PASSENGER RAIL SERVICE
NOVATO TO SUISUN CITY
FEASIBILITY STUDY

NAPA VALLEY TRANSPORTATION AUTHORITY
MAY 15, 2019

2018 CALIFORNIA STATE RAIL PLAN

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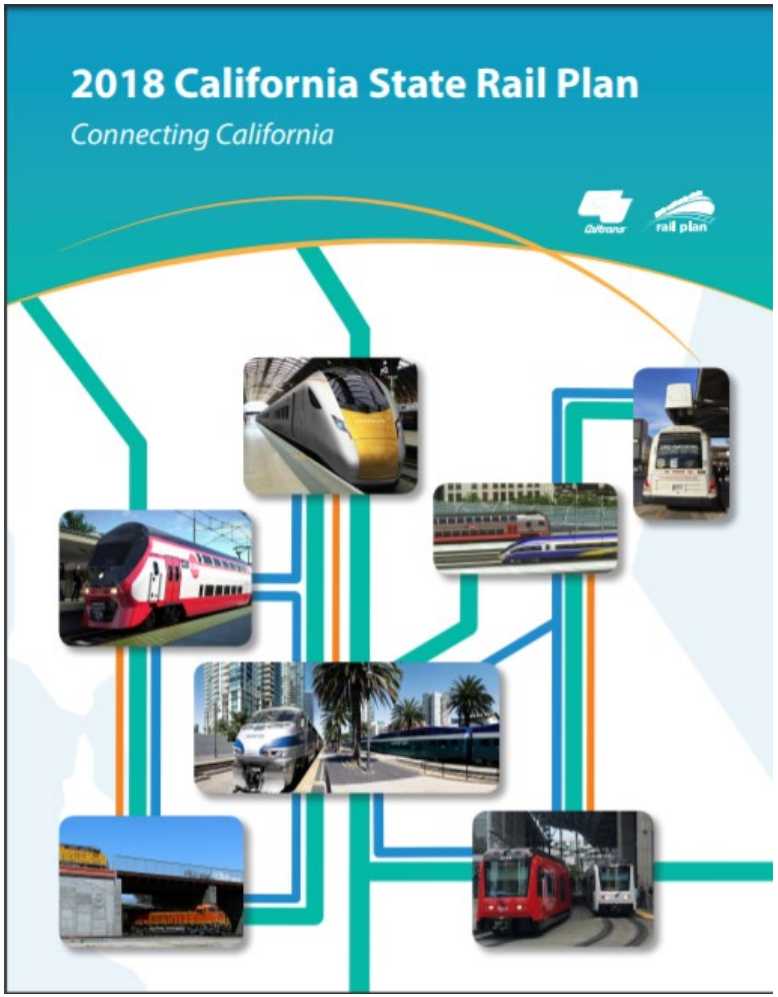


RAIL CONNECTIVITY VISION

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

PROJECT STUDY AREA

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 (based upon assumed length of trains)

