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WHSRA Conference, Las Vegas, NV November 4, 2011

Armin Kick
Siemens High Speed Rail USA



- 1 The History of High Speed Rail**
- 2 Development of High Speed Rail in Germany**
- 3 Product Portfolio – Rolling Stock and Systems**
- 4 Economic Impact of High Speed Rail**



The first electric locomotive built in 1879 was the cornerstone for the development of High Speed Rail

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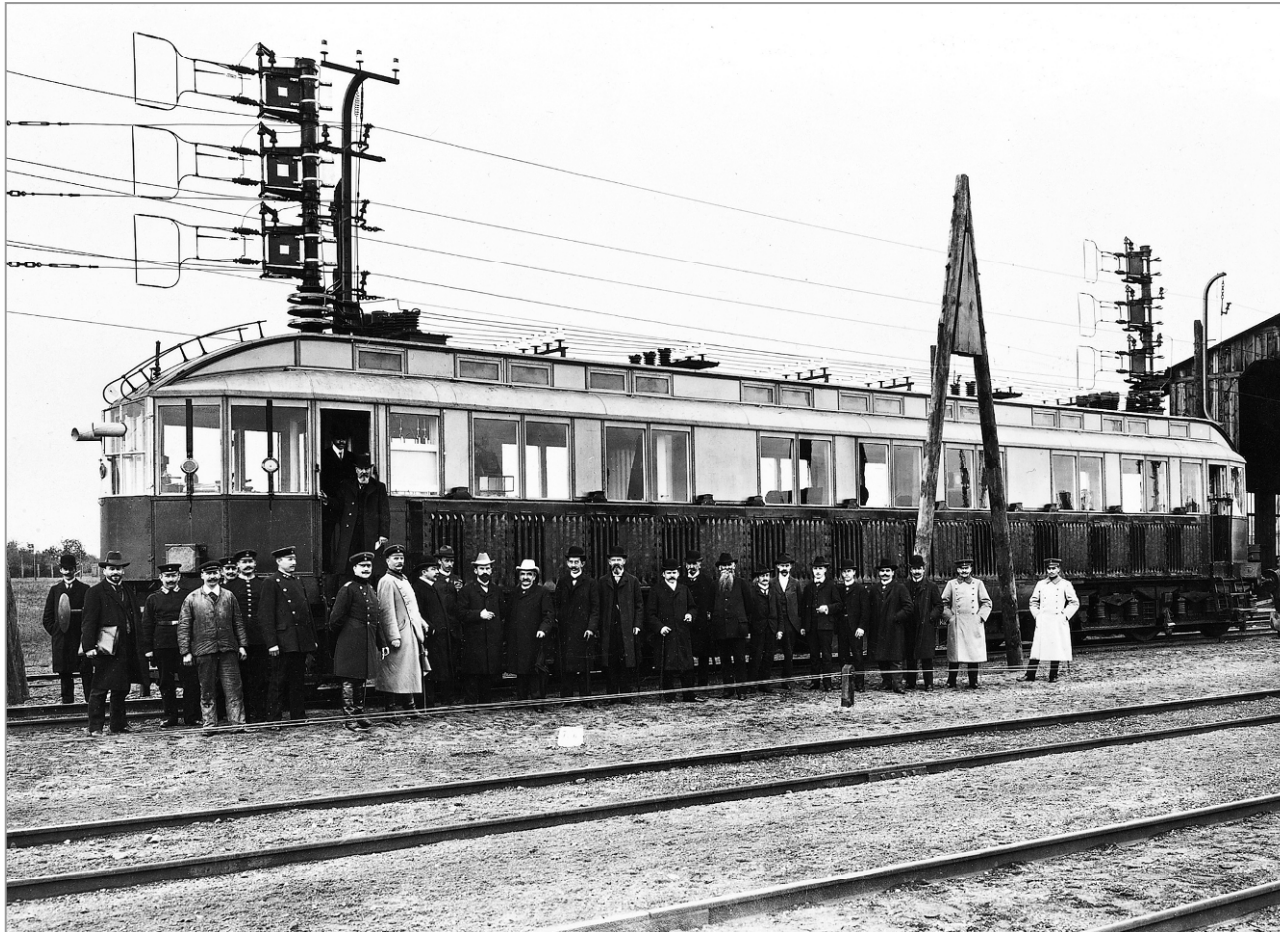
Werner von Siemens and Johann Georg Halske founded the company in 1847 in Berlin.

Werner von Siemens designed the **first electric locomotive of the world**, which was presented at the Berlin Trade Fair in **1879**



**The first High Speed Train was built in 1903
with a maximum speed of 126 mph (203 km/h)**

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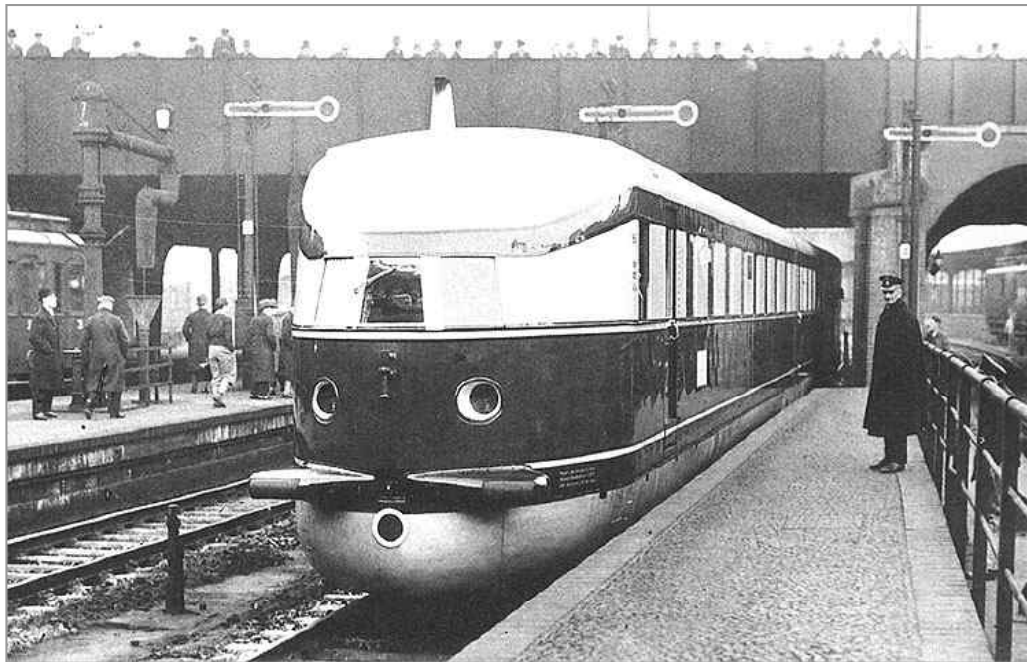
This rail car from Siemens runs in **October 1903** with a **maximum speed of 203 km/h (126 mph)** during trial runs on the Marienfelde-Zossen test track in the area of Berlin.

