

# High-Speed Rail Summary Presentation for Silicon Valley Young Democrats

*August 19, 2013*

*Rod Diridon Sr.  
Chair, US High Speed Rail Association*

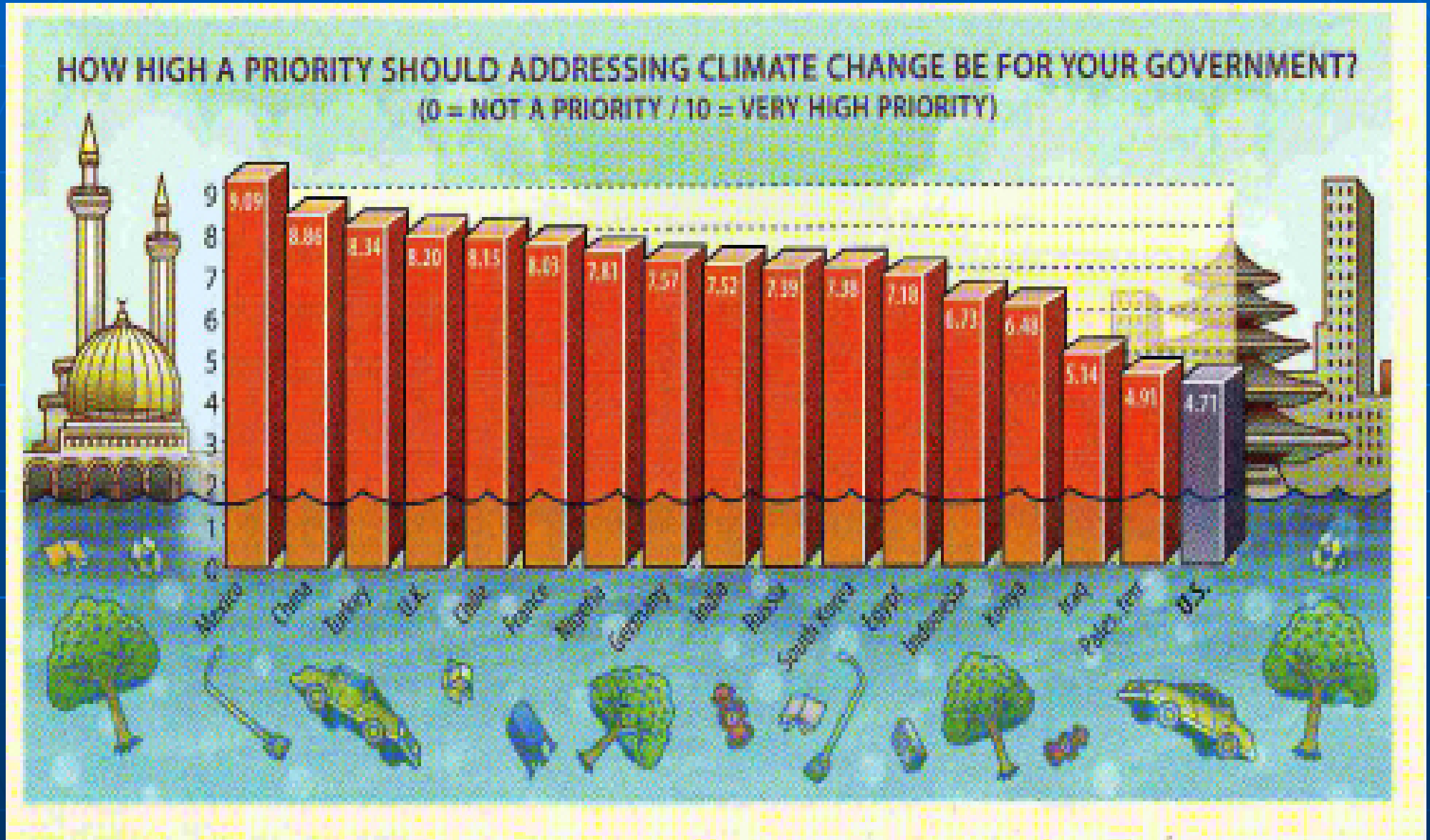
*Past Chair Intercity High Speed Rail Committee  
American Public Transit Association*

*Chair Emeritus  
California High Speed Rail Authority Board*

*Executive Director  
Mineta National Transit Research Consortium  
Mineta Transportation Institute*



