



The intercity train fleet overseen by Caltrans and operated by Amtrak throughout California is transitioning in new Charger locomotives that are more powerful, yet are far-cleaner burning, than previous diesel engines. The Chargers were paid for with federal and Proposition 1B funds.

State Plan Puts Rail Revival on Fast Track

Workhorse of Yesteryear Can Help Solve Today's Congestion, Pollution Woes

Railroads that transformed California almost 150 years ago are poised to again be a vital transportation and economic force for the Golden State.

A vision for a new era of rail service to serve a changing California is presented in the California State Rail Plan, recently released by Caltrans after several years of study and consultation with its transportation partners and stakeholders.

The Rail Plan lays a path for modernizing the state's rail infrastructure and service through 2040. It proposes to build, in stages, a unified statewide rail network that better integrates passenger and freight service, connects passenger rail to other transportation modes, and supports expanded freight capacity to foster future economic growth.

Now is the time, the plan says, for California to embark on expanding and improving the state's rail network. The state represents the world's fifth-largest economy; is home to nearly 40 million people; supports world-class cities, universities and research centers; and hosts the world's most innovative and technologically advanced companies. The state's agricultural industry feeds the nation and world. Ports through which goods and products flow and supply the rest of the nation are a center for international trade. California also draws hundreds of millions of visitors each year.

But in its current condition, California's rail infrastructure and related services are too limited to meet the needs of many travelers, the growing economy, or more

stringent environmental standards. A significant portion of the state rail network, much of it built a century earlier, is reaching the end of its useful life.

Other parts of the state's aging transportation infrastructure are likewise overburdened. Vehicle congestion has led to crippling commute times on many of the state's highways, creating bottlenecks in the movement of goods and restricting access to workplaces and popular destinations. Quality of life is further impacted by transportation-related air pollution. Extreme weather generated by greenhouse gas (GHG) emissions and a changing climate also threatens the state's transportation network.

The Rail Plan contends a rail renaissance will go a long way toward solving those problems. Rail is well positioned to capture an increasing percentage of passenger market, and capacity already exists to expand service and improve performance. Longer trains, more frequent service, better connectivity and easier access will entice more ridership, the Rail Plan predicts, reducing average costs per passenger. Trains on more frequent schedules and traveling faster will be competitive with auto and air travel, and reduce harmful emissions.

To improve the freight rail network, the Rail Plan proposes staged investments. In turn, an upgraded freight system will help shift goods movement away from congested roadways. To accomplish these goals, a combination of public and private investment will be required.

View the plan at www.californiastaterailplan.com.

California Rail Network Today

Physical Size: Nation's most extensive passenger and freight rail system, with more than 10,000 passenger and freight route miles.

Freight Volume: About 51 million tons of freight generated in-state, 94 million tons received from out of state, representing 27 percent of the nation's intermodal volume in terms of units (more than 30 million tons of cargo annually). State's freight railroad loads projected to increase by 38 percent by 2040.

All Aboard: More than 70 State-supported and Amtrak-operated intercity trains run per day in California, attracting 5.6 million boardings annually, up from 3.6 million a decade earlier. California commuter rail ridership grew to nearly 33 million trips in fiscal year 2016, up from 21.6 million trips a decade earlier.

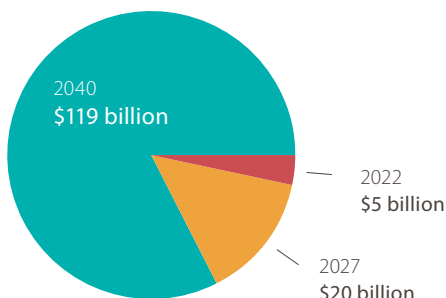
State Population: Now 39 million, almost four times its 1950 population of 10 million, when the core of California's highway (interstate) transportation system was built. The population is projected to grow to 50 million by 2040.

State Rail Plan: 2040 Vision

The Rail Plan sets these goals by 2040:

- **More Trains, More Often** — Expanding passenger rail services to serve most of the state, including rural areas.
- **Integrated Services** — Hub stations can allow seamless transfers among services, such as rail and bus or plane. Hubs provide connection points to local and regional transit systems, providing fast, frequent access to regional destinations. An integrated ticketing system allows trips to be booked on a single ticket, eliminating the need to piece together itineraries.

