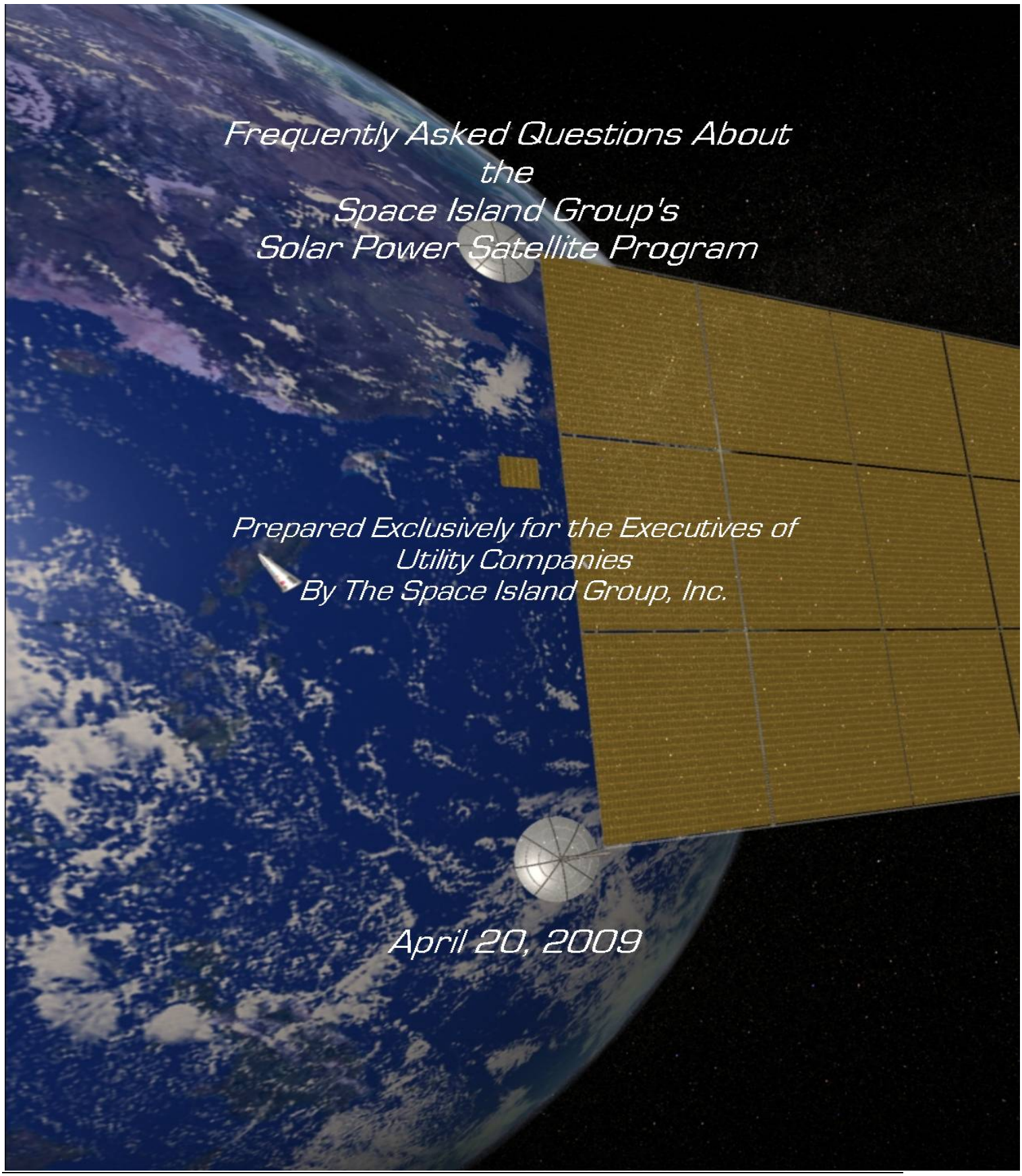


Frequently Asked Questions About the Space Island Group's Solar Power Satellite Program

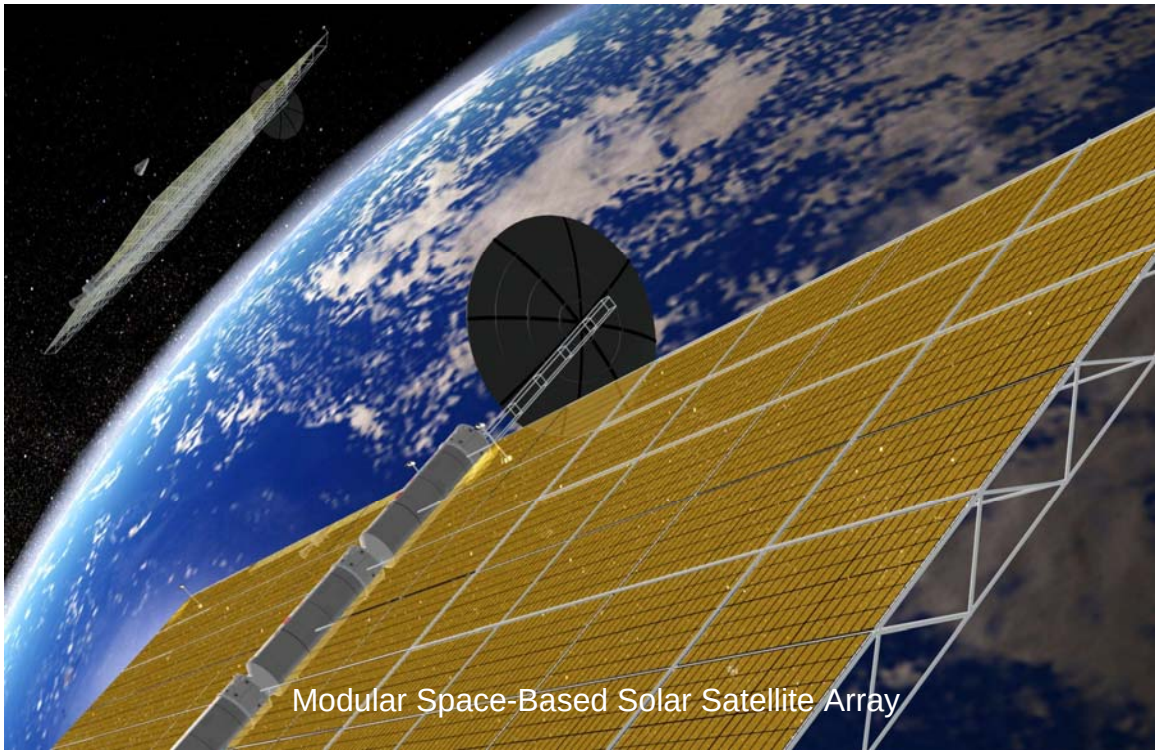
Prepared Exclusively for the Executives of Utility Companies
By The Space Island Group, Inc.

