



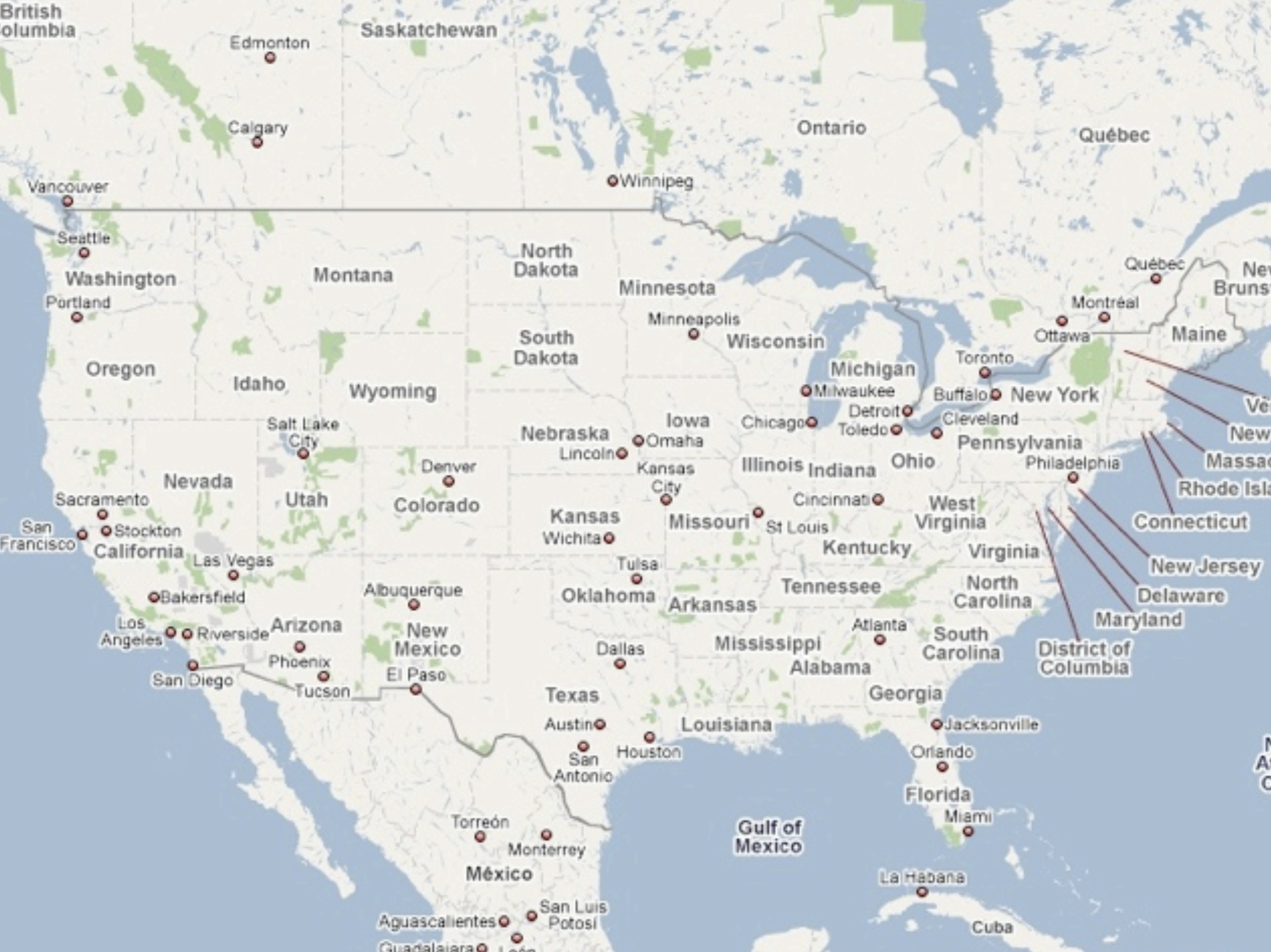
I love trains. In the late 1970s and early 1980s, passenger trains were almost my exclusive form of travel outside the Pacific Northwest. I made many round trips from Oregon to Washington, DC. *Photo by Glenn Courtney; used by permission.*





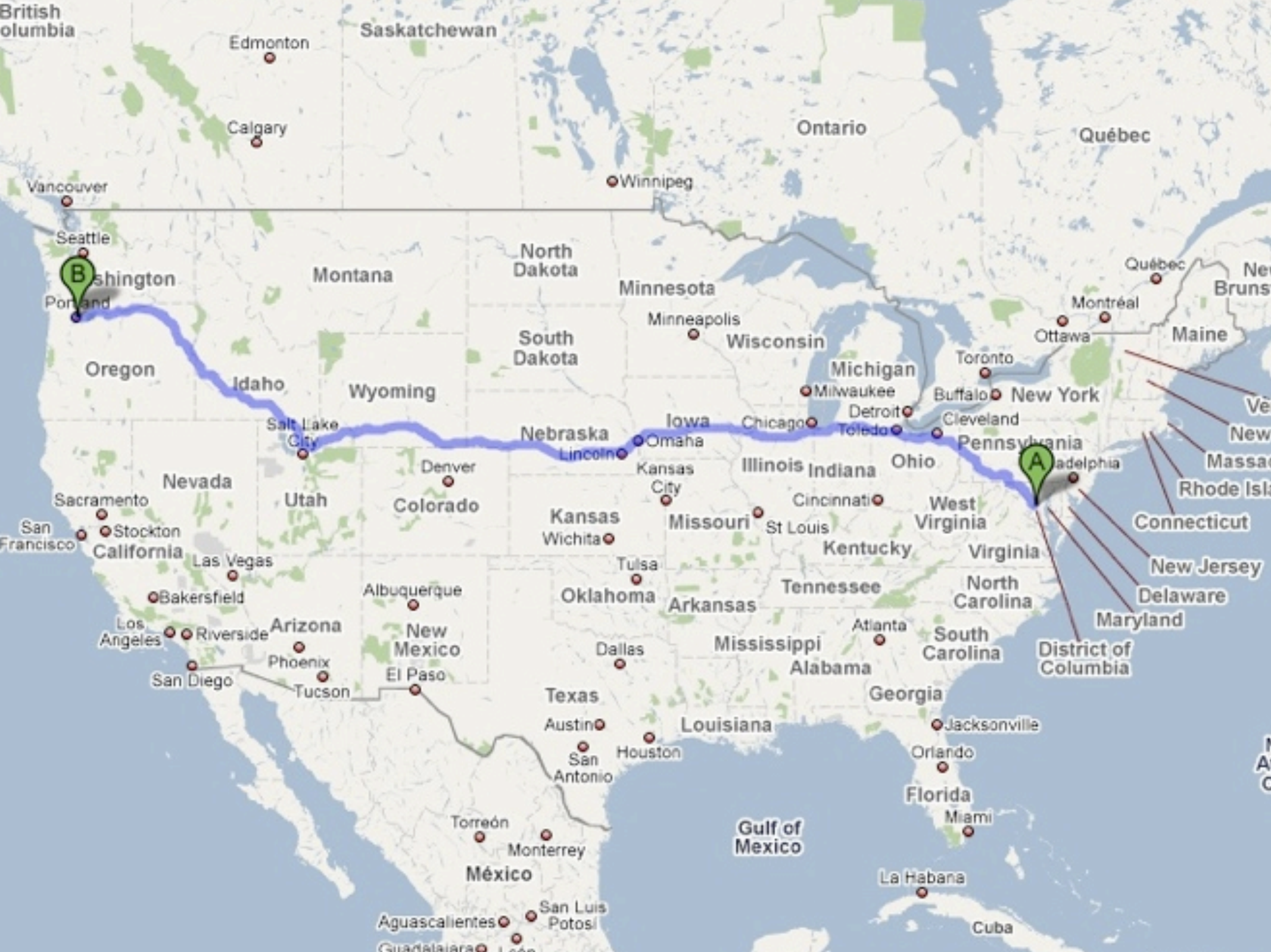
In the late 1980s and 1990s, I helped to restore and operate the nation's second-most-powerful operating steam locomotive.





If the United States had a true, transcontinental high-speed rail network,





I could take the train from Portland to Washington in 20 hours, and would gladly give up flying.



# VISION *for* HIGH-SPEED RAIL *in* AMERICA



Alas, the Obama administration's vision for high-speed rail focuses on 100- to 600-mile corridors, shown in red, while the grey lines will remain low-speed rail.





This vision, by the way, is identical to the Federal Railroad Administration’s high-speed rail corridors designated in 2001.



**“President Obama’s vision for high-speed rail mirrors that of President Eisenhower, the father of the Interstate highway system, which revolutionized the way Americans traveled.”**

***— White House news release***



In announcing this vision, the White House drew the parallel between it and President Eisenhower’s Interstate Highway System. But there are several crucial differences between interstate highways and the FRA’s high-speed rail plan.





First, President Eisenhower had a pretty good idea of how much his interstate highway proposal would cost, based on estimates provided to him by the Bureau of Public Roads.





Second, the president and Congress knew how to pay for building the interstate highways.





In fact, 100 percent of the interstate system was paid for out of taxes on gasoline, tires, trucks, and autos -- not a single dime of general taxes went to construct, maintain, or operate the highways.



# Unmasked Questions

- How much will it cost?
- How to pay for it?
- Who will ride it?
- Do benefits exceed costs?



In contrast, Congress was so eager to pass the stimulus bill that, when President Obama asked it to include \$8 billion for high-speed rail, no one asked how much his rail vision would cost or how it would be financed.



# VISION *for* HIGH-SPEED RAIL *in* AMERICA



Instead, all we have is a vision without a plan.

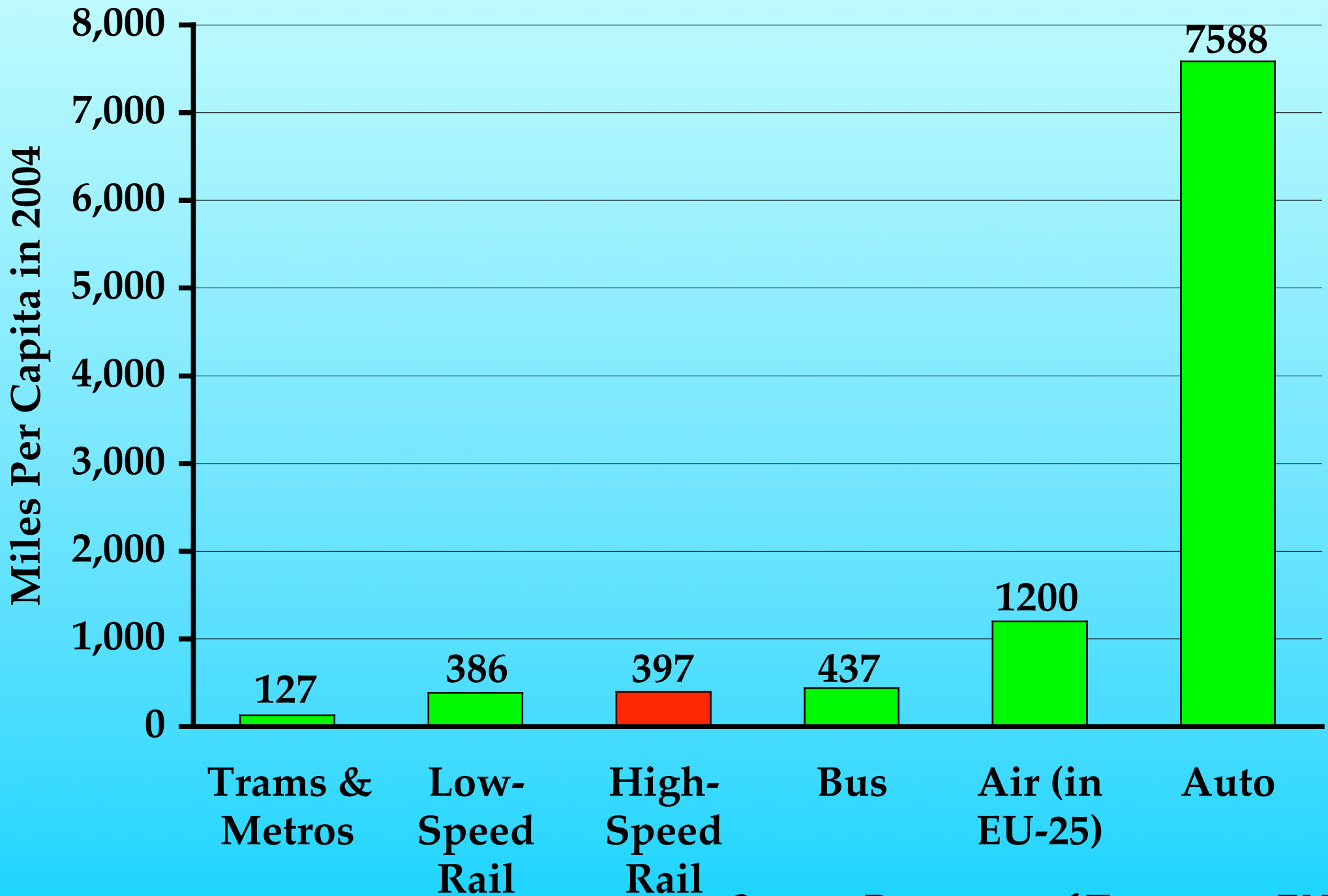




Americans who have been to France often return gushing about the TGV.



