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MAGLEV 2011

Keynote Speech 3

Laurence E. Blow
MaglevTransport, Inc., USA

Status of Maglev Projects in the USA

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Status of Maglev Projects in the USA

Laurence E. (Larry) Blow
MaglevTransport, Inc.
www.maglevtransport.com

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Systems of Interest

- **High-speed maglev**
  - Intercity passengers
- **Low-speed maglev**
  - Urban passengers
- **Other systems**:
  - Emerging system in Colorado
  - Research project at Old Dominion Univ.
  - Innovative approaches

Summary

- High-speed maglev projects are awaiting funding or slowly drifting away; Colo. is new
- Low-speed technologies remain under study, but construction projects are elusive
- Innovative approaches are always active
- 2008 - 2011 has been a waiting game
  - U.S. Administration is negative toward maglev compared with conventional high-speed rail (using incremental upgrades)
- Near-term economic conditions are challenging

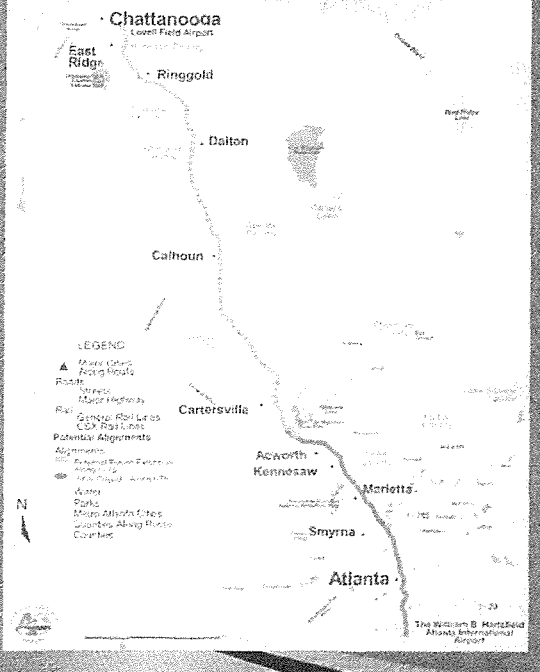
High-speed Maglevs

- **Transrapid (Germany)**
- **Superconducting Maglev (Japan)**

Transrapid

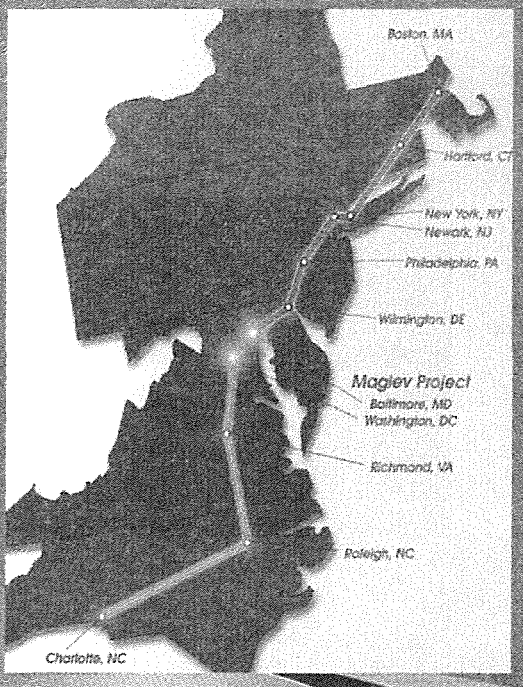
- Technology deployed in Shanghai in 2004
- Maglev Deployment Program (MDP):
  - Atlanta, GA – Chattanooga, TN
  - Baltimore, MD – Washington, DC
  - Las Vegas, NV – Anaheim, CA
  - Los Angeles, CA
  - Pittsburgh, PA
- Other project areas:
  - Chattanooga – Nashville, TN
  - Orange County, CA
- US$90M planned in 2008 never appeared
- Awaiting a go-ahead on any project

Atlanta - Chattanooga



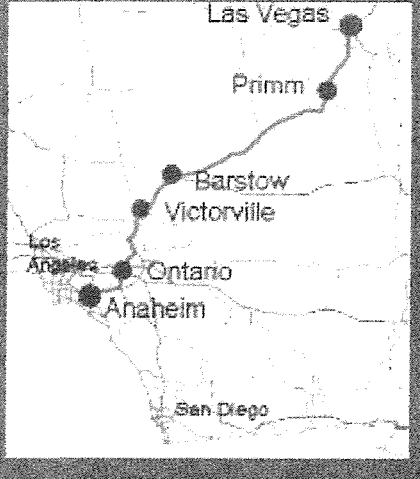
- MDP pre-construction planning in 2000-2002
- Tier I EIS begun in 2008
- GDOT/AECOM lead
- Tier II EIS funds awarded
- Technology selection to occur during Tier II EIS
- Significant new funding expected in 2012
- Active

