



DB Engineering & Consulting USA Inc.  
**TAMC Service Planning and Network Design**

February 3, 2020

# Methodology Review and Background

## Network Design Principles

### TAMC's Goal

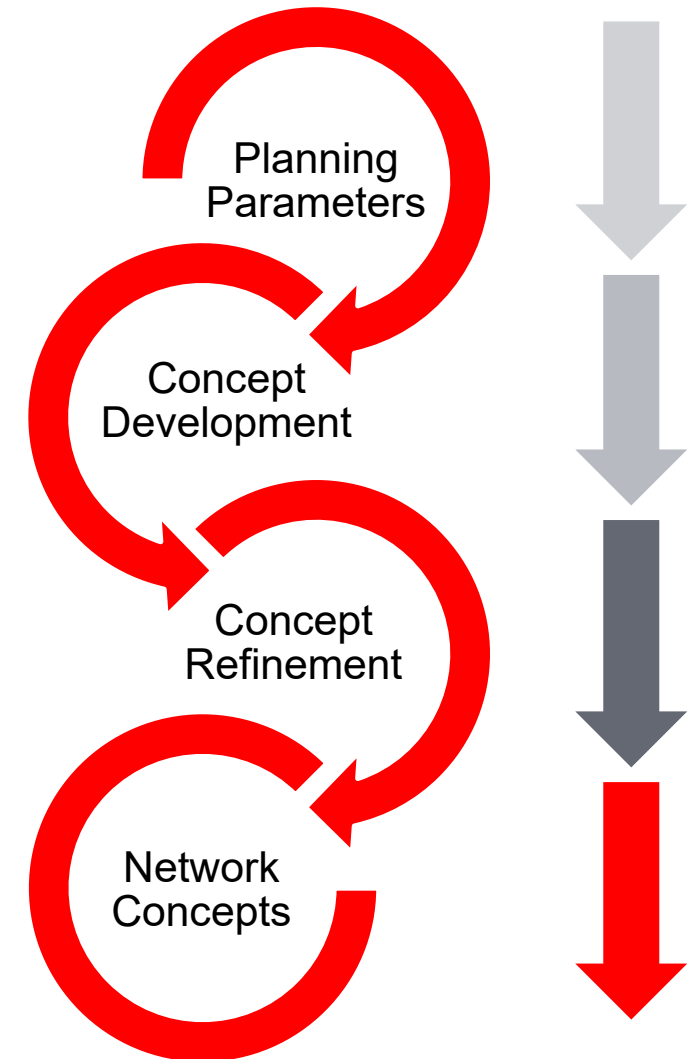
Develop robust passenger rail service connecting Monterey Bay communities and the Central Coast to San Jose.

### Service Planning and Network Integration Process Objective

Design an implementable, technically sound vision for a future Monterey Bay Area regional rail network that accomplishes service goals and provides technical inputs for implementation planning.

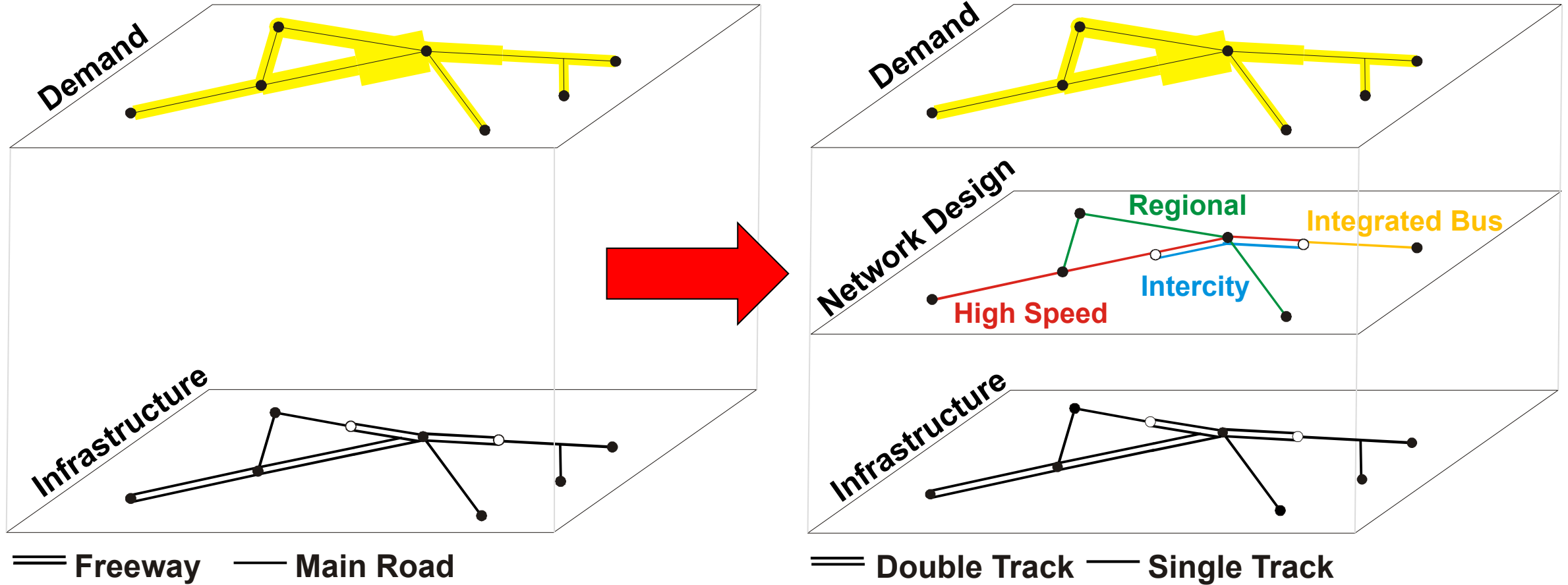
### Process Methodology:

1. Identify planning parameters
2. Develop initial service concepts
3. Refine service concepts
4. Produce concepts for phased implementation



# Methodology Review and Background

## Network Design Principles



# Methodology Review and Background

## Network Design Principles

### Competitive trip times

Direct connections

Optimized transfers

Unimpeded runs (e.g. bus lanes)

Fast pedestrian access



### Easy and Convenient Use

Memory schedule

Pulsed services

Intuitive network design

Always the same chain/transfer route

Always the same stopping pattern/routing

Always a complete chain (ticketing)

