

Two of a Kind:

Miami's Metrorail & Metromover

Miami Metrorail trains pass along its elevated structure which passes through the west side of downtown.

By Gena Holle

A 2005 *Miami Herald* article quoted a frustrated driver about his congested South Florida commute to work: "On a bad day, forget about it," said Eddy Barrera. "One accident on the turnpike, and I'm ready to phone in and say, 'Forget it. I can't get there. I won't be in.'"

That's how bad traffic is in South Florida. It's only gotten worse since the Texas A&M University's Texas Transportation Institute ranked South Florida sixth in the nation for congestion in 2005, tied with Houston. Without public transportation, travel delays would have increased about 27 percent the report noted. In 2005, Southern Florida commuters were taking 42 percent longer to get to their destinations during rush hours than at non-commute times.

Relief is on the way but it won't happen overnight. Miami-Dade Transit (MDT) is about to expand Metrorail, its rail rapid transit service, from one line to two and the new route will parallel the busy State Road 836, known locally as the Dolphin Expressway. Additional corridors are being studied.

Ridership on MDT's two rail systems, Metrorail and Metromover – an automated rubber-tired people mover that circulates around downtown – has been robust in recent years. And transit-oriented development around these lines has boomed too, but Miami wasn't always so keen on developing its transportation systems. When Miami was evolving, railroads turned down landowners' offers for acreage to build tracks to their communities.

Miami's Transit Challenges

Florida's early settlements were up north, where railroad and business mogul Henry Flagler built resorts for wealthy vacationers. But a devastating freeze in northern Florida in 1895 ruined the citrus harvest, leading Flagler to travel to South Florida to investigate growing oranges there. Several years earlier, newspapers reported that Julia B. Tuttle, who had purchased land to promote what would become Miami, had offered acreage for a town site to James E. Ingraham, Florida Railroad's president, if he would route his trains to Miami. He declined. After the crop freeze, Tuttle made the same offer to Flagler, who also reportedly passed at first, but later, after seeing firsthand the

lush fruits and flowers grown in the area, accepted, thus beginning recognition of the region as a viable new business center. In 1896, the same year Miami was incorporated, Flagler's Florida East Coast Railroad (FEC) rolled into town.

Fits, starts and calamities plagued passenger rail in Miami during the early years. The Miami Electric Railway Company operated the city's first streetcar line, from April 1906. It served downtown, the courthouse and an FEC station outside town. In September 1907, it suspended service, ostensibly for a month to get ready for winter, and then never reopened. The same group that operated Miami Electric tried again in 1915 with the Miami Traction Company over a similar route – using battery-powered cars unlike the overhead wires of the first system. This venture lasted until 1921, when its fleet was destroyed in a fire. Next, the city of Miami bought the franchise, purchasing eight Birney streetcars and leasing the operation to the Miami Beach Railway, which in 1920 had opened a line between downtown Miami and South Miami Beach over the County Causeway.

As Miami and South Florida began to attract more residents, transit service increased in Miami and along the beach. During 1924-25, the city purchased more streetcars and the causeway was double-tracked. By

1926, rapid transit cars ran from downtown to Coral Gables, but rail service ended after a bad storm in 1935 damaged overhead power lines. Coral Gables then went to an all-bus system. Jitneys, too, lured business away from rail lines and buses replaced many of them in the early '30s.

A referendum to combine Miami's disjointed transit services was rejected in 1937, but approved in 1939. Rail service ended on the causeway in 1939. Interestingly, early plans for Miami-Dade's rail rapid transit system proposed a line across the MacArthur Causeway that almost duplicated the original trolley route. The city granted an exclusive franchise to the Miami Transit Company and on November 16, 1940, Miami joined other U.S. cities and eliminated its streetcars. During the 1940s, transit companies changed hands frequently and transit services flagged as private companies took over city routes. In 1959, the County Commission wanted to purchase the bus system, but shelved the idea as too expensive. The foundation for a cohesive countywide transit system was finally formed in 1960 when the County Commission passed an ordinance to create the Metropolitan Transit Authority. It was tasked with purchasing, developing and operating an adequate mass transit system. In 1962, voters approved by

a two-to-one margin a revenue bond issue for \$9 million to finance the countywide system.