Already this rail car was powered by three-phase drives!

The first High Speed Rail Network was built in the nineteen-thirties in Germany linking major cities



In the **nineteen-thirties** the German Railway inaugurated a **High Speed Rail system** with regular service from all **major cities in Germany to the Capital Berlin.**



This service was performed with **fast diesel-electric multiple units** with electric equipment from Siemens.

Case Study Germany: Germany has a dense High Speed Rail network

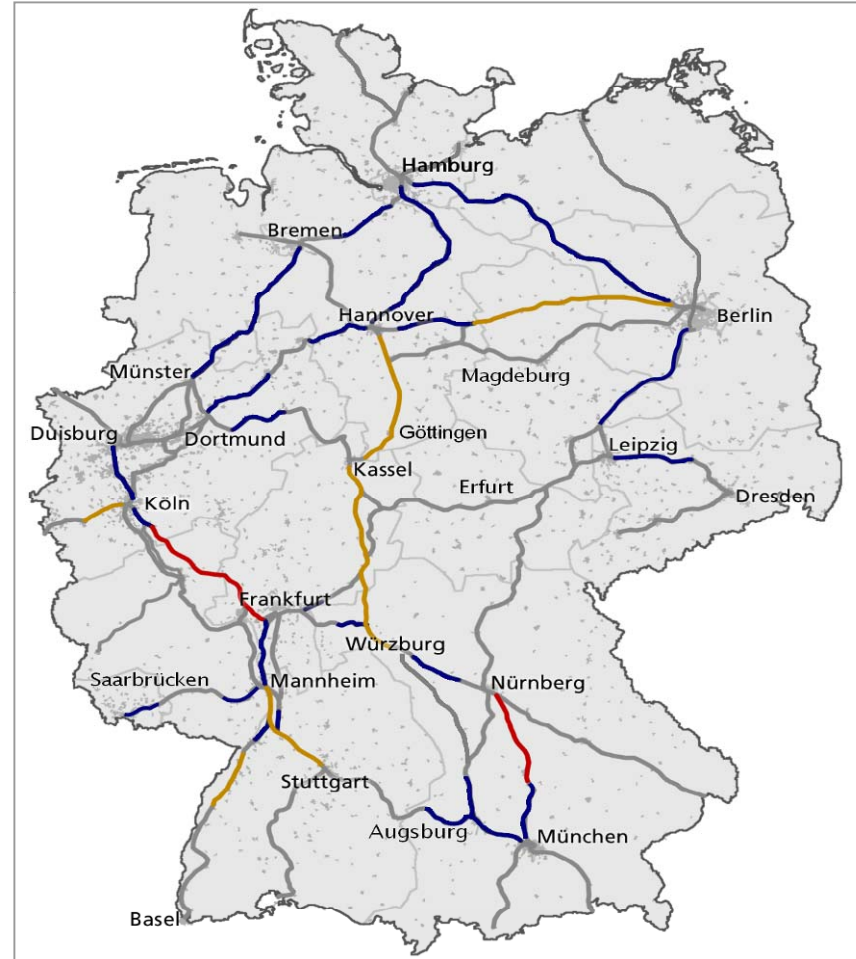
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ICE network in Germany

- High-speed lines for 300 km/h (186 mph)
- High-speed lines for 250 to 280 km/h (156 to 175 mph)
- Upgraded lines, 200 to 230 km/h (125 to 145 mph)
- Other lines, max. 160 km/h (100 mph)

1,056 miles of High Speed Rail network

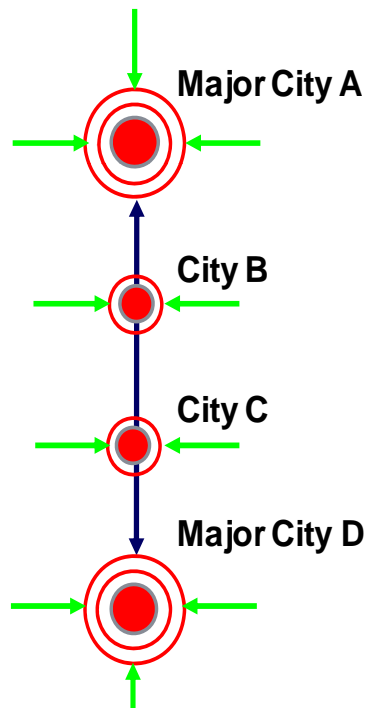


High Speed Rail is the backbone of a passenger rail system – regions get access by feeder systems

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HSR feeder system



↔ HSR Line ← Feeder system
(taxi, station parking, bus,
commuter rail, light rail)

● City

- **HSR is the backbone** of public transportation systems
- **Different modes of transport facilitate region wide access** to HSR and secure the capacity utilization
- **Connectivity between all different modes of transport** has to be ensured (station parking, taxi, bus, light rail, commuter rail etc.)
- **HSR connects and increases the value** of entire regions and strengthens the competitiveness