### Consistent High Quality

Long hours of service

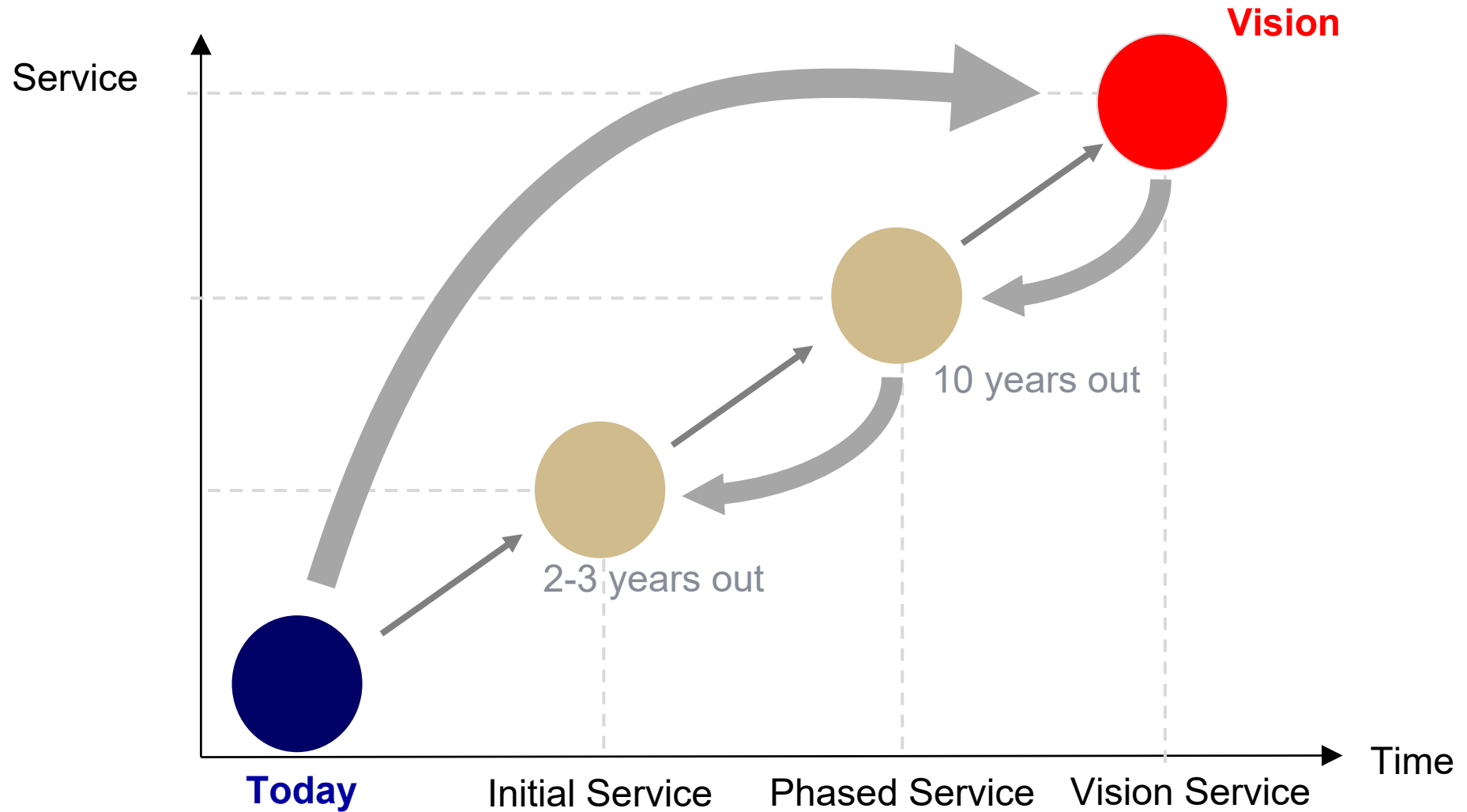
Dense service

Guaranteed connections

Reliable service

# Methodology Review and Background

## Network Design Principles



# Monterey Bay Regional Rail Network Design

## Planning Parameters

Parameters are **documented assumptions** about **policy** and **technical** aspects of the network that impact service planning:

### ■ ***Policy questions***

- how much service should there be?
- what communities should be served?
- how much should be invested?

### ■ ***Technical questions***

- what infrastructure is needed to support service goals?
- what rolling stock type is most efficient for chosen service?
- is it best to invest in track capacity, stations, or rolling stock?

Parameters guide how we refine service concepts to arrive at the ultimate network integration design.

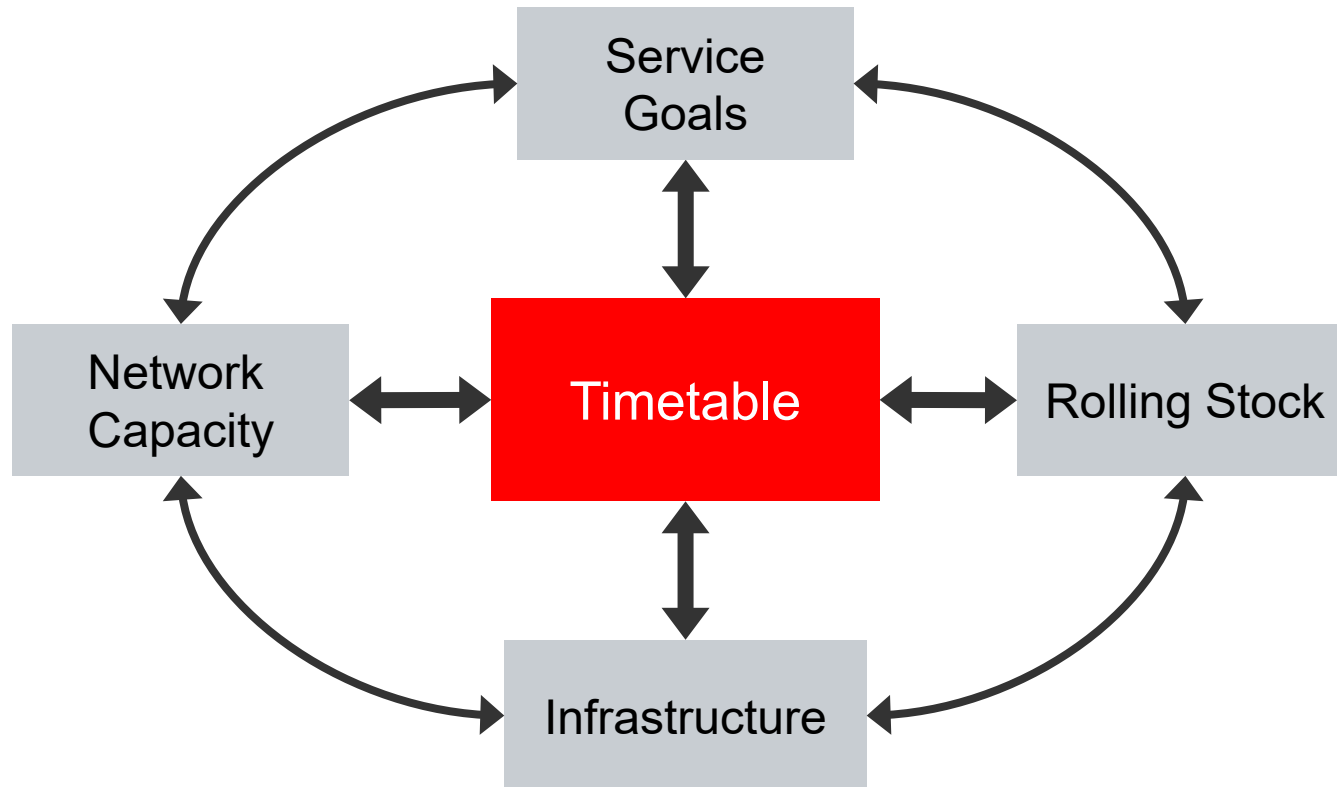
Define objectives,  
planning parameters,  
boundary conditions

Interactively develop and  
analyze scenarios

Validate and/or finetune

# Monterey Bay Regional Rail Network Design

## Planning Parameters

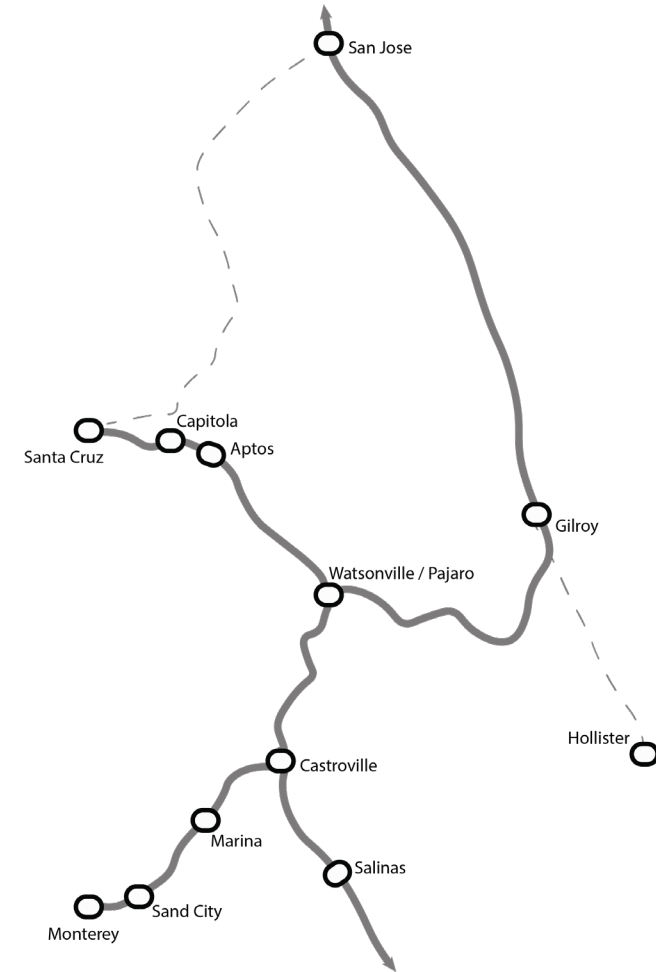


### Timetable-Centric Planning

- Visualizes the co-dependencies between service, operation, and infrastructure
- Opens up all paths to optimize the rail system (organizational, systems, and concrete)
- Allows increasing level of detail step-by-step
- Make strategic pin-pointed infrastructure investments
- *Focus on the customer*

