### Space Solar Power NC

#### My value is life and my criteria is utilitarianism. Saving lives is the most important function of a government who must represent all of its people, and evaluating costs and benefits emphasizes critical comparative decision making skills

#### Contention One – Links

#### 1. The privatization of space is essential to solar power satellites – only private companies can fund and develop SPS.

National Space Society, 2006 [12-6-2006, “Introduction to the motion to the National Space Society Board of Directors”, <http://www.sspi.gatech.edu/sunsatcorpfaq.pdf>]

Space Solar Power must be a commercial or public/private company, as Comsat was. Several organizations, such as NASA and DOE are vying to assume control of the space solar power / wireless power transfer research venue to enlarge their empires. Neither organization would move space solar power an inch closer to commercial reality because neither organization would "win" by doing that. Rather, placing space solar power / wireless power transfer “research and development” under their control will delay the formation of a power satellite industry, delay the lowering in cost of orbital space transportation, delay the formation of innumerable other cis-lunar industries, including asteroid protection, and, finally, incidentally for NSS, delay space settlement in general. NASA doing anything in space costs ten times as much compared to commercial enterprise doing it. IF commercial enterprise can do it, then commercial development is the way to go. (Some things, like the Apollo program, telescopes on the moon, or Mars development cannot be done commercially.) So Space solar power and many other goals await organizations chartered and committed to doing those things. For example, if NASA could support 6 settlers on the moon for 2 billion dollars per year, commercial (public/private) enterprises could do it for one tenth of that cost. The 10 to 1 ratio applies across the board. Most importantly the development is ten times more easily sustained by reason of the lower cost. And actually probably a hundred times more likely to be sustained, since NASA has no significant history of income-generating activity. A renaissance in commercial cis-lunar space markets beckons. If and when SSP is built, greatly reduced launch costs will provide unprecedented access to space and space operations - from in-situ resource utilization and improved observation and communications to space settlement, and many products we can only dream of today - beginning with SSP – promising to provide reliable power delivery and global energy security with improved international prosperity at greatly reduced environmental impact. Therefore we present and commend the following motion to the Board of Directors: Motion to recommend the chartering by Congress of a Space Solar Power Corporation. The National Space Society recommends the enactment of legislation by the Congress to charter a Space Solar Power Corporation. This corporation would be directed to research, design, develop, build and operate a Space Solar Power System (SSPS). The corporation would receive special financial incentives designed to coordinate a lowering in commercial launch to orbit costs commensurate with, and as a direct result of a massively expanded market.

#### 2. Privatization and access to orbital space are key to reduce the launch costs necessary for solar power satellites to succeed.

The Economist, 2008 – Editorial Board[December 4, Let the Sun Shine In, http://www.economist.com/node/12673299]

One company with a specific plan for SSP is Space Island Group, based in California. Its novel scheme involves using the technology that has already been developed by NASA for the space shuttle to build orbiting space-stations out of the empty fuel tanks that are usually discarded when the shuttle reaches orbit. Space Island’s plan is to launch several of these tanks, convert them into living quarters and rent them out. Gene Meyers, the boss of Space Island, says it has identified 200 companies and 300 university research groups which would be interested in renting facilities at its proposed rates; there would also be opportunities for space tourism. The resulting revenues, the company says, would cover the cost of launching the components for a large SSP system, piggybacked onto each fuel tank. It sounds rather far-fetched—but the same was true of Mr Musk’s plans just five years ago, before he had launched a single rocket. That is an indication of how quickly things can change in the commercial space industry. When Mitsubishi Electric started looking at solar power in Japan it, too, was thinking along the lines of launching giant structures and assembling them in space. After a while it balked at the difficulty and cost of that route, and in recent years it has been concentrating on the idea of launching squadrons of small satellites orbiting in formation. Mitsubishi Electric has continued to invest in SSP research, and Japan’s space agency, JAXA, is also taking the idea seriously, with talk of a working system in orbit by 2030. If today’s gloomy economic conditions make SSP seem even more outlandish, it is worth remembering that America’s commercial-aviation industry was born in the midst of the Depression. The 1930s witnessed the formation of aerospace companies such as Grumman and Hughes, the launch of airlines such as American and United and the birth of the Douglas DC-3—the workhorse of the pre-jet age, which is still going in some corners of the world. Space solar power is still an idea far ahead of its time. But the necessary technology already exists and is gradually falling in cost. The commercialisation of space—and, in particular, the enthusiasm building around space tourism—could be the trend that brings down launch costs and brings SSP within reach. It will take entrepreneurs as well as engineers to kick-start the public-private process needed to tap the energy of the great fusion reactor in the sky. Lots of people believe it can be done. But as Cutie the robot demonstrated, what you believe matters less than what you actually do.

#### 3. Private companies need access to geostationary orbital bands to maximize space based solar power.

Rouge, 2007 – former Director, National Security Space Office [Joseph D., October 9, 2007, “Space‐Based Solar Power As an Opportunity for Strategic Security,” https://space.nss.org/space-based-solar-power-as-an-opportunity-for-strategic-security/]

The reservoir of Space‐Based Solar Power is almost unimaginably vast, with room for growth far past the foreseeable needs of the entire human civilization for the next century and beyond. In the vicinity of Earth, each and every hour there are 1.366 gigawatts of solar energy continuously pouring through every square kilometer of space. If one were to stretch that around the circumference of geostationary orbit, that 1 km‐wide ring receives over 210 terawatt‐years of power annually. The amount of energy coursing through that one thin band of space in just one year is roughly equivalent to the energy contained in ALL known recoverable oil reserves on Earth (approximately 250 terawatt years), and far exceeds the projected 30TW of annual demand in mid century. The energy output of the fusion‐powered Sun is billions of times beyond that, and it will last for billions of years—orders of magnitude beyond all other known sources combined. Space‐Based Solar Power taps directly into the largest known energy resource in the solar system. This is not to minimize the difficulties and practicalities of economically developing and utilizing this resource or the tremendous time and effort it would take to do so. Nevertheless, it is important to realize that there is a tremendous reservoir of energy—clean, renewable energy—available to the human civilization if it can develop the means to effectively capture it.

