California-Nevada Super Speed Train

The Fast Track to the Future of Transportation

Traffic Problems: It's Time for a Solution

Efficient transportation systems are one of the critical underpinnings of this nation's economic engine. While over the last half of the 20th century we have made major investments in highways, airports, conventional rail systems and urban transit systems, it is evident that in many areas of the country, traffic congestion is becoming more than an inconvenience – it is creating an obstacle to progress.

The traffic congestion that plagues the nation is perhaps nowhere better demonstrated than along the east-west corridor from Anaheim, California to Las Vegas, Nevada.

Along this 269-mile corridor, there exists some of the heaviest urban traffic in the nation. This causes traffic tie-ups for millions of frustrated travelers who are attempting to drive to five major airports and three major tourist destinations.

This growing problem presents a world-class opportunity to have a U.S. demonstration of a viable technology which can greatly ease traffic growth and give travelers and commuters a choice they've never had before: a comfortable, affordable super speed train. The technology that makes this transportation possible is called magnetic levitation, or "Maglev."

Maglev Interior

Convenience and Safety at 300 Miles Per Hour

For nearly half a century, engineers have dreamed of levitating trains on magnetic fields to eliminate friction, increase speeds, make a smoother ride and to save energy. Until relatively recently, capital costs and engineering issues held this dream at bay.

However, magnetic levitation technology – originated in the United States and refined in Germany – is now a proven reality.

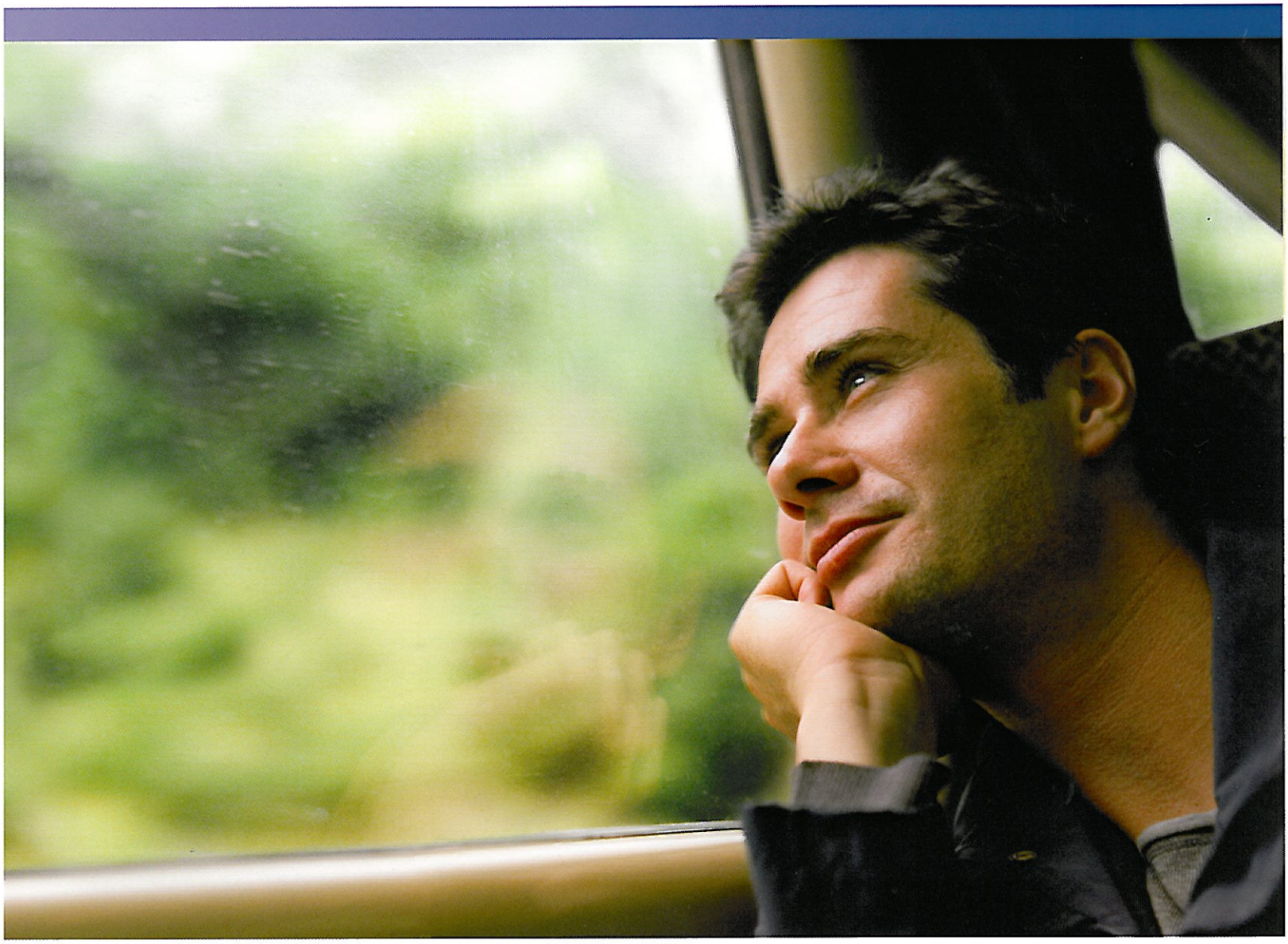
While America awaits development and operation of a high-speed transportation system, the technology already is in use in other parts of the world – and is yielding successful results. Maglev trains are now operating in China and Germany and more Maglev trains are being planned around the world.