# Monterey Bay Regional Rail Network Design

## Planning Parameters – Service Goals





# Monterey Bay Regional Rail Network Design

## Planning Parameters – Rolling Stock



Conventional diesel hauled trainset



Hybrid equipment



Multiple unit

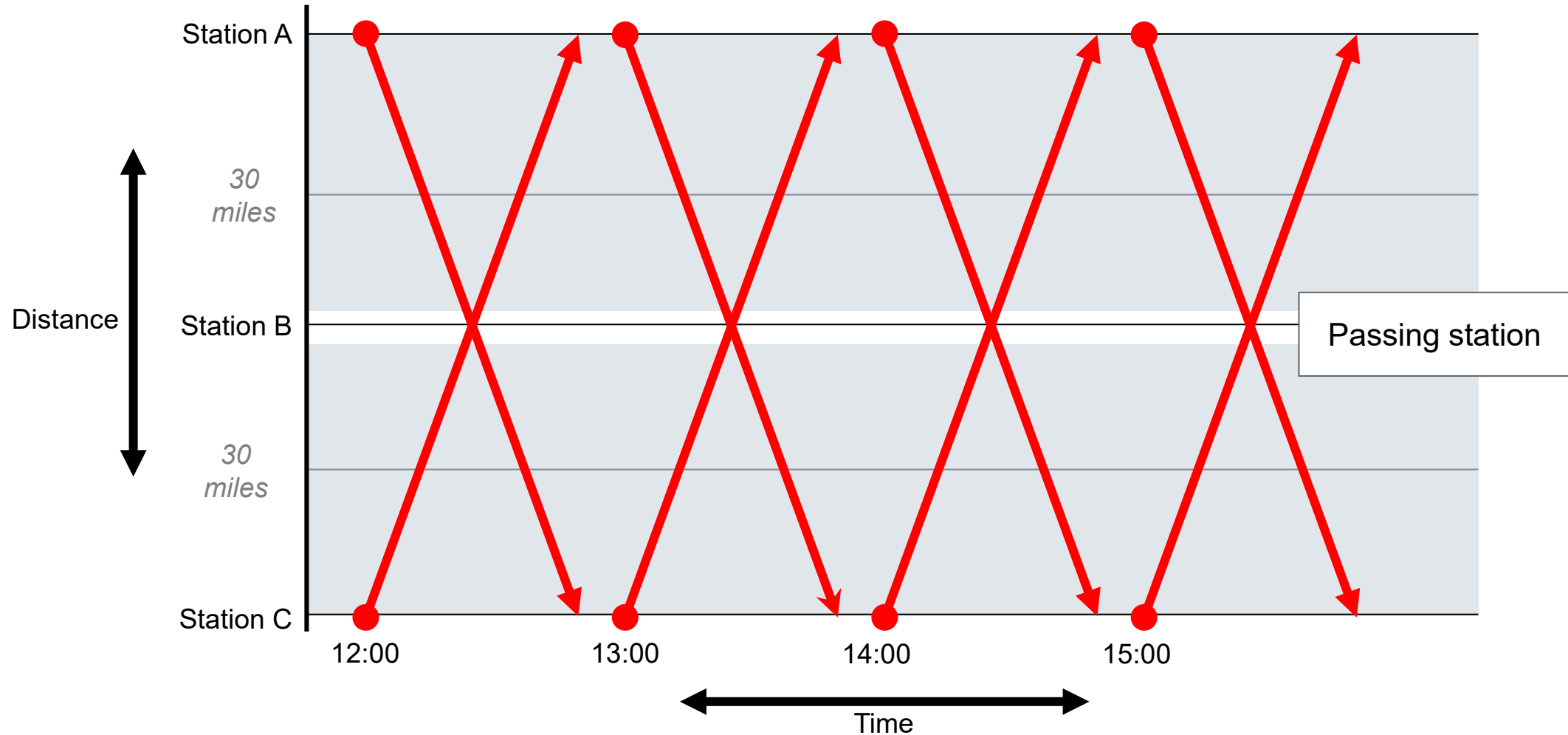


Electric equipment



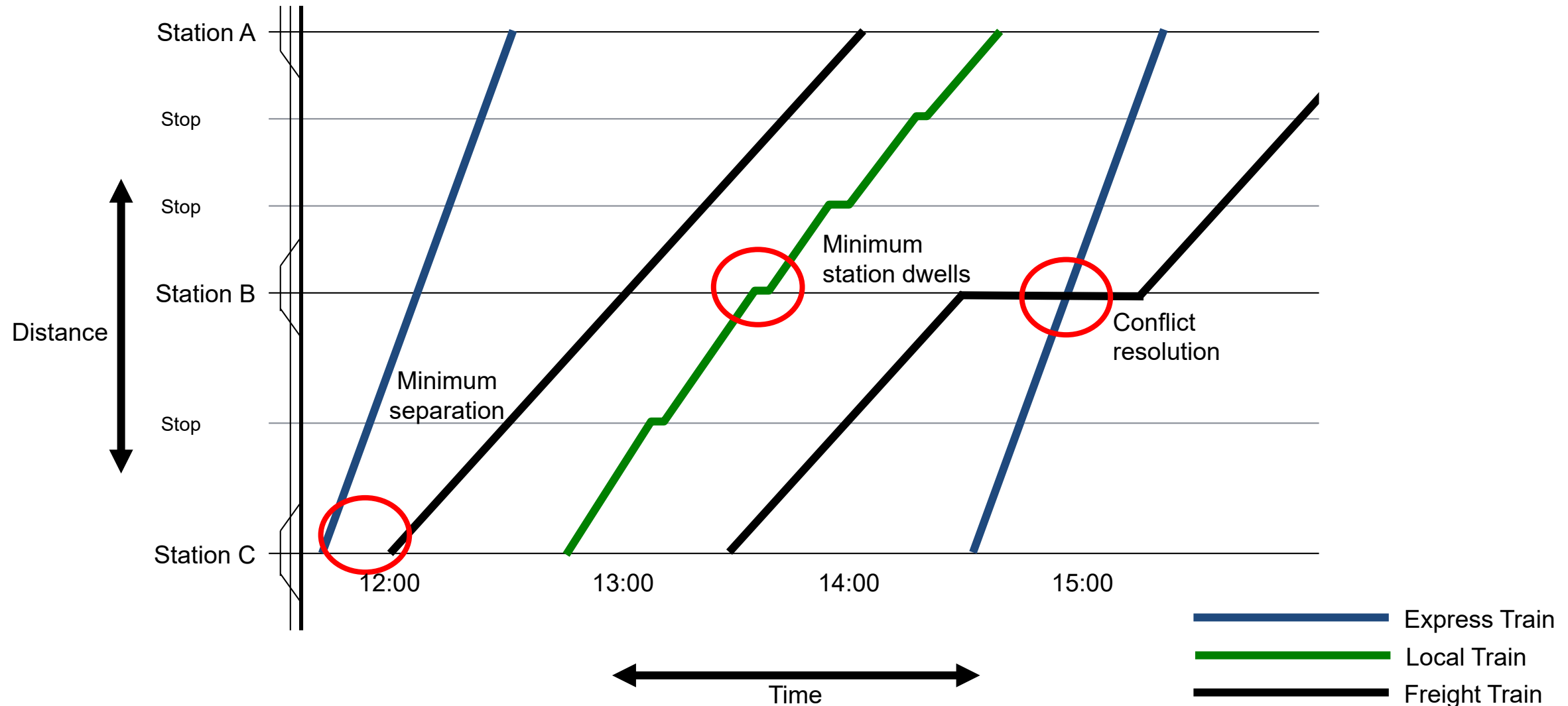
# Monterey Bay Regional Rail Network Design

## Concept Design and Refinement



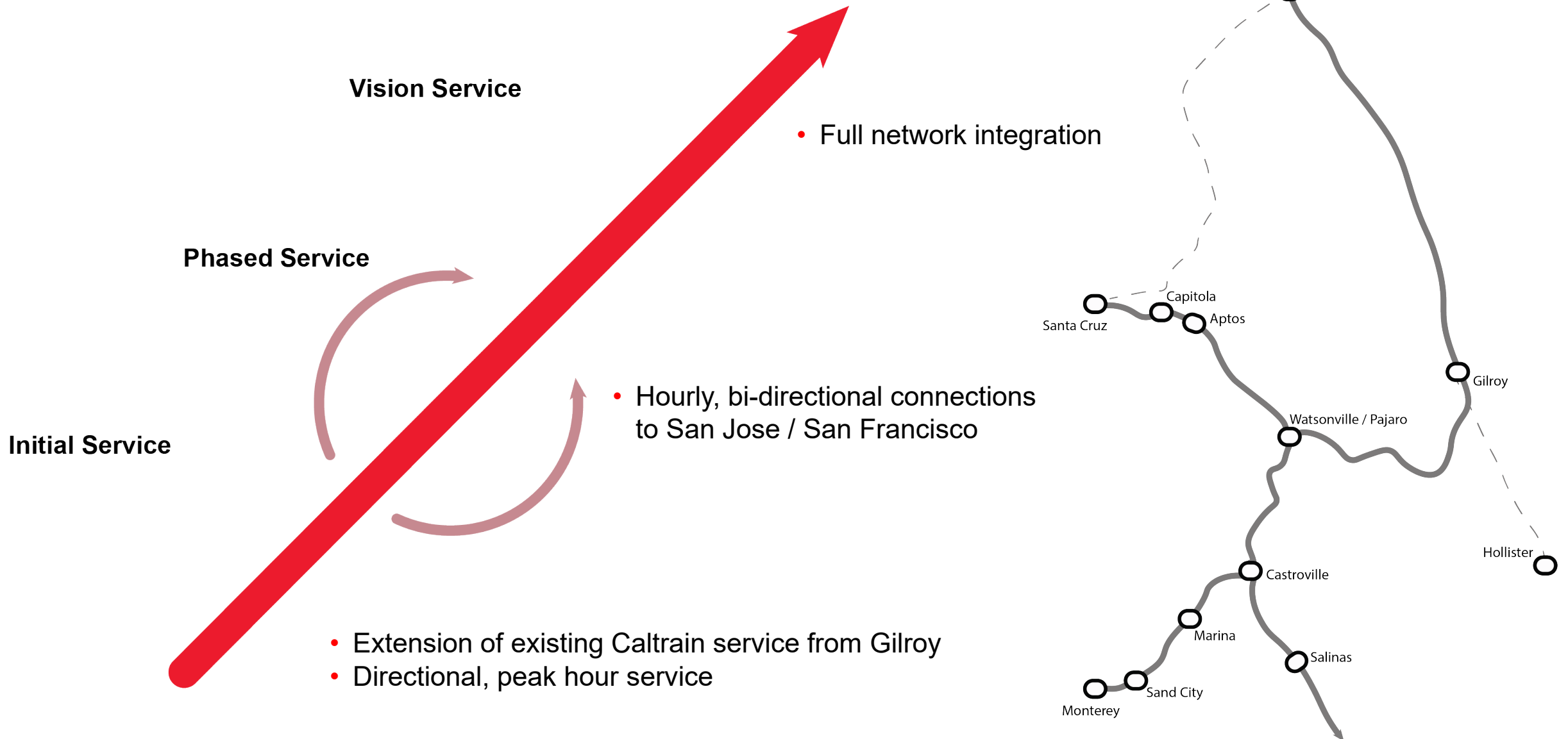
# Monterey Bay Regional Rail Network Design

