Independent Vehicle Mass Transit

The Next Big Thing

Single Mode Transit

Solar Powered Grade Separated Roadway

for self driving electric cars
A Transportation Paradigm Shift

• Individualized high-speed mass transit system
  • Mass Transit on-demand
  • Rent a vehicle or just a seat (ride-share)
  • Self-driving vehicle comes to you
  • Use own electric vehicle on mass transit system

• Self driving vehicles linkup creating high-speed mass transit system
  • Electric vehicles derive power from elevated mass transit roadway
  • Solar energy powers elevated roadway
  • Stations control access to elevated mass transit roadway

• NO Government Subsidies – Generates Tax Revenue
Let’s Go - Los Angeles to Las Vegas

• The Process:
  • Use cell phone app to rent vehicle or rideshare
  • Self-driving electric car arrives picks up passengers
  • Delivers passengers to Las Vegas hotel

• Mode Comparison
  • Distance 270 miles
  • By car 4.5 hrs $155 (IRS) by Bus 5.1 hrs $48 by plane 3.5 hrs $193 by train N/A
  • Freedom Mass Transit system time 1.9 hrs (140 mph non-stop)
  • Cost for rental vehicle trip $115
  • Cost if own vehicle $82
  • Cost if rideshare - 4 rideshares $28.74 6 rideshares $19.16
Freedom Mass Transit – Single Mode Transit

Replaces all other forms of Surface Transportation

- No Fuel powered vehicles
- No Interstate highways or toll roads
- No Trains
- No Busses
- No Short Haul Flights

Why?
None Can Compete with Freedom Mass Transit

**Safer**
33,000 plus people killed each year on our nations highways

FMT Travel is in a covered single lane elevated concrete channel impervious to weather, cross traffic or pedestrians

**Faster**
140 mph is twice as fast as most highway speed limits.

140 mph with no stops between start and finish is faster than air travel out to about 700 miles when airport time is considered.

**Costs Less**
At 43 cents per mile per vehicle it cost less than owning your own vehicle.

All other mass transit travel is based on a fare for each passenger not the vehicle.
These routes have extremely high traffic volumes and would generate the most revenue.

Once these routes are built the revenue generated will be used to connect the routes and build a nationwide network.

Total Net Revenue
$31 million / mile
At 73% of AADT
High Speed Rail vs Freedom Mass Transit Usage

• HS Rail for travel of 200 – 600 miles
  • City to City
  • Scheduled a few times a day
  • Fares are per passenger
  • Group travel 100 – 300 passengers

• Freedom Mass Transit for travel of 10 – 700 miles
  • City to City
  • Local 10 – 60 miles
  • On demand travel 24/7
  • Fares are per vehicle
  • Private travel - individual vehicles 1 – 6 passengers
HS Rail vs Freedom Mass Transit

Maximum Usage

High Speed Rail 520 miles Los Angeles to San Jose
- 12 trains per hour in each direction 20 hrs / day
- 1000 seats per train
- 70% average load factor for trains
  (based on international experience and Travel Demand Model output)
- Multiple Stops
- Maximum Annual Passengers 123 million --- estimated 33.1 million by 2040


Freedom Mass Transit 520 miles Los Angeles to San Jose
- Stations every 5 miles (105 stations total)
- Average trip 30 miles
- Maximum Annual Trips 2.5 billion estimated 949 million
### Amtrak NW Corridor Map


**Boston – Washington**

<table>
<thead>
<tr>
<th></th>
<th>NextGen HSR</th>
<th>FM Transit</th>
</tr>
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<tbody>
<tr>
<td>Speed</td>
<td>220 mph</td>
<td>140 mph</td>
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<tr>
<td>Distance</td>
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<td>430 miles</td>
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<tr>
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<td>No of Stops</td>
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<td>Current Fare</td>
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<td>Annual Ridership</td>
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<tr>
<td>Annual Revenue</td>
<td>$4.6 billion</td>
<td>$11.8 billion</td>
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FM Transit Revenue based on 73% of current car traffic and 40 mile trip
## Freedom Mass Transit - HS Rail Routes 2030

<table>
<thead>
<tr>
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<tbody>
<tr>
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<tr>
<td>Stations</td>
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<td>Electric Cars</td>
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<td>Rental Rev</td>
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<tr>
<td>Tax Rev</td>
<td>?</td>
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Revenue is annual gross revenue.
Freedom Mass Transit Components

**Toll Road Business**
- Cost per mile $37 M *
- Average Revenue per mile $13 M**

**Energy Business**
- Cost per mile $6.8 M *
- Average Revenue per mile $5.8 M**

**Vehicle Business**
- Cost per mile $15 M *
- Average Revenue per mile $12 M**

* Construction Cost     ** Net Annual Revenue
@ 73% of current AADT for high traffic routes
Freedom Mass Transit International

• Franchise Freedom Mass Transit projects
• Project management
• Toll Road Funding
• Approvals
• Marketing
• Project design
• Standards enforcement
Toll Road Business Funding

- Government: 30%
- Institutional: 30%
- FT International: 20%
- Individual Investors: 20%
  - Minimum $1,000 Max $500,000
High Speed Rail vs Freedom Transit Cost

• HS Rail Cost per mile $82 million
  • Secure rail (impenetrable barrier)
  • Absolutely level railway
  • All cross traffic must go over or under

• Average Speed 140 miles per hour with limited stops

• FT Cost per mile $37 million
  • Small foot print 48 ft wide
  • Secure elevated roadway above cross traffic
  • Uses highway right-of-ways

