

Goldlane in South Florida

An Automated Guideway Network for the Tri-County Region

A connected guideway network that moves automated transit, cargo, and even privately owned autonomous vehicles across one shared system.

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A companion technical paper covering guideway and vehicle engineering, distributed control, and system operation is available for engineers and transit professionals.

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Executive Summary

South Florida is running out of room to move. Highways that cannot be widened, an international airport approaching its capacity ceilings, a seaport growing faster than its ground access, and the airport-to-seaport connections each county most needs but barely has: the region's movement problem can no longer be solved by adding lanes.

Goldlane is an elevated, fully automated guideway network that carries three kinds of traffic on one shared system: transit passengers, freight, and privately owned autonomous vehicles driven aboard. Small self-directed vehicles travel a dedicated, grade-separated

path at highway speed, routed individually and without a fixed schedule, the efficiency of rail with the point-to-point flexibility of the road.

For the region and its public agencies, Goldlane offers three things at once:

- **It pays for itself.** Operations are funded by the people and freight that use the system, not by recurring taxpayer subsidy. Construction draws on revenue bonds, private development, and grants concentrated in the early proving phases.
- **It makes existing public assets more valuable.** Rather than building new airports or ports, Goldlane connects the ones the region already owns, relieving the capacity constraints at Miami International Airport, activating Miami Executive Airport as overflow, and moving PortMiami and Port Everglades containers off local roads.
- **It grows like public infrastructure, not a private product.** Goldlane sets a single open standard that any qualified manufacturer builds vehicles to, and any agency or developer can extend the network the way a new roadway lane is added.

The first South Florida network follows the I-95 corridor from Miami north toward the Treasure Coast, anchored by the region's airports and seaports and building outward in phases. This paper lays out the regional case, the deployment, and the public benefit.

1. The Regional Challenge

South Florida's growth has outpaced the transportation model it was built on. The tri-county region of Miami-Dade, Broward, and Palm Beach is among the most congested in the nation, and the conventional responses have run out of room.

Highways that widening cannot fix. The region's core corridors, I-95 chief among them, carry more demand than they can absorb at peak, and there is little physical or fiscal room to widen them further. Adding lanes in dense urban areas is expensive, disruptive, and, as decades of experience nationwide show, quickly refilled by induced demand. The region needs new capacity that does not depend on more pavement.

An airport approaching its ceilings. Miami International Airport is the busiest U.S. gateway for international air cargo and one of the busiest for passengers, and it is running into two distinct limits at once. Its airfield operates at roughly 80% of capacity, the threshold where delays begin to cascade, and it has no land for new runways. On the cargo side, it is landlocked: its response to surging freight is to build vertically, and even that will be exhausted within the next decade of growth. MIA cannot expand its way out of either constraint on its own footprint.

A seaport growing faster than its roads. PortMiami and Port Everglades each move more than a million TEU containers a year, but every container that lands must reach an inland warehouse, overwhelmingly by truck, through a region whose roads are already full. PortMiami has already invested heavily to keep truck traffic off downtown streets; the next step is getting containers to the warehouse districts without adding to regional road congestion at all.

Connections that don't exist. Within each county, the trips that matter most to that county have no dedicated transit at all: MIA to PortMiami in Miami-Dade, FLL to Port Everglades in Broward. These airport-to-cruiseport links are close but not close enough: served only by private shuttles and rideshare on congested roads, at their most painful exactly when demand peaks. For the millions of cruise passengers who fly in and need to reach their ship, that short trip is a stressful, traffic-exposed gap.

The common thread is simple: South Florida is reaching the limits of moving people and goods by conventional means, and the fixes that remain, new airports, wider highways, more trucks, are the most expensive and least effective ones. Goldlane offers a different kind of capacity.

2. What Goldlane Is

Goldlane is a connected guideway network that moves automated transit, cargo, and even privately owned autonomous vehicles across one shared system.

Vehicles run inside an elevated guideway, a dedicated, grade-separated path that never waits at an intersection and never shares a lane with ordinary traffic. They are small and self-directed: each vehicle carries the network map, plans its own route, and drives itself to its destination, bypassing every stop that isn't its own. There is no timetable to catch and no central control room dispatching vehicles; a vehicle is sized to the trip rather than to the rush hour.

The defining idea is that the same infrastructure is indifferent to what rides on it:

- **Transit.** Small automated vehicles carry up to 12 passengers point to point, bypassing stops that aren't theirs, with no timetable to catch. Every vehicle has level boarding and is wheelchair accessible.
- **Cargo.** Freight moves in standardized containers on the same guideway, routed directly and driverless, kept separate from passenger traffic by credential rather than by separate infrastructure. Enclosed vehicles in multiple sizes carry air cargo containers; open beds carry empty or lightweight shipping containers.
- **Privately owned autonomous vehicles.** A qualifying private vehicle can enter the guideway and travel it directly, the reach of a personal car with the flow of a dedicated network. Any compatible car, from any manufacturer, can use it: an Autonomous Vehicle Express Lane (AVEX) network that stretches north-south and east-west.