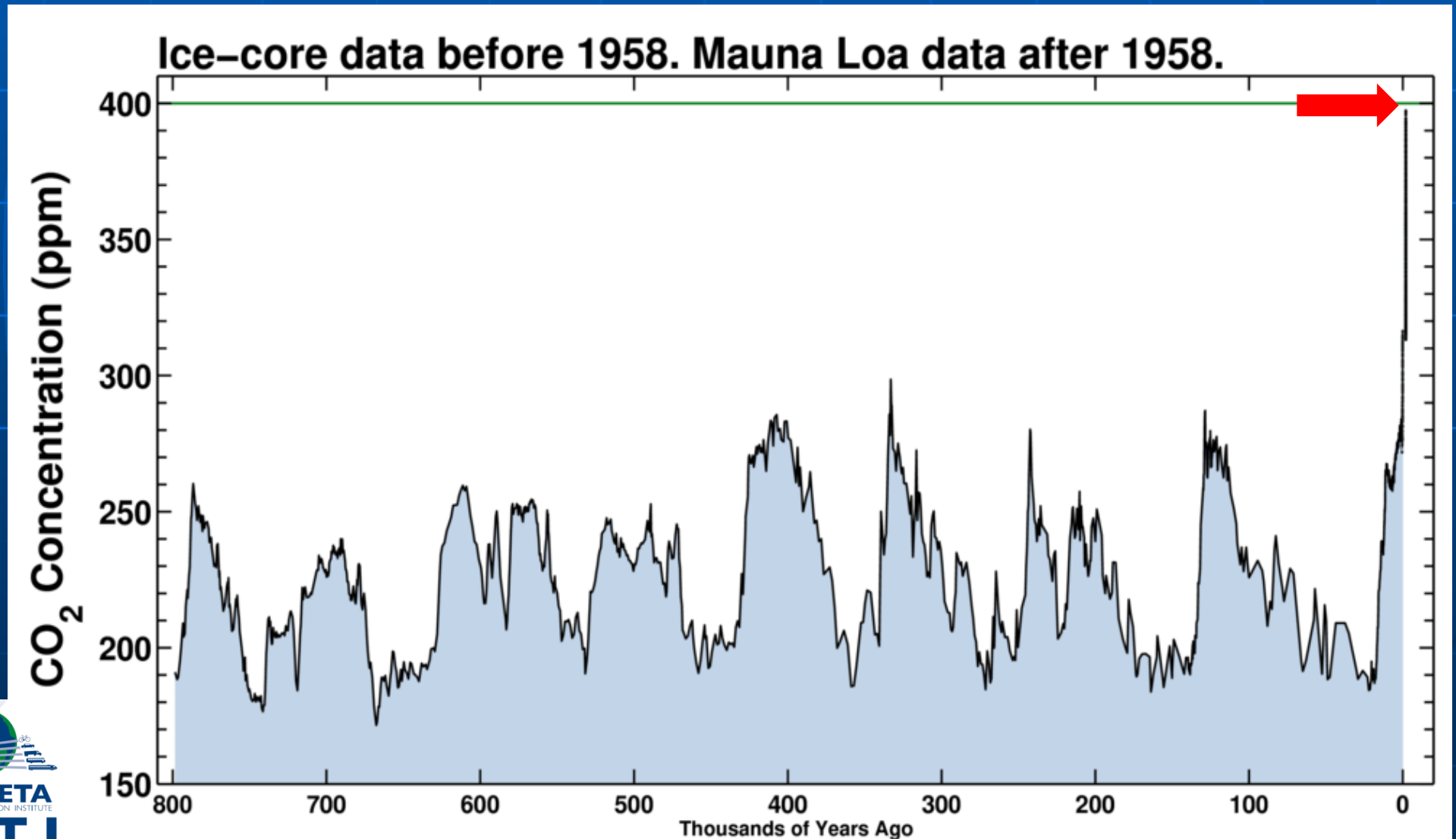
# First, Some Perspective from the UN



# The New York Times

## Heat-Trapping Gas Passes Milestone, Raising Fears

May 11, 2013





# San Jose Mercury News Front Page, August 8, 2013

## State report says global warming's wrath has already arrived

By Paul Rogers

*progers@mercurynews.com*

Rising ocean waters. Bigger and more frequent forest fires. More brutally hot summer days.

These aren't the usual predictions about global warming based on computer forecasts. They're changes already happening in California, according to a detailed new report issued Thursday by the California Environmental Protection Agency.

Climate change is "an immediate and growing threat" affecting the state's water supplies, farm industry, forests, wildlife and public health, the report says. The 258-page document was written by 51 scientists from the Univer-

sity of California, Scripps Institution of Oceanography, Lawrence Berkeley National Laboratory, U.S. Geological Survey and the National Oceanic and Atmospheric Administration, among other agencies and institutions.

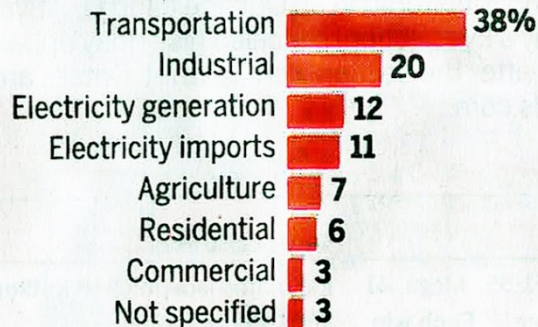
"Climate change is not just some abstract scientific debate," said California EPA Secretary Matt Rodriquez. "It's real, and it's already here."

Most Californians seem to agree. In a poll last month by the nonpartisan Public Policy Institute of California, 63 percent of the state's residents said the effects of global warming are already being felt, while 22 percent

See **WARMING**, Page 8

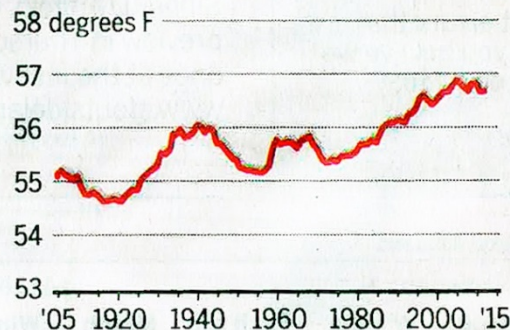
### Sources of emissions

Transportation, industry and electrical generation account for 81 percent of all greenhouse gas emissions in California.



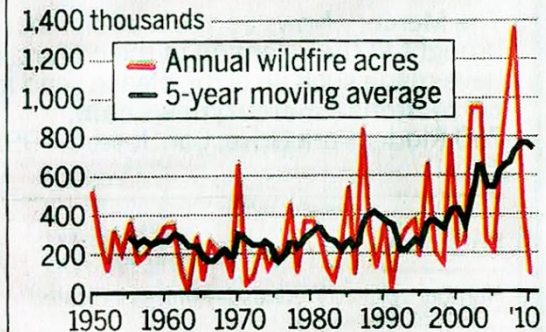
### Rising temperatures

Since 1895, annual average temperatures in California have increased by about 1.5 degrees.



### More severe fires

The average annual acreage burned in wildfires in the state since 2000 is almost twice as high as the 1950-2000 average.

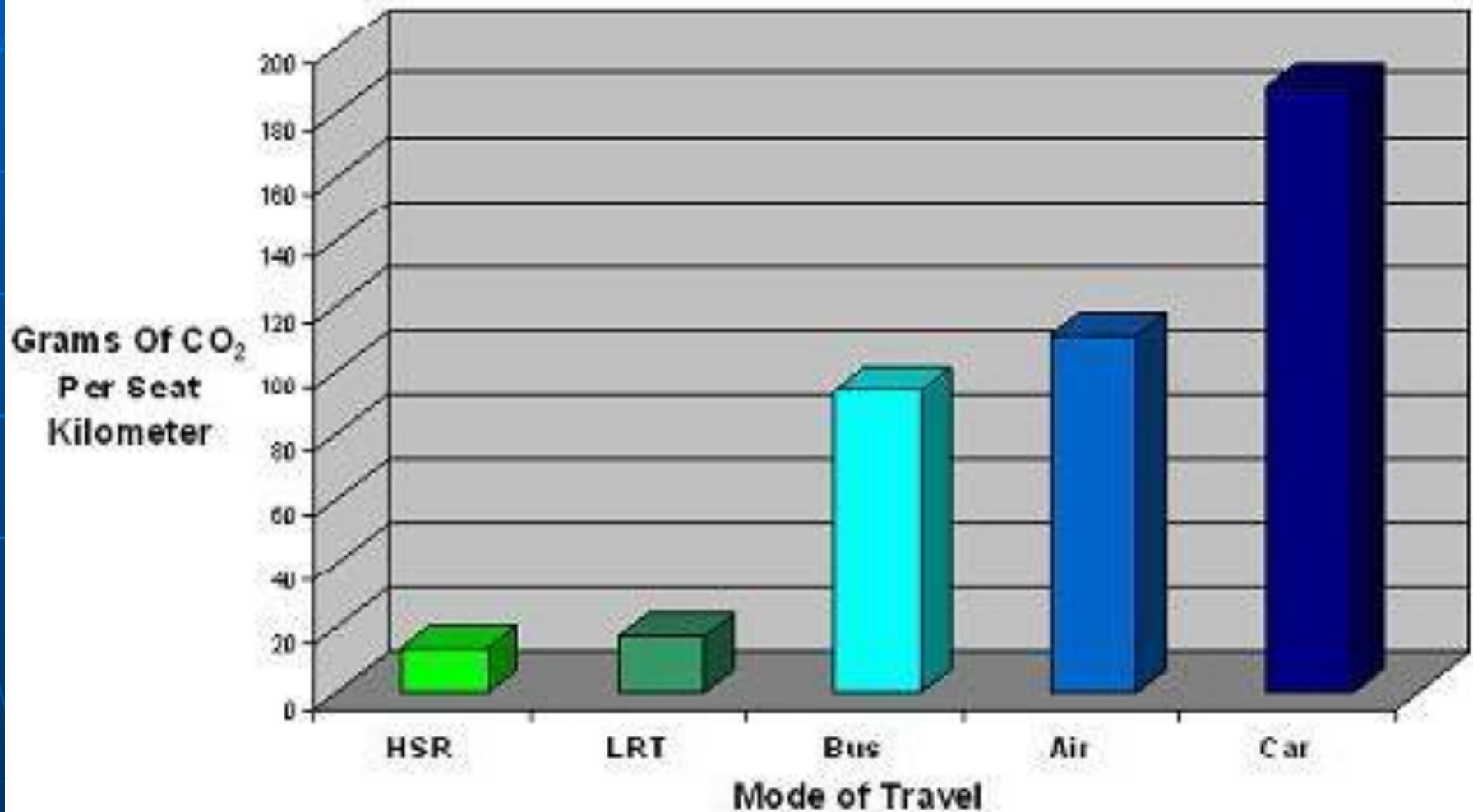


Source: Indicators of Climate Change in California, Office of Environmental Health Hazard Assessment