April 20, 2009

Space Based Solar Power Satellites

What are Solar Power Satellites?

Solar sats are essentially extremely large, but simpler version of communications satellites that have been in use for 40 years.



Several solar sat designs have been studied but the simplest consists of an enormous span of solar cells that convert sunlight into electricity, and an onboard core that converts that electricity into very weak, cell phone-like microwave beams that are transmitted down to equally large receiving antennas on Earth.

The mesh-like antennas on the ground convert the beams back into DC electricity. If the antennas are on the rooftops of large industrial facilities like cement plants or aluminum smelters the DC electricity can be used directly by equipment in those plants. If not, equipment on the antennas can convert it into AC power and feed it into a standard electrical grid.

In round numbers a solar satellite system able to provide 1,000 megawatts of output from the ground antenna will require a 1-square mile span of solar cells in orbit and a 1-square mile antenna on the ground.

These ground receiving stations are safe enough to allow a wide variety of businesses to be conducted under them. The energy produced can be used to draw water from deep wells to permit farming, fish farms, nurseries, water storage and for many other uses.

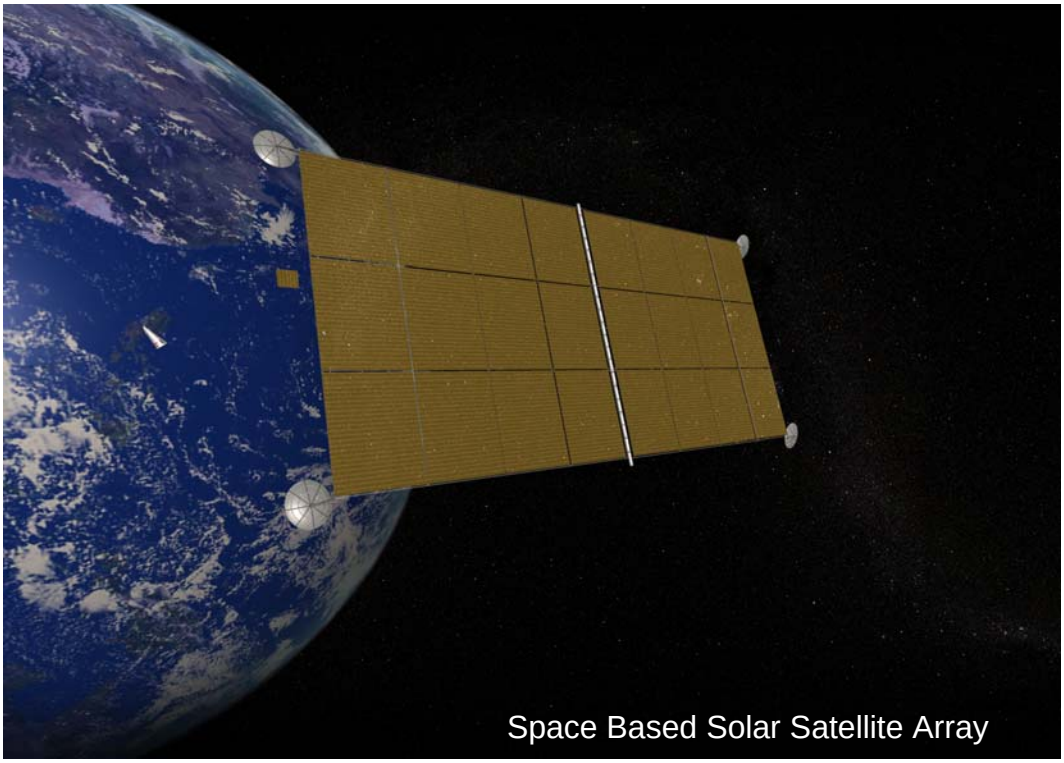
Will newly developed components be needed?

No. Virtually all components needed to build solar sats are now in production for communications and military satellites, although solar sats will eventually need 100 to 1,000 times the current production quantities.

What are their advantages over desert solar installations and wind?

One of the most attractive is that their weak microwave transmissions come down *24 hours per day / 7 days per week / 365 days per year,* compared to the intermittent nature of ground-based solar or wind generators.

Solar sats will orbit 22,000 miles above the equator, where most communications satellites operate. At that altitude they match the speed of the Earth's rotation, which allows the 24/7 transmissions. When they are "behind" the Earth from the sun (over the night side of the Earth), the tilt of the Earth on its axis and their distance from the Earth means they are still in sunlight.



Space Based Solar Satellite Array

The transmission frequency (2.45 or 5.8 GHz) passes through clouds uninterrupted, which adds to their *24/7* capability.

Solar cells in orbit are constantly bathed in 1,400 watts of solar energy per square meter. Five hundred watts of this total will reach the ground antennas every single hour.

