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.

Initial FMT Installations

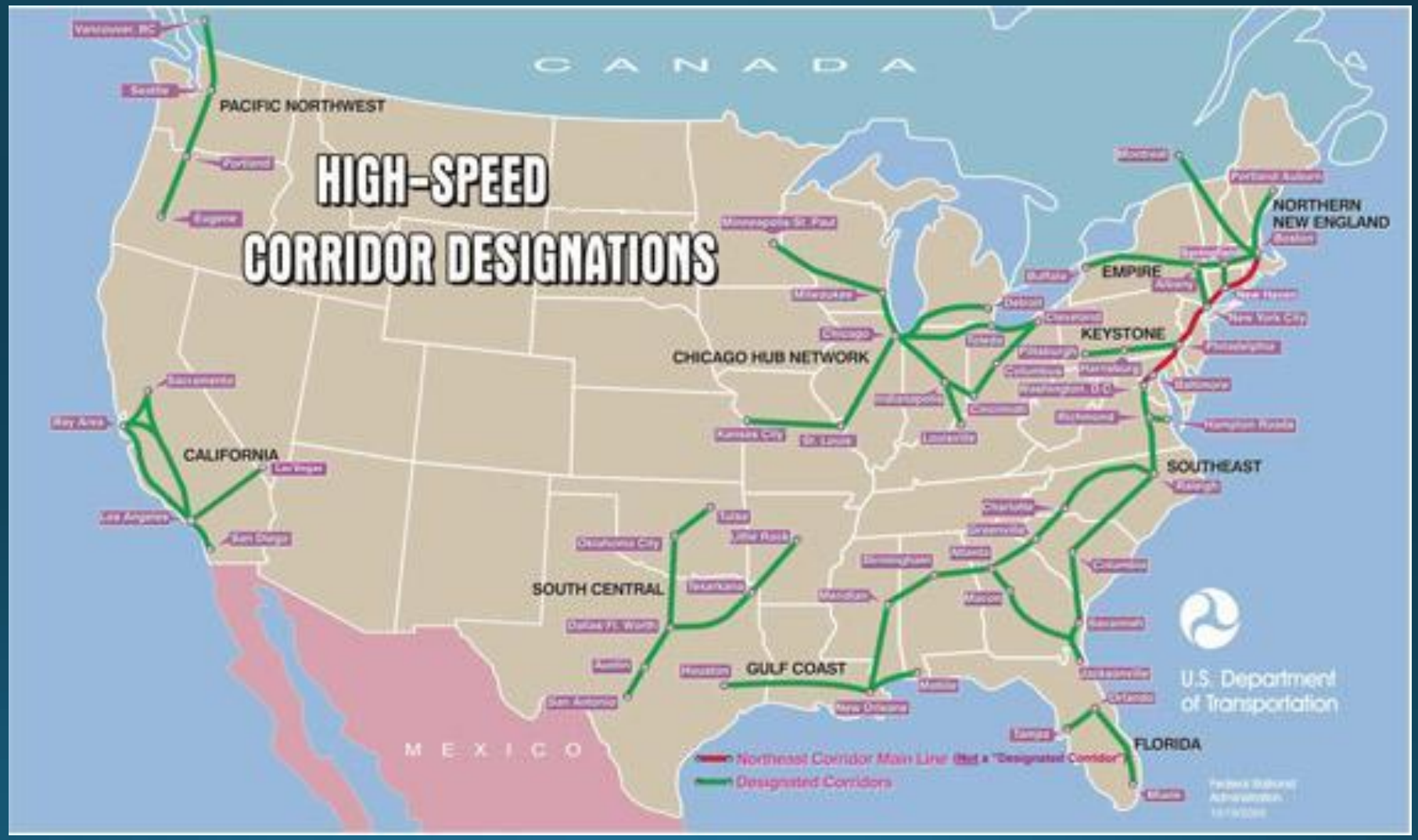
These routes have extremely high traffic volumes and would generate the most revenue.