## Concept Design and Refinement



# Monterey Bay Regional Rail Network Design

## Scaled Service Concepts



# Initial Service Concept

## Assumptions

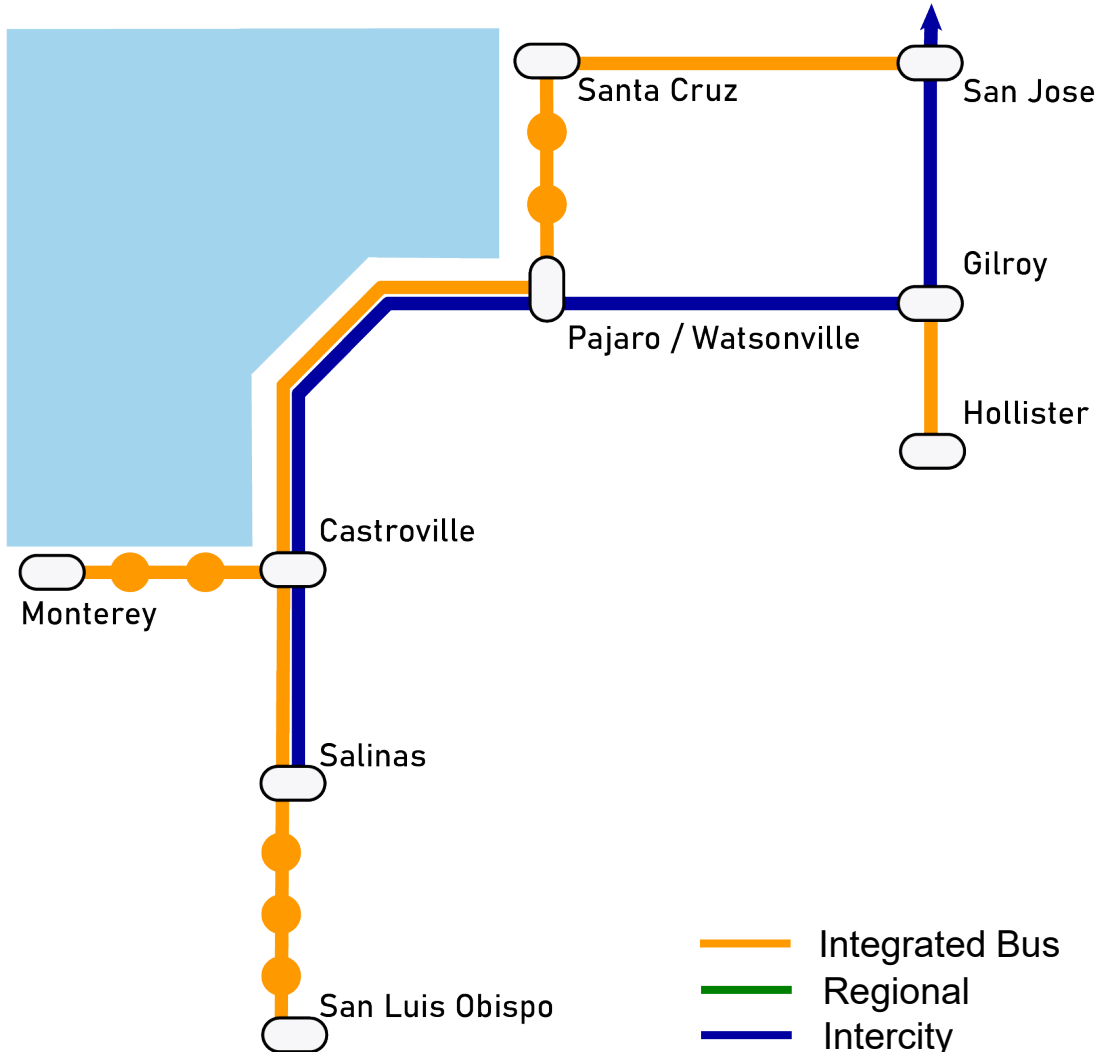
- Directional service (Salinas – SJ/SF)
- Extension of Caltrain from Gilroy
- Conventional diesel hauled locomotive equipment



Planning Parameter	Assumption
<b>Main Line</b>	3 round trips
<b>Branch Line</b>	NA
<b>Horizon</b>	Initial
<b>Rolling Stock</b>	Conventional Caltrain rolling stock
<b>Speed Limit</b>	Service Design: 79 mph

# Initial Service Concept

## Customer Perspective



### Sample Rail Schedule:

Northbound	217	221	227
Salinas	5:10	5:32	6:10
Castroville	5:20	5:42	6:20
Pajaro / Watsonville	5:35	5:57	6:35
Gilroy	6:06	6:28	7:06
San Jose	6:58	7:22	7:58
San Francisco	8:24	9:00	9:29

Southbound	218	222	228
San Francisco	15:00	16:23	16:58
San Jose	16:44	17:41	18:26
Gilroy	17:38	18:36	19:19
Pajaro / Watsonville	18:10	19:08	19:51
Castroville	18:24	19:22	20:05
Salinas	18:33	19:31	20:14

# Phased Service Concept

## Assumptions

- Through-service to San Jose via high-speed alignment
- Hybrid trains (diesel with ability to run electrified under catenary)
- Hourly, bi-directional service
- Extended service to San Luis Obispo
- Assumes expanded track access agreement with UP

