CSXT Network Planning: The View in 2010

University of Illinois at Urbana-Champaign
April 2, 2010
CSX connects the nation and the globe

CSX facts:

- 30,000 employees
- 21,000 route miles
- 1,200+ trains/day
- 5 million+ carloads
- 3,500+ locomotives
- 80,000+ freight cars
- Serves 70 ocean, lake and river ports
Our Vision and Values provide guiding principles

- **Vision:**
  - To be the safest, most progressive North American railroad relentless in the pursuit of customer and employee excellence

- **Values:**
  - It starts with the customer
  - People make the difference
  - Safety is a way of life
  - Fact based
  - Right results, right way
Network Planning is engaged in interesting work

- Infrastructure and capacity improvement projects
- What are the impacts of passenger service on a freight network?
- What models, applied technology and real world experience can we use to solve problems?
- Managing relationships with public agencies, other railroads and consultants
- Managing a Capital Investment Budget
- Preparing and delivering presentations – Selling your work
Network Planning works with a number of other groups at CSX

- Strategic Planning/SDT
- Strategic Infrastructure
- Service Planning
- Engineering
- State Relations
- Terminal Group
- Field Operations
- Finance
- Passenger & Commuter Ops
Market and economic conditions are improving (although slowly)

- Intermodal, steel, auto, grain, and chemicals
- Exports
- Inventories
- Financial markets
- CAPEX
Managing network capacity is our primary objective. This is not a simple problem.
Congestion can be lowered with management or $$$

- **Non-Capital Solutions**
  - Fleeting trains
  - Changing the mix of trains
  - Removing or rerouting trains
  - Changing the priority of trains
  - Changing maintenance windows

- **Capital Solutions**
  - Increasing authorized speed
  - Improving the signaling system or adding signaling
  - Adding sidings
  - Adding segments of double track
Various tools and techniques help us understand and analyze capacity

- Operations Analyzer
- Bottleneck analysis
- Dispatching Model – Rail Traffic Controller (RTC)
- Signal wake model
- Field observations, input and validation
- Risk evaluation
- Economic analysis
String Lines:
In the schedule world, trains are consistent each day of the week.
String Lines:
Actual scheduled operations are not consistent from day to day
(Note the multiple congestion points)

Q12121 delayed 1 hr-15 min by Q68819 walking train at Baker due to DD malfunction

Q12121 delayed 1 hr-15 min by Q59729 ahead at Casky with engine failure
Problem #1
Need capacity for projected growth on I-65 Corridor
Forecast infrastructure constraints from traffic growth

<table>
<thead>
<tr>
<th>2004 Traffic Levels</th>
<th>2008 Forecast Traffic Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surplus Capacity</td>
<td>Surplus Capacity</td>
</tr>
<tr>
<td>At or Near Capacity</td>
<td>At or Near Capacity</td>
</tr>
<tr>
<td>Capacity Constrained</td>
<td>Capacity Constrained</td>
</tr>
</tbody>
</table>
Multi-discipline team, including Network Planning, developed a system-wide solution

- Methodology
  - Performed bottleneck analysis on existing capacity
  - Developed Base Case and potential project list (RTC modeling)
  - Developed and modeled future growth
  - Assessed impact of growth on velocity and train delay
  - Developed project list and determined synergies
  - Modeled viable projects for impact to determine estimated benefits
  - Explored constructability from hi-rail trips
  - Developed project cost estimates and estimated benefits
  - Performed cost and economic analysis for rate of return on investment
  - Secured funding
  - Implemented construction
Result: $250M+ Capacity expansion project

- Chicago To Terre Haute 5 Locations
- Terre Haute To Nashville 10 Locations
- Birmingham To Atlanta 6 locations
- Waycross To Atlanta 7 Locations
Those investments drove better performance

Fitzgerald Subdivision

Velocity (mph)

1/6/06 3/6/06 5/6/06 7/6/06 9/6/06 11/6/06 1/6/07 3/6/07 5/6/07 7/6/07

Up 25%
Problem #2
Traffic growth required more efficient operation at Greenville, NC

Diagram showing existing connections and yard at Greenville, NC.
Multi-discipline team, led by Network Planning, devised an effective local solution

- **Methodology**
  - Opened discussions with city, state and other railroads involved
  - Risk analysis
  - Alternatives analysis
  - Competitive analysis
  - Public-Private Partnership
  - Site selection
  - Environmental assessment
  - Economic analysis
  - Permitting
  - Joint Facilities contract negotiation
  - Project management
Result: Direct connection and efficient operation

- Rocky Mount
- Parmele
- Plymouth
- Mackeys
- Greenville, NC
- Lee Creek
- Elmer

- Build New Yard and Yard Office 2010
- Build New Connection 2009
- Remove Old Yard
The future promises more challenging work

- Growth and changing markets for freight
- Public-Private Partnerships
- High-speed passenger rail
- Additional commuter operations
- PTC (unfundied government mandate)
- Track relocations to accommodate city growth
The Case for Public-Private Partnerships helps solve major national problems

- Freight-rail is essential to U.S. competitiveness in a global economy
- Freight rail is the most efficient and environmentally-friendly way to move goods.
  - CSX can move a ton of freight 466 miles on a single gallon of diesel fuel
- Freight rail helps alleviate highway congestion
  - A single train can move the equivalent of 280 trucks
National Gateway: Overview

**Project overview**
- $842 million in investments
- 61 double stack clearance projects
- Construction or expansion of 6 intermodal terminals
Clearance and infrastructure work needed

- Goal: Establish double-stacked capabilities

- Construction work varies from minor modifications to complete reconstruction of bridges, tunnels and other infrastructure

- 61 clearance projects in 6 states and the District of Columbia to achieve 20'-2" clearance

- Improvements underway at Charlotte terminal to increase capacity, efficiency
National Gateway provides solutions to our nation’s challenges, over $10 billion in public benefits

- Stimulates the economy
  - Over 30 years, expected to create more than 50,000 jobs, including more than 25,000 jobs in 14 economically distressed areas

- Improves U.S Competitiveness
  - Triples the market access potential for the Ports of Baltimore, Hampton Roads and Wilmington while improving western connections over Chicago.

- Provides a Sustainable Transportation Solution
  - Reduces emissions – estimated 20 million tons of CO2 eliminated
  - Assists states in attainment of federal clean air standards

- Reduces Consumption of Oil
  - Contributes to U.S. energy security by saving 2 billion gallons of diesel fuel
A successful team will be able to play offense and defense with diverse skills and experience

- **OFFENSE – Optimize freight network capacity**
  - Shifting traffic patterns and customer needs/demands
  - Volatility of the markets we serve and dynamic capital plan
  - Changing demands for freight network capacity

- **DEFENSE – Protect the franchise (our future)**
  - Influx of Federal Stimulus money
  - Proliferation of parties requesting use of our tracks and property
    - Amtrak
    - Commuters
    - State DOT’s
    - Planning organizations (MPO’s, TPO’s, Development Commissions)

- Current staff backgrounds/disciplines
  - Civil Engineering
  - Mechanical Engineering
  - Business Administration
  - Signal Engineering
  - Computer Science
All of this leads to employment opportunities as CSXT’s aging work force retires.
Questions?