MicroRail monorail, LRT, BRT & streetcar alternate

Practical & affordable alternate is now available!

MegaRail® Transportation Systems, Inc.
Fort Worth, Texas

• Low Cost
• Low Tech
• Low Risk

U.S. PATS. 6,039,135, 6,401,625, 6,435,100, 6,615,740, 6,742,458, 6,834,595 & 6,837,167
OTHER U.S. & INTERNATIONAL PATENTS PENDING
Presentation Covers

Major problems with current transit systems

*MicroRail™* system – The *affordable* alternate

*MicroRail™* capabilities & advantages
Monorail Guideway Problems

**Heavy piers & beams** – Must support 100,000-lb cars
  - Massive concrete piers to support monorail beams

**Guideway** – Necessary escape walkways now block sky

**Right of way** – ROW for piers & trains needed
  - 25-ft over city streets *(Typical)* – Support piers - Typ. 6-ft x 4-ft

*Not your father’s Disney monorail*

Heavy & costly structures  Massive support columns  Large amount of sky blockage
LRT/BRT & Streetcar Guideway Problems

**Not light weight** – Must support 149,000-lb cars for LRT
  - Heavy-duty bridge structures needed

**Guideway** – Railroad-type rails or dedicated BRT pavement lanes

**Right of way** – Dedicated 44-ft ROW needed can be needed
  - 25-ft on city streets *(Typical)*
  - On-street lines often take two traffic lanes & interfere with traffic

Heavy-duty & costly structures  Massive support columns  Multiple traffic lanes lost
Critical Cost & Time Impacts
LRT, Streetcar, BRT & monorail systems

High initial cost – $30 to $190 M / mile (US)
At-grade LRT - $30 – $60M/mi – (Avg. $45M/mi)
(Slightly lower cost for BRT)
Las Vegas Monorail - 3.9-mi ($650M) ($166M/mi)
Next 2.4-mi est. $454M ($189M/mi)

High O&M costs – 15 - 25% from fares - Positive ROI impossible

Long wait time – Often 6 to 12 years
- Heavy construction required
- Major traffic disruptions
Fixed Route Transit “Last Mile” Problem

Service does not appeal to most people

Root cause of low ridership problem
(System unable to provide door to door & 24/7 service)

Light rail stations
(one to two mile spacing)

Light rail line

Desired service area
(Now served by buses or nothing)

Typical max walk distance
(1/8 mile)

Only the carless & a few others use fixed route transit

To date, expensive BRT has offered the only solution
Monorail, LRT, Streetcar & BRT Alternate
Superior performance & capability in small space & at low cost

Dualmode *CargoTram* on street
Point to point cargo transport

Dualmode passenger tram on street
offers BRT service

*CarTrain™* service for small automobiles

Ultralight *MicroRail* passenger transport train on elevated guideway
(Mechanically-coupled train operated by on-board motorman)

PAT. PENDING
Expanded *MicroRail* Capability

**All LRT, streetcar, BRT & monorail capabilities plus**

- Guideway stations – Serve both guideway trains & dualmode trams
- BRT capability plus • Guideway station use & short turns (30-ft)
  • Electrical guideway operation
  • Hybrid street operation

**Point to point cargo transport – Cargo trams**

- Shares passenger train guideway
- Electrical guideway operation
- On or off-guideway transport
- Hybrid street operation

**Easy expansion** – Affordable extension throughout area

- Use available bridges or new, lightweight suspension bridges
- No traffic lanes eliminated
- Minimal installation impact

**Go-anywhere** (Including up hills) – Cars use rubber tires

PAT. PENDING
MicroRail™ Easy Fit over City Streets

**MicroRail™ System**
over Typical Street

- Up street MicroRail™
- Down street MicroRail™

**Street Measurements**
- 13’
- 12’
- 12’
- 12’
- 6’
- 18’
- 18’

** Economist **
- Walk width increased to 23-feet
- Street narrowed to 4 lanes
- Heavy Monorail Recently Proposed for Seattle on Same Street

**Note**
- Street lanes loss & trains within 6-feet of buildings.
- 13-feet space
- Street lanes unchanged
- Walk width unchanged

MC-PC-ALT-4
**MicroRail™ Skycoach™ mass transit service**

**MicroRail** – Affordable urban mass transit

- Whisper-quiet smooth ride
- ALL passengers seated
- Grade-separated for safety
- Safe, derail-proof design
- All-weather service
- 65-mph top speed

- Service in 36 months
- All-electric operation
- Use street right-of-way
- Ultra-low noise
- Motorman manual control
- Ultra-low 20% LRT cost
- 6X at-grade LRT capacity

**MicroRail** – Small, Ultra-light, comfortable SkyCoaches

- 3% LRT car weight
- Self-propelled
- Long-life stainless
- Rubber tires
- Air suspension
- Air conditioned
- 13-passenger cars

20 to 30-car trains – 260 to 390 passengers per train
Superior MicroRail Performance

Passenger performance

- High-speed – 65-mph – Short trip times!
- High passenger capacity
  - 24,000 pphpd (Typical light rail 200-ft station length) (36,000 with 300-ft stations)
    (Typical conventional monorail capacity = 7,520 pphpd)
- Short wait times – As short as 30 seconds
  No switching delays – Full-speed, car-based switching

Cargo & automobile transport performance

- High-speed – 65-mph – Short trip times!
- No automobile or cargo traffic delays
- Fast car travel & cargo delivery to local docks & terminals
MicroRail Dualmode SkyTram™ BRT Service

