Central Japan Railway Company (JRC) Superconducting Maglev (SCMAGLEV) and N700-I Bullet Train

Torkel L. Patterson
PRESIDENT
U.S.-Japan MAGLEV
Atlanta, GA
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Who Are We?

Central Japan Railway Company (JRC) is the world's premier high-speed rail operator. The core of JRC operations is the Tokaido Shinkansen, known internationally as the "Bullet Train." Carrying as many as 150 million passengers yearly, the Shinkansen links Japan's principal metropolitan areas of Tokyo, Nagoya, and Osaka.

U.S.-Japan High-Speed Rail (USJHSR) is a U.S. company that has teamed with JRC to market and deploy the N700-I Bullet Train internationally, including in the U.S.. USJHSR was founded in association with JRC in 2009 and is headquartered in Washington, DC.

U.S.-Japan MAGLEV (USJMAGLEV) is a U.S. company that has teamed with JRC to market and deploy its Superconducting MAGLEV technology internationally, including in the U.S.. USJMAGLEV was founded in association with JRC in 2009 and is headquartered in Washington, DC.

JRC is the World's #1 High-Speed Rail Operator

What Do We Do?

- Central Japan Railway Company (JRC)
  - Developer, owner, and operator of the N700-I and SCMAGLEV
  - Committed to deploying N700-I and SCMAGLEV in the U.S.
  - Committed to ensuring safe, efficient and unparalleled high-speed ground transportation
- USJHSR and USJMAGLEV:
  - Represent JRC in marketing efforts
  - Provide strategic advice and analysis to JRC
  - Develop project team-building and project financing solutions on corridor by corridor basis

<u>Our Goals</u>: Deploy the N700-I and SCMAGLEV as high-speed ground transportation solutions in U.S. corridors, and develop opportunities for SCMAGLEV technology applications.

U.S. Strategic Transportation Goals

- Ensure safe and efficient transportation choices
- Build a foundation for economic competitiveness
- Promote energy efficiency and environmental quality
- Support interconnected livable communities

Administration Has Made High-Speed Rail a Priority

Commitment to High-Speed Rail

- U.S. $8B investment in Federal Stimulus funding
- U.S. $2.5B appropriated in FY 2010 budget
- A down payment on a national network of corridors, along with $1B annually for at least 5 years
- Requires long-term commitment from both the Federal Government and States

China is spending $50B per year for the next 10 years;
$500B commitment!

JRC Approach to High-Speed Rail

- Dedicated Track – No Mixed Operations
  - No possibility of a freight/passenger train collision
  - Enables more efficient equipment design
- A Total System:
  - Integrated management of both:
    - Hardware: Rolling Stock, Track, Signals, etc; and
    - Software: Safety, Training, Maintenance, etc
- Extensive Research & Development
  - Komaki Research Facility – opened in 2002
- Strategic, Long-Term Investments
  - Superconducting Magnetic Levitation (SCMAGLEV)
  - Tokaido Shinkansen Bypass – meeting future demand

Dedicated Track is the "Key" to Successful High-Speed Rail

Central Japan Railway (JRC)

A Total System Approach to High-Speed Rail in the United States

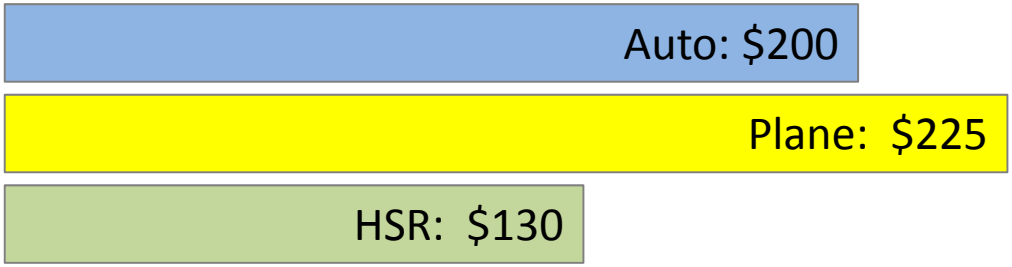
N700-I Key Characteristics

- Safety
  - ZERO accident-related fatalities (N700)
  - Computer-Aided Traffic Control
- Speed
  - 200+ mph maximum speed
  - 2.0 mph/sec starting acceleration
- Proven Reliability
  - 0.6 min average annual delay (N700)
  - 150 million passengers per year (N700)
- Environmental Friendliness
  - 47Wh/mile/seat energy consumption (N700)
  - Low noise pantograph & coverall hood
- Passenger Comfort
  - Advanced semi-active suspension
  - Noise-absorbing floor structure