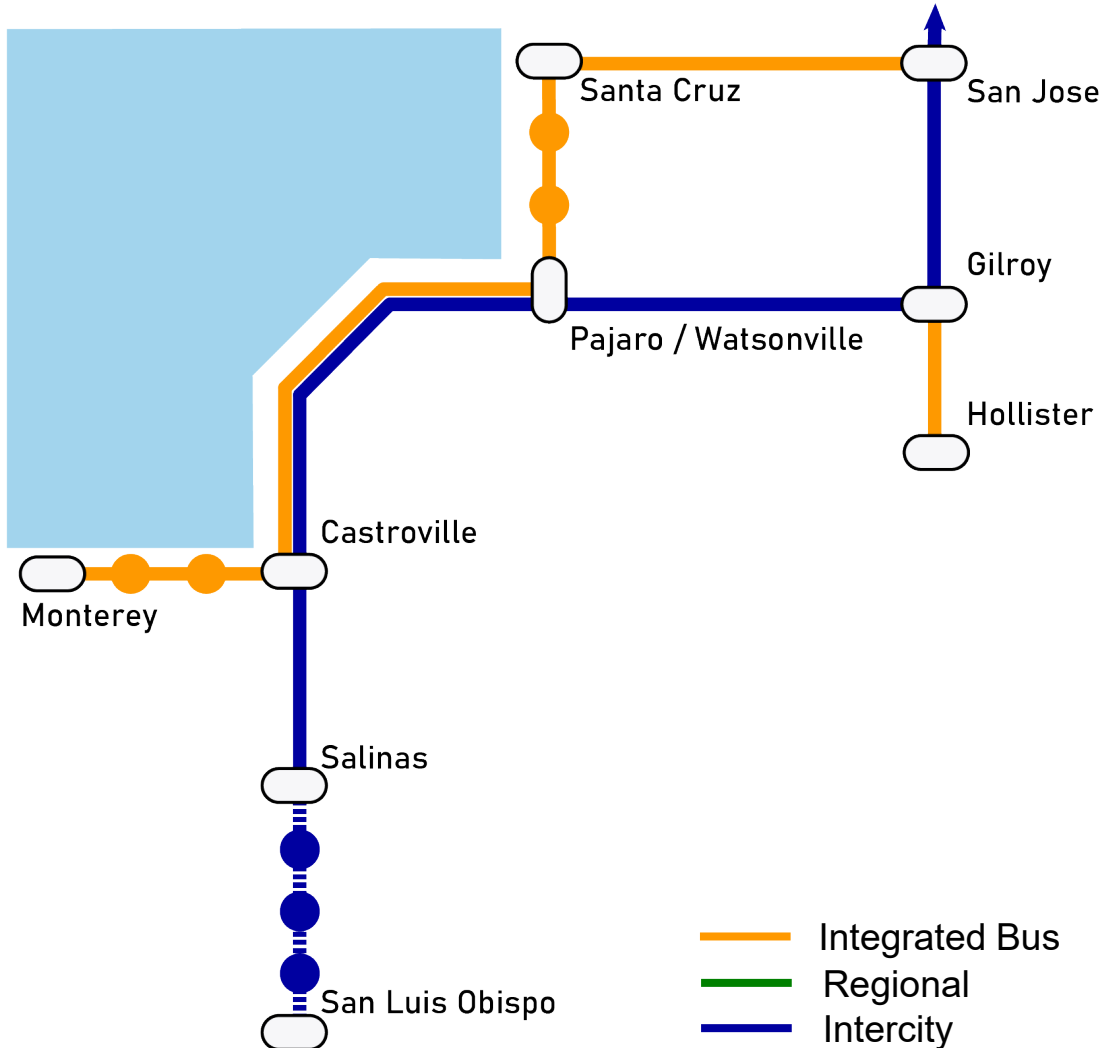


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Planning Parameter	Assumption
<b>Main Line</b>	Hourly (San Jose – Salinas) Every Four Hour (Salinas – SLO)
<b>Branch Line</b>	NA
<b>Horizon</b>	Phased
<b>Rolling Stock</b>	Hybrid rolling stock
<b>Speed Limit</b>	Service Design: - 110 mph (San Jose – Gilroy) - 79 mph (all other services)

# Phased Service Concept

## Customer Perspective



### Sample Rail Schedule:

Northbound	303	111	113	115	305	119	121	123	307
San Luis Obispo	6:09				10:09				14:09
King City	8:17				12:17				16:17
Soledad	8:47				12:47				16:47
Salinas	9:07	10:07	11:07	12:07	13:07	14:07	15:07	16:07	17:07
Castroville	9:16	10:16	11:16	12:16	13:16	14:16	15:16	16:16	17:16
Pajaro / Watsonville	9:31	10:31	11:31	12:31	13:31	14:31	15:31	16:31	17:31
Gilroy	10:10	11:10	12:10	13:10	14:10	15:10	16:10	17:10	18:10
San Jose	10:40	11:40	12:40	13:40	14:40	15:40	16:40	17:40	18:40
San Francisco	~11:40	~12:40	~13:40	~14:40	~15:40	~16:40	~17:40	~18:40	~19:40
Southbound	300	102	104	106	302	110	112	114	304
San Francisco	~4:20	~5:20	~6:20	~7:20	~8:20	~9:20	~10:20	~11:20	~12:20
San Jose	5:20	6:20	7:20	8:20	9:20	10:20	11:20	12:20	13:20
Gilroy	5:51	6:51	7:51	8:51	9:51	10:51	11:51	12:51	13:51
Pajaro / Watsonville	6:30	7:30	8:30	9:30	10:30	11:30	12:30	13:30	14:30
Castroville	6:44	7:44	8:44	9:44	10:44	11:44	12:44	13:44	14:44
Salinas	6:53	7:53	8:53	9:53	10:53	11:53	12:53	13:53	14:53
Soledad	7:13				11:13				15:13
King City	7:44				11:44				15:44
San Luis Obispo	9:50				13:50				17:50



# Vision Service Concept

## Overview

### Vision Concept

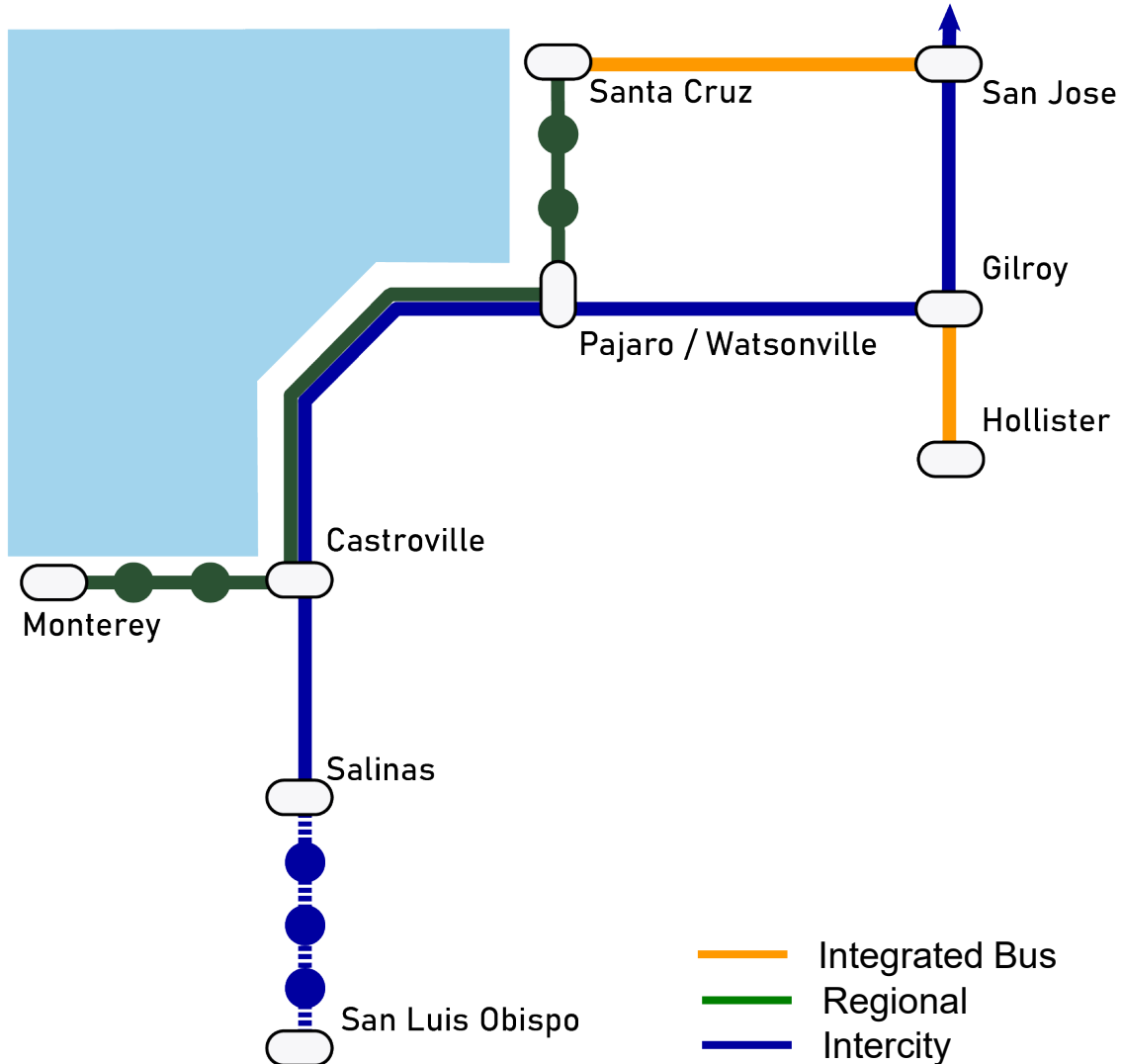
- Full intercity and regional rail integration
- Gilroy to San Jose on high-speed alignment
- Integrated hourly regional service
- Extended service to San Luis Obispo
- Assumes expanded track access agreement with UP



Planning Parameter	Assumption
<b>Main Line</b>	Hourly (San Jose – Salinas) Bi-Hourly (Salinas – SLO)
<b>Branch Line</b>	Hourly (Santa Cruz – Monterey)
<b>Horizon</b>	Vision
<b>Rolling Stock</b>	Main Line: Hybrid rolling stock Branch Line: Diesel Multiple Unit
<b>Speed Limit</b>	Service Design: - 110 mph (San Jose – Gilroy) - 79 mph (all other services)