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

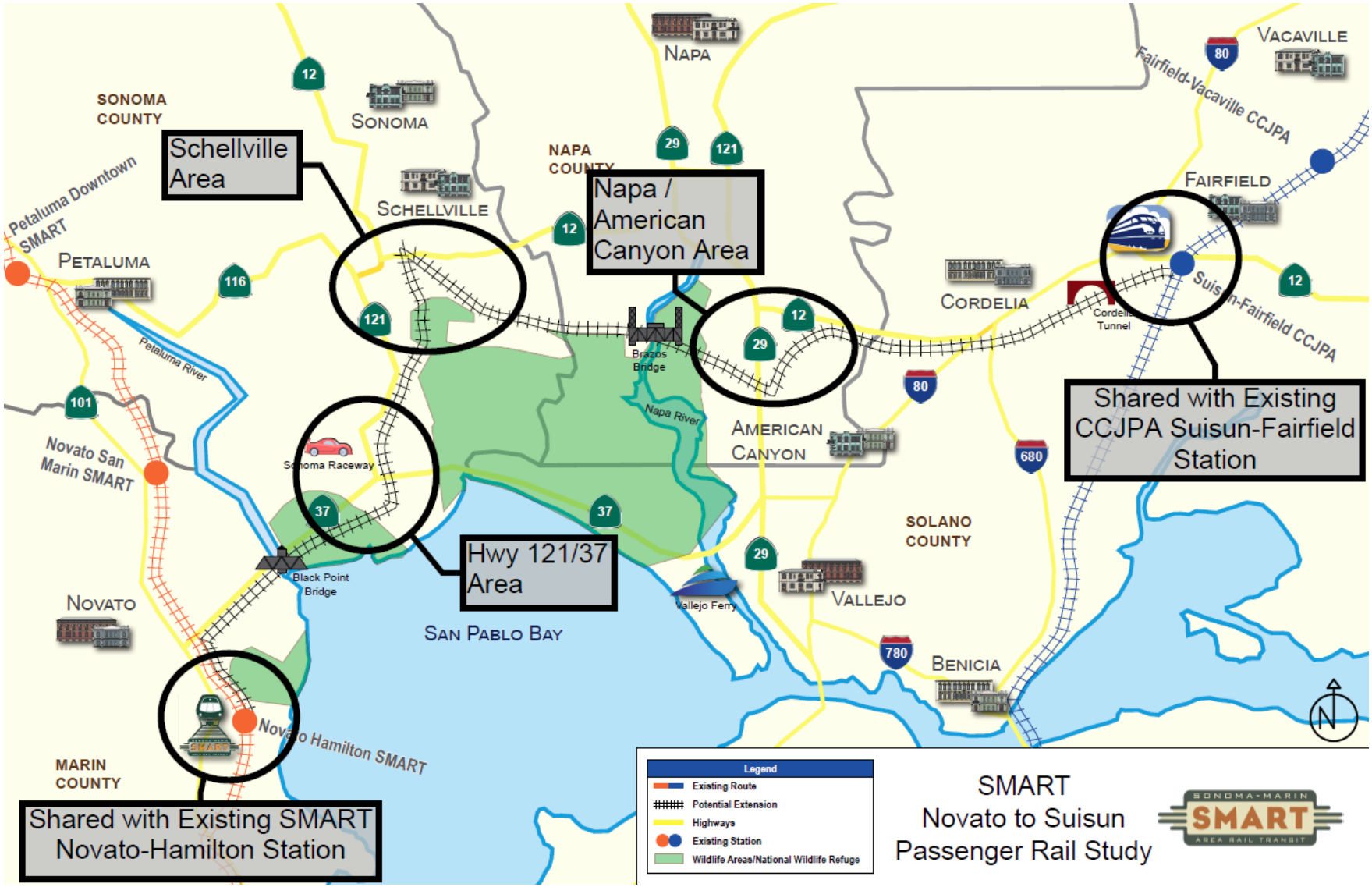
OPTION 1 - VEHICLE ASSUMPTIONS

Pre-Owned locomotives & coach cars