Miami's population was mushrooming by 1969 and studies concluded rail rapid transit would benefit the area. Public hearings began in 1971 for the proposed \$800 million system and creation of a transit plan for the area. The next year, Dade County voters agreed to a \$132.5 million bond issue by a two-thirds margin to provide the local share of monies for rapid transit construction and other transit improvements.

When Dade County took complete control of the bus system in 1974, Metro Transit Agency became the new name. Through the years, the agency had many name changes, from Metro-Dade Transportation Administration, to Metro-Dade Transit Agency, Miami-Dade Transit Agency and the current Miami-Dade Transit.

Residents balked when a study to build six new expressways was announced in the mid-1970s. The consensus was the region needed adequate mass transit more than new freeways, so the plan was scrubbed. Preliminary engineering for the rapid transit line was finished in 1976 and the United States Department of Transportation committed to pay 80 percent of the line's construction costs. Also that year, the Urban Mass Transportation

The Miami Electric Railway (left) began serving South Florida in 1906, while the Metromover (right) now circulates people through the heart of the city.





A typical day on Miami's Metrorail begins, as passengers disembark at the Dadeland North station (above), while a Metromover vehicle serves the Tenth Street/Promenade station (below).



Administration (UMTA) publicized a nationwide competition to fund downtown people movers. Miami-Dade County was selected as one of 11 finalists from a field of more than 65 cities interested in the project; in December, the people-mover plan was conditionally approved.

Miami was drawn toward building a people mover for several reasons. The downtown area was relatively large and had grown over the years, plus a people mover would offer a way to get around downtown without having to walk very far in the warm climate, says Miami-Dade Transit's Public Information Officer, John Labriola. Another factor was its planned connection to the rapid rail line, a connection that would likely attract more riders to the heavy-rail system.

With funding in place, plans proceeded to build the rapid transit line, which would be called Metrorail. But in 1977, a group of disgruntled citizens put a referendum on the March 1978 ballot to try to stop additional spending on Metrorail and repeal the 1972 bond vote. Voters rejected the idea, validating the importance of transit.

Metrorail's Green Line opened May 20, 1984 with 10 stations between Dadeland South and Overtown. More than 125,000 riders took free rides to check out the elevated line operating on a dedicated right-of-way with no grade crossings. Subsequent phases followed in December 1984 to Earlington Heights and May 1985 to Okeechobee with Palmetto station opening in May 2003. A one-way trip on the 22.4-mile 22-station line takes about 42 minutes. Weekdays, six-car trains operate about every six minutes during peak times and between 8-10-minute-to-15-30-minute intervals at off-peak times; a total of 84 cars run each weekday with 14 six-car trains in service during rush hour. Except for special events requiring more capacity, four-car trains run about every 15 minutes on weekends until early evening, and then every 30 minutes

Metrorail's north-south line (top right) stretches from Palmetto in the north to Dadeland South, and Metromover (bottom right) operates three routes that connect with Metrorail at the Government Center and Brickell stations.

until closing. Service begins at 5 a.m. and goes until midnight, seven days per week, including holidays. Metrorail connects with South Florida's Tri-Rail commuter system at the Metrorail-Tri-Rail transfer station. Tri-Rail operates between Miami, Ft. Lauderdale and Palm Beach.

Miami participated in a joint procurement with Baltimore for their Budd rail cars. Baltimore ordered 100 cars and Miami purchased 136. Each car seats 74 passengers, a full load is 166 with a crush load 275. While the cars can operate at 70 mph, Metrorail's top speed is 58 mph with an average speed of about 45 mph. Trains use Automatic Train Operation, which controls braking and acceleration; train operators control doors and monitor train movement and speed. Manual operation is only used when track inspectors are walking the right-of-way. Passengers enter a fare gate and pay with tokens or coins or a monthly Metropass swiped through a magnetic reader, so there are no ticket inspectors. Weekdays, Metrorail averages about 60,000 daily boardings. When it opened the fare was just a dollar; today it's \$1.50.

Miami's people mover, called Metromover, debuted April 17, 1986 with free rides for four days before the 25-cent fare kicked in. It opened with a fleet of 12 automated rubber-tired vehicles traveling a 1.9-mile double-loop, stopping at nine stations in the downtown business district. Metromover boardings broke the record for a single event during revenue service New Year's Eve 1990, carrying 43,600. Metrorail's 101,000 boardings on that date was also a record.