Dualmode passenger SkyTram operates on guideway under automated control with guideway electrical power

Dualmode passenger SkyTram provides BRT service on street in hybrid mode
**MicroRail™ Dualmode CarTram™**

Near-term Freeway Congestion Relief

- Cars drive on and off to side roads at stops at the same time
- Compact cars with passengers move at constant 65-mph speed
**MicroRail™ – Dualmode Cargo Tram!**

Dualmode cargo tram operates on guideway under automated control with guideway electrical power

Dualmode cargo tram exits guideway & operates on street in hybrid mode

Guideway shared with passenger trains & trams

PAT. PENDING
**MicroRail™ – Point Point Cargo Transport!**

Cargo Container Train Transport
( In trains to on-guideway cargo & tram terminals )

Future Automated Container Transport
( Single carriers to on-guideway terminals )

Containers are Transportable by Truck

PAT. PENDING

Comprehensive Urban Cargo Transport
Attractive, **Low Profile** Stainless Guideway

Ultralight, stainless-steel structure

Long-life, no rusting

Guideways elevated above street & pedestrian traffic - *MicroRail* guideway photo

Minimum sky blockage – No wide beam, switch or LRT shadows

View looking upward through guideway

Small, 6.4-ft wide by 34-inch high *MicroRail* guideway

U.S. Patent 6,837,167
**MicroRail** is Available NOW!

**Guideway installation**
- Guideway engineering – Immediate start
- First production guideway sections deliver in 12 months

**Train production**
- Start within 12 months
- Deliveries within 18 months

**First service within 36 months** – (Manual control)

No waiting for extensive new development!

Demo system operating
Prototype Test Vehicle

Now in road and guideway testing

Main chassis unit of hybrid dualmode tram lead car in test
( Dualmode version operates both on guideway & streets )

Not a “paper” system
Its real and working
Low-cost, All-weather, Enclosed Rails

• Low-cost guideway rails
  • Formed from flat stainless-steel
  • Machine-welded construction
  • Low material & labor costs
  • Bolt-in electric power rails
  • Trucked to installation site

• All-weather, enclosed rails
  • Wheels & power collectors inside
  • Protected electric power rails
  • Dry & ice-free traction surfaces
  • Safe operation in any weather
  • Whisper-quiet operation
Conventional off-the-shelf Train Control Used

Used on light rail systems for over a century

- Manual speed and brake controls
- Precise in-cab signaling for close train spacing
Factory-built, Modular *SkyCoach™* Stations

- Low-maintenance stainless-steel
- Low cost
- Minimum street impact

*MegaRail™* mass transit train at four-car elevated, over-street *SkyCoach™* station

Platform-edge wall with sliding doors omitted to show train

Stairs

Elevator

Stations over streets

Wall with sliding doors for safety
Modular, Street-level SkyTram™ BRT Stations

Dualmode MicroRail™ SkyTram™ provides BRT service to stations on parking lot or on streets

- Low-maintenance stainless-steel
- Low cost
- Minimum ground space
SkyCoach™ Step in and Sit Entry & Exit

- No center aisles!
  - Fast entry & exit
  - Short station dwell times
- Ample leg room

Photos are of larger, but similar, MegaRail cabin

All cars are wheelchair-compatible
SkyCoach™ Offers Safe Escape
Unaided escape for all (including wheelchairs) without rescue personnel

- Full-height escape doors in ends of cars
- Open-mesh escape walkway between rails
- Covered electric rails

Upward view through walkway
Technical Summary

Unique new combination of off-the-shelf, proven technology

Enclosed stainless-steel guideway rails - US Pat. 6,039,135
- Simple welded steel factory fabrication
- Standard electrical power rails

Flat-free tires – Current car tire technology

Permanent-magnet electric motors
- Current commercial brushless-motor technology
- Electric motor wheels – current electric car use

Car-based steering & switching
- Automobile-type steering with electronic control
- Switching – No moving rails – Used in other people-movers

Only the combination & guideway are new!
**MicroRail** - **Low-risk Solution**

Revolutionary, but entirely upon off-the-shelf, proven technology

- First systems use manual train control
  Control proven in transit and railroad systems

- No exotic new technology
  All technology proven in transit and auto systems*

- Guideway is only really new element!
  (And it is a simple welded steel structure)

* Future automated systems also employ proven aircraft technology
Future “Last Mile” Problem Solutions
Fully Automated, 24/7 services in 48 Months

PAT service

Carferry™ service

Dualmode electric & hybrid-electric automobiles

Automated personal dualmode automobile service on guideways

Dualmode personal automobile service on ordinary streets
MicroRail Summary

Performance – Beats heavy monorail, LRT, streetcar & BRT
• Up to 36,000 pphpd (300-ft stations) – 24,000 pphpd (200-ft stations)
  Conventional monorail capacity = 7,500 pphpd
• Shorter trip times • Bus-type hill capability • Dualmode serves more

First service – Within 36 months! – (LRT type manual control)
• Much less than typical monorail, LRT & BRT – No funding delays

Total system cost – 15 - 20% of typical monorail, LRT or BRT
• Local funding and control • No on-going operation subsidies

Environment friendly – Noise free operation
• No construction or operating impacts to business or street traffic
• No earth moving • No added right-of-way • Zero emissions

Monorail, BRT & Freeway Alternate Available NOW

Low Cost
Low Tech
Low Risk
Revolutionary, High-speed, Multi-user 21st Century Transport!

offers -

• Unprecedented level of service
• Low transportation user costs

Near-term & affordable solution to traffic & air pollution problems