N700-I is the World's Most Advanced 330 KPH Train

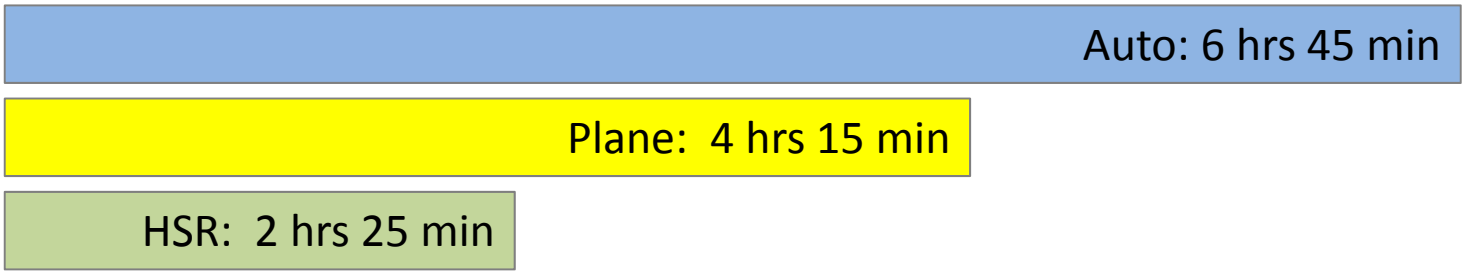
Benefits of HSR (N700)

Cost of the Journey

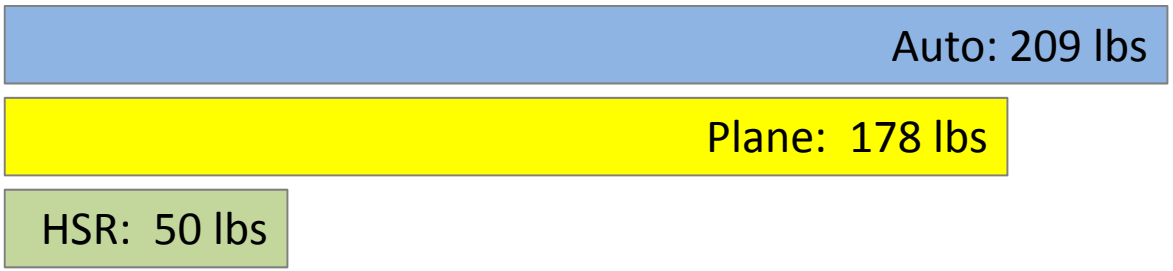


320 MILE TRIP FROM TOKYO TO OSAKA, JAPAN

Total Time of Journey



Carbon Dioxide Emitted per Seat



U.S. GAO, Reuters, Bureau of Transportation Statistics, JRC, Scientific American, May 2010

JRC has "Zero" Fatalities in 46 Years of High-Speed Rail Operations

The N700-I for the U.S.

