

2022

# TRANSPORTATION RESILIENCE IN MIAMI-DADE COUNTY







In Miami-Dade County, resilience is woven into everything we do. As we work to improve and expand our transportation infrastructure, our plans focus on creating a more resilient, connected, and equitable system that will help put Miami-Dade on the map as a model for resilient transportation.

Our County's rapid responses to short- and long-term shocks and stresses, such as climate change and the COVID-19 pandemic, showcase our track record in reimagining how government and community partners can collaborate on achieving resilience goals in terms of our urban transportation network. County staff integrates these lessons learned into the Resilient305 Strategy, the Strategic Miami Area Rapid Transit (SMART) Plan, Climate Action Strategy, and the 2045 Miami-Dade Long Range Transportation Plan (LRTP). These interlocking, complementary plans ensure that Miami-Dade County thrives now and for decades ahead while serving as a global leader in resilience.

Our diverse community is renowned for its innovative entrepreneurs and impressive network of local partners and collaborations across multiple disciplines. This facilitates our ability to embrace emerging technologies that will launch us boldly into the future. Our agencies are working towards achieving success in a wide range of resilience efforts, including the installation of more electric vehicle charging stations, reshaping our urban land uses and bus system, and committing to more bicycle and pedestrian friendly neighborhoods that put people first.

Sincerely,

**Daniella Levine Cava**, Mayor  
Miami-Dade County

Sincerely,

**Oliver G. Gilbert III**, Chairman  
Miami-Dade Transportation Planning  
Organization



# MIAMI-DADE COUNTY

## RESILIENT TRANSPORTATION SYSTEMS

### MOVING TOWARD A MORE RESILIENT FUTURE

#### What is **RESILIENT TRANSPORTATION**?

Miami-Dade County is the most populous county in Florida, with 2.8 million residents. This represents the core contingency of the 4th largest urban area in the nation, known as the Miami Urbanized Area, with more than 5.5 million people. Resilience requires planning today for the future. Miami-Dade County has a strong track record of planning for resilience when it comes to transportation. Our history of living with hurricanes, extreme weather, and a rapidly growing urban population has taught us many lessons and prepared us well for planning holistically and collaboratively to ensure resilience to shocks and stresses. Miami-Dade County is committed to ensuring the long-term resilience of our transportation system through collaborative planning across departments and with our community that integrates social welfare, economic viability, climate preparedness, innovative technologies, and environmental considerations.

#### **INTEGRATED**

Integrated transportation plans can address interconnected issues, including climate change, disaster risk reduction, and social equity. Transportation plans should unite systems and organizations to identify shared resources and determine how all departments will work together to achieve joint goals.

#### **FLEXIBLE**

Things change quickly during a crisis. How well you adapt to alternative strategies helps determine resilience. Transportation systems can be made more flexible by introducing new technologies and recognizing traditional best practices. For example, in times of crisis, governments may redeploy public buses for emergency evacuations.

#### **REDUNDANT**

Redundant transportation systems provide multiple pathways to accommodate surges in demand and serve as a backup plan for network disruptions. Resilience demands multiple ways to meet transportation needs.



## RESOURCEFUL

Resourceful transportation systems encourage individuals to explore alternative means for moving around an area. Engaging citizens in planning to improve public and active transportation modes ensures that these systems reflect residents' concerns and needs. For example, approaches include mobile apps to engage citizens in decisions on where to assign transit routes and establish cooperative car- and bicycle-sharing programs.

## INCLUSIVE

Since transportation systems are symbiotic, planning cannot occur in a vacuum or in silos. Diverse voices must be brought to the table from the beginning to create the most feasible plans with a shared sense of ownership that works for everyone.

## INNOVATIVE

Innovations in technology and energy move key systems forward. Transportation planners should analyze technological innovations and integrate applicable smart technologies into existing systems. For example, without innovation the region may be left behind in the transition to electric vehicles or other more efficient technologies.

## ROBUST

Transportation planners should identify transportation system vulnerabilities to extreme events and longer-term climate changes so design improvements can be made to increase robustness and redundancies within the system. Integrating information from climate projections into the design of the transportation system and rebuilding infrastructure can also ensure robustness.



305  
RESILIENT

# ADAPTING TO THE FUTURE TODAY: MIAMI-DADE COUNTY'S PLANS FOR A MORE RESILIENT TRANSPORTATION SYSTEM

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## RESILIENT305 STRATEGY:

The Resilient305 Strategy was developed by Greater Miami & the Beaches (GM&B), a unique partnership of Miami-Dade County, the City of Miami, and the City of Miami Beach. This Strategy is a living roadmap created to address resilience challenges prioritized through intergovernmental and community collaboration. Resilience is about being better prepared for an increasing occurrence of shocks, such as hurricanes and infrastructure failures, as well as better mitigating stresses, such as sea level rise, crippling traffic, and severe economic inequities.

