Senator John M. W. Moorlach

Report on the California High-Speed Rail Project

By State Senator John M. W. Moorlach
37th District

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EXECUTIVE SUMMARY: REASSESSING HIGH-SPEED RAIL

Early 2019 is a great time to reassess the California High-Speed Rail project. Our new Governor Gavin Newsom called the project into question in his February 12, 2019 State of the State address:

Next, let’s level about High-Speed Rail. I have nothing but respect for Governor Brown’s and Governor Schwarzenegger’s ambitious vision. I share it. And there’s no doubt that our state’s economy and quality of life depend on improving transportation.

But let’s be real. The project, as currently planned, would cost too much and take too long. There’s been too little oversight and not enough transparency.

Right now, there simply is not a path to get from Sacramento to San Diego, let alone from San Francisco to LA. I wish there were.

However, we do have the capacity to complete a high-speed rail link between Merced and Bakersfield.

I know that some critics will say this is a ‘train to nowhere.’ But that’s wrong and offensive. The people of the Central Valley endure the worst air pollution in America as well as some of the longest commutes. And they have suffered too many years of neglect from policymakers here in Sacramento. They deserve better.

High-Speed Rail is much more than a train project. It’s about economic transformation and unlocking the enormous potential of the Valley.

Abandoning high-speed rail entirely means we will have wasted billions of dollars with nothing but broken promises and lawsuits to show for it.

It is important to note that Governor Newsom did not entirely call for ending the project. And his budget proposal for fiscal year 2019-20, released on January 10, included high-speed rail expenditures of $1.73 billion for 2018-19 and $1.69 billion for 2019-20. Despite his later words, these are numbers the Legislature initially will be grappling with as it works on the state budget before the June 15 constitutional deadline to pass it.

LOOKING AT THE NUMBERS

So this matter is very much alive – even for a limited 171-mile segment between Merced and Bakersfield – and concerns many billions more of taxpayer dollars that could be spent on other priorities. Let’s look more closely at those numbers, in chronological order.
**November 4, 2008.** Voters passed Proposition 1A, authorizing the project. In the pamphlet mailed to voters, which helped them decide issues, the Legislative Analyst found, “The authority estimated in 2006 that the total cost to develop and construct the entire high speed train system would be about $45 billion.”

**June 1, 2018:** The California High-Speed Rail released its Draft 2018 Business Plan, projecting a cost of $77 billion. So the cost more than a decade later is 71 percent higher than what was sold to voters. Those numbers do not consider the other cost overruns as a result of delays, change orders, complicated land acquisitions and litigation.

**June 15, 2018:** The budget the Legislature passed and Governor Jerry Brown signed for fiscal year 2018-19, which began July 1, continued minimal funding. The governor’s enacted budget summary included, “The Budget anticipates expenditures of $1.1 billion, including $382.5 million from Proposition 1A (2008), and $749.5 million Greenhouse Gas Reduction Fund, and $750,000 High-Speed Rail Property Fund. Of this amount, $45.4 million is included in the Budget with the remainder provided by previous appropriations or the continuously appropriated Cap and Trade funds.”

**January 17, 2019:** The Senate Committee on Budget and Fiscal Review, on which I sit, met for hearings on high-speed rail. Testifying was Vivek Viswanathan, Chief Deputy Director at the Department of Finance. When I asked about funding for high-speed rail, he responded:

> The administration is obligated to put out a five-year infrastructure plan. It includes all of our infrastructure investments – whether they are in rail, transit – across all areas. They will be putting that out at some point later this year. And certainly the governor plans, he’s still deliberating for the future of that high-speed rail system, what will be in that plan. There is currently a continuous appropriation under the cap-and-trade expenditure plan. We have not weighed in on those continuous appropriations in this budget. But you will certainly hear from the governor and the administration about his thoughts on this later this year. [The video is here, beginning at 1:40]

**REASONS FOR THIS STUDY**

As part of the governor’s call for a “fresh start,” I have produced this study. I am a trained Certified Public Accountant and I believe it is time to look closely at where the money is going and what it is supposed to buy. In a state with so many pressing fiscal demands, including our aging utility infrastructure and ailing forests, rising pension costs and a severe homelessness crises, is building high-speed rail the best way to spend our money?
This report raises questions the governor, my fellow legislators and all California residents should be asking. These are matters to think about as we craft a new budget that will address our many infrastructure needs and where high-speed rail fits into our priorities.

The following report uses a question and answer format, which I hope makes the policies easier to digest. For those using an electronic version, I have included hyperlinks to all resources I reference in this report. The report will be archived on my website at:

https://moorlach.cssrc.us/content/re-evaluating-high-speed-rail-california
ORIGINS OF HIGH-SPEED RAIL

Q: Where did California’s high-speed rail project originate?

A: After high-speed rail lines were constructed in Europe and Asia beginning in the 1980s, the idea came to California. Senator Quentin L. Kopp of San Francisco authored Senate Bill 1420 in 1996, which created the California High-Speed Rail Authority. Voters ratified Proposition 1A in the November 2008 general election to implement high-speed train service in California. The project’s official groundbreaking happened in Fresno on January 6, 2015. That day Governor Jerry Brown exuded confidence on a project he had doubted for years: “I wasn’t sure where the hell we were going to get the rest of the money. Don’t worry about it. We’re going to get it.”

However, the high-speed rail’s plan today is dramatically different from what was presented to the voters in November 2008. Voters agreed to a system that would:

- Cost $45 billion to construct (the state’s portion being $9 billion in general obligation bonds);
- Be up and running by 2020, providing service between San Francisco and Los Angeles;
- Be faster and cheaper than what is currently available from the airlines;
- Make a profit in its first year of operation;
- Have 39 million passengers per year by completion.

This was all done in the name of providing a futuristic transportation system that was more economical than building more vehicle lanes as well as good for the environment.

A September 2017 Reason profile reported:

An icon of California politics known as the “Great Dissenter,” Quentin L. Kopp introduced the legislation that established the rail line, and became chairman of the High-Speed Rail Authority. He helped convince voters in 2008 to hand over $9 billion in bonds to the Rail Authority to get the project going. Since he left, Kopp says the agency mangled his plans.

“It is foolish, and it is almost a crime to sell bonds and encumber the taxpayers of California at a time when this is no longer high-speed rail,” says Kopp. “And the litigation, which is pending, will result, I am confident, in the termination of the High-Speed Rail Authority's deceiving plan.”

Voters supported the bond measure to pay for construction on the condition that the train would be self-sustaining. But multiple outside analyses conclude that the Rail Authority will have to massively hike ticket prices or rely on taxpayer largess. According to one recent estimate, the project’s latest iteration would suck up at least $100 million in annual subsidies.
Since 2008, lawsuits have multiplied, private investors have fled, and even the official price tag has nearly doubled, from $33 billion to $64 billion. When the legislature cleared the way for the Rail Authority to begin selling the voter-approved bonds in early 2017 to fund construction, the agency declared it a “milestone.”

Kopp was livid.

“It’s deceit. That’s not a milestone, it’s desperation, because High-Speed Rail Authority is out of money,” Kopp told Reason.

Q: Are there other critiques?

A: Yes, many, beginning with a list of critiques from the Reason Foundation, which has been closely monitoring this project since its inception.

In January 2018, Associate Editor Scott Shackford wrote in “California’s Boondoggle Bullet Train About to Break the Bank”:

Will California’s high-speed rail plan go bankrupt before the state even finishes building the first leg? Maybe, if we’re lucky.

On Tuesday, the officials in charge of the massive $64 billion boondoggle were formally told what everybody with any lick of sense has been saying from the start: They had wildly underestimated the costs and woefully under budgeted just the first stretch of train construction by billions.

The first 119-mile stretch of the bullet train project in the central part of the state is going to cost $10.7 billion, which is much higher than the original $6 billion budgeted. This is actually the second time the cost for just the first leg of the project has skyrocketed. In September, the cost of the initial leg of the project jumped $1.7 billion.

From January 2017, “California High Speed Rail Faces 50 Percent Cost Overruns,” by Steven Greenhut:

Rail authorities have made one substantive change after another. In its draft business plan released last year, the rail agency announced the train would first be routed to the San Jose area before heading over the formidable Tehachapi Mountains and into the Los Angeles basin. “The High Speed Rail Authority is desperate and wants to lay as much track as possible so that it becomes more difficult to stop the project,” said Board of Equalization Vice President George Runner, at the time.