# French Travel



*Source: Panorama of Transport, EU*

What they don't realize is that, while the TGV may be attractive to tourists, it is hardly used by the French, who average less than 400 miles a year on high-speed rail. The average resident of France travels by bus more than high-speed rail, by air three times as much, and by car almost 20 times as much.

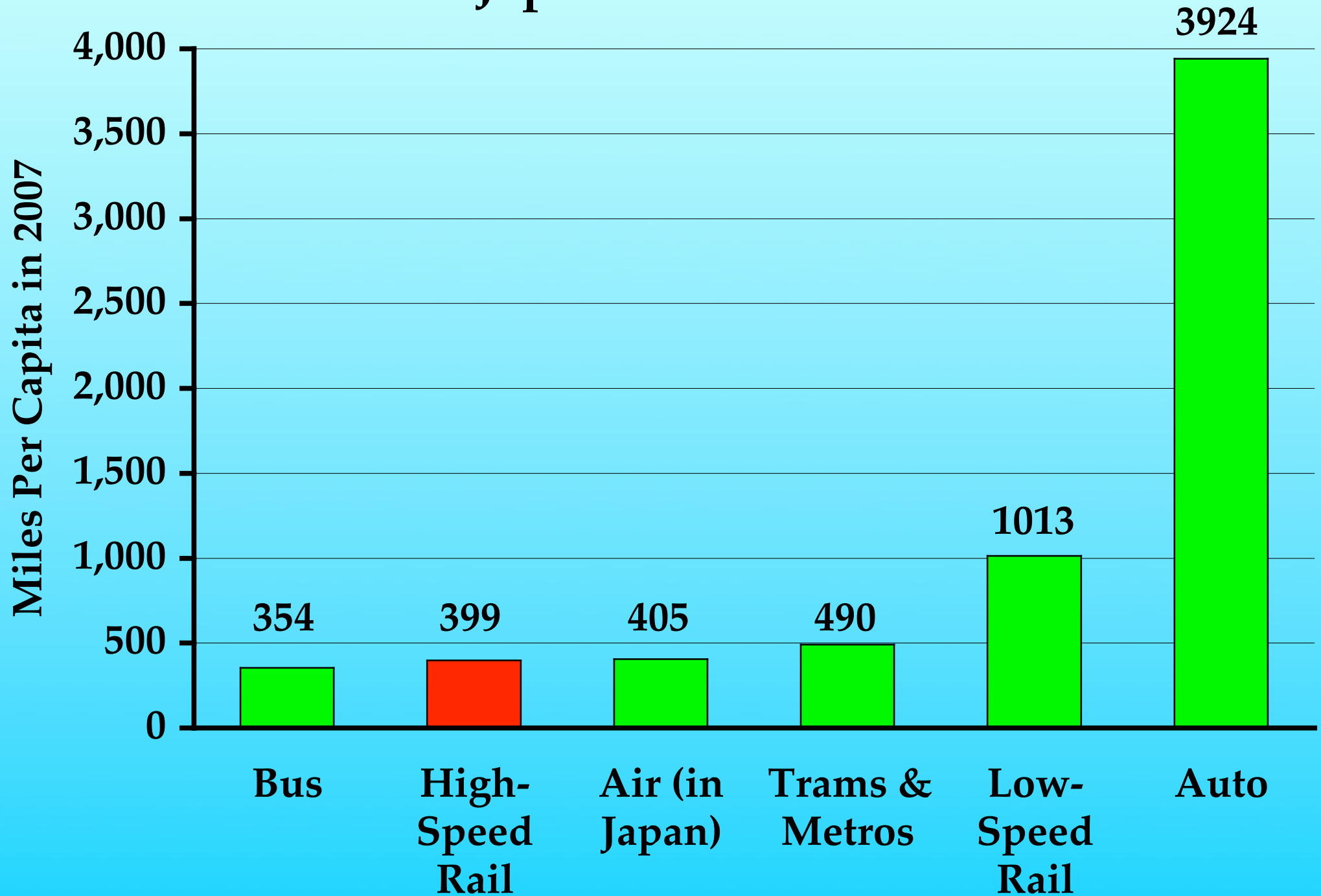




The same thing is more-or-less true about the Japanese bullet trains: the average resident of Japan travels less than 400 miles per year on those trains.



# Japanese Travel



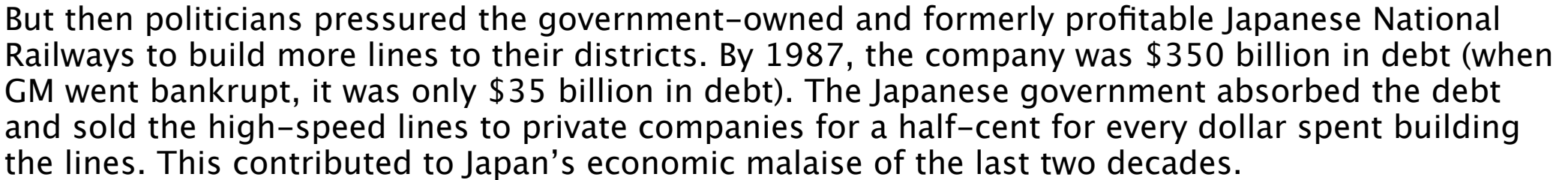
*Sources: Ministry of Transport, Japanese Railways*

The average Japanese travels by air more than high-speed rail, by low-speed rail nearly three times as much, and by car 10 times as much.



High-speed rail nearly bankrupted Japan. The first line made money, because it connects three huge urban areas: Tokyo, Osaka, and Nagoya.









For the most part, the FRA plan does not call for true high-speed rail. Instead, it mostly consists of upgrading existing freight lines so that Amtrak can boost its speeds from current 79 mph to 110 mph. These might be called moderate-speed trains.



Type/Location	Top Speed	Average Speed
Very Hi-Speed (California)	220	135-145
High-Speed (Florida)	125	80-85
Moderate-Speed (31 States)	110	55-75

Only in California and Florida does the FRA plan allow higher-speed trains, which for safety reasons require brand new construction.

# Costs

- **Moderate-speed in Midwest: \$2.4 million/mile in 2004**
- **Moderate-speed NYC-Buffalo: \$3.9 million/mile in 2005**
- **High-speed in Florida: \$25 million/mile in 2005**
- **Very high-speed in California: \$67 million/mile in 2008**

Various states have made cost estimates for both new construction and for upgrading existing lines to allow 110-mph trains.

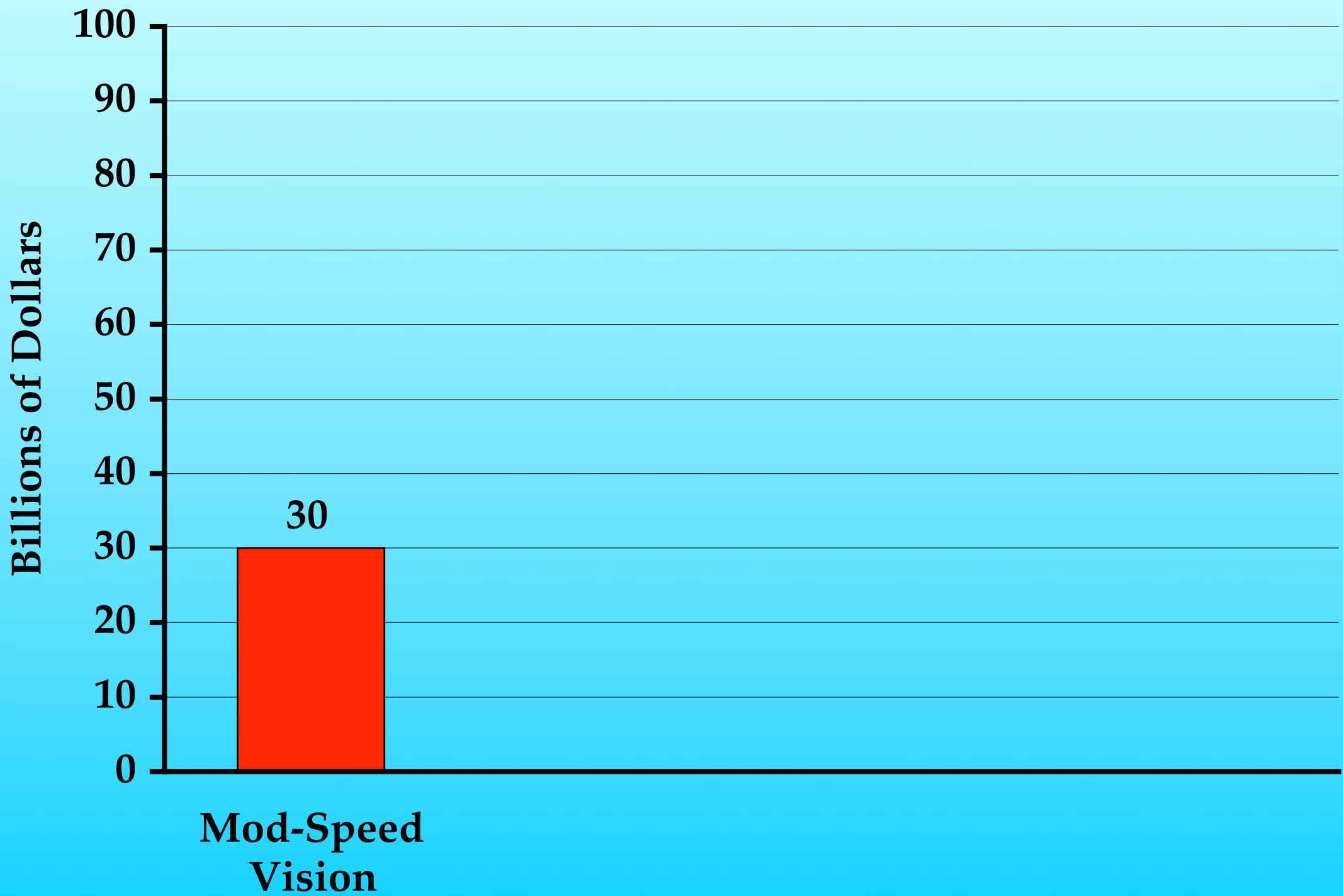


# **Inflation-Adjusted Costs**

- **Moderate-speed rail: \$3.5 million/mile**
- **High-speed in Florida: \$31 million/mile**
- **Very high-speed in California: \$67 million/mile**

After adjusting those estimates for increases in construction costs, it is likely that moderate-speed rail will cost about \$3.5 million per mile while true high-speed rail will cost \$30 to \$100 million per mile depending on the technology and terrain.

