

# 21<sup>st</sup> Century Transportation®

***FASTRANSIT***



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# Building More Energy-Efficient Cars, Trucks, and Trains Will Not Solve Our Infrastructure Crisis

- HSR is incompatible with rail freight and will only slow the growth of car vehicle miles
- New rail freight capacity will only slow the growth of truck miles
- No long-distance electric trucks
- Electric cars will still get stuck in traffic, and need to recharge
- New rights of way: “impossible”

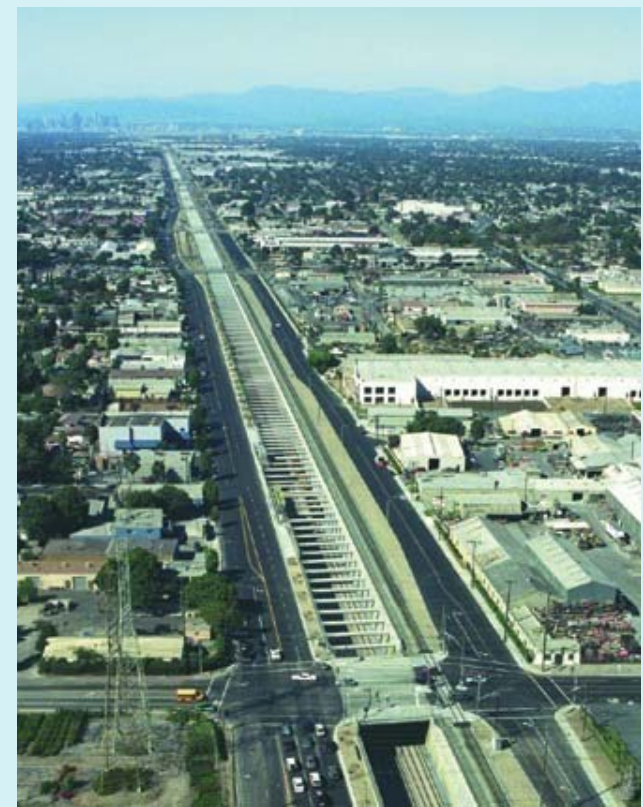


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The logo for FASTRANSIT, featuring the word "FASTRANSIT" in a bold, green, sans-serif font. Below the text is a stylized graphic of a train track with two horizontal lines and a central vertical line.

# We Need to Upgrade Existing Rights of Way to a High Capacity, Multi-Modal Packet Switching Network

- A single guideway for freight, trucks, cars, and passengers
- Dense urban networks and high-speed inter-city routes
- *Instant switching* => highest capacity, flexible routing
- High value proposition + market share => no subsidies
- Zero-emission, energy-efficient

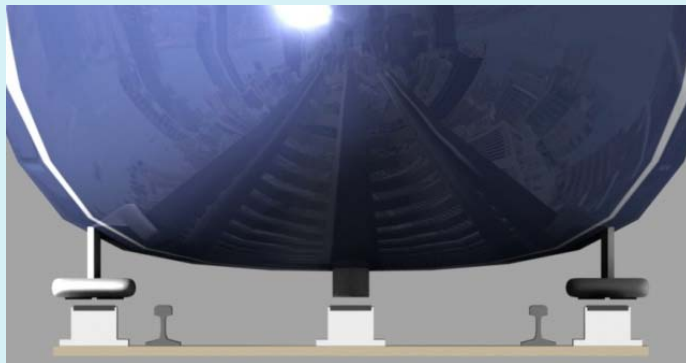


The Alameda  
Corridor

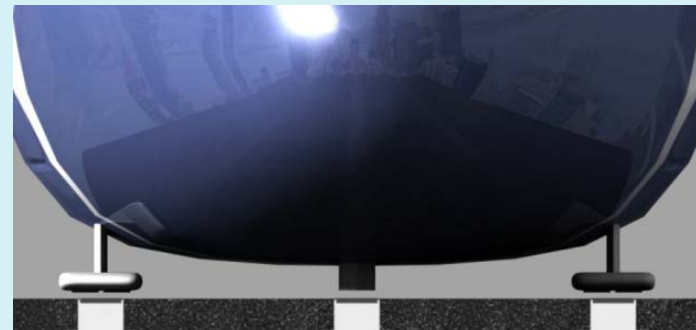


# Retrofit Existing Rails and Roads with Permanent Magnets to Create High-Speed “Electric Highway”

- Rails of permanent magnets cost \$3MM/mi, create permanent levitation: *no power, no wheels*
- *LSM + instant switching = maximum capacity*
- 2-meter gauge spans standard rail gauge: interoperable with conventional steel rails



Rail retrofit installation



Embedded in road

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# Patented Stabilized Permanent Magnet Design Creates Permanent Levitation with No Power