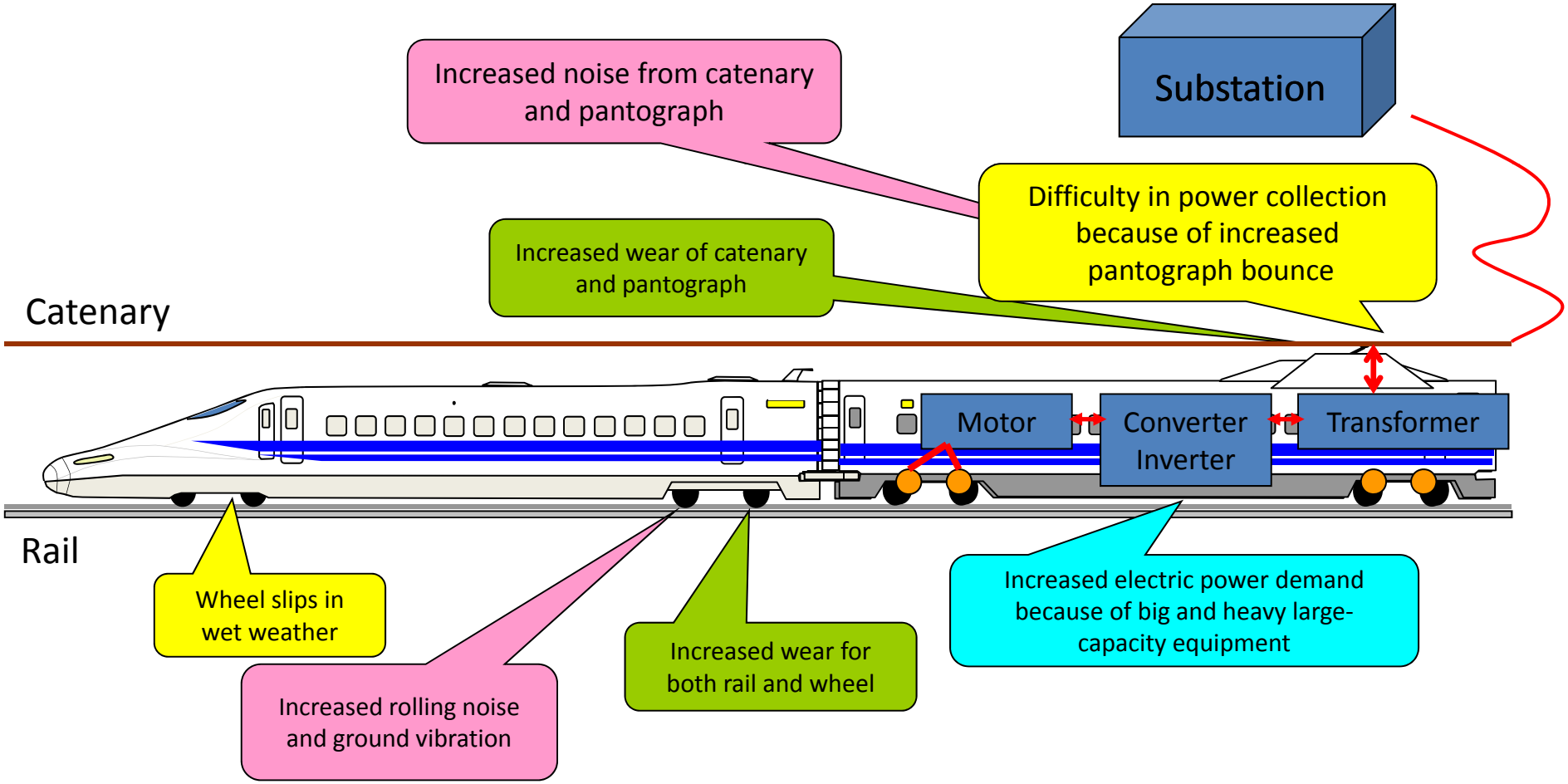
- JRC is committed to deploying the N700-I Total System Solution to the U.S. in order to:
  - Provide the U.S. the best return on our investment – the "gold standard" of high-speed rail
  - Create jobs
  - Strengthen the economy
  - Connect communities
  - Strengthen the U.S. and Japan relationship
- Only on selected "Closed-System" corridors – Florida; Texas; Alberta; LA-Las Vegas

