



An Overview of High Speed Rail

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Defining High Speed Rail in the U.S.

- What is High Speed Rail?
 - Allusions to world-class European and Asian systems
 - But most U.S. projects not likely to be like those
- How Much Funding for High Speed Rail?
 - \$8 billion (ARRA) + \$5 billion requested FY2010-2014
 - But some of that money will go to regular intercity passenger rail projects

The general talk about HSR sounds like this...



But actual project proposals tend to look like this



What is High Speed Rail?

- Prevailing speed: 79 mph
- Improve existing tracks: 90-125 mph
- Dedicated, grade-separated, electrified track: 186-210 mph
- Maglev: 268 mph
- “Service that is time-competitive with air and/or auto for travel markets in the approximate range of 100 to 500 miles” (FRA)

High Speed Rail is a System

- Tracks
 - Straight
 - No highway crossings
 - Dedicated to passenger traffic
 - Electrified
- Signaling
- Trains

HSR in Other Countries

- Japan – since 1964
- France – since 1981
- Italy – since 1991
- Germany – since 1992
- Spain – since 1992
- Korea – since 2004
- Taiwan – since 2007
- China – since 2008

Why no HSR in United States?

- Differing structures of railways
 - Private (US) vs government (others)
- Economic geography
 - Size & population density
 - Freight/passenger rail differences
- Earlier shift to motor vehicles in US
- Government policies regarding transportation modes

High Speed Rail versus Other Modes

■ Air

- High speed rail can be time-competitive between downtowns <500 miles apart
- Requires more infrastructure than air travel

■ Highway

- High speed rail can be faster than driving; more predictable (avoids congestion); safer
- But compared to driving, each additional traveler in a group going by rail significantly increases the trip cost of the group

Proposed benefits of HSR

- Energy efficiency
- Reduced environmental impact of travel
- Alternative to congested roads/airports
- Development around stations
- (These benefits apply mostly to “true” HSR)

Proposed costs of HSR

- Development costs of “true” HSR are high
- Ridership estimates are often overstated
- Most corridors likely to require ongoing operating support
- May not be economically efficient investment in most corridors

Costs of High Speed Rail

■ Track

- Improve existing shared track to enable 79-110 mph: c. \$7 million/mile
- Dedicated ROW, speed > 110 mph: c. \$35 million/mile

■ Cost estimates tend to be understated

Cost estimates from National Surface Transportation Policy and Revenue Study Commission, Passenger Rail Working Group, Vision for the Future: U.S. Intercity Passenger Rail Network Through 2050, December 6, 2007

Congressional interest

- Passenger Rail Investment and Improvement Act of 2008 created new programs
 - High Speed Corridor Development Grant Program (authorized \$1.5 b/5 years)
 - Intercity Passenger Rail Development Program (authorized \$1.9 b/5 years)
 - Congestion Mitigation Grant Program (authorized \$325 m/5 years)

Congressional Funding for High Speed Rail

- FY1990-2007: \$4.17 billion total
 - Annual Average \$232 million
 - Mostly to NEC
- 2009: \$8 billion (ARRA)
- \$5 billion requested FY2010-FY2014 (DOT appropriations acts)
- \$50 billion proposed FY2010-FY2015 (surface transportation reauthorization)

Federal Funding: Available vs Requested

- Available:
 - \$8 billion now
 - Possibly \$5 billion over next 5 years
 - =\$13 billion
 - (Potentially as much as \$50 billion more over next 6 years)
- Requested in first year:
 - \$102 billion (278 pre-applications)

Current U.S. High Speed Rail Corridors

Corridor	Length (Miles)	Motive Power	Max Speed	Avg Speed
LA-San Diego	130	Diesel	90	55
Chicago-Detroit/Pontiac	304	Diesel	95	53
NYC-Albany, NY	158	Diesel	110	56
Phil-Harrisb'g, PA	104	Electric	110	66
NEC (DC-Boston)	454	Electric	150	69

Federally-Designated HSR Corridors



Funding for State-Supported Amtrak Rail Routes

14 states, \$177 million total (2008)



HSR Players

- Congress – \$, Programs
- White House – Signature Issue
- FRA – Regulations, Grants
- States – \$, Implementation
- Freight Railroads – Own the tracks
- Amtrak – Train Operator
- Industry – Contractors

Challenges

- Funding
 - Adequacy
 - Consistency
- Interstate coordination
- Expertise
- Project management

Challenges (cont.)

- Freight network capacity limits
- Regulatory requirements
 - HSR trains must be designed for tracks shared with freight trains
- Uncertain ridership forecasts
- Diffusion of federal funding

Opportunities

- Funding available
- Widespread support
- Positive Train Control (PTC) required on passenger rail lines by 2016

Acela on NEC