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

http://www.hsr.ca.gov/docs/about/ridership/ridership_CM_and_forecast_CHSR_RR_2014_BP_Forecast_Tech_Memo_041814.pdf

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

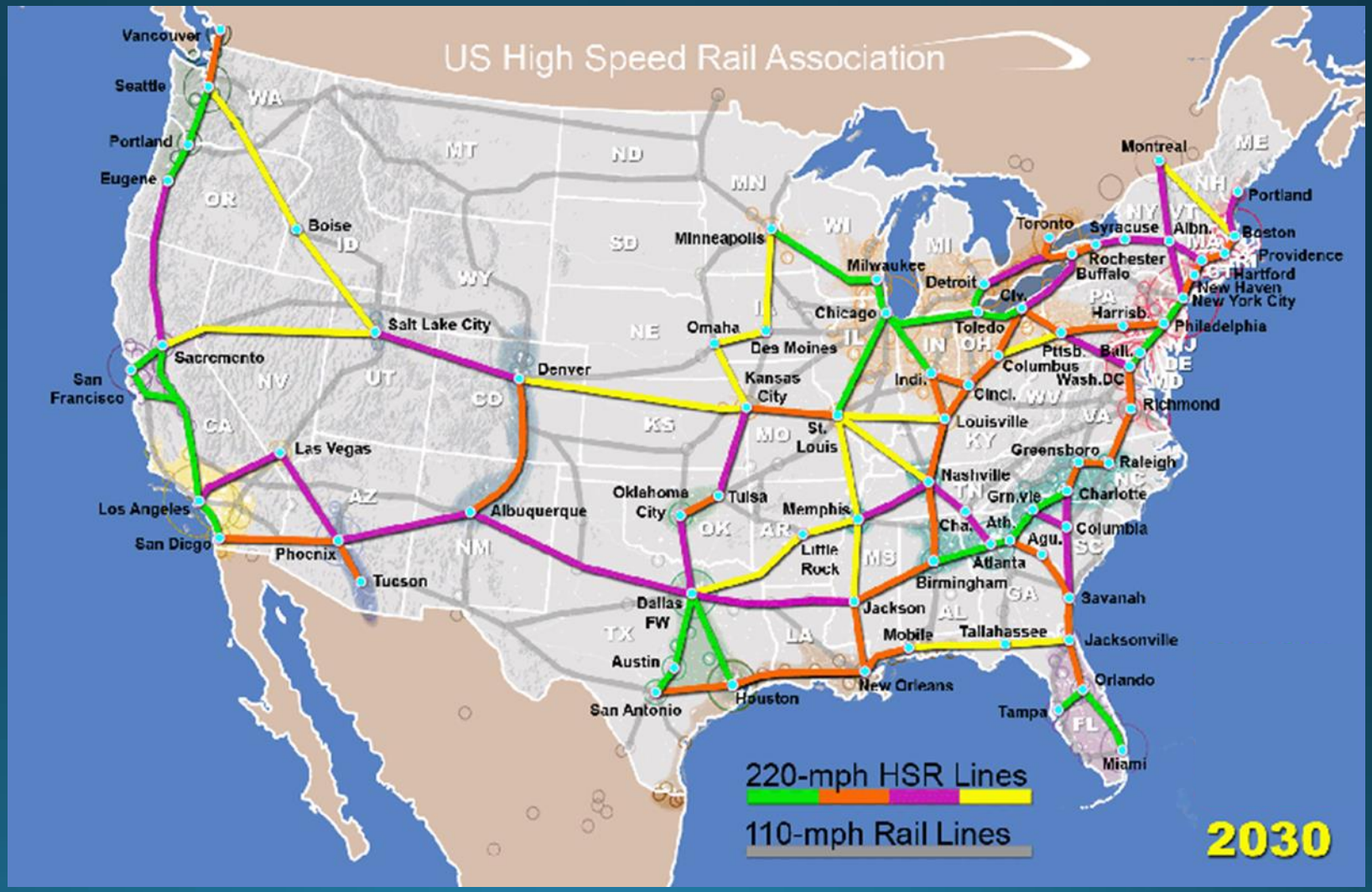
http://www.amtrak.com/ccurl/453/325/Amtrak-Vision-for-the-Northeast-Corridor.pdf

Boston – Washington

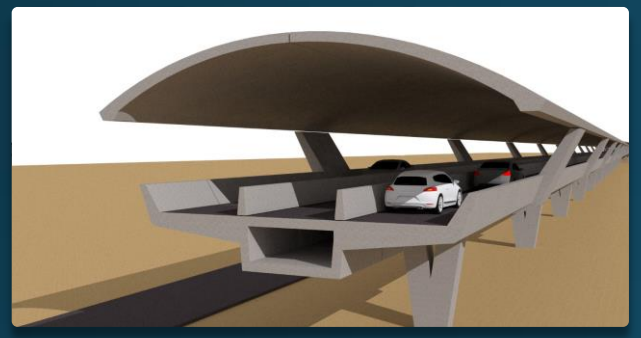
	NextGen HSR	FM Transit
Speed	220 mph	140 mph
Distance	427 miles	430 miles
Stations	17	87
No of Stops	4- 16	non-stop
Cost Est. billions	$115	$22
Travel Time Boston - NYC	94 minutes	93 minutes
Current Fare	$115 - $220	$91.58 per car
Annual Ridership	43.5 million 2040	1.1 billion 2030
Annual Revenue	$4.6 billion	$11.8 billion
FM Transit Revenue based on 73% of current car traffic and 40 mile trip		

