



Northeast Corridor

*Looking at Technological
Innovation*

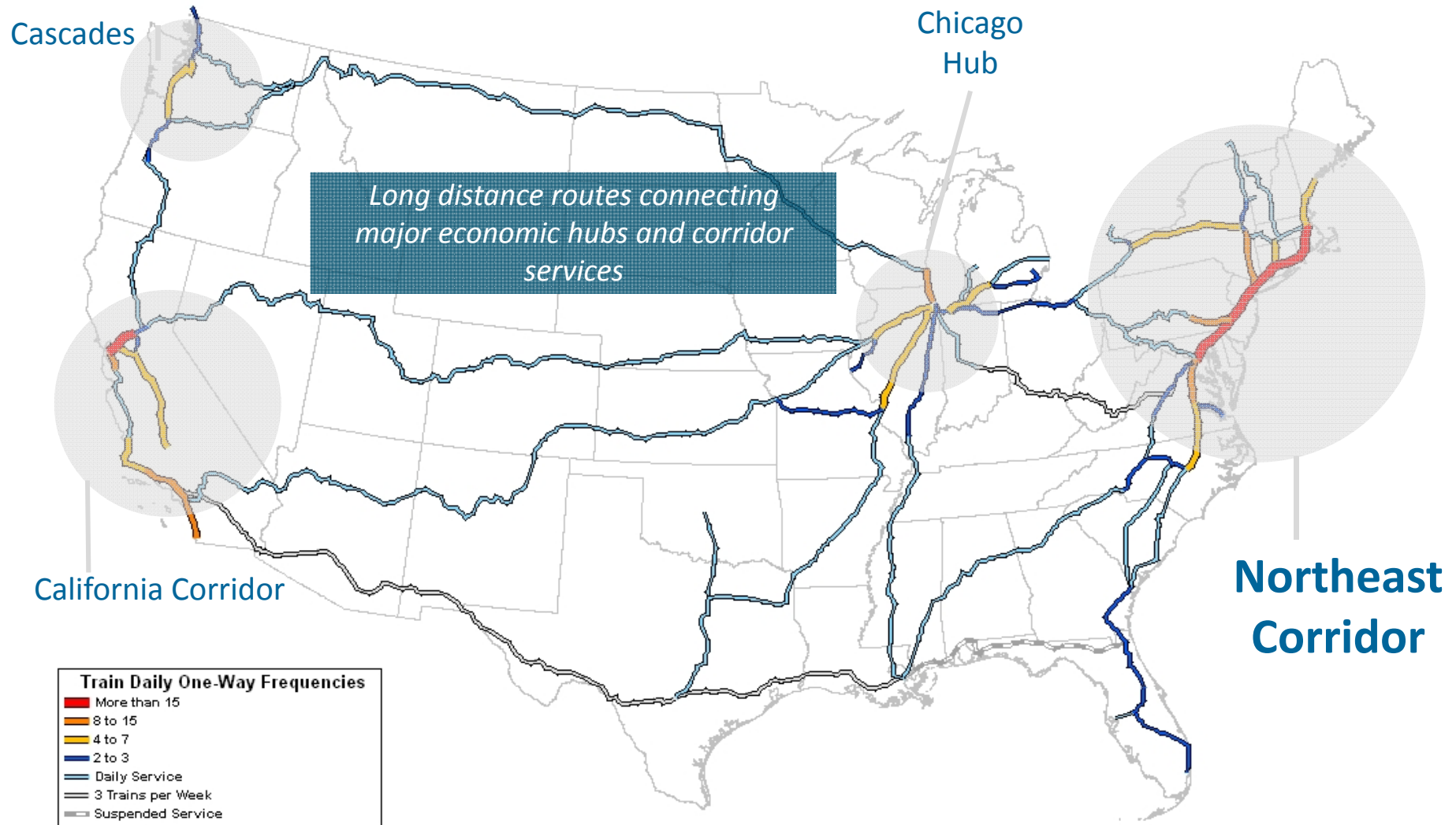
Prepared for:

Japan International Transport
Institute

By:

