California High-Speed Rail Project Experience

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World Bank bag lunch
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HSR in California

- Why am I here?
- California HSR in Context
- California HSR project: what happened, why?
- Megaprojects: why can't we do them right?
- What should we do?

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My Background

- US DOT team that created Amtrak, ran NECIP ($10 billion in 2024$)
- World Bank Railways Advisor 1987-2003
- TGA transportation consulting worldwide
- TX HSR project Peer Review Group
- 15 years (12 as Chairman) of CA HSR Peer Review Group reporting to Legislature
- Consultant to Caltrain and VTA

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HSR Experience: It Works!?
(HSR is >150 mph or so)

- Japan – "Shinkansen" 1964
- France – "TGV" 1981
- Germany – "ICE" 1991
- China – 2008
- Italy, Taiwan, Korea, and others

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Shinkansen

- "Shinkansen" 1964
  - Separate system (Std gauge) from Tokyo to Osaka in 1964 (WB helped finance !)
  - Now covers most major cities
  - To date ~8 billion passengers, zero fatalities from train accidents
  - Average delay: 9 seconds!
  - HSR lines "profitable,"
  - Old JNR "privatized" in 1987 Now 6 companies

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France

- "TGV" 1981
  - Uses both HSR and conventional lines
  - Serves most major cities and connects to UK, Belgium, Spain, Switzerland and Germany
  - To date, 2 billion passengers, no fatalities from accidents
  - Some TGV lines "profitable": SNCF very unprofitable

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Germany

- "ICE" 1991
  - Mixed speed system (speeds and lines)
  - Germany, Austria, Switzerland, Belgium and Netherlands
  - To date 1.5 billion passengers
  - Major accident: 101 fatalities
  - DB **major financial problem** for Germany

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China

- Started 2008 (!)
  - 28,000 miles by 2023, headed for 30,000 or more
  - About 18.5 billion passengers so far
  - Multiple objectives, not just "profitability"
  - Complex organization (national/local)
  - Financial impact uncertain (very high debt)
  - Wenzhou accident, 40 fatalities
  - WB planning and studies

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Major HSR Systems (2023)

	HSR Line Miles	Passengers (000)	Passenger-Miles (000,000)
China	27,967	2,897,880	610,698
Japan	1,800	349,885	61,070
Germany	1,729	107,857	23,571
France	1,687	127,997	37,057
CA HSR (est)	**520**	**39,000**	**~10,000**