One of the central objectives in the Resilient305 Strategy, "Create Mobility Options", recognizes that mobility options are vital to the health and success of both Miami-Dade County's environment and its economy. Although Resilient305 is not a transportation strategy, per se, it recognizes that advancing the six corridors in the SMART Plan is a pathway to reduce emissions, shorten travel times, and minimize traffic congestion, while transitioning Greater Miami & the Beaches beyond single-occupancy gas-powered vehicles. Resilient305's mobility actions will advance a Better Bus Network connected to multi-use hubs in a community that prioritizes residents' health and transit alternatives with new electric and non-motorized options. The Resilient305 Strategy strengthens our foundation for a stronger network focused on innovation and collaboration in addressing the use of resources that best meet the needs of all Miami-Dade County residents and visitors.

## FROM THE RESILIENT305 STRATEGY:

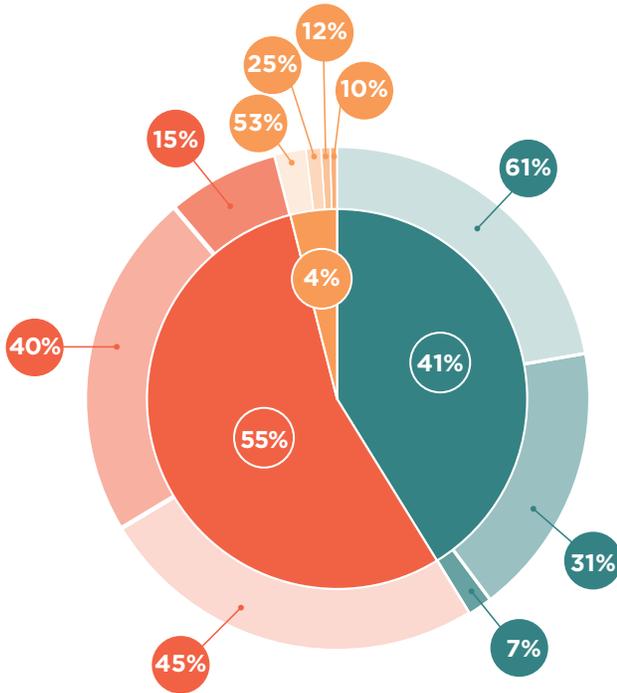
**ACTION 12 - DEVELOP MOBILITY HUBS IN THE 305.** Mobility Hubs consist of physical improvements that seamlessly integrate different modes of transportation. Improvements include technology to match trips from rail and Bus Rapid Transit (BRT) to bus, micro-transit, transportation network companies, carsharing, and other modes through connected real-time navigation and enhanced broadband.

**ACTION 15 - IT'S ELECTRIC.** To prepare and catalyze the growth of the electric vehicle (EV) market, Greater Miami & the Beaches will enact policies that support development of EV infrastructure (such as chargers), seek opportunities to introduce EVs into municipal fleets, and engage in knowledge sharing to create best practices and a unified network.

**ACTION 16 - EXPAND RENEWABLE ENERGY.** Uninterrupted access to reliable energy is critical to the Greater Miami & the Beaches region. Sustaining the region's lifestyle requires a deliberate effort to increase efficiency, use alternative sources, and improve the resilience of energy systems.

## REDUCING GREENHOUSE GAS EMISSIONS:

Miami-Dade County has set ambitious goals to cut climate polluting greenhouse gas emissions 50% by 2030 and to become a net-zero carbon community by 2050 (from a 2019 baseline). These goals are outlined in the Miami-Dade County Climate Action Strategy. The largest source of greenhouse gases is within the transportation sector which accounts for 55% of emissions community wide. Making bus systems more efficient, transitioning the fleet to electric vehicles, and expanding public transportation options will all help in working toward achieving these goals.



## 2019 Community-Scale Inventory by Sector

- **Buildings and Energy 41%**
  - Electricity 61%
  - Other Fuels 31%
  - Natural Gas 7%
- **Transportation and Land Use 55%**
  - Air Travel 45%
  - Ground - Gasoline 40%
  - Ground - Diesel 15%
- **Water and Waste 4%**
  - Landfilled Waste 53%
  - Wastewater Energy 25%
  - Incinerated Waste 12%
  - Other 10%

## PLANNING FOR SEA LEVEL RISE:

Miami-Dade County conducted a vulnerability study of County-owned assets that will be impacted by sea level rise, including transit assets, and is working with all departments to reduce potential risks and prepare for future conditions. The County is also working on a comprehensive Countywide Sea Level Rise Strategy. The Strategy lays out five adaptation approaches to address sea level rise and flooding. One approach, complementary to the Strategic Miami Area Rapid Transit (SMART) Plan and to the natural geography of the county, focuses on concentrating development on high ground around the rapid transit corridors.