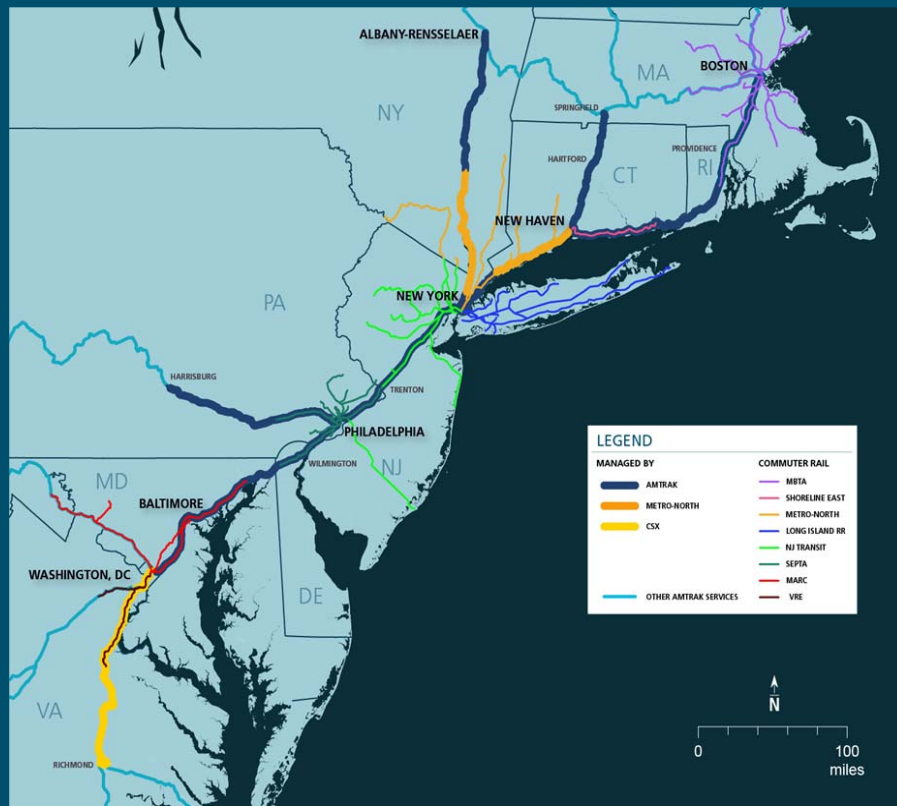
Drew Galloway
Chief Infrastructure Planning
Amtrak
March 23, 2015

- **The Amtrak System**
- **NEC Overview**
- **Technological Innovation in the NEC**
 - **A New Business Approach**
 - **Mobile Ticketing**
 - **Inspection Trains**
 - **Strong Partnerships for Future Planning**