Meanwhile, the agency’s reaction to the Federal Railroad Administration document suggests it is going to keep forging ahead, regardless of costs, in the hopes that a funding
source will materialize to complete a project estimated at $64 billion before the latest projected cost overruns. Supporters are counting on revenues from the state’s cap-and-trade auctions and state funding to help keep the project moving ahead, but it remains far shy of full funding.

From February 2016: “Surprise! California’s High Speed Rail Breaks Major Promise in New Plan,” by Alexis Garcia:

> Leaked documents show that the California high speed rail is reversing course – quite literally – and changing construction plans on the first 250-mile stretch of track. The new plan will now connect the Central Valley to the Bay Area – not Los Angeles as originally planned.

> News of the route change comes in the same week consultants projected a $260 million increase in additional costs for the first 22-mile leg of construction – which amounts to a 5 percent increase in price for a project that has yet to lay a single foot of track.

> The proposed change may also violate state law.

> California Assemblyman David Hadley (R-South Bay) told local radio station KFI 640 AM that the new route potentially goes against a provision in the high-speed rail legislation that says the train must first connect to Los Angeles. He stated the language was added to ensure Southern Californians didn’t foot the bill for a train that could very well end up becoming a regional transportation project.

A 2014 debate was held in the Senate Transportation and Housing Committee on Senate Bill 901, by Senator Andy Vidak, R-Hanford, which would have cut bond funds on high-speed rail. At the hearing, Katherine Phillips from the Sierra Club detailed how high-speed rail would not improve greenhouse gas emissions or reduce criteria pollutants now or in the immediate future. See the video here (starting at 55:30). SB 901 failed in that committee.

In contrast, when then-Governor Rick Scott of Florida refused federal funds to build a high-speed rail in his state – effectively killing the project – private groups came together to assemble a more realistic passenger express-rail option. As such, Florida’s Brightline inter-city rail system sometimes is held up as a model for what California’s high-speed rail could transition into. Brightline is run by Virgin Trains USA and currently travels between Miami and West Palm Beach, reaching speeds of 125 mph in initial sections. There are plans to extend the line to Orlando, with increasing ridership and revenues and expectations that the train will operate at a profit without taxpayer subsidies.
DIFFERENT PRIORITIES

Q: How much funding is expected for the high-speed rail from the state’s cap-and-trade tax?

A: The following graph is from p. 35 of the high-speed rail’s Draft 2018 Business Plan. The explanation’s summary: “On a cumulative basis, total proceeds until 2030 could provide a funding source ranging from $7.1 billion to $18.4 billion which, at the high end, would be sufficient to cover the delivery of the Silicon Valley to Central Valley line.”

Q: Can we expect more funding from the federal government?

A: According to a May 25, 2018 Bloomberg report:

California’s $77 billion high-speed rail project, which has been dogged by cost overruns and delays, could receive much-needed federal funding if Democrats take control of Congress in November, Governor Jerry Brown said Wednesday.

“When the Congress shifts” and lawmakers draft an infrastructure bill, Brown said he is optimistic they will provide $6 billion for a phase of the project that would help pay for building a 13.5 mile-long tunnel in the mountains between Fresno and San Jose.

“It needs obviously more money,” Brown, an 80-year-old Democrat, said in an interview in his statehouse office in Sacramento. “I think it has a good chance of being there.”
Although Democrats took control of the House of Representatives five months after that interview, Republicans kept control of the Senate. So Governor Brown’s prediction effectively conceded high-speed rail is dead in 2019.

Yet hope remained alive for House members whose Central Valley districts would benefit from the limited construction of the project. Said Rep. Jim Costa, D-Fresno, on December 18, “I think there will be an opportunity to provide funding for high-speed rail corridors across the country. If that happened, California would benefit.” He added House Speaker Nancy Pelosi, D-San Francisco, “has been a strong advocate for the funding of, and support of, high-speed rail.”

Then there’s President Trump. After Governor Newsom’s February 12 State of the State address apparently killed the project, Trump tweeted, “California now wants to scale back their already failed ‘fast train’ project by substantially shortening the distance so that it no longer goes from L.A. to San Francisco. A different deal and record cost overruns. Send the Federal Government back the Billions of Dollars WASTED!”

The federal Department of Transportation canceled $929 million in federal grants, which the state will have a tough time recovering. It will be up to federal courts if the $2.5 billion the state already spent on the project must be sent back to Washington.

The fact is Trump is not likely to spend any more money in California after the state filed 46 lawsuits against his administration.

During the recent government shutdown, Pelosi and Senate Minority Leader Chuck Schumer, D-NY, became the public face of opposition to Trump’s border wall. As they have with the border wall, even Democratic members of Congress from other states may balk at spending any more money on the troubled high-speed rail project.

LOCAL PROBLEMS AND NIMBYISM

Q: What about NIMBYS – Not in My Back Yarders?

A: Signing the $8 billion high-speed rail funding bill in 2012, Governor Brown branded critics as “NIMBYs,” “fearful men” and “declinists.” The fact is NIMBYs – Not in My Back Yarders – are a powerful force in California and a significant factor hindering construction for many things, including something the state vitally needs: easing the housing shortage.

NIMBYism has plagued the high-speed rail from the beginning. In 2009, reported the San Jose Mercury News, “Palo Alto council candidates bash high-speed rail plans.” Said candidate Tim Grey, a CPA living near the track, “I’ve got my back against the rail and I am going to keep on fighting. I am like a mother bear with her cubs.”
It has been more than five decades since – in a different America and a different California – Governor Pat Brown could push aside NIMBYs to build the state roads, schools and water systems.

Fast-forward to 2018 and in February the *Los Angeles Times* reported, “Land acquisition delays have paralyzed high-speed rail contractor, lawsuit alleges”:

*The California bullet train project is supposed to be an economic engine for small business in the Central Valley, but one woman-owned construction firm is alleging in a suit that the project has paralyzed her company.*

*Virginia Villa made it a goal to win a small contract for high-speed rail construction for her firm, West Pacific Electric Co. in Lemoore. Villa spent about a year going to the rail authority’s outreach meetings, which it held to help meet a goal of issuing 30% of its work to small businesses.*

*The problem originated with the state rail authority, which is years behind schedule in acquiring land. It has paid tens of millions of dollars to rail contractors Dragados and Tutor Perini to compensate them for the delays.*

*The suit, which also names as defendants 10 bonding companies, is seeking $2 million, along with punitive damages.*

**Q: What is the impact of eminent domain and inverse condemnation through the Central Valley?**

**A:** The *Los Angeles Times* reported on February 4, 2018, “Vacant lots, empty homes and dying orchards on bullet train route attract squatters, vandals and thieves”:

*The California High-Speed Rail Authority now owns more than 1,272 parcels stretching from Madera to south of Wasco, a 119-mile corridor of abandoned commercial buildings, vacant lots, dying orchards, boarded up homes and construction sites.*

*Someday it may be the path for a gleaming bullet train system, but today much of it is an eyesore and a magnet for criminal activity that is affecting the surrounding areas. It has put stress on already hard-luck communities that grapple with poverty, homelessness and crime.*

*The problem that vacant properties create when the government takes private land is not new, but the massive scope of the bullet train project has birthed a problem unprecedented in recent California history: The current construction program is creating a corridor 100 feet or more wide through the Central Valley. Many of the land takes are
stuck in protracted litigation, creating a patchwork of property ownership and leaving lots vacant for a long time.

One veteran rail designer who works on the high-speed rail project said it has created “a linear ghetto.”

A video produced by Reason TV showed the frustration of Central Valley residents as the state used aggressive tactics to take private property for high-speed rail and negatively impacted property owners through inverse condemnation. It is unclear how the land acquisition process and associated litigation will go on in light of the challenges of funding the high-speed rail system.

Q: What about changing routes in the Bay Area?

A: The Fresno Bee reported in February 2016: “High-speed rail operating plan pivots to Silicon Valley”:

The latest business plan for California’s high-speed rail system confirms a proposed change in direction – rumored for several weeks – that would have the first passenger-carrying trains head to the Silicon Valley when operations commence in the mid-2020s.

