Collaborative and Participatory Planning of The Future of High Speed and Commuter Rail on the Northeast Corridor

Joseph H. Boardman | President and CEO, Amtrak
A densely-populated region, with neighborhoods and urban cores, provides economic and quality of life justification for high quality interconnected rail services.

Amtrak Infrastructure Supports 125-150 mph service

The NEC today

High Speed Reliable All Weather Service

Stations Define Neighborhoods
AVE Class 102 train - built by Talgo and Bombardier for RENFE (Spanish national rail operator) in 2005 ...

...on the Paracuellos de Ribera viaduct, part of the Madrid-Barcelona high speed line, opened in 2003
...and what we have

ACELA – built by Bombardier and Alstom for Amtrak in 2000...

Electric catenary added and bridge deck rebuilt, 1999

Widened with cantilevered addition in 1910

Double-tracked in 1860

...on the Canton Viaduct – built by George Washington Whistler for the Boston & Providence Railroad in 1835

Equipment Design Must Account for Existing Infrastructure Constraints
By World Definition: NEC Operation is High Speed

Does not include about 400 miles of miscellaneous yard tracks

<table>
<thead>
<tr>
<th>Line</th>
<th>15 mph (CL I)</th>
<th>16-30 mph (CL II)</th>
<th>31-60 mph (CL III)</th>
<th>61-80 mph (CL IV)</th>
<th>81-90 mph (CL V)</th>
<th>91-110 mph (CL VI)</th>
<th>111-125 mph (CL VII)</th>
<th>126-150 mph (CL VIII)</th>
<th>Total Track Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEC Main Stem</td>
<td>4.7</td>
<td>18.8</td>
<td>68.4</td>
<td>145</td>
<td>144.6</td>
<td>273.7</td>
<td>267.6</td>
<td>195.4</td>
<td>1118.2</td>
</tr>
<tr>
<td>Percentage</td>
<td>0.4%</td>
<td>1.7%</td>
<td>6.1%</td>
<td>13.0%</td>
<td>12.9%</td>
<td>24.5%</td>
<td>23.9%</td>
<td>17.5%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

- About 65.9% of the Amtrak-owned NEC Main Stem trackage usable for 110-150 mph service
- Amtrak is the only company in America that maintains track for 110+ mph service
- 24.7% Boston to New York Operation is High Speed (125+ MPH)
- 44.9% Boston to Washington Operation is High Speed (125+ MPH)
- 65.7% New York to Washington Operation is High Speed (125+ MPH)
...but it depends on century-old infrastructure

- **Connecticut River Bridge**
  - Built in 1873
  - Cost to replace: $1.2 billion
  - Major bottleneck
  - 30 mph speed restriction
  - Water infiltration problems

- **Portal Bridge**
  - Built in 1907
  - Cost to replace: $225 million
  - Most active – 4K openings/yr
  - Fatigue issues

- **Susquehanna River Bridge**
  - Built in 1906
  - Cost to replace: $100 million
  - 2nd most active
  - Reliability & fatigue issues

- **Pelham Bay Bridge**
  - Built in 1906
  - Cost to replace: $550 million
  - SOGR and capacity needs

- **Niantic River Bridge**
  - Built in 1907
  - Cost to replace: $225 million
  - Most active – 4K openings/yr
  - Fatigue issues

- **B&P Tunnel**
  - Built in 1907
  - Cost to replace: $210 million
  - 420 trains/day

- **B&P Tunnel**
  - Built in 1873
  - Cost to replace: $1.2 billion
  - Major bottleneck
  - 30 mph speed restriction
  - Water infiltration problems
The Situation in Northern New Jersey

- Greatest operational challenge on the NEC
  - Density and Capacity
    - (Amtrak, NJT, LIRR)
  - Operating geography
  - Infrastructure age
- Service disruptions here ripple through the system, causing further disruptions at distant terminals:
  - Miami
  - Chicago
  - New Orleans

At peak, 1 train enters each tunnel every 120 seconds
In spite of these challenges...

• Amtrak carries more people than all of the airlines put together between:
  • New York and Washington (65%)
  • New York and Boston (52%)

• We’re operating a vital transportation link that can touch 150 mph - but we’re running on century-old infrastructure

• How do we solve this problem - and how do we grow?

Amtrak carries more people than all of the airlines put together between:
• New York and Washington (65%)
• New York and Boston (52%)

We’re operating a vital transportation link that can touch 150 mph - but we’re running on century-old infrastructure

How do we solve this problem - and how do we grow?