Because the path and the timing are known in advance, the system can tell a rider or a shipper their arrival time up front, with only a small, bounded allowance for traffic, a level of reliability no road or bus route can offer. The engineering that makes this possible is covered in the companion technical paper; for the purposes of this document, the point is that Goldlane delivers dedicated, weather-independent, predictable movement on infrastructure far smaller and cheaper than the roads it relieves.

3. The South Florida Deployment

Goldlane's ideal network follows the region's primary north-south axis, the I-95 corridor, from Miami International Airport north toward the Treasure Coast, with connectors reaching the region's airports, seaports, urban areas, and warehouse districts. It is built in phases, each one proving the system and funding the next, beginning with validation and early revenue-generating segments before the main spine is built.

Validation at SunTrax. The system's control logic and vehicles are proven at SunTrax, Florida's premier autonomous-vehicle testing complex, before any public segment opens: an at-grade proof-of-concept, then freight and low-speed testing, then high-speed certification. This simulation-and-test-first approach means the technology is demonstrated before it carries a single passenger.

Early revenue segments. The first public-facing installations are short, high-value elevated segments (a developer-funded urban loop, most likely in Wynwood, and the airport-to-seaport-to-warehouse freight corridor) that generate revenue and demonstrate the model while the case for the full spine matures.

The spine and its extensions. From there the network builds along I-95: Miami to Fort Lauderdale first, then north to West Palm Beach, and ultimately to Port St. Lucie, with east-west lines every 5 to 10 miles. Each segment is justified on its own merits and funded as its case becomes strong, so the network grows the way roadway networks grow: incrementally, by demand. Each autonomous-vehicle station works like an interstate on-ramp, but because the stations are small and widely distributed, they add access without concentrating new traffic at any one point.

The corridors and sequence described here are the deployment as currently planned; the essential point is that the network starts small, proves itself, and extends outward without ever depending on a single all-at-once megaproject. As the network grows, transit riders can reach more of the region without a car, while suburban residents who prefer their own vehicle can stay in it, driving onto a high-speed autonomous guideway rather than fighting traffic.

4. Miami-Dade Airport and Seaport Anchors

Goldlane's regional value is clearest at the airports and seaports that drive South Florida's economy. Rather than build new facilities, Goldlane connects and relieves the ones the region already owns, starting with the passenger connections each county most needs, then the cargo gateways.

Airport–Cruise Connectivity: The Trip Each County Needs Most

South Florida is home to two of the busiest cruise ports in the world, and a large share of their passengers fly in. The trip from the airport to the ship is short but painful, served only

by private shuttles and rideshare on congested roads, at its worst on embarkation mornings, exactly when it matters most. For a cruise passenger, being late is not an inconvenience; the ship leaves without them.

Goldlane connects airports and cruise terminals directly, on dedicated guideway, with the deterministic arrival times the system guarantees, worth more to a cruise passenger than to almost anyone. The Goldlane connection can reach each individual cruise terminal rather than a single drop-off point. Initial connections run from the Miami Intermodal Center (MIC); over time they can extend into the airside terminals and incorporate a separate, offsite cruise TSA checkpoint, so a passenger clears security once and travels secure all the way from ship to plane. This turns a chronic regional pain point into a reliable, dedicated link, and adds a large, high-value stream of riders to the network.

Goldlane can also connect the region's airports to each other, an FLL-to-MIA link, for example, that moves a connecting traveler between airports without traffic or a second trip through security. This is a smaller piece of the picture than the cruise and seaport connections, but it is a natural extension of the same network.

Miami International Airport: Relieving the Cargo Gateway

MIA is the nation's perishables gateway, handling the majority of U.S. air imports of flowers, seafood, and fresh produce, along with a large and growing pharmaceutical cold chain. This is precisely the cargo for which Goldlane is best suited: time-critical, temperature-sensitive freight whose value degrades by the hour when it waits for a truck or sits in traffic.

Goldlane connects MIA's cargo aprons directly to the cold-storage and warehouse district in Doral, moving perishables off the airport and onto the guideway within minutes of clearing the aircraft: no truck, no local road, no delay. This does two things at once: it gives shippers the fast, reliable, weather-independent delivery that perishables command, and it relieves the on-airport handling constraint that is driving hundreds of millions of dollars of new warehouse construction. By moving cargo directly off-airport, Goldlane frees scarce airport land for the operations that only an airport can perform.