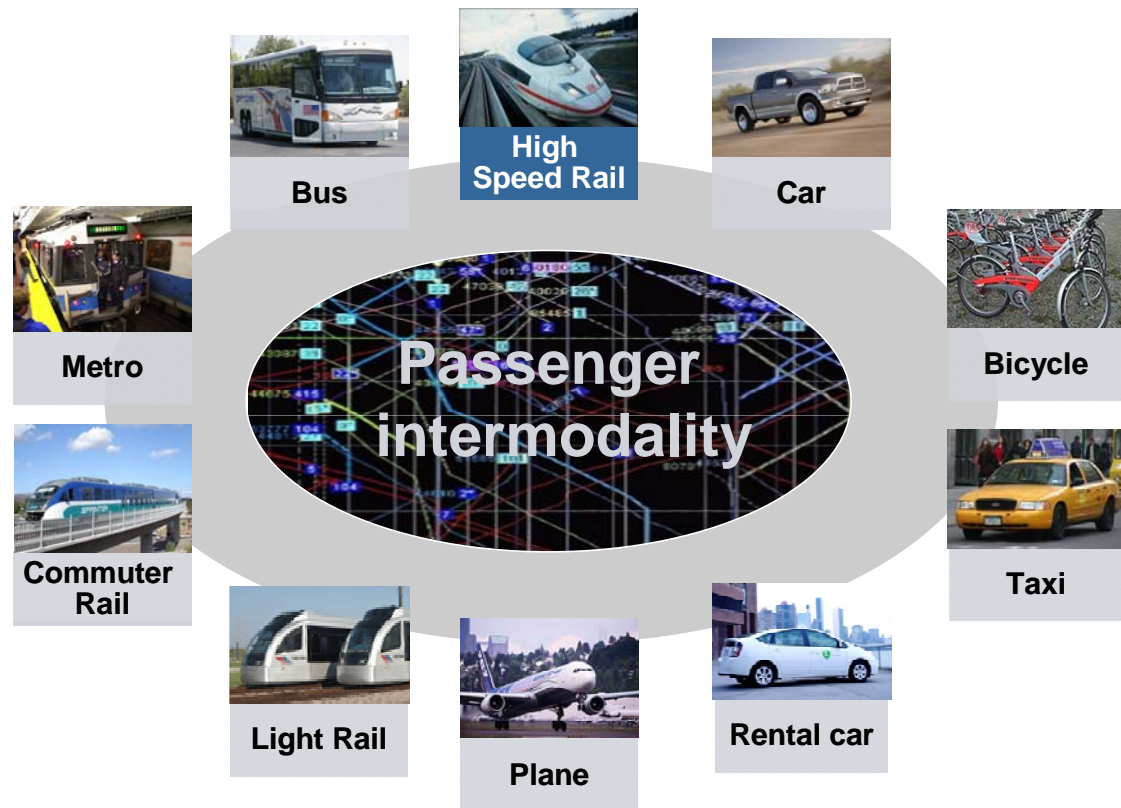


Passenger Intermodality is the key for High Speed Rail networks

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- Interchange Stations to link with Feeder Systems
- Direct connection of airline hubs by rail
- Park & Rail facilities for commuters
- Car Rental / Car sharing at station
- New ticket systems, e.g. Integrated City Transit & HSR tickets



The “new way” of Passenger Intermodality – Cooperation of Airlines and HSR Operators

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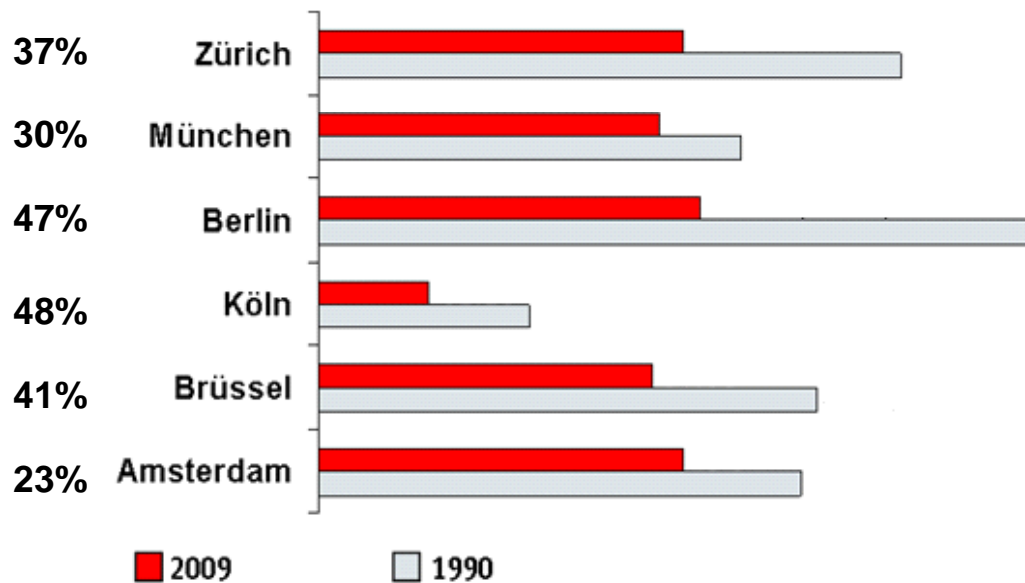


HSR reduces travel times and has increased the number of rail customers up to 50%.

