Case Study 2: High Speed Rail in America

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VISION for HIGH-SPEED RAIL in AMERICA

KEY
- Despatched High-speed Rail Corridor
- Northeast Corridor (NEC)
- Other Passenger Rail Routes

Pacific Northwest
Northeast New England
California
Chicago Hub Network
Keystone
Empire
Southeast
South Central
Gulf Coast
Florida
HSR Details

› High Speed Passenger Rail
  › E.U. - 200 km/h (125 mph)
  › U.S. - 90 mph (145 km/h)

› Amtrack
  › 21,000 miles of passenger rail

› U.S. HSR System
  › 100-600 mile Intercity Corridors

› ARRA Funding
  › $8 billion initial investment
  › $5 billion over 5 years
Case Outline

- History and International Experience
- Narrative and Overview of U.S. HSR Plan
- Policy and Economic Issues
- Actors and Implementation
Brief History of U.S. Passenger Rail

- Before Rail Time
  - Rivers, canals, horse drawn coaches
  - Low efficiency, and low capacity
- Rail Prosperity
  - Government loans and free land grants
  - Trains carry 95% of intercity transportation
  - Peaked in 1920, 1.2 billion passengers in the year alone
Brief History of U.S. Passenger Rail

- After automobile appeared
  - Ridership sharply went down
  - The Great Depression furthered the trend
- With new technology
  - President Roosevelt’s New Deal Program
  - Ridership increased a little bit, but far less than the numbers in 1920
- Record ridership during World War II
Brief History of U.S. Passenger Rail

- Post-war period
  - Expansion of highway system
  - Government subsidies to air industry
  - Bankruptcies, mergers, and acquisitions of many railroad companies
- Rebirth of Passenger Rail?
  - National railway passenger system (Amtrak)
  - Stimulus for High Speed Rail
High Speed Rail Timeline

Events

- 1991. Intermodal Surface Transportation Efficiency Act: not more than 5 corridors
- 2009. DOT strategic plan for high-speed rail across America
International Experiences

- Shinkansen in Japan
  - Started in 1964 between Tokyo and Osaka, densely populated area
  - Privatized in 1984
  - First line construction cost finance: issue bonds in Japan, loans from the World Bank
  - Expansion finance: local governments
  - Public and private partnership
International Experiences

- Shinkansen in Japan (cont’d)
  - Operation speed up to 186 mph
  - 291,258 thousand passengers annually
  - Never a fatal train accident since operation
  - Reliability: accurate schedule
  - Low emission level
International Experiences

- **TGV (Train à Grande Vitesse) in France**
  - Operated since 1981
  - 932 miles in France and 2500 miles in Europe (until 2007)
  - Annual passenger 100 million
  - No fatality since operation
  - Substantially reduce travel time
  - Consumer oriented service
International Experiences

› TGV (Train à Grande Vitesse) in France (cont’d)
› Energy efficient and low fuel consumption
› Construction cost: $20 million per mile
› Mainly financed by SNCF (French National Railway)
Discussion 1

Many European and Asian High Speed Rail systems operate in densely populated areas along relatively shorter tracks. Can American HSR adjust to the geographic and population differences?
Why we need High Speed Rail
President Barack Obama and the U.S. DOT established a strategic plan for HSR.

The HSR plan would allow for cities all across the U.S. to be interconnected via designated HSR corridors as well as other passenger rail routes.
A set of strategic transportation goals have been established to address challenges for future transportation projects.

The U.S. DOT feels that passenger rail is positioned to account for the transportation goals.
Transportation Goals

- Transportation investment must ensure both **safe and efficient** transportation.

- Transportation investment must provide **groundwork for economic competitiveness**. Transportation efforts should establish a base for ongoing economic growth.

- Transportation investment must encourage **energy efficiency and environmental quality**. Efforts to establish energy independence and reduce emissions will be reinforced in new transportation efforts.

- Transportation investment must **support interconnected, livable communities**. Transportation efforts should help to advance the quality of life in communities by providing affordable, convenient, and sustainable options.
Transportation Goals and HSR

- **Efficiency** can be utilized by using existing road right-of-ways and improving upon existing rail lines for future HSR services.