JRC Will Play to WIN in the Corridors it Enters

World's Best High-Speed Train

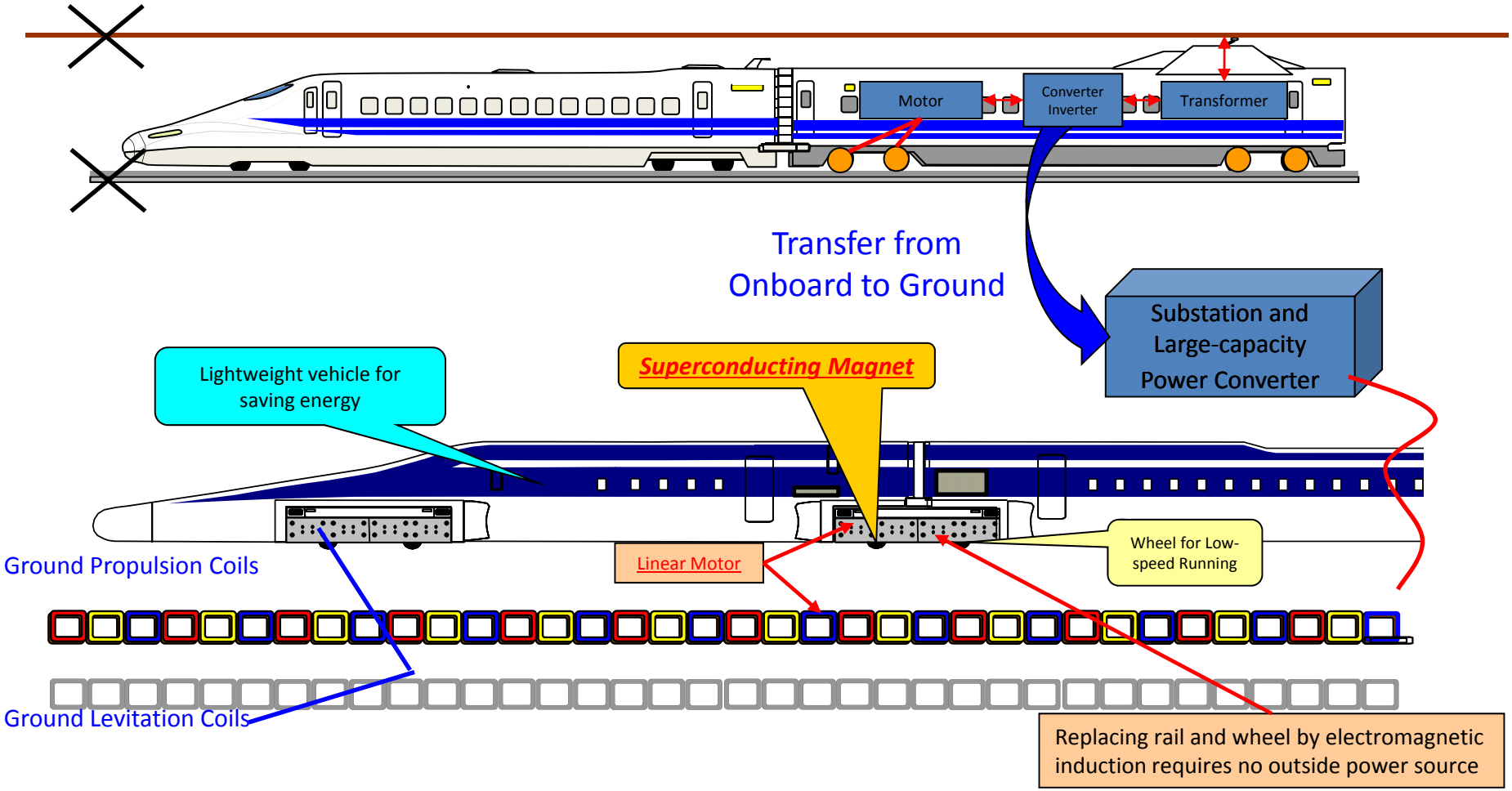
Physics Limits Performance

There is a technological brick wall on catenary and rail to reach 500 Kph by conventional high-speed rail



Birth of the SCMAGLEV

Eliminating the catenary and rail brings…



SCMAGLEV—THE SYSTEM OF THE FUTURE

SCMAGLEV

Overview

SCMAGLEV Key Characteristics

- 310+ mph
- Maximum Passing Speed: 638 mph
- Maximum Daily Travel Distance: 1,787 miles
- Cumulative Travel Distance: 482,805 miles
- Cumulative Number of Riders: 146,195
- Fastest accelerating MAGLEV technology
- Quiet
- Environmentally friendly

SCMAGLEV is the World's Fastest Train

Safe and Stable Operations

13 Years of Safe and Stable Operations

Maximum Speed	361mph
	581kph
Maximum Relative Speed	638mph
	1,026kph
Maximum Daily Travel Distance	1,787 miles
	2,876 km
Cumulative Travel Distance	482,805 miles
	777,000 km
Cumulative Test Ride Passengers	146,195

A Fully Tested System

Government Approval

The Government of Japan approved deployment of the SCMAGLEV for revenue service in 2009.

"The technologies of the Superconducting Maglev have been established comprehensively and systematically, which makes it possible to draw up detailed specifications and technological standards for revenue service.