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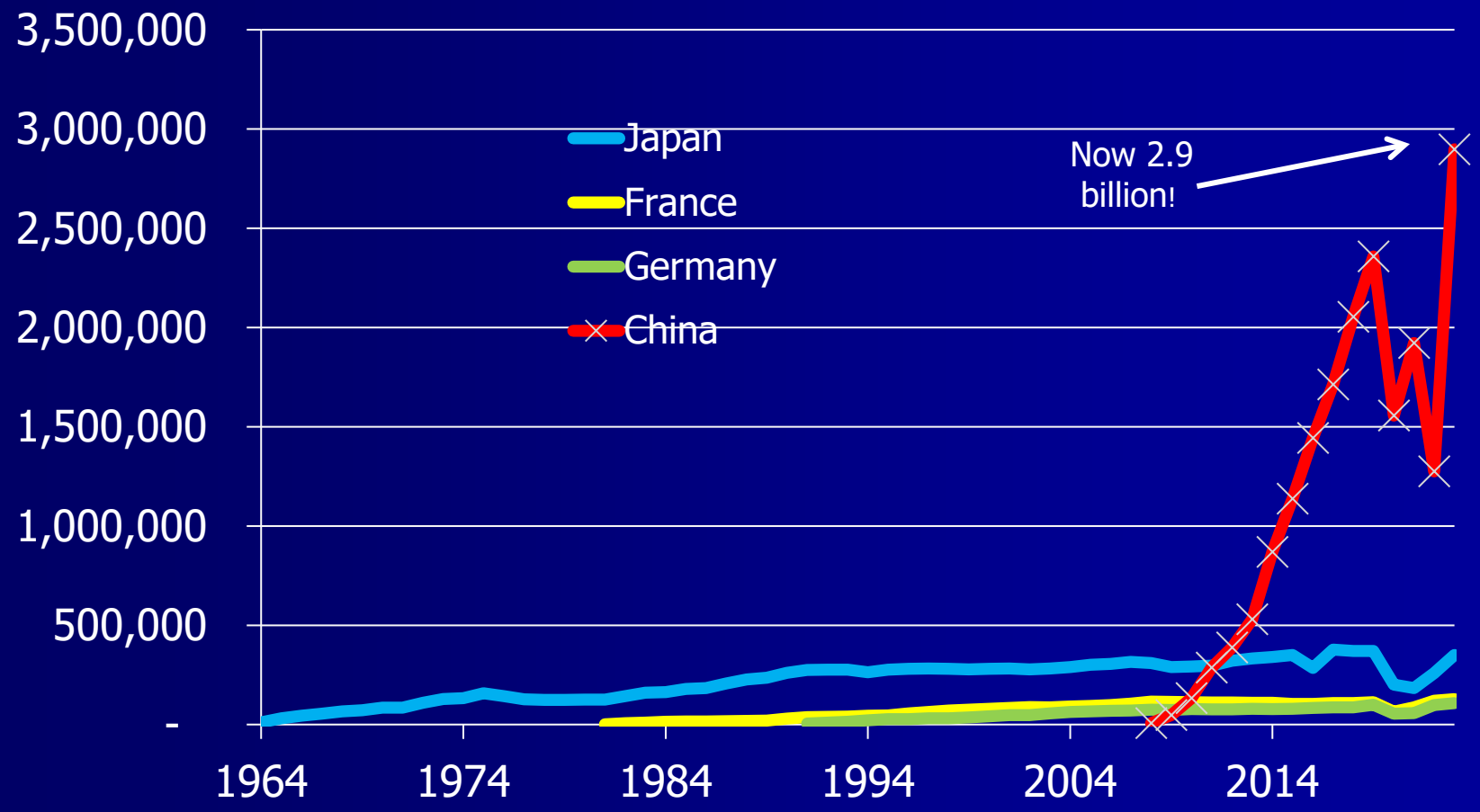
Annual HSR Passengers

(000)



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Now to California

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HSR Project History

- Studies: 1980 (FRA) through 1996 (CA): HSRA Commission
- 2000 BP: first entire system: ¼ % sales tax. Base for Prop 1A
- 2008 BP: Based on **Prop 1A**. Ph 1 only, Rte. 99. 220 mph, 2hr 40 min SF to LA Union. The "1/3s" mantra. "Bookends"
- 2009 BP: 1st Revision, added ARRA (Fed) $, started in the center
- 2012 BP: Blended service (not separated) SJ/SF and Burbank/LA
- 2014 BP: Suspend North, go South (BKF to LA)
- 2016 BP: Suspend South, go North (SF to BKF)
- 2018 BP: BKF to SJ only: possibly some trains to SF. Added Cap & Trade funding (25%)
- 2020 BP: Merced to BKF links: no connection to SJ
- 2022 BP: Additional focus on Merced to BKF, ACE, SJJPA
- **2024 BP**: Cost increases, further problems (Trump!)

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Project Evolution

Business Plan	Length (miles)	Est Cost $ of Yr.	Est Cost ($2024 billions)	Cost/Mile (millions)	Riders (millions)	1st Yr Full Operation	Operating Ratio (cost/rev)
2000	703	37.8	79.4	113.0	42	2020	0.61
2008	520	32.8	55.7	107.1	40	2020	0.45
2009	520	35.7	60.2	115.9	41	2020	0.37
2012	494	57.9	101.4	205.2	27	2034	0.46
2014	494	54.9	89.3	180.8	37	2040	0.52
2016	494	55.2	82.6	167.2	45	2040	0.36
2018	494	67.5	96.8	196.0	39	2040	0.39
2020	494	71.9	96.7	195.8	41	2040	0.44
2022	494	86.0	107.1	216.8	41	2040	0.37
2024	494	86.0	108.8	220.2	29	2050	0.50

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The Funding Gap From Then to Now

($ billions)

	2009 BP	2024 BP
Estimated Cost	34	130
Funding Available		
Prop 1A Bonds	9	9
Cap and Trade (2030)	--	13.4
Federal (ARRA and 2010)	3.5	3.5
Private Sector	8.5	--
Planned Funding	21	25.9
Gap based on KNOWN Funding	13	104.1
Potential Additions		
Cap and Trade (2030 to 2050)		15
Federal*		4.7
New State		?
Remaining Unfunded Gap	**13**	**93.8**
*Trump wants it back		

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Where is the Project Now?