- HSR and IPR have a very good **safety** record overall.

- Rail can help serve the needs of business as well as generate construction and operating jobs. This in turn will provide a **foundation for economic growth**.

- Rail has already established **energy-efficiency and environmental quality**.

- Rail has been known to help reduce urban sprawl because it **allows for higher-density growth**.
Overview of U.S. HSR Plan

HIGH-SPEED RAIL CORRIDOR DESIGNATIONS

Map showing high-speed rail corridor designations across the United States, including routes in the Pacific Northwest, Midwest, Northeast, and Southeast regions.
Northeast Corridor

- Boston, New York, Washington D.C.
- 456 miles
- Acela Express
  - Average Speed: 70 mph
  - Max Speed: 150 mph
  - Averages Travel Time: 7 hours (Boston to D.C.)
- Not a “designated high speed rail corridor”
California Corridor

- Los Angeles, San Francisco, Sacramento, San Diego
- Electric Powered
- 800 miles
- Operate at over 200 mph for much of its length
Pacific Northwest Corridor

- Portland, Seattle, Vancouver
- 466 miles
- Planned to operate at 110 mph
Northern New England Corridor

- Boston is the hub
- Current frequent passenger service: Boston to Portland, and New Haven with Springfield
- Less frequent service: Boston to Springfield and Albany
$3.4 million has been allocated for grade crossing improvements

State fund construction improvement

Some portion could run up to 110 mph
• East from Harrisburg to Philadelphia: mature passenger corridor, with frequent intercity trains

• West from Harrisburg to Pittsburgh: heavy-duty freight railroad with only one passenger train round trip per day
Southeast Corridor

- Up to 110 mph speeds
- Virginia-North Carolina Interstate High-Speed Rail Compact
- Washington-Richmond: two hours
- Richmond-Charlotte: four-half hours
Florida Corridor

- Amtrak serves with long-distance trains
- Tri-Rail commuter service over the State-owned, 72-mile railroad
- Florida attempts to develop a over 150 mph high speed rail
Chicago Hub Network

- Three earliest-designated segments: Milwaukee, Chicago–St. Louis, and Chicago–Detroit
- 95 mph already possible on the Chicago–Detroit route
- The Midwest Regional Rail Initiative (MWRRI)
- A 10-year program to achieve 110 mph service on many of the lines
• New Orleans is the hub
• At Atlanta, the Gulf Coast Corridor would connect with the Southeast Corridor
• No corridor-type intercity rail service operates in this corridor
South Central Corridor

• Hub at Dallas-Fort Worth, Texas

• Status quo: single long-distance train (Amtrak) and Oklahoma-sponsored Fort Work-Oklahoma City Heartland Flyer train

• $2.558 million has been allocated for grade crossing improvements
Discussion 2

› How do you think the public will react to this new mode once in place?
Policy Issues

- Until 2008, the policies associated with intercity passenger rail focused mainly on institutional policy regarding Amtrak.

- With the passage of key legislation, a new framework has been established for intercity passenger rail development.
Policy Issues- Funding HSR

- The 2008 Appropriation Act (IPR)

- The Rail Safety Improvement Act of 2008 (RSIA)

- The Passenger Rail Investment and Improvement Act of 2008 (PRIIA)

- The American Recovery and Reinvestment Act of 2009 (ARRA)
The 2008 Appropriation Act (IPR)

- Allowed federal funding to be made available to states on a competitive basis.

- Funding allows states to financially make capital investments on HSR corridor planning.
The Rail Safety Improvement Act of 2008 (RSIA)

- Addresses the safety policy issues regarding intercity passenger rail.

- Under this act the Federal Railroad Administration’s safety programs were reauthorized from an intercity passenger rail perspective.
The Passenger Rail Investment and Improvement Act of 2008 (PRIIA)

- Provides additional funding programs for HSR improvement efforts

  (1) **Intercity Passenger Rail Service Corridor Capital Assistance program** - funding for IPR services.

  (2) **High-Speed Rail Corridor Development program** - funding for HSR services.

  (3) **Congestion Grants program** - funding to states and Amtrak for congestion relief efforts.
The American Recovery and Reinvestment Act of 2009 (ARRA)

- Economic stimulus package aimed to invest in America’s future.