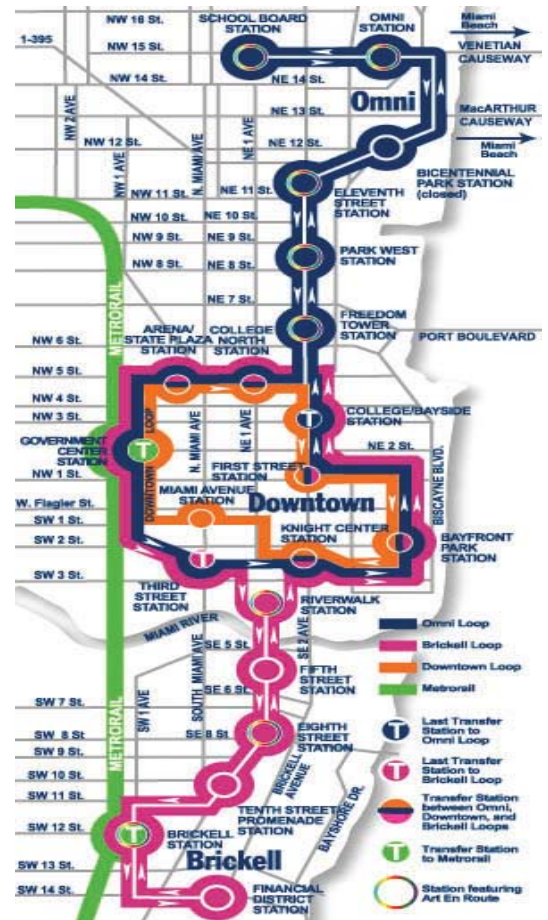
Mass transit had a setback in 1990 when Dade County voters rejected by 4 percent a penny sales tax to fund transit, police and other public agencies. While the defeat led to

bus service cuts, transit police lay-offs and fare hikes, it didn't affect Metromover's planned expansion, which was already in the works. Two new Metromover extensions opened May 26, 1994, the Brickell, serving Miami's financial district and the Omni, covering a busy business area north of central downtown Miami. Both extensions were finished on-time and under budget and expanded the system to 4.4 miles and 21 stations.

Today, the guideway system averages about 28,000 weekday boardings. Metromover's average operating speed is 9 mph with 2-minute 12-second headways on the Inner Loop and 5 minutes 24 seconds on the Omni and Brickell Loops. Five rubber-tired vehicles run on each of the loops and can consist of one car or two joined cars. Four two-car trains usually run on the Inner Loop. Each single car carries up to 98 passengers.

Metromover holds a place in transit history as the world's first commercial automated downtown people mover. It's also, says MDT's Labriola, the first people mover integrated with a heavy-rail system, connecting with Metrorail at Government Center station and Brickell station.

When Metrorail opened in 1984, transit officials had envisioned a 50-mile system, but for a while, voters rejected additional taxes for transit expansion, despite public opinion surveys that showed people were interested in high-quality mass transit. Business leaders, concerned about increased traffic and urban sprawl, began a campaign to promote transit and the People's Transportation Plan (PTP), a referendum for a half-cent sales surtax to provide local matching funds for transit improvements, including 62.7 miles of rapid transit. Televised town hall meetings, radio call-in shows and numerous public





A Metrorail train speeds into the Dadeland North Station. The system's fleet consists of 136 Budd-built railcars.

meetings emphasized the importance of mass transit to the voters. MDT's Labriola says during discussions about PTP a county commissioner, Bruno Barreiro, proposed making Metromover free. The argument was the revenues from fares barely exceeded the cost of collecting them, plus a free Metromover could potentially attract more riders to Metrorail. Other commissioners agreed. The idea of free Metromover service apparently resonated with voters; the referendum passed and Metromover's 25-cent fare was eliminated in 2002.

Miami Blossoms Around Metromover and Metrorail

"We're going through a renaissance right now," says Oscar Rodriguez, Senior Vice President of The Related Group, a forward-thinking company that has developed transit-oriented residential properties in the Miami area for several years.

