The California High Speed Rail Project: Improving Megaproject Outcomes

2014 Omega Centre Programme
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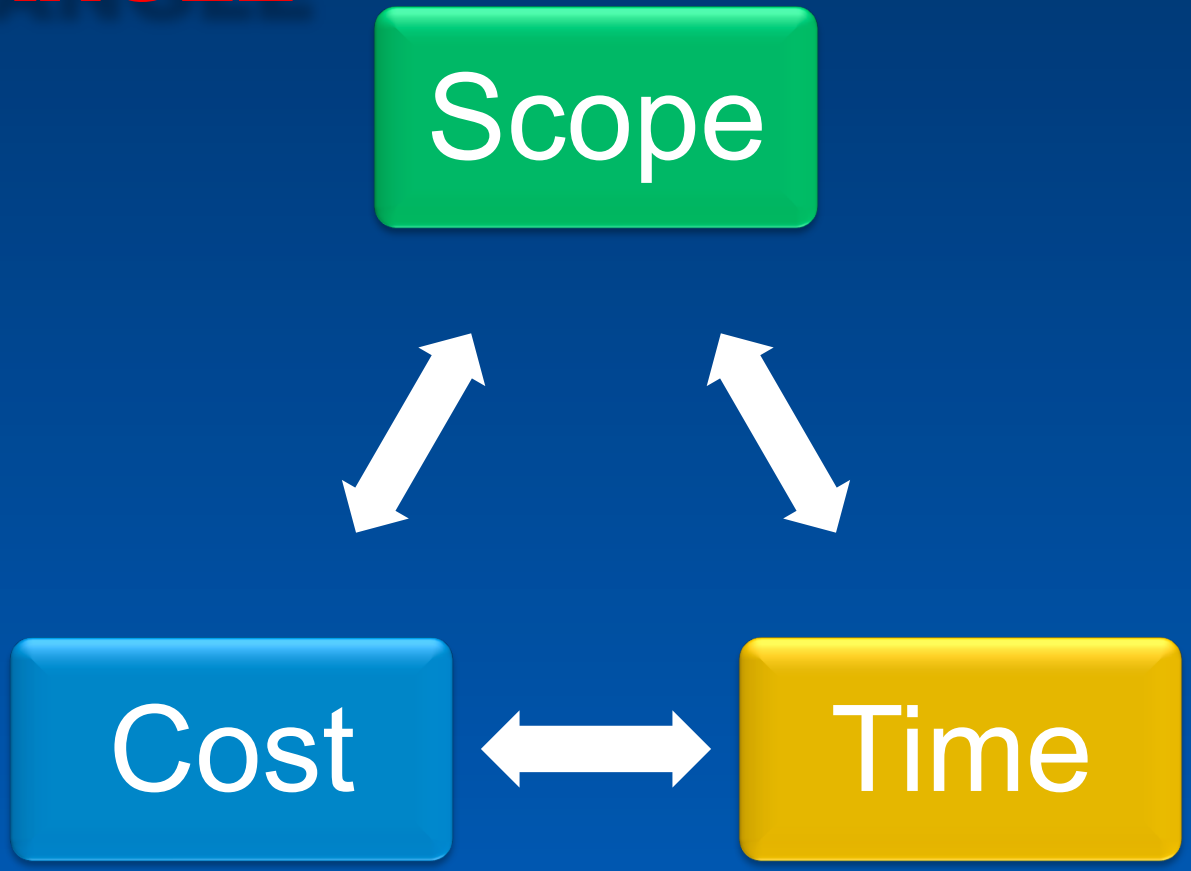
ARE MEGAPROJECTS REALLY AS BAD AS EVERYONE SAYS?

"Measuring the success of a megaproject is not linear. There are twists and turns not only in terms of engineering and the emergence of new technology, … but in the moving target of pubic expectations."

