Title: Prior Art Disclosure: Equatorial Space-Based Solar Panel Belt with Wireless Energy Transmission

Author: Jorim Nikolas Muller **Date:** 07 februari 2025

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1. Introduction

This document serves as a **prior art disclosure** for a novel energy solution involving a **space-based solar panel belt positioned along Earth's equator** with **wireless energy transmission**. The goal is to harness **continuous solar energy**, mitigate global energy dependence, and potentially provide **climate benefits** by reducing equatorial solar radiation. This publication prevents private entities from monopolizing the concept while allowing open research and collaborative innovation.

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2. Concept Overview

2.1 Problem Statement

Current terrestrial solar power solutions are limited by **night cycles, weather conditions, and land use constraints**. Space-based solar energy can eliminate these limitations by collecting **uninterrupted solar power** and transmitting it wirelessly to Earth.

2.2 Proposed Solution

A **ring-like array of solar panels** in **geostationary orbits** along Earth's equator will continuously capture solar energy and transmit it wirelessly via **resonant inductive coupling (Tesla Coil principles), microwave transmission, or laser-based power beaming**. This approach:

- Maximizes solar energy absorption.
- Reduces dependency on fossil fuels.
- Lowers equatorial surface temperatures via partial shading.

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3. System Design

3.1 Orbital Solar Panel Belt

- A **series of satellites** equipped with **high-efficiency photovoltaic panels**.
- Placed in **geostationary orbit (35,786 km altitude)** to maintain a fixed position relative to Earth's surface.
- Modular design allows expansion and maintenance over time.
- Panels can **rotate** to optimize solar absorption and minimize shadowing effects.

3.2 Wireless Energy Transmission

- **Tesla Coil Resonant Inductive Coupling:** Transmitting energy wirelessly using resonance-based near-field transmission (for short distances, like from panel clusters to energy hubs).
- **Microwave Power Beaming:** Converting solar energy into microwaves and beaming it to ground-based rectenna farms.
- **Laser Power Transmission:** High-intensity lasers directed at photovoltaic collectors on Earth.

3.3 Ground-Based Energy Collection

- **Rectenna Farms:** Ground stations that capture transmitted energy and convert it into usable electricity.
- **Smart Grid Integration:** Connecting wireless power reception with existing infrastructure.

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4. Potential Benefits

4.1 Energy Security

- **Continuous energy generation** independent of time and weather.
- Eliminates **geopolitical reliance on fossil fuels**.
- Decentralized energy supply reduces infrastructure vulnerabilities.

4.2 Climate Impact

- **Equatorial shading effect:** Reduces **direct solar radiation** on equatorial regions, mitigating extreme temperatures.
- **Lower greenhouse gas emissions** by replacing fossil fuel dependency.
- Can serve as a **climate intervention method** for global cooling studies.

4.3 Space Industry Growth

- Encourages further investment in **space-based solar power (SBSP)**.
- Supports advancements in **wireless power transfer technology**.
- Enables **future interplanetary energy transmission** for space missions.

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5. Technical Challenges & Considerations

5.1 Space Launch and Deployment Costs

- High upfront investment needed for **satellite deployment**.
- Possible solution: Use **SpaceX Starship, Blue Origin, or similar heavy-lift rockets**.

5.2 Orbital Stability & Space Debris

- Active **station-keeping mechanisms** required.
- Need for **de-orbiting plans** for expired satellites.

5.3 Energy Transmission Efficiency

- Microwave and laser-based transmission require high precision.
- Atmospheric absorption and energy loss calculations must be optimized.

5.4 International Regulation & Governance

- The legal and governance framework for space-based solar energy must be carefully structured to ensure **fair global access**, prevent monopolization, and comply with international space treaties.

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6. Conclusion & Open Source Intent

This document establishes **prior art** for the concept of an **equatorial space-based solar panel belt with wireless energy transmission**. The intent is to:

1. **Prevent private monopolization** of this idea.
2. **Encourage global open research & development**.
3. **Enable public-private partnerships** to fund and build this technology.

The design and implementation details are **open for further collaboration and development under an open-source patent framework**, ensuring that companies, researchers, and governments can **freely innovate while contributing to its advancement**.

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7. Next Steps

- **Public Disclosure:** Submit to ArXiv, ResearchGate, and GitHub.
- **Community Engagement:** Invite researchers, space agencies, and energy companies.
- **Patent Licensing:** Explore controlled open-source licensing models.
- **Funding & Prototype Development:** Establish a nonprofit organization to manage project funding, research, and implementation efforts.

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