Their first project, One Miami, by the Miami River and Biscayne Bay, opened a few years ago and was the first residential project built in the central business district in more than 50 years, Rodriguez says.

"Now it's occupied and that started a resurgence, an influx of buyers back to downtown to live in our urban areas. Downtown Miami was for many years just a commerce center full of street retail and that's it, no residential. And that made absolutely no sense to us."

Miami's lower-to-medium-income population continues to grow and affordable housing is scarce in the greater Miami area, where available land is at a premium. According to the Miami Planning Organization's 2030 Long Range Transportation Plan, Miami-Dade's population is expected to increase more than 40 percent by 2030. In 2006, the county's population was 2.4 million. Related's Rodriguez says there's a need for housing in urban areas for people who make between \$40,000

and \$60,000 annually. Miami-Dade Transit recognized this need and began working with developers like The Related Group to build affordable housing. In 1981, the Board of County Commissioners established a joint-use policy for Metrorail to use stations as joint business developments to encourage and promote private development along the rapid transit system. In 2000, transit agency-owned property was leased to Related for 90 years to build the 400-plus-unit Santa Clara Apartments. To be built in two phases next to the Santa Clara Metrorail station in the Allapattah neighborhood, the development is adjacent to Miami's urban core and near industrial and commercial employment centers like the Civic Center and Jackson Memorial Hospital. Many of the renters are exclusive transit riders, which has attracted new riders to Metrorail. MDT's joint-developed properties also provide revenue to county coffers, more than \$1 million per

year and growing as new transit-oriented projects open. A project in Coconut Grove with retail and residential space is expected to generate \$16 million for the county over 30 years while an office-retail complex in South Miami is expected to bring in \$180,000 per year for 90 years. Since 2004, more than 1,000 apartments and nearly 2 million square feet of office and retail space have been built with more on the way, like the Related Group's plans to build nearly 1,000 condominiums around the Civic Center, a major employment center desperate for affordable housing.

Related's showcase project is The Lofts, a four-phase transit-oriented development. Loft 1 is fully occupied and Loft 2, which sold out within three days of going on sale, was on the verge of occupancy at press time. Loft 3 was 75 percent sold in four days and should be complete in 2009. Sales for Loft 4 began in August. Loft 2's 469 units are built over the First Street Metromover station. Loft 4 prices will start at \$139,000 and go up to \$400,000 with 70 percent of the inventory priced under \$300,000.

Frank Talleda, Miami-Dade Transit's Chief, Joint Development Leasing, recalls challenges the transit agency had with Loft 2's construction around the Metromover line. MDT once owned the property in the early 1980s where the condos were built, but sold it in the late '80s because real estate was slow back then.

"We had a lot of issues related to just making sure that the system was secure and that there was no settlement of the structure because we don't have a lot of tolerance. One-inch of settlement can derail one of our cars so we had to make sure there was this constant monitoring of the system to make sure that the settlement is within tolerance and if there was any issues that they had to address them right away. That's on-going," says Talleda. "I think it's a very attractive project

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and will be a real signature project for everybody."

Another residential venture, a condominium conversion, is The Madison Downtown Condominium. Built in the mid-1980s, the two revamped buildings are across the street from Metrorail's Arena station and about two blocks from Metromover.

"There's no question about it, without having passenger rail next to the buildings, we wouldn't have the amount of sales that we have today," says Jeffrey Lehman, Director of Sales at The Madison. "We started our one-bedrooms at \$179,000 up to \$250,000 and we're almost 50 percent sold out. Now we're starting our prices at \$199,000 and higher. We're right downtown, a block from the Miami Heat Arena, which is also known as the American Airlines Arena and just blocks away from the new Carnival Center for the Performing Arts."

Both Lehman and Rodriguez acknowledge home sales have slowed in Miami, like in the rest of the nation, but say it's negligible compared to other higher-priced properties. "We've been fortunate because we've priced ourselves very well," Lehman says.

Rodriguez says their property's strategic locations near rail transit has worked well and provides a synergy that they can market, setting them apart from their competitors. He also feels Miami's transit system has been historically underutilized and now there's an opportunity to give it the capacity that it needs. "We understand that the demographic that buys in those types of projects is more inclined

to utilize our rail transit system," Rodriguez says.