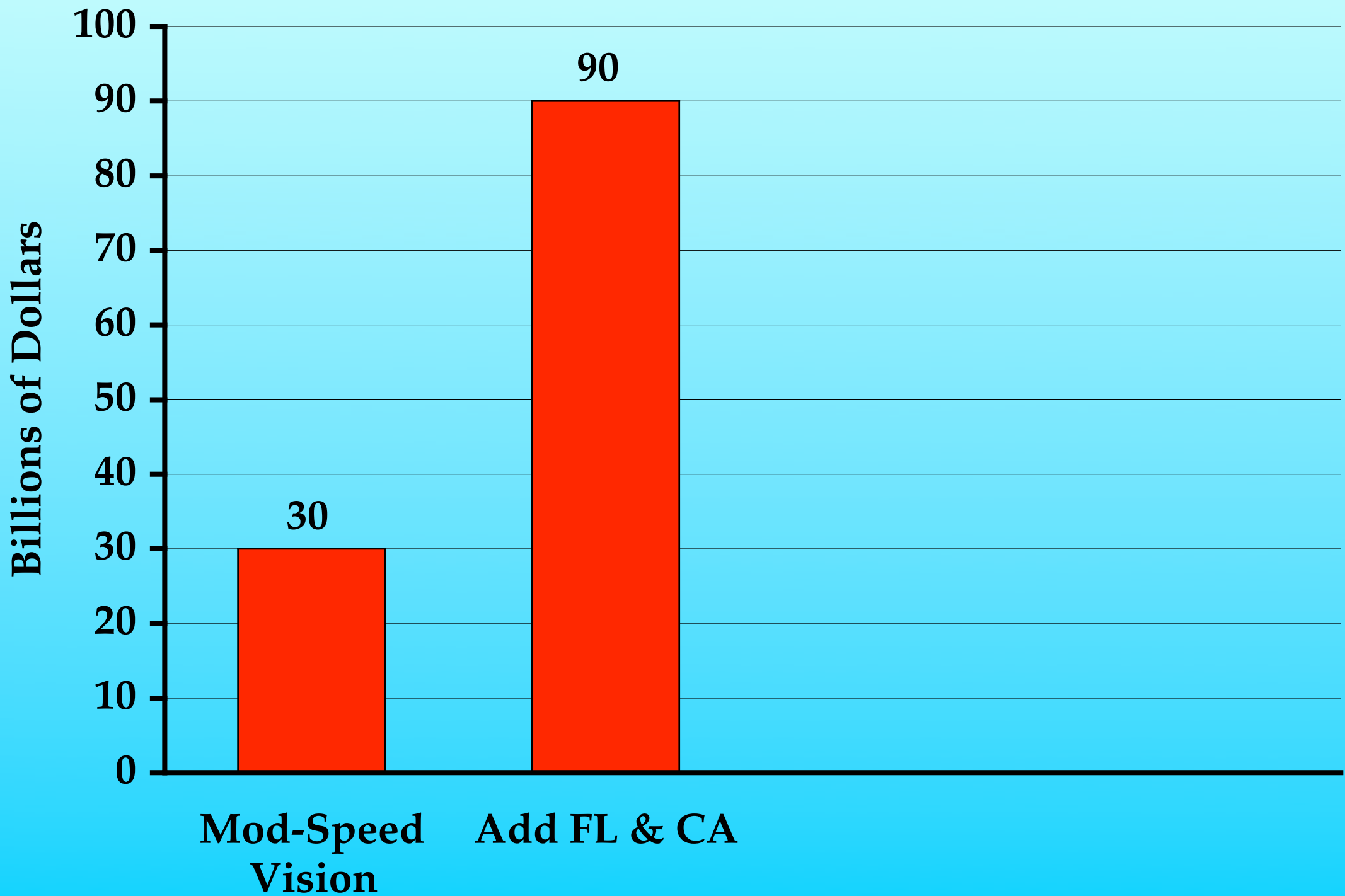
# HSR “Vision” Construction Costs



If all the corridors in the FRA plan were built to moderate-speed standards, the cost would be about \$30 billion.

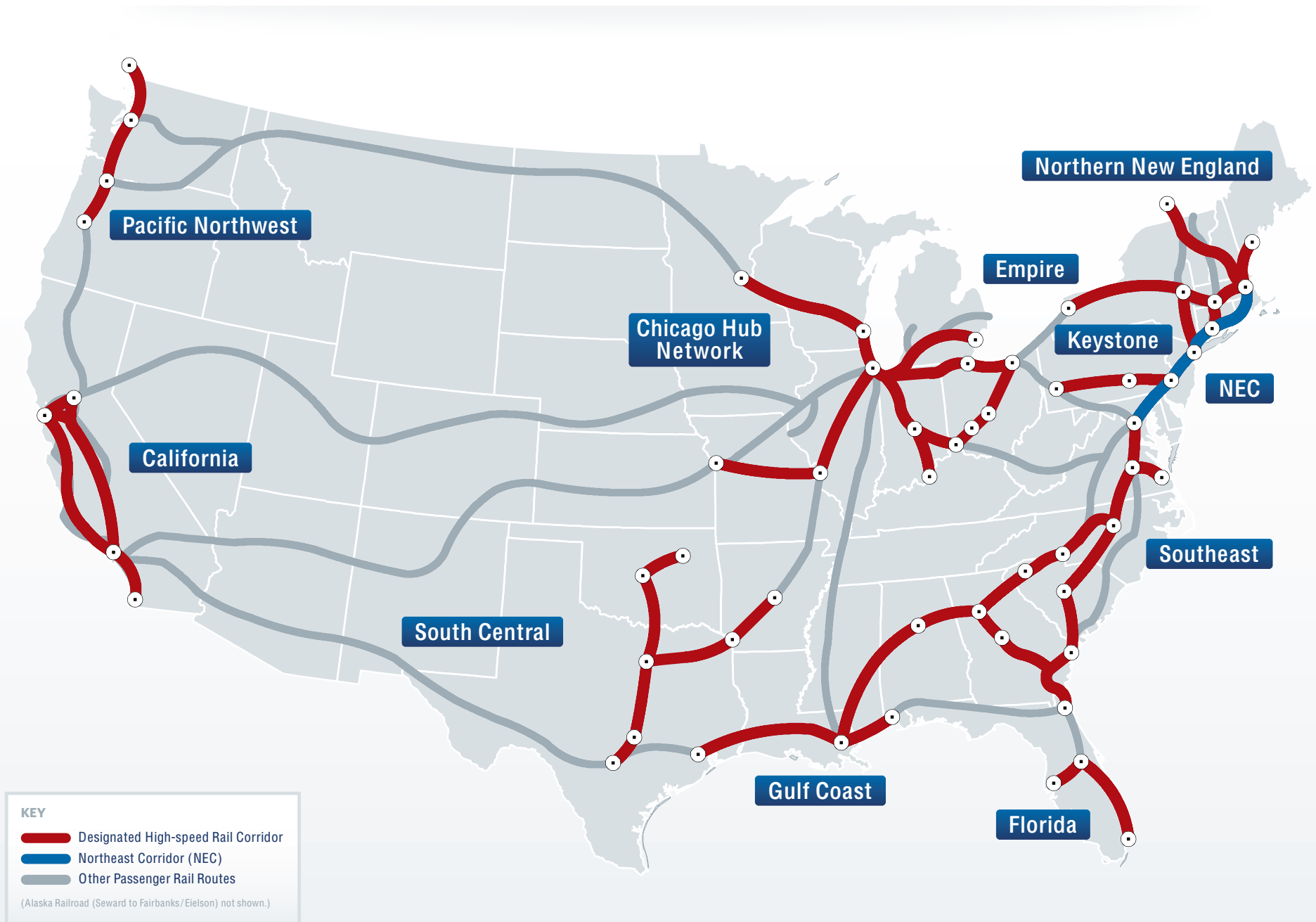


# HSR "Vision" Construction Costs



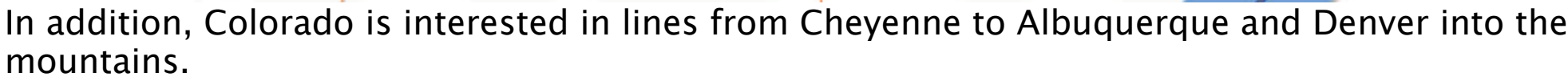
But California wants true high-speed rail, which will cost at least \$50 billion. If Florida builds high-speed rail, that will add another \$11 billion to the total.

# VISION *for* HIGH-SPEED RAIL *in* AMERICA

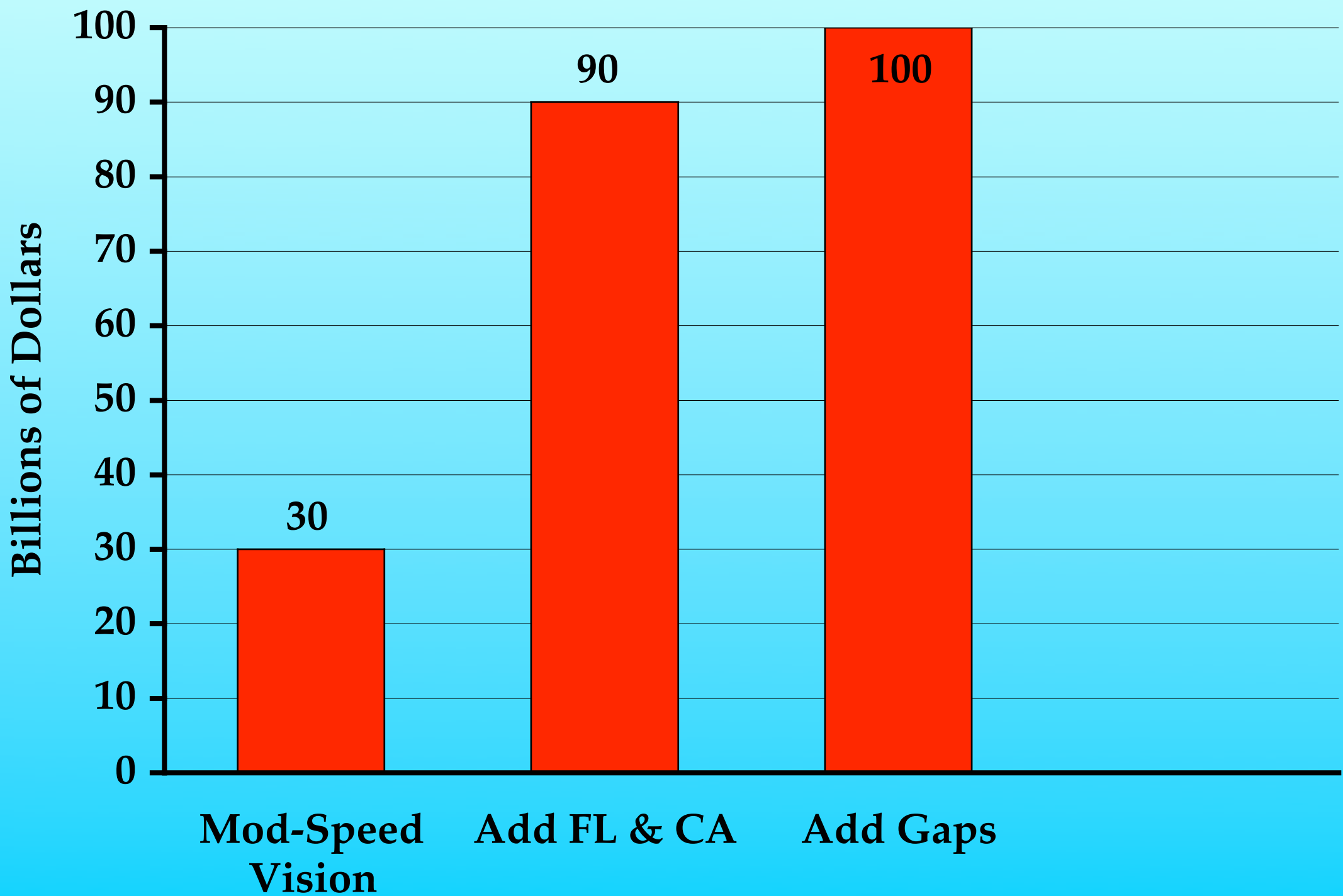


The FRA plan contains some significant gaps, such as Dallas–Houston and Jacksonville–Orlando.