Maglev in Shanghai ran at 92% occupancy in its first quarter of operation (Jan-March 2003).

The original Maglev in Emsland, Germany has been a visitor attraction for more than a decade.

These trains can sustain speeds in excess of 300 miles per hour and handle large numbers of passengers in comfort with a degree of safety and convenience unrivaled by any other mode of transportation.

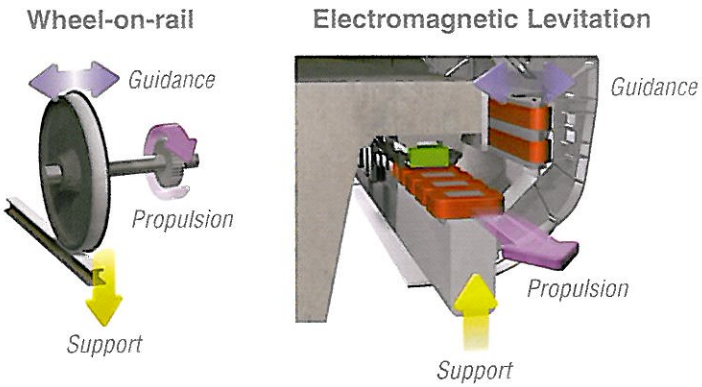
E FAST TRACK TO CLEAN, EASY & SAFE TRANSPORTATION.



What is Magnetic Levitation?

Instead of wheels and rails, Maglev trains hover above the tracks – or guideways – levitated and propelled by magnetic force. There is no physical contact between the train and the guideway, which eliminates friction and enables high speeds. The base of the train wraps around the guideway and cannot derail.

Maglev trains reach unprecedented ground transportation speeds of more than 300 mph (or twice as fast as Amtrak's fastest commuter train). In comparison, a Boeing 777 commercial airplane used for long-range flights can reach a top speed of about 490 mph.