Overtown Transit Village is a significant public-private joint development by Metrorail's Overtown/Arena station and near Metromover's Arena/State Plaza station. A 17-story, 341,000-square foot County office building was recently finished and MDT's move to offices in the building is almost complete. About 1,800 employees are expected to work in the village. There's also 596 parking spaces available and 4,000 square feet of ground-floor retail space. The rest of the site will be developed with another office building. MDT receives guaranteed annual rent plus 2 percent of gross revenues on a 90-year lease.

"The Overtown area has historically been underdeveloped and there's a lot of activity happening there and it's all focused right around the station," says MDT's Talleda.

The list of transit-oriented development around Metrorail and Metromover is long. Significant to Metromover is the Government Center station, says Talleda. "The Government Center Building was built in conjunction with the Metromover station and is also served by Metrorail. On the other side of it, there's a very large parcel, which any day now it's going to sprout up. They haven't gotten off the ground yet but they're certainly going to build something there. And across the street there's another project on the drawing board, so there is quite a bit of activity happening there."

The Bank of America Tower

at International Place is home to Metromover's Knight Center station, which was incorporated into the building's construction, says Talleda. The Carnival Center for the Performing Arts and American Airlines Arena are both examples of new venues built around Metromover. Metromover is also central to many hotels such as the Hyatt Regency and attractions like Bayside Marketplace.

"There's been an awful lot of development that's taken place around stations," says Talleda. "If you look at the skyline, it's all cranes everywhere you look."

Talleda is confident the system can meet the increased demand and now that the federal government has made it easier for transit systems to acquire property, he expects to see more joint development projects.

"In a way, the joint development that we did here was sort of retroactive," Talleda says. "First we put in the system and then we thought about joint development. Now we're thinking about it as we build the (new Metrorail) corridor, so it's a lot better approach."

Metromover's New Vehicles, Metrorail's New Line and Beyond

Miami-Dade Transit (MDT) has several projects underway to improve transportation for Miami's residents.

A lack of funding deferred midlife rehabs on Metromover's 12 original rubber-tired vehicles and since Metromover's fare was scrubbed, heavy usage has taken its toll. MDT has contracted with Bombardier for 12 new cars at \$26.7 million, with an option for 17 more at an additional \$34 million. The sleek, aerodynamic cars will arrive between March and November 2008. To recognize problems before they start, the cars will have a self-diagnostic system, which should reduce

the risk of mechanical failures. When Metromover was built, no manufacturer designed cars for a subtropical climate like Miami's, but the new car's construction is sturdier with more reliable air-conditioning units. If the County exercises its option for the additional cars in 2008, deliveries will take between 12-to-18 months.

"The new Metromover vehicles will feature a new, sleek design of the vehicle exterior and a bright new look of the interiors," says Ray

Betler, President of Bombardier's Total Transit Systems. "But the improvements go well beyond just the look of the cars. The new vehicles will include state-of-the-art equipment which will provide improved diagnostic capability for maintenance troubleshooting, improved air-conditioning for better passenger comfort and stronger corrosion resistance to standup to the elements of the Miami environment."

Metromover's 17 1990-era cars

Metrorail's new Orange Line will stretch from the Miami-Dade County border through Miami International Airport to West Miami and Florida International University.



are getting new air conditioning units, windows, doors and vinyl flooring is replacing carpet. A new carwash began operating in July so cars now get daily scrubbing instead of sporadic hand-washes. Escalators at stations have corroded in places from the humidity; some will be replaced and have canopies erected over them. New rubber platforms are going in, and the PA system is being upgraded.

Metrorail's Orange Line will take the rail service to its next level. The new line will parallel one of the area's most congested freeways. The 22-mile route that targets major employment centers such as Miami International Airport, and will be built in three sections between 2008 and 2016.

First up is a 2.4-mile \$523 million segment between the Miami Intermodal Center (MIC) and Earlington Heights. Branching off from Metrorail's Green Line west of the Earlington Heights Station, it will parallel State Road 112 on its way to the MIC. Passengers will transfer to a people mover to access Miami International Airport. The MIC facility will be completed in time for the new service and will include stops for Metrorail, Tri-Rail and the airport's automated people-mover system. Several sources are providing investment; 59 percent federal, 25 percent state and 16 percent from the PTP's local surtax. Construction should begin in 2008 with completion in 2011.