# HSR “Vision” Construction Costs



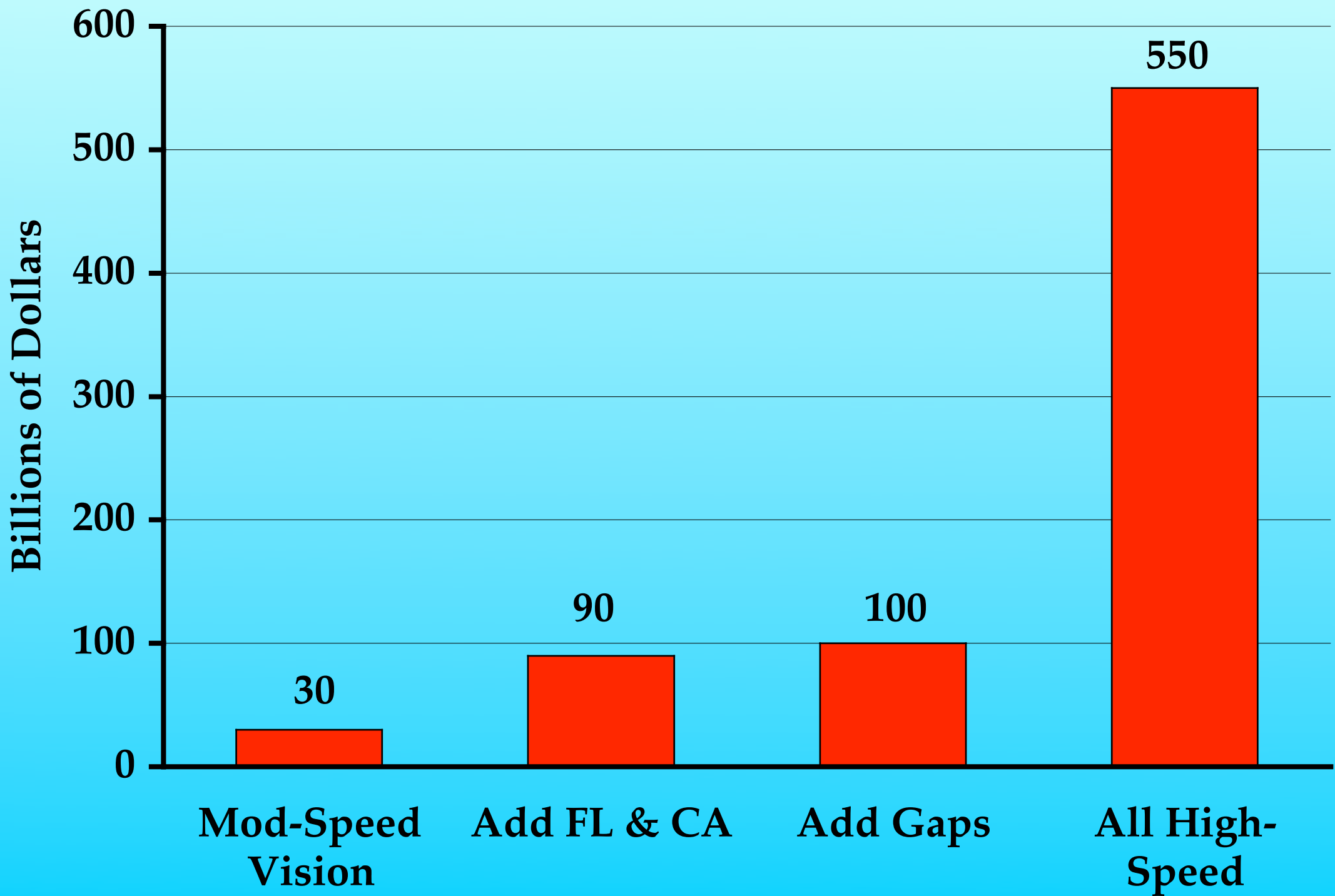
Filling these gaps with moderate-speed rail would bring the total cost to an even \$100 billion.





More than half of this cost is for the California high-speed routes, and the state of California fully expects the federal government to cover half of its rail costs. This is likely to lead other states to ask why California gets most of the money when it has less than 10 percent of the route miles.

# HSR “Vision” Construction Costs



In the long run, this could lead to political demands to build true high-speed rail everywhere, which would cost well over half a trillion dollars.



# Interstate Highway System



By comparison, the inflation-adjusted cost of the Interstate Highway System, which reaches every state, 330 major metropolitan areas, and thousands of smaller cities and towns, was about \$425 billion. We can compare the cost-effectiveness of high-speed rail with the interstates.

## High Speed Rail and Greenhouse Gas Emissions in the U.S.

January 2006

PREPARED JOINTLY BY

Center for Clean Air Policy  
Center for Neighborhood Technology



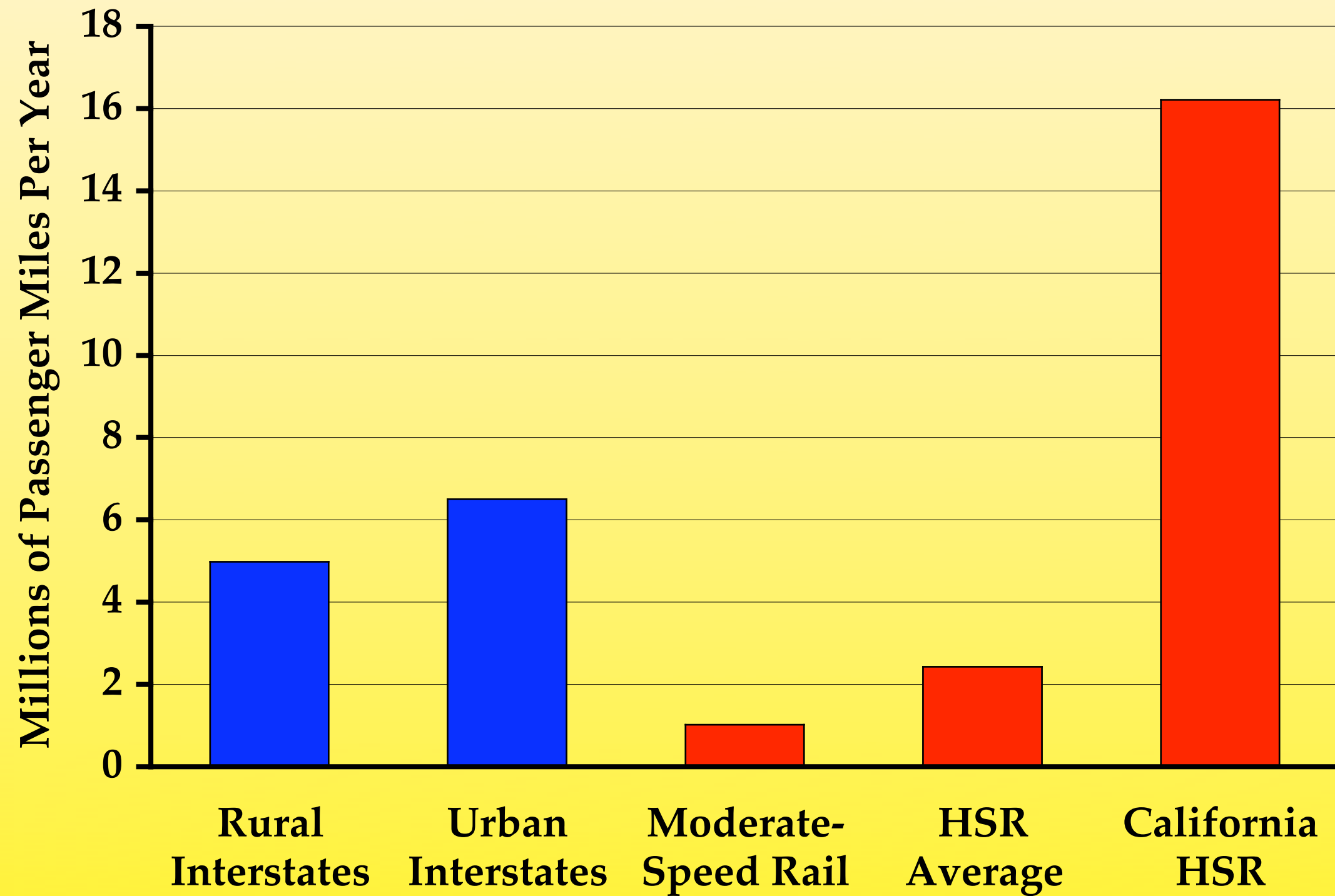
A paper by the Center for Clean Air Policy and Center for Neighborhood Technology put together all of the projections for high-speed rail ridership.





Some of these projections are extremely optimistic. For example, California projects that its routes will carry more than three times as many passengers each year as Amtrak's Boston-to-Washington corridor, which has a greater population today than the California corridor will have in 2025.

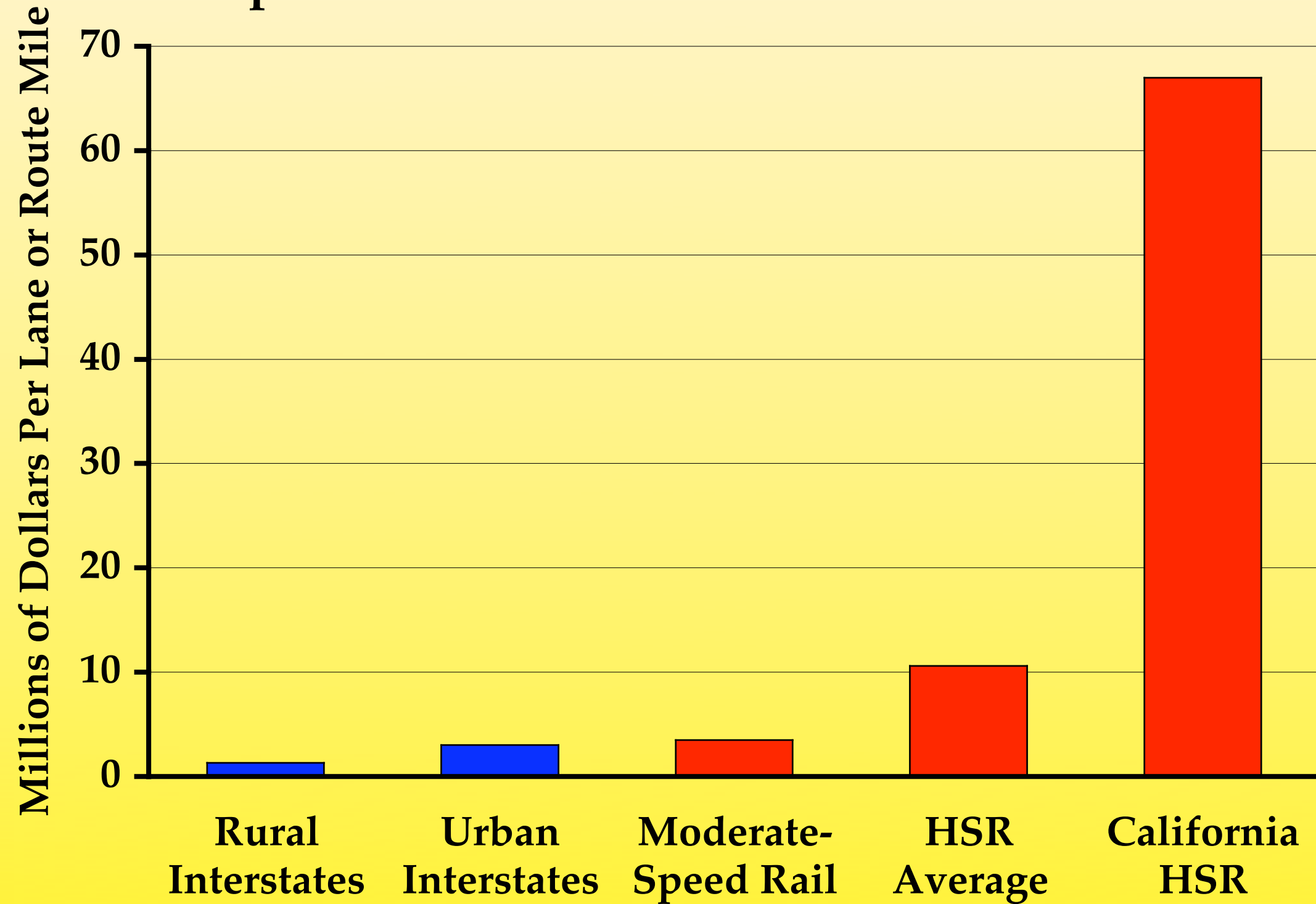
# Passenger Miles Per Lane or Rail Route Mile



Using these projections, we can compare high-speed rail ridership per route mile with the interstate travel per lane mile.