Miami Executive Airport: Overflow Without the Roadway

Miami-Dade County owns a second airport, Miami Executive Airport (TMB), whose runways are used today only for general aviation. It is not set up for commercial cargo or passenger service because it does not have the surrounding roadway, terminal, or warehouse infrastructure.

Goldlane removes these obstacles entirely. With a guideway connection, TMB's passengers, cargo, and workers arrive and depart by guideway, not on the local roads. TMB becomes a networked extension of MIA: a traveler checks in and clears security at a terminal building at MIA, then rides Goldlane the short distance to TMB's airside, functionally an internal transfer within one airport system. The only building needed at TMB is small concourse with a jet bridge. Freight that lands at TMB and moves straight to the Doral warehouses by

guideway. Goldlane turns an underused county asset into the relief facility the region needs, using land the county already owns and adding no traffic to the surrounding streets.

PortMiami: Containers Off the Roads

PortMiami's containers must reach inland warehouses, and today that means trucks. Goldlane moves them on the guideway instead, directly from the port to the Doral warehouse district, taking container traffic off the regional roads rather than adding to it.

It is estimated that roughly 15% of arriving containers weigh under 22,000 pounds, light enough to use the Goldlane guideway. In addition, about half of outbound containers are empty. Because trucks hardly ever drop off and pick up a container on the same trip, every container that travels on Goldlane eliminates two truck trips from the roadway. The refrigerated and perishable containers that are a signature of PortMiami's trade benefit from the same fast, direct, cold-chain-friendly delivery as MIA's air perishables. Together, MIA and PortMiami make Doral the convergence point for both the region's air and sea freight, connected to both gateways by one guideway network.

For the heaviest containers, Goldlane's future plan could include a dedicated heavy-freight guideway, the same guideway design on a heavier structure, running a direct, low-speed, port-to-warehouse route.

5. Fort Lauderdale and West Palm Beach

The anchors described so far are Miami-Dade's, but the same pattern repeats north of the county line. Goldlane connects Broward and Palm Beach to their own airports and seaports in exactly the way it connects Miami-Dade to its.

Fort Lauderdale: airport and cruiseport side by side

Fort Lauderdale-Hollywood International Airport (FLL) is one of the busiest airports in the state, carrying a large share of leisure and cruise travelers. It sits immediately next to Port Everglades, one of the busiest cruise ports in the world and a major container port. That proximity makes the airport-to-cruise connection described above especially strong in Broward: the trip between the two is short, the passenger volume is large, and the embarkation-morning reliability problem is the same one Goldlane solves in Miami-Dade. A guideway link joining FLL, Port Everglades, and downtown Fort Lauderdale serves the cruise passenger and the daily commuter on the same infrastructure.

On the freight side, almost everything described for PortMiami applies to Port Everglades as well: a share of inbound containers is light enough to travel on the guideway, a large portion of outbound containers move empty, and every container carried on Goldlane eliminates two truck trips from the roads. The one meaningful difference is that Broward does not have a single concentrated warehouse district equivalent to Doral; its distribution is more dispersed. Without that convergence point, the direct port-to-district freight case is weaker, and a dedicated heavy-freight guideway is unlikely to be justified at Port

Everglades. The passenger connections and the light-container movements remain valuable.

West Palm Beach: the northern anchor

West Palm Beach has a booming downtown development that is currently limited by traffic and parking. With a Goldlane system, large parking garages could be built at the airport, where they have direct connection ramps to I-95. From the airport garage, residents, commuters, and visitors, can travel downtown without hitting a single traffic light. Downtown developments can maximize building and green space instead of parking. This section can be built sooner, and be sustainable even without the I-95 spine connection.

6. Transit-Oriented Development and Housing

Beyond moving people and freight, Goldlane changes what the land around it is worth and what can be built there. This makes the network a tool for housing and economic development, not only for transportation.

Every station is a development seed. Transit-oriented development, the dense, walkable, mixed-use growth that forms around transit stations, is a well-established pattern. Goldlane extends it. Because its stations are small, numerous, grade-separated, and add access without adding road traffic, each one creates an Enhanced Transit-Oriented Development (eTOD) area: a node where residents and workers can reach the region without a car and without loading the local streets. A building at a Goldlane station does not have to size itself to the road in front of it, because its daily access comes from the guideway.

Unlocking land the roads cannot reach. The more distinctive opportunity is land with limited roadway access. Across the region there are parcels that are difficult to develop, not because of the land itself, but because the surrounding roads cannot carry the traffic that new development would generate, or because the site simply has poor road frontage. A Goldlane station gives such a parcel high-capacity access independent of the local road network, turning land the roadway could never support into developable, transit-served ground. This is how the network can create new housing and commercial capacity in places that are otherwise stuck.