The California High-Speed Rail Authority’s draft 2016 business plan, released Thursday evening, calls for the development of an operating route for the statewide bullet-train system from Kern County north through the San Joaquin Valley and then west to San Jose. It’s a major strategic pivot for the rail agency, which in its 2012 and 2014 versions of the business plan had proposed a route from Merced southward through the Valley to Bakersfield, then southeast to Palmdale and on to the San Fernando Valley and Los Angeles.

Q: What are the chances the high-speed rail will end up being only a couple segments of low-speed commuter rail systems?

A: High. The money just is not there for the highly touted, 200 mph-plus Los Angeles to San Francisco route, which already can be traversed with a one-hour plane ride. High-speed local routes are also looking infeasible, meaning low-speed projects as the reality.

The Los Angeles Times reported on March 15, 2018: “Another 30 miles of California's bullet train route must run at lower speeds, documents show”:

The California bullet train will have another slow segment of track as part of a new cost-savings measure, state rail authority documents reveal.
Technical documents attached to the authority's 2018 business plan show that it no longer plans to have dedicated tracks designed for speeds of up to 220 mph over a 30-mile stretch south of San Francisco.

Instead, the system would operate between San Jose and Gilroy at 110 mph on ground-level tracks on or adjacent to an existing right of way owned by Union Pacific. The route would make 32 highway crossings, requiring sophisticated barrier gates and sharing a corridor that carries freight and commuter rail.

The decision is the third compromise the rail authority has made for money or politics that would create slower sections of track, each incrementally adding travel time to an alternative form of transportation promised to link Los Angeles and San Francisco in less than three hours.

FUNDING AND THE FEDERAL AUDIT

Q: Proposition 1A, passed in 2008, promised voters private and public matching funds were required to build the system. How is that proceeding?

A: The Draft 2018 Business Plan includes only the “potential” for private investment, on p. 44:

Over time, as the system is projected to generate significant revenues and positive cash flow, the value as a commercial enterprise will be significant for California. In turn, this will create the opportunity for private investment to support expansion of the system. However, this will likely come after some years of demonstrated system viability and maturity. There are three key sources of funding to help complete Phase 1 System:

1. The positive cash flow generated from selling tickets and operating the first parts of the system, which could be leveraged for financing;

2. Potential private investment under the right conditions; and

3. Additional public funds, including federal funds, which can help match project-generated funding.

Q: What about the federal audit?

A: On April 12, 2018 the Office of the Inspector General of the U.S. Department of Transportation announced it would audit the $3.5 billion the high-speed rail has received in federal funds from the Federal Railroad Administration (FRA).
The Memorandum from the IG specified it intended “to initially focus our work on California’s high-speed rail project and specifically assess FRA’s (1) risk analysis, assessment, and mitigation efforts – particularly regarding the availability of non-Federal matching funds, business plans, and financial reporting – and (2) procedures for determining whether Federal funds expended complied with applicable Federal laws and regulations.”

“We will cooperate fully in this and any other audit of our funding or program,” High-Speed Rail Authority CEO Brian Kelly said in a statement. “We look forward to working closely with our federal partners to deliver the nation’s first truly high-speed system.”

I called the DOT, which told me the expected date of the completion of the audit is “the first half of 2019.”

That means the audit should be completed by the time of the state budget’s June 15, 2019 deadline.

Q: How about the San Francisco to Los Angeles ride?

A: Also in the official 2008 election pamphlet, a major selling point was, “Travel from Los Angeles to San Francisco in about 2½ hours for about $50 a person.” This is crucial because the project was sold not as a regional train, but a statewide system.

The Draft 2018 Business Plan discussed the project’s construction dates. We read on p. 85, “Phase 1 System: Service that assumes connections from San Francisco and Merced to Los Angeles and Anaheim opening in 2033. An out-year forecast in 2040 is also provided.”

So the Los Angeles to San Francisco segment could be ready, at least according to the report, in another 14 years from 2019; but it might be another 21 years from 2019.

AIRPORTS AND AIRLINE INNOVATIONS

Q: Are airports waiting to expand to see what happens with high-speed rail?

A: No. The San Jose Mercury News reported on May 2, 2018: “San Jose airport will add four passenger gates amid surge in flights.” The story:

“SAN JOSE – Mineta San Jose International Airport will jet ahead with a plan to build four passenger gates to accommodate its growing traffic, the air traffic hub said Wednesday.”
“The four boarding gates, which will be interim facilities, are due to open in the summer of 2019, airport officials said.

“Passengers should benefit directly from the new interim gates: Airlines will be able to wield greater flexibility in scheduling and carriers should be able to reduce delays for air travelers.”

Ontario International Airport reported on March 14, 2018 it “recorded double-digit increases in traffic volumes for the second consecutive month, with passenger levels up more than 10% and freight tonnage nearly 20% higher in February.”

Said Ontario International Airport CEO Mark Thorpe, “The sustained year-over-year growth reflects not only our capacity to handle more customers and cargo but our strong ability to provide the services and amenities passengers demand and the hassle-free experience they deserve.”

For Los Angeles International Airport, the August 23, 2017 Wall Street Journal headlined, “With Expansion, Will LAX be Less Congested or More?” The story:

A $14 billion expansion is underway at Los Angeles International Airport, making it the fastest-growing airport in the U.S. More flights mean cheaper fares but also possible delays.

Big airports sometimes get much bigger, bringing big bargains and big headaches.

Los Angeles International Airport, already the second-biggest airport in the U.S. after Atlanta, is undergoing a major expansion. Airlines have pumped in new flights. A massive rebuilding is underway.

For Sacramento International Airport, which many of us in the Legislature use twice a week, USA Today reported on May 1, 2018: “Frontier Airlines is adding two California cities to its route map and expanding its base in Raleigh/Durham, all part of a six-route expansion announced by the carrier Tuesday.

“Frontier’s first flights from Sacramento begin August 1 while service from Santa Barbara, Calif., starts August 21.”

Q: What developments can we expect in more efficient air transportation?

A: A big development is revolutionary new vertical takeoff and landing aircraft, called VTOL. These are all-electric or electric-hybrid aircraft that “hold the promise of unlocking new regional and local commuter markets,” Aviation International News reported on February 18, 2018. More,
they “could erode demand for some rail and airline service and weaken the small business jet market.”

The report was based on an interview by Mark Huber with Rolls-Royce Electrical global head Mike Mekhiche. Vehicles will carry from four to 100 passengers. And, “VTOLs could start adversely impacting the helicopter market by 2025,” with other markets affected afterward.

On February 28, 2018, Huber reported numerous companies are jumping on the electric vertical takeoff and landing (eVTOL) innovations, including Airbus, Boeing, Bell, Embraer, Intel, Amazon, Honda, Toyota and Uber. “This is really a big deal,” AHS International executive director Mike Hirschberg said of more than $1 billion already spent on research and development. “This is a lot of money. This is technology that’s really going to revolutionize flight.”

Huber wrote, “This isn’t a bunch of hobbyists in garages, and Hirschberg points to a survey taken of attendees from one of his organization’s recent conferences showing that 59 percent thought that eVTOLs would become a reality within the next five to 10 years.”

JET AIRCRAFT FUEL EFFICIENCY

Q: Are jet aircraft becoming more fuel-efficient?

The white paper concludes, “Overall, the average fuel burn of new aircraft fell by about 45 percent from 1968 to 2014, or an annual reduction of about 1.3 percent.”

The next graph, from p. 16, “shows the trends in newly delivered single-aisle and small twin-aisle aircraft in terms of metric value (normalized to 1968 values) versus the fuel burn technology goals that ICAO (International Civil Aviation Organization) established for 2020 and 2030…. Because ICAO’s technology goals are set for new aircraft types, they are most comparable to a trend line for new EIS aircraft, which is shown in the black line. Under those goals, in 2020 the metric value of new aircraft types on average could reach between 27 percent and 31 percent below the base aircraft values, namely Airbus A320-200, Boeing 737-800, Airbus A330-200, and Boeing 777-200.”
However, in the conclusion, the white paper notes, “Despite faster fuel efficiency improvements linked to new aircraft types and higher fuel prices, manufacturers remain 12 years behind ICAO’s technology goals. It is also worth noting that, albeit at a slow pace, new aircraft fuel efficiency keeps improving by the year.”

ROAD SYSTEMS

Q: How would California’s existing road system affect using high-speed rail?

A: California has America’s worst road system. According to TRIP.org, a national research group, the nation’s three worst road systems are: San Francisco-Oakland (71% poor roads), Los Angeles-Long Beach-Santa Ana (60% poor) and San Jose (59% poor).