Overall Capital Program Time Horizon



Achieving the 2040 Vision will require State, regional and local investment totaling \$144 billion. This strategy of investment is intended to capture a bigger slice of the growth in all trips by 2040.

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Ridership and fare revenue have risen substantially as a whole for the Amtrak intercity rail service, overseen by Caltrans, since 2014.

- **Coordinated Schedules** — Services will be coordinated in a "pulsed" schedule across the network to reduce wait times and allow direct transfers.
- **Frequent Service** — To grow ridership and drive down costs and subsidies. Trips would be significantly faster with High-Speed Rail service.
- **Customer Focus** — Enhanced ticketing, scheduling, and passenger information.

Timeline

2022

The electrification of Caltrain, the Bay Area-Santa Clara commuter line; expansion of rail service to Redlands, Salinas, and Larkspur; and increased schedule frequencies on intercity and regional rail corridors.

In addition:

- Assisting communities in better connecting transit systems to rail, and enhancing station area functions.
- More bus connections.
- Land use planning and development to cluster jobs and housing at station hubs.
- Strategic planning for fleet management, replacement and expansion.

- Conducting targeted investments in integrated ticketing and travel planning.
- Estimated 2022 capital costs: \$5.17 billion

2027

Focus on initial High-Speed Rail (HSR) services, improvements for integrating intercity and regional rail with initial HSR, and maximizing service in existing rail corridors. Key components: Beginning HSR service on initial segments; with significant growth in intercity and regional rail frequencies on all existing corridors.

In addition:

- Initiation of statewide hub operations with varied services and multimodal travel connections, and “pulsed” trip schedules.
- Full use of programmed passenger corridor capacity statewide.
- Full use of negotiated passenger service capacity on existing freight corridors.
- Targeted investments at hubs.
- Fully developed and operational integrated ticketing; and
- Implementation of a new fleet strategy.
- Estimated 2027 capital costs: \$19.76 billion.

2040

Represents the full build-out of an integrated statewide network. Highlights:

- Completion of the San Francisco Downtown Extension and a new Transbay tube, allowing fast service throughout the Bay Area and connecting Sacramento.
- Completion of corridor investments in the Los Angeles Basin.
- Significant new regional services in the Central Valley, on the Central Coast, and in the North Bay.
- Expansion of network capacity in full realization of the integrated service goals.
- Intensification of services, with more frequencies and higher speeds, implemented during the 2022 and 2027

horizon years.

- Estimated 2040 capital costs: \$119.8 billion

Freight

With competition from multiple transcontinental freight routes and seaports along the East Coast, West Coast, and the Gulf of Mexico, it’s imperative that California upgrades its freight transportation network, the Rail Plan contends. Through 2040, the plan calls for these improvements:

- Trade corridor improvements to shift a share of freight loads from highways-bound trucks to freight rail, and reduce transportation and delivery bottlenecks.
- Assistance to short lines that link many of the state’s freight-intensive industries, ports and principal trade corridors. Programs should provide grants and loans to improve and upgrade track, rail network access.
- Grade-crossing improvements or investing in grade separation programs to enhance safety and reduce vehicular and pedestrian delays.
- Additional terminal and yard capacity. Expand intermodal (rail/truck) terminal capacity in California, particularly in urban centers with access challenges on congested roadways.
- Short-haul rail shuttle improvements for more efficient freight connections between ports and distribution centers.
- Advancement of zero- and near-zero-emissions technologies for locomotives.

Estimated cost: Based on earlier analysis, the total freight improvements will cost between \$20 billion and \$40 billion. In some regions, most or all projects address joint-use passenger and freight facility needs.

Shared responsibility: Long-term planning for freight improvements can be difficult because the state does not own the infrastructure, and the freight rail industry is sensitive to releasing information on their long-term projects. However,

Spatial Efficiency

Passenger rail is far more spatially efficient than air travel or cars.

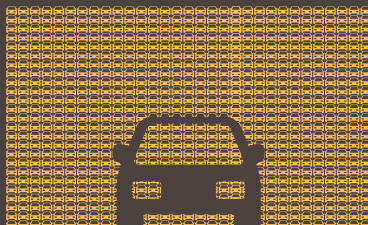
800 cars



7 airplanes



1 train



there are opportunities to work with the freight railroads, and to maximize state money by investing in projects that benefit an entire corridor rather than individual projects.

