases since project financing is entirely secured from the financial marketplace. Municipalities that embrace the waste-to-energy technology automatically become zero waste-to-landfill communities. The waste-to-renewable energy technology has been slowly developed over the last 10 years. It is just now being introduced to the international marketplace. The technology has the clear potential for making every single city throughout the world energy and fuels independent while reducing oil and natural gas imports. The technology will also permit every single city throughout the world to improve water and wastewater treatment infrastructure while creating jobs and investment opportunities. The waste-to-energy technology can also be applied to Sugar Cane Mills as well as Pulp & Paper Mills with equal success. Both types of mills become energy, food, fuels,

and water independent while significantly increasing profits from routine operations. In the case of Sugar Cane Mills temporary and seasonal jobs turn into full time better paying jobs.

**WaterSmart Environmental, Inc.** is a provider of waste-to-energy, food independence, water independence, and energy independence technologies and a manufacturer of highly engineered water purification components and systems. The company designs and builds a wide variety of water treatment equipment including packaged water and wastewater treatment plants, UltraPac™ aerobic package plants, OAT™ Process anaerobic digesters with associated energy production, aerators, filters, PuriSep™ and SmartWater™ oil/water and solids/liquids separators, RainDrain™ perimeter trench sand filters for stormwater runoff, dissolved air flotation separators, air strippers, complete skid assembled aqueous waste treatment plants, FilterFresh™ skid mounted potable water production plants, skid mounted wastewater treatment systems for laundromats, commercial laundries, and car/truck wash facilities with water reclamation and reuse, softeners, demineralizers, activated carbon treatment equipment, and water purifiers for domestic and international markets.

*Worldwide Promoters of Renewable Energy, Organic Foods, Biofuels,  
& Water Independence Technologies by and for the Common Man*



# Engineering Data Sheet

6255

## Process: Zero Greenhouse Gas (GHG) Emissions from SuperGreen™ Buildings

### Building History

Buildings account for over one third (1/3) of global energy use and associated greenhouse gas emissions worldwide. Reducing energy use by buildings is therefore an essential part of any strategy to reduce greenhouse gas emissions, and thereby lessen the likelihood of potentially catastrophic climate change. The buildings in which we live, work, and play protect us from Nature's extremes, yet they also affect our health and environment in countless ways. The design, construction, operation, maintenance, and removal of buildings takes enormous amounts of energy, water, and materials, and generates large quantities of waste, air and water pollution, as well as creating stormwater runoff and heat islands. Buildings also develop their own indoor environments, which present an array of health challenges. Where and how they are built affects wildlife habitat and corridors and the hydrologic cycle, while influencing the overall quality of human life.

As the environmental impact of buildings becomes more apparent, a new field called **green building** is gaining momentum. Green or sustainable building is the practice of creating healthier and more resource-efficient models of construction, renovation, operation, maintenance, and demolition. Research and experience increasingly demonstrate that when buildings are designed and operated with their lifecycle impacts in mind, they can provide great environmental, economic, and social benefits.

### Elements of green building include

1. Energy Efficiency and Renewable Energy
2. Water Stewardship
3. Environmentally Preferable Building Materials and Specifications
4. Waste Reduction
5. Toxics Management
6. Indoor Environment
7. Smart Growth and Sustainable Development

### What Makes a Building Green?

A green building, also known as a sustainable building, is a structure that is designed, built, renovated, operated, or reused in an ecological and resource-efficient

manner. Green buildings are designed to meet certain objectives such as protecting occupant health; improving employee productivity; using energy, water, and other resources more efficiently; and reducing the overall impact to the environment.

### What Are the Economic Benefits of Green Buildings?

A green building may cost more up front, but saves through lower operating costs over the life of the building. The green building approach applies a project life cycle cost analysis for determining the appropriate up-front expenditure. This analytical method calculates costs over the useful life of the asset.