While deteriorating road and highway infrastructure has been used as a rationale for high-speed rail to get people off the roads, the real problem would be getting them to and from the high-speed rail stations instead of airports. Where I live in Costa Mesa, it is fairly easy to drive to
John Wayne Airport for my weekly commute to and from Sacramento. By contrast, driving up to the high-speed rail station in Anaheim would involve the torture of driving at a snail’s pace on first the 55, then the 5 and then the 57 freeways. The station in Fullerton is even farther.

Whereas Orange County only would have the Anaheim high-speed rail station, residents currently can use, in addition to John Wayne Airport, the nearby Long Beach Airport (convenient to those in Northwest Orange County), Ontario Airport (convenient to those in North Orange County) and for those in South Orange County, even the San Diego Airport. Potentially, South Orange County residents could drive to the high-speed rail stations in Murrieta and Escondido, but why not just drive to the San Diego Airport?

No doubt similar situations exists for residents all over the Golden State. Would rational people who commute from Southern California to Sacramento weekly when the Legislature is in session take the high-speed rail, assuming it works as well as advertised, or keep using planes?

**COMPARISONS WITH OTHER HIGH-SPEED RAIL COUNTRIES**

**Q: Are sub-sections of other countries building high-speed rail lines?**

A: No, all high-speed rail projects in foreign countries are built by central governments, which have far more authority to tax, borrow, plan and build than do sub-national political entities, such as the 50 states in America. Although California is the biggest state, the entire general fund of the state budget will run only $144 billion, according to Governor Newsom’s proposed budget for 2019-20. For comparison, that is just 3.1 percent of the $4.7 trillion President Trump proposed for the federal budget for fiscal year 2018.

**Q: How is California’s per capita income compared to those of countries with high-speed rail?**

A: This is an important question because the wealthier people are, the more they can afford to choose which transportation system best suits their family budgets and time demands. That may be flying or driving instead of taking high-speed rail. For example, while governor, centi-millionaire Arnold Schwarzenegger flew almost daily on private jets between Sacramento and his palatial compound in Malibu – even as he was pushing AB 32, the Global Warming Solutions Act of 2006 and other environmental legislation.

Here are per capita country data for Gross Domestic Product (GDP) in 2016; and state data from 2016:
<table>
<thead>
<tr>
<th>Country</th>
<th>GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>57,467</td>
</tr>
<tr>
<td>California</td>
<td><strong>55,374</strong></td>
</tr>
<tr>
<td>Germany</td>
<td>48,730</td>
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<tr>
<td>Japan</td>
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<td>Spain</td>
<td>36,305</td>
</tr>
<tr>
<td>China</td>
<td>16,624</td>
</tr>
</tbody>
</table>

By the way, the “state” with the highest per capita GDP is Washington, D.C., at $160,472. Wonder no more to where your tax dollars disappeared.

**GEOGRAPHY**

**Q: How is California’s geography compared to these other countries?**

A: California’s geography is different from any of these countries, with two large population centers, the Los Angeles Basin and the Bay Area, 400 miles apart, a distance just right for a one-hour plane flight, but too long for a 2.5-hour high-speed rail ride, assuming that advertised time could be achieved.

Explained a 2015 article in Vox, “[What America can learn from Germany’s high-speed trains](https://www.vox.com/2015/7/20/8779512/what-america-can-learn-from-germanys-high-speed-trains)”: 

*You cannot build a high-speed rail line to nowhere and expect it to attract enough passengers to be economically feasible. Many US cities, by sprawling over everywhere, are in a sense nowhere. Or, in Gertrude Stein’s famous phrase about Oakland in the 1930s, ‘There is no there there.’ West Coast cities in particular sprawl outward in so many different directions, with so little mass transit, that arriving at a downtown station won’t make it easy for you to get to your ultimate destination unless you rent a car upon arrival. LA and San Diego do not have the extensive subway systems of Hamburg or Berlin.*

*For high-speed rail to fulfill its potential, it must be one component of a low-carbon society. LA and San Diego need to become more like Berlin and Hamburg – and San Francisco and New York. That means being denser, with walkable and bikeable streets, public transit systems, and regional commuter rail lines to the suburbs.*

But is that likely to happen?

As noted in a [2012 economic analysis](https://www.economics.columbia.edu/sites/default/files/capital_transportation_2012.pdf) by Professor Kanemoto, et al., at the University of Tokyo’s Graduate School of Public Policy:
It appears that it will be challenging for HSR to achieve the statutorily required travel times for the following reasons:

a) The proposed HSR speeds are faster than the fastest operating segments in other countries operating HSR;

b) At least 150 miles of the route would be in built-up areas and the train could be forced to slow down as it travels through at least five urban areas;

c) Compared to HSR of France, the California line would encounter more challenging topography. Higher mountain passes and greater elevation changes can slow high-speed rail;

d) Political considerations could slow train travel times even more, as local citizens seek to slow train speeds to reduce noise levels and as communities seek to obtain stations that are not in the current plan;

e) CHSRA has decided to blend high speed with existing rail systems on shared infrastructure, so the speed will be lower than formerly expected.

The fact is California has a different geography and demography that makes high-speed rail more difficult for a number of reasons. Further, most Americans, including millennials, still seek suburban-style housing with a yard where their kids can play. California families are no different. That is a major factor in people leaving for other states with cheaper housing on bigger plots of land.

POPULATION DENSITIES

Q: What are the population densities of the cities cited in the previous question?

A: Here are the population densities per square mile. Note that the least dense city actually is Berlin; and Hamburg, although more dense than San Diego, is less dense than Los Angeles.

- New York City: 27,016
- San Francisco: 18,679
- Los Angeles: 8,483
- Hamburg: 6,010
- San Diego: 4,003
- Berlin: 2,451

Q: How much older are California cities than those in other countries with high-speed rail?
A: French, German, Chinese and Japanese cities also are older than California cities by hundreds of years, even millennia. Paris was founded in the 3rd century B.C., Beijing in 1045 B.C. Our large California cities, although founded before the automobile, grew to their present size after cars took over transportation – something that is not going to change, despite the lamentations of many urban planners.

People in these other countries are more comfortable taking existing mass transit to the centralized high-speed rail stations. By contrast, in California people are increasingly shunning mass transit. The Los Angeles Times reported on January 25, 2018:

*Despite a growing population and a booming economy, the number of trips taken on Los Angeles County’s bus and rail network last year fell to the lowest level in more than a decade.*

*Passengers on Metropolitan Transportation Authority buses and trains took 397.5 million trips in 2017, a decline of 15 percent over five years. Metro’s workhorse bus system, which carries about three-quarters of the system’s passengers, has seen a drop of nearly 21 percent.*

Here’s a February 9, 2018 headline from the San Francisco Chronicle: “With BART ridership down, and complaints up, agency promises new cleanup.” The story read: “BART officials who acknowledge that filthy stations and trains, the presence of sleeping homeless people and fear of crime may be scaring away riders said this week they have big plans to clean up the region’s backbone transit system.”

**FRANCE AND GERMANY**

**Q: Does France’s high-speed rail system stand as a model for California’s?**

A: France’s extensive high-speed rail system often is held up as a model for California’s. This was explained by Eric Eidlin, an urban and regional policy fellow at the German Marshall Fund of the United States. In 2016 he wrote:

*As California’s High-Speed Rail (HSR) project moves from planning to construction, and as HSR cities dive deeply into station and station area design work, the time is ripe to seek input from experts from countries that have far more experience with this form of intercity transportation.*

This was in preparation for a conference in Pittsburgh, Pa. that year. He continued:
Why focus on France and not one of the many other countries with well-developed HSR systems? Because France is home to some of the world’s clearest examples of high-speed rail oriented development (HSROD) – stations that are built to maximize the specific economic development and city-building potential of this particular transportation technology. These examples demonstrate how HSR stations – when carefully planned and designed to embrace the many and varied public purposes that rail stations can play – can serve not simply as important transportation facilities, but also as engines for urban regeneration and as destinations in and of themselves.”

There are problems with the French focus. France is a unified country with a strong central government since the time of King Louis XIV, whose motto was, “L’État, c’est moi” – I am the state.

In similar ways, albeit with major differences, both China and Japan have strong central governments that have made it easier to mandate national solutions to problems.