On Earth, because of the day/night cycle, sand and rain storms, variations in the angle of the cells and other factors, an average of only 250 watts hits the cells every 24 hours. Up to forty times as much solar satellite energy will be fed into the grid every 24 hours.

Ground-based solar shortcomings can be overcome with solar tracking systems or night time storage systems, but at very substantial costs.

Are There Other Advantages?

No fossil or nuclear fuel waste issues.

No generating cost fluctuations caused by fuel shortages.

Reduced grid transmission costs because the antennas can be located near major cities.

Virtually no maintenance cost for the receiving antennas.

In developing nations, antennas can be set in remote locations far from power grids or ground-based power plants.

Have Safety Tests Been Done on the Transmissions Before Now?

Yes. Extensive, very long duration plant and animal tests have been done in laboratories by the Air Force, NASA and space agencies in India, China and Europe. The reason the antennas are so large is that the beams are intentionally wide and weak for safety reasons.

Why Haven't Solar Sats Been Built in Orbit Until Now?

The single hurdle is the economics of launching them.

Based on estimates we have gotten from several aerospace firms, the total cost of mass producing all the solar sat components (including the cells, the guidance and transmitting equipment) works out to about $2,000 per pound. It takes about 2 pounds of these components to generate and transmit 1 kilowatt of electricity to the antenna.

But it costs $10,000 to $20,000 per pound to get these components up to this 22,000 mile altitude. Launching robot assemblers controlled from Earth to put these components together nearly double this cost. Launching and housing astronauts in orbit to do this assembly would double it again.

Solar satellites can physically be built, but at the above costs their electricity would have to sell for $5 per kWh to even approach breakeven.

The most recent government study defining the dramatic advantages and launch challenges of solar satellites was prepared by the Pentagon in October of 2007. It can be seen at;

http://www.nss.org/settlement/ssp/library/nsso.htm

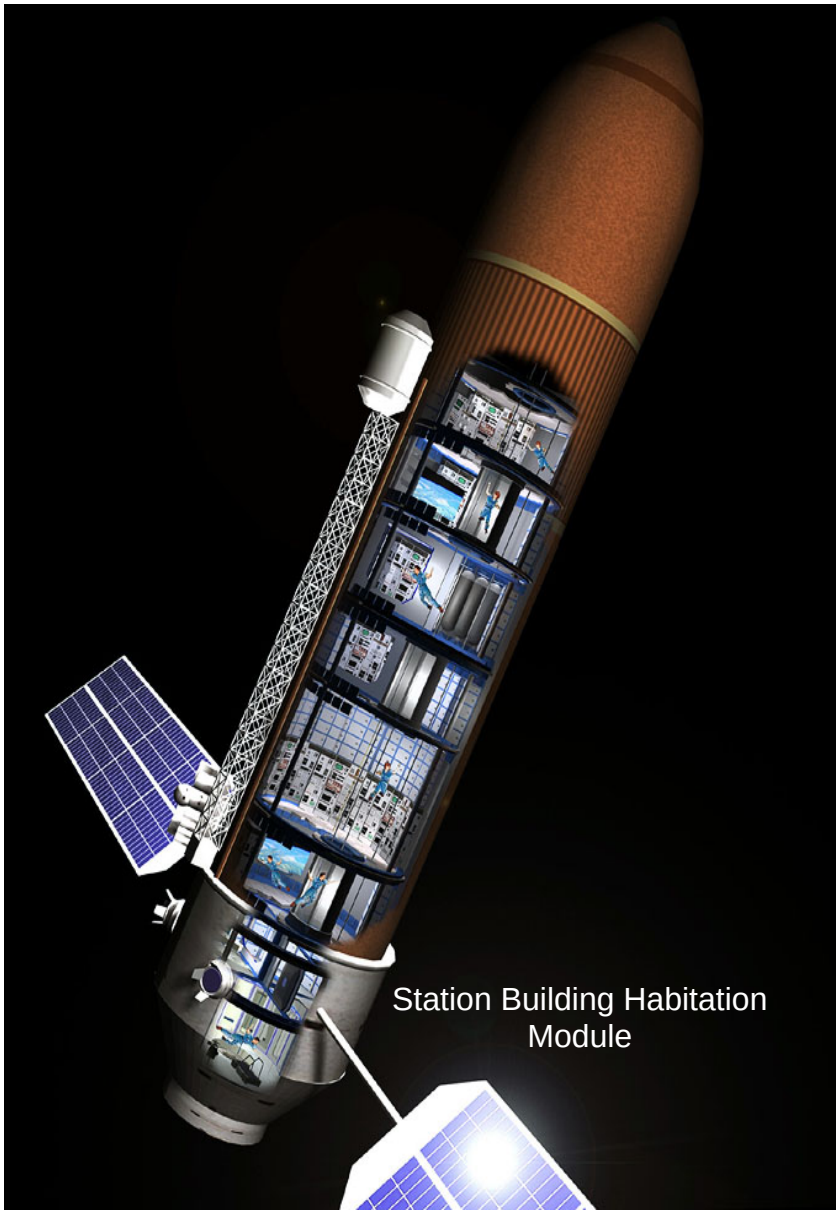
Space Island Modular Launch Vehicle

So What's the Space Island Launch Solution?

