PASSENGER RAIL SERVICE - NOVATO TO SUISUN CITY
FEASIBILITY STUDY

MAY 1, 2019
2018 CALIFORNIA STATE RAIL PLAN

- Published: September 2018
- Presented to SMART Board: 
  November 1, 2017
RAIL CONNECTIVITY VISION

Novato – Suisun Alignment
PURPOSE OF REPORT

▪ Examine the technical feasibility of implementing passenger rail service between Novato and Suisun City

▪ Document the existing physical condition of the corridor

▪ Propose limited infrastructure options, and their corresponding operating characteristics

▪ Identify potential infrastructure and environmental challenges

▪ Prepare schedule and cost estimates
CORRIDOR OWNERSHIP AND OPERATIONS

• **SMART**: Novato to Napa River (American Canyon)
  ➢ *Freight Operator: Northwestern Pacific Railroad*

• **Union Pacific Railroad (UPRR)**: American Canyon (Napa River) to Suisun
  ➢ *Freight Operator: California Northern Railroad*
IS A PASSENGER RAIL LINE FEASIBLE?

YES!
STUDY OPTIONS

1. Rapid Deployment – Basic Service
2. Higher Level of Service
STUDY OPTIONS

- **Transportation infrastructure which can be built upon for decades to come**...
- **Both Options have “scalability” to increase service with the addition of vehicles**
- **Investing not just in an option but in transportation connectivity in Northern California**
OPTION 1 - DESCRIPTION

Utilizing the existing operating freight railroad...

*What are the minimum infrastructure improvements needed to allow passenger rail service?*
OPTION 1 - SERVICE SCENARIO

- Start with minimum service;
  - Two morning round trips per day
  - Two evening round trips per day
  - Total round trips per day: 4 (8 one-way trips per day)

- Daily capacity for the 8 trips is approximately 2100 passengers
BACKGROUND - TRACK

- The Federal Railroad Administration regulates allowable speed based on quality or “Class” of track:
  - **Class 1**: 15 MPH maximum (for passenger trains)
  - **Class 2**: 30 MPH maximum
  - **Class 3**: 60 MPH maximum
  - **Class 4**: 80 MPH maximum

- Higher classes of track have more stringent geometric tolerances and require more robust infrastructure.
OPTION 1 - INFRASTRUCTURE

- Maximum speed: 60 MPH (Class 3 track)
- Maximize re-use of existing infrastructure
- Stay within existing rail embankment/prism
- Replace Black Point Bridge over the Petaluma River with used bridge
- Replace 28 existing timber bridges
OPTION 1 – RAILROAD SIGNALS

▪ Three types of signal systems:
  » Grade crossing signals
  » Wayside signals
  » Positive Train Control (PTC)

▪ PTC is a required safety overlay working with wayside signals.
  » The PTC system must be compatible with UPRR system
  » New fiber optic, wayside interface, back office, and on-board systems are required
OPTION 1- INFRASTRUCTURE

- New signals and train control/PTC
- Three new intermediate stations
- Two passing Sidings
- Shared maintenance facility
- Shared or contracted corridor maintenance
- Shared corridor with freight
- New connections to SMART and Capitol Corridor
OPTION 1 - INFRASTRUCTURE

- Two Moveable Bridges:
  » Black Point Swing Span
  » Napa River Vertical Lift

- Other Bridges:
  » Replace 28 existing timber bridges
BLACK POINT BRIDGE OPTIONS

▪ Constructed in 1911
▪ Repairing the bridge is not a viable option
▪ **Option 1:** Assumes repurposing a used bridge (budget $40 M)
▪ **Option 2:** New bridge (budget $100 M)
NAPA RIVER VERTICAL LIFT BRIDGE

- Would only require minor upgrades
- Constructed in 1979
- Excellent Condition
OPTION 1 - VEHICLE ASSUMPTIONS

Pre-Owned locomotives and coach cars

The minimum required fleet would be:

» Three (3) pre-owned locomotives (one spare)
» Six (6) pre-owned high platform coaches (includes two spares)
» Three (3) pre-owned Cab coaches (includes one spare)
NOVATO-HAMILTON STATION CONCEPT

New Novato-Suisun Station Platform
New Novato-Suisun Trackway
Existing Novato-Hamilton Station Platform
SUISUN/FAIRFIELD STATION CONCEPT

- New Novato to Suisun Station Platform
- Regional Bus Platform
- Existing Fairfield-Suisun Capitol Corridor Station Platforms
- New Novato to Suisun Trackway
OPTION 1 - ENVIRONMENTAL

- For Option 1, by staying within the railroad envelope, and because it is already an operating railroad, it is assumed that an appropriate level of environmental/permitting review will be conducted.