- Madera to near BKF only: environment/engineering for extensions
- Caltrain electrification done and successful (<25% overrun), LA Union through tracks suspended
- Plan connection to SJJPA at Merced and extend to BKF
- SJJPA to operate HSRA service from Merced to BKF (avoid deficit) with connection to Sacramento ("San Joaquins")
- Major overruns on existing contracts so far and major delays
- Major cost unknowns (50 mi of tunneling, electrification, rolling stock): no bids or experience on >60% of the project
- New Federal money (if any) unlikely for next 4 years, maybe lose what they have.
- **New State financing source needed beyond the CV.**

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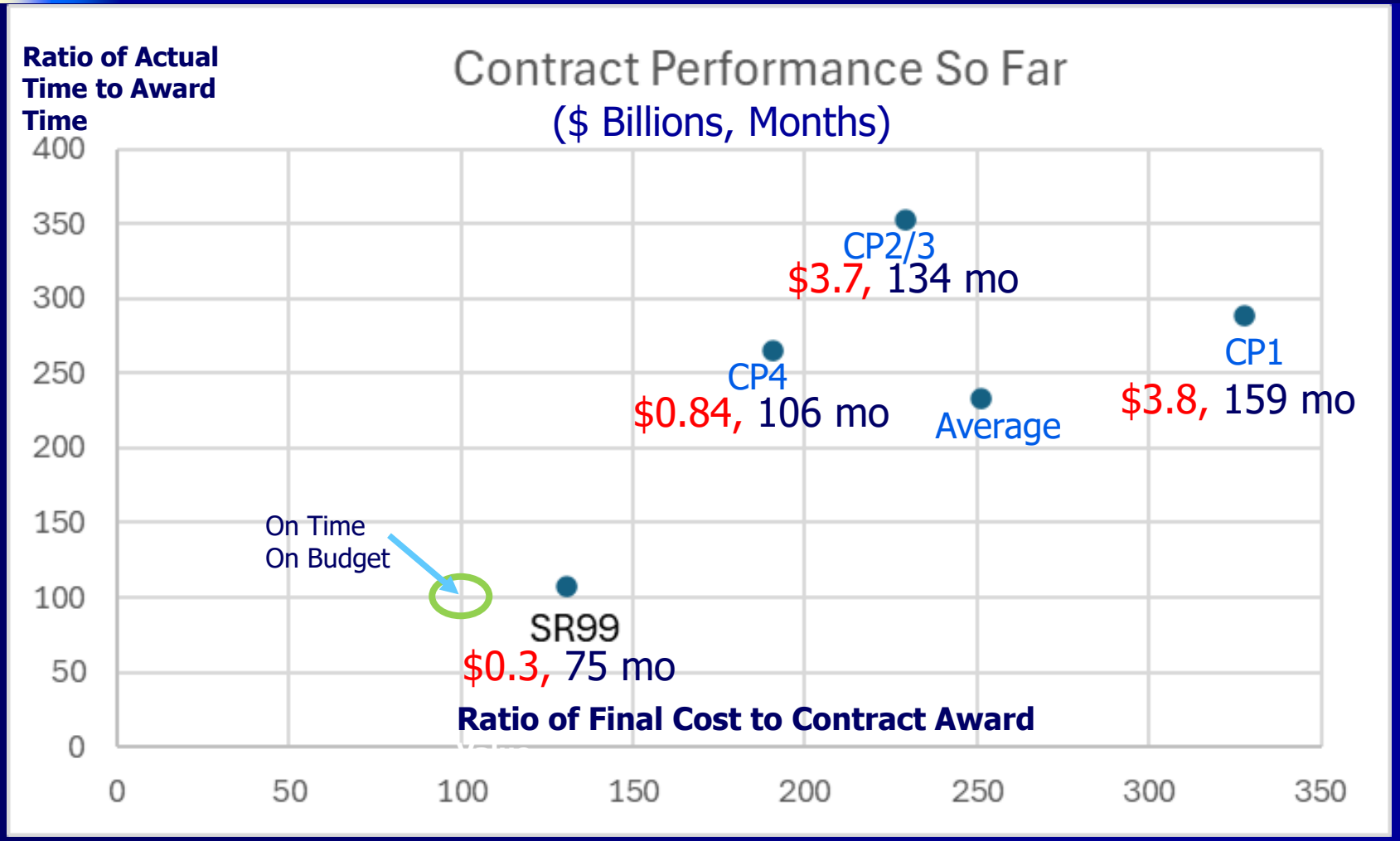
Performance on Contracts so Far