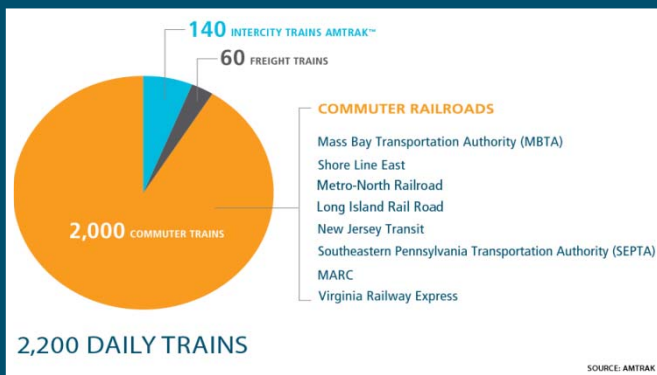


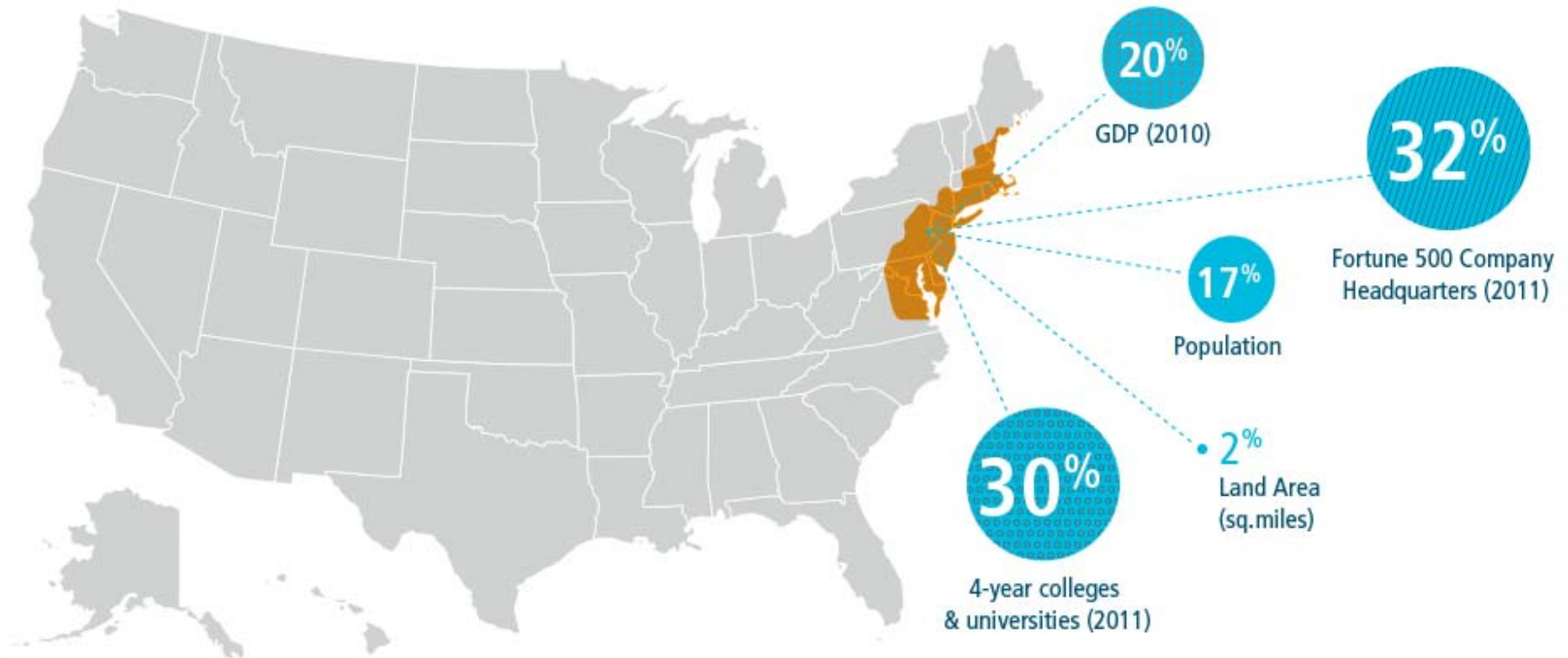
- **Congressionally-chartered National Railroad**
 - 20,000 employees operate a 21,100 mile system
 - 310 daily intercity trains; 528 stations
 - 70% of our train-miles run on track owned by other railroads
- **Ridership (30.9M) and ticket revenue (\$2.189B) in FY 2014**
- **Amtrak Services:**
 - Northeast Corridor (NEC)
 - State-supported trains
 - Long Distance Trains



CRITICAL AND COMPLEX OPERATIONS

- 899 total route miles
- Carries intercity passenger, commuter, and freight trains
- Amtrak is the majority owner and infrastructure manager (546 route miles)
 - 8 commuter railroads depend upon Amtrak for reliable operations
- 66% electrified
- 150,000 daily trips, 260 million annual passengers
- 1,200 bridges and tunnels, many over a century-old
- U.S. prototype of legacy corridor achieving high-performance, high-capacity service





SOURCES: U.S. CENSUS BUREAU, 2010; BUREAU OF ECONOMIC ANALYSIS, 2010; U.S. DEPARTMENT OF EDUCATION, 2011; FORTUNE MAGAZINE, 2011.

The Northeast Megaregion is better suited for rail travel than anyplace in the U.S., and parallels successful rail corridors in Britain and the rest of Europe.



Innovation on the NEC A New Business Approach



- Business line strategy introduced in 2011 and refined in 2014:
 - Corporate Development
 - Northeast Corridor Operations
 - State Supported Services
 - Long Distance Services
- Each line has responsibility for profits and loss.
- Separates operating functions from management of property.