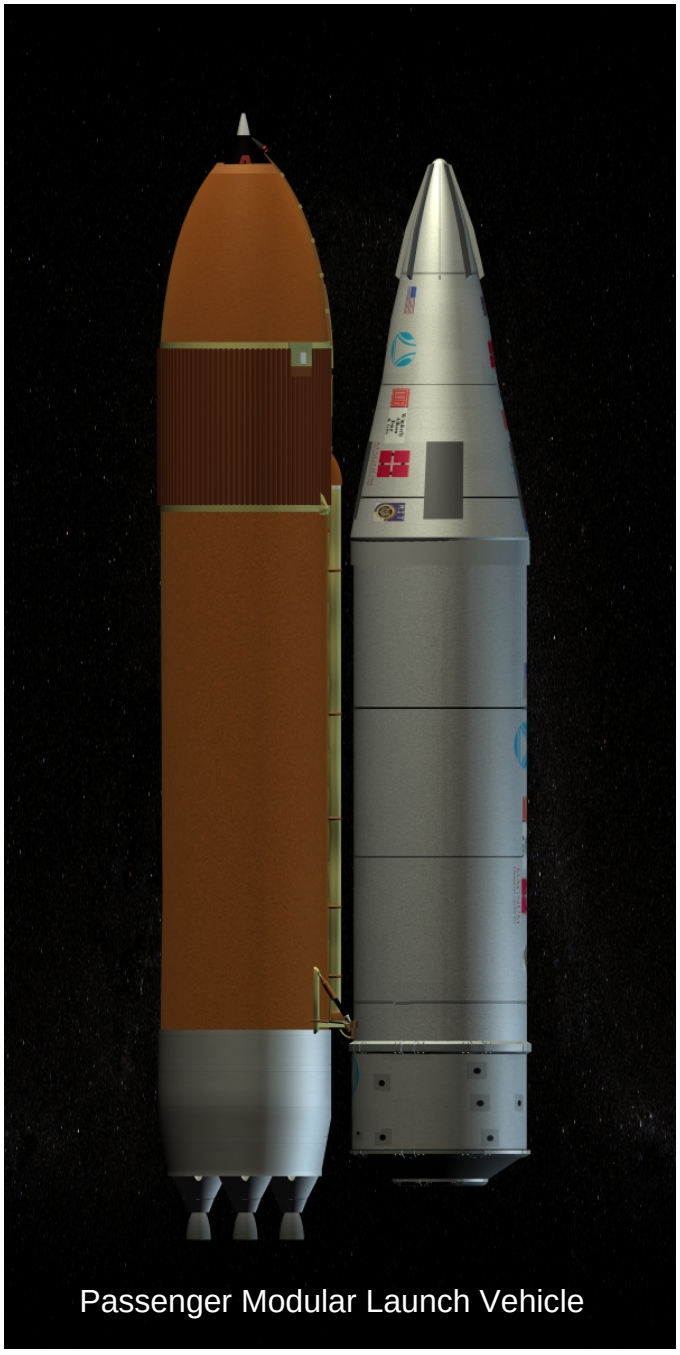
Launch costs for all satellites are high because the launch rockets are destroyed when their cargo is delivered. The rocket's cost is then added to the satellite. (Most of the "space debris" you read about are exploded rocket engines and fuel tanks left over after their satellites are released.)

We have developed and patented a launch rocket built from the engines and fuel tanks now used for NASA's space shuttles. The launcher is basically 2 of the space shuttle's huge, orange fuel tanks joined side by side with shuttle engines and booster rockets attached. (The shuttle uses one of these fuel tanks on each launch.)

When these rockets release the solar sat components, their 747-sized fuel tanks will stay in orbit intact. We will outfit the interiors of these fuel tanks (when their odorless fuel is gone) as living quarters, factories and research centers, and lease them to a wide range of tenants who may have nothing to do with the solar sats. These hollow, empty, extremely strong tanks will become commercial space stations.