Improving Safety

Traveling by train is inherently safer than driving in a car. Fatalities per mile are 17 times more likely in an automobile than in an intercity passenger train, according to the Federal Railroad Administration.

Ongoing safety investments include:

- Positive Train Control, an advanced safety system designed to automatically stop a train before potential train-on-train, speed-related, and signal-related incidents occur.
- At-grade crossing improvements, such as crossing gates, warning systems and physical barriers.
- Grade separations to eliminate interaction between trains and roadway users.
- Convincing drivers to take trains instead will lead to reductions in the amount of vehicle miles traveled, which in turn lowers incidences of traffic accidents. Also, moving freight by rail reduces the number of trucks on roads — reducing congestion and the potential for truck-related accidents.

An Economic Engine

According to the plan, investments in California’s rail system will generate greater economic activity: new construction, more jobs, and growing tax revenues.

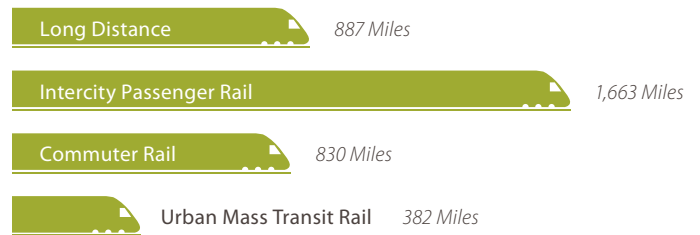
- The \$40.8 billion of direct expenditures identified in the Rail Plan will result in a total output for the economy of nearly \$77.5 billion by 2040 — a payout of nearly two dollars for every dollar invested.
- Predicted to create nearly 463,000 full-time jobs across various industries, with a \$28 billion payroll.
- By 2040, state and local tax revenues anticipated from the expenditures would approach \$2 billion, and federal tax revenues were estimated at \$5.4 billion.

A Greener Way to Travel

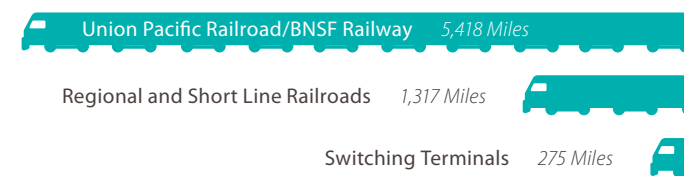
The Rail Plan advances the state’s commitment to reduce greenhouse gases and other pollutants.

- By 2040, more than half of passenger trips and the majority of passenger miles of travel is predicted to take place on electrified trains in California. Diesel-electric and other alternative clean technology passenger and freight locomotives will reduce greenhouse gas emissions.
- By diverting 88 million daily passenger miles from highways to cleaner-burning trains, more than 13 million metric tons of carbon dioxide equivalence would be eliminated annually — comparable to planting more than 166 million urban trees every year.

Passenger Rail Route Mileage



Freight Rail Route Mileage



- Rail is an energy-efficient way to move freight. According to federal statistics, an average freight rail car moves 10.6 miles per gallon of fuel consumed, while an average combination truck moves 5.9 miles per gallon.

Sparing the Highway System

The system could accommodate 1.3 million daily riders by 2040 if train service is expanded, upgraded and integrated with transit systems, the Rail Plan asserts — a twelvefold increase in ridership from current levels of 115,000 trips per day on intercity lines.

- The increased ridership represents the equivalent to the rail network accommodating 1.5 times the current daily traffic volumes of the entirety of I-5, from the Oregon state line to the border with Mexico.
- According to 2040 projections, the shift from roads to rail will result in 74 million fewer vehicle miles traveled on highways, easing congestion and wear-and-tear on highway infrastructure.

The Rail Plan Advisory Committee included representatives from diverse groups, including passenger rail operators, planning agencies, freight rail interests, tribal nations, private railroads, ports, transit operators and neighboring states. Advocacy groups representing environmental, disadvantaged communities, livable community/ active transportation, and agricultural interests also participated on the committee. **MM**

Source: California State Rail Plan