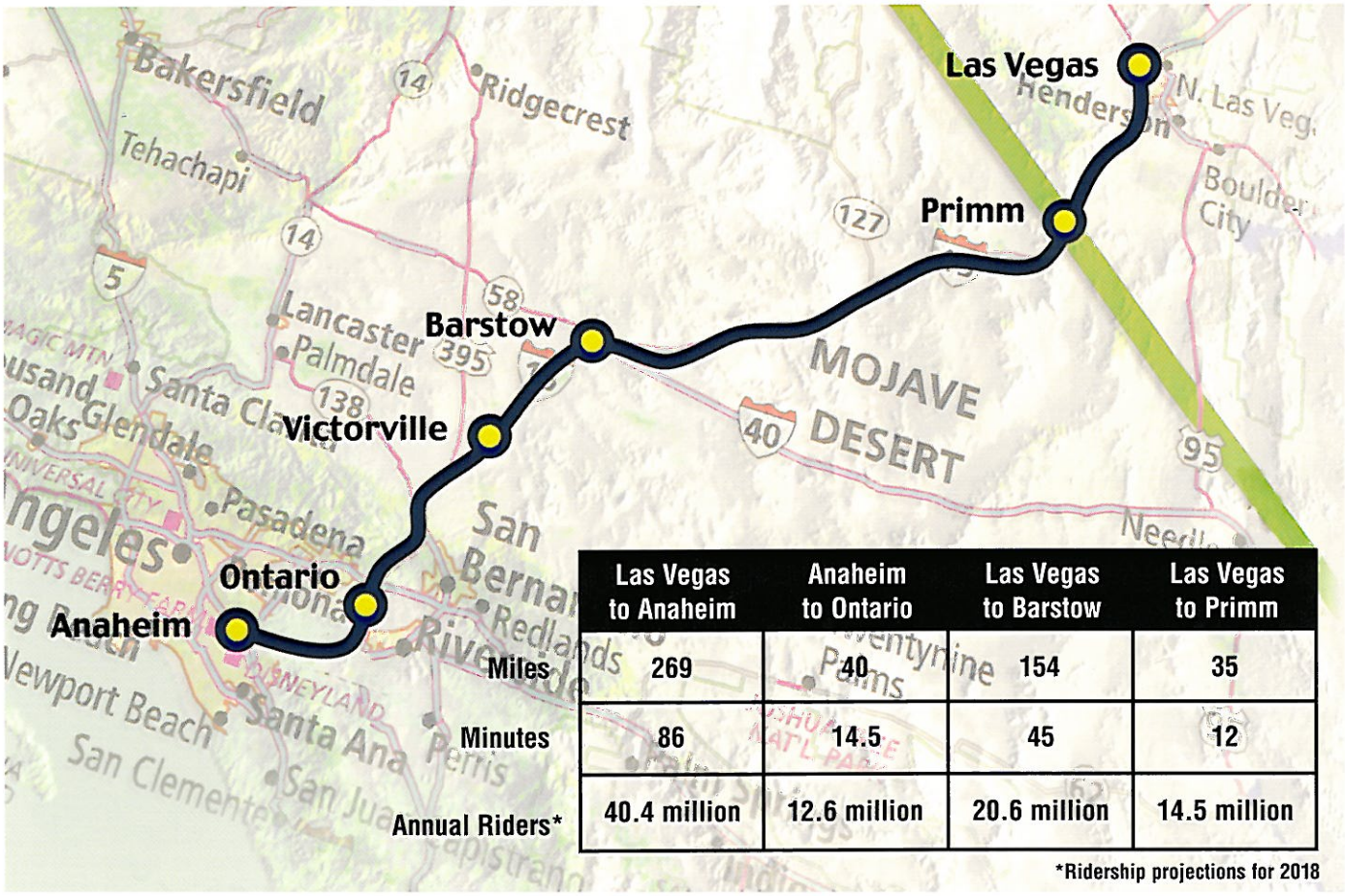


A Model for Getting the Nation On-track

Maglev – a state-of-the-art mode of transportation – has the potential to revolutionize travel between Las Vegas and Southern California and presents the most viable option to date for improving and enhancing transportation along the I-15 corridor.

The California-Nevada Maglev project offers significant advantages over all other Maglev projects currently under consideration for federal funding:

- Maximum availability and use of the I-15 right-of-way
- Minimum average cost-per-mile
- Ease and predictability of construction
- Maximum environmental benefit
- Strong ridership, revenue and economic benefits
- Relief of a heavily congested I-15 highway
- True high-speed intercity demonstration of Maglev technology