Again, by contrast, California is one of 50 states in a federal system, the United States. The most financial help that could be squeezed out of the U.S. Congress for the high-speed rail was $3.5 billion from a successful grant application funded by President Obama’s American Recovery and Reinvestment Act in 2009 – a decade ago. That’s assuming, as noted above, President Trump doesn’t take the money back.

Q: How does California’s situation resemble Germany’s?
A: California’s situation more resembles that of Germany than France. In a 2011 article, Der Spiegel explained a new high-speed segment being constructed is “primarily designed to connect Munich and Berlin, two major transportation hubs, and the new travel time by rail will still be too long to completely eliminate air travel between the two cities.” It continued:

As experiences with France’s TGV high-speed rail system have shown, to do so, the train would have to complete the trip in three hours.

French express trains travel distances of 750 kilometers [435 miles] within this amount of time, while even the fastest German trains can't break 500 kilometers [311 miles]. There are too few continuous high-speed segments in Germany and too many stops – a fundamental problem for railroads in federalist systems. Officials from states and larger cities responsible for regional matters tend to have an inhibiting effect on transportation-project planning.”

Göttingen is a case in point. The central German city successfully lobbied to make itself a stop on the north-south rail line between Hanover and Würzburg, in north-central and
south-central Germany, respectively. As a result, it slows down every train traveling north to south from Hamburg to Frankfurt or west to east from Stuttgart to Munich.

The original plan called for a nonstop rail line running directly from Hanover to Kassel as well as a good connection from Göttingen to both cities. But becoming a stop on the ICE [Intercity-Express] route became a matter of prestige for Göttingen, and the city won out.

The article continued with similar federalist problems – of powerful local politicians demanding stops that slow the train.

As Eric Eidlin wrote:

*California should carefully consider the economic development and access challenges that French cities such as Aix-en-Provence and Avignon have experienced with exurban and peripheral stations. Thankfully, California has made the wise decision of siting most HSR stations in central cities. However, one notable exception to this is the proposed Kings/Tulare station east of Hanford, which would be located in an exurban location. There is also debate over the location of two other stations, which could end up in more peripheral locations.*

**JAPAN**

**Q: How does California’s population density along the proposed rail lines compare to Japan’s?**

**A: California’s population density** is 251 per square mile: 39.1 million people per 155,959 square miles.

Japan’s population density is 868 per square mile: 126.7 million people per 145,932 square miles.

So, the land area is about the same size; California is just 7% larger. But Japan has 3.2 times the population.

On the other hand, Japan’s population is “dramatically shrinking,” by about 1 million people every 5 years, while California’s population is expected to rise to 50 million by 2050 (although recent out-migration trends should be taken into consideration). However, if growth does continue, would it not be better for the people of that day to decide on high-speed rail, when there are more of them to ride it, a larger tax base to support it and newer technologies to reduce the cost? Perhaps by then the state also will have solved its pension crisis.
Q: What are the populations of the California Cities Served Compared to those in Japan?

A: Japan also often is used as a model for California’s high-speed rail project, such as in a 2014 article in the Atlantic by veteran journalist James Fallows, “The California High-Speed Rail Debate – Kicking Things Off.” It enthused, “The Erie Canal. The transcontinental railroad. The Interstate Highway system. Big, expensive, controversial – and indispensable. Is the next one in this series a new rail network in our most famously freeway-centric state?” It mentioned the Tokyo-Osaka high-speed line.

But let’s look at California and Japan. Phase 1 of the HSR would connect San Francisco to Los Angeles and Anaheim. Phase 2 would extend the project to Sacramento and San Diego. Here is the map.
Those served largely would be in the two largest areas, Los Angeles, population 4 million, and the Bay Area, with San Francisco 864,815 residents and San Jose around 1 million people. So, that is almost 2 million in the North to 4 million in the South. If we go by metropolitan areas, Los Angeles’ is 13.3 million, while the Bay Area’s is 8.8 million.

Of the cities in between, the largest are Fresno 522,053 and Kings/Tulare 610,918 (Kings 150,965 plus Tulare 459,803).

Of course, people from nearby areas also would drive into the population centers to use high-speed rail. But isolating the cities themselves indicates the populations most likely to be served.

Here is a list of the population, from north to south, of the cities on the principal stations for Phase 1 and Phase 2 (in bold), north to south:

<table>
<thead>
<tr>
<th>City</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sacramento</td>
<td>495,234</td>
</tr>
<tr>
<td>Stockton</td>
<td>307,272</td>
</tr>
<tr>
<td>Modesto</td>
<td>212,175</td>
</tr>
<tr>
<td>Merced</td>
<td>82,594</td>
</tr>
<tr>
<td>San Francisco</td>
<td>864,815</td>
</tr>
<tr>
<td>Millbrae</td>
<td>22,661</td>
</tr>
<tr>
<td>San Jose</td>
<td>1,000,000</td>
</tr>
<tr>
<td>Gilroy</td>
<td>55,069</td>
</tr>
<tr>
<td>Madera</td>
<td>64,444</td>
</tr>
<tr>
<td>Fresno</td>
<td>522,053</td>
</tr>
<tr>
<td>Kings/Tulare</td>
<td>610,918</td>
</tr>
<tr>
<td>Bakersfield</td>
<td>376,380</td>
</tr>
<tr>
<td>Palmdale</td>
<td>157,356</td>
</tr>
<tr>
<td>Burbank</td>
<td>104,447</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>4,000,000</td>
</tr>
<tr>
<td>Norwalk/Santa Fe Sp.</td>
<td>229,205</td>
</tr>
<tr>
<td>Fullerton</td>
<td>140,721</td>
</tr>
<tr>
<td>Anaheim</td>
<td>351,043</td>
</tr>
<tr>
<td>East San Gabriel Vly.</td>
<td>14,874</td>
</tr>
<tr>
<td>Ontario Airport</td>
<td>173,312</td>
</tr>
<tr>
<td>San Bernardino</td>
<td>216,239</td>
</tr>
<tr>
<td>Riverside</td>
<td>324,722</td>
</tr>
<tr>
<td>Murrieta</td>
<td>111,614</td>
</tr>
<tr>
<td>Escondido</td>
<td>151,673</td>
</tr>
<tr>
<td>San Diego</td>
<td>1,400,000</td>
</tr>
</tbody>
</table>

Total: 11,988,821
Average of 25 cities: 479,500
The point is, if the north and south terminals are marginalized by using airplanes, which could well happen, then we would essentially have a highly expensive network serving medium cities.

Here is another map showing population densities in red. Once again, there are significant gaps where the train would be running through sparsely populated farm country.
Q: How do the low California populations contrast with the high populations of the existing high-speed rail network in Japan?

A: Here is the map:

Japanese city populations, North to South:

- Shin-Hakogate: 279,851
- Shin-Aomori: 1,400,000
- Akitra: 1,100,000
- Morioka: 296,739
- Sendai: 1,100,000
- Yamagata: 1,200,000
- Fukushima: 2,000,000
- Niigata: 2,400,000
- Tokyo: 9,000,000
- Toyama: 1,100,000
- Kanazawa: 464,431
- Nagano: 2,100,000
- Yokohama: 3,700,000
- Odawara: 194,672
- Nagoya: 2,200,000
- Kyoto: 1,500,000
- Osaka: 2,000,000
- Okayama: 1,900,000
Hiroshima 1,100,000  
Hakata 228,000  
Kumamoto 1,800,000  
Kagoshima-chuo 1,700,000  
Total: 38,763,693  
Average 22 cities: 1,761,000

Q: How much larger are Japanese station cities than those in California?

A: Note the following, based on the above numbers:

1. How the Japanese cities are multiples larger than the equivalent California cities.

2. Compare the total population of the station cities in two systems: California 11,988,821 and Japan 38,763,693 – 3.2 times as large.

3. Compare the average size of the population of the cities with stations:
   - California, 25 stations with an average of 479,500;
   - Japan, 22 cities with an average of 1,761,000 – 3.7 times bigger.
     (For comparison, if Japan had 25 stations, the average would be 1,551,000 people.)

4. There is no large gap in the middle of Japan with sparsely populated cities, as there is in California.

5. Here are the cities with stations South of Fresno and North of Los Angeles:

   Kings/Tulare 610,918 (Kings 150,965 plus Tulare 459,803)  
   Bakersfield 376,380  
   Palmdale 157,356  
   Burbank 104,447  
   Total: 1,249,101

6. For the rough equivalent in Japan, here are the four cities North of Tokyo:

   Sendai 1,100,000  
   Yamagata 1,200,000  
   Fukushima 2,000,000  
   Niigata 2,400,000  
   Total: 6,700,000
7. For no four contiguous cities in the Japanese network is the total population less than 3,076,590 – and that is at the north end of the line.