These and other cost savings can only be fully realized when they are incorporated at the project's conceptual design phase with the assistance of an integrated team of professionals. The integrated systems approach ensures that the building is designed as one system rather than a collection of stand-alone systems.

Some benefits, such as improving occupant health, comfort, productivity, reducing pollution and landfill waste are not easily quantified. Consequently, they are not adequately considered in cost analysis. For this reason, consider setting aside a small portion of the building budget to cover differential costs associated with less tangible green building benefits or to cover the cost of researching and analyzing green building options.

Even with a tight budget, many green building measures can be incorporated with minimal or zero increased up-front costs and they can yield enormous savings (Environmental Building News, 1999).

### What Are the Elements of Green Buildings?

Below is a sampling of green building practices.

#### Siting

1. Start by selecting a site well suited to take advantage of mass transit.
2. Protect and retain existing landscaping and natural features. Select plants that have low water and pesticide needs, and generate minimum plant trimmings. Use compost and mulches. This will save water and time.

3. Recycled content paving materials, furnishings, and mulches help close the recycling loop.

### Energy Efficiency

Most buildings can reach energy efficiency levels far beyond California Title 24 standards, yet most only strive to meet the standard. It is reasonable to strive for 40 percent less energy than Title 24 standards. The following strategies contribute to this goal.

1. Passive design strategies can dramatically affect building energy performance. These measures include building shape and orientation, passive solar design, and the use of natural lighting.
2. Develop strategies to provide natural lighting. Studies have shown that it has a positive impact on productivity and well being.
3. Install high-efficiency lighting systems with advanced lighting controls. Include motion sensors tied to dimmable lighting controls. Task lighting reduces general overhead light levels.
4. Use a properly sized and energy-efficient heat/cooling system in conjunction with a thermally efficient building shell. Maximize light colors for roofing and wall finish materials; install high R-value wall and ceiling insulation; and use minimal glass on east and west exposures.
5. Minimize the electric loads from lighting, equipment, and appliances.
6. Consider alternative energy sources such as photovoltaics and fuel cells that are now available in new products and applications. Renewable energy sources provide a great symbol of emerging technologies for the future.
7. Computer modeling is an extremely useful tool in optimizing design of electrical and mechanical systems and the building shell.

### Materials Efficiency

1. Select sustainable construction materials and products by evaluating several characteristics such as reused and recycled content, zero or low off gassing of harmful air emissions, zero or low toxicity, sustainably harvested materials, high recyclability, durability, longevity, and local production. Such products promote resource conservation and efficiency. Using recycled-content products also helps develop markets for recycled materials that are being diverted from California's landfills, as mandated by the Integrated Waste Management Act.

2. Use dimensional planning and other material efficiency strategies. These strategies reduce the amount of building materials needed and cut construction costs. For example, design rooms on 4-foot multiples to conform to standard-sized wallboard and plywood sheets.

3. Reuse and recycle construction and demolition materials. For example, using inert demolition materials as a base course for a parking lot keeps materials out of landfills and costs less.

4. Require plans for managing materials through deconstruction, demolition, and construction.

5. Design with adequate space to facilitate recycling collection and to incorporate a solid waste management program that prevents waste generation.

### 6. Water Efficiency

- Design for dual plumbing to use recycled water for toilet flushing or a gray water system that recovers rainwater or other nonpotable water for site irrigation.
- Minimize wastewater by using ultra low-flush toilets, low-flow shower heads, and other water conserving fixtures.

7. Use recirculating systems for centralized hot water distribution.

8. Install point-of-use hot water heating systems for more distant locations.

9. Use a water budget approach that schedules irrigation using the California Irrigation Management Information System data for landscaping.

10. Meter the landscape separately from buildings. Use micro-irrigation (which excludes sprinklers and high-pressure sprayers) to supply water in nonturf areas.