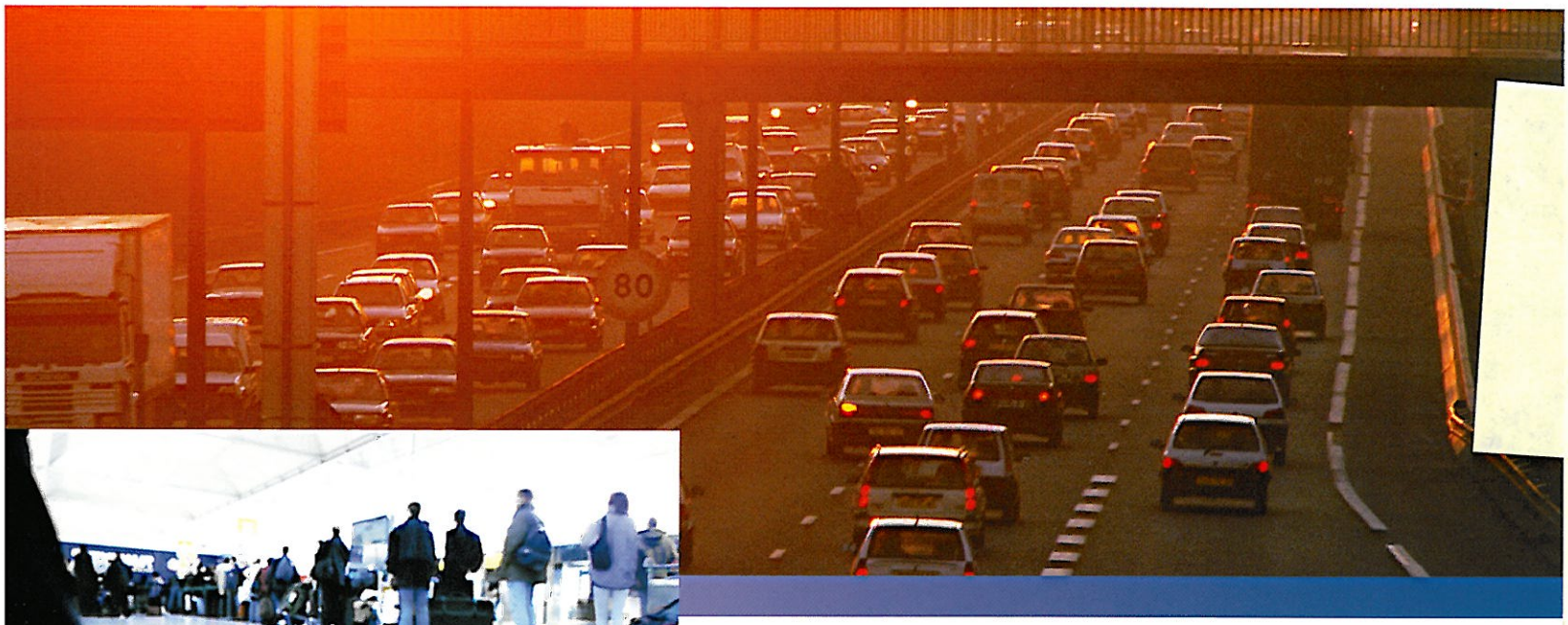


	Las Vegas to Anaheim	Anaheim to Ontario	Las Vegas to Barstow	Las Vegas to Primm
Miles	269	40	154	35
Minutes	86	14.5	45	12
Annual Riders*	40.4 million	12.6 million	20.6 million	14.5 million

*Ridership projections for 2018

Facts:

- *The population of California's Inland Empire is expected to double to 6.4 million in the next 25 years*
- *The population in the Las Vegas region is expected to increase to 2.2 million by 2025, an increase of 68% from the year 2000*
- *When completed, the California-Nevada Maglev project will link three major airports, three major tourist destinations and the largest, fastest-growing cities and counties in the United States*
- *Maglev is scheduled to begin construction in early 2006, with the first segment ready for service in 2009 … a faster timeline than any other project can deliver*



Our Airports Could Use Some Relief

Maglev is a key component of meeting Southern California's regional plan and demonstrates a futuristic intermodal transportation solution known as "airports without runways."

"Airports without runways" receive passengers, baggage or cargo in areas with high aviation demands and link them via alternative modes of transportation, such as high-speed trains, to locations with lower demands.

This would benefit Southern California by relieving pressure on the region's overcrowded airports, reducing freeway congestion and enhancing air quality, while air passengers would benefit from a truly seamless, intermodal transportation system.

Why Not Just Build More Roads?

Maglev also has many distinct advantages over freeways. It can deliver inter-city passengers in as little as 20% of the time it takes for freeway drivers. In addition, Maglev's guideway support piers require minimal land consumption; as a result, it consumes only about 16% of the land required for a freeway system.

Maglev and freeway systems of similar capacity connecting urban regions have similar capital costs in rural and undeveloped urban areas. However, Maglev is substantially less costly in dense urban regions due to the high cost of freeway right-of-way in these areas.

And since the trains are propelled by electrical energy, Maglev is an environmentally friendly option for 21st century travel as it contributes to a reduction in automobile emission, noise and air pollution.

Maglev offers significant benefits in passenger travel time, land usage and reduced pollution.

Maglev Puts America to Work

"Our roadways are overcrowded, our airports are near capacity and our bridges and transit systems require more investment ... And we desperately need to invest billions of dollars in high-speed rail corridors across the nation (and) magnetic levitation. Las Vegas has the second worst 'congestion burden' in the nation. Magnetic levitation could help ease this traffic crunch."

