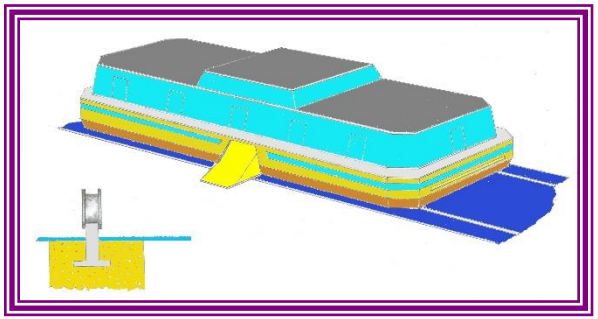
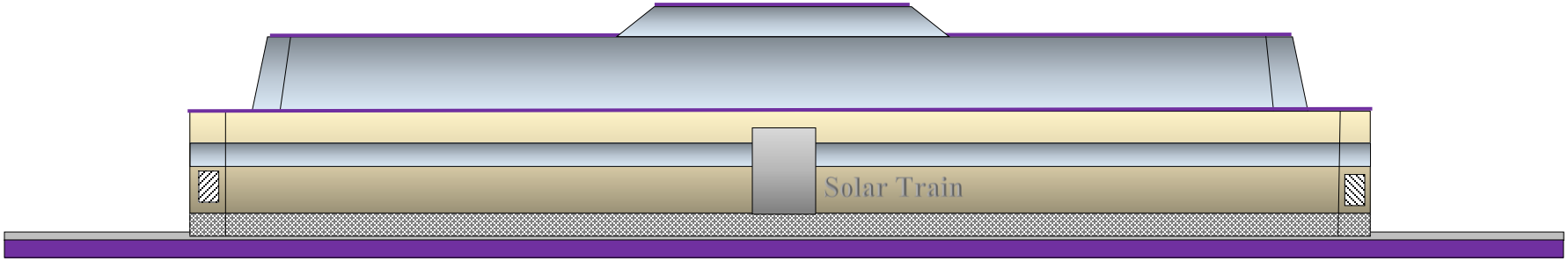
Solar Train *Passenger Module*