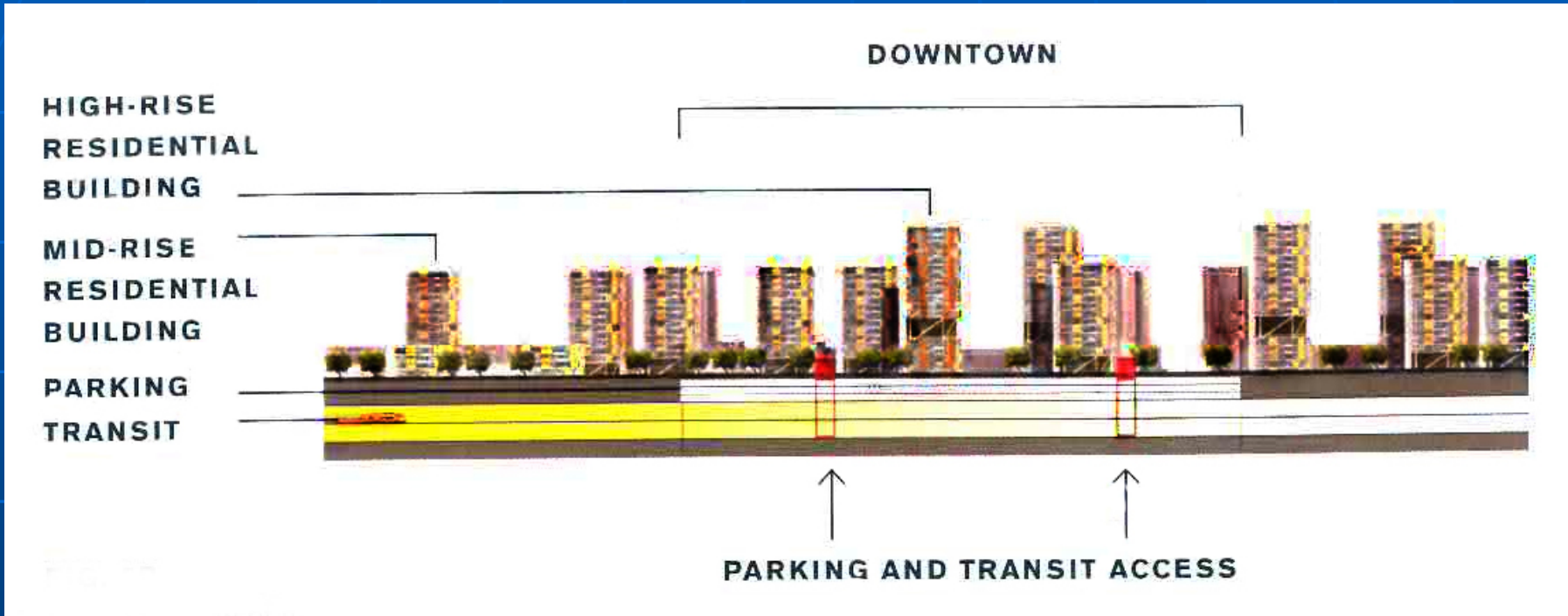
BAY AREA NEWS GROUP



# Carbon Footprint Mode Comparison



# Transit Communities



Source: "Centers for the Bay Area: Walkable Communities on Transit" by Peter Lydon

# High Speed Rail System in Asian Countries

- § Korea: KTX
- § Japan: Shinkansen
- § Taiwan: HSR 700T
- § China: CRH Systems



# High Speed Rail in Japan Shinkansen System

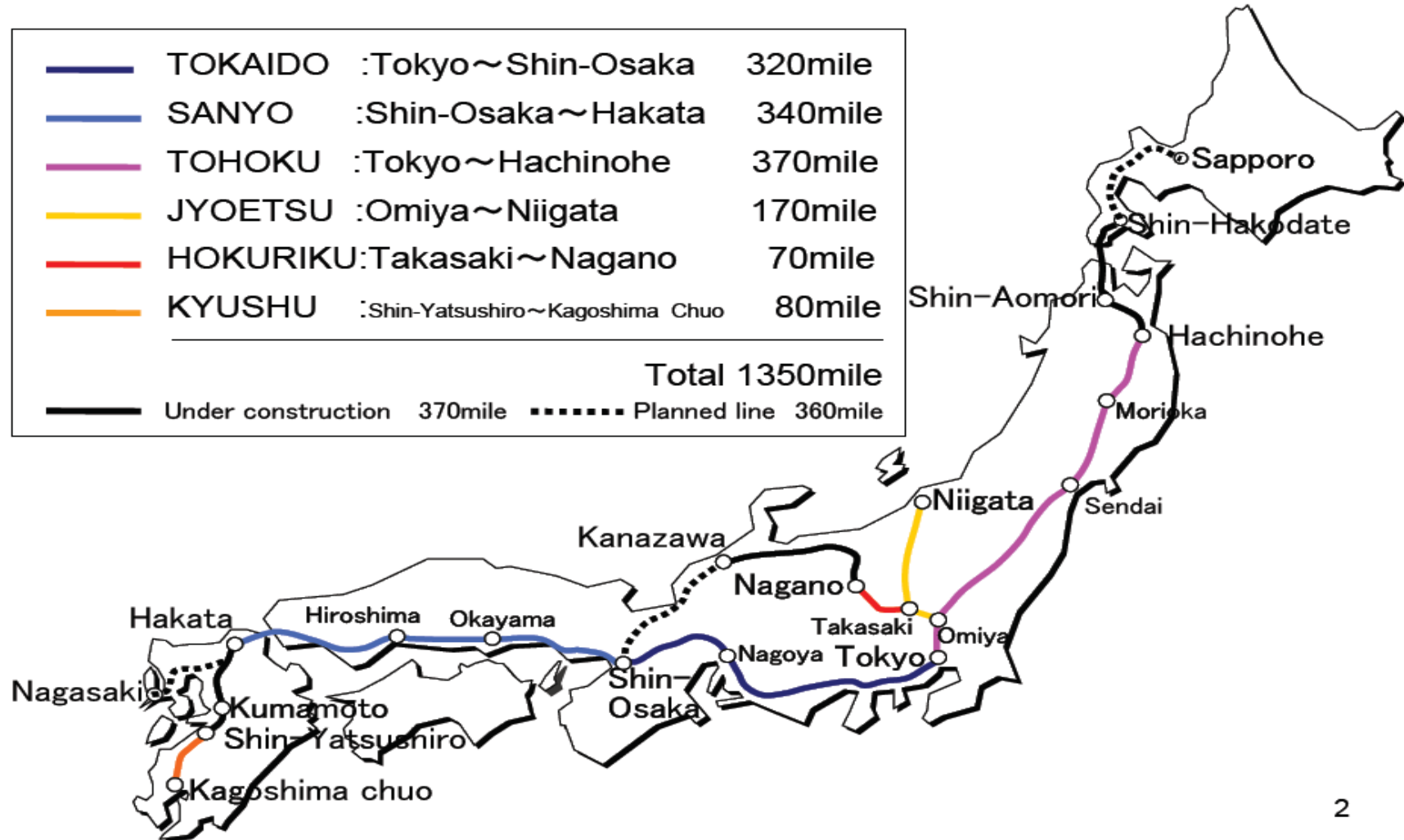
- Opened in 1964
- Total Service Mileage: 1,500+ miles
- Operated by 4 Private Japan Railway Companies
- Total Fleet approx. 4,000 cars
- Max. 12 Trains during peak hour
- Up to 350 km/h operation