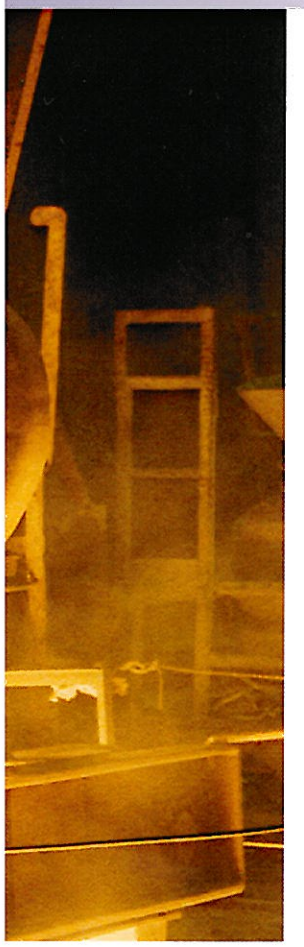
— United States Senator Harry Reid (D-Nevada),
Assistant Democratic Leader and former Chairman of the
Senate Subcommittee on Transportation, Infrastructure and Nuclear Safety

"The California-Nevada Super Speed Train Commission is taking the necessary steps to ensure the United States' first magnet driven high-speed train is built between California and Nevada. Southern California is facing severe growth and transportation problems, and smart solutions are necessary to ensure the region's future economic vitality and quality of life. The construction of the California to Nevada Maglev project will play a vital role in ushering in a new era of ultra-fast and efficient long distance mass transit."

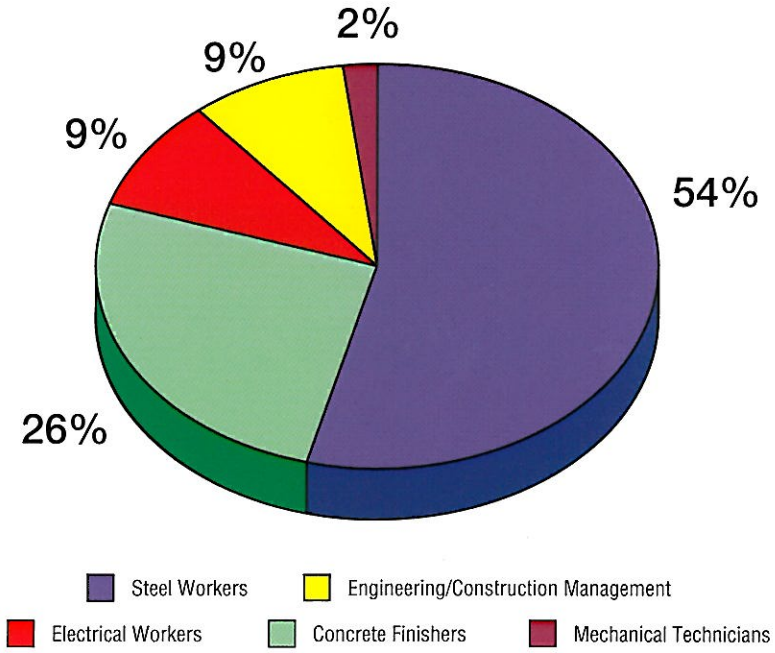
— United States Representative Gary Miller (R-California),
House Committee on Transportation and Infrastructure

"This project will play a vital role in determining conclusively the value of deploying super speed Maglev technology in the United States. The California-Nevada Maglev project can achieve up to 30% higher cruise speeds than other projects currently under consideration and can sustain those speeds over a five times greater distance. Furthermore, it can reach these speeds at a lower cost due to the characteristics of the corridor. In addition, the time to complete the planning and construction for this route is estimated to be the shortest for all projects in the country."

— United States Representative Don Young (R-Alaska),
Chairman of the House Committee on Transportation and Infrastructure



Breakdown of Construction Jobs for Maglev



Across America, investment in public transportation is paying off. For each $1 billion in federal capital funds, 47,000 jobs are created and businesses experience a $3 billion gain in sales*.

Maglev presents significant long-term opportunities for U.S. manufacturers of steel, concrete, power cables, hardware, software and electronics – providing a needed boost for these manufacturing sectors while keeping dollars spent on these products in the United States.

Maglev typifies the West's role in ushering our nation into brand new eras of prosperity. It started with the transcontinental railroad and it continues today.

*Statistic provided by U.S. Chamber of Commerce

All Aboard
the Future of Transportation

The California-Nevada Maglev project enjoys broad-based support in its region and around the country. This support reflects the confidence that leaders in both states have in Maglev and its long-range ability to provide a viable alternative means of transportation for our region.

The public-private partnership between the California-Nevada Super Speed Train Commission and American Magline Group is the entity recognized under federal law to design, build, operate and maintain this system.

Our public-private partnership has secured cooperative agreements or resolutions and statements of support from all of the cities and regional planning organizations in every jurisdiction along the route.

