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**

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

<table>
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<th>Corridor</th>
<th>Length (Miles)</th>
<th>Motive Power</th>
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Federally-Designated HSR Corridors

HIGH-SPEED RAIL CORRIDOR DESIGNATIONS

Northeast Corridor Main Line (not a ‘designated corridor’)

Designated 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