Anthony Flint, Atlantic Cities.com

TRADITIONAL: IRON TRIANGLE

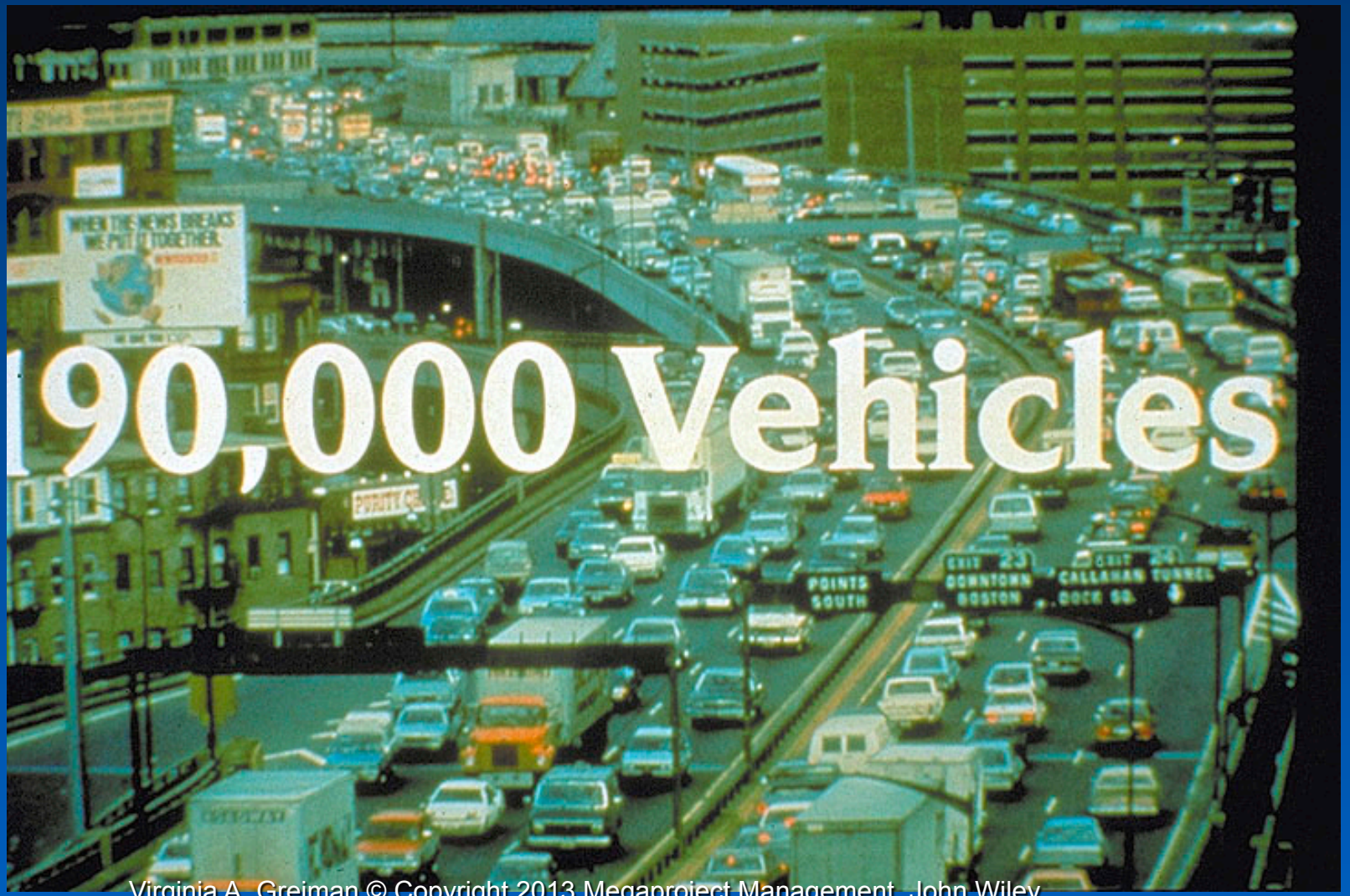


Design, Risk, Safety and Quality Decisions!!