The Federal Railroad Administration (FRA), California Department of Transportation (Caltrans) and the Nevada Department of Transportation (NDOT) are now working together with the public-private partnership to complete a Program Environment Impact Statement (PEIS) applicable to the entire 269-mile corridor. This will enable the near term construction of "The First Forty Miles™" and, ultimately, the full corridor.

Jobs, Economic Benefits & Materials

Maglev construction will provide many American workers with employment opportunities for years to come. All along the I-15 corridor, the California-Nevada Maglev project will create nearly 97,000 total jobs. Mechanics, electricians, steel workers and concrete finishers will be involved in building the system.

Construction of the Las Vegas-Primm segment alone, known as the "first 40 miles," will create about 4,000 direct and 9,000 indirect (full time equivalent) jobs. After its completion, the Las Vegas-Primm segment will create about 100 operations and maintenance positions.

High Speed Maglev Material Summary

Item	LV-Primm	LV-Anaheim
Girder Steel		
tons	148,750	1,600,550
$ millions	446	4,802
Stator Steel		
tons	18,750	201,750
$ millions	62	666
Rebar		
tons	16,789	632,150
$ millions	15	569
Concrete		
cubic yards	173,720	6,940,200
$ millions	38	1,527
Copper Cable		
tons	6,335	72,515
$ millions	56	638
Construction Jobs (man years)		
on-site	4,000	43,040
total	9,000	96,840
Total Construction Time (yrs)	2.75	8
O&M Jobs (per year)	100	300

Maglev provides significant long-term opportunities for U.S. manufacturers of steel, concrete, power cables, hardware, software and electronics – providing a needed boost for these manufacturing sectors while keeping dollars spent on these products in the United States.

Construction of the guideways for the Las Vegas-Greater Los Angeles corridor alone will involve almost 2 million tons of prefabricated steel, 7 million cubic yards of concrete beams and support piers containing 632,000 tons of reinforcing bar and more than 8,000 miles of electrical cabling.

CALIFORNIA

The Maglev system will become a key component in California's regional planning efforts and will help to foster the state's economic growth.

In particular, Maglev will ease the air traffic burden that some airports are currently experiencing. And it will provide a fast and convenient method for individuals to access and travel between airports, which are now facing constraints against physical expansion or added flights.

- Los Angeles International Airport (LAX) is nearing its maximum capacity of 78 million annual passengers
- Santa Ana's John Wayne Airport (JWA) hosted more than 7.9 million passengers in 2002 – nearly at its projected 8 million capacity
- Ontario Airport (ONT) currently is at about 20% of capacity, meaning it is at the threshold of becoming the region's next major air hub

NEVADA

In Nevada, direct and indirect expenditures from labor and capital for building, assembling and operating the Maglev train will add $1.44 billion to the gross county product for Clark County.

The unique aspects of the Maglev train alone are expected to draw 2.3 million new visitors to the area. These visitors will require lodging, dining and other services and facilities – providing more than $1.2 billion annually in new tourism expenditures.

Based on these visitor forecasts, state and local tax revenues generated by the Maglev train would reach more than $122 million per year. These include $44 million in sales taxes revenues, $18.7 million in property taxes and $8.9 million in gaming taxes.

FEDERAL

The federal government could expect about $173 million per year in direct and indirect tax revenues. The Las Vegas to Anaheim corridor offers the lowest cost demonstration of Maglev, thus maximizing the benefits obtained from federal investments.

Safety, Ridership & Cost Benefits

High-speed Maglev can and should be an integral component of our nation's transportation system.

Its contact-free operation between the vehicle and guideway infrastructure results in lower operating and maintenance costs than for traditional steel-wheel-on-rail systems. And because Maglev can operate routinely at speeds of up to 300 mph, it has the ability to attract passengers that might never use slower alternatives.

Unlike steel-wheel-on-rail systems, Maglev's synchronous long-stator linear motor integrated into the guideway eliminates the need for an on-board propulsion motor, thus permitting lower weight vehicles which, in turn, enables enhanced energy efficiency.

Maglev offers significant safety benefits: derailment is virtually impossible as the vehicle wraps around the guideway, and collisions are virtually impossible since the guideway motor is only active as the vehicle passes.

Also, since there is no fuel on-board and non-combustible materials are used in construction, there is no fire danger, and elevated guideways eliminate the need for grade-level crossings, unlike traditional railroads.

While the average lifespan of steel-wheel-on-rail rolling stock is about seven years requiring frequent maintenance, Maglev vehicles can be in service for 30 years or more – providing further proof of its cost-efficiency.