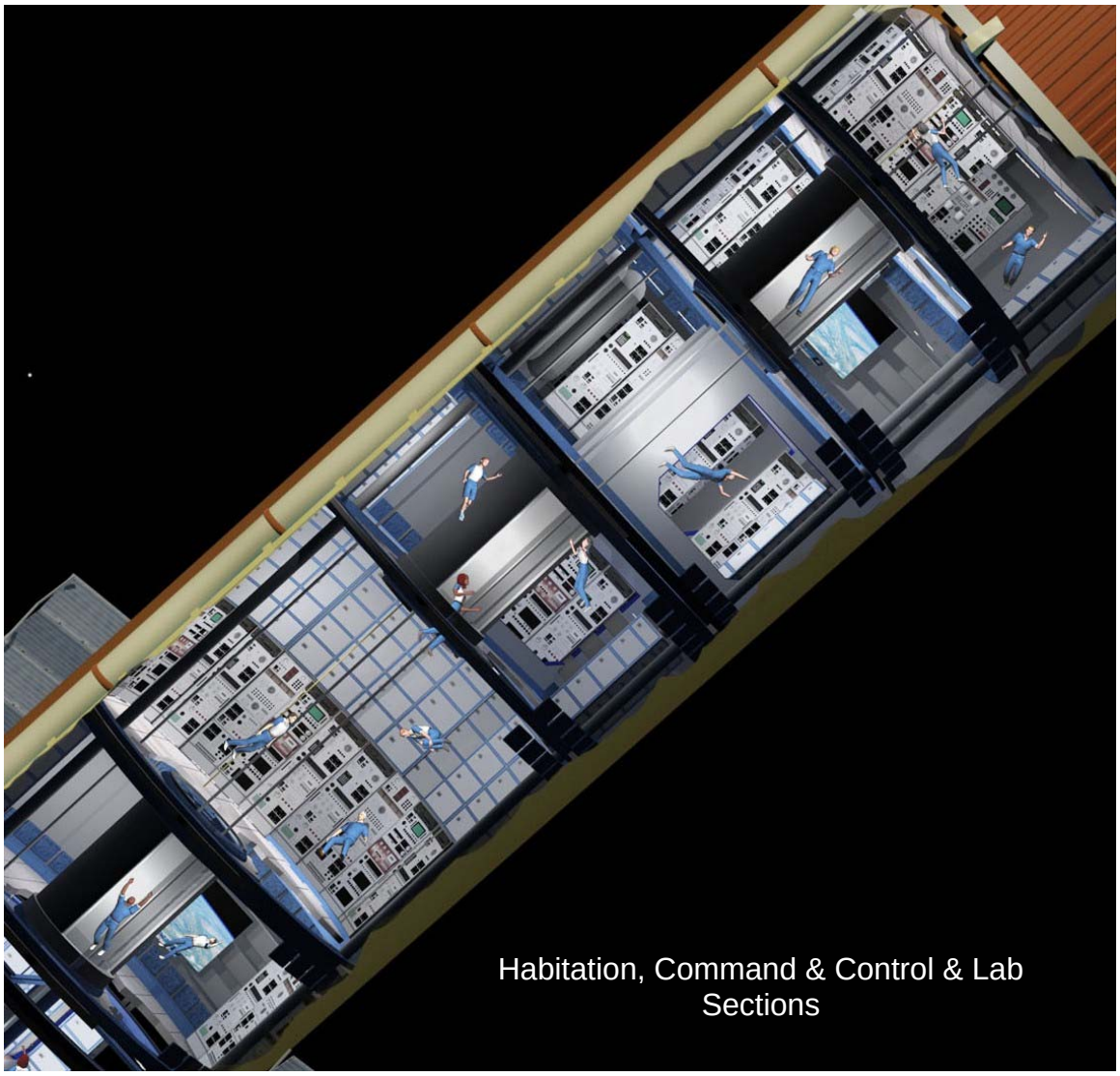


On some launches these rockets will carry a 24-passenger capsule up to the stations. The capsule will be able to return the passengers to the Florida launch site later under its own power.



Passenger Modular Launch Vehicle

We will retain part of the interiors to house our own crews, who will assemble the solar sats. The revenues from these tenants will allow us to recover our launch costs without adding those costs to the solar satellites. The leases will also cover the cost of housing our crews in orbit.



Habitation, Command & Control & Lab Sections

Details of the convertible launch rockets and the stations we will build from them can be seen at:

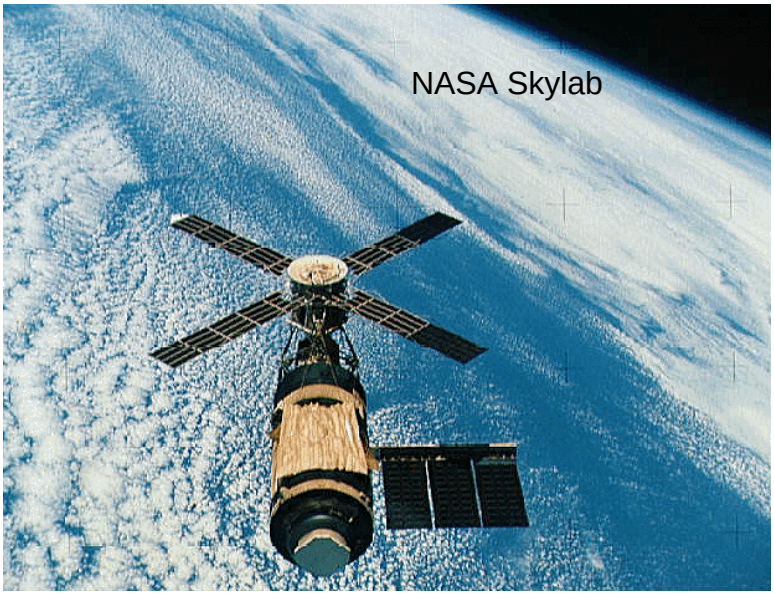
www.spaceislandgroup.com/dual-launch.html

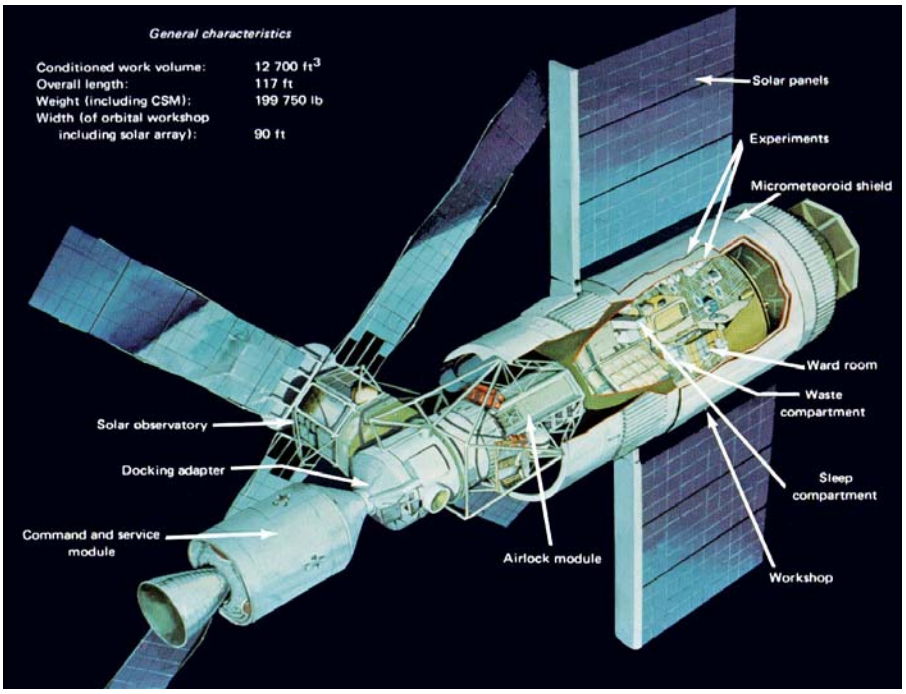
The tenant rates we will charge are at:

www.spaceislandgroup.com/stationrates.html

Isn't This A Radically New, High-risk Approach?

No. In 1973 NASA launched their Skylab space station, which was built inside an empty rocket fuel tank from the Apollo program. NASA itself developed designs for converting the shuttle's fuel tank into a space station when its fuel was gone. They didn't implement the program because of budget constraints.