<table>
<thead>
<tr>
<th>City</th>
<th>Population</th>
<th>Sum of 4 cities, down</th>
<th>Sum of 4 cities, up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shin-Hakogate</td>
<td>279,851</td>
<td>3,076,590</td>
<td></td>
</tr>
<tr>
<td>Shin-Aomori</td>
<td>1,400,000</td>
<td>3,896,739</td>
<td></td>
</tr>
<tr>
<td>Akitra</td>
<td>1,100,000</td>
<td>3,696,739</td>
<td></td>
</tr>
<tr>
<td>Morioka</td>
<td>296,739</td>
<td>4,596,739</td>
<td>3,076,590</td>
</tr>
<tr>
<td>Sendai</td>
<td>1,100,000</td>
<td>6,700,000</td>
<td>3,896,739</td>
</tr>
<tr>
<td>Yamagata</td>
<td>1,200,000</td>
<td>14,600,000</td>
<td>3,696,739</td>
</tr>
<tr>
<td>Fukushima</td>
<td>2,000,000</td>
<td>14,500,000</td>
<td>4,596,739</td>
</tr>
<tr>
<td>Niigata</td>
<td>2,400,000</td>
<td>12,964,431</td>
<td>6,700,000</td>
</tr>
<tr>
<td>Tokyo</td>
<td>9,000,000</td>
<td>12,664,431</td>
<td>14,600,000</td>
</tr>
<tr>
<td>Toyama</td>
<td>1,100,000</td>
<td>7,364,431</td>
<td>14,500,000</td>
</tr>
<tr>
<td>Kanazawa</td>
<td>464,431</td>
<td>6,459,103</td>
<td>12,964,431</td>
</tr>
<tr>
<td>Nagano</td>
<td>2,100,000</td>
<td>8,194,672</td>
<td>12,664,431</td>
</tr>
<tr>
<td>Yokohama</td>
<td>3,700,000</td>
<td>7,594,672</td>
<td>7,364,431</td>
</tr>
<tr>
<td>Odawara</td>
<td>194,672</td>
<td>5,894,672</td>
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</tr>
<tr>
<td>Nagoya</td>
<td>2,200,000</td>
<td>7,600,000</td>
<td>8,194,672</td>
</tr>
<tr>
<td>Kyoto</td>
<td>1,500,000</td>
<td>6,500,000</td>
<td>7,594,672</td>
</tr>
<tr>
<td>Osaka</td>
<td>2,000,000</td>
<td>5,228,000</td>
<td>5,894,672</td>
</tr>
<tr>
<td>Okayama</td>
<td>1,900,000</td>
<td>5,028,000</td>
<td>7,600,000</td>
</tr>
<tr>
<td>Hiroshima</td>
<td>1,100,000</td>
<td>4,828,000</td>
<td>6,500,000</td>
</tr>
<tr>
<td>Hakata</td>
<td>228,000</td>
<td></td>
<td>5,228,000</td>
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<tr>
<td>Kumamoto</td>
<td>1,800,000</td>
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<td>5,028,000</td>
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<tr>
<td>Kagoshima-chuo</td>
<td>1,700,000</td>
<td></td>
<td>4,828,000</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>38,763,693</strong></td>
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**CHINA**

**Q:** China’s system often is touted as a model for California’s. How is it doing?

**A:** It seems to be working well, even eclipsing some air flights. The October 9, 2017 *South China Post* reported:

> With China having recently launched the world’s fastest bullet train between Beijing and Shanghai, analysts are now concerned that Chinese airlines could lose domestic market
share gradually to high speed rails and see their price power weakened further in the next few years.

The intensified domestic competition might also prompt Chinese air carriers to shift more capacity towards international routes and seek new opportunities from overseas markets, as rising personal income fuels more international travel, they said.

China recently increased the speed of bullet trains between Beijing and Shanghai to 350 km/h [217 mph], cutting travel time to under 4 hours and 30 minutes. This made China’s high-speed rail the fastest in the world, Xinhua reported.”

Q: What major ways is California different from China?

A: As noted above, California’s per capita GDP is $55,374, more than three times China’s $16,624. That means Californians can much more easily afford air travel, presuming it is more expensive than high-speed rail, which may not be the case.

According to Travel China Guide, “Beijing-Shanghai High Speed Railway, Jinghu High Speed Railway for short, finishes the 1,318 km’s (819 miles) distance between the two cities in 4.5 hours.” While an airplane flight would be about 2 hours.

By contrast, the Los Angeles to San Francisco high-speed rail would be half as much time, at 2.5 hours, assuming the advertised parameters are achieved, compared to a one-hour airplane flight.

The city configurations also are different; the California metro areas are added to take that into account:

- Shanghai’s population of 24,150,000 + Beijing’s 19,612,000 = 43,762,000
- Los Angeles City’s population of 4,000,000 + San Francisco City’s 864,815 = 4,864,815
- Los Angeles Metro Area of 13,131,000 + San Francisco Metro Area of 4,727,000 = 17,858,000

For the cities’ populations, China’s combined population is nine times as large. And using the California metro areas, China’s 43,762,000 people in its two cities are 2.45 times the size of the two California regions.

SUBSTITUTE HYBRID AND ELECTRIC CARS?

As noted above, p. 35 of the High-Speed Rail’s Draft 2018 Business Plan explains: “In December 2017, the Legislative Analyst’s Office (LAO) produced a report entitled ‘Cap-and-
On a cumulative basis, total proceeds [from cap-and-trade] until 2030 could provide a funding source ranging from $7.1 billion to $18.4 billion which, at the high end, would be sufficient to cover the delivery of the Silicon Valley to Central Valley line.”

For the next several questions, to give every advantage to the high-speed rail position, we will use the low estimate of $7.1 billion.

It must also be acknowledged that artificial intelligence and self-driving technology turn high-speed rail into antiquated technology, making adaptation to a new future of transportation all the more difficult. The new future needs to plan for more lane options with associated modern technological features on California highways that not only allow for, but anticipate and accommodate, driverless vehicles.

Q: How many vehicles does the High-Speed Rail Authority claim the project would remove from the roads?

A: From the Draft 2018 Business Plan: “Over time, the average annual greenhouse gas emissions savings of the system is projected to be equivalent of taking 360,000 passenger vehicles off the road, every year.”

Q: How many Toyota Prius hybrid cars could be bought for the $77 billion price tag of high-speed rail?

A new 2018 Prius currently costs $23,476 MSRP. So that comes to 3,279,945 new Priuses.

Q: How many Toyota Prius hybrid cars could be bought for the $1.7 billion going to high-speed rail in the governor’s proposed budget for 2019-20?


Q: How many Tesla Model 3 all-electric cars could be bought for the $77 billion price tag of high-speed rail?

A new 2018 Tesla Model 3 costs $33,450 MSRP. So that comes to 2,301,943 new Model 3s. And they’re totally electric powered, so they would generate no tailpipe greenhouse gas emissions, if tied to renewable energy, as high-speed rail plans to be tied.
Q: How many Tesla Model 3 all-electric cars could be bought for the $1.7 billion going to high-speed rail in the governor’s budget proposal for 2019-20?


UNDERGROUNDING POWERLINES

Q: How many miles of electric power lines could be undergrounded at the $77 billion price of high-speed rail?

A: Estimates I found for the cost for undergrounding are from $2.3 million to $7.4 million per mile. Of course, it depends on electrical service load, soil composition, the terrain and other factors. Using these estimate ranges, the $77 billion could be used to underground from 10,405 miles to 33,478 miles of power lines. These could be concentrated in the populated areas most at risk of wildfires and extend from there. Here are three estimates:

1. Southern California Edison’s “Fact Sheet on Undergrounding” estimates “$3 million per mile.”

2. Grant A. Mack, Senior Legislative Liaison, Office of Governmental Affairs, California Public Utilities Commission, wrote me:

   Total Length of Above-Ground Infrastructure: California has approximately 25,526 miles of transmission lines, and approximately 239,557 miles of distribution lines, of which approximately 152,000 miles of distribution lines are overhead.