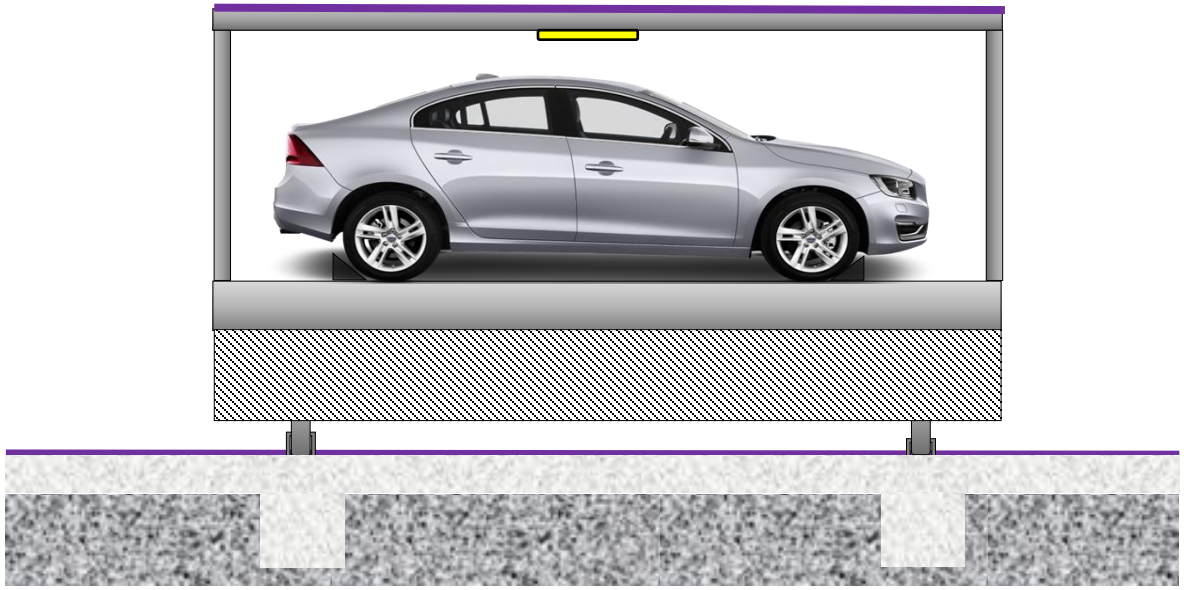
Profile View Below



Solar Panels: All Top Surfaces and Surrounding Rail Right-of-Way
Two Honeycomb Decks with Upper Scenery Crown & Reclining Sofa Seating
Double-Wide Track & Spacious Cabin (4-Fold Capacity Increase)
Aesthetic Back-Illuminated Mesh Skirt Hide Undercarriage
Light-Weight Durable Metal Composite Spanel Construction
Upper-Deck Perimeter Walk-Way for Window Maintenance
Fold-Down Stumble-Free Ramp Entry-Exit
Self-Contained Internal Electric Propulsion + Capacitor Storage & Discharge for Starts & Grades
Electric + Mechanical Motor Braking (No Runaway Car or Train on Down Grades)
Electro-Tethering & Sensory Perimeter for Collision-Free Mobility
Automated Low & Slow Daytime Travel (100 Mile-Per-Day Free-Energy Range)
No-Derailing: Lock-On-Track Steel-Rimmed Aluminum Wheels
Converts to Quiet Stationary (Plug-In) Draw-Curtain Motel & Restaurant at Night
Unhurried Night Loading & Unloading
Matchless Family Sight-Seeing, Vacationing, Visiting, Photography, Comfort, Economy, and Safety

Solar Auto Carrier

Transverse View



Vehicles Efficiently Side-Load Onto Double-Wide Flatbed Facing Across Tracks
Imbedded Chocks Automatically Rotate Upward to Position & Anchor Vehicle
Auto Loading Station Abuts Side of Flat Car for Smooth & Level Drive-On
Auto Carrier is Electric-Powered via Solar Roof and Track-Level Solar Panels (Shown in Purple)
Electricity Stores in On-Board Long-Life Capacitor Banks for Starts & Grades
Steel-Rimmed Aluminum Wheels Roll Securely Within Box Channel Tracks
Tracks are Secured in Long-Lasting Reinforced Concrete Road Bed Poured Over Compressed Gravel
Metal Mesh Skirt Hides Undercarriage Clutter
Self-Propelled Auto Carrier Can Be Electro-Tethered to Solar Passenger Car

Solar Track Power Grid *Auxiliary Ground Power*

Overhead View

Grade Degrees	Width’	Car Widths	Length’	Car Lengths
0	20	1	60	1
3	40	2	240	4
7 (Max)	40	2	600	10

Solar Track Collects Energy All Day and Stores it in Under-Track Capacitor Banks
Solar Train Draws from Solar Track w/ Integral Capacitor Bank Only When Passing
Capacitor Banks Under Track and Within Solar Train Discharge for Starts and Grades
Capacitors Afford Clean Lightweight Long-lasting Non-Chemical Power Potencies Superior to Batteries

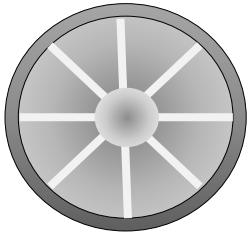
Solar Trailer Option *Auxiliary Mobile Power*

Tow Ultra-Light-Weight Solar Panels Behind Solar Train Like Flat-Bed Cars
Invoke When Solar Rail Cost Exceeds Solar Trailer Cost