A direct tie to how the network funds itself. Because Goldlane creates this development value, it is positioned to capture a share of it to help fund construction, as the funding section describes. New development can locate its parking offsite at guideway-served sites near the interstate rather than on expensive core land, which takes traffic out of the core and frees high-value parcels for housing and productive use. The development opportunity and the funding mechanism are two views of the same effect: Goldlane makes land both more valuable and more usable, and reinvests a portion of that value into extending the network.

7. Public Benefit and Governance

Goldlane is organized as a nonprofit, and that structure is a deliberate response to what the network actually is.

A regional network is a natural monopoly. Because the first line is the beginning of an integrated network rather than an isolated segment, whoever builds and operates it effectively holds a monopoly over a new layer of regional movement. That is not a role to hand to an enterprise answerable to investor dividends, whose obligation is to extract returns from captive riders and shippers. A nonprofit is the right custodian: it is aligned permanently with the public it serves, it reinvests rather than distributes, and it removes the central objection to a privately owned monopoly over regional transportation.

One standard, many builders. Goldlane's role is to set and steward a single open standard, for the guideway, the vehicles, and the control system, that others build to. Vehicle manufacturers build to one specification instead of producing a custom vehicle for every system, the way the trucking and container industries are built on shared standards rather than one-off designs. This keeps vehicle costs down, invites competition among manufacturers, and prevents the region from being locked to a single proprietary supplier.

Expandable like public infrastructure. Because the standard is open, the network is not a closed product. Any agency, and even a private developer, can add a new Goldlane section the way a new roadway lane is added, building to the standard and connecting to the network. Goldlane maintains the integrity of the system; the region and its partners extend its reach.

8. Funding

Goldlane is designed to be built and operated without becoming a burden on taxpayers.

No recurring public subsidy. The system's operations are funded by the people and freight that use it. Unlike conventional transit, which typically requires perpetual operating subsidy, Goldlane's user-funded model means that once a segment is built, it pays its own way. There is no general obligation to taxpayers.

Value capture as a primary funding mechanism. Goldlane creates land value, and it captures that value to help fund the network. New development will locate its parking offsite, at guideway-served sites near the interstate where access is easy, rather than building structured parking on expensive core land. This takes traffic out of the core, removes parking from high-value parcels, and frees that land for far more productive development. The result is sites that are only developable because Goldlane provides their daily access. Because the network creates that developable value, developer contributions on those unlocked sites become one of the primary ways the network funds itself: not an incidental fee, but a central mechanism.

A blended construction funding mix. Alongside value capture, construction draws on revenue bonds repaid by user tolls over the life of the asset, private co-investment from the

ports, airports, and freight operators that benefit directly, and public grants concentrated in the early phases that prove the technology. As a nonprofit, Goldlane can access financing, including tax-exempt bonds issued through a public conduit with Goldlane as the obligor, and philanthropic and public support that a for-profit developer cannot.

The financing structure keeps public risk low and public benefit high: taxpayers are not on the hook for operations, early public investment is focused on validation rather than open-ended construction, and the users and beneficiaries of the system carry its costs.

9. Climate Resilience

For South Florida, resilience is not a feature; it is a requirement, and it is one of Goldlane's strongest advantages.

The guideway is elevated. That single fact means it stands above the flooding that increasingly closes the region's roads, and it is engineered for hurricane-force winds well beyond the region's building-code baseline. Where a flooded highway shuts down and a stalled roadway strands its traffic, an elevated guideway continues to operate, and can be brought back into service quickly and predictably after a storm.

This matters in two ways. Day to day, it means the network is not taken out by the routine flooding that already disrupts South Florida movement. In an emergency, it means a resilient, elevated corridor for moving people and critical goods when the roads are impassable. As sea level and storm intensity rise, an elevated, weather-independent network becomes not just convenient but strategically valuable regional infrastructure.

10. The Path Forward

Goldlane's South Florida network advances in deliberate steps, each one lowering risk before the next commitment.

The near-term work is validation and engagement: proving the control logic and vehicles at Florida's autonomous-vehicle testing complex, and beginning the conversations with the agencies and partners whose assets the network connects: the aviation and seaport authorities, the state department of transportation, county and municipal governments, and the developers and freight operators who benefit directly. A clear regulatory pathway for automated guideway transit is established in parallel, so that certification keeps pace with construction.

From there, the early revenue segments demonstrate the model in service, and the spine builds outward along I-95 as each segment's case matures. None of this depends on a single decision or a single megaproject; it depends on a sequence of steps, each justified on its own terms, that together build a new layer of regional infrastructure.

For agencies and partners, the invitation is straightforward: Goldlane connects and strengthens the assets South Florida already has, funds itself without recurring taxpayer subsidy, and grows like the public infrastructure it is meant to become. The next step is a conversation about how it serves your part of the region.

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