In 1995 NASA also designed and prototyped the passenger capsule we will build. It was called the Delta Clipper, or DC-X.

Prototype Delta Clipper DC-X

Why Isn't NASA Building These Stations and Solar Sats?

NASA isn't permitted to operate commercial businesses in space, but they will help us with technical or engineering issues. The shuttle program is scheduled to end next year, so the aerospace companies that build the shuttle's engines, fuel tanks and other components are eager to work with us.

Solar Satellite Demonstrator

Has a Solar Sat Demonstrator Ever Been Tested in Orbit?

No. The transmitters and receivers have been tested on the ground since the 1970s, and the Japanese have transmitted the beams from high altitude balloons.

In the early 2000s Mitsubishi developed a solar sat design and asked the Japanese government to fund its construction and launch. The government asked what the eventual cost of the electricity from orbit would be, and Mitsubishi had to explain that the launch costs would make it extremely expensive. Because of this cost, the government refused to fund the effort.

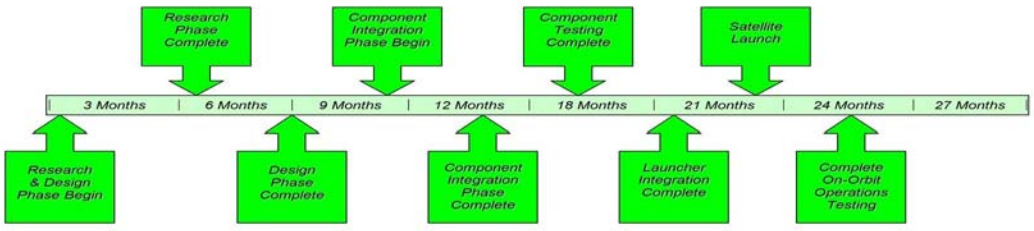
Our management team met with Mitsubishi in Tokyo about our approach to eliminating these launch costs a couple of years ago. They were very impressed, and sent us a letter stating that ours was the most practical idea they have seen. That letter is attached at the end of this document.

Does the Space Island Group Plan to Launch a Demonstrator?

Yes. We've presented our solar sat concept to energy companies in the U.S. and energy ministers in India, China, Canada and Europe over the last 2 years. They were all taken with the ground-based tests that have been done so far, but all asked to see a demonstration of energy transmitted down from orbit next year.

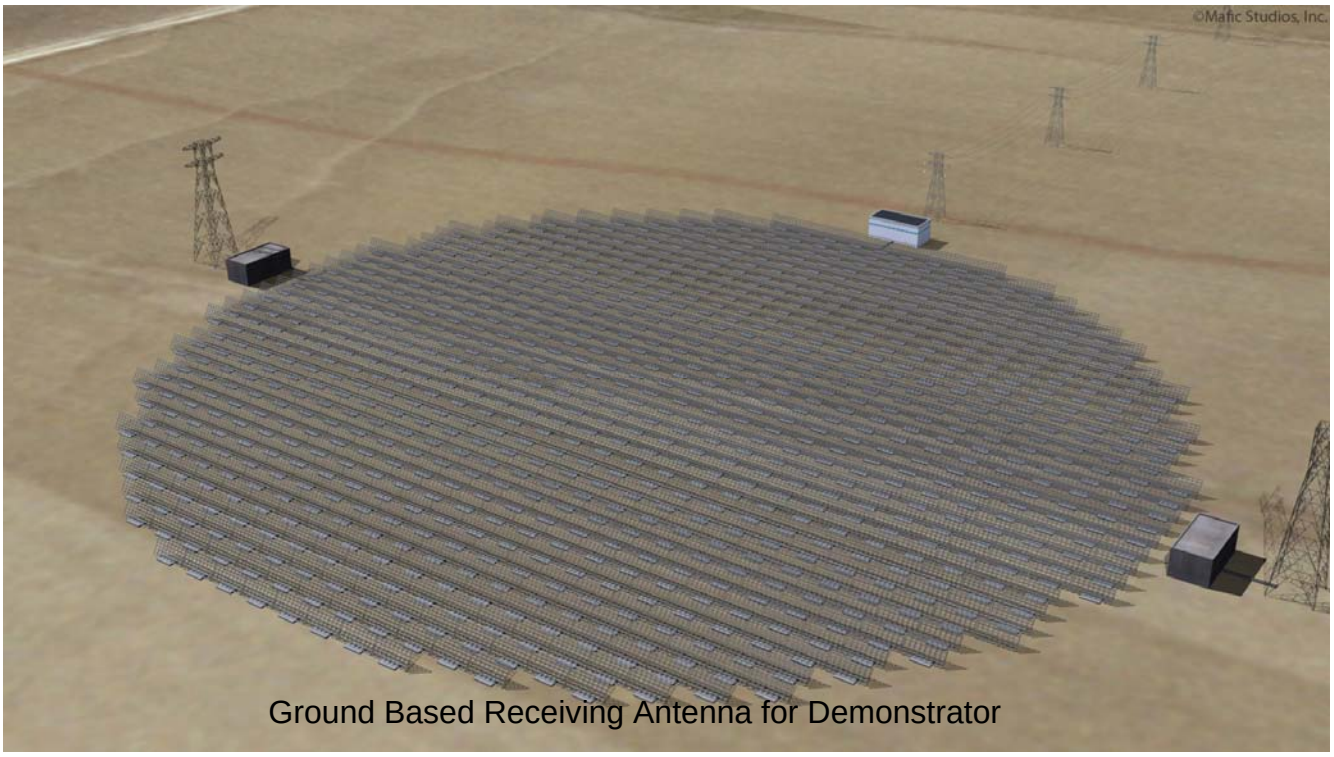
The satellite engineers we've met with at NASA, Raytheon, Lockheed and other aerospace firms suggested a small satellite in low orbit (300 miles up) that would send down a few milliwatts to an antenna on the ground briefly as it passed overhead every few hours. We told them that our potential clients needed to see at least a few dozen kilowatts, and they said that could be done.

