

The University of Montana

Alternative Energy Technologies

The University of Montana, Missoula, MT

- First Responders Hydrogen Safety Training Site
 - Wind Monitoring and Demo Technology
 - Solar Tracking
 - Wind Anemometer Sighting and Installation
 - Hydrogen Membrane Separation Research
 - Biomass Gasification Electrical Generation
 - Hydrogen Electrolysis Generation
 - Fuel Cell Power (ReliOn)
 - High Pressure Hydrogen Storage
 - Explosion Proof H₂ Enclosure Cat. I Div II Demo Site
 - Hydrogen Ignition Simulation Demonstration
 - High Pressure Hydrogen Distribution
-

AET (con't)

- H2education.com Biomass Web sites
 - Alternative Energy Technicians Program
 - Hydrogen ICE Vehicle with Metal Hydrates
 - Electric Vehicle Conversion
 - Author, U.S. Sustainable Energy Plan
 - Third World Energy Planning
 - Policy Advisement
 - Hydrogen Powered, Magnetic Levitation Personal Rapid Transit
-



Off-Line Station with waiting vehicles

Transportation Conundrums

- Vehicle Independence Demands
- Finite Petroleum Supply and Risks
- Wealth Transfer (-\$208B/yr.)
- Urban Congestion
- Global Air & Water Impact
- Unsustainability



Hidden Transportation Costs

'Road to Extinction'

- ❑ Injuries: 2007 – 2.49 M
- ❑ Fatalities: 2007- 41,059
- ❑ Health Care (\$55-672B/yr.)
- ❑ Subsidized Public Transportation
- ❑ Dedicated Traffic Lane Costs
- ❑ Traffic Delays --4.5B hours Yr.
- ❑ Insurance Costs
- ❑ Shipping, Harbor, Pipeline, Terrorist Risks
- ❑ Finite Resource Intensive System
 - Roads, Bridges, Tires, Fuel, Vehicle Mft, etc.
- ❑ Subsidies to Auto and Oil Industries
 - \$2700 per year per every M/W/C in U.S.



New Sustainable Thinking

- ❑ Power Sources
- ❑ Community & Commuting Demands
- ❑ Vehicle Appropriate Technology
- ❑ Finite Resource Maximization
- ❑ Alternative Energy
- ❑ Hydrogen only multi-venue energy solution

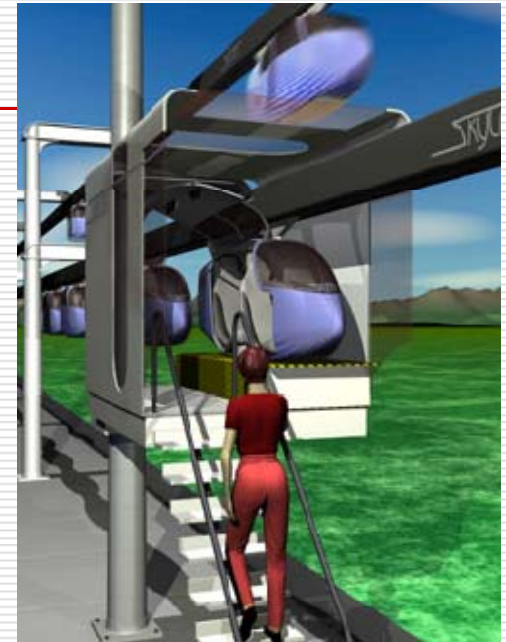


SkyTran-A New Vision for High-Speed Transportation

- ❑ Cutting Edge U.S. Innovation
 - ❑ Domestic Industry and Jobs Creation
 - ❑ New Technologies- Maglev, PRT
 - ❑ Non-Polluting Alternative Energy
 - ❑ Guideway Infrastructure -Com/power
 - ❑ Safe, High Capacity Option
 - ❑ Flexible, Economical and Efficient
 - ❑ Low Infrastructure/Carbon Impact
-