11. Use state-of-the-art irrigation controllers and self-closing nozzles on hoses.

### Occupant Health and Safety

Recent studies reveal that buildings with good overall environmental quality can reduce the rate of respiratory disease, allergy, asthma, sick building symptoms, and enhance worker performance. The potential financial benefits of improving indoor environments exceed costs by a factor of 8 and 14 ([Fisk and Rosenfeld, 1998](#)).

Choose construction materials and interior finish products with zero or low emissions to improve indoor air

quality. Many building materials and cleaning or maintenance products emit toxic gases, such as volatile organic compounds (VOC) and formaldehyde. These gases can have a detrimental impact on occupants' health and productivity.

Provide adequate ventilation and a high-efficiency, induct filtration system. Heating and cooling systems that ensure adequate ventilation and proper filtration can have a dramatic and positive impact on indoor air quality. Prevent indoor microbial contamination through selection of materials resistant to microbial growth, provide effective drainage from the roof and surrounding landscape, install adequate ventilation in bathrooms, allow proper drainage of air-conditioning coils, and design other building systems to control humidity.

### Building Operation and Maintenance

Green building measures cannot achieve their goals unless they work as intended. Building commissioning includes testing and adjusting the mechanical, electrical, and plumbing systems to ensure that all equipment meets design criteria. It also includes instructing the staff on the operation and maintenance of equipment.

Over time, building performance can be assured through measurement, adjustment, and upgrading. Proper maintenance ensures that a building continues to perform as designed and commissioned.

In March of this year world famous Lafarge Group and United Technologies formed a worldwide alliance to achieve buildings energy self sufficiency by the year 2050. This distant date can be accelerated to the year 2007 since the basic energy self sufficiency technology has already been identified. Please refer to attached WSE Engineering Drawing No. S-1598.

Buildings today account for 40 percent of energy consumption in developed countries. The goal of the Lafarge-United Technologies alliance was to achieve energy self sufficiency by the year 2050. By self sufficiency is meant the consumption of net zero energy from external power supplies. Another objective of the building alliance was to produce zero net carbon dioxide emissions. Energy self sufficiency technology has already been achieved in hundreds of buildings throughout the world as distributed natural gas enables buildings to generate their own power supply. The exhaust from power generation equipment, however, always contains carbon dioxide and NOx gases. In the WaterSmart Environmental wastes-to-energy program carbon dioxide and NOx gases are beneficially used simultaneously to produce microalgae through photosynthesis. The microalgae, in turn, are converted in biodiesel fuel while the biodiesel refining waste products are recycled and thereby converted into methane gas.

The **WaterSmart Environmental** technologies are designed to have zero carbon dioxide emissions to fully comply with the Kyoto Protocol on Climate Change. The **WaterSmart Environmental** technologies include the production of both **natural gas** and **biodiesel** fuels, both of which can be used for heating buildings, for boiler fuel, for steam production, for automotive fuel, for truck fuel, and to generate electricity. Producing fuels at the building location itself eliminates the necessity to hook up a natural gas supply line. Buildings may therefore be built in remote locations without regard to the availability of natural gas pipelines, electricity power, sewage treatment plants, or landfills making them totally energy and waste management self sufficient. Solid and liquid wastes produced within each building are processed in the same manner as the biodiesel refining waste products. The buildings therefore produce no wastes that require landfill disposal. The identical technology can be used to produce self-powered trains and ships that discharge zero carbon dioxide in full compliance with Kyoto Protocol.

The technology also produces potable water that, in turn, theoretically makes the building water self sufficient. The recycling of wastewater to potable water is still unacceptable from a public perception standpoint and consequently will not be practiced. Either a potable water line to the building or developing a well will have to occur. The excess water could, however, be bottled and successfully sold as bottled water as the source of the water itself needs not be identified, only its quality. **The produced bottled water would be the only bottled water in the world that would be both purified and sterile thus obviating the need for storage in cool places carrying an unlimited shelf life.** With ever increasing energy, fuel, waste disposal, and water treatment costs green buildings that are constructed or converted using this technology should become far easier to finance since operational costs are always an integral consideration of project financing. Buildings so constructed or converted become eligible for renewable energy credits thereby decreasing operating costs even further.