Maglev has many distinct advantages over freeways. It can deliver inter-city passengers in as little as 20% of the time it takes for freeway drivers. In addition, Maglev's guideway support piers require minimal land consumption; as a result, it consumes only about 16% of the land required for a freeway system.

Maglev's maximum capacity of 10,608-seated passengers per hour, per direction (based on 10-section trains with 5-minute headways) is equivalent to an 8-lane freeway (4 lanes in each direction).

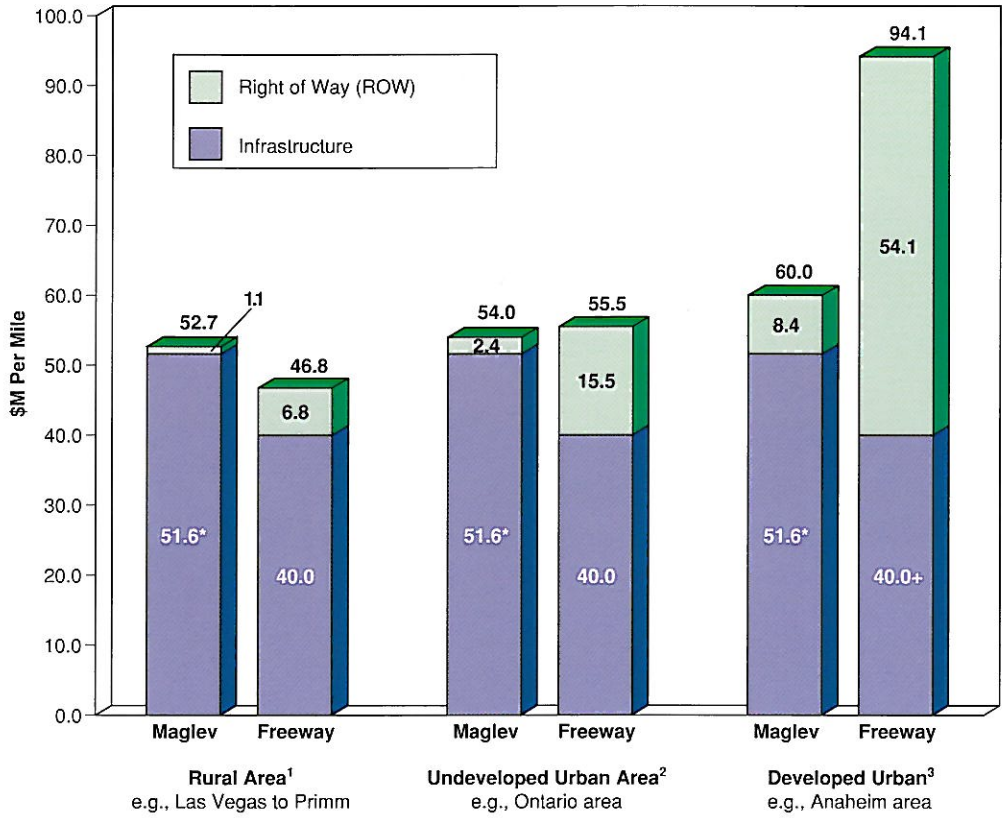
Maglev's construction costs compare favorably to freeways in carrying similar number of people.

Infrastructure Cost Comparison

Maglev
Dual Track
10 Section Trains
5 Minute Headway

Freeway
8 Lanes
4 Lanes Each Direction

[1]Assuming ROW Acquisition Cost of $5 per sq. ft.
[2]Assuming ROW Acquisition Cost of $11.50 per sq. ft.
[3]Assuming ROW Acquisition Cost of $40 per sq. ft.



*Extrapolated from the CNIMP Project Report – Las Vegas to Primm Segment (dated June 2000)