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- HSR generates an average demand increase between 40 and 50 percent.
- Travel time reduction from Frankfurt:



High Speed Rail supports regional development ... and results in strong economic growth

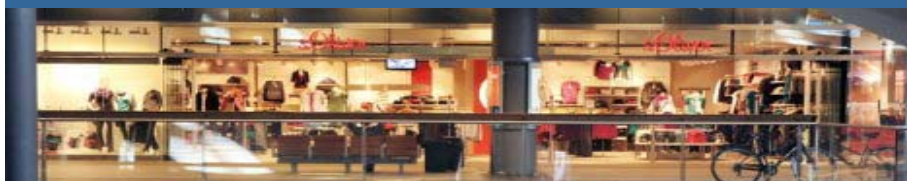
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Hauptbahnhof Berlin – Intermodal Train Station



Level 1-5: Urban and Regional Rail Station | Offices | Shopping Mall | Restaurants |



Basement: High Speed Rail Terminal



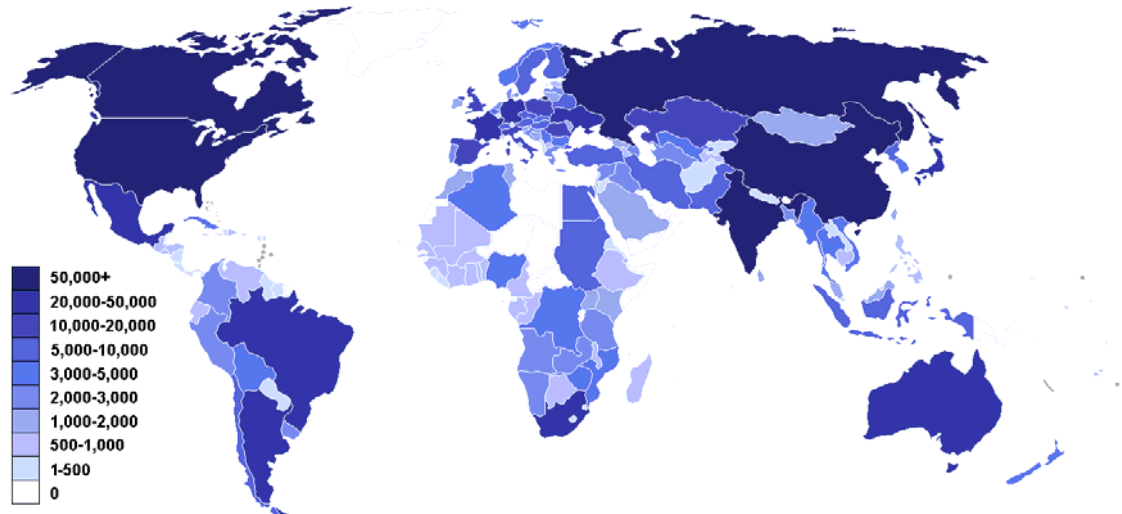
- **Land value increases** significantly in cities with HSR access
- **Commercial and industrial estate developments** around HSR stations result in jobs and fiscal revenues
- HSR gives impulses for **touristic development** and provides **high-capacity transport for events**

The USA still have the biggest Railroad Network in the World, but “true” High-Speed Rail is not in operations

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Railroad from a world perspective

- **USA** has a long and **great History of Railroads**
- The **USA** have the **biggest Railroad Network** in the World
- But as of today the economic and sustainable **benefits of High-Speed Rail** are harvested in **other countries**



Map: Total route length of the railway network in kilometers by Countries

Country	Railroad miles
USA	140,695
Russia	54,157
China	48,364
India	39,777
Canada	29,011
Germany	26,033
Australia	23,522
Argentina	19,517
France	18,152
Brazil	17,931
Japan	16,426
...	...

Source: CIA World Factbook 2008

China, Japan, France, Germany, Spain, Italy and Russia are the Global Leaders in High-Speed Rail

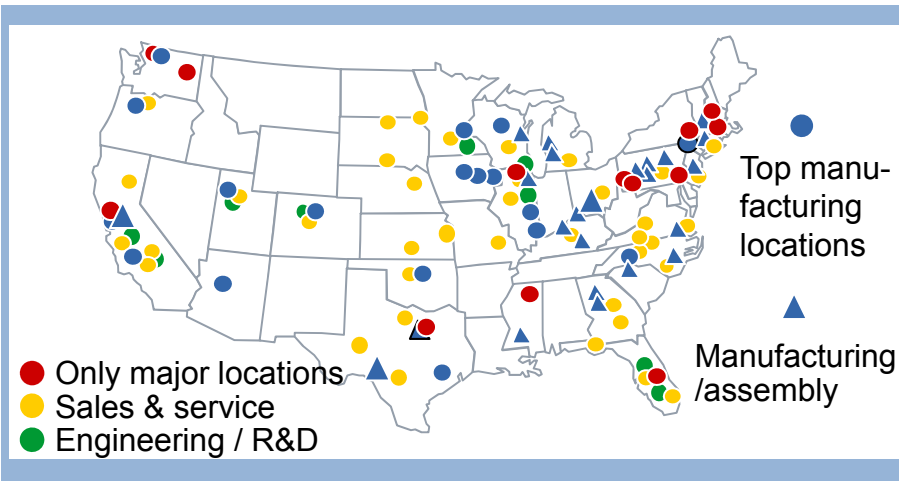


Country	Current Network High Speed Rail	Maximum Operating Speed	Highlights	Future Plans
China	4,300 miles (6,920 km)	217 mph (350 km/h)	125,000 passengers a day from Beijing to Tianjin	> 8,000 miles by 2012
Japan	1,351 miles (2,175 km)	186 mph (300 km/h)	Already in 1994: EUR 3.7 billion economic benefits	> 1,800 miles by 2015
France	1,143 miles (1,840 km)	199 mph (320 km/h)	Paris is the central Hub for all HSR connections in France	> 2,500 miles by 2025
Germany	1,056 miles (1,700 km)	186 mph (300 km/h)	German ICE trains traveled > 14 million miles in 2009	> 1,500 miles by 2025
Spain	633 miles (1,020 km)	186 mph (300 km/h)	HSR absorbed 50% of airline traffic Barcelona - Madrid	> 2,000 miles by 2020
Italy	547 miles (923 km)	186 mph (300 km/h)	70 daily connections in 37 min from Bologna to Florence	> 800 miles by 2020
Russia	403 miles (650 km)	155 mph (250 km/h)	411,000 passengers in first four months of operation	> 7,000 miles by 2030
USA*	435 miles 700 km	149 mph (240 km/h)	Acela linking Washington – New York – Boston	> 1,200 miles in CA, NV, NEC, Midwest