Power Siding Option *Log Steep Uphill Pulls*

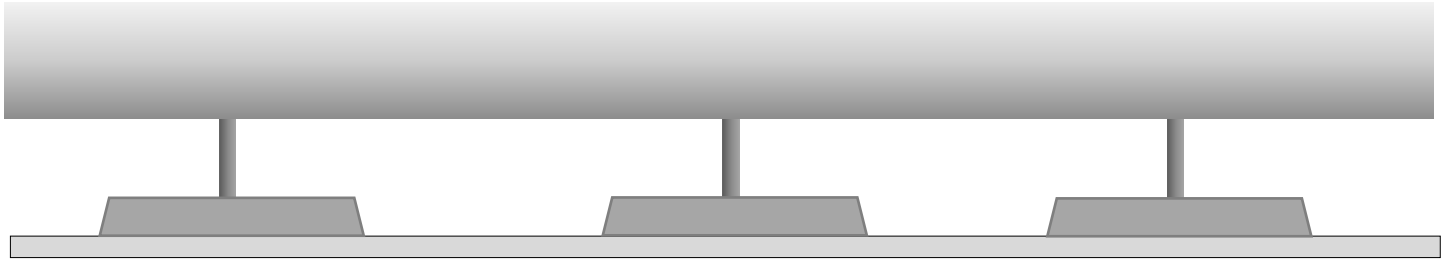
Connect to Extra-Length Power Trailer Positioned on Siding at Foot of Incline
Leave Extra-Length Power Trailer at Top of Siding for Next Solar Train
Power Trailer Automatically Back-Travels to Foot of Incline for Next Service
Construct Power Siding When Solar Rail Cost Exceeds Power Siding Cost

Solar Train *Aluminum-Steel Wheels*



Hi-Carbon Long-Wearing Replaceable Steel Rim
Lightweight Aluminum Body with Strengthening Heat-Radiating Spinners
Hub-Covered Drive Axle

Rail Brake *Deploys from Underneath Solar Train*



Mechanical, Electric, or Pneumatic Vertical Plungers Descend from Car to Apply Brake Pressure to Tracks
Replaceable Hardened Steel *Scrubber Plates* Afford High-Friction Long-Wearing Brake Service
Note: Traditional Wheel-Brake Affords Comparatively Small Rail Contact Area

Solar Train *Design Advantages*

Single-Wide Tracks are a Fully-Depreciated Railway Asset Already in Place but with Low Utilization (33%)
Conversion to Double-Wide Trackage Should be Less Expensive than Original Single-Wide Construction
Railway Grades Already Least of Any Surface Travel (7° Max)
Railway Grade-Dependent Propulsion Burden Least of Any Form of Powered Transportation (1 HP/Ton to 50 HP/Ton)
Solar Train Grade-Dependent Propulsion Requires About 10 to 100 HP per Car (0.3 HP/Ton to 3.5 HP/Ton)
Loaded Railway Cars Linear Density 1 Ton/Ft Loaded Double-Deck/Double-Wide Solar Train Linear Density ½ Ton/Ft
Railway Car Fuel Efficiency 235 Ton-Mile/Gallon or 425 BTU/Ton-Mile or 8 Ton-Miles/KWH
Solar Car Energy Efficiency 736 Ton-Miles/Gallon or 136 BTU/Ton-Mile or 25 Ton-Miles/KWH

Traditional Train Stopping Distance is Extreme & Becoming More Unsafe

Type of Train	***Speed mph***	***Stopping Distance (Feet)***
Bullet Train	186	11,000
Freight Train	55	3,200
Freight Train	8	147 (Like 55 mph Auto)
Freight Train	4	60 (Like 35 mph Auto)
Automobile	55	151
Automobile	35	61
Solar Train	8 (Sailboat Speed)	Less Than 147 (Like 55 mph Auto)

Operating Solar Train as Singleton Passenger Cars or Auto Carriers Vastly Increases Stopping Safety

Daylight Operation Safest Time-of-Day Travel
Solar Train + Solar Track +Solar Trailer = Free Energy Subsidy (100%)
Solar Train Capital Cost Less Than $100,000 per Car
New Standard Rail Car + Pro Rated Diesel Engine = $150,000
Individually Powering Rail Transit Cars Vastly Increases Their Transportation Utility
Maximal Schedule Flexibility Maximal Route Diversity Maximal Safety Enhancement Comfortable Speed of Sailing Ship
Accommodates Personal Automobile Day "Sailing" on Free Sunshine Steel-On-Steel Railway Has Maximal Energy Efficiency
Lowest Capital Cost and Operating Cost for a Basic Transit Unit
If the U.S.A. Ever Offers FREE Long-Distance Family+Car Transportation, Solar Train Looms as Best Instrumentality

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2018

Global Environmental Service
"Preserving the Balance of Nature"