- President Obama has allotted $8 billion in initial HSR funding and $5 billion over the next 5 years.
Policy Issues (Cont.)

- Partnerships will be needed between states and private railroads.

- Multi-state partnerships will be needed in order to plan, fund, build, and operate HSR corridors that cross over state boundaries.
Economical Analysis

- Cost Benefit Analysis (CBA)
  - Incorporate many criteria
  - Capital Cost, Operation Cost, TT, Cost PKT
  - Nonmonetary parameters require monetary assignment based on models
- Examined two cases
  - Improvement of NEC
  - Analysis of California Corridor
Economical Analysis (Cont.)

- FRA NEC Upgrades
  - Investment proposal for improving NEC
  - Projected a $14.0 billion investment would yield a net present value benefit of $16.3 billion
  - Reduce travel times
  - Current Infrastructure is limiting earning potential
  - No CBA implemented in report
Economical Analysis (Cont.)

- California Corridor
  - Study compared various modes for the region
  - Incorporated a detailed CBA
  - Concluded HSR is significantly more costly than expanding air service and marginally more costly than auto travel
  - Estimated a $590,100,000 subsidy per year to compete with air travel in the corridor
  - HSR better suited for shorter distances to compete with auto travel
- Implementation ideas…
## Potential Modal Comparative Advantage

<table>
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<tr>
<th>Population Density</th>
<th>Intercity Distance Mile</th>
<th>Light</th>
<th>Moderate</th>
<th>High</th>
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<tbody>
<tr>
<td>0-100</td>
<td>1) Auto</td>
<td>2) Auto</td>
<td>1) High Speed Rail</td>
<td>2) Air</td>
</tr>
<tr>
<td>100-600</td>
<td>1) Auto</td>
<td>2) Conventional Rail</td>
<td>1) Auto</td>
<td>2) Auto</td>
</tr>
<tr>
<td>600-3,000</td>
<td></td>
<td>1) Auto</td>
<td>2) Air</td>
<td>1) Air</td>
</tr>
</tbody>
</table>
Discussion 3

Should government agencies implement plans in regions where HSR may not be economically feasible?
Actors Involved

Federal Government:

➤ Supports the case for HSR

➤ President Obama’s administration, along with the U.S. DOT developed the strategic plan for HSR.

➤ The Federal Railroad Administration has and will play an integral role in the planning of these systems on a large scale.

➤ As the national passenger line, Amtrak will also play a role in the transition.
Actors Involved

State Governments:

➢ The involvement includes all the states that are designated to receive HSR corridors.

➢ The state DOT’s will play a large role in the planning and implementation of the rail within their state.
Actors Involved

Local Governments:

- Local governments could be called upon for the operation of the system within their region.
Actors Involved

Airline Owners:

▷ HSR will serve as a substitute to some airline routes affecting demand.

Business Owners:

▷ HSR station near business will be positive.

-Should projects around a station be taxed toward the development of that system?
Actors Involved

Public:

- Involvement has increased with popularity of the case.
- Public scoping meetings have been used to gauge opinion on HSR.
- Response of mixed reviews
Implementation Guidelines

In order for a project to be implemented, a set of criteria need to be met to ensure the project will achieve certain standards set out by the federal government.

- Achieve public benefit.
- Contribute to economic recovery
- Advance the strategic transportation goals
- Further other HSR goals.
Implementation Schedule

Round 1:

(1) Projects:
   (a) that can start immediately or
   (b) have minimal engineering work

(2) Corridor Development Programs: completed preliminary planning and precon- includes phases or sections of corridor

(3) Planning: State corridor planning efforts to prepare for remaining funding
Round 2:

- Provides opportunity for resubmission of revised applications that were unsuccessful in Round 1
- Provides opportunity for new proposals
Strategic Plan: April 16th, 2009
Application Guidance: June 17th, 2009
HSR Proposals: August 24th, 2009 & October 2nd, 2009

* Schedules are preliminary; June Guidance will provide additional detail.
Final Discussion

- Do you think high speed rail is part of a viable solution to America’s transportation problems?