The North Corridor is a \$1.45 billion 9.5-mile extension that will branch from Metrorail's Green Line to the north of Dr. Martin Luther King Jr. Station and run along 27th Avenue to 215th Street at the Miami-Dade-Broward County Line. Final design should be complete by June 2008 with construction starting in November 2009 and completion in 2014.

The third and final phase, the \$2.28 billion East-West Corridor, will travel 10 miles from the MIC to Florida International University in west Miami-Dade. The line will parallel State Road 836, also known as the Dolphin Expressway. "We believe that corridor will take a lot of pressure off that highway, which is right now one of the most congested highways in the county," says Labriola. "By running

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Potential Rail Transit Corridors in Miami-Dade County

(see map on page 40)

The Miami-Miami Beach Transportation Corridor (Bay Link)

From the 1920s to 1939, trolleys operated on Miami Beach. History could repeat itself with the proposed Bay Link, which would help alleviate parking woes. Miami Beach is a major tourist destination and buses to the beach have high ridership levels.

Under deliberation is a light-rail line from downtown Miami on a mostly dedicated right-of-way that would travel along the East Coast Railroad right-of-way to the Intracoastal Waterway Bridge and MacArthur Causeway then into Miami Beach. The route on Miami Beach would have two large loops to circulate trains in the beach area. Trains would operate on 5-minute headways with two cars during peak times and one car during off-peak times. Because some Miami Beach residents have expressed their opposition to the plan saying that the rail line won't relieve traffic congestion, the project isn't currently a high priority.

South Link-Dadeland South-Florida City

The South Link corridor starts from Metrorail's Dadeland South terminal to Florida City. The area is experiencing a large growth in population and is expected to need transit improvements in the future. Currently, the South Miami-Dade Busway, Busway Flyer and Busway MAX handle traffic on this route using dedicated bus lanes. The corridor is undergoing Alternative Analysis studies per the PTP and 2030 Plan. Options include upgrading the busway or building a Metrorail line on this corridor.

Kendall-Link

Studies are underway to develop recommendations for transit in the Kendall area, from SR 836 to the north, SW 152nd Street to the south, US 1 to the east and Krome Avenue to the west. Possibilities include bus service improvements, Bus Rapid Transit on Kendall Drive and SW 137th Avenue, Diesel Multiple Unit passenger service on the CSX rail corridor and Metrorail extensions on Kendall Drive and the Homestead Extension of Florida's Turnpike. Evaluations are currently underway and a preferred alternative should be selected soon.

New station designs, like those planned for the Miami Intermodal Center shown here, will be a key element of new rail transit projects in South Florida.



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parallel, we believe that a lot of people will be moving off that highway and onto the trains.”

Construction is expected to begin in 2012 with completion in 2016. MDT is currently working with the Federal Transit Administration to obtain approvals to begin the preliminary engineering design phase before it requests a funding grant agreement.

MDT hasn't decided yet if it will rehab its Metrorail cars or buy new ones for the expansion and replace the entire fleet of existing cars.

Beyond the Orange Line, MDT is looking to expand rapid transit lines with at least two major corridors as part of the 2030 Plan. The corridors could be in the form of rail or bus rapid transit like the South Miami-Dade Busway that operates on exclusive bus lanes paralleling US1 from SW 264th Street to Metrorail's Dadeland South station. The busway is a potential future corridor for Metrorail.

Waiting for the Train

From recent news reports, it appears many drivers who tried transit when gasoline prices went through the roof are sticking with transit now that pump prices have dropped, and that includes Miami area drivers. Passengers often comment that as long as they keep improving public transit, the more likely they'll continue to use it. For those who find themselves inching along the Dolphin Expressway, the Orange Line's arrival won't come too soon so they can trade their stressful drives for a relaxing train ride. 

Bombardier is building 12 new vehicles for the Metromover system (top right), while the Miami Intermodal Center (middle and bottom right) – adjacent to the Miami International Airport – will connect Metrorail, Amtrak and Tri-Rail trains in one architecturally stunning location.