EMERGING: SUSTAINABILITY

- OPEN SPACE
- EXPANSION OF THE SHELLFISH POPULATION
- VENTILATION / AIR QUALITY
- SMART INTERMODAL HIGHWAY SYSTEM
- UNITING NEIGHBORHOODS
- ECONOMIC OPPORTUNITY/TRAINED WORKFORCE/POVERTY ALLEVIATION
- BUILDING BETTER INSTITUTIONS
- DEVELOPING UTILITY CORRIDOR
- INCREASED PROPERTY VALUES

Boston's Big Dig



Seattle Alaska Way Viaduct Replacement and Floating Bridge

August 26, 2013
From Mike Lindblom at *The Seattle Times:*
Construction delays and upcoming change orders are threatening…[to] send the project another $128 million in the red, the state disclosed Friday.
Most of the costs are related to design errors by the state Department of Transportation (DOT) that caused cracks in the first four giant pontoons. These required repairs, while others have been redesigned.

California $68 Billion High Speed Rail

California high-speed rail will connect the mega-regions of the state, contribute to economic development and a cleaner environment, create jobs and preserve agricultural and protected lands. By 2029, the system will run from San Francisco to the Los Angeles basin in under three hours at speeds capable of over 200 miles per hour. The system will eventually extend to Sacramento and San Diego, totaling 800 miles with up to 24 stations.

"While I am glad that the toll payers are finally able to cross the new eastern
Bridge, it is important that we examine the problems that caused the construc
span to be 10 years late and $5 billion over budget," The committee will syste
this project, and produce a report on our findings that I expect will inspire refo
Creating legislation that creates greater accountability at Caltrans, and impro
management of future projects, will be a top priority of mine during the 2014 l

Senator DeSaulnier, California Housing and Transportation Committee Chair, October 30, 2013

East Span Bay Bridge Cost Growth

- Political disagreements
- Complex environmental challenges
- Compounding economic factors
  - Increased bonding costs
  - Increased international demand for construction materials

Senate Transportation and Housing Committee Informational Hearing, Background Paper, November 13, 2013

Bay Bridge Key Facts

- Labor Day 2013 new eastern span opened built to replace 1936 structure damaged in Loma Prieta earthquake
- Highlighted by an innovative single-tower suspension design
- 150 year service life
- Designed to withstand the largest seismic event
- Originally described as engineering marvel now serious concerns

Testimony before the CA State Senate on Bridge Quality

- Engineers did not conclude bridge unsafe but that myriad construction mistakes could have been prevented and could lead to costly repairs.

- Metallurgy experts including an engineer hired by Caltrans said “the defective seismic safety rods were made of a corrosion-prone steel that should never have been used.”

Engineers tell State Panel that construction mistakes could have been prevented. San Francisco, January 24, 2014

Why High Speed Rail in CA?

- Airport Congestion – Most congested short-haul market in the U.S.
- Highway Congestion – Six of Top 30 Congested Urban Areas
- Environmental Sustainability
- Population Growth

Benefits

- Flights reduced by up to 171 a day starting in 2030
- Reduction in vehicle miles of 10 million miles daily by 2040
- 30% overall small business participation goal
- Air Quality Improvement
  - Reduction in volatile organic compounds, particulate matter and ozone precursors

The Grand Plan: U.S. High Speed Rail Financing

- Passenger Rail Investment and Improvement Act of 2008 (PRIIA) and the 2009 American Recovery and Reinvestment Act (ARRA)
- Establishment of the High Speed Innercity Rail program (HSIRP)
- $9.9 B allocated in state bonds for 150 projects
- 30-40 projects in the pipeline
- California largest recipient with $3.5 B

A STATEWIDE RAIL MODERNIZATION PLAN

Connects to Existing Systems

Phase I:

San Francisco to Los Angeles/ Anaheim – 520 miles

- San Francisco to L.A. in Under 3 hours
- Speeds Over 200 MPH
- 14 Stations
- Completed by 2029

Phase II:

Extensions to Sacramento and San Diego – 800 miles

Funding Estimates

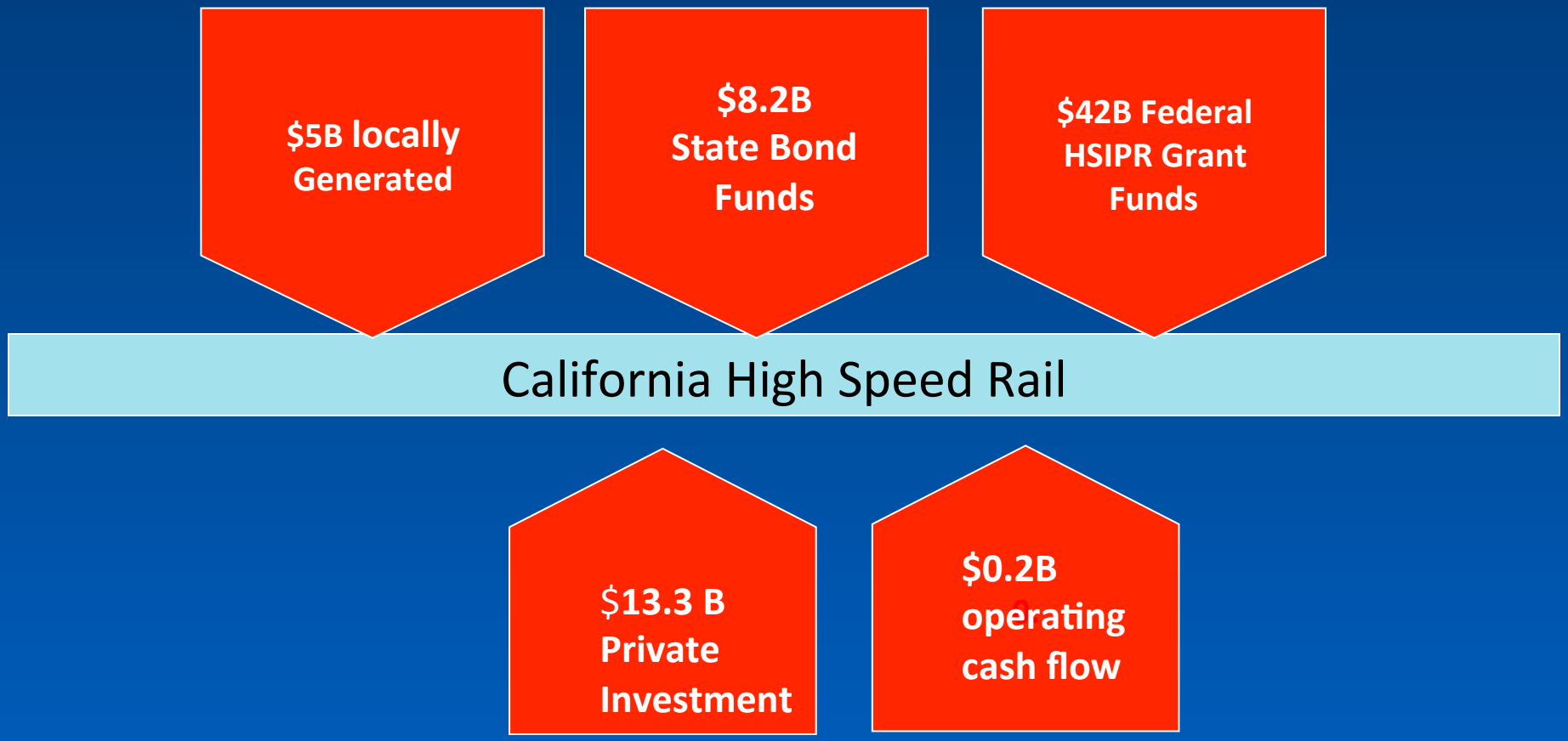
- 2008 $33B
- 2009 $42.6B
- 2012 $65.4B
- 2012 (Rev) $68.4B
- 2014 $67.7B

2008, 2009, 2012, 2012 (Rev) 2014 Draft Business Plans, California High Speed Rail Authority

Fig. 2.9

Funding comes from Local, State, Federal Government and Private Sector

Local, State and Federal



Other Sources

Source: CHSRA 2014 Draft Business Plan

California High Speed Rail 2014 Business Plan

Requires a proposed approach for improving:

- Demand for Projects
- Operations and Management Cost Models
- Benefit-Cost analysis as applied to future project decisions

California High Speed Rail Authority May 1, 2014 Business Plan

Major Financial Risks

- Decreased commercial and financial viability
- Lower-than-expected project revenue
- Increase in the public funding required
- Loss of stakeholder support

Legal Uncertainty

- CA Farmers in Madera and Merced Counties settle lawsuits and state establishes agriculture land mitigation fund (April 18, 2013, Superior Court, CA)

- Citizens for California High Speed Rail Accountability (CCHSRA) cautioned that a newly certified environmental document covering Fresno to Bakersfield will have serious ramifications if implemented (CCHSRA May 8, 2014).