MOW equipment on the North End of the NEC
NEC Steps to HSR Vision and augmenting capacity for Commuter Partners, such as NJT

- Next Gen HSR to Boston
- Next Gen HSR North to Hartford
- Next Gen HSR South to Wash D.C.
- NEC Gateway – Newark - NYC
- 160 mph Service south of NYC
- Acela II Doubles HSR Fleet Capacity
- 35% Increase in Acela Capacity
The NEC of the future

- The NEC Master Plan published in 2010
  - Collaborative process with states, commuters, and freights
  - Designed to expand existing network and feeders to accommodate (by 2030):
    - 59% growth in total passenger ridership
    - 41% growth in total passenger trains
    - Increases in speed on existing ROW to 160 mph for Acela

- This is a participatory and collaborative plan, but has the following constraints:
  - Essentially improvements on existing alignments
  - Projected growth will “max out” capacity by 2030
  - Total cost (thru 2030) exceeds $50B
Amtrak’s Next Generation HSR Feasibility Study

<table>
<thead>
<tr>
<th>Route:</th>
<th>Stations Served:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Super Express</td>
<td>– Boston</td>
</tr>
<tr>
<td></td>
<td>– New York</td>
</tr>
<tr>
<td>4 Stops –</td>
<td>– Philadelphia</td>
</tr>
<tr>
<td>Next-Gen Alignment</td>
<td>– Washington</td>
</tr>
</tbody>
</table>
| Standard Express  | As above, other stops will include:
|                   | – Hartford                         |
|                   | – Danbury                          |
|                   | – Newark                           |
|                   | – Wilmington                       |
| 18 Stops          | – Baltimore                        |
| (A/B stop pattern, Next-Gen Alignment) | |
| Shoreline Express | - Boston - New York (via NEC alignment) serving: |
| 11 Stops          | – Providence                       |
|                   | – New Haven                        |
|                   | – Stamford                         |
|                   | - Direct service to New York - Washington (via Next-Gen alignment) |
| Keystone Express  | - New York - Philadelphia (via Next-Gen alignment) |
| 6 Stops           | - Keystone Corridor to Harrisburg  |
NEC Master Plan - and the Next Gen HSR Plan

• Master Plan
  – Total cost about $42B ($52B with normalized replacement included)
  – Will basically keep up with growth in demand

• Next Gen
  – Total cost (thru 2040) of $117B
  – Will generate $900M operating surplus in 2040

Projected Ridership
- Master Plan
- Next Gen

<table>
<thead>
<tr>
<th>Year</th>
<th>Master Plan</th>
<th>Next Gen</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>2020</td>
<td>16</td>
<td>25</td>
</tr>
<tr>
<td>2030</td>
<td>21</td>
<td>34</td>
</tr>
<tr>
<td>2040</td>
<td>23</td>
<td>38</td>
</tr>
<tr>
<td>2050</td>
<td>25</td>
<td></td>
</tr>
</tbody>
</table>

Projected Trip Times
- NYC - DC
  - Existing: 2:42
  - Master Plan (2030): 1:36
  - Next-Gen HSR Plan: 1:24

- NYC - BOS
  - Existing: 3:35
  - Master Plan (2030): 2:15
  - Next-Gen HSR Plan: 3:08
Why does the Amtrak team work every day to convey need for these investments?
Beginning the process, the visioning, and the conversation...

• We have a vision - but vision needs to be matched to a plan that is:
  – Attainable
  – Affordable
  – Needs of Partners
  – Generates returns quickly
  – Provides the public with a useful transportation solution that builds support for the completed project

• Amtrak has identified the first two stages of a plan:
  – NEC Gateway Project
  – New York-Philadelphia segment

• These improvements will provide the NEC with the capacity it needs for a century to come
Opening the Door: The NEC Gateway Project

- Keystone of the plan - creating capacity where it’s most needed

- Involves major capacity expansion
  - Add extra tracks between Newark and Penn Station
  - Build two new tunnels under the Hudson River
  - Build Moynihan Station
  - Add extra commuter rail capacity at Penn Station

- When commuter services get investment, high speed services get operational fluidity
New York-Philadelphia dedicated HSR Line

• The “minimum operable segment” concept:
  – Existing line would be improved to raise speeds to 160 mph (short term)
  – Separate HSR line could be built to provide dedicated 220mph express service (mid- to long term)

• Each improvement will generate
  – Initial rounds of improvement will greatly increase capacity
  – Subsequent rounds will increase speed, provide jumping-off point for later rounds of HSR construction
What do we need?

• A solution for the future – not a strategy from the past

• Capacity for growth

• An infrastructure improvement that will last for a century

• A strategy that will safeguard our mobility and conserve oil

• Rail is the progressive, high-tech, energy-efficient solution for tomorrow
Collaborative and Participatory Planning of
The Future of High Speed and Commuter Rail on the Northeast Corridor

Thank You

Joseph H. Boardman | President and CEO, Amtrak