# High Speed Rail in Japan Route Map

## SHINKANSEN NETWORK

	TOKAIDO :Tokyo~Shin-Osaka	320mile
	SANYO :Shin-Osaka~Hakata	340mile
	TOHOKU :Tokyo~Hachinohe	370mile
	JYOETSU :Omiya~Niigata	170mile
	HOKURIKU:Takasaki~Nagano	70mile
	KYUSHU :Shin-Yatsushiro~Kagoshima Chuo	80mile
Total 1350mile		
	Under construction	370mile
	Planned line	360mile



# High Speed Rail in Japan New Train set N700 Series



Created by Mineta Transportation Institute



# High Speed Rail in Korea

## KTX

n Korean High Speed Rail:

n Between Seoul and Busan

- TGV based design.

- Total 46 train sets:

12 trains by Alstom

34 trains by Hyundai-Rotem

Max Speed: 300 km/h



Korea

# High Speed Rail in Taiwan

- Opened: January 5, 2007
- Total length: 345 km
- Max Speed: 300+ km/h
- 12 car trains, total 30 train sets





# High Speed Rail in Taiwan Route Map



Created by Mineta Transportation Institute

# High Speed Rail in Taiwan

## HSR 700T Series



Created by Mineta Transportation Institute

# High Speed Rail in China

- n Mid to Long Range Rail Transportation Improvement Plan is on-going.

200 – 250 km/h Lines: 11,000 km, mostly dedicated for passenger, some freight.

360 km/h Lines: 13,000 km, dedicated for passenger services.



# High Speed Rail in China Route Map



Created by Mineta Transportation Institute





# European HSR

## Major players:

- Spain
- France
- Germany
- Italy

## Other countries with HSR :

- Holland
- Belgium
- England
- Sweden, etc.

Units:	200 kph	-	125 mph
	250 kph	-	155 mph
	300 kph	-	186 mph
	350 kph	-	217 mph





Europe 2025



# Spain: Rolling Stock for $\geq 300$ kph

AVE S 100



AVE S 102



AVE S 103  
(ICE-3)



# France: Speed records

- **Long distance:** 1067 km in 3hr 29min □ average speed 305 KPH! (TGV Réseau: Calais to Marseille May 26, 2001)
- **Top speed:** 574.8 KPH, 357.2 MPH (April 3<sup>rd</sup>, 2007)!



## Train-Consist:

- Two TGV-EST locomotives and two powered Jacobs bogies (AGV).
- 12 powered axles of 16 total
- Total power 20 MW!

Created by Mineta Transportation Institute



# Next Generation TGV = AGV

## n Major differences:

- Distributed power (EMU rather than locomotive design)
- Powered Jacobs–Bogie
- Reduced axle load
- Permanent magnet motors (synchronous motors)
- Improved aero–dynamics
- More passenger space (no locomotive)



# Germany: Rolling Stock

Type	Design	Vmax	Trains	In Service
ICE-1	Siemens	280 kph	60	1982
ICE-2	Siemens	280 kph	44	1989
ICE-3	Siemens	330 kph	72	2000



ICE-2



ICE-3

Created by Mineta Transportation Institute



# Italy: Rolling Stock

Type	Design	Vmax	Trains	In Service
ETR 500 (P)	Ansaldo/Bombardier	300 kph	60	1982