* not true High-Speed Rail, starting at 150 mph up to 220 mph

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Siemens USA - broad presence and one of the top US employers



Overview of fiscal 2010

Sales (in millions of US\$)	19,900
Employees	62,000
R&D (in millions of US\$)	1,300
Global business HQs	9
Locations	760

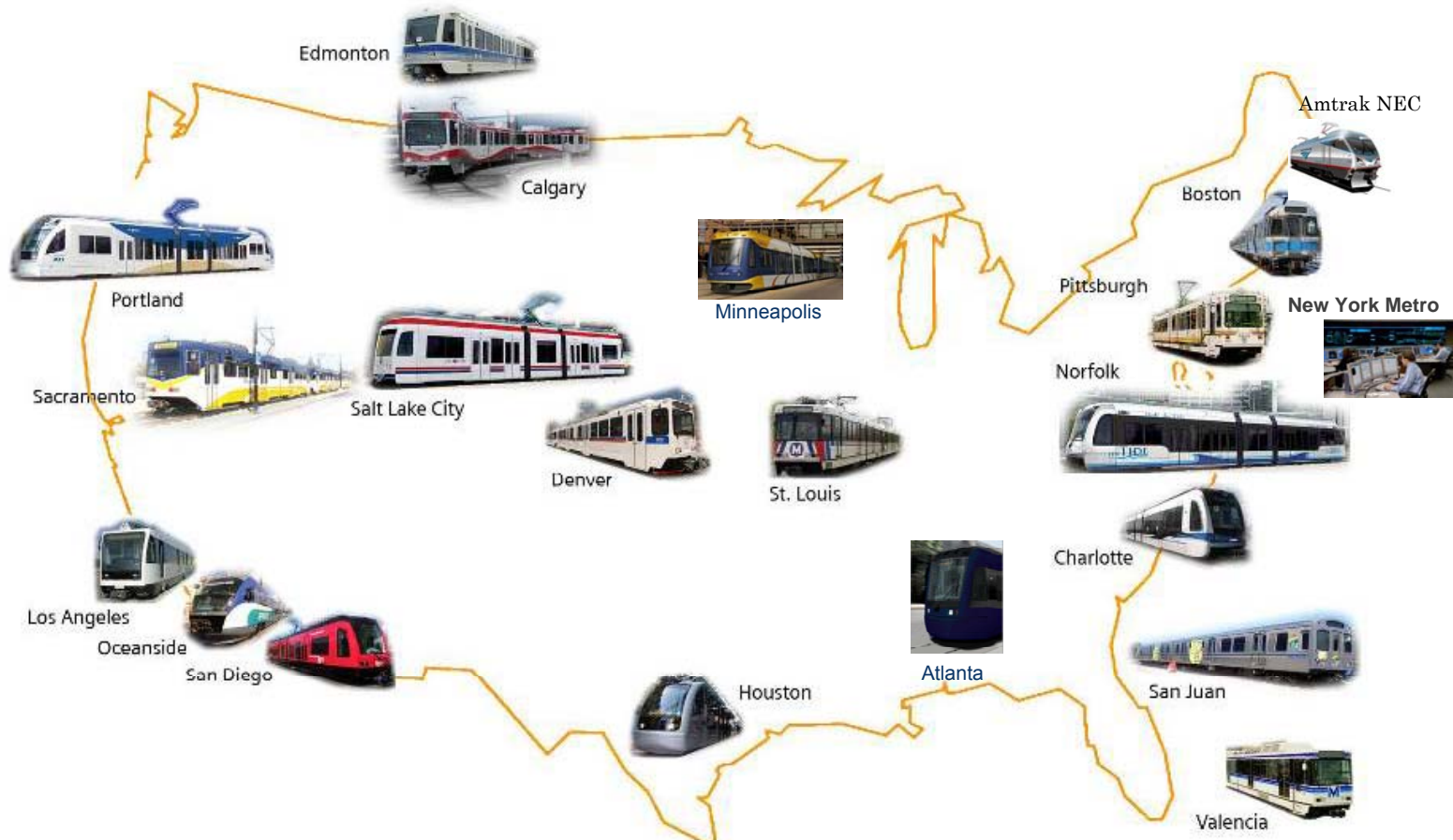
Siemens is modernizing the U.S. infrastructure

- In **energy**, our power generation solutions help meet one-third of America's total energy needs every day, like six 60-Hz H-class, next-generation gas turbine-generator packages in Florida and largest single U.S. order for 149 wind turbines for the Lower Snake River project
- In **healthcare**, we are the No. 1 application service provider, processing an average of 190 million transactions daily for more than 1,000 customers
- In **industry**, we process 100% of the nation's mail
- **Invested** USD 400 million and created some 3,000 **green manufacturing jobs**



**Siemens supplied more than 1,000 mass transit vehicles
in 17 US locations and Canada**

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Although known for light rail vehicles Siemens has a wider U.S. products portfolio - projects for Signaling, Electrification and Locomotives in the US Market

Commitment to the US: 300,000sq ft of Manufacturing Permanence and Commitment to Localization

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Siemens has been in Sacramento since 1984

In the past 4 years Siemens has invested \$50 M into our plant

Over 850 employees work at the facility. We will be ramping up to approx. 1000 employees due to Amtrak order

We employ more than 70 engineers to design and customize Rail cars

We fulfill the Buy America requirements and use green energy to build our product