Baltimore - Washington



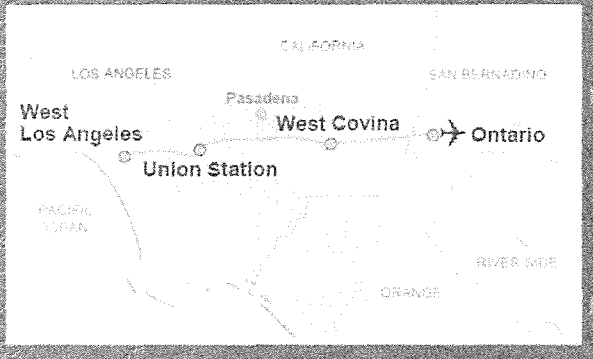
- MDP pre-construction planning in 2000
- DEIS in 2003, draft FEIS submitted 2007
- MTA/KCI-PB team lead
- Opportunity for new federal funds in 2012
- Original study inactive

Las Vegas - Anaheim



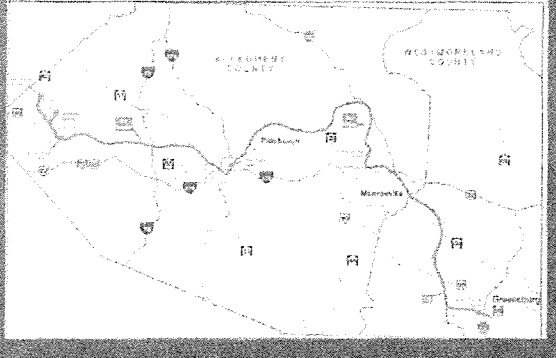
- MDP pre-construction planning 1999-2003
- EIS work: 2003-2007
- CNSSTC, American Magline Group lead
- Owed US$45M from $90M funds...Awaiting contract
- Current plan:
  - IOS starts in either NV or CA
  - Tech transfer, construction funding agreements in place with Chinese, German and U.S. firms
- Active

Southern California Association of Governments (SCAG), Los Angeles



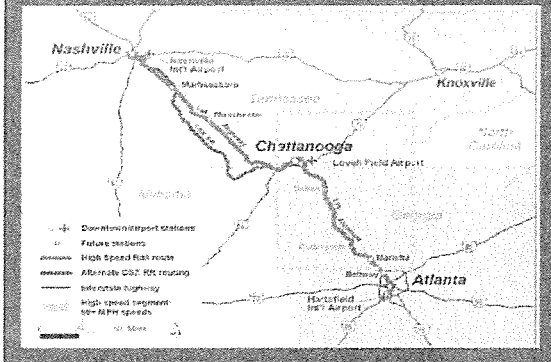
- MDP planning in 2000
- Initial engineering, EIS work completed
- SCAG analysis in 2009: technology-neutral, "High-speed Regional Transport" project
- Duplicates CA HSR
- Not funded
- Pending

Pittsburgh, PA



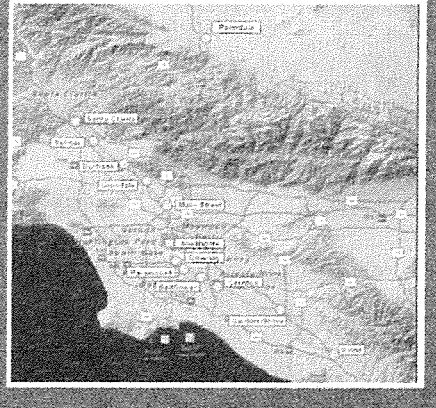
- MDP planning in 2000
- DEIS, FEIS approved in 2007-09
- PennDOT, PAAC, Maglev Inc. lead
- Project oriented as industrial development vs. transport project
- July, 2011: MLI declared bankruptcy
- Inactive

Chattanooga - Nashville



- 2005: Statewide HSR feasibility study
- 2008: Maglev feasibility study completed
  - Feasibility confirmed
  - Costs in normal ranges
- 2010: Full A-C-N corridor established
- Active

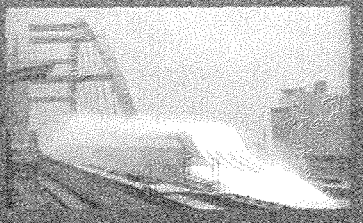
Orangeline, Los Angeles



- Private initiative, begun by 13 cities in 2002
- Today, US$240M available under "Measure R" plus future federal funds
- Orangeline Development Authority (OLDA) lead
- Open to all systems, not just maglev
- Active