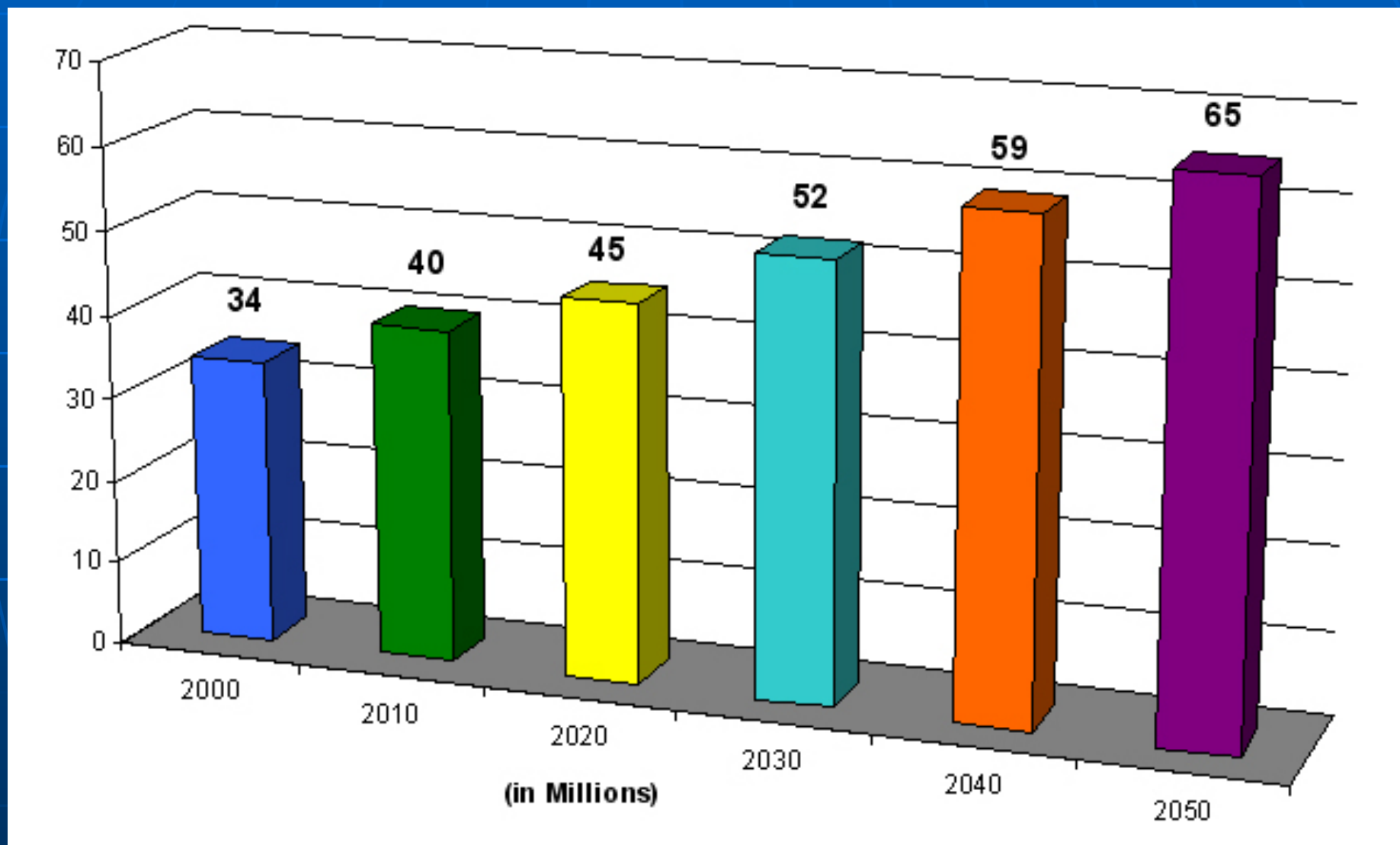




# US Federal HSR Funding, May 2011

Project	States	Total Investment	New Miles	Upgrades Miles	Top Speed (mph)
California	CA	\$3.4 billion	800	880	220; 110
Northeast Corridor	9 States	\$1.65 billion	0	363	150
Chicago - St. Louis	IL, MO, KS	\$1.3 billion	--	570	110
Michiana	IL, IN, MI	\$1.052 billion	--	300	90
Hiawatha	WI, MN	\$823 million	32	144	110
Southeast	VA, NC	\$639 million	--	480	110
Pacific Northwest	OR, WA, BA	\$598 million	--	437	79
3-C Corridor	OH	\$400 million	250	--	79
Empire Corridor	NY	\$144 million	--	462	110
Albany - Burlington	NY, VT	\$50 million	67	--	79
Vermont	NY, CT, MA, VT	\$40 million	11	261	90
Downeaster	ME	\$35 million	30	--	79
Keystone Corridor	PA	\$26 million	--	111	110
Iowa	IA	\$17 million	--	--	79
Albany - Montreal	NY, Quebec	\$7 million	--	3	79
Fort Worth	TX	\$4 million	--	--	79
<b>Total</b>	<b>32 states</b>	<b>\$10.185 billion</b>	<b>1274</b>	<b>4011</b>	

# California 's Projected Population



Sources: U.S. Census Bureau; Projections - CA Dept. of Finance

Created by Mineta Transportation Institute





# California

## High-Speed Rail Authority

- n Authorized by legislation in 1996
- n Nine-member authority board – five appointed by Governor, two by State Senate, two by State Assembly
- n Budget expended in state/federal funds to date, \$800M+
- n Program level Environmental Clearance certified on July 9, 2008
- n Project level Environmental Clearance and first construction contract, December 2012

# California HSR with Stations and Feeders



790 Miles  
26 Stations

# CHSRA Central Valley Starter

n The five design-build teams are listed in alphabetical order:

FIRM	Small Business (SB) Contact	NON-SB CONTACT
CALIFORNIA BACKBONE BUILDERS	Christopher Smith csmith@ferrovial.us.com (512) 637-8592	Christopher Smith csmith@ferrovial.us.com (512) 637-8592
CALIFORNIA HIGH-SPEED RAIL PARTNERS	Lynn Romano Lynn.romano@fluor.com (949) 349-2896	Chuck Lines Chuck.lines@fluor.com (949) 349-4512
CALIFORNIA HIGH-SPEED VENTURES	Verenise Di Salvi Verenise.DiSalvi@Kiewit.com (707) 439-7300 Ext. 7357	Jeff Riley Jeff.riley@kiewit.com (707) 439-7300
DRAGADOS/SAMSUNG/PULICE A JOINT VENTURE	Jeff Gergal jgergal@dragados-usa.com 858-200-4052	Chad Mathes cmathes@Dragados-USA.com (657) 229-7805
TUTOR PERINI/ZACHRY/PARSONS	Sarah Morris Sarah.Morris@tutorperini.com Phone: (818) 362-8391 Ext. 5637 or Mike Barge Mike.Barge@tutorperini.com Phone: (818) 362-8391 Ext. 5572	Gerald Brown Jerry.brown@tutorperini.com (818) 362-8391

# CHSRA Phased Expansion

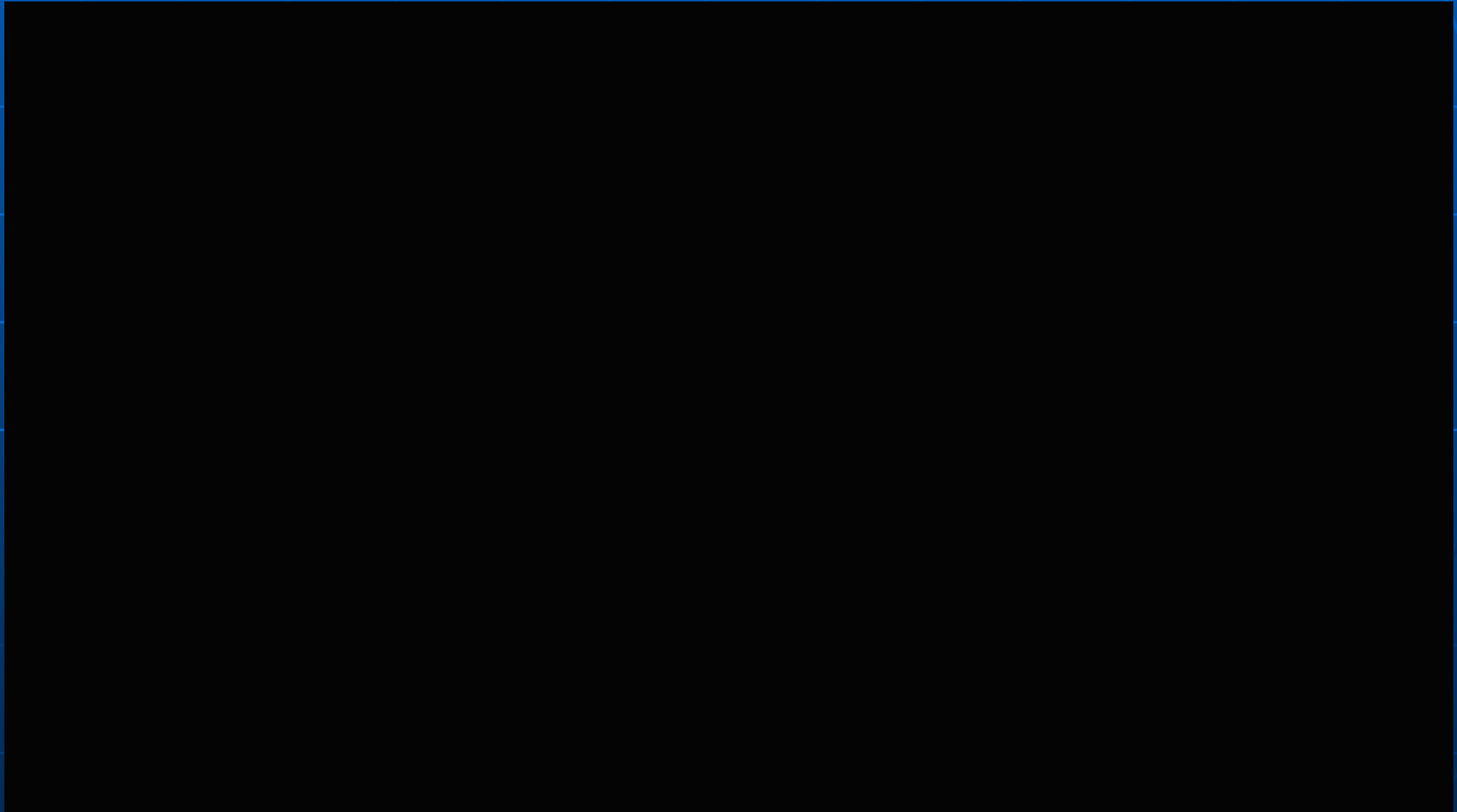
Section	Length (approx)	Endpoints	Service Description	Service Start	Cumulative Costs (YOE\$, billions)
Initial Operating Section	300 Miles	Merced to San Fernando Valley	<ul style="list-style-type: none"> <li>• One-seat ride from Merced to San Fernando Valley</li> <li>• Closes north-south intercity rail gap, connecting Bakersfield and Palmdale and then into Los Angeles Basin</li> <li>• Begins with construction of up to 130 miles of HSR track and structures in the Central Valley</li> <li>• Private sector operator</li> <li>• Ridership and revenues sufficient to attract private capital for expansion</li> <li>• Connects with enhanced regional/local rail for blended operations, with common ticketing</li> </ul>	2022	\$31
Bay to Basin	410 Miles	San Jose and Merced to San Fernando Valley	<ul style="list-style-type: none"> <li>• One-seat ride between San Francisco and San Fernando Valley (1)</li> <li>• Shared use of electrified/upgraded Caltrain corridor between San Jose and San Francisco Transbay Transit Center</li> <li>• First HSR service to connect the San Francisco Bay Area with the Los Angeles Basin</li> </ul>	2026	\$51