- **Section 212(c) of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA):**
 - Created NEC Commission to improve coordination and planning
 - Required the NEC Commission to development a standardized formula for fully allocating operating and capital costs between Amtrak and commuter railroads for shared use assets.

- **Cost Allocation methodology applies to all users and owners of shared-use assets from Boston to Washington and the Amtrak-owned Springfield and Harrisburg branch lines and Empire Connection.**

- **Commission adopted historic Cost Allocation methodology in December 2014**

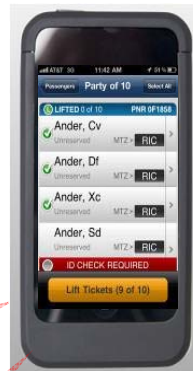
- **Cost Allocation methods become effective October 1, 2015.**



Technological Innovation on the NEC Mobile Ticketing

- Introduced on Amtrak's national network in 2012
- Replaced paper tickets with eTickets that are printable from a computer or available from a smartphone
- Convenient for passengers and provides real-time information, improves onboard operations, safety, inventory management, revenue realization and workflow.





1. Customer: Receives eTicket Confirmation "Anywhere"

No Ticket Pickup needed at Station

3. Real-Time, Accurate Passenger Manifest and Ridership Reports

2. Conductor Scans Customer Document or Smartphone. Data transmitted in Real-Time to Central Systems

Date/Time Printed: 04/05/2012 16:28:19 PM

(Electronic Lift Data Only)

Route: HEARTLAND FLYER

Train: 822

Train Origin Date:	04/01/12	Conductor ID/Name
Itinerary:	FTW - OKC	00015447
Total Conductors:	3	00084646
Total Number of Transactions:	149	00802895
Total Lifts:	149	
Total Unlifts:	0	
Total Subsequent Lifts:	0	
Total Passengers Handled:	188	
Total Vehicles Handled:	0	

Passenger Counts

Passenger Breakdown By Ticket Type:

Honored not Found Details:

One Way:	137	72.87%	Emp Pass Riders:	0	Infants:	2
TDD:	0	0.00%	COTS:	9	Group Riders:	39
VAL:	0	0.00%	Manual Tickets:	0	Rail Order:	0
Multi-Ride:	1	0.53%	Other:	0	MARC:	0
Monthly Pass:	0	0.00%	VRE:	0	MetroLink:	0
*Honored Not Found (HNF):	50	26.60%	Sounder:	0	Shore Line East:	0
			NNEPRA Voucher:	0	HNF Total:	50



Technological Innovation on the NEC Inspection Program

- Utilizes state of the art vehicles with measurement systems to inspect 22,000 miles of railroad track in the NEC and across the national network.
- The inspection fleet consists of four inspection vehicles that collect various data.
 - Track Geometry
 - Differential GPS
 - Track Quality Indices
 - Right of Way Video
 - Rail Profile
 - Vehicle Track Interaction



- **10002**
 - Equipped with right of way video system
 - Measures track geometry and rail wear
 - Operates in revenue passenger consists
 - Tests at speeds up to 135 mph

- **TSAV GRMS**
 - Self-propelled vehicle
 - Measures gage restraint, geometry and rail profile
 - Surveys all main line and terminal trackage in the NEC once per year



- **10003**
 - Operates in the Acela High Speed Trainsets
 - Tests at speeds up to 165 mph

- **10005**
 - Operates in revenue passenger consists and stand alone service
 - Tests the catenary system
 - Tests at speeds up to 125 mph
 - Test height, stagger and wear on underside of the wire



