

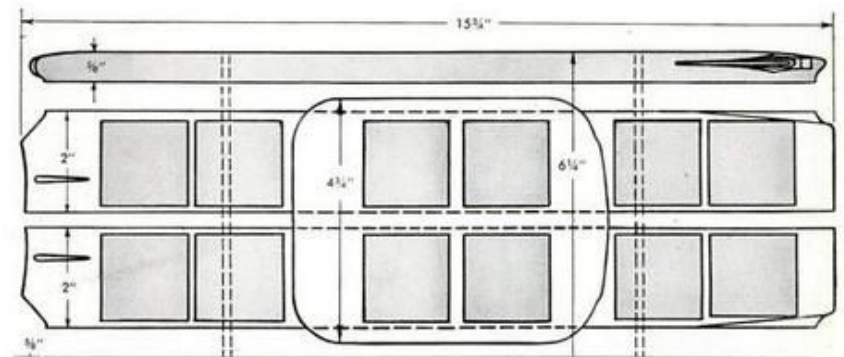
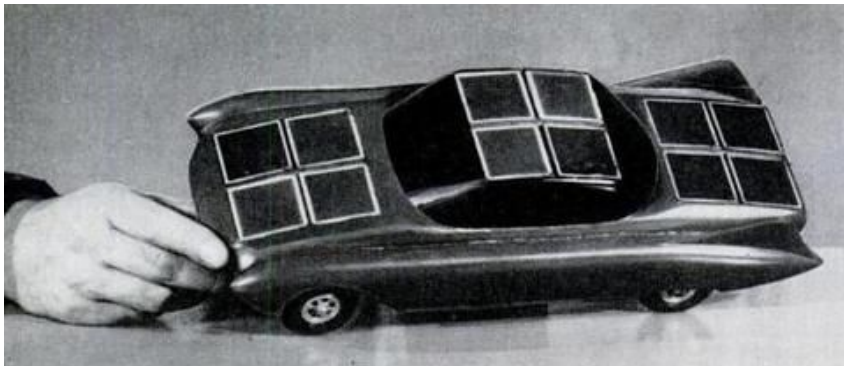
The History of Solar Applications in Commercial Vehicles



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The “Sunmobile”

- In 1955, William G. Cobb demonstrated the first solar-powered car at the General Motors Powerama Auto Show
- The 15-inch model car was equipped with 12 photoelectric cells to produce electric current to power a motor



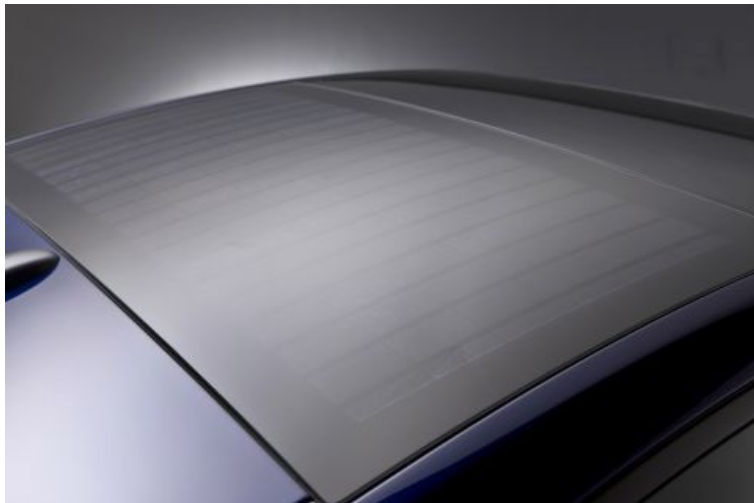
Tindo Solar Bus

- Tindo is the world's first Solar Electric Bus - put into service in Adelaide, Australia in February 2008
- The solar PV system is installed on the Bus Station's roof to recharge the batteries powering Tindo, generating 70,000 kwh of clean energy per year



2010 Toyota Prius

- The 2010 Toyota Prius introduced an optional \$2000 upgrade to include a Kyocera solar moonroof.
- The panel is capable of supplying 50 watts of power which powers a fan to cool the cabin when the engine is off.



Tesla Cybertruck

- In 2019, the Tesla Cybertruck was announced to offer the option for a solar roof to replace the standard truck bed.
- The solar roof will be able to add up to 15 miles of range per day



Solar Powered Train

- In December 2017, Byron Bay Railroad Company restored a vintage passenger train in New South Wales, Australia to incorporate solar energy.
- The diesel engines have been replaced with electric motors and batteries
- The train can seat up to 100 passengers



Solar Power Limitations in Vehicle Applications

- **Power Density**
 - The power generated from solar arrays is limited to the area that is exposed to sunlight
- **Weight**
 - Installing solar panels increases weight which in turn increases the energy needed to propel forward
- **Initial Costs**
 - PV Cells are expensive to manufacture
- **Weather Conditions**
 - Not sunny 24/7 due to night time and weather conditions
- **Design**
 - Most PV panels are designed for stationary applications, so in vehicle applications they have to be able designed to withstand vibrations

Sources

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