# CHSRA Phased Expansion (Cont.)

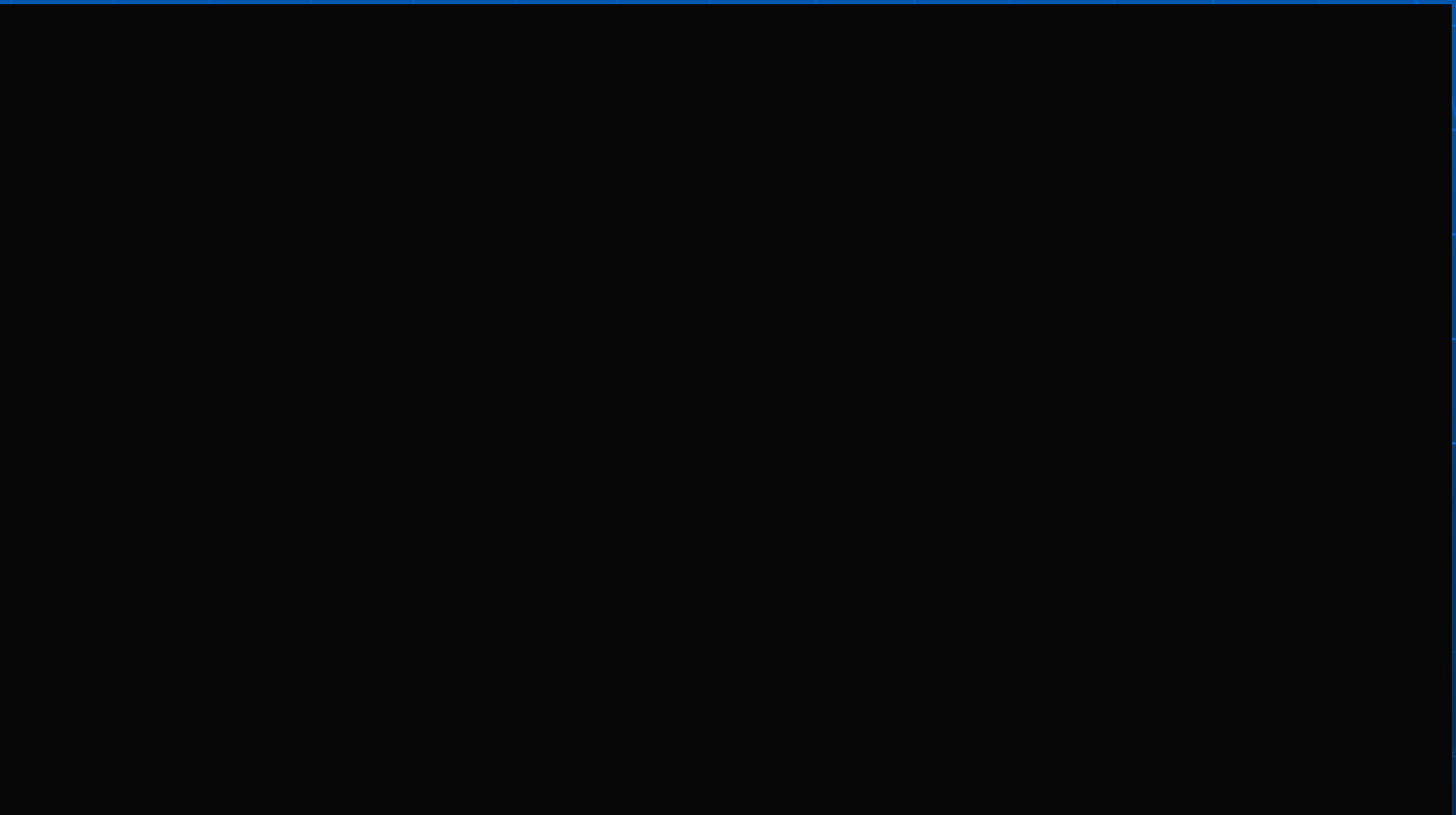
Section	Length (approx)	Endpoints	Service Description	Service Start	Cumulative Costs (YOE\$, billions)
Phase 1 Blended	520 Miles	San Francisco to Los Angeles/ Anaheim	<ul style="list-style-type: none"> <li>• One-seat ride between San Francisco and Los Angeles (1)</li> <li>• Dedicated HSR infrastructure between San Jose and Los Angeles Union Station</li> <li>• Shared use of electrified/upgraded Caltrain corridor between San Jose and San Francisco Transbay Transit Center</li> <li>• Upgraded Metrolink corridor from LA to Anaheim</li> </ul>	2029	\$68