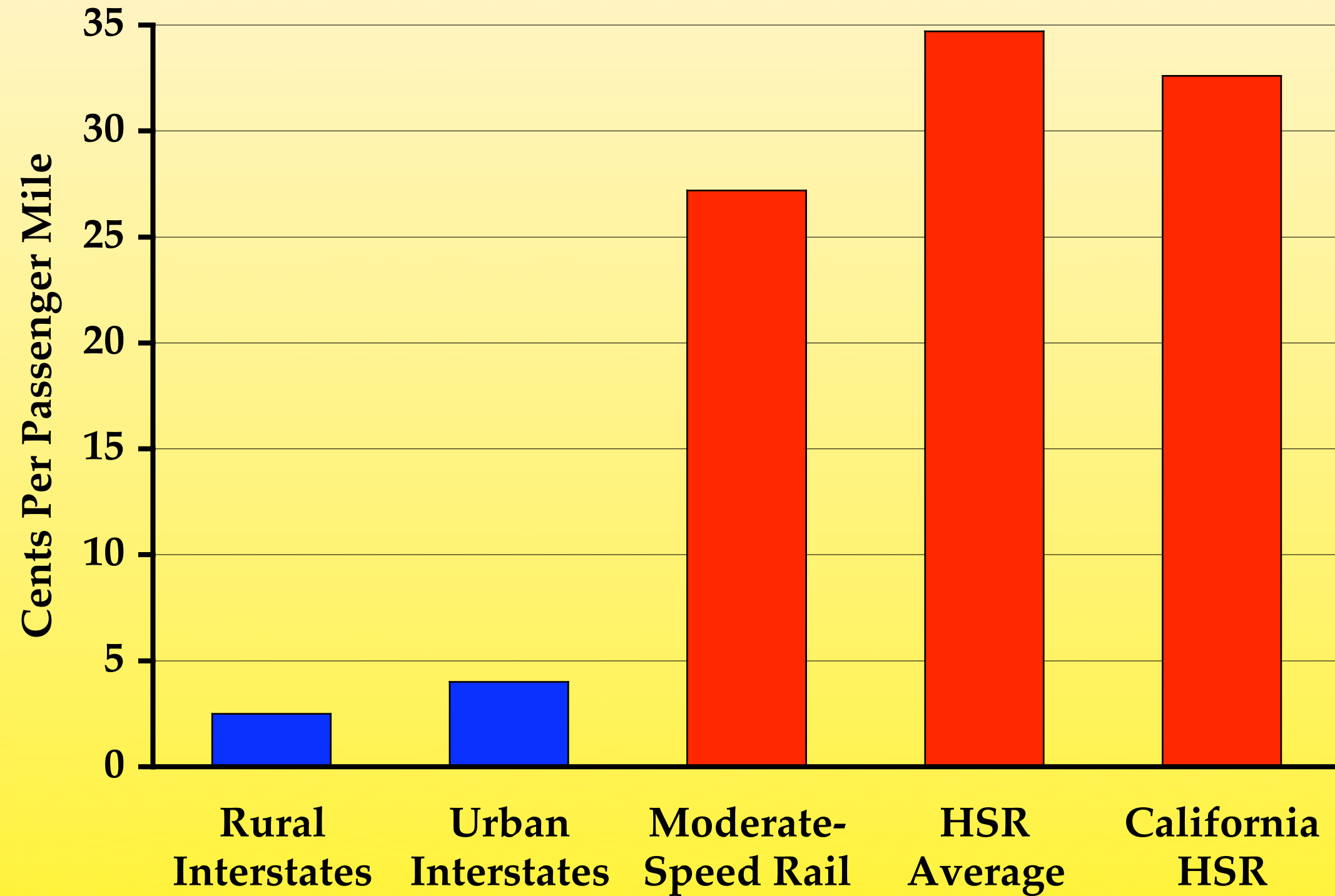


# Capital Cost Per Lane or Rail Route Mile



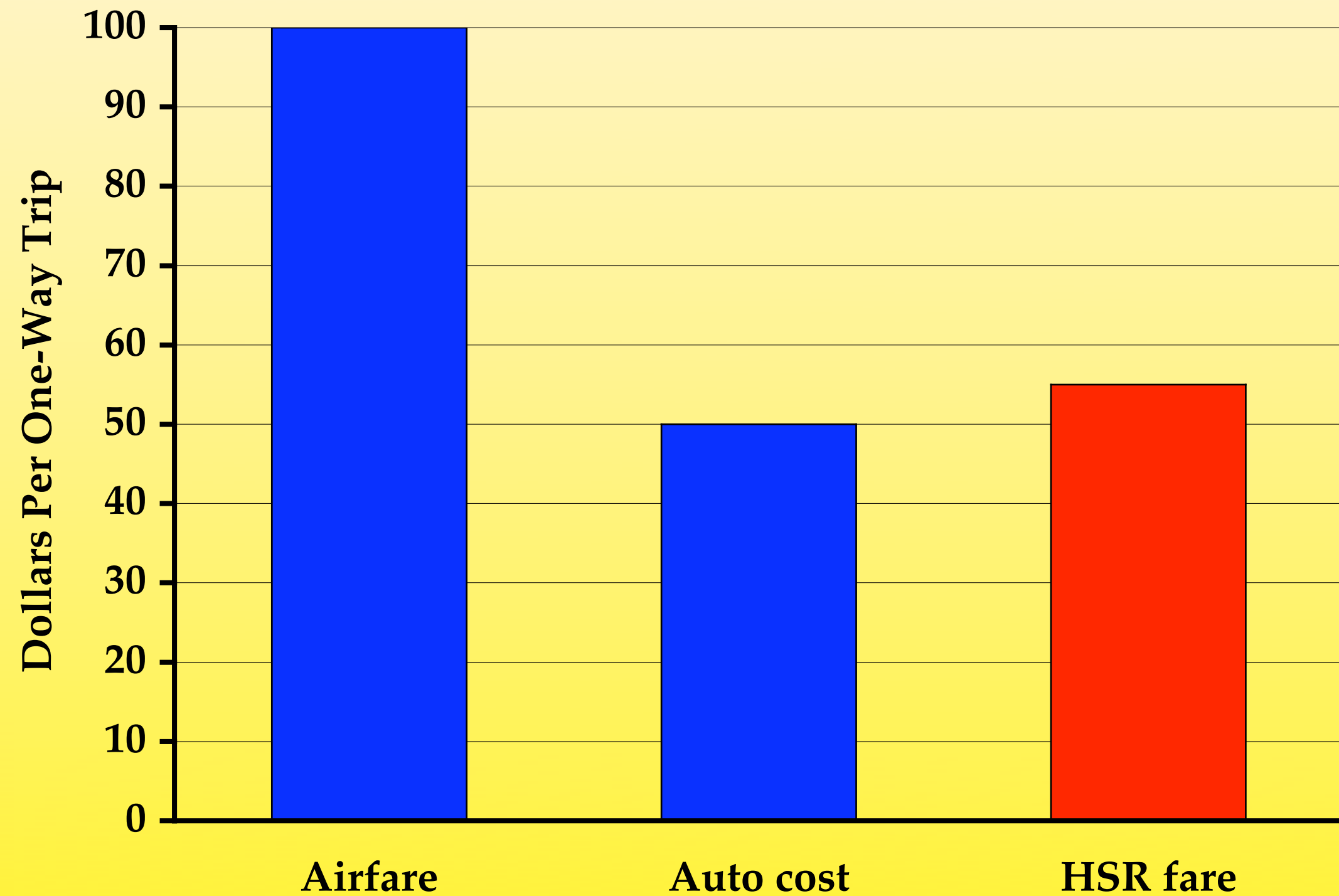
We can also compare the cost per lane-mile or rail route mile.

# Amortized Capital Cost Per Passenger Mile



Amortizing the capital costs over 30 years at 7 percent reveals that the rural interstates that will compete with high-speed rail are well over ten times as cost effective as any of the high-speed rail lines.

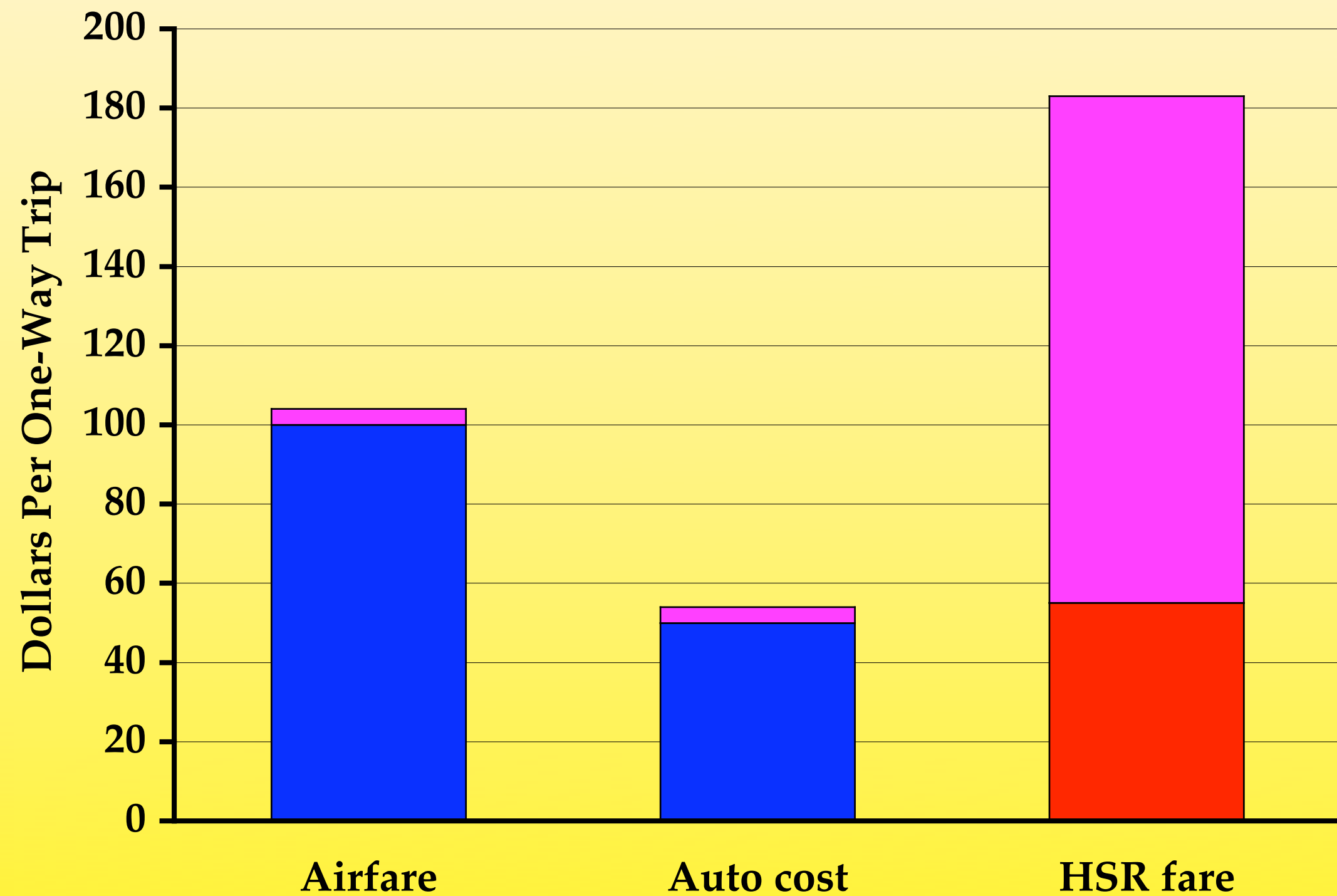
# Sacramento-to-Los Angeles Fares/Costs



Last Sunday's New York Times Magazine had an article claiming that high-speed rail fares from Sacramento to Los Angeles would be \$55, which compares favorably with air fares. This is, in fact, Amtrak's current fare and does not include the premiums usually charged for high-speed rail service.