Japan MLIT (Ministry of Land, Infrastructure, Transport and Tourism)

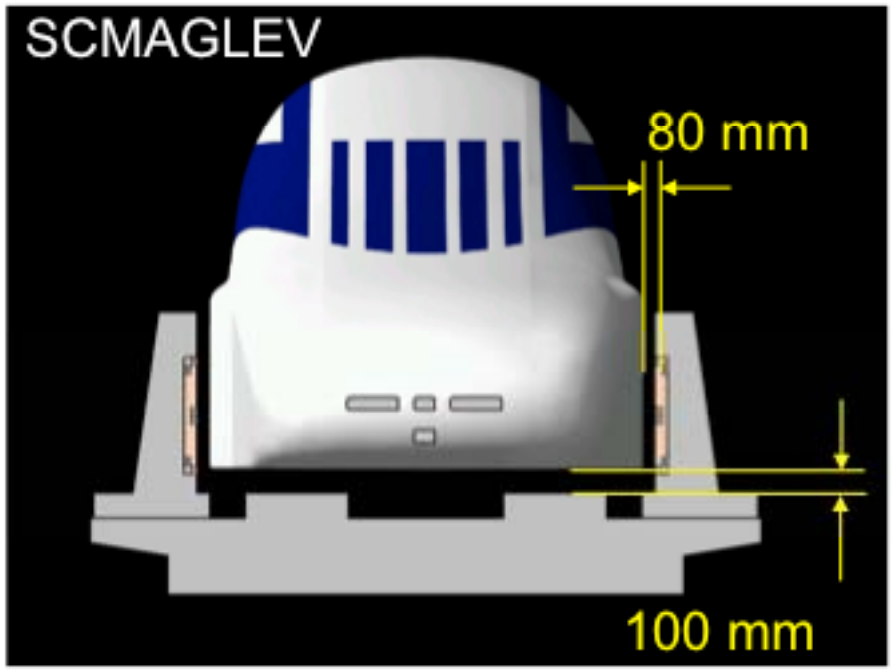
SCMAGLEV is Safe and Viable

Key Characteristics

	SCMAGLEV	Transrapid, Shanghai
		
Propulsion Method	Linear Synchronous Motor Automatic Train Control from Ground Facility	
Onboard Magnet	Superconducting Magnet	Normal Conducting Magnet
Magnetic Levitation and Guidance Method	Electromagnetic Induction requires no active control for both levitation and guidance.	Electromagnetic Attraction requires active control.
Maximum Speed for Revenue Service	500 km/h (311 mph)	430 km/h (267 mph)*
Maximum Speed recorded in Running Tests	581 km/h (361 mph)	501 km/h (311mph)
Magnetic Air Gap	80 mm	10 mm