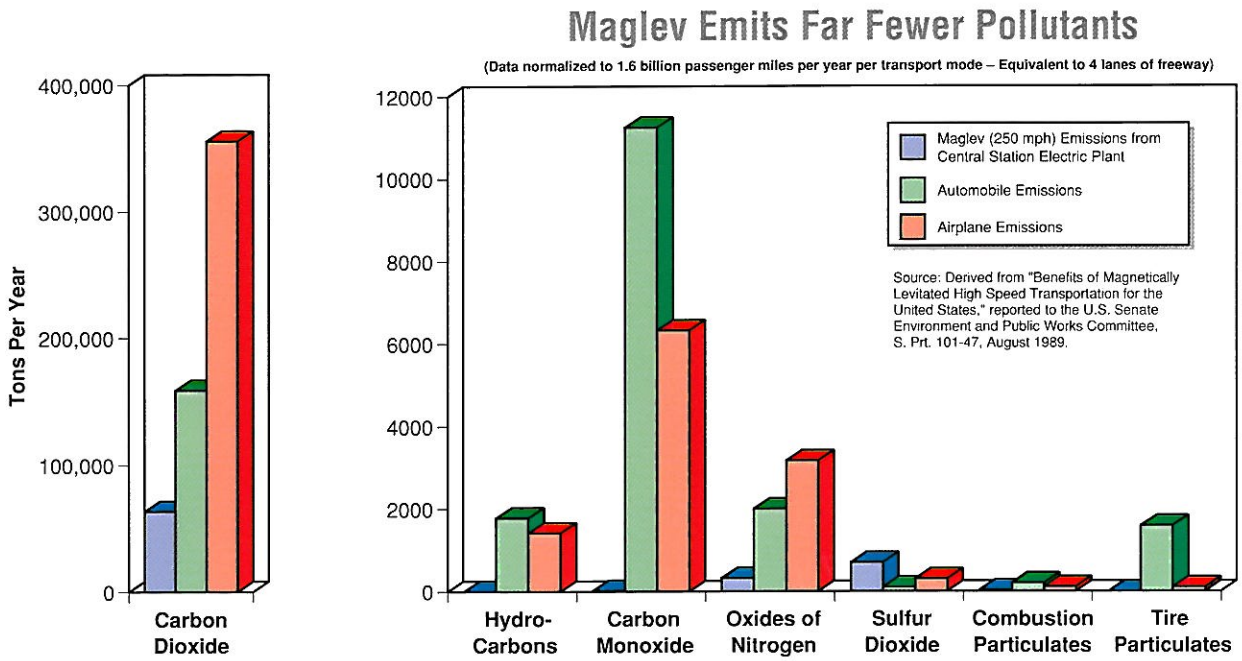
Ridership

California-Nevada Maglev officials are estimating ridership on the Maglev system between Las Vegas and Anaheim to reach about 40.4 million passengers in the year 2018. Of that total, an estimated 13.3 million will be inter-city passengers traveling between terminus cities, while 27.1 million would be "suburban" passengers riding between the intermediate destinations on the route – Las Vegas, Primm, Barstow, Victorville, Ontario and Anaheim.

The estimates do not include transfers from other high-speed rail systems, which could add an additional 3 million annual passengers to those totals.

Officials also are forecasting that the system's initial 40-mile segment connecting Las Vegas and Primm could yield 32,350 daily trips in the segment's first year of operation – an estimate expected to increase to 40,812 daily trips by 2025.

Environmental Benefits



The introduction of a new transportation system such as Maglev makes the most sense as it possesses ecological advantages and contributes to a reduction in pollution caused by other forms of transportation, including automobiles and commercial aircraft.

Maglev has numerous other positive environmental characteristics that make it a desirable alternative to traditional modes of transportation:

- Much quieter, at comparable speed, than conventional rail due to the non-contact technology
- No combustion, exhaust gases or other pollutants emitted along the route by the Maglev trains since the trains are propelled by electrical energy. Pollution may, of course, be emitted by the electrical power generation sources. However, even if the electrical power sources are all coal fired (a worst case scenario since a significant fraction of Western power supplies comes from other less polluting sources) the aggregate emissions for Maglev are less than one fifth of those from an equivalent volume of highway traffic
- Low land consumption of the elevated and at-grade guideways (a Maglev corridor is typically less than one-fifth the width of an equivalent highway corridor)
- Elevated guideways permit uninhibited movement by animals, and even at-grade guideway allows passage for amphibians and small animals
- Few embankments and cuttings result in minimal disruption of the landscape
- The grade climbing capability of Maglev permits routing through mountainous terrain with minimal need for tunneling
- Magnetic fields within the passenger compartment of the Maglev train are well within permissible standards and much less than those generated by common household products such as hair dryers, toasters, electric ovens and televisions

The time to begin building the best
high-tech system for 21st century travel is now.

There is no other high-speed form of transportation that is safer, more comfortable, more reliable, more energy efficient and more environmentally friendly than Maglev.

To find out how you can help bring the California-Nevada Maglev project to reality:

Call (702) 229-6551 or (310) 914-5033
E-mail: info@maglev-train.com

www.maglev-train.com

A Public-Private Partnership

California-Nevada
Super Speed Train
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