Superconducting Maglev (SCM)

- Central Japan Railway (JRC): SCM a "revolutionary concept," should be promoted internationally
- 2009: U.S.-Japan Maglev office formed to assess int'l markets
- CFS from 1997: Maglev in the Northeast Corridor has best performance and economics
- Keys to success: Public-private partnerships, financing and U.S. government approvals
- Active



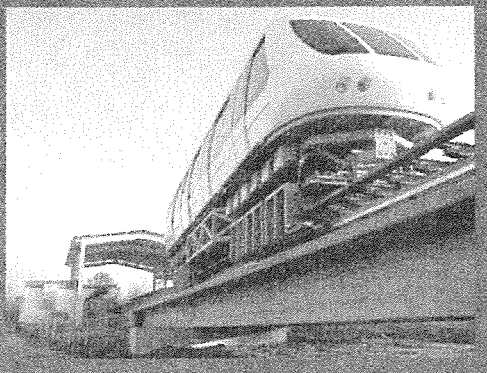
SC Maglev @ 500 km/h
Typhoon Roke,
September 21, 2011

Low-speed Maglevs

- **AMT**
- **General Atomics**
- **HSST/Linimo**
- **Maglev 2000**
- **MagneMotion**
- **Magplane**

American Maglev Technology

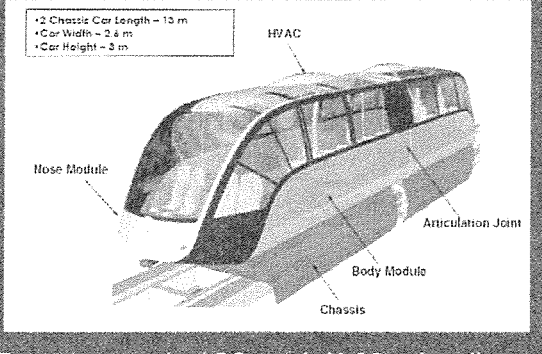
- EMS Suspension, LIM
- Cargo and passenger
- Undergoing full-scale tests on 600-m track
- Promoting projects in Brazil, Canada, India, Mexico, Puerto Rico, Spain and the U.S.
- Active



Test facility near Atlanta, GA

General Atomics Urban Maglev

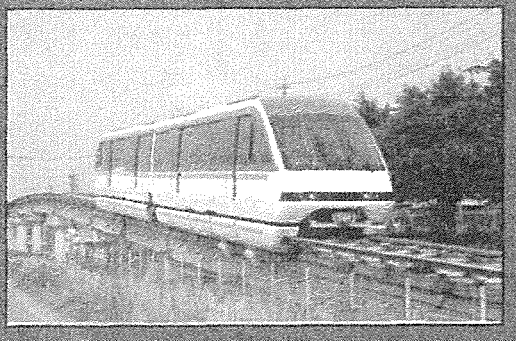
- Halbach array (PM) suspension, LSM
- 4.5-mile (7.2-km) "CALU" campus shuttle:
  - Technical feasibility verified
  - Initial EIS completed
- Completed all federal technical objectives
- Ready for demonstration and deployment
- Active



Target speed: 100 mph/160+ km/h
Max. Acceleration: 1.6 m/sec^2 (.16 g)
Max. Gradient: 7% in CALU application

HSST / Linimo Urban Maglev

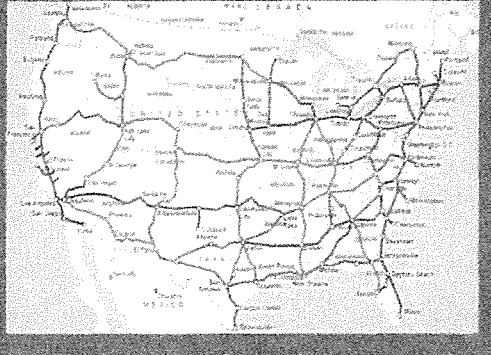
- Most mature system
- Operational in Nagoya since 2005
- EMS Suspension, LIM propulsion
- Analyzed for use in Colorado, Hawaii
- No U.S. projects
- Inactive



Federal Urban Maglev Goals
Top speed: 100 mph/160+ km/h
Max. Acceleration: 1.6 m/sec^2
Max. Braking: 3.6 m/sec^2
Max. Gradient: 10%
Max. Noise Level: 70 dBA