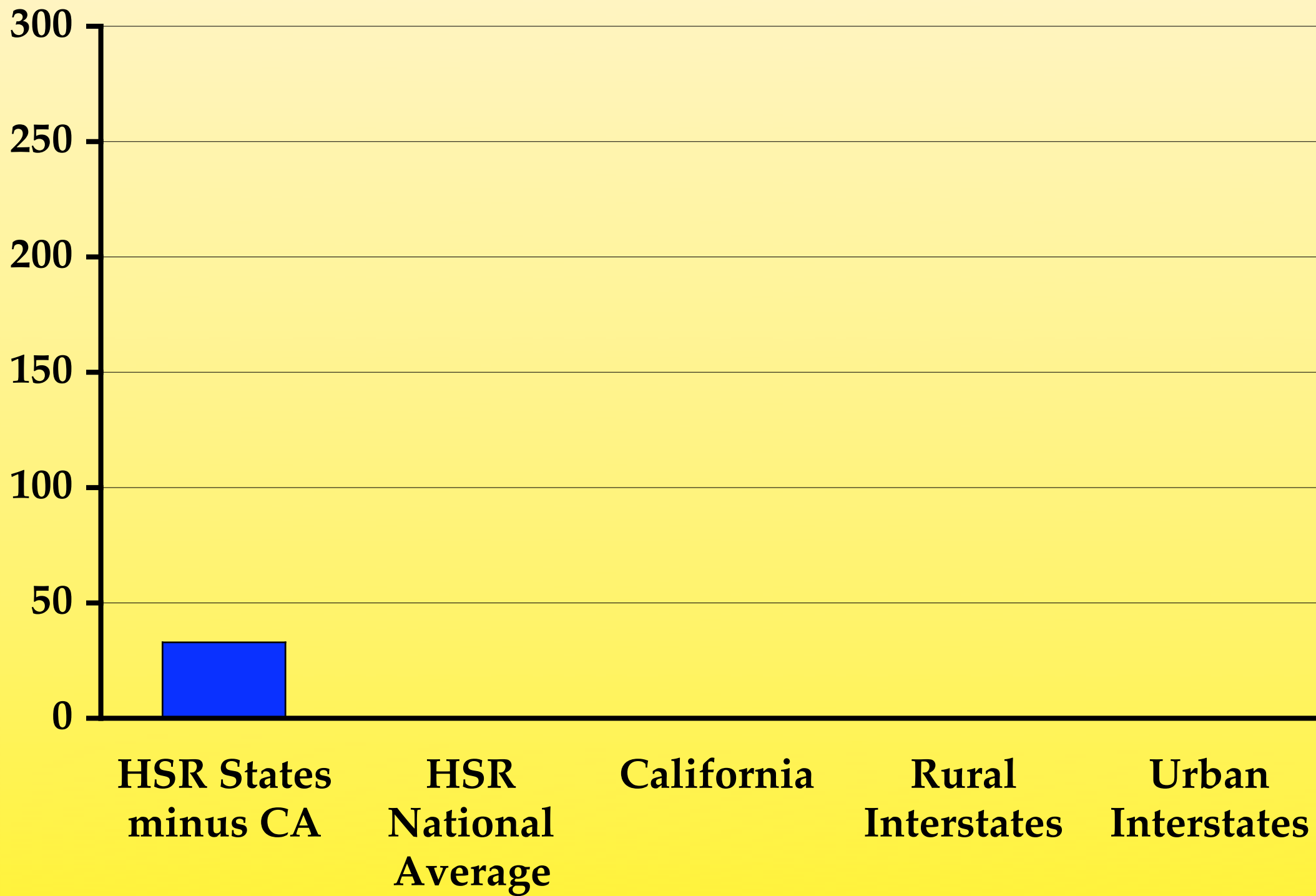


# Sacramento-to-L.A. Fares/Costs & Subsidies



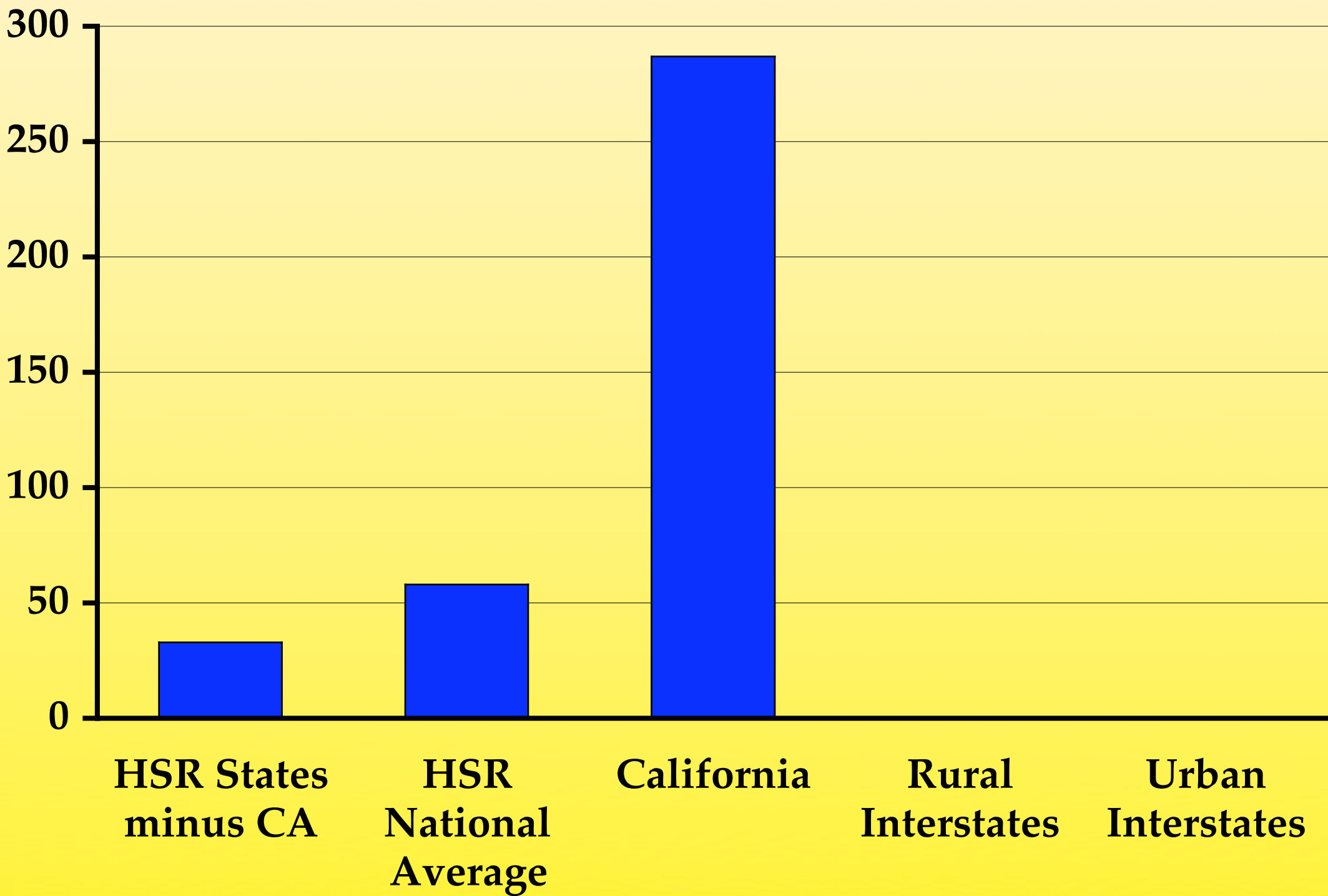
But it is easy to have a low fare when most or all of your capital costs have been subsidized by taxpayers. Subsidies to airlines and highways average a penny per passenger mile, but at 32 cents per passenger mile the capital subsidies to California's high-speed rail project result in far higher total costs.

# Annual Passenger Miles Per Capita



Another way of looking at the numbers is per-capita travel. Residents of states with high-speed rail other than California are projected to take high-speed trains just 33 miles per year. Figuring a round trip is 600 miles, that's about one round trip every 18 years.

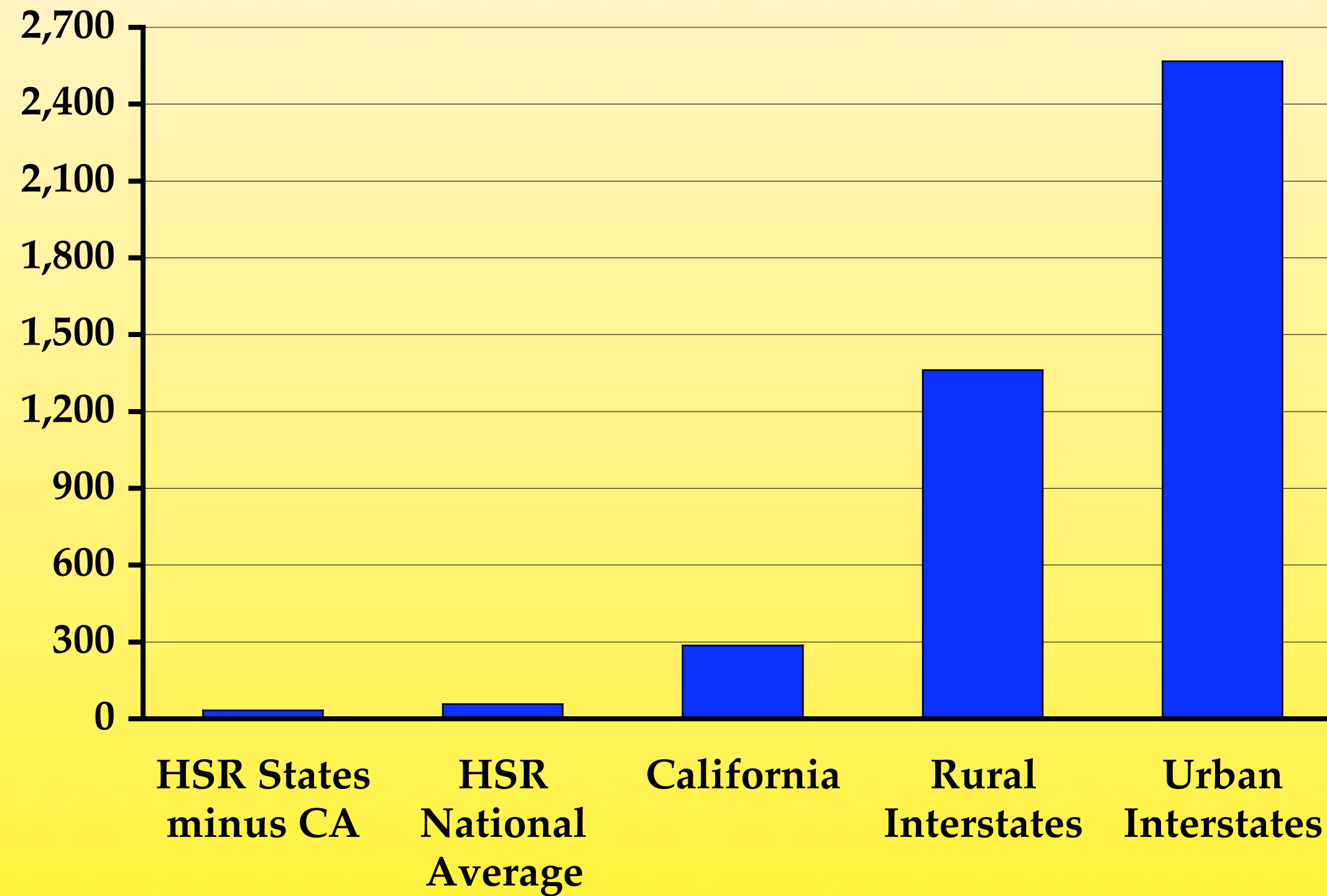
# Annual Passenger Miles Per Capita



California optimistically projects that its lines will carry people nearly 300 miles per year. That's about one round trip every two years. The national average would be 58 miles per year.



# Annual Passenger Miles Per Capita



Yet even 300 miles is insignificant compared with the interstates, over which the average American travels 4,000 miles per year.

# DC to NYC

Mode	Time	Fare
Acela	2:50	\$99
Regional	3:15	49
Bus	4:15	20
Air	1:00	119

Who will ride the trains? We can get one answer from current fares from DC to New York City: high-speed rail is five times as much as buses with leather seats and free WiFi. Anyone who values their time enough to pay \$79 to save less than 90 minutes would pay the extra \$20 to save another 110 minutes.



*Fewer than  
8% of  
Americans  
work in  
downtowns*

*Fewer than  
1% of  
Americans  
live in  
downtowns*



Rail advocates point out that high-speed rail's downtown-to-downtown times compare favorably with the plane. But this limits ridership to a narrow, fairly wealthy elite.



## High Speed Rail and Greenhouse Gas Emissions in the U.S.

January 2006

PREPARED JOINTLY BY

Center for Clean Air Policy  
Center for Neighborhood Technology



When President Obama announced his rail vision, he said trains would provide clean, energy-efficient transportation. The FRA specifically cited this report. . .

**“We calculated a total emissions savings of 6 billion pounds of CO<sub>2</sub> per year if all proposed high speed rail systems studied for this project are built.”**

. . . which claims high-speed trains would save 6 billion pounds of CO<sub>2</sub> per year.

# Assumptions

- “Relatively low fuel prices and a continuing trend of drivers switching to sport utility vehicles” = average 23 mpg
- 1.6 passengers per auto
- Airline efficiencies grow 0.6 percent per year
- Trains 70 percent full

However, this report was based on some very questionable assumptions.