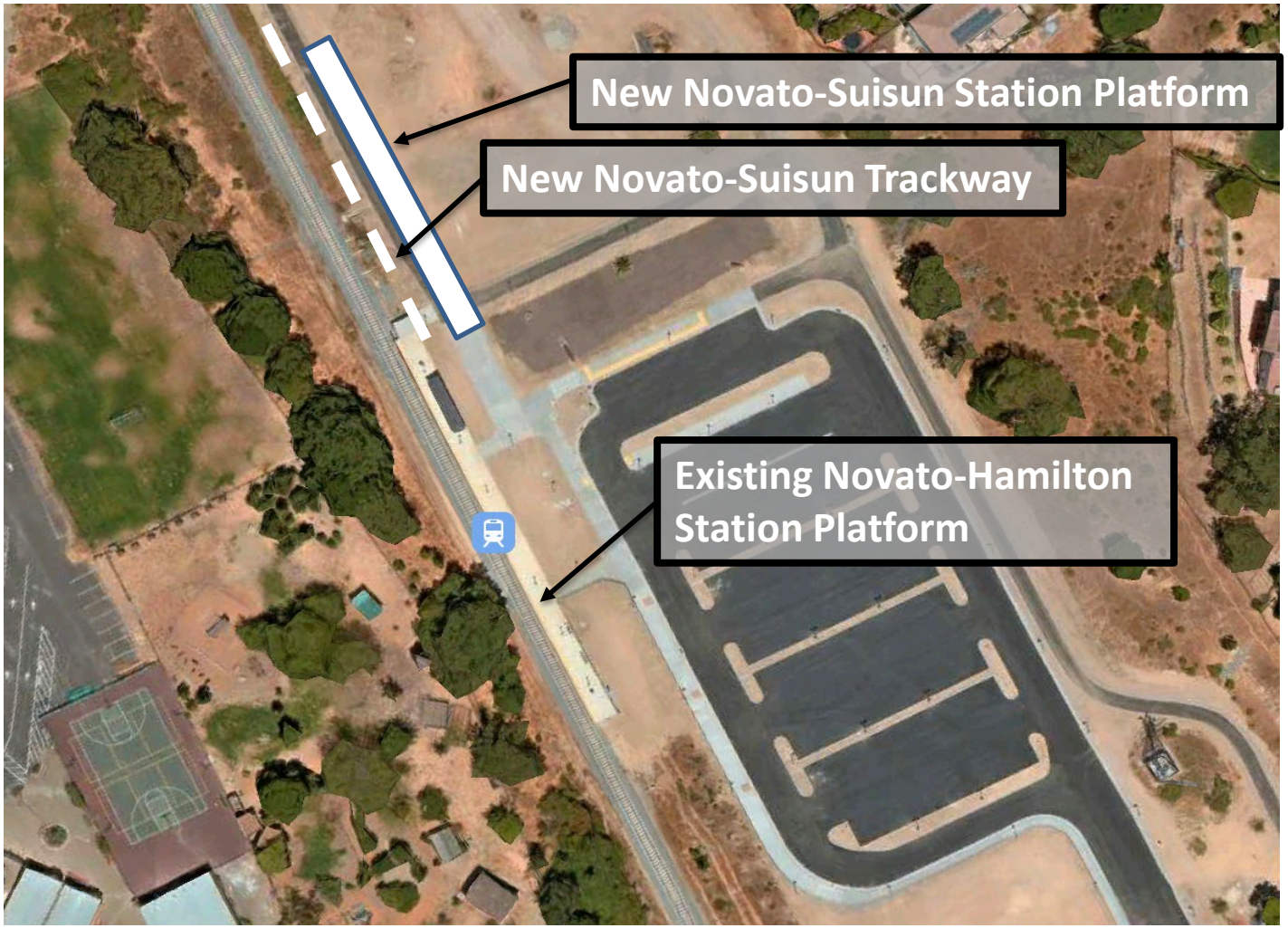
The minimum required fleet would be:

- 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)