SCMAGLEV is More Stable than Transrapid

Air Gap Increases Safety

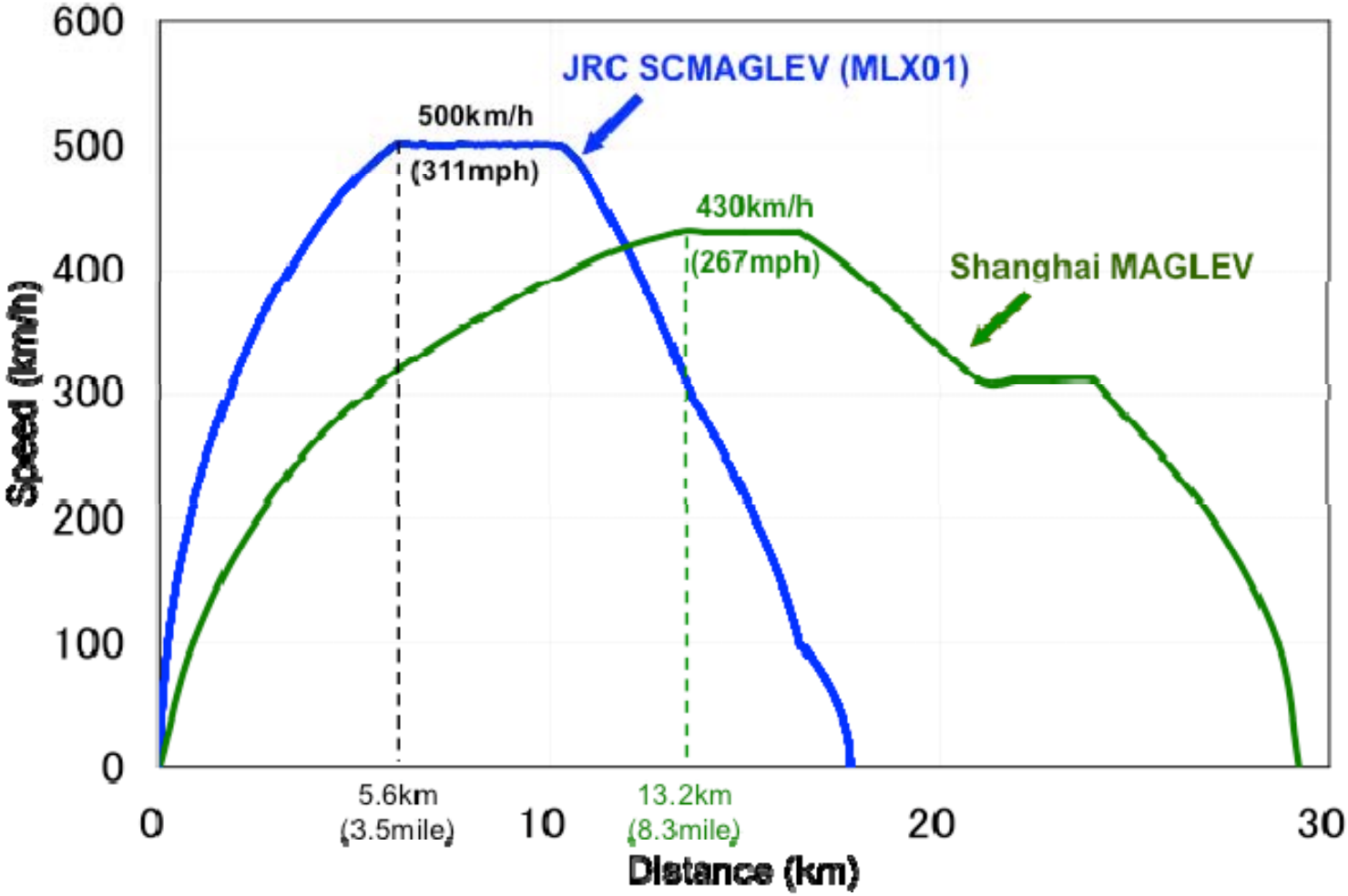


- The SCMAGLEV does not require active control due to electromagnetic induction and the large magnetic air gap for both levitation and guidance.
- Due to strong electromagnetic suspension, there is no chance of derailment even during an earthquake.

SCMAGLEV is Safe with the Highest Performance

Fast & Frequent

SCMAGLEV performance characteristics enable ultra-high speed and high frequency operations.