Flir Thermal Imaging

1. Flir Image 112 3/25/14 Time 12:19:13:6 to 12:19:14:6

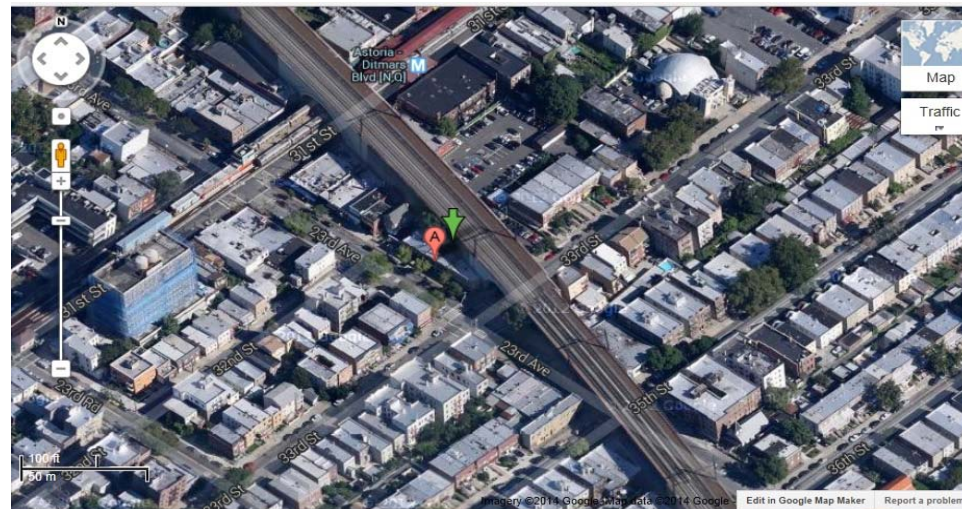
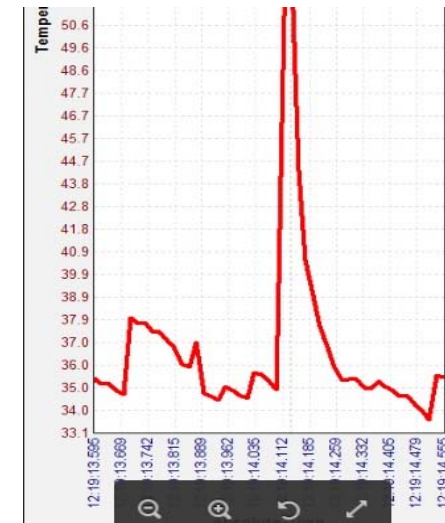
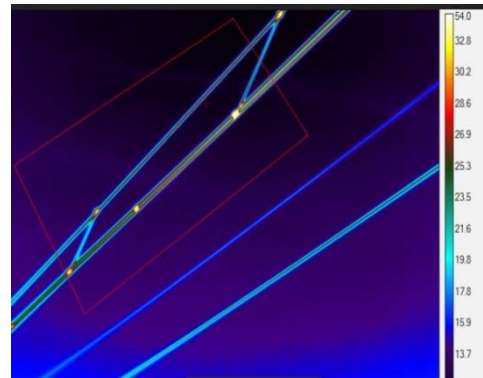
Amtrak Line AG

Speed: 55.02 MPH

Direction of travel: West

Travelled Track 1

Imaged Track 2



- Each Acela train car has a VTI unit which reports track conditions or specific car issues wirelessly to Amtrak.
- When a value exceeds Federal Railroad Administration thresholds, a notification is sent. Information transmitted includes the time, GPS coordinates, sensor reading, and a snapshot in time of the continuous sampled sensor data.
- The VTI Monitor platform can be configured and expanded to monitor many track and vehicle conditions.