# California HSR Corridor



# San Jose Animation

Diridon Station







# San Francisco Bay Area Transit Integration

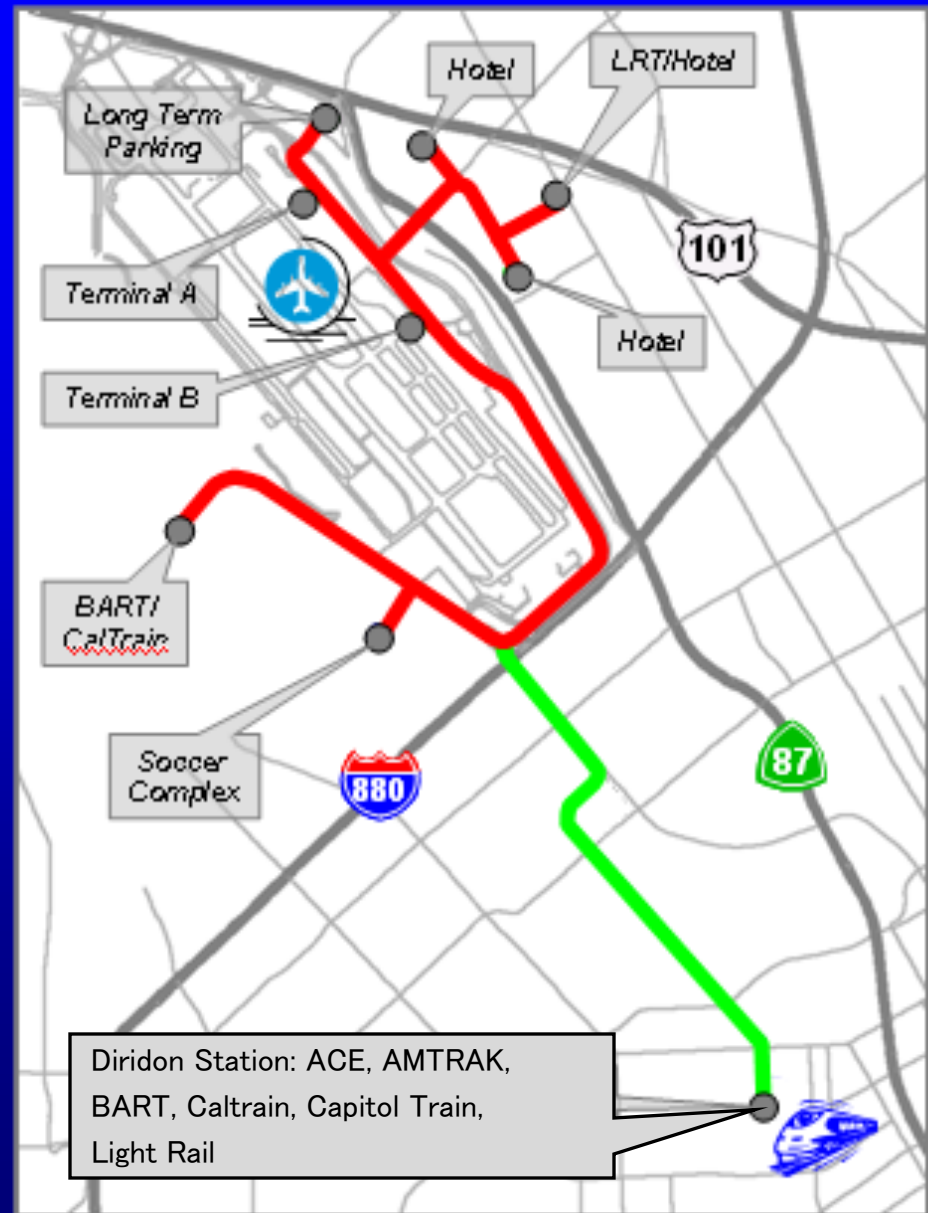
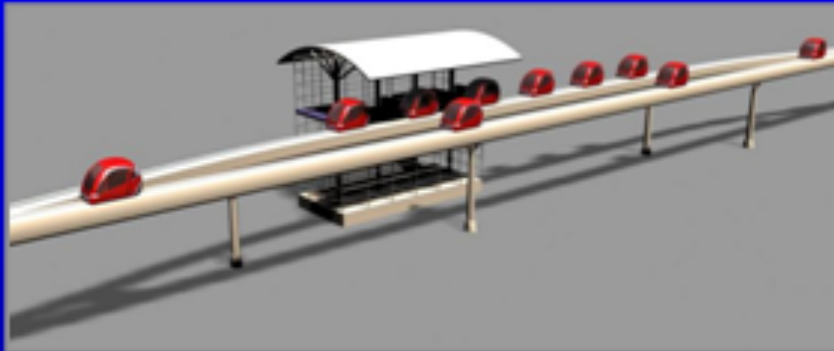
- **Commuter Rail**
  - Caltrain, ACE, Amtrak, Capitols
- **BART Rapid Transit**
  - Existing
  - Silicon Valley Extension
- **Light Rail Transit**
  - Existing
  - Vasona/Capitol Extensions
  - Potential Future Corridors
- **Bus, Local & Express Service**
- **Proposed High Speed Rail**
- **Multimodal Station Hubs**
  - Downtown Diridon Station
  - SJ Mineta International Airport