- Range of Environmental Documentation Cost:
  - $10M to $15M depending on level of requirements
## SCHEDULE—OPTION 1

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>YEAR 1</th>
<th>YEAR 2</th>
<th>YEAR 3</th>
<th>YEAR 4</th>
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<tr>
<td>Environmental/Public Participation</td>
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<td>Permitting</td>
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<td>Construction</td>
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<tr>
<td>Testing/Start-Up</td>
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<tr>
<td>Revenue Operation</td>
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## CAPITAL COST – OPTION 1

### OPTION 1 CONCEPTUAL CAPITAL COST SUMMARY

<table>
<thead>
<tr>
<th>COST CATEGORY</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Track &amp; Signal Construction</td>
<td>$332M</td>
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<tr>
<td>Sitework, Structures, &amp; Maintenance Facility</td>
<td>$171M</td>
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<td>Environmental Mitigation, Site Restoration, &amp; Station ROW</td>
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<td>Mobilization, Bonds, &amp; Insurance</td>
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<td>Rail Vehicles</td>
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<tr>
<td>Project Development, Support, and Start-up</td>
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<td>Contingency</td>
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<td><strong>Conceptual Cost Total</strong></td>
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Low Range of Conceptual Costs (-7% of Total) $780M  
High Range of Conceptual Costs (+7% of Total) $898M

(Totals may vary slightly due to rounding)
OPTION 2 - DESCRIPTION

Option 2:

What infrastructure improvements would be required to allow for a higher level of service, compared to Option 1?
OPTION 2 - SERVICE SCENARIO

- Five morning round trips per day
- Five evening round trips per day
- Total round trips per day: 10 (20 one-way trips)
- Daily capacity: approximately 5400 passengers
OPTION 2 - INFRASTRUCTURE

- Maximum speed: 79 MPH
- Reconstruct existing infrastructure
- Replace Black Point Bridge
- Replace 28 existing timber bridges
- Four Passing Sidings
- New signals and train control/PTC
OPTION 2 INFRASTRUCTURE ASSUMPTIONS

- Three intermediate stations
- New maintenance facility
- Four passing sidings
- Shared corridor with freight
- New connections: SMART and Capitol Corridor
OPTION 2 VEHICLE ASSUMPTIONS

New locomotives and new coach cars or Diesel Multiple Units (DMU’s)

» Six (6) new Tier 4 compliant locomotives, includes one spare
» Twelve (12) new high platform coaches, includes two spares
» Six (6) new Cab coaches, includes one spare

OR...

» Twelve (12) new DMU’s, includes two spares
OPTION 2 STATIONS

▪ Same end stations as Option 1
▪ Three or more intermediate stations
OPTION 2 - ENVIRONMENTAL

- Option 2 would likely require a more extensive environmental review because it will have greater impacts.
- Range of Environmental Documentation Cost:
  - $20M to $25M depending on level of requirements
## SCHEDULE—OPTION 2

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## OPTION 2 CONCEPTUAL CAPITAL COST SUMMARY

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<thead>
<tr>
<th>COST CATEGORY</th>
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<td>Track &amp; Signal Construction</td>
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<td>Sitework, Structures, &amp; Maintenance Facility</td>
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<td>High Range of Conceptual Costs (+7% of Total)</td>
<td>$1.30B</td>
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(Totals may vary slightly due to rounding)
CONCEPTUAL RUNNING TIMES

- **Option 1**: 75 mins – 90 mins
- **Option 2**: 60 mins – 75 mins
ALTERNATE VEHICLE TECHNOLOGY

- Hydrogen Fuel Cell
- Battery
- Electric Multiple Unit
## COMPARISON

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<tr>
<th>Item</th>
<th>Option 1</th>
<th>Option 2</th>
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<tbody>
<tr>
<td>Start of Service</td>
<td>4 years from funding available</td>
<td>6 years from funding available</td>
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<tr>
<td>Service frequency</td>
<td>3-car trains; 4 Round Trips/day</td>
<td>3-car trains; 10 Round Trips/day</td>
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<tr>
<td>Stations</td>
<td>2 end; 3 along corridor</td>
<td>2 end; 3 or more along corridor</td>
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<tr>
<td>Max Speed</td>
<td>60 MPH</td>
<td>79 MPH</td>
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<tr>
<td>Travel Time (Conceptual)</td>
<td>75-90 minutes</td>
<td>60-75 minutes</td>
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<tr>
<td>Daily Capacity</td>
<td>2100 total seats available</td>
<td>5400 total seats available</td>
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<td>Operating costs</td>
<td>Lower</td>
<td>Higher</td>
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<tr>
<td>Maintenance costs</td>
<td>Relatively high compared to Option 2</td>
<td>Significantly lower than Option 1</td>
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NEXT STEPS

- Evaluate Operating Plan
- Refine Project Scope
- Explore Station locations in cooperation with stakeholders: Solano, Napa, Sonoma, and Marin transportation agencies and affected cities/counties
- Investigate shared track/corridor opportunities with track owners
- Prepare Environmental Report and Preliminary Engineering
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