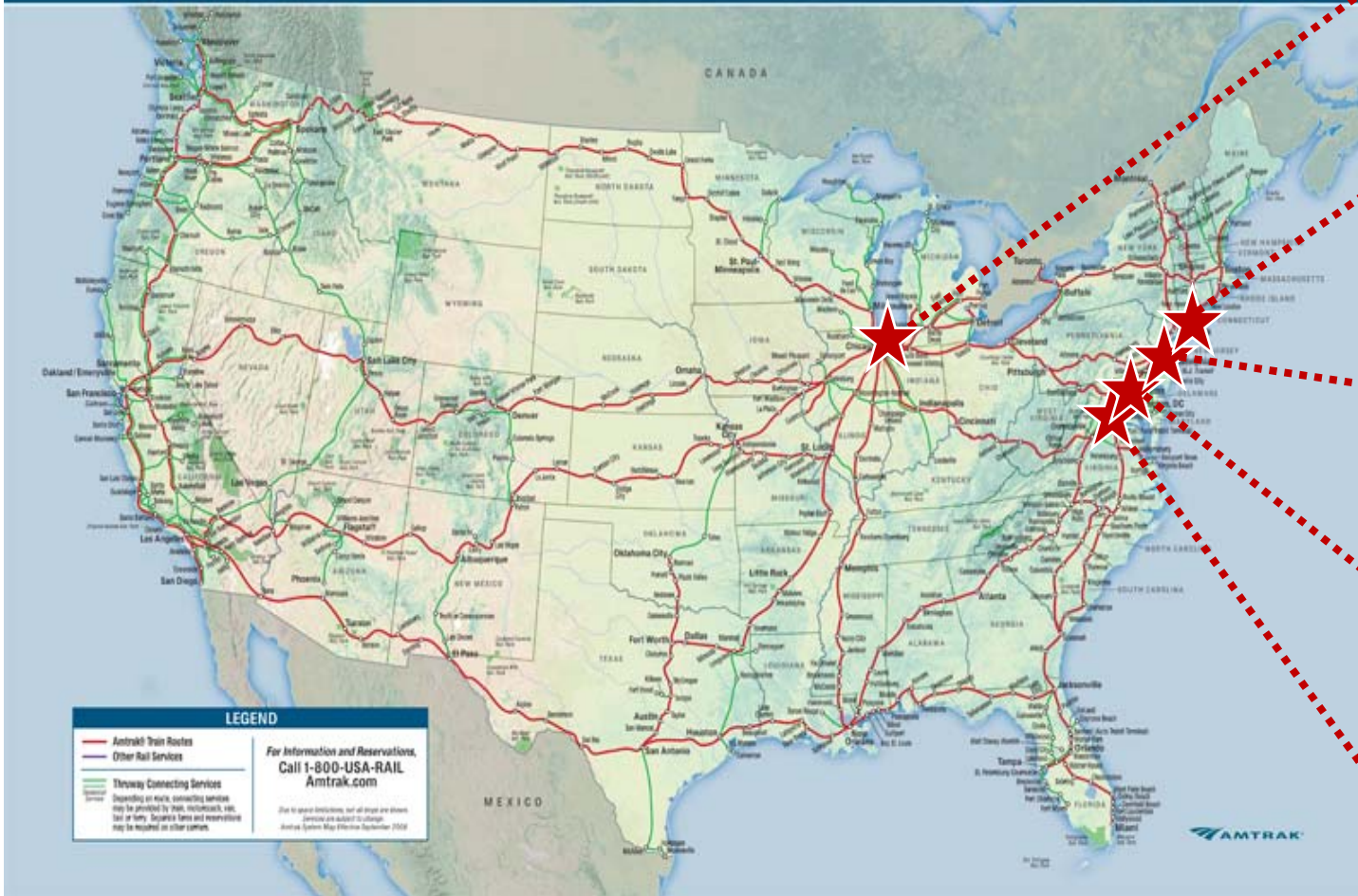


Technological Innovation on the NEC Developing Strong Partnerships for Future Planning



Station Planning & Development

THE AMTRAK® SYSTEM



CHICAGO



NEW YORK



PHILADELPHIA



BALTIMORE



DC





Philadelphia 30th St. Station

STATION FACTS

3rd busiest station in Amtrak network (4.1M passengers) in FY14

PLANNING STATUS

- Two- year joint planning effort currently underway
- Three main elements of analysis: Transportation, Station + Facilities and Commercial Opportunities

KEY PARTNERS

Amtrak, Brandywine Realty Trust, Drexel University, Southeastern Pennsylvania Transportation Authority (SEPTA), Pennsylvania Department of Transportation and property owners, government, and non-profit organizations located in close vicinity to the station.



STATION FACTS

2nd busiest in the Amtrak network (30 million visitors) , #1 for Metro, #1 for MARC and #2 for VRE

PLANNING STATUS

- Master Plan unveiled July 2012
- 15-20 year project with estimated cost of \$7B
- Plan refinement, survey/assessment work underway, near-term focus on concourse expansion.

KEY PARTNERS

Union Station Redevelopment Corporation (USRC), Akridge, Ashkenazy, VRE, MARC





For more information:
NEC.Amtrak.com