Since the demo satellite will circle the entire Earth, we are pursuing international participants. This is what the demonstration will entail.



Solar Satellite Demonstrator Development Timeline

Beginning this summer we will build, with great media fanfare, 2 to 4 dozen demo receiving antennas the size of 4 football fields in the U.S. and overseas. Our PR group will portray participating utility companies, U.S. states and overseas countries as leading the planet into a new era of clean, safe energy for the 21st Century.

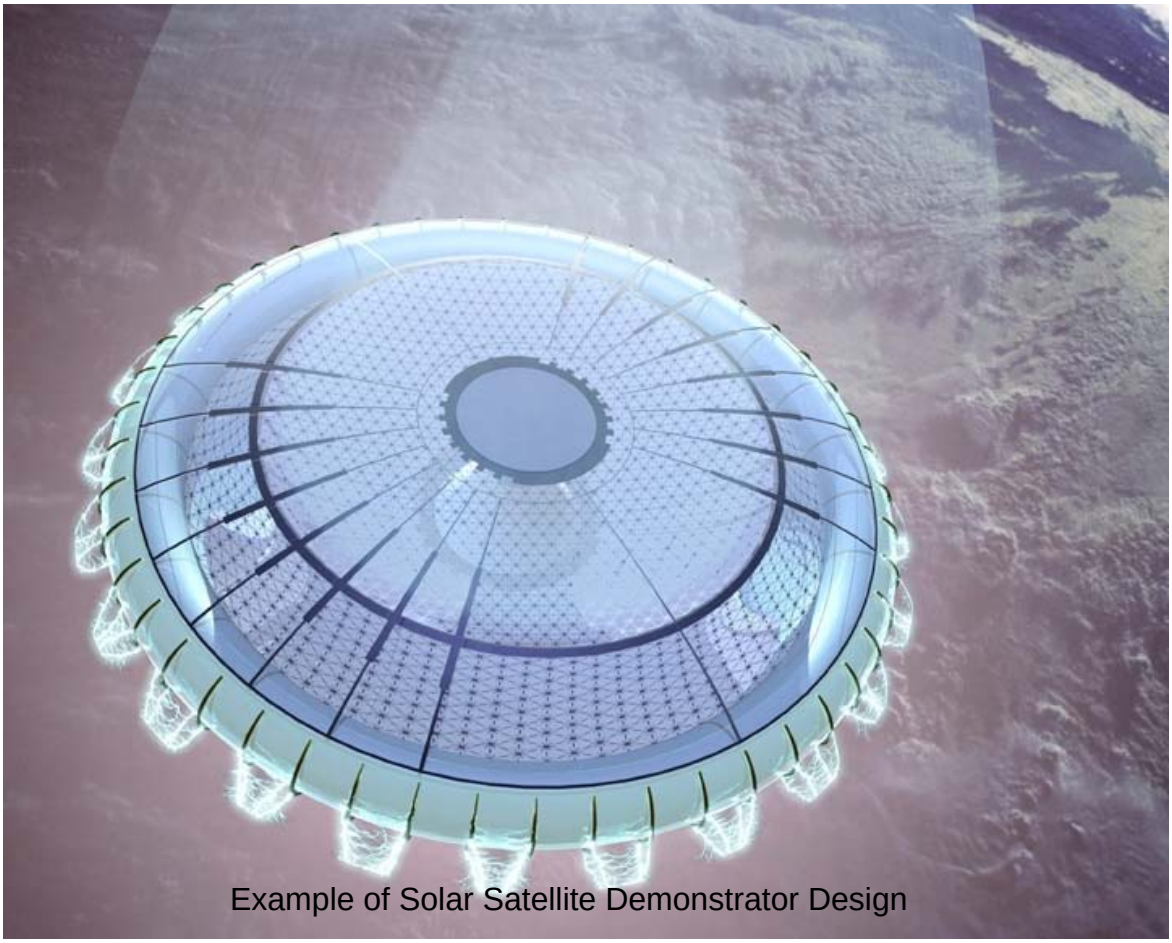


Ground Based Receiving Antenna for Demonstrator

Early next year we will begin testing these antennas with energy transmissions from aircraft and high altitude balloons.

In the fall of 2010 at least 2 demo solar sats will be launched (on throwaway rockets) 300 miles above the Earth. The satellites will transmit several dozen kilowatts down to the antennas every few hours as they pass overhead.

(They'll orbit every 90 minutes, but they won't be able to hit every antenna on every orbit.)



Example of Solar Satellite Demonstrator Design

The intensity of the transmissions will vary as part of the test. Lights surrounding the antennas will be lit as the satellites pass overhead at night. Overseas participants will be able to replace part or our entire first antenna with locally produced versions as a possible job generator for their nation.

This test phase will last at least 2 years. During that time the antennas will be evaluated for their ability to withstand local weather extremes such as hurricanes, sand storms, heavy rain or snow, flooding, etc.

By the fall of 2012 we will be ready to launch our first "convertible" rockets which will house our satellite assembly crews in low orbit. The following year the crew will assemble the first of our larger 1,000 megawatt solar sats in low orbit.

After it’s tested near the station, electric ion engines (now built by Boeing and others for NASA) will slowly boost the satellite to its operational orbit 22,000 miles above the Earth. This boost will take 2-3 months. The solar satellite will begin commercial operations in 2015.

Will The Demo Solar Sats Deliver Commercially Usable Energy?

No. Their purpose will be to allow local technical and environmental evaluation of the beam's safety, coverage, intensity and to check the antenna's durability under variable weather conditions.