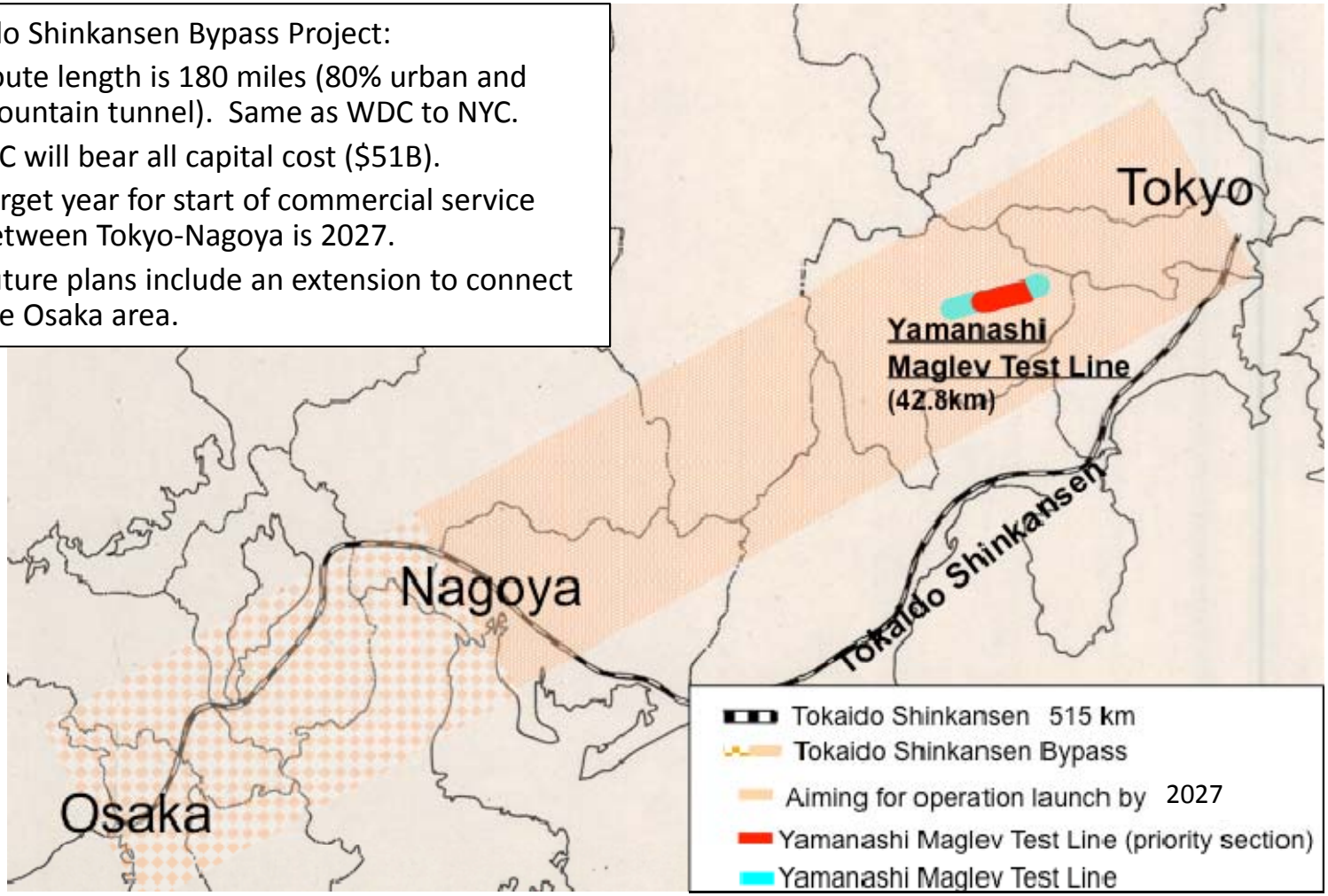


“Tokaido Shinkansen Bypass Project”

SCMAGLEV In Japan

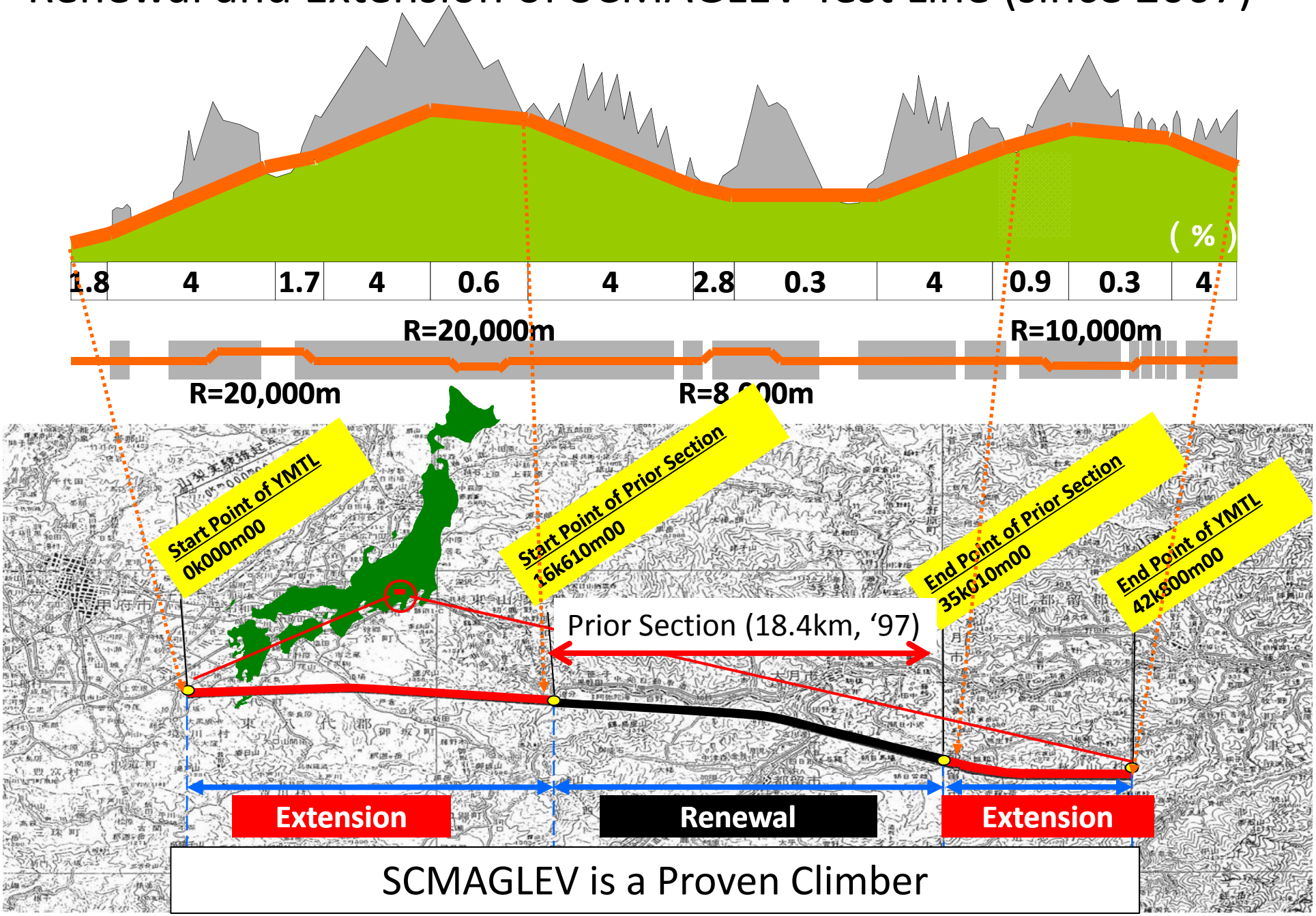
Tokaido Shinkansen Bypass Project:

