

Aircraft Propulsion by Directed Energy Beam Bursts (DEB-B)

Research Phase:

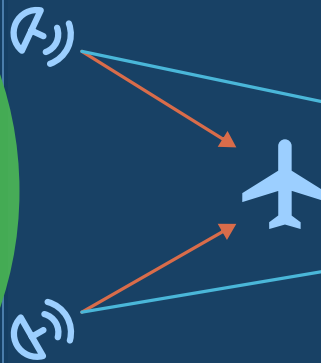
Required Tech

- High-Powered Laser
- Aircraft Tracking System
- Aircraft Power Receiving Module
- Orbital Capacity
- Launch Capability

Phase I:

Ground Stations

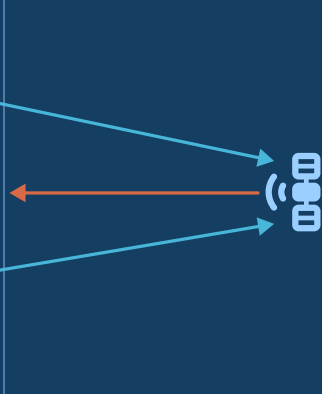
Ground Stations provide power from the existing energy grid to aircraft in flight.



Phase II:

Relay Satellites

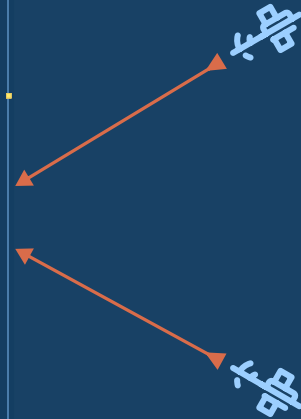
Relay Satellites redirect beamed energy from Ground Stations.



Phase III:

Power Satellites

Power Satellites generate power and transmit energy to Relay Satellites.



NOW - 2030

Technological feasibility shown in 40MW ground-based laser system.

Develop aircraft propulsion/receiving systems, and ground infrastructure systems to utilize DEB-B.

2030 - 2040

Ground-based power stations are built along popular air traffic routes, providing line-of-sight beaming capability.

Take-offs and landings are assisted by lasers embedded in runways.

2040 - 2050

Relay satellite network is established around Earth to allow over-the-horizon transmission for greater route flexibility.

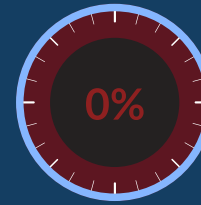
Energy beams are redirected from ground stations to create a larger area of coverage.

2050-2100+

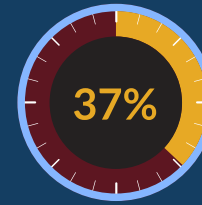
Space-based power satellites in high-Earth orbits utilize solar or nuclear systems for emissions-free energy.

Ramp up to 13,380 Relay Satellite launches per year!

Carbon Reductions



Current CO₂ Reductions
95 grams CO₂ / passenger km

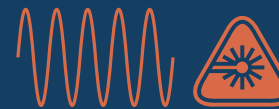


Phase I CO₂ Reductions
60 grams CO₂ / passenger km



Phase III CO₂ Reductions
0.67 grams CO₂ / passenger km

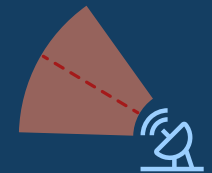
The Case for Lasers



Concentrated and On-Demand Power Delivery
Laser energy is more concentrated than visible light, providing higher power density. Receivers can be designed to specific wavelengths to better capture beamed energy.

Tracking and Guidance

Point-and-Shoot
Lasers travel at light speed, simplifying tracking to pointing the laser at the airplane and firing. Current lasers are already sufficiently accurate.



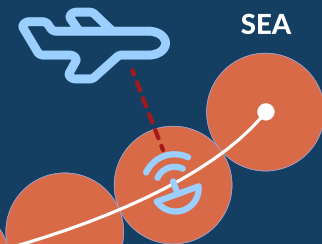
Highly Versatile System



Multiple Applications
Lasers can power rural energy networks, other satellites, emergency services, and potential off-world mining operations.

Initial Ground Systems

7x Ground Stations from LAX to SEA
Cruising Altitude: 30,000 feet
Station Range: ~215 miles
Laser Power: 40 megawatts



LAX

215 Mi

SEA