



Image courtesy of California High-Speed Rail Authority

California High-Speed Rail

Building a Sustainable Future

The California High-Speed Rail Authority (Authority) is planning, designing and building the first high-speed rail system in the United States. The Authority's goal is to deliver the greenest infrastructure project in the nation, both in construction and operations, while honoring California's culture of environmental stewardship.

The California High-Speed Rail project is one of the largest, most ambitious public transportation programs in U.S. history. When complete, it will connect the Bay Area to the Los Angeles Basin via the Central Valley at speeds of over 200 miles per hour. Since the early 1990s, WSP has helped shape this important transportation infrastructure investment from the earliest feasibility studies to planning for future operations, most recently as the Authority's rail delivery partner. The California High-Speed Rail Authority currently has 119 miles of high-speed rail under construction through California's Central Valley. When completed, high-speed rail will serve as a 500-mile the backbone of a modern, integrated statewide rail system that will:

- Establish vital, new economic links between California's economic megaregions
- Create employment and educational opportunities for Californians
- Improve air quality and advance the state's climate change initiatives
- Preserve agricultural land, protect the environment and promote sustainable communities
- Create opportunities to use the dedicated high-speed rail corridor to achieve broader public benefits

The Authority received national recognition in December 2020 for the program's sustainability efforts. The Envision Platinum rating was awarded by the Institute for Sustainable Infrastructure, a nonprofit organization founded by the American Public Works Association, the American Society of Civil Engineers and the American Council of Engineering Companies. The California High-Speed Rail project is the largest transportation infrastructure project both in terms of capital investment and geographic area to earn an Envision award for sustainable infrastructure to date.



REDUCING GREENHOUSE GAS (GHG) EMISSIONS

The system's electrified high-speed zero-emission trains will be powered by renewable energy and create an equitable clean energy future in California. It will provide a green transportation choice for travelers and is part of California's solution to reduce GHG emissions by shifting travel from automobiles and short-haul air travel to high-speed rail. In its first 50 years of operation, the system is projected to reduce GHG emissions by 102 million metric tons of carbon dioxide equivalent (MMT_{CO₂e}). It will also reduce harmful air pollutants, such as particulate matter, carbon monoxide and nitrogen oxide. The average annual GHG emissions savings of the system, as much as two million metric tons of carbon dioxide equivalent, would be equal to taking 432,000 passenger vehicles off the road every year – roughly all of the cars registered in San Francisco County.

102
MMT_{CO₂e}
GHG emission reductions over 50 years is equal to:



1.6 billion
tree seedlings



22 million
cars



11.4 billion
gallons of gasoline



1.3 million
tanker trucks of gas



4.9 billion
garbage trucks of waste recycled



62,000
air trips reduced annually



5 billion
VMT reductions annually



300,600 MT
carbon sequestered and avoided

PROTECTING NATURAL RESOURCES

To date, the Authority has preserved and restored more than 2,320 acres of habitat and protected more than 3,096 acres of agricultural land.



2,320 acres
habitat preserved and restored



3,096 acres
agricultural land protected



273 acres
agricultural land secured

AGGRESSIVE CONSTRUCTION RECYCLING

The Authority requires 100 percent recycling of the steel and concrete from construction and demolition and diversion of at least 75 percent of all other construction and demolition waste from landfills. All concrete and metal is recycled or stockpiled for reuse.

Recycling construction waste (through 2020)

95% total recycled
196,906 tons

5% total landfilled
9,651 tons



POWERED BY RENEWABLE ENERGY

The rail system is designed to be powered by 100 percent renewable energy. This ambitious commitment is made possible by abundant renewable energy resources in California and a robust renewable energy industry. The opportunity for on-site solar coupled with battery storage offers both cost savings and resilience. High-speed rail stations and service facilities are being designed to be net-zero energy, meaning they will produce at least as much energy on-site as is consumed by the facility over the course of a year. Also, station design is focusing on ease of navigation, passenger well-being, efficient use of resources, building to the highest LEED standards and ease of maintenance.



1.9 million MWh
renewable energy generation



Image courtesy of California High-Speed Rail Authority

PROTECTING AIR QUALITY DURING CONSTRUCTION

Avoiding emissions production is a critical focus for the Authority. All contractors working on the project must use trucks and equipment that comply with California requirements. Contractors are also subject to contract terms which require fleets to meet the U.S. Environmental Protection Agency standards for the cleanest off-road diesel engines (Tier 4 equipment, as available). The Authority requires 100 percent zero-emission vehicle (ZEV) fleets in future infrastructure and construction contracts. To offset any remaining air pollutant emissions, the Authority has funded projects through a Voluntary Emissions Reduction Agreements with local air districts. To date, the Authority's agreement with the San Joaquin Valley Air District has delivered 1,358 tons of total lifetime reductions of criteria air pollutants. To offset any remaining emissions produced through construction, the Authority helped plant over 7,000 trees through 2021.

HIGH-SPEED RAIL IS A VALUABLE INVESTMENT

California is investing strategically toward achieving its climate goals. High-speed rail's alternatives, such as expanding airports and adding more lanes to the existing interstate and highway systems, would cost twice as much. They would also create significant negative impacts to communities and the environment.

Investing in high-speed rail delivers positive returns for current and future communities. It will not only reduce vehicle miles traveled (VMT) and GHG emissions, but also create extensive co-benefits for Californians and California businesses, including those who are most vulnerable.

- **709 small businesses** have been engaged in the program as of March 2022.
- **7,983 construction workers** have been dispatched (as of May 2022) to work on the 119 miles that are currently under construction.
- **\$4 billion**—over half of the total investment in the program through 2020—was invested in disadvantaged communities.
- **7,200 jobs** will be created in the future to operate the service and maintain the system.

ABOUT WSP

WSP USA is the U.S. operating company of WSP, one of the world's leading engineering and professional services firms. Dedicated to serving local communities, we are engineers, planners, technical experts, strategic advisors and construction management professionals. WSP USA designs lasting solutions in the buildings, transportation, energy, water and environment markets. With more than 12,000 employees in over 200 offices across the U.S., we partner with our clients to help communities prosper.

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