- Route length is 180 miles (80% urban and mountain tunnel). Same as WDC to NYC.
- JRC will bear all capital cost ($51B).
- Target year for start of commercial service between Tokyo-Nagoya is 2027.
- Future plans include an extension to connect the Osaka area.



Revenue Service is Under Construction in Japan

Renewal and Extension of SCMAGLEV Test Line (since 2007)



SCMAGLEV is a Proven Climber

Bringing the World's Fastest Train to the United States

SCMAGLEV to the U.S.

- SCMAGLEV technology is now fully developed and ready for deployment. A U.S. project will:
  - Set the standard for future of U.S. high-speed ground transportation service
  - Demonstrate the superiority of an SCMAGLEV solution
  - Create opportunities for other SCMAGLEV technology applications
  - Reinforce the U.S.-Japan strategic alliance

USJMAGLEV and JRC are committed to working with stakeholders in diverse corridors to deploy the SCMAGLEV system and technology in the United States.

Benefits for U.S. Projects

- JRC has demonstrated that the SCMAGLEV can operate safely and is stable on a steep gradient (4%)
- SCMAGLEV operates at the highest speed with high acceleration
- SCMAGLEV maximizes its safe operation through a combination of guideway and superconducting magnet design
- SCMAGLEV is highly environmentally friendly with its low energy use and noise reduction features
- Technology transfer
- Economies of scale resulting from the ongoing project in Japan will drive down component costs

Cost/Benefit Ratio for SCMAGLEV is High

Issues & Challenges

- Standards & Regulations (apply to both N700-I and SCMAGLEV
  - Not all systems conform to same specs
  - Broad and level playing field will ensure Americans get the best technology available
  - Key is to balance safety and performance
- System Integration
  - Procurement strategies will vary by corridor, but must not undermine system integration
- Financing & Funding
  - Federal long-term commitment still unclear
  - Significant private sector involvement will be critical
  - Risk must be fully understood and managed
  - Corridor Demographics and Right of Way

Each Corridor has Unique Challenges

Next Steps

- USJHSR and USJMAGLEV will work with key stakeholders in Atlanta, Chattanooga, and Nashville to promote and develop high-speed ground corridor projects.
- JRC and USJMAGLEV are also exploring:
  - Industrial partnering opportunities (e.g., U.S. component manufacturing)
  - Intellectual property leasing
  - Public and private sector briefings
  - Other technology applications (e.g. energy, medical, etc)

JRC and Its Partners Provide Total System Solutions

Questions?

Contact Us

U.S.-Japan MAGLEV
U.S.-Japan High-Speed Rail

1331 H Street NW, Suite 500
Washington DC 20005
Phone: 202-403-0438

Web: www.usjmaglev.com
www.usjhsr.com
Email: info@usjmaglev.com
info@usjhsr.com