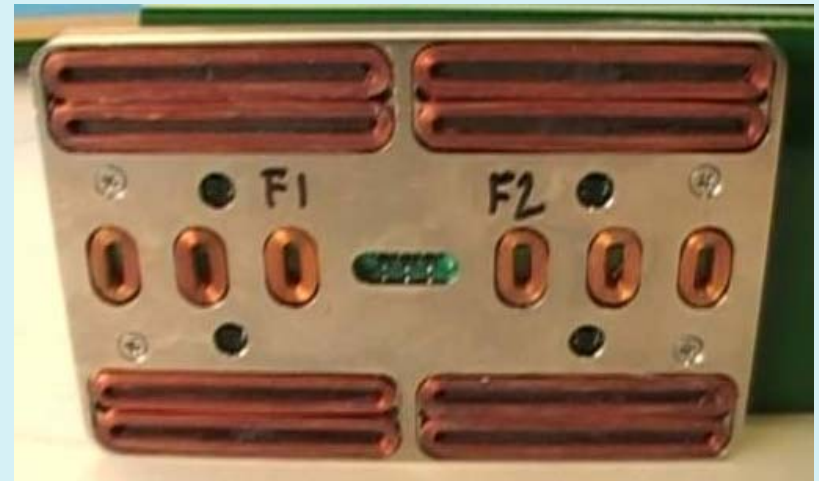
- Five foot vehicle levitating over a track for six years – using *no power*
- Powerful neodymium-iron-boron magnets
- “Halbach Array” focuses magnetic field on rails (safe, DC field above rails)
- Constant levitation gap of 3-8 cm at all speeds



Vehicle magnets can be sized to lift different types of payloads, all using the same rails

# Low-Power Stabilization and Motor Systems Already Proved in Multiple Applications

- Stabilizers center vehicle over rails at all times
- Vehicle follows right or left rail at the switch – *nothing moves in the rails*
- Linear motors, instant switches, offline stations allow individually routed cars on short headways
- *A highway, not a railroad*



The copper windings are stabilizers; the coils in the center are actuators for the short-stator LSM – *and yes, the bogie pivots on curves*

# A Superior Value Proposition for a Wide Range of Freight and Passenger Transportation Markets

- Faster, less expensive than rail *or* trucks
  - Ports: one move from gantry crane to highway offramp near customer
- Urban/regional/high-speed inter-city networks
  - One-seat commuter rides
- Passenger car travel on the “Electric Highway”
  - Faster than flying < 600 mi.



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# “Electric Highway” Is Feasible Because it Offers Major Benefits for All Public and Private Stakeholders

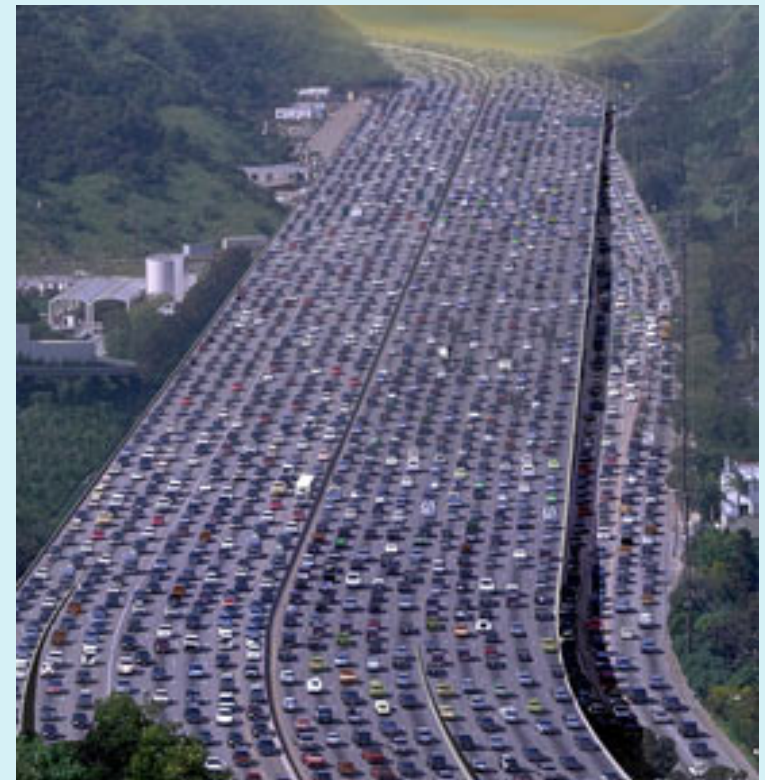
- Lower shipping costs = better for trucking cos.
- Just-in-time deliveries = better for customers
- No long-haul truck drives, only local moves
- Much lower highway maintenance costs
- Much greater capacity



Aerodynamic caps reduce drag; standard 5<sup>th</sup> wheel coupling

# Electric Highway Offers a Viable Business Model for a National Zero-Emission Transportation Network

- Single operating system for multiple markets segments
  - Network economics will reinforce market dominance
- Price at cost of self-driving:
  - \$1.50/mi for trucks
  - \$.20/mi for cars
- Solves “battery problem” of electric cars, trucks



All this can be replaced by 4 lanes

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# Thank You

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