SkyTran PRT Basics

- Point to Point Transportation
- Magnetic Levitation
- Voice Activated
- Video and Internet Interconnect
- Speeds: 15-150 mph
- Low-polluting
- Network Profile w/thru traffic, o/f ramps
- Regenerative System
- Federally Funded



Am. Made Technology Interface

- ❑ Overhead Guideway
 - Magnetic Levitation
 - Power Electronics
- ❑ Guideway Raceway:
 - Utilities, fiber optics, pipelines, broadband
- ❑ Software, Switching Interfaces
- ❑ System and community electrical generation installation
- ❑ Collision Avoidance
- ❑ Hydrogen Fuel Cells



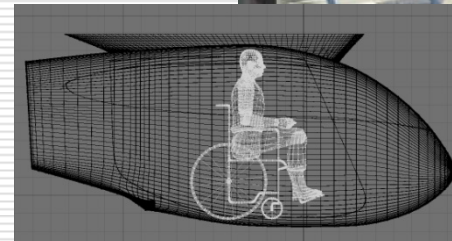
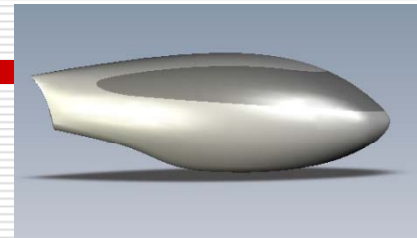
Vehicle Designs

PASSENGER APPLICATIONS

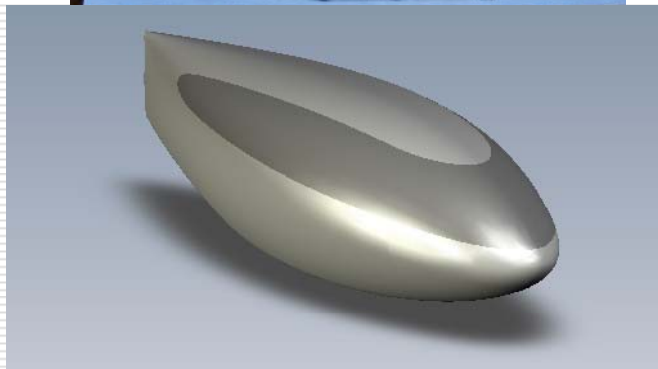
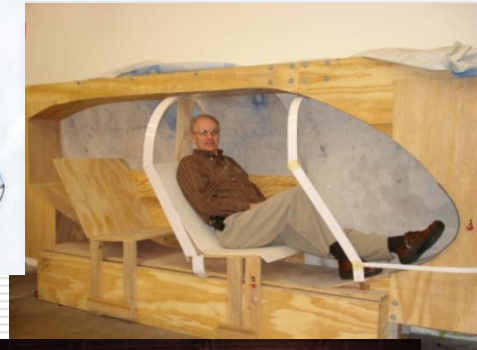
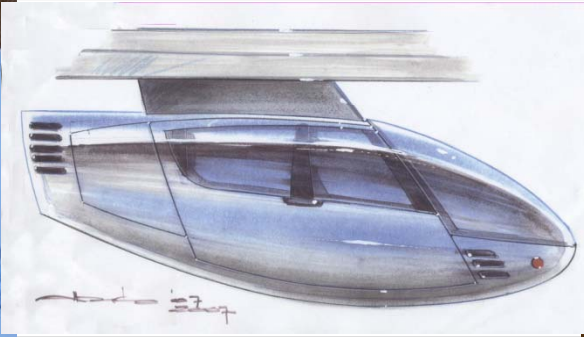
- 2-3 Passenger Commuter
- ADA Transporter
- Campus and Theme Park Tram
- Airport Terminal/Parking Connector
- Sleeper Car
- Diner Car

MATERIALS HANDLING

- Personal Baggage Carrier
- Liquid Tanker
- Palletized Freight Container
- Boxed Freight Container
- Factory Material Transport