Maglev 2000

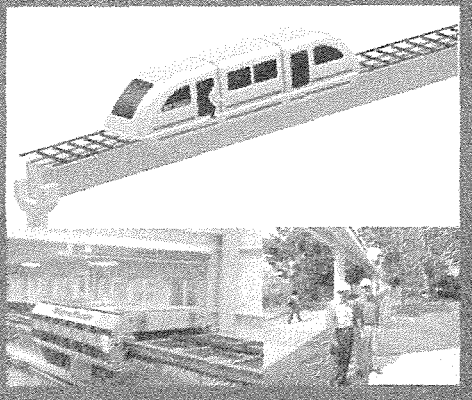
- 2nd generation system
  - HTS magnets
  - EDS suspension
  - LSM propulsion
  - High-speed electronic switching
- Florida MDP project
- Needs a full-scale testing facility
- Active



Vision: National Maglev Network
- Covers 28.8K miles/46.3K km
- Connects 174 metro areas
- Serves 230+ million people within 15 miles of a station

MagneMotion

- Permanent Magnet EMS
- High-efficiency, large-gap suspension
- FTA-supported since 2001
- Testing underway at full-scale 50-m test track in Devens, MA
- Nov., 2011: Begin tests on outdoor 75-m track at ODU, Norfolk VA
- Active



Target speeds:
Urban: 160 km/h (100 mph)
Intercity: 430 km/h (267 mph)

Magplane

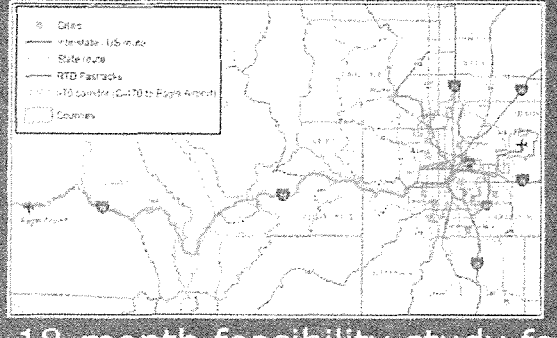
- Common track for single urban, intercity vehicles
- EDS PM suspension, LSM mounted in track
- Planned 19-mile (30-km) route for Beijing
- Mining application in construction, Inner Mongolia
- No U.S. projects
- Inactive

Top speed: 60 -300 mph
Banking: +/- 10^0
Passive or mechanical switching

Other Systems

- Emerging project in Colorado
- Research project at Old Dominion University
- Innovative approaches

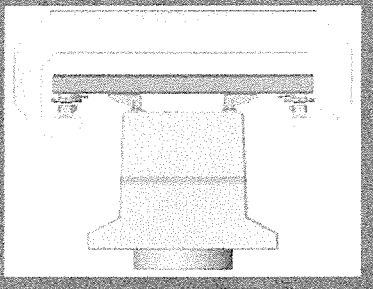
"Advanced Guideway System" in Colorado



- US$2.3M, 18-month feasibility study for the I-70 Mountain Corridor (190km/120mi west of Denver)
  - Purpose: Identify alignments, stations and technologies to implement an AGS system – "a high-speed monorail or maglev"
  - Procurement expected in November, 2011

Old Dominion University

- Research opportunity following stalled AMT campus shuttle in 2003
- MagneMotion joint venture: multiple test vehicles at full speeds on existing guideway
- US$8M for hardware development & testing
- Active

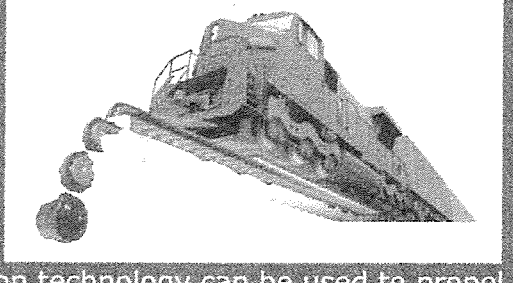


Planned MM bogie and LSM stators mounted on ODU girder

Speed goal: 40 mph / 64 km/h

Innovative Approaches

- Maglev subsystems can be adapted to conventional rail applications
  - Maglev 2000/MERRI, Fastransit, MagneMotion
  - Shapery Enterprises:



LSM propulsion technology can be used to propel conventional vehicles suspended by wheels, such as intercity rail, commuter rail, light rail and monorail systems.

Innovative Approaches (cont'd)

- Personal Rapid Transit, Group Rapid Transit concepts w/ maglev technologies

Fastransit

Interstate Traveler

SkyTran

Summary

- High-speed maglev projects are awaiting funding or slowly drifting away; Colo. is new
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- Near-term economic conditions are challenging