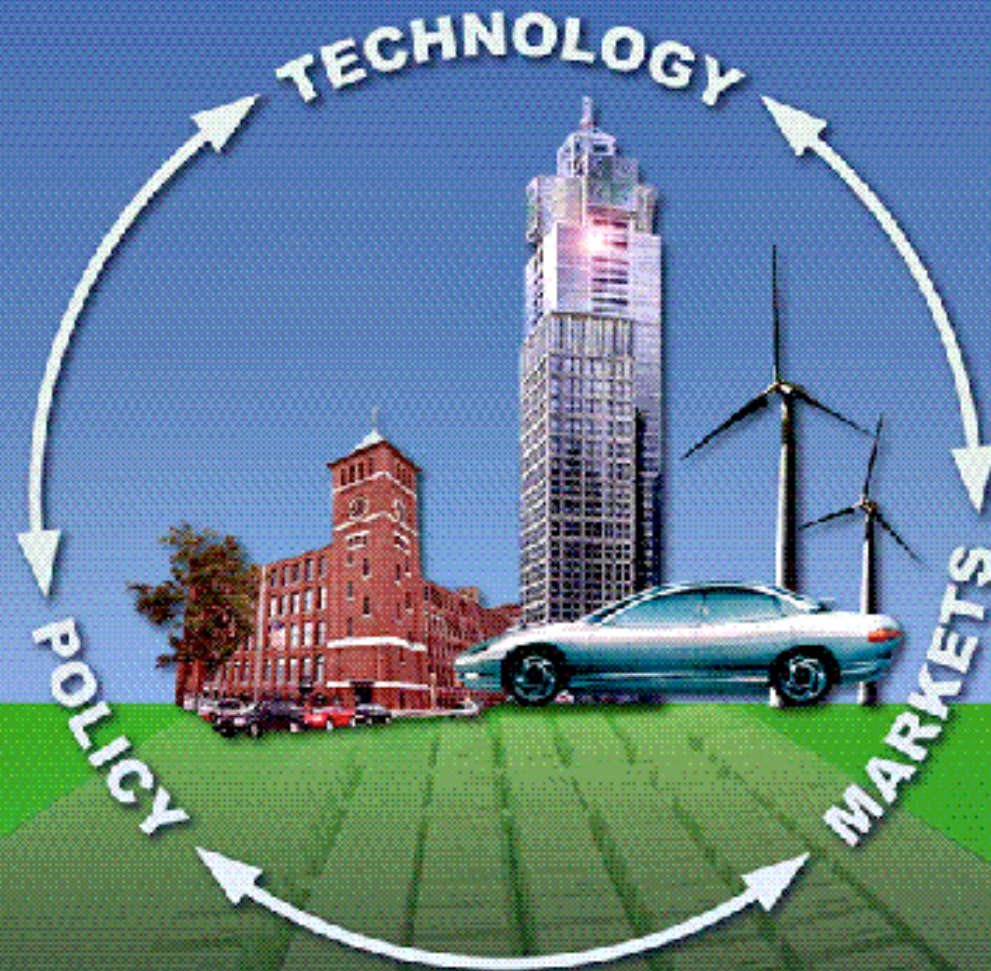


# Alternative Assumptions

- Obama's fuel-economy standards will increase average mpg to 29 by 2025
- 2.4 passengers per auto in intercity traffic
- Airline efficiencies have grown by 3 percent per year
- Amtrak trains only 51% full

An alternate set of assumptions completely changes the results.

# Scenarios for a Clean Energy Future



Interlaboratory Working Group on  
Energy-Efficient and Clean Energy Technologies

November 2000

For example, the assumption that cars carry an average of 1.6 people is a national average, but this Department of Energy report points out that auto occupancies are higher in intercity travel.

**“Intercity auto trips tend to be relatively efficient highway trips with higher-than-average vehicle occupancy rates—on average, they are as energy-efficient as rail intercity trips.”**

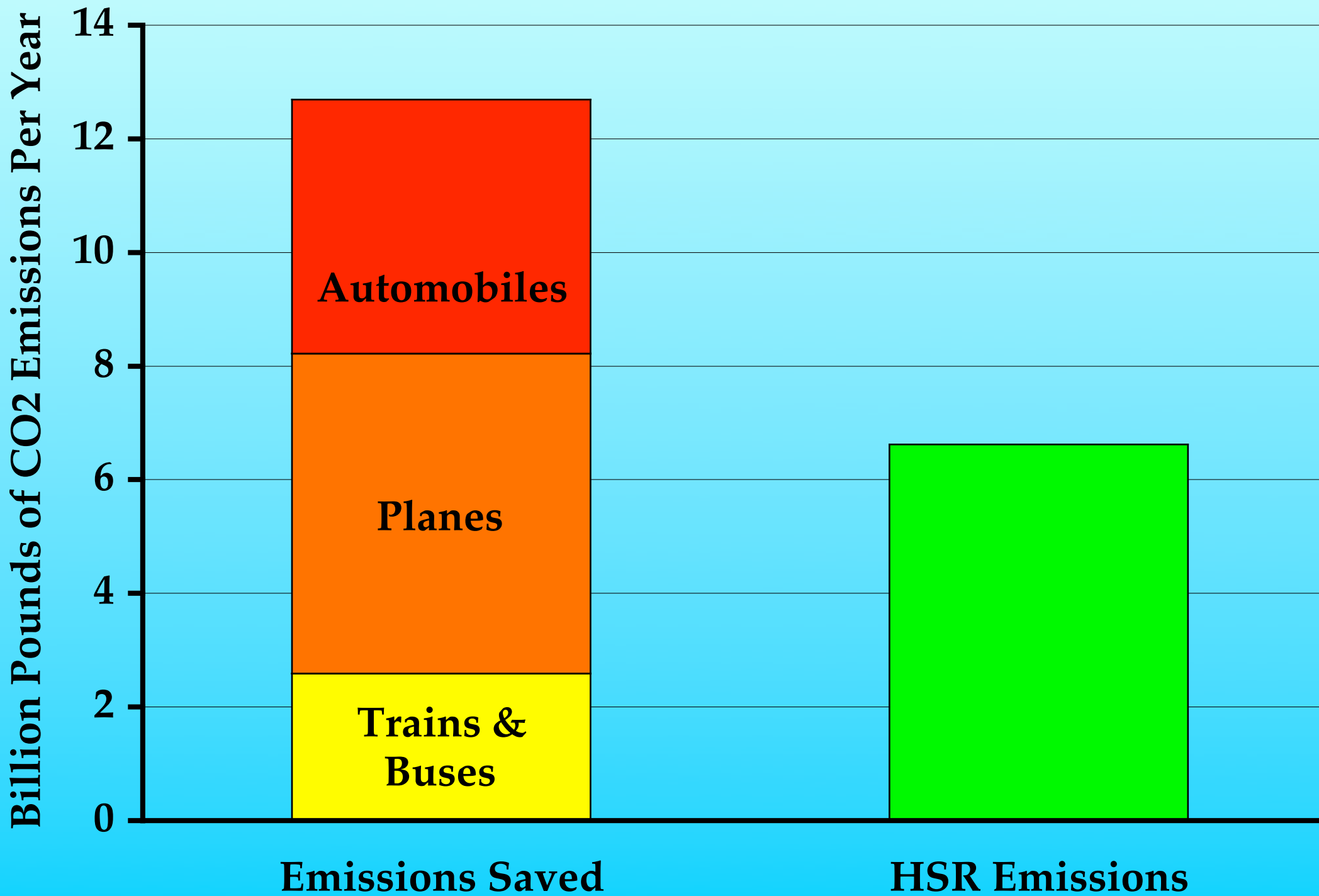
The report concluded that cars are already as energy efficient as trains for intercity travel.



**“Additionally, if passenger rail competes for modal share by moving to high speed service, its energy efficiency should be reduced somewhat—making overall energy savings even more problematic.”**

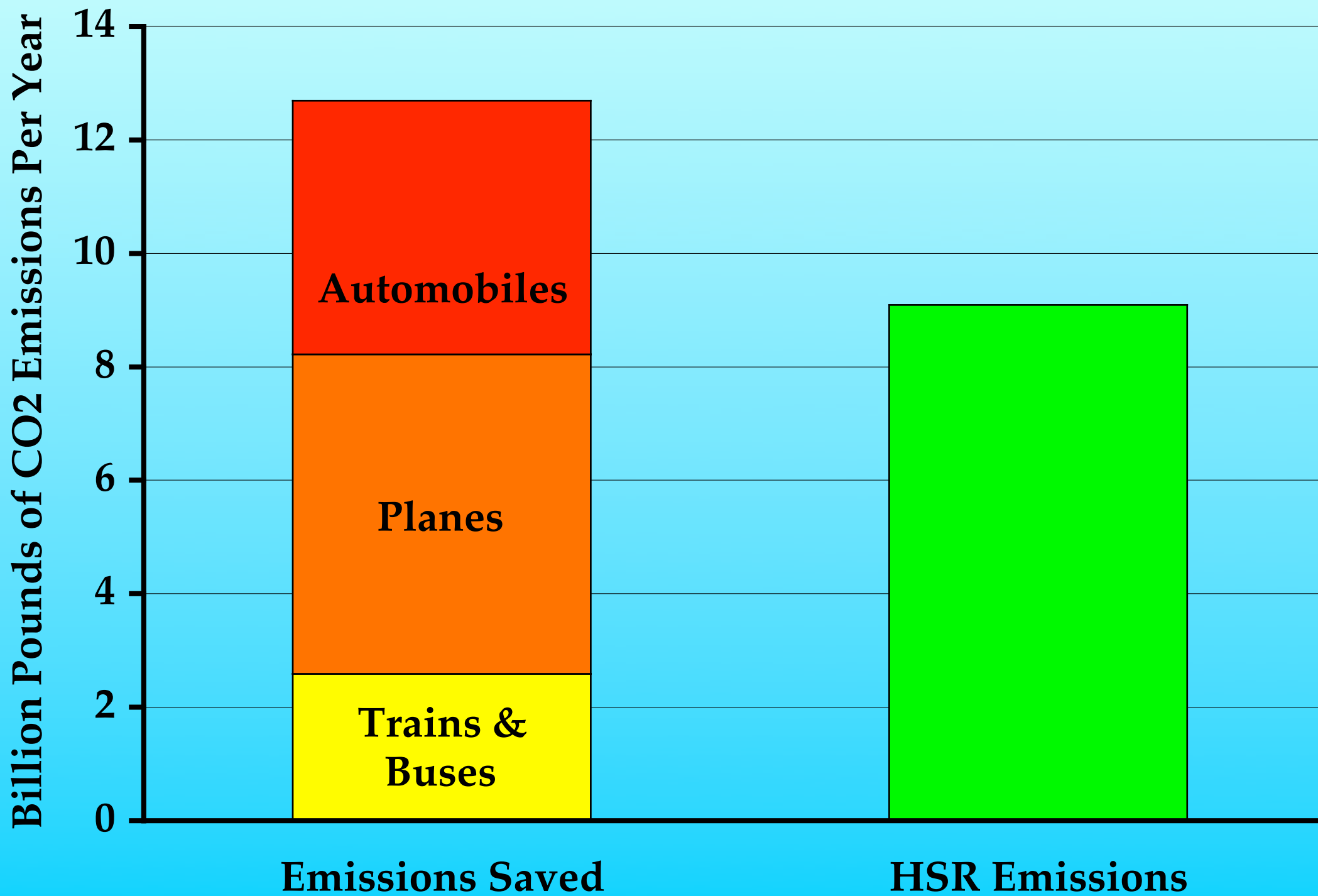
Moreover, boosting the speed of trains will make them less, not more, energy efficient.

# Emissions Using Report Assumptions



Here are the national numbers calculated in the Center for Clean Air Policy report. It estimated that attracting people out of cars, plans, buses, and conventional trains onto high-speed rail would save 2.7 million metric tons of greenhouse gases.