   Costs: According to PG&E, SCE and SDG&E, the costs for undergrounding overhead distribution infrastructure can range anywhere from $500 per foot to $1,150 per foot (or $2.64 million to $6.072 million per mile given that there are 5,280 feet per mile). These costs represent all costs associated with the undergrounding effort: trenching, conduit, substructures, cabling and connections, meter panel modifications, cutover work, and finally removal from service of poles and wires.

3. Shohreh Dupuis, Assistant City Manager/Director of Public Works for the City of Laguna Beach, told me:

   Our estimates indicate that the total cost to underground the entire City of Laguna Beach is nearly $300 million.
We are focusing our efforts first on undergrounding the utilities along the City’s key evacuation routes and Laguna Canyon Road. The total cost for undergrounding these routes is $135 million. Below is the breakdown and cost per mile:

- 23,000 linear feet of lines along evacuation routes which includes distribution and communication lines at $1,400 per foot (including design, contingency, construction management, and escalation) which is $7.4 million per mile.

- 15,000 linear feet of lines along Laguna Canyon Road which has two circuits of transmission lines, distribution, and communication at $5,400 per foot (including design, contingency, construction management, and escalation) which is $28.5 million per mile.

WILDFIRES

Q: For greenhouse gas emissions reduction, how do wildfires caused by downed power lines compare to other actions?

A: The San Francisco Chronicle reported November 21, 2017, after the Wine Country conflagrations: “Huge wildfires can wipe out California’s greenhouse gas gains.” The story:

Over the course of just a few weeks, a major fire can pump more carbon dioxide into the atmosphere than California’s many climate change programs can save in 12 months. Scientists debate whether California’s vast forests are emitting more carbon dioxide through fires than they absorb through plant growth....

The state agency that oversees most of California’s global warming programs – the California Air Resources Board – does not include wildfires in its annual inventory of emissions, the official scorecard of the state’s progress on global warming. When state officials talk about how much California has managed to cut its emissions so far, they don’t factor in wildfires.

That could change. The board has spent much of the last decade researching how to calculate and track wildfire emissions and is working on a year-by-year tally.

A September 2016 report from the Forest Service of the U.S. Department of Agriculture found:

In 2013, the Rim fire, fueled by accumulated, dry biomass, burned over 250,000 acres and emitted 10-15 MMTCO2e (million metric tons of CO2 equivalents), ushering in a 3-year period of unprecedented fire activity in California, corresponding with unprecedented drought.
According to a November 2018 report, the U.S. Geological Survey estimated the wildfires in 2018 produced approximately 68 million tons of carbon dioxide (MMTCO2e) estimated to be 15 percent of emissions in the state. It added: “This number equates to about 15 percent of all California emissions, and it is on par with the annual emissions produced by generating enough electricity to power the entire state for a year. The recent Camp and Woolsey fires have produced emissions equivalent to roughly 5.5 million tons of carbon dioxide.”

By contrast, the High-Speed Rail Authority’s Draft 2018 Business Plan projects, on p. 10, estimated reductions of between 64.9 and 84.1 MMTCO2e over a 50-year period. That comes to an average reduction of between 1.3 and 1.7 MMTCO2e a year.

So, let’s assume the high-speed rail reduces greenhouse gas emissions at the highest estimated amount, 84.1 MMTCO2e over 50 years. While we assume ending wildfires the size of the Rim wildfire would save the lowest estimated damage, 10 MMTCO2e. That means, if we could stop 8.4 wildfires over the next 50 years by undergrounding, we would save the equivalent greenhouse gas emissions to that of the claims of high-speed rail.

CONCLUSION: That means, if we could prevent one such wildfire every six years, we would be ahead of whatever high-speed rail might save.

UNDERGROUNDING POWER LINES

Q: What happened to legislation to facilitate the undergrounding of power lines?

A. A measure I introduced in 2016, Senate Bill 1463, would have provided an expedited pathway for utility companies to harden their infrastructure and underground power lines. The bill stipulated that the Public Utilities Commission (PUC) consult with the Department of Forestry and Fire Protection (CalFire) about areas given priority for enhanced mitigation measures. Emphasis would have been given to communities where overhead utility facilities, such as power lines, posed a special danger of sparking wildfires.

The bill would have required the PUC to develop a definition of “enhanced mitigation measures” for these purposes. It also would have required the PUC to incorporate the concerns of local governments and fire departments in determining those boundaries.

Unfortunately, after being approved by strong bipartisan votes in both houses of the Legislature without opposition, Governor Brown vetoed the bill. That was a year before the massive Wine Country fires in 2017, which devastated a large portion of the state, spewing out far more greenhouse gas emissions than anything potentially saved by high-speed rail.
Q: What about Senator Bob Hertzberg’s resolution?

A: Senate Joint Resolution 20, introduced by Senator Bob Hertzberg, D-Van Nuys, on March 6, 2018, concerns the electrical grid:

This measure would urge Congress and the President of the United States to work together to implement grid hardening measures and to help ensure our nation’s critical electrical infrastructure is protected from threats from electromagnetic pulses and physical attacks on the infrastructure....

Resolved by the Senate and the Assembly of the State of California, jointly, That the Legislature urges the President and the Congress of the United States to work together to implement grid hardening measures and to help ensure our nation’s critical electrical infrastructure is protected from threats from electromagnetic pulses and physical attacks on the infrastructure.

During the Senate Floor Session Discussion on SJR 20 on May 3, 2018, I explained:

I also rise in support of SJR 20. This resolution is focused, but extremely critical. The resolution does not mention, however, that a grid that is not hardened is also a potential for the cause of wildfires. We saw this in tragic proportions in Santa Rosa and around the state. And we all know the data and the statistics, including the many lives lost, more than 44. And wildfires also, colleagues, generate more greenhouse gases in 2-1/2 days than all the cars in California driving for one year.

So, if Sacramento is serious about climate change; if it’s serious about electrifying cars; if it’s serious about saving lives – then we need to harden these power lines. The good senator from Los Angeles mentioned you could drive a truck through some of the loopholes.

There was a recent study that was done by the Financial Times, and they said that a Tesla truck will need [electricity equivalent to that used in] 4,000 homes to recharge. I mean, we’re talking about serious electricity moving up and down this state, with a serious grid.

And so, if we can just get serious about greenhouse gases and close the loopholes, we need to start by using cap-and-trade funding to fix our power lines. We have the resources. We need to help the utilities. We need to get this fixed because, as the Senator from Santa Barbara mentioned, if we lose these power lines, the whole state stops.

So we not only need to send a message to our President, but we need to send a message to our Governor, too, to implement the hardening of our power grid.
Q: What is the Auditor’s Report?

A: On November 15, 2018, California State Auditor Elaine M. Howle released a bombshell report criticizing “flawed decision making” and “poor contract management” at the High-Speed Rail Authority. Criticisms included:

- Despite being aware of risks associated with beginning construction before completing critical planning tasks, the Authority began construction in 2013 – a decision that has led to contract changes, project delays and cost overruns.

- Cost overruns for three active Central Valley projects reached $600 million in June 2018, and the Authority estimates an additional $1.6 billion in costs to complete them.

- Contract changes have resulted in significant time delays, and the Authority has had to continually extend expected completion dates, pushing them back from 2018 to March 2022.

- The Authority risks losing $3.5 billion in federal grant funds if it fails to complete construction by December 2022 – it must work twice as fast over the next four years to meet this deadline.

- Since the Authority has now exhausted all feasible options to use existing infrastructure, its ability to mitigate future cost increases is in doubt.

- The Authority needs to improve its contract management to control soaring costs.

- It relies heavily on outside consultants to manage certain contracts, but these consultants may not have the best interests of the State as their primary motivation.

Here is the Auditor’s chart on how much faster the Authority must work. Yet there is no sign the Authority is capable of doing so.
CONSTRUCTION DEADLINES

Q: How much money needs to be spent to keep up with all the deadlines for construction?

A: In his 2019-20 Budget proposal, Governor Newsom included $666 million in Proposition 1A bond funds and cap-and-trade funds for high-speed rail, not close to the $1.6 billion in the current budget for 2018-19. Analysis from the Senate Republican Fiscal Office on January 15, 2019 noted:

Cost Estimates Increased in 2018. In 2016, the high-speed rail project had an estimated cost of $64.2 billion. The latest business plan published June 1, 2018 estimates a middle-cost scenario of $77.3 billion and a high-cost scenario of $98.1 billion.