# Vision Service Concept

## Customer Perspective

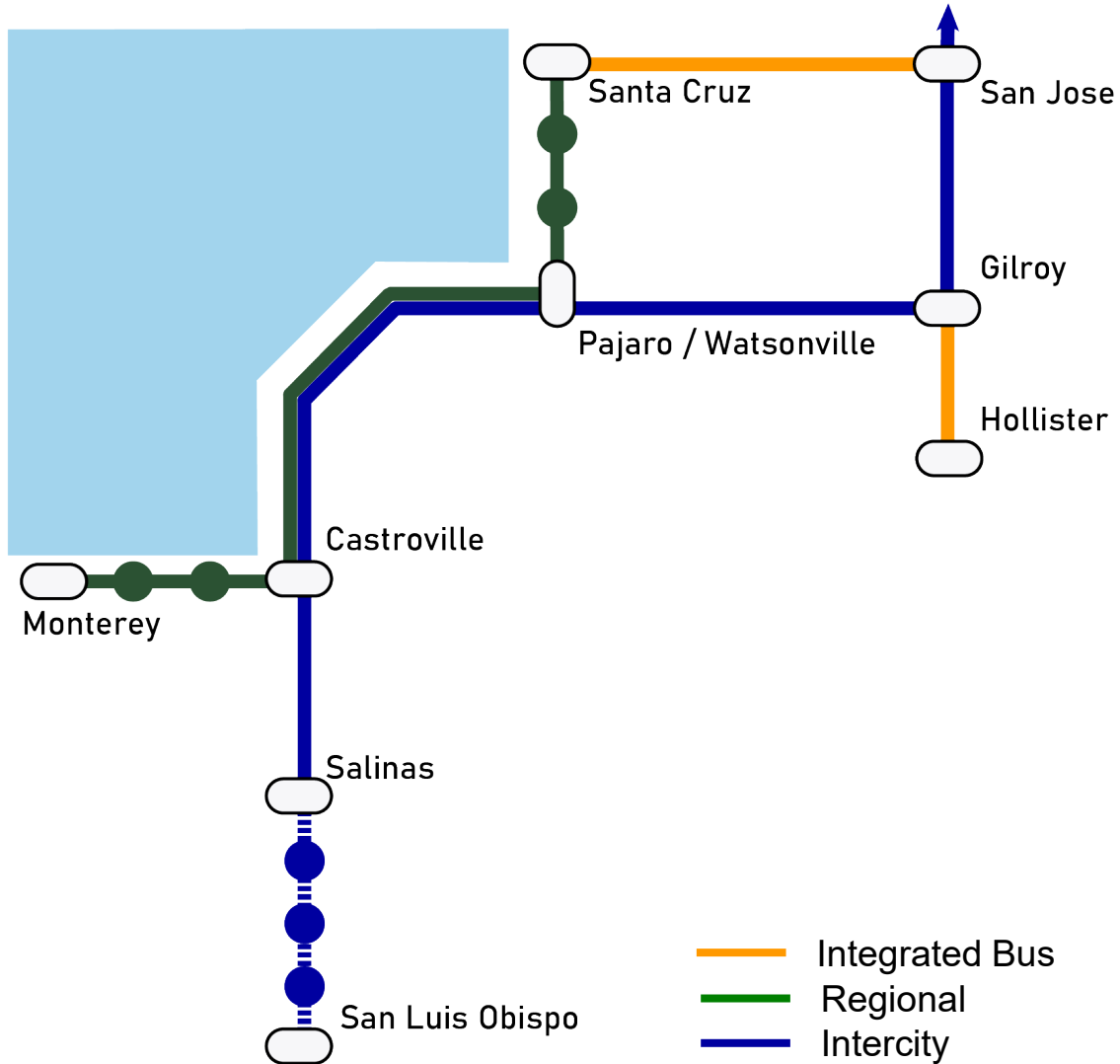


Sample Rail Schedule:

Northbound	409	305	411	105	413	307	415	107
San Luis Obispo		6:09				8:09		
King City		8:17				10:17		
Soledad		8:47				10:47		
Salinas		9:07		10:07		11:07		12:07
Monterey	8:44		9:44		10:44		11:44	
Castroville	9:12 → 9:16		10:12	10:16	11:12	11:16	12:12	12:16
Pajaro / Watsonville	9:33	9:30	10:33	10:30	11:33	11:30	12:33	12:30
Santa Cruz	10:07		11:07		12:07		13:07	
Gilroy		10:10		11:10		12:10		13:10
San Jose		10:40		11:40		12:40		13:40
San Francisco		~11:40		~12:40		13:40		14:40

# Vision Service Concept

## Customer Perspective



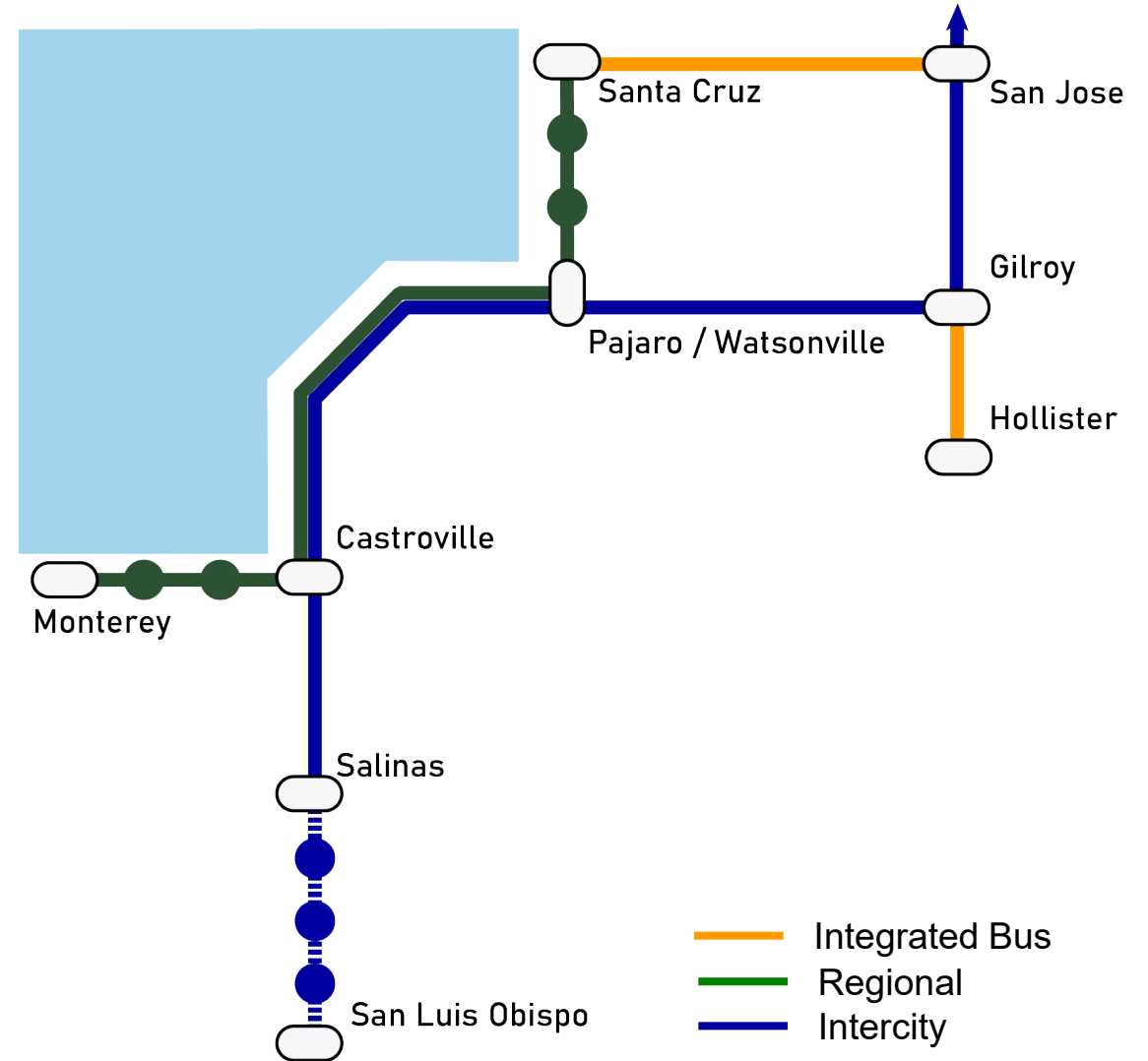
Sample Rail Schedule:

Southbound	402	304	404	102	406	306	408	104
San Francisco		~6:20		~7:20		~8:20		~9:20
San Jose		7:20		8:20		9:20		10:20
Gilroy		7:51		8:51		9:51		10:51
Santa Cruz	6:51		7:51		8:51		9:51	
Pajaro / Watsonville	7:34	8:30	8:34	9:30	9:34	10:30	10:34	11:30
Castroville	7:48	8:44	8:48	9:44	9:48	10:44	10:48	11:44
Monterey	8:16		9:16		10:16		11:16	
Salinas		8:53		9:53		10:53		11:53
Soledad		9:13				11:13		
King City		9:44				11:44		
San Luis Obispo		11:50				13:50		

