

# Space-based solar power

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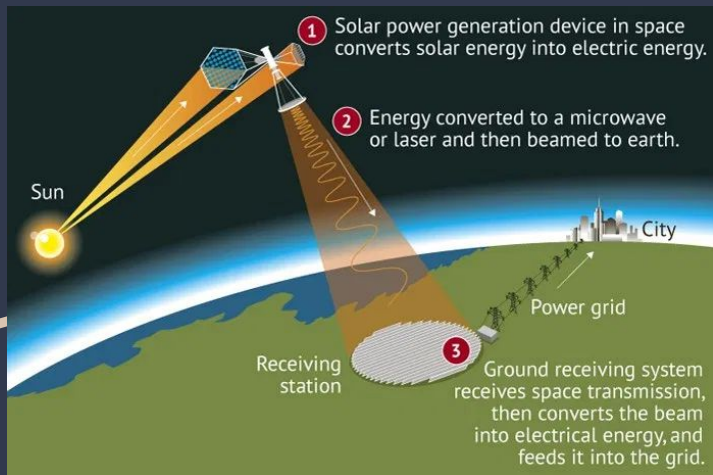
# Overview

- [History](#)
- [Plan and implementation](#)
- [Pros to the advancement](#)
- [Cons to the advancement](#)
- [Megan's Summary](#)
- [Mena's Summary](#)
- [Citations](#)

# History

- 1941 Isaac Asimov and *Reason*
  - First look at a space station using energy from the sun in fiction
- 1968
  - Introduction of Solar Power Satellite
- 1978
  - Examination of solar power satellite
- 1987
  - Stationary high altitude relay platform
- 1995
  - Nasa conducts study of space solar power
- 1998
  - Identification of credible, commercially viable solar power satellite
- 1999
  - SSP exploration research and technology program begins

# Plan and Implementation



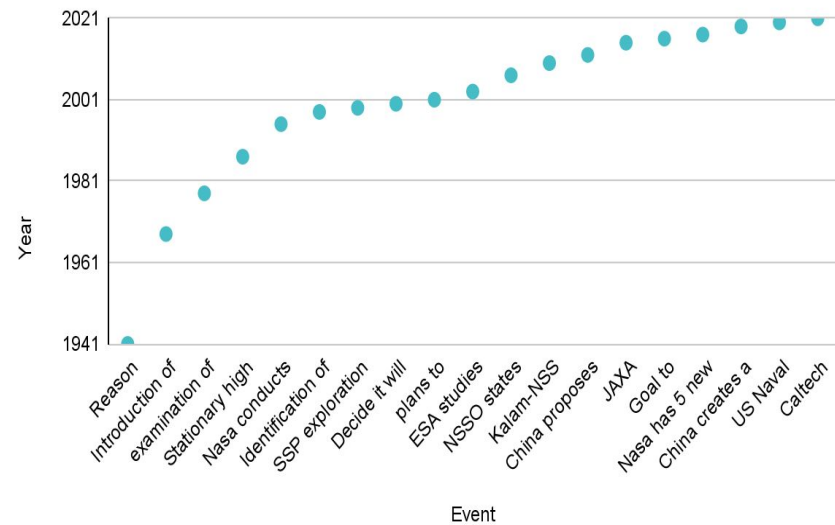
- Purpose
  - Help capture more sustainable energy
  - Turn solar energy into useable energy for a remote receiving station
- Functionality
  - It can give solar power 24/7. It won't be stopped by cloud cover, night, or the atmosphere.
- How does it work?
  - Reflectors, a microwave/laser power transmitter, and self assembling satellites will be launched into space.
  - The reflectors would spread over a large area of space, directing solar energy onto solar panels.
  - These solar panels would convert solar power into a microwave/laser, and give uninterrupted energy to earth.

# Timeline



- Caltech launch by 2023

Year vs. Event



# Pros

- This energy would be cleaner/better for the earth than fossil fuels.
- The power wouldn't be interrupted by the weather, nightfall, ect. like normal solar panels are.
- Mostly all the disadvantages of solar energy are eliminated if the solar panels are in space.

# Cons

- A demo plant could cost \$10 billion
  - The cost would inhibit the installation and the maintenance of the power satellites, restrict launch geography, and safety hazards.
- Very experimental
- There would have to be a lot of them because each receiving station can only power so much space.

# Megan's Summary

I think that it is a really good idea because it would be a more effective way to power cities. Electricity could be more widespread and efficient because we would no longer have to deplete all our natural resources that we now use for electricity. Compared to normal solar panels it would be more efficient because it would constantly be receiving energy from the sun, but during the night solar panels don't get the energy.



# Mena's Summary

I support doing space-based solar power because it could eliminate some of the pollution that is attributing to greenhouse gases. It would be a lot more reliable than normal solar panels because it couldn't be inhibited by nightfall, clouds, etc. It would be way more effective, and if we could make it widespread we could be using cleaner, safer energy

# Citations

- [Space-based Solar Power by European Space Agency 14 April 2013](#)
- [Space-Based Solar Power Department of Energy, March 6, 2014](#)
- [We Have Lift-Off: A History of Space-Based Solar Power | Environmental Leadership, Action and Ethics](#)
- [Space-Based Solar Power: A New Path Towards Sustainable, Clean Energy? – USC Viterbi School of Engineering.](#)
- [Space-based solar power may answer Earth's energy needs. - ASME](#)
- [5 Disadvantages of Solar Energy to the Environment](#)