Vehicle Fabrication

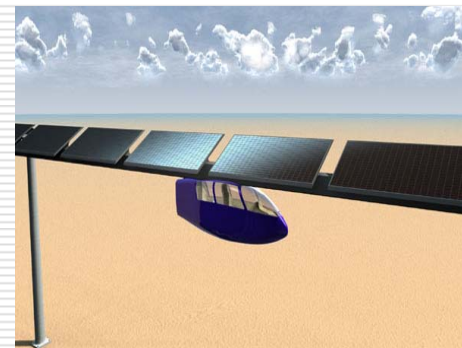
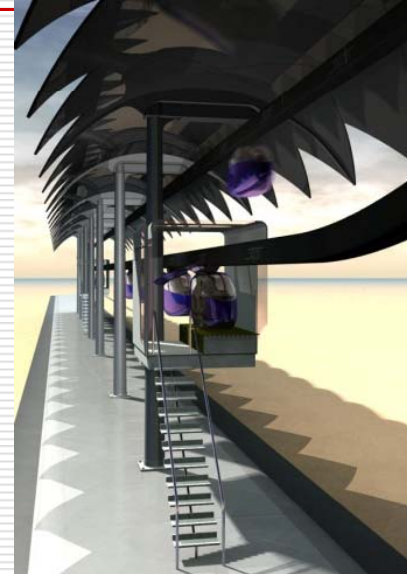


Research Sites

- ❑ AET, University of Montana
 - ❑ Advance MagLev Systems, Seattle
 - ❑ NASA, Ames Research Center
 - ❑ SkyTran UniModal, Los Angeles
 - ❑ U.S. Department of Transportation,
Research Innovation and Technology
Administration
-

Regional Network Infrastructure

- Computer Networks
 - Switching
 - Logistics
- Manufacturing Complex
 - Poles
 - Guideway Sections
- Hydrogen Centers



Commercialization

| | | |
|--|---|---|
| <ul style="list-style-type: none">+Contractors+Assemblers+Mech, Elec, Struct, Engineers+Computer Prog.+System Designers+Altern. Energy Technicians+Motor Const.+Quality Control | <ul style="list-style-type: none">+International Relations+Communication+Public Relations+Transportation Planning+Training+Infrastructure Planning+Site Planning+Fabrication | <ul style="list-style-type: none">+Material Support+Resource Mgmt+System Testing+Electronic Board Assembly+Vehicle Devel. and Manufacture+Component Install+Guideway Assembly |
|--|---|---|

Transit Cost Comparisons

(per mile)

| | |
|--|------------|
| <input type="checkbox"/> California Sidewalk | \$1M |
| <input type="checkbox"/> SkyTran (3-5 Ln Eq) | \$10M |
| <input type="checkbox"/> Bus Private Lane | \$10-15M |
| <input type="checkbox"/> Train Track Laying | \$14M |
| <input type="checkbox"/> Second Gen PRT | \$20-25M |
| <input type="checkbox"/> Freeway | \$35-50M |
| <input type="checkbox"/> LA-LB | \$40M |
| <input type="checkbox"/> Light Rail | \$40-50M |
| <input type="checkbox"/> Electric Freeway | \$75-100M |
| <input type="checkbox"/> Elevated Light Rail | \$75-100M |
| <input type="checkbox"/> Elevated Maglev | \$150-200M |
| <input type="checkbox"/> Subway | \$350-450M |
| <input type="checkbox"/> Sound Transit | \$321M |

SkyTran Milestones

Past, Present & Future

SkyTran Concept and Design
Team Identification
University Collaboration
Congressional Interest
Department of Transportation
Support
Multi-state Laboratory
Collaborative
Guideway Development
Passive Magnetic Levitation
System
Power Electronics Development
Hydrogen Power System
Integration Linear Synchronous
Motor Development

Test Guideways Fabrication
Software Simulation
Vehicle Design &
Fabrication
System Testing
NASA Collaboration

Integrated Switch Devel.
Collision Avoidance System
400' Loop Development
1000' Loop Development
Public/Private Partnerships

The Future of Transportation

Is Just Around the Corner



3DConceptRendering.wmv



NASA SkyTran (CONFIDENTIAL).wmv