# Monterey Bay Regional Rail Network Design

## Network Design Principles

- Operational feasibility
- Regional connectivity
- Infrastructure needs
- Freight Coordination

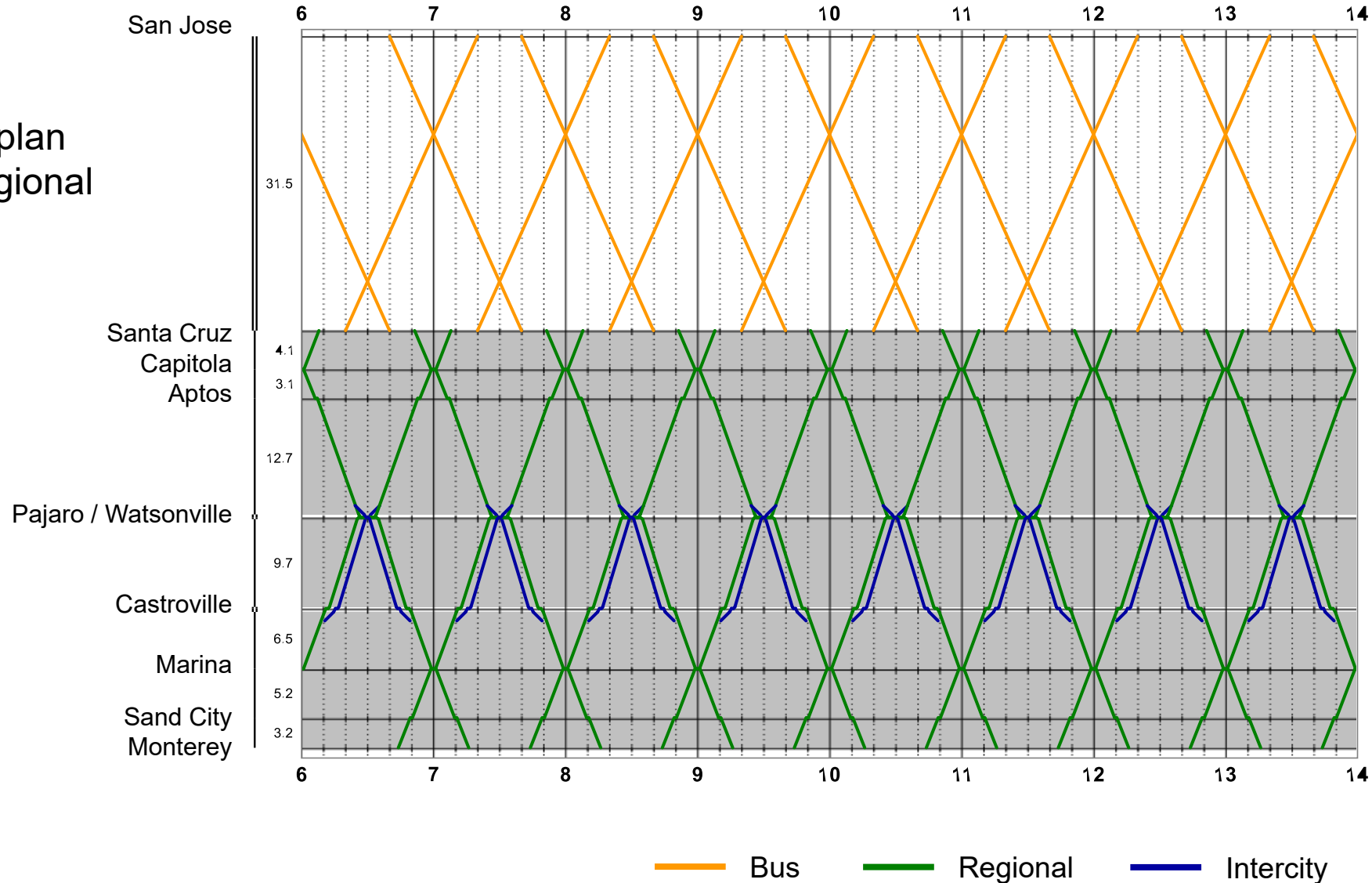


# Monterey Bay Regional Rail Network Design

## Operational Feasibility

### Results:

- Technically feasible operations plan
- Achieves hourly intercity and regional rail integration
- Optimizes integration at timed connection points



# Monterey Bay Regional Rail Network Design

## Regional Connectivity

### Results:

- Timed transfers at connection points for maximum regional access to key markets
- 4 minute cross/same platform transfers

### Sample Rail Schedule:

Northbound	409	305	411	105	413	307	415	107
San Luis Obispo		6:09				8:09		
King City		8:17				10:17		
Soledad		8:47				10:47		
Salinas		9:07		10:07		11:07		12:07
Monterey	8:44		9:44		10:44		11:44	
Castroville	9:12 → 9:16		10:12	10:16	11:12	11:16	12:12	12:16
Pajaro / Watsonville	9:33	9:30	10:33	10:30	11:33	11:30	12:33	12:30
Santa Cruz	10:07		11:07		12:07		13:07	
Gilroy		10:10		11:10		12:10		13:10
San Jose		10:40		11:40		12:40		13:40
San Francisco		~11:40		~12:40		~13:40		~14:40

# Monterey Bay Regional Rail Network Design

## Amtrak *Coast Starlight* Integration

### Results:

- Intercity slots in the network can be filled by existing *Coast Starlight* service
- Opportunities for at least three new stations south of Salinas

Sample Rail Schedule:



Southbound	406	306	408	11	410	308	412	106
San Francisco		~8:20				~10:20		~11:20
San Jose		9:20		10:20		11:20		12:20
Gilroy		9:51		10:51		11:51		12:51
Santa Cruz	8:51		9:51		10:51		11:51	
Pajaro / Watsonville	9:34	10:30	10:34	11:30	11:34	12:30	12:34	13:30
Castroville	9:48	10:44	10:48	11:44	11:48	12:44	12:48	13:44
Monterey	10:16		11:16		12:16		13:16	
Salinas		10:53		11:53		12:53		13:53
Soledad				12:13				14:13
King City				12:44				14:44
San Luis Obispo				14:50				16:50

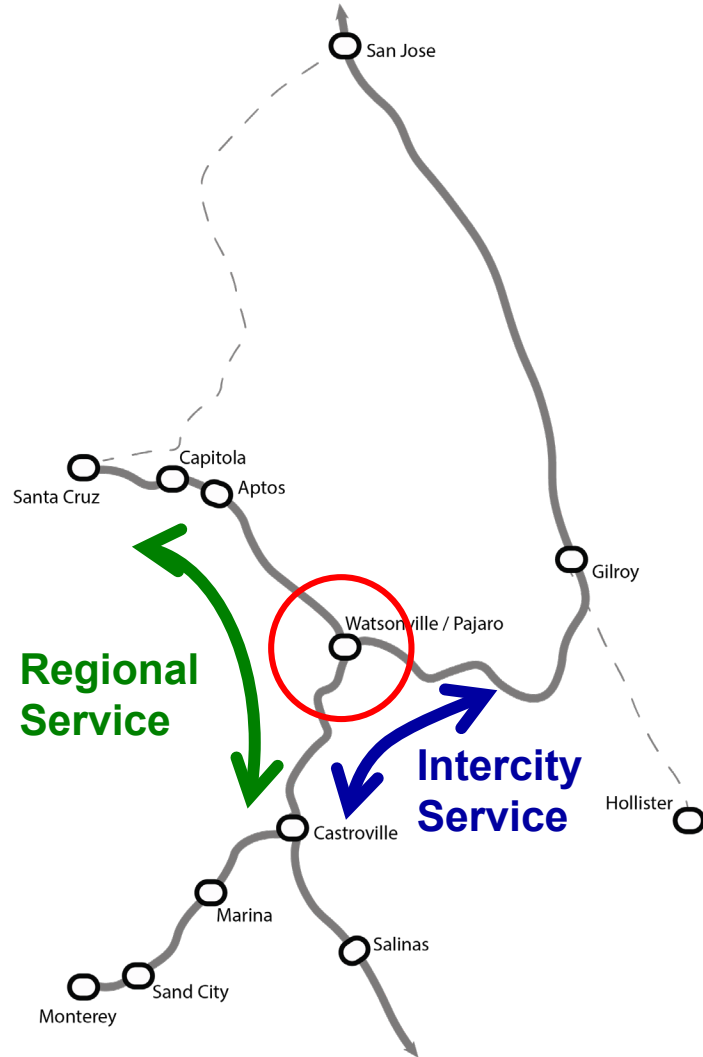
# COAST STARLIGHT®

serving SEATTLE - TACOMA - PORTLAND - EUGENE-SPRINGFIELD - SACRAMENTO -  
SAN FRANCISCO BAY AREA - SANTA BARBARA - LOS ANGELES and intermediate stations