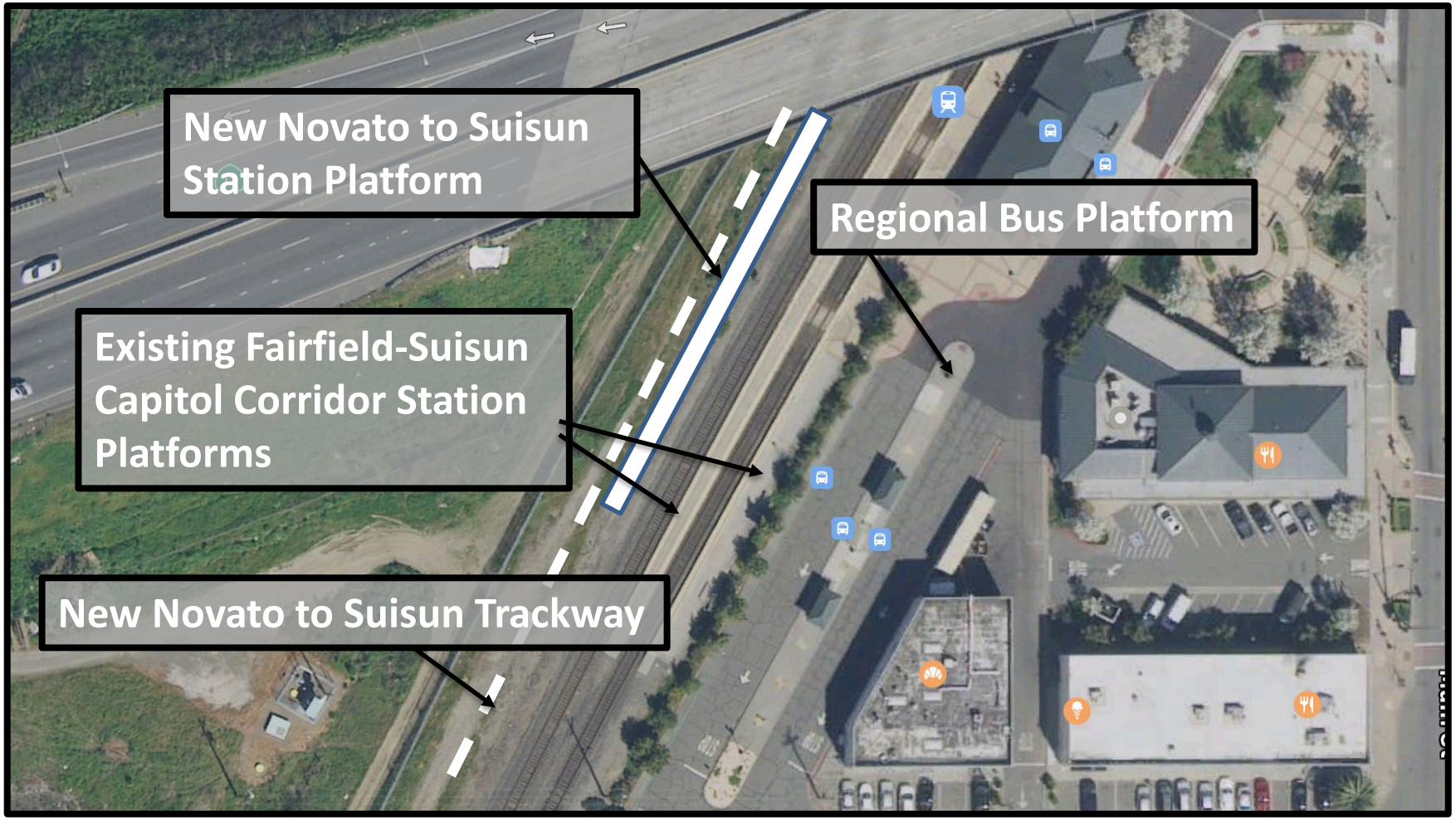
STATION OPPORTUNITIES



NOVATO-HAMILTON STATION CONCEPT



SUISUN/FAIRFIELD STATION CONCEPT

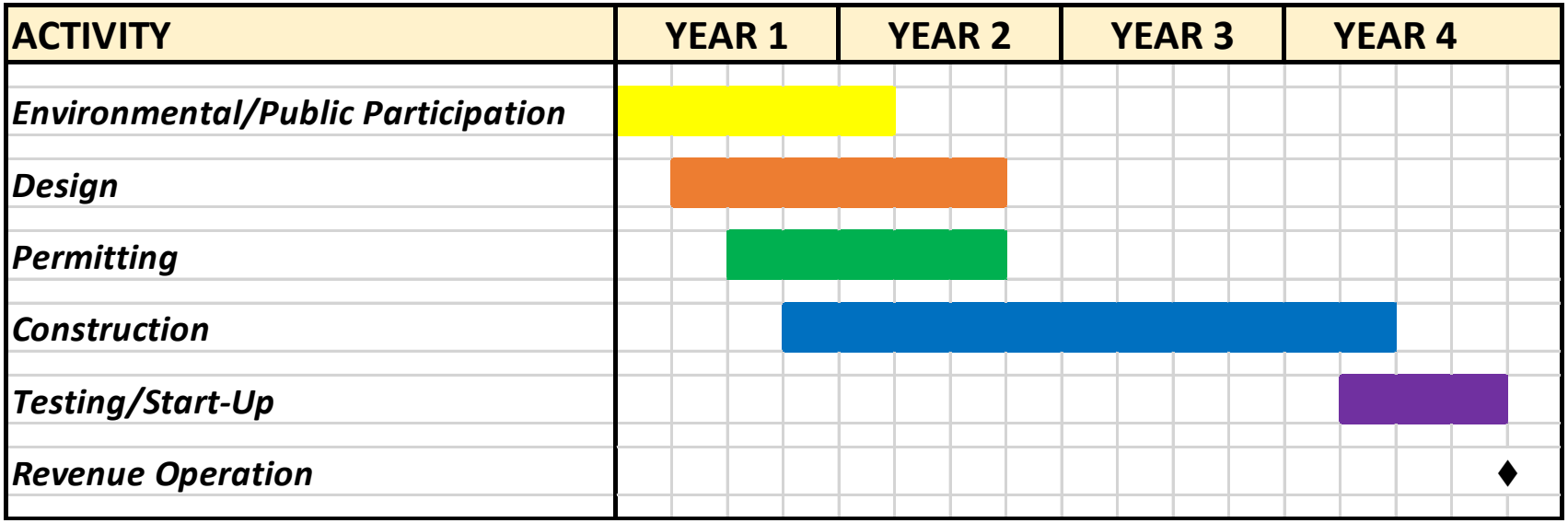


OPTION 1 - ENVIRONMENTAL

- 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



CAPITAL COST – OPTION 1

OPTION 1 CONCEPTUAL CAPITAL COST SUMMARY	
COST CATEGORY	**Cost**
Track & Signal Construction	$332M
Sitework, Structures, & Maintenance Facility	$171M
Environmental Mitigation, Site Restoration, & Station ROW	$25M
Mobilization, Bonds, & Insurance	$36M
Rail Vehicles	$30M
Project Development, Support, and Start-up	$52M
Contingency	$194M
Conceptual Cost Total	**$840M**
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 (based upon assumed length of trains)

OPTION 2 - INFRASTRUCTURE

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

OPTION 2 INFRASTRUCTURE ASSUMPTIONS

- Three intermediate stations
- New maintenance facility
- Four passing sidings
- Shared corridor with freight