Sustainable Manufacturing: Using Renewable Energy to Build our Trains

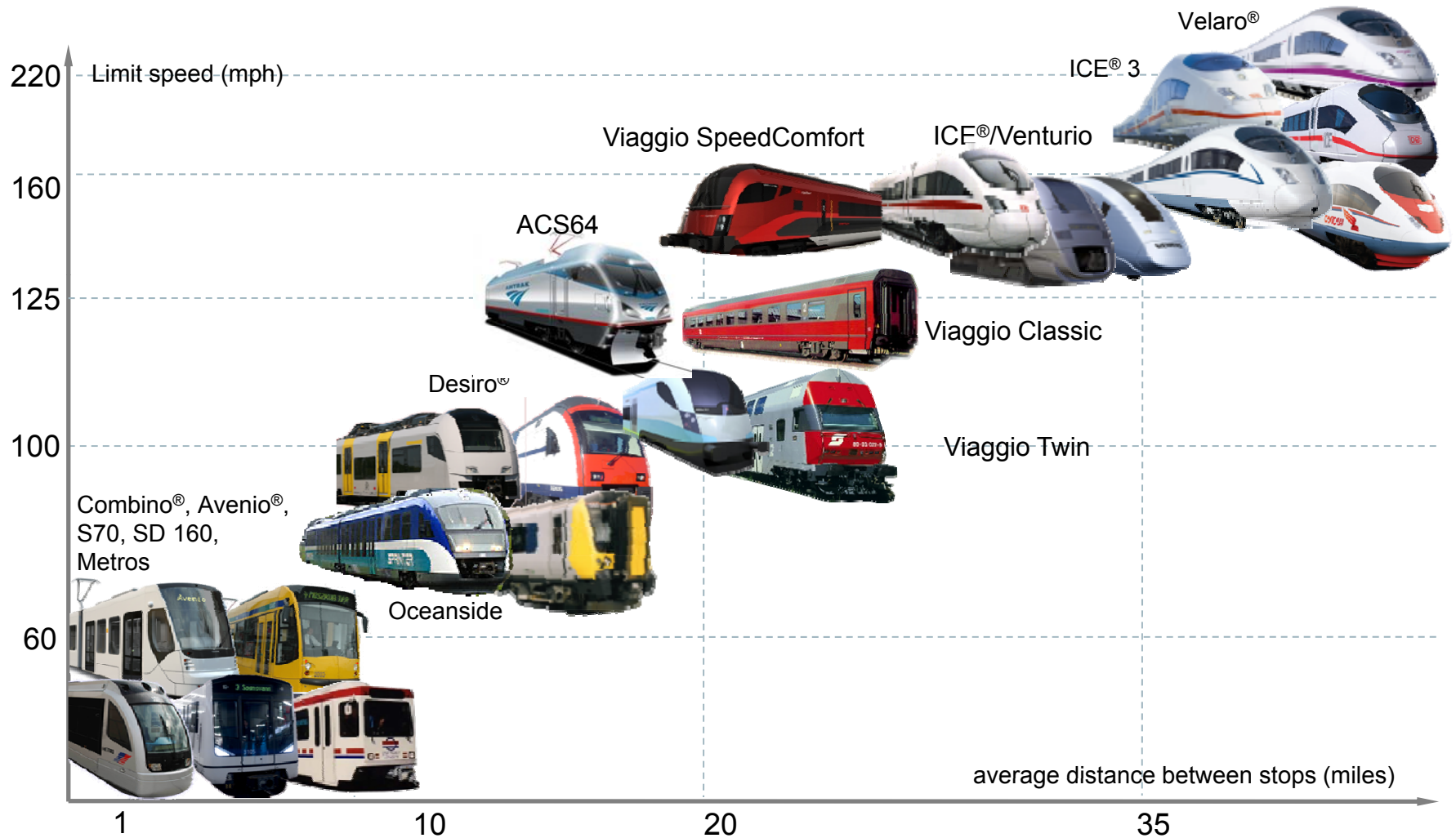
- **Electrical power** for our railcar production plant in Sacramento comes from a 2 MW solar facility
- **Solar power onsite supplies approximately 85 percent** of current needs and helps us reach the goal of delivering zero-emission light rail vehicles and in the future, high speed rail



Sacramento Facility: 25+ year commitment to the US Market



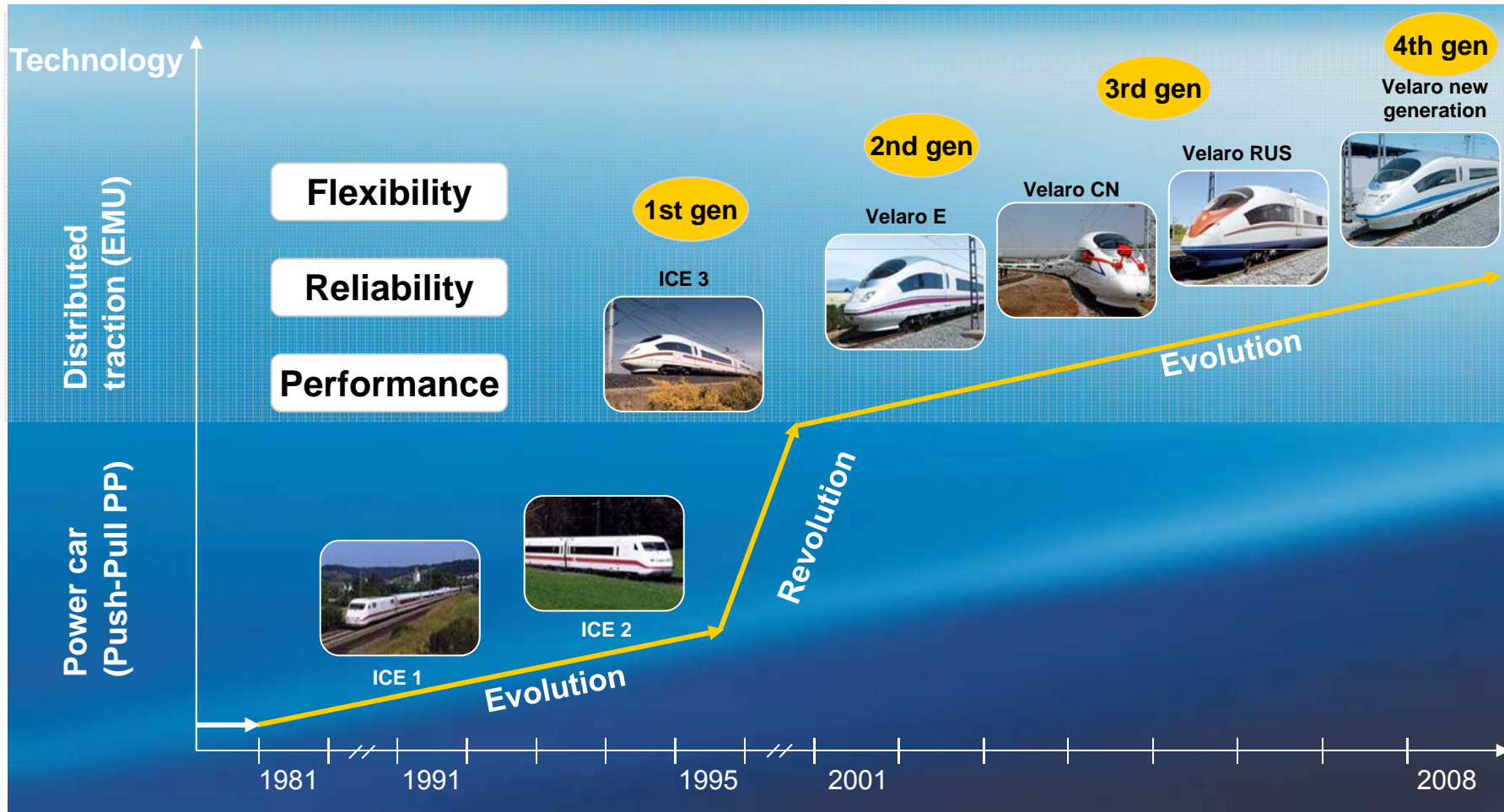
Our Public Transit Portfolio addresses trains for all market segments



