



Integrated Network Approach



Madrid to Barcelona

Madrid to Valladolid



Madrid-Sevilla



-----Trip Time (hrs) -----Annual Ridership

Madrid-Valencia



Madrid-Malaga



Building Blocks Towards Speed

<u>90+ mph</u> Separate slow trains from fast trains <u>110+ mph</u> Separate highway crossings

<u>125+ mph</u> Electrified

The faster the speed, the more likely a new right-of-way will be needed

Fencing always a good idea

Three Types of Track Connecting Regions

Shared-Use Lines



Up to 110 mph (90 max preferred) Mostly privately owned Many highway crossings Mostly diesel 35-ton axle loading

Regional Lines



Up to 160 mph Mostly government owned Few highway crossings Electric preferred 35-ton axle loading

High-Speed Lines



Up to 250 mph Mostly government owned Zero highway crossings Electric above 125 mph 17-ton axle loading



Network planning is critical



High Speed Rail Alliance

TGV Sudest Network 1983







California's Existing Train and Thruway Bus Network





California's Cutting-Edge Integrated Rail Plan



Integrated Plan drives huge boost in usage

Note: Fresno is a busy station by current standards but doesn't show up at this scale

High Speed Rail Alliance

County-to-County Ridership Demand

2010	2040	2040
Existing	Stand-Alone Projects	Coordinated Network
Del Norte Modoc Siskiyou	Del Norte Modoc Siskiyou	Del Norte Modoc Siskiyou
Shasta Lassen	Shasta Lassen	Shasta Lassen
Humboldt	Humboldt	Humboldt
Tehama	I rinity Tebama	Tehama
Plumas	Plumas	Plumas
Butte	Butte	Butte
Glenn	Glenn	Glenn
Sierra	Sierra	Sierra
Nevada	Nevada	Nevada
Yuba	Yuba	Yuba
Colusa	Colusa	Colusa
Lake	Lake	Lake
Placer	Placer	Placer
Sutter	Sutter	Sutter
Yolo	Yolo	Yolo Yolo
Alpine	Alpine	Alpine
Sonoma	Sonoma	Sonoma
Napa	Napa	Napa
Sacramento -	Sacramento <	Sacramento
Solano	Solano	Solano
Calaveras	Calaveras	Calaveras
Marin	Marin	Marin
Tuolumne	Tuolumne	Tuolumne
San Joaquin	San Joaquin	San Joaquin
Mono	Mono	Mono
San Francisco 🛁	San Francisco	San Francisco
Alameda 🔫	Alameda	Alameda
Mariposa	Mariposa	Mariposa
Stanislaus	Stanislaus San Mateo	Stanislaus San Mateo
Santa Clara	Santa Clara	Santa Clara
Madera	Madera	Madera
Merced	Merced	Merced
Santa Cruz 🧹	Santa Cruz	Santa Cruz
Fresno	Fresno 2	Fresno San Ropito
Invo		Invo
Monterey	Monterey	Monterey
Tulare	Tulare	Tulare
Kings	Kings	Kings
San Luis Obispo	San Luis Obispo	San Luis Obispo
San Bernardino	San Bernardino	San Bernardino
Santa Barbara	Santa Barbara	Santa Barbara 🔪
Ventura	Ventura	Ventura 🤰 🕅
Los Angeles 🖌	Los Angeles	Los Angeles
Riverside	Riverside	Riverside
		Imperial
San Diego 🧹	San Diego	San Diego

California High Speed Rail Status by Segment

High Speed Rail Alliance



Central Valley segment:

90 minutes cut from the middle

Frequency at least doubled





High-Speed Line Boosts Volume

Improvements to San Joaquin and connecting routes with Central Valley High-Speed Line







Caltrain - The First Modern Regional Line