#### Contention Two - Impacts

#### 1. Solar Power Satellites solve climate change – it is the only source that can replace all fossil fuels

National Space Society, 2011 [June 3, 2011, “Space Solar Power: Limitless clean energy from space”, https://space.nss.org/space-solar-power-info/]

The United States and the world need to find new sources of clean energy. Space Solar Power gathers energy from sunlight in space and transmits it wirelessly to Earth. Space solar power can solve our energy and greenhouse gas emissions problems. Not just help, not just take a step in the right direction, but solve. Space solar power can provide large quantities of energy to each and every person on Earth with very little environmental impact. The solar energy available in space is literally billions of times greater than we use today. The lifetime of the sun is an estimated 4-5 billion years, making space solar power a truly long-term energy solution. As Earth receives only one part in 2.3 billion of the Sun's output, space solar power is by far the largest potential energy source available, dwarfing all others combined. Solar energy is routinely used on nearly all spacecraft today. This technology on a larger scale, combined with already demonstrated wireless power transmission (see 2-minute video of demo), can supply nearly all the electrical needs of our planet. Another need is to move away from fossil fuels for our transportation system. While electricity powers few vehicles today, hybrids will soon evolve into plug-in hybrids which can use electric energy from the grid. As batteries, super-capacitors, and fuel cells improve, the gasoline engine will gradually play a smaller and smaller role in transportation – but only if we can generate the enormous quantities of electrical energy we need. It doesn’t help to remove fossil fuels from vehicles if you just turn around and use fossil fuels again to generate the electricity to power those vehicles. Space solar power can provide the needed clean power for any future electric transportation system. While all viable energy options should be pursued with vigor, space solar power has a number of substantial advantages over other energy sources.

**2. Failure to address fossil fuels is an existential risk, threatening extinction – negative sources Under-estimate runaway warming and feedback loops.**

**Specktor 2019 – Senior Writer for Live Science** [Brandon Specktor, "Human Civilization Will Crumble by 2050 If We Don't Stop Climate Change Now, New Paper Claims," Live Science, 6-4-2019, <https://www.livescience.com/65633-climate-change-dooms-humans-by-2050.html>]

It seems every week there's a scary new report about how man-made climate change is going to cause the collapse of the world's ice sheets, result in the extinction of up to 1 million animal species and — if that wasn't bad enough — make our beer very, very expensive. This week, a new policy paper from an Australian think tank claims that those other reports are slightly off; the risks of climate change are actually much, much worse than anyone can imagine. According to the paper, climate change poses a "near- to mid-term existential threat to human civilization," and there's a good chance society could collapse as soon as 2050 if serious mitigation actions aren't taken in the next decade. Published by the Breakthrough National Centre for Climate Restoration in Melbourne (an independent think tank focused on climate policy) and authored by a climate researcher and a former fossil fuel executive, the paper's central thesis is that climate scientists are too restrained in their predictions of how climate change will affect the planet in the near future. [Top 9 Ways the World Could End] The current climate crisis, they say, is larger and more complex than any humans have ever dealt with before. General climate models — like the one that the United Nations' Panel on Climate Change (IPCC) used in 2018 to predict that a global temperature increase of 3.6 degrees Fahrenheit (2 degrees Celsius) could put hundreds of millions of people at risk — fail to account for the sheer complexity of Earth's many interlinked geological processes; as such, they fail to adequately predict the scale of the potential consequences. The truth, the authors wrote, is probably far worse than any models can fathom. How the world ends What might an accurate worst-case picture of the planet's climate-addled future actually look like, then? The authors provide one particularly grim scenario that begins with world governments "politely ignoring" the advice of scientists and the will of the public to decarbonize the economy (finding alternative energy sources), resulting in a global temperature increase 5.4 F (3 C) by the year 2050. At this point, the world's ice sheets vanish; brutal droughts kill many of the trees in the Amazon rainforest (removing one of the world's largest carbon offsets); and the planet plunges into a feedback loop of ever-hotter, ever-deadlier conditions. "Thirty-five percent of the global land area, and 55 percent of the global population, are subject to more than 20 days a year of lethal heat conditions, beyond the threshold of human survivability," the authors hypothesized. Meanwhile, droughts, floods and wildfires regularly ravage the land. Nearly one-third of the world's land surface turns to desert. Entire ecosystems collapse, beginning with the planet's coral reefs, the rainforest and the Arctic ice sheets. The world's tropics are hit hardest by these new climate extremes, destroying the region's agriculture and turning more than 1 billion people into refugees. This mass movement of refugees — coupled with shrinking coastlines and severe drops in food and water availability — begin to stress the fabric of the world's largest nations, including the United States. Armed conflicts over resources, perhaps culminating in nuclear war, are likely. The result, according to the new paper, is "outright chaos" and perhaps "the end of human global civilization as we know it."