The **WaterSmart Environmental** technology was carefully developed over a several year period to totally eliminate all greenhouse gas emissions to the environment. **It is the only waste-to-energy technology available worldwide to have eliminated all greenhouse gas emissions.** The energy created is called **Renewable Energy** since the electricity is always created from renewable wastes. **WaterSmart** has developed Kyoto Protocol compliant energy independence wastes-to-renewable energy designs for cities&counties, cars, trucks, jet airplanes, trains, barges, ocean ships, pulp&paper plants, sugarcane mills, and also concentrated animal feeding operations. Its comprehensive worldwide waste-to-energy program was commercialized in January of this year. Upwards of fifty (50) early stage

waste-to-renewable energy projects now exist in Argentina, Bolivia, Mexico, and Panama. Its main marketplace objectives are economic development coupled with massive jobs creation in full compliance with Kyoto Protocol. The first project scheduled for completion by the summer of 2007 is located at Dalmacio Vélez Sársfield, Argentina.

The **Kyoto Protocol** is an international agreement, negotiated in December 1997, by which industrialized nations have committed to making substantial reductions in their emissions of greenhouse gases by 2012. A total of 155 countries have committed to the agreement thus far. There is a strong likelihood that Kyoto will be extended beyond 2012 as marketplace talks are now underway.

The first observation that human activities contribute to the greenhouse effect was made one hundred years ago by Swedish scientist Svante Arrhenius. In the late 1950s, measurements made at the Mauna Loa Observatory in Hawaii recorded an increase in carbon dioxide concentrations in the atmosphere.

Efforts to obtain international agreement on addressing human contributions to global greenhouse gases began many decades ago. In 1979, the World Meteorological Office, the United Nations Environment Programme, and the International Council for Science held the first World Climate Conference in Geneva to address the question of the potential role of human sources of carbon dioxide and other greenhouse gases in inducing global climate changes. In 1988, the United Nations Intergovernmental Panel of Climate Change (IPCC) established three scientific working groups to study the problem. The IPCC's First Assessment report in 1990, based on the findings of its three working groups, concluded that there was evidence that emissions from human sources were enhancing the greenhouse effect.

In response to this report, the United Nations General Assembly launched a negotiating process to establish an

agreement among industrialized nations to act to reduce their emissions of greenhouse gases. In 1992, the United Nations Framework Convention on Climate Change was adopted. The nations who signed the convention agreed to develop national inventories of greenhouse gas emissions, establish national programs to reduce emissions, and mitigate climate change.

Should WaterSmart's **SuperGreen™** buildings technology become dominant in the worldwide marketplace they will have a quite positive impact on climate change. The **SuperGreen™** technology is being marketed on a build-own-operate basis thus eliminating capital cost requirements for its use in either new construction or existing building conversions. It is ideal for high rise apartments, discount stores, malls, and especially hospitals since they use more energy per square foot than all other dedicated use buildings. One very large international discount store chain called **Wal-Mart** has indicated its marketplace interest in green buildings. You can be sure that if Wal-Mart has an interest in any particular technology it is because it will enhance their "**Always Low Prices Always**" discount policy.

Over 800 pages of wastes-to-renewable energy technical information is available at WaterSmart's Website with URL address [www.watersmart.com](http://www.watersmart.com). The availability of **SuperGreen™** Building Technology will be announced to the world early next year in the prestigious *The Bulletin on Energy Efficiency* published by Winrock International India.

The Chemists, Engineers, Environmentalists, Constructors, Builders, and Scientists, at **WaterSmart Environmental, Inc.** welcome your inquiries with enthusiasm.

From the Engineering Department of  
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