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® Combino, Avenio, Desiro, Viaggio, Venturio and Velaro are registered trademarks of Siemens AG

30 years of High Speed Train development (ICE ⇨ Velaro)



ICE® is a registered trademark of DB AG

Siemens has produced / on order > 800 high speed trains worldwide (e.g. China, Russia, Spain, Germany, UK)

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... and has won the 300 ICx Trainsets order from DB in May 2011



USA: City Sprinter
Amtrak North East Corridor
70 Electric Locomotives (2010)
V = 125 mph
Project: \$ 466 Million



UK / France: Velaro
Eurostar / Eurotunnel
10 Trainsets (2010)
V= 320 km/h (199 mph)
Project: \$ 840 Million



Spain: Velaro E
Spanish Railways RENFE
26 Trainsets (2005)
V= 350 km/h (217 mph)



Germany:
ICE 1,2,3
ICE T, TD
Velaro D
ICx
Deutsche Bahn AG
273 Trainsets (1991-2011)
V=230-320 km/h (140-200 mph)
300 ICx Trainsets (2011 – 2030)



Russia: Velaro RUS
Russian Railways RZD
8 Trainsets (2009)
V=250 km/h (155 mph)

China: Velaro CN
Chinese Ministry of Railways MOR
60 Trainsets (2008-)
V=300 km/h (186 mph)
100 Trainsets (2011-)