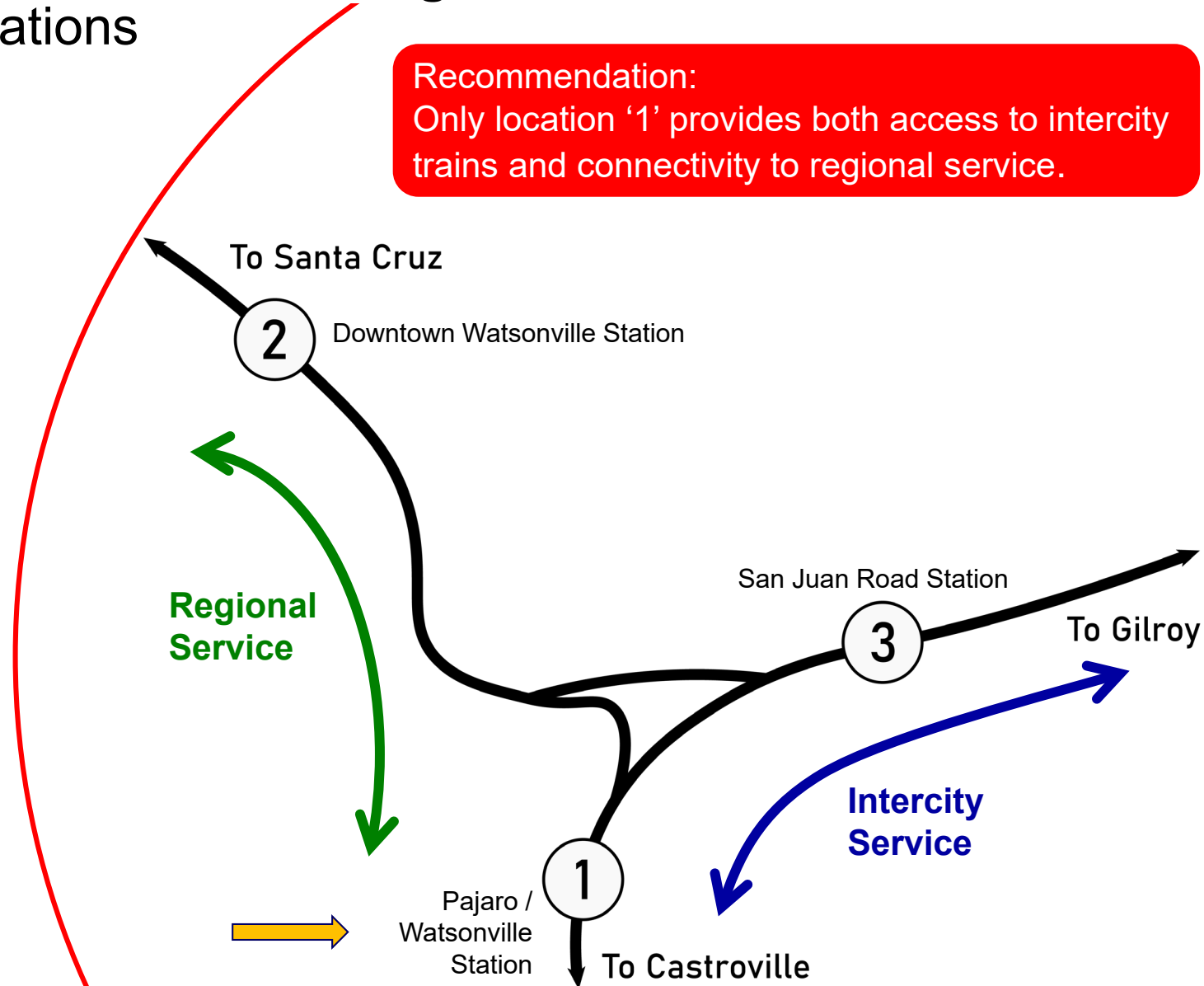
Amtrak.com  
1-800-USA-RAIL

# Monterey Bay Regional Rail Network Design

## Infrastructure Needs: Operations



**Recommendation:**  
Only location '1' provides both access to intercity trains and connectivity to regional service.



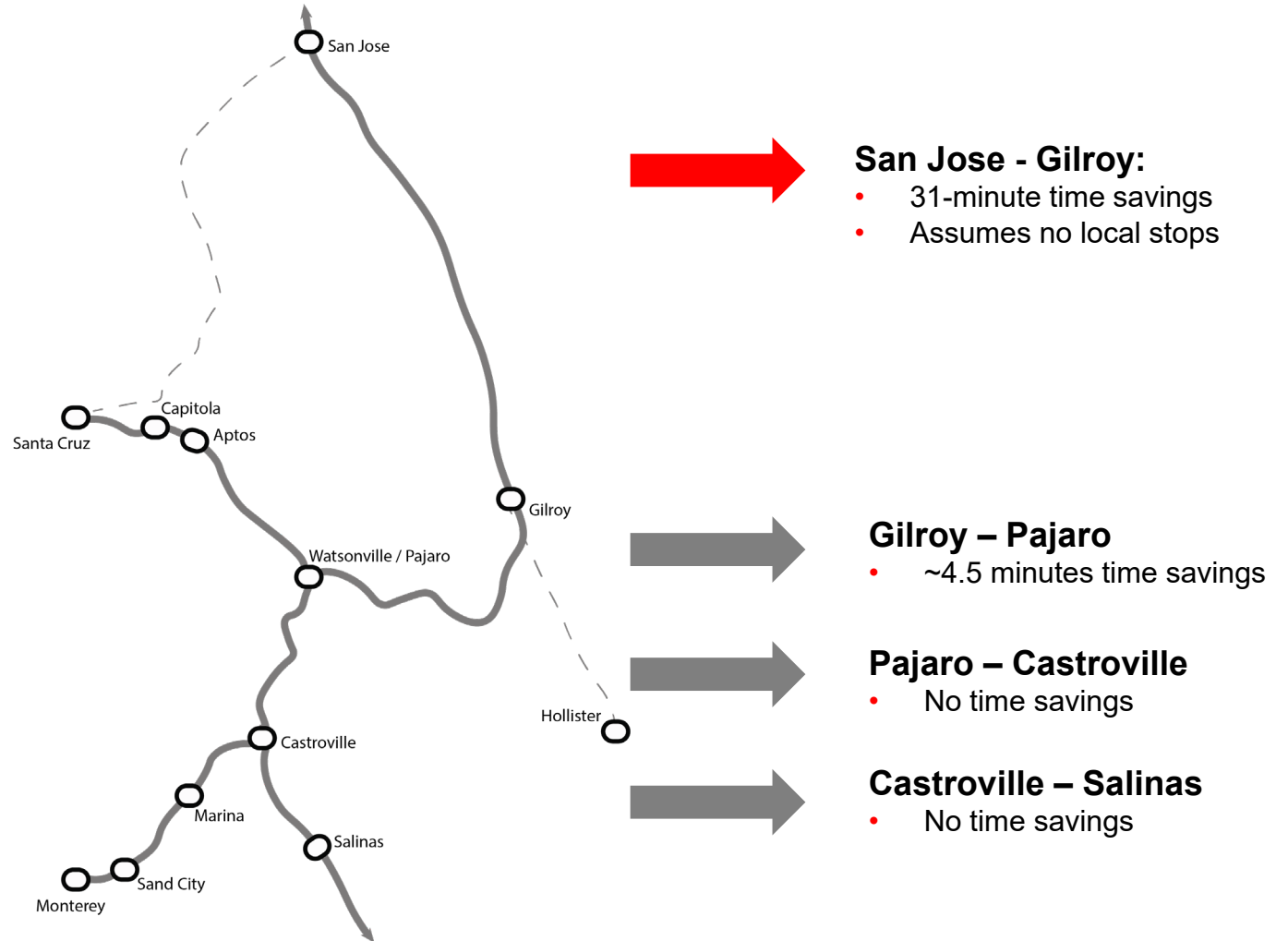


# Monterey Bay Regional Rail Network Design

## Infrastructure Needs: Travel Time

### Results:

- Major benefit from new high-speed alignment (110 mph)
- Minimal to no travel time benefit for speed improvements south of Gilroy



# Monterey Bay Regional Rail Network Design

## Freight Coordination

### Results:

- Vision Service **does not preclude freight service** (may require siding extension in Castroville)
- Complexity increases as service increases
- Overnight hours and every-four-hour freight windows are preserved in the service plan





**DB Engineering & Consulting USA Inc.**  
**Thank you**