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How Did This Happen?

- "Optimism Bias" (scope, schedule and budget): dishonesty versus delusion. Promoters had "vision," lacked knowledge/competence
- Major interests have very short-term objectives (Labor, Contractors)
- Unclear legislation -- diffuse and conflicting political/social objectives
- "Aspirational" funding plan (the "1/3s"). Net result, inadequate and unstable funding made effective management impossible
- Passage by Proposition: unrealistic expectations, inadequate review, "orphan" when trouble came, poor public understanding of project magnitude
- "Free" federal (ARRA) money deadline forced decisions (rushed contracting, construction started prematurely and in the middle)
- Management too thin (over-dependence on consultants)
- Litigation, especially NEPA and CEQA (costly delays and changes) "NIMBYism is destroying the State" (Newsom)
- Wholly inadequate executive and legislative oversight

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A closer look at (just) CEQA

- Bakersfield sued for a new route and station
- Farmers sued for alternate routes and indemnities for "conservation easements"
- Hospitals and churches sued for alternate routes and compensation
- Developer in Bakersfield sued because of potential noise impacts.
- City of Shafter sued and demanded tracks be raised onto a viaduct
- After a suit, HSRA paid City of Corcoran to "make up for aesthetic effects"
- Peninsula cities sued over noise impacts – ultimately lost
- UP railroad sued over taking land for a maintenance facility
- Burbank airport sued arguing that rail would impact on the airport
- NET RESULT: >$350 million and 15 years in environmental analysis, as well as years of project delay (and large legal costs).

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So, What Should California Learn?

- Look gift horses in the mouth: **visions aren't projects**
- Ensure planning and system performance objectives are realistic and accepted
- Place extreme emphasis on initial review and planning and don't establish projects by popular vote (Proposition)
- Provide credible, stable and adequate funding: **if you can't fully pay for it, don't start it**
- Try to make at least somebody have skin in the game
- Need competent, adequate and stable internal management team without undue reliance on consultants (1.6+.8 on consultants)
- Streamline the litigation environment (both time and direct cost)
- PRG: Need to reassess the project, **re-align objectives with credible funding and greatly improve oversight**

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What should the Bank learn about Megaprojects

- Megaprojects affect multiple interests, far beyond the "project" boundaries. You have to understand the **country**, not just the agency or department
- The evaluation of a megaproject entails more than just financial or economic analysis.
- Megaprojects have a long time span and are especially subject to political and economic changes (inflation) during the project.
- Megaprojects will never be built by the private sector alone. They are too large and they involve public as well as private benefits and costs. But PPPs are a lot easier to promise than to deliver…
- Megaproject financing is never just based on a one-time loan: it must involve adequate, stable and predictable sources over time.
- Management capability is critical
- When money is involved, people don't tell the truth.

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Two Quotes About Megaprojects That Say It All

- "News that the Transbay Terminal is something like $300 million over budget should not come as a shock to anyone. We always knew that the initial estimate was way under the real cost … In the world of civic projects, the first budget is really just a down payment. If people knew the real cost from the start, nothing would ever be approved. The idea is to get going. Start digging a hole and make it so big, there's no alternative to coming up with the money to fill it in." Willy Brown (Politician)
- "We have met the enemy, and he is us." Pogo (Possum)

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Plan B: the right direction today. Incremental improvements, carefully targeted for maximum value. Focus on trip time, not max speed. Make sure that there is enough money for solid and continuing operational support, not just construction. Focus benefits on riders, not consultants, contractors and construction unions. Bring money and be patient.

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