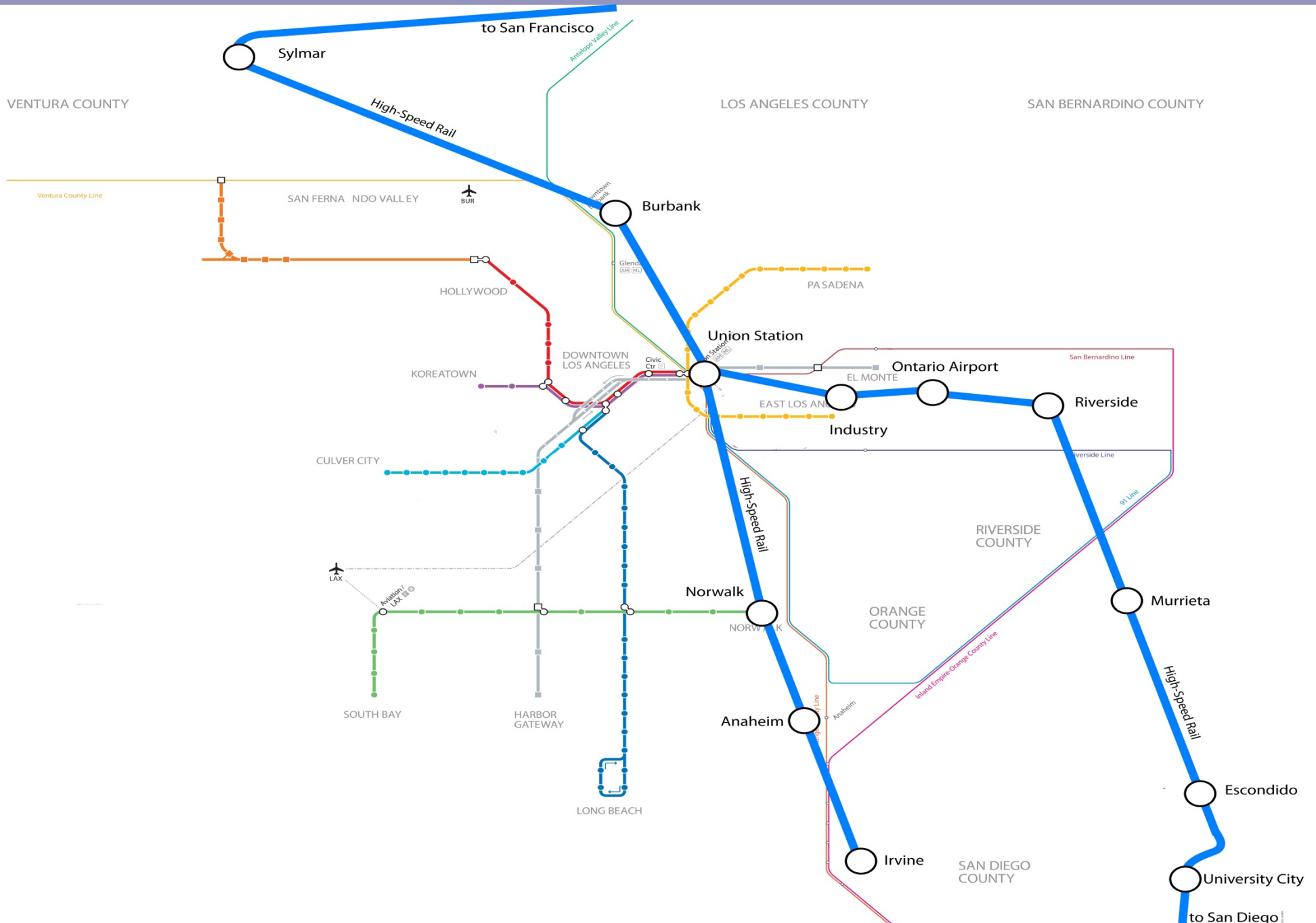
# San Jose 's AGT Project

## AGT Routing Study

-  **Base Project**
-  **Diridon Extension**



# Cal HSR, LA Metro, and Metrolink Commuter Rail

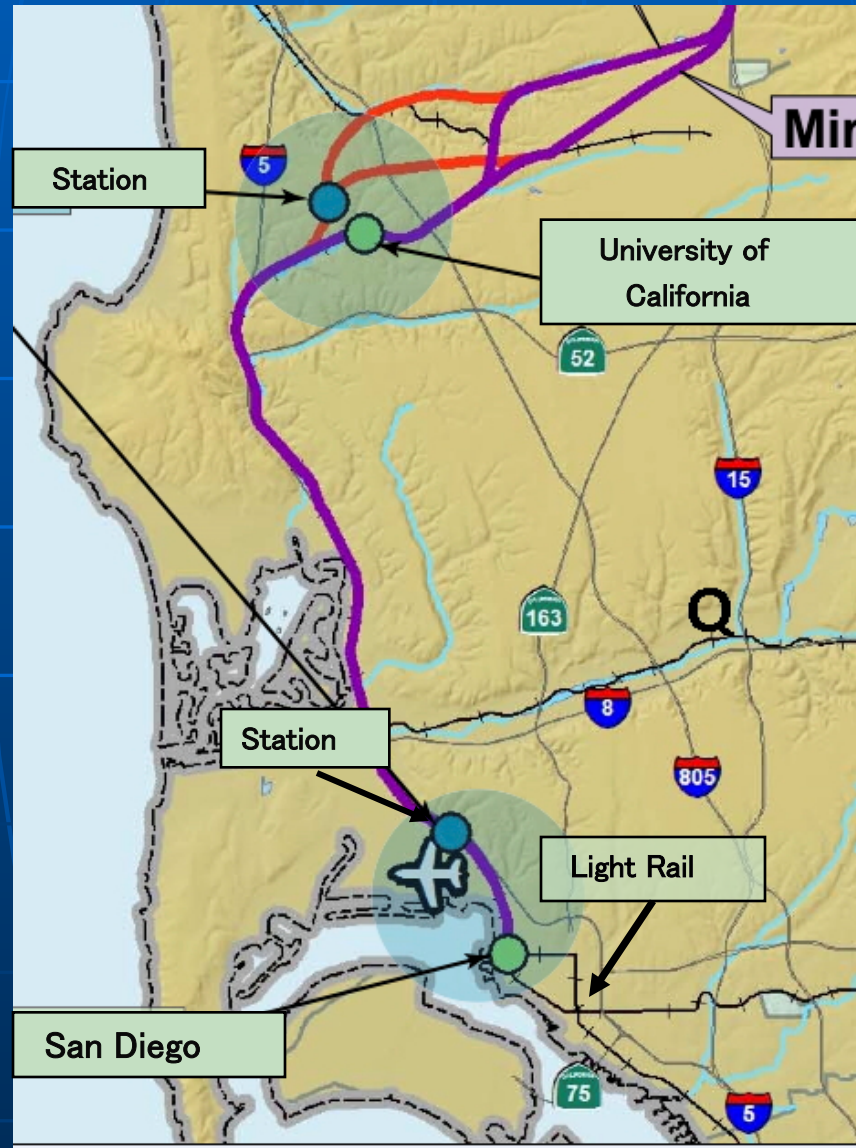




# LA Union Station Amtrak Intercity Connections



# San Diego Connections



# Innovations to Support HSR

## n Controlling Issue

- In California and most US states, the cities control land use. Therefore, the cities or legal combinations of local governments must approve the implementation of innovative technologies.
- City councils rarely share land use control, and then typically only via joint exercise of power authorities (JPA) controlled by local elected delegates.
- JPAs are created to meet obvious pressing needs.
- Actions by JPAs require approval of every organizational member of the agreement.



# FTA National Environmental Protection Act Process

## n The Pressing Need

- Rampant climate change and near-terminal gridlock

## n Local Action

- Local elected leaders propose creation of a JPA to meet the need in a specific corridor or system element; completes a locally funded concept study.

## n JPA/FTA Environmental Clearance

- With the objective review of FTA, the JPA conducts an alternative analysis of every corridor, station location, mode, grade-level development, and operational alternative in terms of both economic and environmental impacts. **THIS IS THE KEY STEP, WHICH MUST BE DONE BY BROADLY KNOWLEDGABLE AND OBJECTIVE CONSULTANTS.**

# Certification of the EIR, Design/Build RFP

- n With FTA concurrence and after many public meetings, the JPA approves and certifies selection of the preferred alternatives.
- n Grant and/or community funding is obtained for a design/build bid, and the construction project proceeds. Funding might consist of local government pooled revenue, state and federal grants, and/or PPP.

# Construction, Building Public Confidence

- n The construction project must be delivered on budget and schedule, and with minimum community disruption, otherwise the remainder of the system will not be allowed to be built.
- n The next corridor or systems element should begin as quickly as possible to maintain momentum.



# California Project Size

## California High-Speed Train Project



**FLY CALIFORNIA**  
Without ever leaving the ground.

**790 Miles Long**

**26 Stations**

**150 Miles of Bridges, Viaducts, and Elevated Structures**



**35 Miles of Tunnels**

**610 Grade Separations**

**510,000 Square Yards of Retaining Walls**

**110 Power Supply, Switching and Paralleling Sub-Station**

STATISTICS



# California Project Size

## California High-Speed Train Project



Statistics

# Contact Information

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