The demo's political and economic benefit may be the most powerful. Our international media blitz will showcase the visionary leaders of the utility companies, U.S. states and overseas nations who support this worldwide, futuristic demonstration.

How Much Will the Demo Cost?

About $1 billion. We expect to have at least 20 utility companies, U.S. states and overseas nations participate for a fee of $50 million each. For this amount we will build a receiving antenna and AC/DC converting equipment on their property, program the satellites to send the transmissions down to their location and provide and technical assistance they request.

Is Federal Assistance Available to Cover This $50 Million?

It’s very likely.

We recently approached the new DOE Secretary about this option. The project meets President Obama's goals of job retention and generation (especially in aerospace when the shuttles stop flying next year), and the development of exclusively American clean energy sources that can be exported around the world.

Because of America's shuttle program, no other nation on Earth has the convertible rocket technology needed to make the economics of solar satellites practical. India, China and Europe won't have this capability for at least 25 years. Russia had it 20 years ago, but their aerospace capabilities have greatly deteriorated since then. Beyond that, their economic future is based on fossil fuels.

What Could Utility Companies Role Be In This Effort?

If Utility Companies joined us as the first potential demo participant we could launch our media campaign in June. This would attract other U.S. and overseas utility companies this summer. It's possible that the $50 million fee could be considered as a marketing expense, or Utility Companies and other participants could request a ½ of 1% rate increase for 6 months to recover it from its ratepayers.

If this last option was publicized, it's very likely that congressional pressure would build for the DOE to reimburse U.S. utilities from their stimulus funding.

Our contacts at the Department of State believe that their economic development funds could be used to rebate this amount to overseas participants.

How Will the Launcher and 1,000 Megawatt Solar Sats be Funded?

The demo ground antennas will be able to receive up to 1,000 megawatts from our larger solar sats with some expansion and modifications. We believe that most of the demo participants will issue PPAs to us for much larger quantities.

Advance payments against these PPAs will provide the $10 billion development funding for our launcher, first space station and solar sat program. Two years ago the World Bank and the IMF told us that they could provide these advance payments to us for developing nations like India. Those 2 funds are even more aggressive today.

U.S. government loans to U.S utilities or states to cover these advance payments should also be possible. That's one factor in our September, 2010 demo launch and our October, 2012 preparations for our first convertible launch. Both dates are just before national elections.

What is Space Island's Expected Selling Price For Solar Sat Energy?

Our target price is 10 cents per kWh, measured at the antennas. (They'll convert over 90% of the beam into usable AC energy.)

We will also offer demo participants at least 50 billion kWh at 5 cents per kWh if they can provide us with 20% of that allotment in advance. These advances will likely come from the IMF or U.S. funds mentioned above.

What If The Production Price Is Higher Than Space Island Estimates?

We know that our solar sats will operate at a loss for the first few years. We are doing this to absorb most of the risk to our energy buyers.

The advantage of our "convertible launch vehicle" business model is that leases from the station interiors can be adjusted to subsidize the solar sat costs. Our first option is to lease 50% of the interiors at basically $25/cubic foot per day. This will recover each rocket's launch costs within 2 years, and their lifetime will be 30 years.

We can increase the percentage of the interiors we lease or increase the rate, or increase the payback time. We have identified tenants for at least 3,000 of these 747-sized interiors over the next 30 years.

What Is The Expected Solar Sat Production Rate?

It will grow as our orbital facilities grow. Our first 1,000 megawatt sat will be in operation in 2015. Two more will be completed each year until 2020. Five will be completed annually until 2025, 10 annually until 2030, and 20 annually after that. By 2050 we will complete 50 annually. Each will last at least 30 years.

How Does This Approach Differ From Solaren's *Recent PG&E Contract?*

Solaren was not able to offer PG&E a firm price because they don't know what the weight or cost of each satellite or their robotic assemblers will be. They plan to launch 6 small sub-assemblies to a 22,000 mile orbit. Then they will have robots controlled from Earth assemble them into a single, 200 megawatt unit. No assembly like this has ever been done in orbit.

Solaren is basically a group of retired satellite designers. They no doubt can design a good solar sat, but they haven't spent much time figuring out its launch and assembly costs.

All of their expenses will have to be recovered from solar sat energy sales, including extremely high, presently unknown launch costs. The cost of robotic assemblers controlled that far away from human technicians are an even larger question mark.

Our robotic assemblers will operate just outside our stations. They can be easily refueled, repaired and upgraded. They can be sent out from their 300 mile high base to the 22,000 mile high sats, perform repairs and return to their station base. We can also have a human presence on solar satellites for short periods of time. Solaren's robots will stop functioning when they run out of fuel

If PG&E submits their application to the California PUC, Solaren's lack of detail will be a major detriment. We believe that our project, with strong support from major aerospace firms and with enormous aerospace job creation potential in the state, will be very well received. Federal reimbursement should also be available to Utility Companies and States because of our detailed approach.

Is There a Role For Utility Companies in This Effort?

It's possible that Utility Companies could manage the overseas distribution of this solar sat energy for us.

They could buy it from us at a set price, and then resell it overseas. We would transmit down to the final buyer. Your experience in developing these relationships is well known. Mitsubishi discussed this same option 2 years ago.

Could Solar Sat Energy Supplement Wind Farms?

It's likely that solar satellite antennas could be placed on the same land occupied by wind generators. The cost of the land, the AC/DC converters and the power lines would be written off against the wind generators, and the 24/7 solar sat energy could be added to the intermittent wind power. Shell Renewable Energy discussed this option at length with us last year.

There are several other possible we would like to explore at your convenience.

Sincerely,

Gene Meyers
CEO
The Space Island Group, Inc.

(626) 260-3184 (cell)

www.spaceislandgroup.com

spaceisland@verizon.net

Attachments: Mitsubishi Letter
Economist Article