Funding Remains Short. The High-Speed Rail Authority has struggled to obtain sufficient funding to build the system. A significant funding shortfall remains, with less than one-third of the funding secured under the best-case scenario. In the 2018 Business Plan, the Authority includes financing their share of future revenues from the Cap and Trade program as part of the funding plan, but has not yet taken the steps necessary to do so. Even if financing future revenues becomes a reality, a funding gap of at least $49.1 billion, and as much as $77.6 billion, remains. To date, no private investment has materialized.

Future Remains Uncertain. The Governor’s Budget does not comment on the future of the high-speed rail project. According to media reports, Governor Newsom has considered moving the end of the rail line from Los Angeles to the San Joaquin Valley, at least until it can “attract more money from taxpayers or private investors.” There will likely be more information on the fate of the bullet train in the coming months.

<table>
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<th>Key Changes</th>
<th>2010</th>
<th>2018</th>
<th>Change</th>
<th>% Change</th>
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<tr>
<td>San Francisco to Anaheim/Los Angeles Cost (in billions)</td>
<td>$42.6</td>
<td>$77.3</td>
<td>$34.7</td>
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<td>Percent of Project Funded</td>
<td>26.4%</td>
<td>30.9%</td>
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<td>Miles of Track Constructed</td>
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<td>0%</td>
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<td>2020</td>
<td>2033</td>
<td>13 years</td>
<td></td>
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</tbody>
</table>

Sources: California High-Speed Rail Authority Business Plans

Since the above report, as noted earlier the governor has commented he will continue with the Merced to Bakersfield 171-mile segment as a test for further buildout, should it prove to be workable.
However, the amount of money being spent on this project is breathtaking. As reported by Ralph Vartabedian in an August 26, 2018 Los Angeles Times article:

*The California bullet train project has cost state taxpayers an average $3.1 million a day over the last year — a construction spending rate higher than that for the Bay Bridge, Boston’s Big Dig or any U.S. transportation project in recent history.*

*But still it’s not enough, planners say.*

*In order to hit its 2033 deadline and $77-billion budget, the California High Speed Rail Authority will have to increase daily spending by up to nine times over the next four years or risk putting the already-delayed system further behind.*

Here is a chart from the *Los Angeles Times* article:

The current spending rate is stunning, but to increase that to $27 million a day is extraordinary and unheard of with any comparable project we know of around the world. And the varying costs of construction materials, labor and interest payments could further exacerbate the future burn rate, especially if there are more delays.
DEMOCRATIC CRITICS

Q: What are some Democrats saying?

A: My colleague Senator Jim Beall, D-San Jose, is chair of the Senate Transportation Committee and a board member of the Authority. After the Auditor’s Report came out, he said at a November 29 meeting of the committee, “We need to make some changes and we need to make them now.” He added that he wants to put the high-speed rail under the authority of the new Caltrans Inspector General’s Office.

Former Senator Joe Simitian, D-Palo Alto, was one of the strongest supporters of the high-speed rail project, often authoring legislation that would continue it and put it on sound footing. As a chair and member of several key committees through which the high-speed rail project traversed, including the budget subcommittee chair, he was a key figure in assisting the project through years of legislative scrutiny. Unfortunately, fatigued at the broken plan, he became a clear opponent of the high-speed rail project before he was termed out of the Legislature.

In one of his final speeches on the Senate Floor in 2012, he said, “There is no arguing that this is a very different plan before us today both in scope and content and price…. There are billions of reasons why none of us should simply go along with the program.” He ended poignantly by saying that, though he respected his colleagues’ continued funding of a defunct project, he could not support it any longer. “Regrettably, the only conclusion I can come to today is that this is the wrong plan, in the wrong place, at the wrong time.”

Q: What is the effort to repeal high-speed rail?

A: According to Secretary of State Alex Padilla, a proposed initiative to repeal the High-Speed Rail project entered circulation on November 30, 2018 to gather signatures. The proposed title, which could be modified by the state attorney general, currently reads, “Removes Responsibility and Funding For State Highway Construction And Maintenance From State. Transfers Such Responsibility And Funding To Individual Local Governments. Ends State High-Speed Rail Project. Constitutional Amendment.”

Recent signals to modify the high-speed rail project by Governor Newsom prompted the Legislative Analyst’s Office to offer the following advice in their 2019-20 Budget Transportation Proposals write-up:

We find that the Governor’s revised approach to the high-speed rail project provides an important opportunity for the Legislature to consider how the project aligns with its policy and fiscal priorities. Given the significant funding gap facing the project, it is a...
good opportunity for the Legislature to evaluate if it would like to continue to move forward with Phase I of the project as planned or undertake an alternative course of action. As it evaluates the various available options, the Legislature will want to weigh the alternatives’ costs and risks against their anticipated mobility benefits.

Regardless of the approach the Legislature would like to take on the project, we find that there are significant benefits to the Legislature providing clear direction soon. This is because, if the state is going to move forward with the project as currently planned, it would be beneficial to the High-Speed Rail Authority to have certainty regarding the Legislature’s commitment to completing the project and ensuring its full funding. Alternatively, if the state is ultimately going to scale down the project, the longer the state waits to make this decision, the more likely the state will incur unnecessary costs.

In the end, California needs a transportation system that is financially viable and anticipates innovation. And the Central Valley deserves better treatment as we work toward that goal.

CONCLUSION: MOVING TO THE AUTONOMOUS FUTURE

In the 10 years since California voters approved Proposition 1A in November 2008, much has changed the high-speed rail plan that was sold to voters. The project is simply not penciling out and it is time to end this travesty.

The last two years of wildfires scorching large parts of the state and taking scores of human lives have demonstrated the immediate need to harden our utilities and take other mitigation measures in our wildlands and forests. Preventing wildfires also would reduce far more greenhouse gases, today, than would a train project that would not be completed for more than a decade.

The alarming and heartbreaking increase in homelessness in California since 2010 demonstrates the need to stop wasting state resources and start taking care of our people. The cap-and-trade tax that partly funds high-speed rail currently costs between 13 and 14 cents per gallon of gasoline. For a poor person with a long commute, that could be the difference between living in an apartment and living out of a car on the street.

A new governor taking office presents a new opportunity to put aside the failed projects of the past and shift to bold new solutions for today’s problems – and to prepare for a greater future. At least partly, Governor Newsom has grasped that opportunity to embrace new priorities.

When Steve Jobs returned to Apple in 1997, one of the first things he did was clear out a museum of devices of the company’s accomplishments, such as early Mac computers. The past
was gone and the future was to set its own course, leading almost magically to the resurgence of the company with the iMac, the iPod, the iPhone and the iPad.

With transportation, California needs to cast aside a 19th Century technology on rails in favor of the new, autonomous technologies carrying us toward the 22nd Century. As Jobs said, “Innovation distinguishes between a leader and a follower.” It’s time for California to lead.

**IMAGINE: THE CALIFORNIA HIGH-SPEED ROAD**

*Imagine a sleek, battery-powered car automatically picks you up in front of your home. It whisks you at 120 mph on an autobahn-style freeway from Southern California to Northern California in 3 hours, door-to-door. No wasted time parking at an airport or train station before you enter a mass-transit plane or train; no security check-ins. Your luggage is in the trunk. On the trip, you can relax, play games with your family, catch up on work, watch a movie or sleep. Once you arrive at your destination, there would be no need to de-plane or de-train and rent a car, or get picked up, because you already would be in your car.*

*Fantasy? No, the technology is currently being developed for such a ride. Self-driving cars and electric cars both are making great strides. Meld the two and you have the vehicle. What’s missing is the road.*

*The solution: A California autobahn, modeled on those in Germany, where for long stretches there is no speed limit. Call it the California High-Speed Road. It could be built, for starters, in the middle of the current freeways, beginning with the I-5 at the base of the Grapevine going all the way to Sacramento. I have introduced Senate Bill 319 to start the process.*

*As demographer Joel Kotkin recently wrote, the high-speed rail, local trolleys and other mass transit are “all the more unconscionable at a time when more efficient, less costly technologies – electric cars, work at home and autonomous vehicles – all beckon with promise of better environmental results and greater mobility and efficiency. California may have developed many of these technologies, but our leaders have been maddeningly slow to even consider how to adopt them.”*

*This is California. We can imagine the future. And we can build it fast, if we make it a priority.*