Freedom Mass Transit - HS Rail Routes 2030

	HS Rail	FM Transit
Miles	17,000	17,000
Cost Billions	$500	$631
Stations	?	3401
Revenue	?	$245 billion
Megawatts	None	76,432
Cost	None	$115 billion
Revenue	None	$99 billion
Electric Cars	None	$250 billion
Rental Rev	None	$168 billion
Tax Rev	?	$126 billion
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

http://www.businessinsider.com/the-true-cost-of-a-high-speed-rail-for-the-us-is-more-than-500-billion-2009-5

- 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

Travel Time and Cost per Vehicle

City Pairs	Miles	HRS	Owner Cost	Rental Cost
Washington - Baltimore	42	0.3	$12.73	$17.88
Tampa - Orlando	84	0.6	$25.46	$35.77
San Francisco - Sacramento	88	0.6	$26.68	$37.47
Oklahoma City - Tulsa	107	0.8	$32.44	$45.56
Indianapolis - Louisville	115	0.8	$34.86	$48.97
Phoenix - Tucson	120	0.9	$36.38	$51.10
Los Angeles - San Diego	121	0.9	$36.68	$51.52
Washington - Philadelphia	139	1.0	$42.14	$59.19
Pittsburgh - Cleveland	141	1.0	$42.74	$60.04
Portland - Seattle	173	1.2	$52.45	$73.67
Chicago - Indianapolis	183	1.3	$55.48	$77.92
Houston - San Antonio	197	1.4	$59.72	$83.89
Dallas/Ft Worth - Oklahoma	205	1.5	$62.15	$87.29
New York - Boston	216	1.5	$65.48	$91.98
New York - Washington DC	230	1.6	$69.73	$97.94
Dallas/Ft Worth - Houston	239	1.7	$72.45	$101.77
Charlotte - Atlanta	245	1.8	$74.27	$104.33
Kansas City - St. Louis	248	1.8	$75.18	$105.60

City Pairs	Miles	HRS	Ower Cost	Rental Cost
Orlando - Miami	254	1.8	$89.51	$120.67
Atlanta - Nashville	259	1.9	$91.28	$123.05
Dallas/Ft Worth - San Antonio	275	2.0	$96.91	$130.65
Los Angeles - Las Vegas	277	2.0	$97.62	$131.60
Chicago - St. Louis	297	2.1	$104.67	$141.10
Phoenix - Las Vegas	301	2.2	$106.08	$143.00
Pittsburgh - Philadelphia	304	2.2	$107.13	$144.42
Atlanta - Charleston	324	2.3	$114.18	$153.93
Phoenix - Los Angeles	372	2.7	$131.10	$176.73
San Francisco - Los Angeles	381	2.7	$134.27	$181.01
Atlanta - Memphis	381	2.7	$134.27	$181.01
Sacramento - Los Angeles	386	2.8	$136.03	$183.38
Chicago - Minneapolis	410	2.9	$144.49	$194.78
Atlanta - Orlando	438	3.1	$154.36	$208.08
Denver - Albuquerque	445	3.2	$156.82	$211.41
Atlanta - New Orleans	469	3.4	$165.28	$222.81
Tucson - Las Vegas	523	3.7	$184.31	$248.47
Denver - Kansas City	610	4.4	$214.97	$289.80
Chicago - New Orleans	925	6.6	$325.98	$439.45

Trip Cost Details

Trip Costs	Per Mile
Guideway Fee	$0.180
Power Used	$0.070
Vehicle Rental	$0.123
Bonus Tax / mile	$0.053
FT Total Trip Cost	$0.426
FT Total Trip Cost w/o car	$0.303

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% [1]
- Single vehicles use 40% more fuel at highway speed [2]
- Dynamically created groups or platoons reduces energy by 400% [2]
- Safe following distances means each lane's capacity is 2,300 [3]
- 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 4,320
  - 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 CO_2 Reductions

1,405 million metric tons

All electric vehicles emit no gasses and power comes mostly from solar energy. 30% of US total

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.

New Tax Revenue

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

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 accoss country
- Safer travel
- Low cost rideshare travel
- Revenue return to millions of small investors
- Huge new Tax revenue

Questions