- "There are more cows than people [in Kings County],and people take care of these cows,"

  - Testimony of Diane Friend on behalf of CA Farm Bureau, Senate Hearing on AB 1501 in support of Rail Accountability Act, April 28, 2014

Organizational Structure

Governance	Delivery	Operations	Rail Operations
Public	Private	Private	Private
Ownership	Systems Integration	Train Dispatch	Passenger Service
Safety	Super Structure Construction	Maintenance	Vehicle Maintenance
Contract Support Agreements	Sub Structure Construction	Power Station	Vehicle Procurement
Right of Way	Stations and Depots	Infrastructure O&M	
Environment			
Approvals			

Key Questions for Consideration at CHSR

1. How do you define success?
2. How do you manage shifting goals?
3. What governance and evaluation structures are needed during project development?
4. What is the role of the legislature and government agencies in megaprojects?
5. How do you identify performance based criteria?
6. What is the role of delivery method in project success?

California Senate Transportation and Housing Information Hearing, November 13, 2013, Sacramento

What is Project Success?

- Being on Time and Budget?
- Meeting Goals?
- Reducing Costs?
- Achieving Sustainability?

Technical Evaluation Criteria and Weighting

Technical Criterion	Points
Past Performance	35
Project Experience (25 points)	
Past Safety Experience (10 points)	
Design-Build Team	30
Organization and Management Approach (10 Points)	
Key Personnel (20 Points)	
Project Understanding	25

CA High Speed Rail Project
Procurement Evaluation Approach

Peer Review Group

- The California legislature established a Peer Review Group (PRG) whose duty is to evaluate the California High-Speed Rail Authority's funding plans and prepare its independent judgment as to the feasibility and the reasonableness of the Authority's plans, appropriateness of assumptions, analyses and estimates, and any observations or evaluations the PRG deems necessary. Membership of the PRG has evolved since the 2012 Business Plan was issued.

AB 3034 (Galgiani, Chapter 267, Statutes of 2008)

Project Peer Review Act

- California SB 969 expands the Public Works Project Peer Review Act of 2013 to require administering agencies of transportation megaprojects to improve project oversight by establishing both a peer review group and a comprehensive risk management plan.

Risk Management Plan

- Establishing a comprehensive risk management plan with a process to identify and quantify risks to the project, track responses and mitigation steps, and control risks throughout the life of the project.
- Qualifying risks in financial terms.
- Regularly updating cost estimates, reassessing its reserves for potential claims and unknown risks, and reporting risks and integrating updated estimates for costs and contingency reserves.

Risk Management Objectives

- Systematize the process by which the Authority responds to circumstances that could increase the cost or significantly delay or halt the program.
- Increase transparency regarding challenges to project plans and objectives.
- Capture project opportunities.
- Satisfy legal and regulatory requirements and meet the needs and expectations of other stakeholders.
- Rationalize allocation of resources including cost and schedule contingencies.

Utility Framework Legislation

- California established a framework for the reimbursement or payment, and apportionment, of utility relocation costs, clarifying the Authority's utility relocation process on land acquired for the high-speed rail project.

SB 85 (Committee on Budget and Fiscal Review, Chapter 35, Statutes of 2013)

Safety/Security Management Plan

1. Implementation of the safety assurance portion of the RAMS (Reliability-Availability-Maintainability-Safety) program.

2. Development of a hazard management program that includes hazard identification and hazard assessment in the form of preliminary hazard analyses and threat and vulnerability assessments.

3. Coordination with fire and life safety agencies having jurisdiction such as the Office of the State Fire Marshal, Federal Railroad Administration, and Department of Homeland Security and local emergency response agencies.

What Have We Learned?

- Megaproject investments are for future generations as real worth takes decades.
- Cost/benefit analyses must be rigorous and sustainable.
- Financial resources should be identified and committed before project implementation begins.
- Public and political support and stakeholder consensus must be sustainable.
- Technical expertise must be verified and never assumed.

Thank You!
Questions???

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