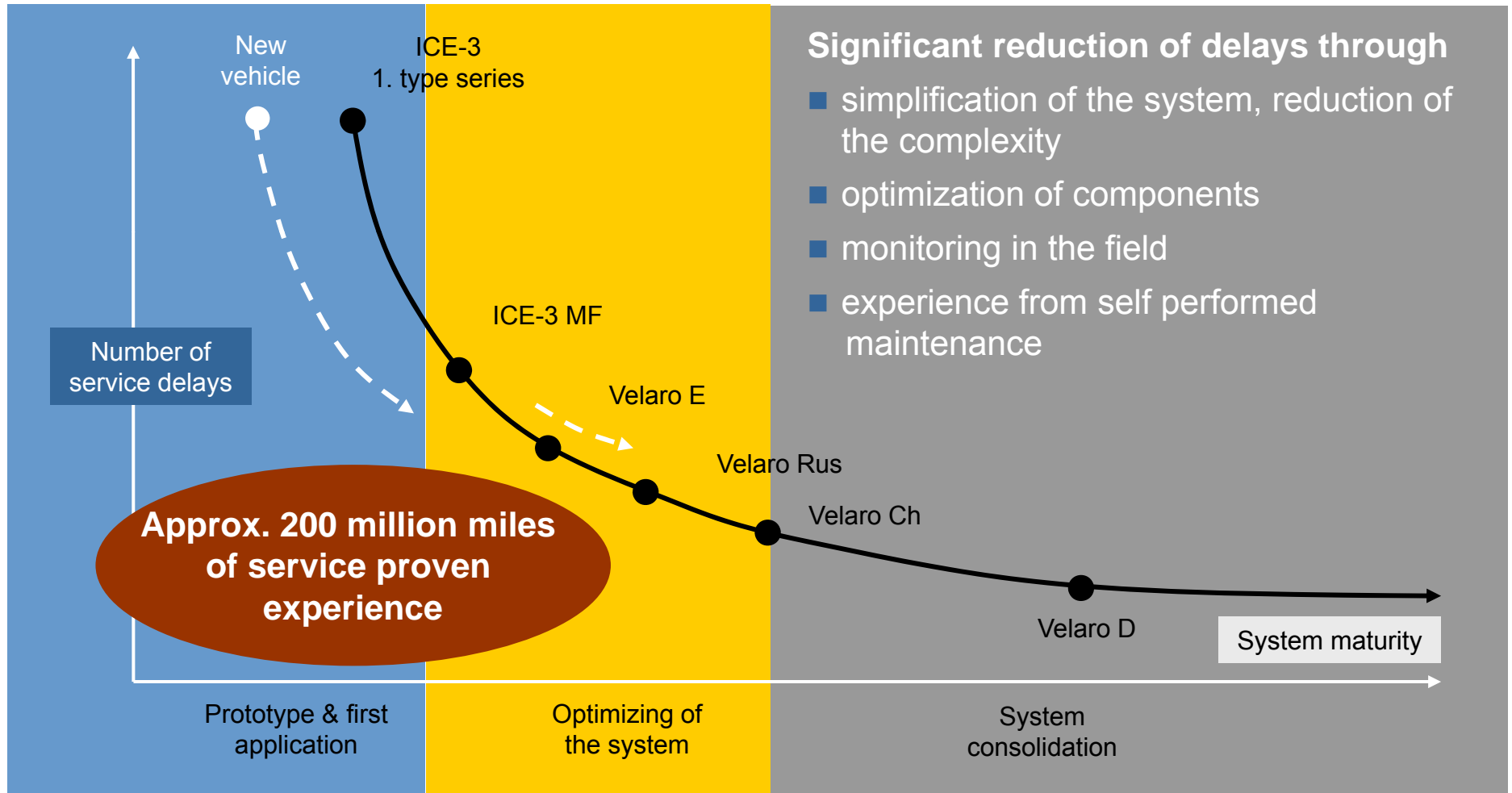


Austria: Viaggio Comfort (RailJet)
Austrian Railways
67 Trainsets (2008 -)
V=230 km/h (140 mph)



Velaro Platform

Getting even better – Continuous improvement of reliability



The Economic Impacts of High-Speed Rail on Cities and their Metropolitan Areas



The United States Conference of Mayors
**The Economic Impacts of High-Speed Rail
on Cities and their Metropolitan Areas**

A research project summary prepared by Economic Development Research Group, Inc.
and sponsored by Siemens

usmayors.org/highspeedrail



The United States Conference of Mayors, together with the Economic Development Research Group and Siemens, published the HSR study in June 2010

The Economic Impacts of High-Speed Rail on Cities and their Metropolitan Areas

including HSR case studies of
Los Angeles, Chicago, Orlando and Albany



Albany Mayor
Gerald D. Jennings



Orlando Mayor
Buddy Dyer



Chicago Mayor
Richard M. Daley



Los Angeles Mayor
Antonio R. Villaraigosa
Vice President
The United States
Conference of Mayors

USCM Study: Key Economic Impact Findings for LA

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In Los Angeles, as much as \$7.6 billion a year in new business sales, producing up to 55,000 new jobs and \$3 billion in new wages.

Effects of HSR on Economic Growth:

1. HSR can help drive higher-density, mixed-use development at train stations
2. HSR can increase business productivity through travel-efficiency gains
3. HSR can help expand visitor markets and generate additional spending
4. HSR can broaden regional labor markets
5. HSR can support the growth of technology clusters

USCM Study: Passengers bring money

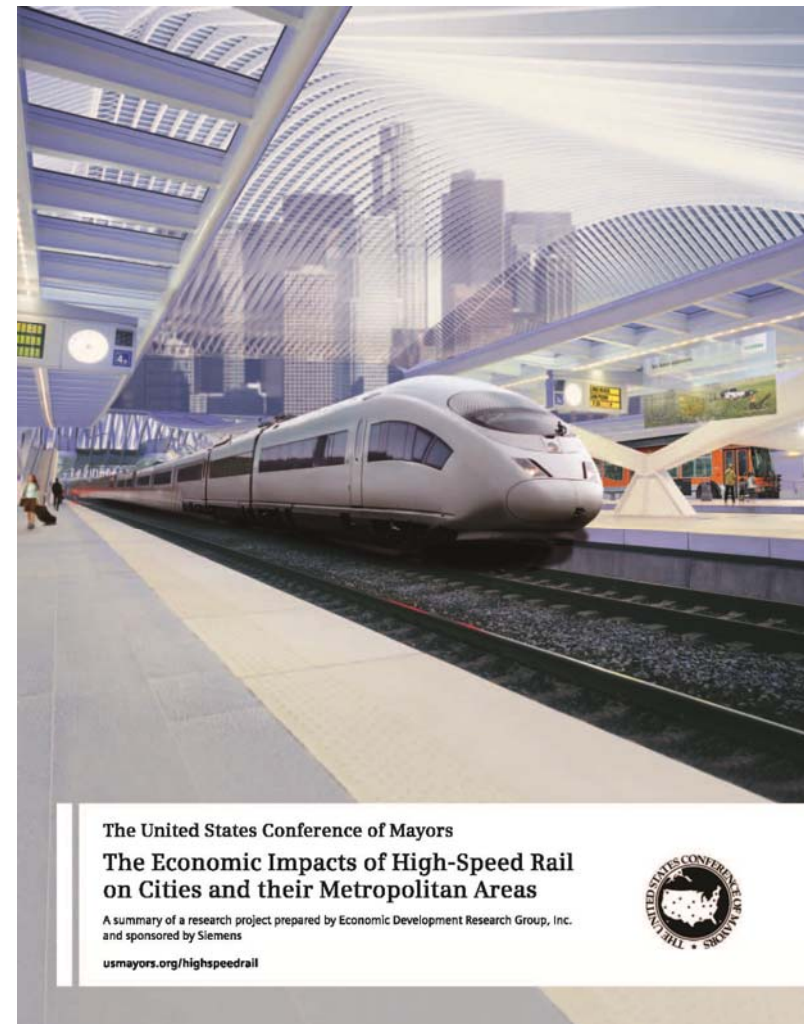
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HSR's projected larger flow of passengers will lead to:

- Increased tourism and business travel

Which translates into:

- Generating additional spending at local hotels, restaurants and retail stores



www.usmayors.org/highspeedrail

A Core Express Study sponsored by Siemens shows great economic impacts for the Midwest States

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- **43 million annual riders** from 13 MW cities and major metropolitan areas
- **> \$2.2 billion** annually in user-generated revenues
- **25 daily departures** on each corridor
- Capacity for up to **10 trains** in peak hours **per corridor**
- **2-3 hour travel times** between Chicago and the furthest points of the network
- **\$13.8 billion** per year increase in **business sales** for the Chicago Metro area alone
- **104,000 new jobs** and an additional **\$5.5 billion in wages** each year in the **Chicago Metro area** resulting from increased economic activity
- **\$314 million** in new annual **visitor spending** in **downtown Chicago**



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Industry Sector, Mobility Division



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Thank you

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