- New connections:
  SMART & 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

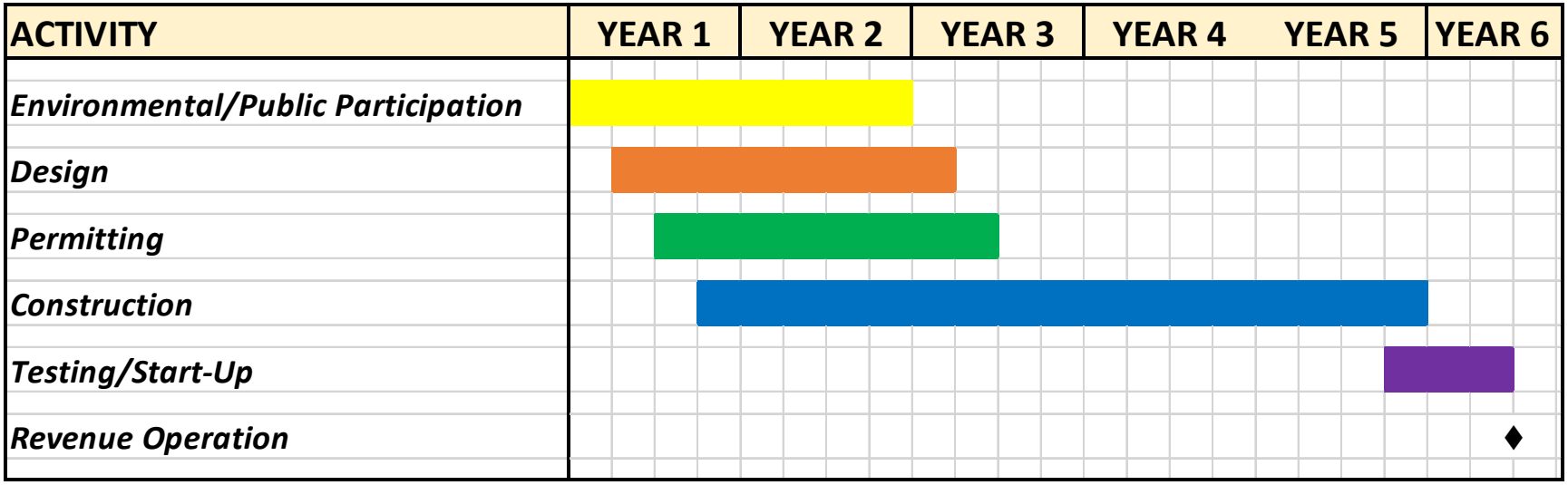
- Same end stations as Option 1
- Three or more intermediate stations

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



COST – OPTION 2

OPTION 2 CONCEPTUAL CAPITAL COST SUMMARY	
COST CATEGORY	**COST**
Track & Signal Construction	$364M
Sitework, Structures, & Maintenance Facility	$310M
Environmental Mitigation, Site Restoration, & Station ROW	$49M
Mobilization, Bonds, & Insurance	$50M
Rail Vehicles	$96M
Project Development, Support, and Start-up	$69M
Contingency	$281M
Conceptual Cost Total	**$1.22B**
Low Range of Conceptual Costs (-7% of Total)	**$1.13B**
High Range of Conceptual Costs (+7% of Total)	**$1.30B**
(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

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

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 & Preliminary Engineering*

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