• Speed 140 miles per hour non-stop
  • Stations available every 5 miles minimum trip 10 miles 4.3 minutes
<table>
<thead>
<tr>
<th>City Pairs</th>
<th>Miles</th>
<th>HRS</th>
<th>Owner Cost</th>
<th>Rental Cost</th>
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<td>Los Angeles - San Diego</td>
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<td>Chicago - Indianapolis</td>
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<td>Houston - San Antonio</td>
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<td>Dallas/Ft Worth - Oklahoma</td>
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<td>New York - Washington DC</td>
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</table>

<table>
<thead>
<tr>
<th>City Pairs</th>
<th>Miles</th>
<th>HRS</th>
<th>Owner Cost</th>
<th>Rental Cost</th>
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<tbody>
<tr>
<td>Orlando - Miami</td>
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<td>Los Angeles - Las Vegas</td>
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<td>Pittsburgh - Philadelphia</td>
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<td>Atlanta - Memphis</td>
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<td>2.7</td>
<td>$134.27</td>
<td>$181.01</td>
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<td>Sacramento - Los Angeles</td>
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<td>$136.03</td>
<td>$183.38</td>
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<td>Chicago - Minneapolis</td>
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<td>Atlanta - Orlando</td>
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## Trip Cost Details

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<thead>
<tr>
<th>Trip Costs</th>
<th>Per Mile</th>
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<td>Guideway Fee</td>
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<tr>
<td>Power Used</td>
<td>$0.070</td>
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<tr>
<td>Vehicle Rental</td>
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<tr>
<td>Bonus Tax / mile</td>
<td>$0.053</td>
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<tr>
<td>FT Total Trip Cost</td>
<td>$0.426</td>
</tr>
<tr>
<td>FT Total Trip Cost w/o car</td>
<td>$0.303</td>
</tr>
</tbody>
</table>
Top view of Freedom Mass Transit.

Imagine the power generated by thousands of miles of Solar covered roadways.
Solar Estimates

• Installed Solar Cost per Mile $6.8 million
• Panels per Mile 11,446
• Panels per Station 15,198
• Megawatts per Mile 4.5
• Annual Revenue per Mile $5.8 million
• Annual Revenue per Megawatt $1.3 million
Rental Vehicle Estimates

- Cost of Electric Vehicle: $38,000
- Life Maximum Miles: 500,000
- Profit per Vehicle: 63%
- Average Service Life: 1.5 year
- Trip Load/Unload Time: 15min.
- Clean Time: 30min.
- Time Between Stations: 2.1 min.
- Rental Fee per Mile: 12.3 cents
Energy Efficiency
The FMT™ guideway externally powers electric vehicles

- Electric vehicles could reduce fuel cost by 74%  
- Single vehicles use 40% more fuel at highway speed  
- Dynamically created groups or platoons reduces energy by 400%  
- Safe following distances means each lane’s capacity is 2,300  
- Platooning vehicles raises capacity to 22,000
  (at 70% of guideway capacity)

1 http://content.sierraclub.org/EVGuide/myths-vs-reality
2 http://www.mpgforspeed.com/
3 http://www.dot.ca.gov/hq/maint/Pavement/offices/Pavement_Engineering/LCCA_Docs/Appendix5_Aug_1_2013.pdf
Airline Energy / Environmental Cost

• Short journeys are most wasteful.
• Substantial fixed costs must be paid
  • maintenance
  • labor
  • bag loading and unloading
  • taxes
  • landing fees
  • cleaning
  • especially fuel (Planes typically burn most of their fuel during takeoff and landing.)
• Short-haul trips
  • 2/3rds of domestic flights are less than 700 miles
  • 35% of those are less than 350 miles

http://www.wsj.com/articles/SB10001424052702304691904579349264138993436
Airline Flights per Day

• "On any given day, more than 87,000 flights are in the skies in the United States. Only one-third are commercial carriers, like American, United or Southwest. On an average day, air traffic controllers handle 28,537 commercial flights (major and regional airlines), 27,178 general aviation flights (private planes), 24,548 air taxi flights (planes for hire), 5,260 military flights and 2,148 air cargo flights (Federal Express, UPS, etc.).
Station Merge Capacity Each Direction

• Maximum Vehicle Merges per hour
  • One merge point
  • Four staging points
  • Six vehicles per merge
  • Twelve merges per minute

• Phoenix stadium with 26,000 parking spaces emptied in .8 hours
  • Four stations
  • Two merges each direction
  • Four directions
  • Two direction on each side of stadium
Freedom Mass Transit Supports

Massive CO2 Reductions
1,405 million metric tons
All electric vehicles emit no gasses and power comes mostly from solar energy. 30% of US total

New Tax Revenue
Tax Revenue on each FMT project is a permeant new source of revenue. Energy tax average $4 million a mile.

Economic Redistribution
FMT fares quickly payback the infrastructure investment and then provide a steady return.

Crowd Funding
Small investors can participate in FMT projects at a $1,000 a share level.

Ride Sharing
Fares are based the vehicle not the passengers. If user choose to share the ride the cost can be very low per passenger.

Efficient Travel
Compared to other forms of mass transit.
74% less energy cost
400% less energy
Freedom Mass Transit™ Summary
Single Mode Transit

- A transportation paradigm shift
- Individual car mass transit
- Car ownership benefits w/o owning
- Fast travel across town or access country
- Safer travel
- Low cost rideshare travel
- Revenue return to millions of small investors
- Huge new Tax revenue
Questions