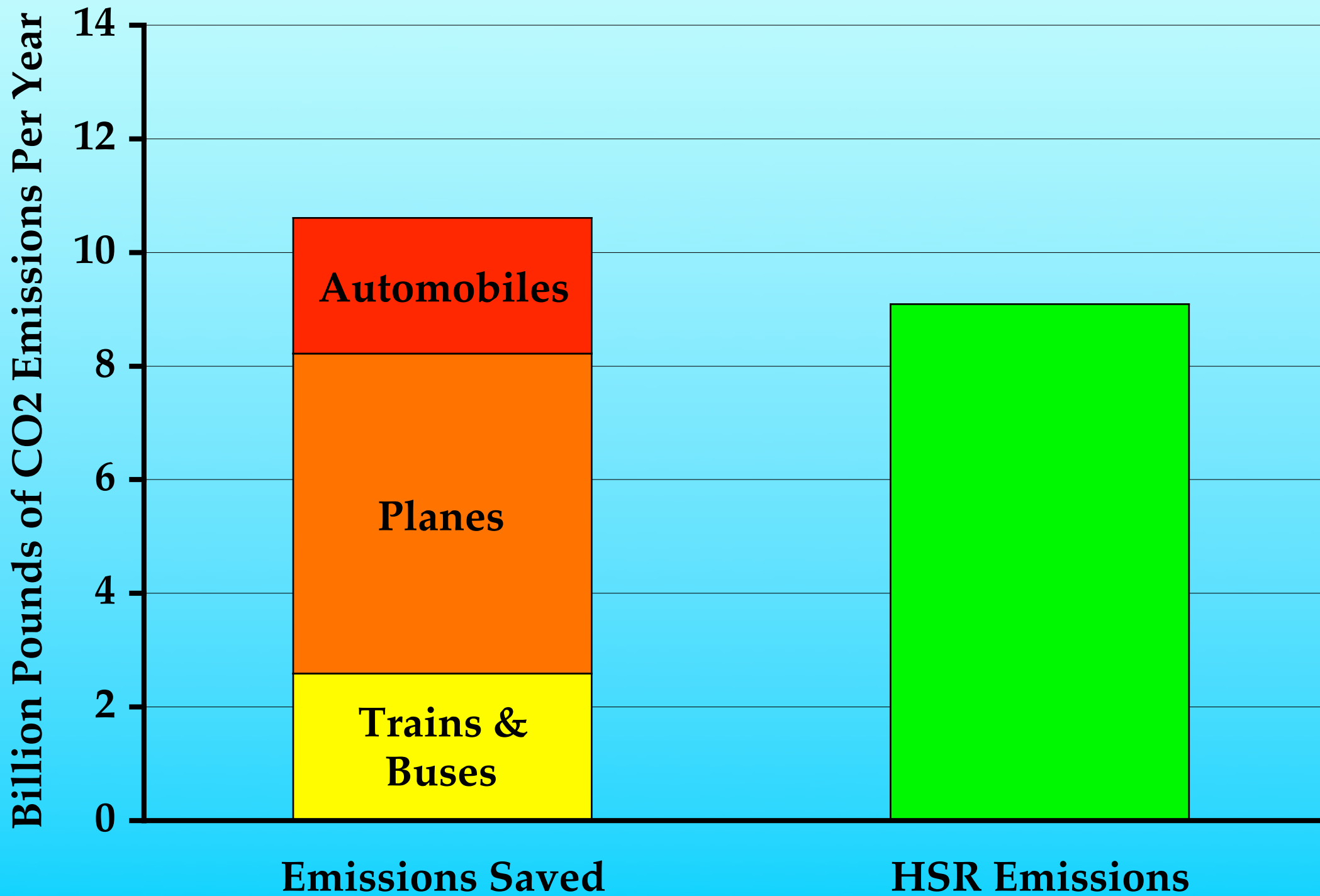
# Emissions If Trains 51 Percent Full



The savings are somewhat smaller if we assume that the trains will only be 51 percent full instead of 70 percent.

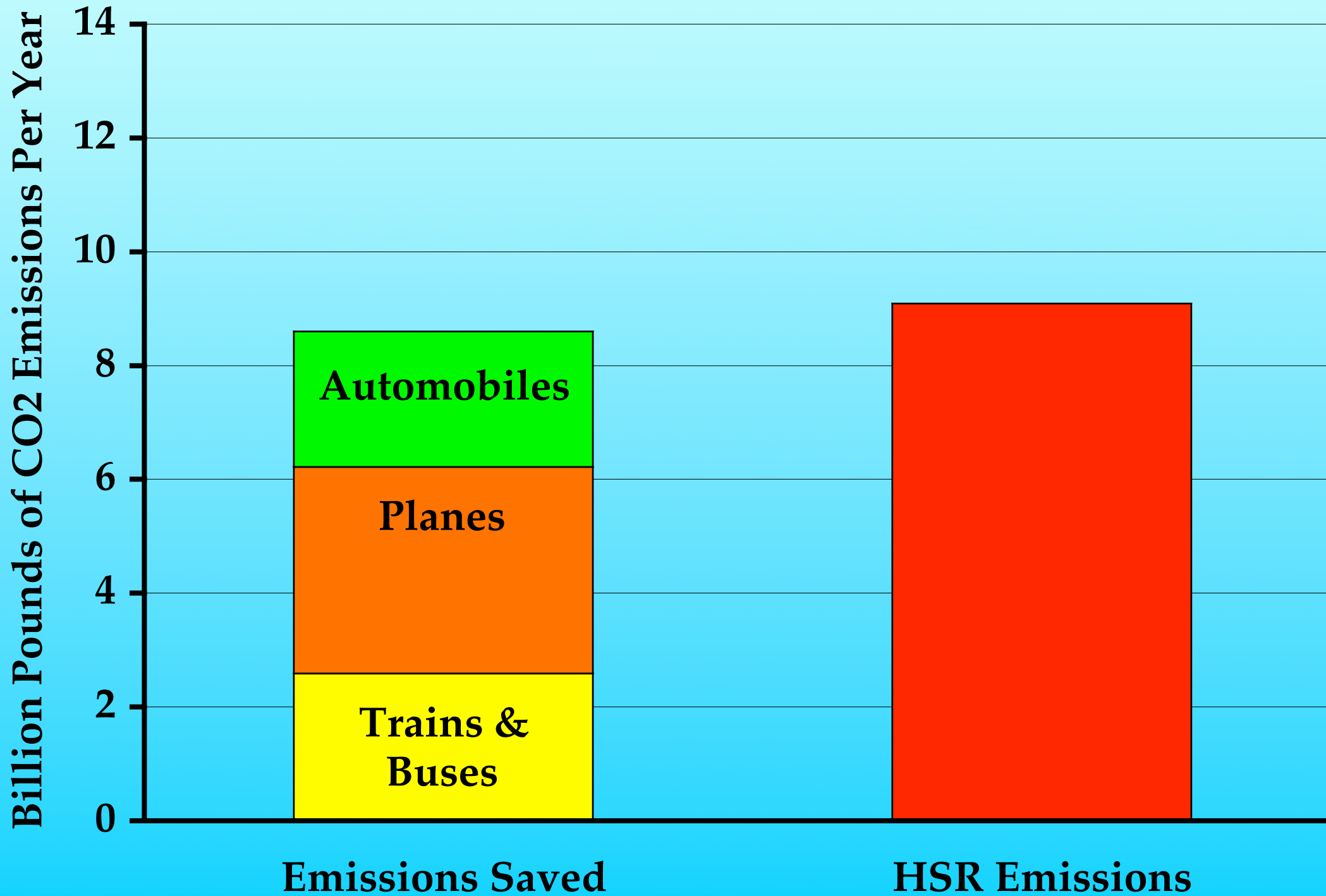


# Emissions If 29 MPG & 2.4 People/Car



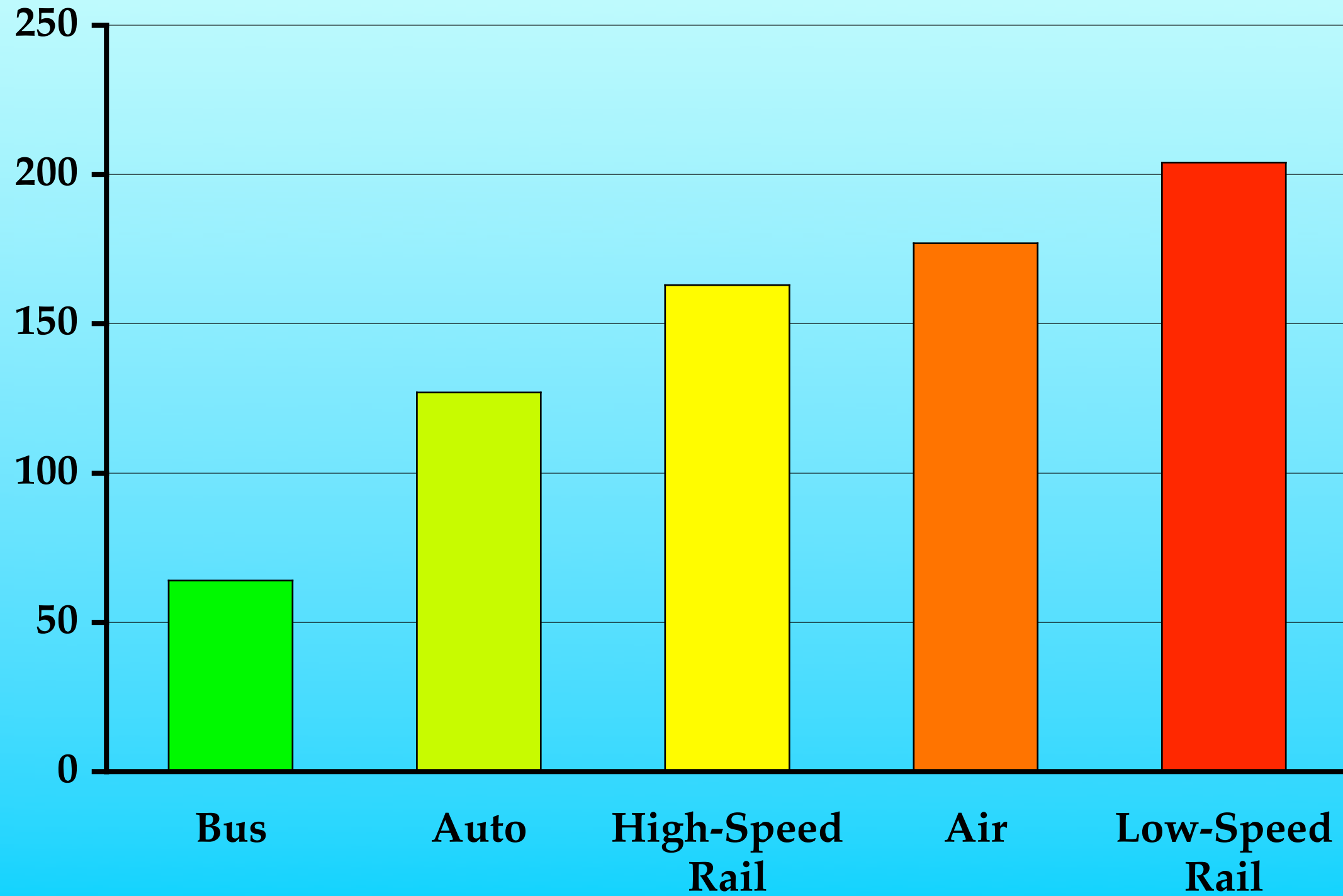
The savings shrink even more when we assume 2.4 people per car and that Obama's fuel-economy standards are met.

# If Airline Efficiency Grows at 3%/Year



Finally, if we assume that the airline efficiencies continue to grow at 3% per year, high-speed rail is more harmful to the environment than other modes.

# Grams of CO2 Emissions Per Passenger Mile



In fact, those who want to save energy should emphasize buses and autos, not rail.



**FLORIDA HIGH SPEED RAIL  
TAMPA TO ORLANDO**

**Federal Railroad Administration  
United States Department of Transportation**

**Florida High Speed Rail Authority**


In Cooperation with:

**Federal Highway Administration  
United States Army Corps of Engineers**

**Hillsborough, Orange, Osceola, Polk Counties, Florida**

7/19/2005  
Date

MAY 17 2005  
Date

  
\_\_\_\_\_  
Administrator  
Federal Railroad Administration  
U. S. Department of Transportation

  
\_\_\_\_\_  
Chairman  
Florida High Speed Rail Authority

**May 2005**

So it should not be surprising that the final environmental impact statement for the Florida high-speed rail proposal concluded that. . .

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TAMPA TO ORLANDO

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**"The environmentally  
preferred alternative is  
the No Build  
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[Signature]  
Administrator  
Federal Railroad Administration  
U. S. Department of Transportation

[Signature]  
Chairman  
Florida High Speed Rail Authority

May 2005

... the environmentally preferred alternative is the No Build Alternative.



So, as much as I would personally like to take the train everywhere, I cannot recommend that the United States invest in expensive megaprojects that will mainly be used by a wealthy elite and that won't save energy or reduce pollution. *Photo by Brian Nicodemus; used by permission.*



# Why Colorado Should Not Build High-Speed Rail



by Randal O'Toole  
Issue Paper X-2009  
June, 2009

My detailed analysis of the FRA vision has been published by state think tanks in Colorado, Florida, Georgia, Indiana, Iowa, Louisiana, North Carolina, New Mexico, North Carolina, Ohio, Oregon, and Washington.

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