## ENVISIONING A RESILIENT INNOVATIVE FUTURE:

Miami-Dade County is at the cutting edge of transportation technology. In partnership with Miami-Dade County, Ford Motor Company launched its first self-driving vehicle business in Southeast Florida after conducting its first statewide autonomous vehicle test in the county. Miami-Dade County constantly seeks innovations that improve mobility. One way is through the Smart Signals and Transit Signal Priority (TSP) controllers that are being tested along the South-Dade TransitWay. These projects are also paving the future of the County's roadway infrastructure by installing the necessary applications at intersections designed for the usage by connected autonomous vehicles.



## 2045 LONG RANGE TRANSPORTATION PLAN:

The Miami-Dade Transportation Planning Organization (TPO) Governing Board adopted the 2045 Long Range Transportation Plan (LRTP) on September 26, 2019. The 2045 LRTP highlights Miami-Dade County's major sustainability initiatives, including the Resilient 305 Strategy, the Miami-Dade GreenPrint, and the Federal Highway Administration (FHWA) Climate Resilience Pilot Program. The 2045 LRTP also lays out action items to develop mobility hubs in Miami-Dade County through the implementation of the SMART Plan, catalyze on the growth of the electric vehicle market, and expand renewable energy by increasing efficiency, using alternative sources, and improving the resilience of energy systems.



# RESILIENCE IN ACTION

## THE SMART PLAN:

The Strategic Miami Area Rapid Transit (SMART) Plan is a bold infrastructure investment with six rapid transit projects: Beach Corridor, East-West Corridor, Kendall Corridor, North Corridor, Northeast Corridor, and the South Dade TransitWay. Another critical component of the SMART Plan is a network of express buses, known as Bus Express Rapid Transit (BERT). Together, this network aims to significantly improve transportation mobility, provide a world-class transit system that will support economic growth, and increase competitiveness in the global arena.

The Miami-Dade Transportation Planning Organization (TPO) Governing Board has adopted a Locally Preferred Alternative (LPA) for most of the corridors, selecting an array of transportation modes ranging from Elevated Heavy Rail for the North Corridor, to Bus Rapid Transit (BRT) for the South Dade TransitWay and the East-West Corridors, to passenger/commuter rail technology for the Northeast Corridor, to elevated rubber tire, extension of Metromover, and dedicated bus lanes for bus/trolleys for the Beach Corridor. The Miami-Dade TPO also studied transit supportive land use, which plays an important role in the success of major rapid transit projects. It promotes transit use and increases mobility choices along the corridors. By reaching out to the community during this process, transit supportive land use scenarios were developed for each corridor. Collaboration with public agencies and municipal partners also assisted in developing first/last mile connections to the SMART Plan corridors.

## SMART DEMONSTRATION PROGRAM:

This program is a vision of the Miami-Dade TPO Governing Board to provide immediate solutions for critical first/last mile (FLM) connections, while expanding access to transit. It consists of numerous demonstration projects providing short-term congestion relief based upon a collaborative effort led by the Miami-Dade TPO with the Florida Department of Transportation (FDOT), Miami-Dade Department of Transportation and Public Works (DTPW), the Citizen's Independent Transportation Trust (CITT), South Florida Regional Transportation Authority (SFRTA), and numerous local municipalities. Demonstration projects focus on increasing FLM connectivity to existing and future SMART Plan transit stations, and on-demand and enhanced integration of transit services at county and municipal levels. The program also advances elements of the SMART Plan, such as transit stations and BERT services.

The SMART Demonstration Program includes numerous projects from a range of applicants that represent diverse demographics and economies including college students, the elderly, transit dependent communities at locations with limited parking, and new services for workforce groups. Projects include municipal on-demand responsive services, which are dynamically routed and connected to ride sharing applications, allowing the community to book rides to transit hubs or nearby destinations. Services are constantly monitored and, in some cases, such as the Village of Miami Shores, the project was discontinued via agency consensus until a better solution can be provided to the community.



# MIAMI-DADE SMART PLAN

## NEW SERVICE OPENINGS, CONSTRUCTION, & PROJECT MILESTONES

### The SMART Plan

- Existing Metrorail
- Existing Tri-Rail
- Existing Rail
- Miami Intermodal Center
- SMART/BERT Hub

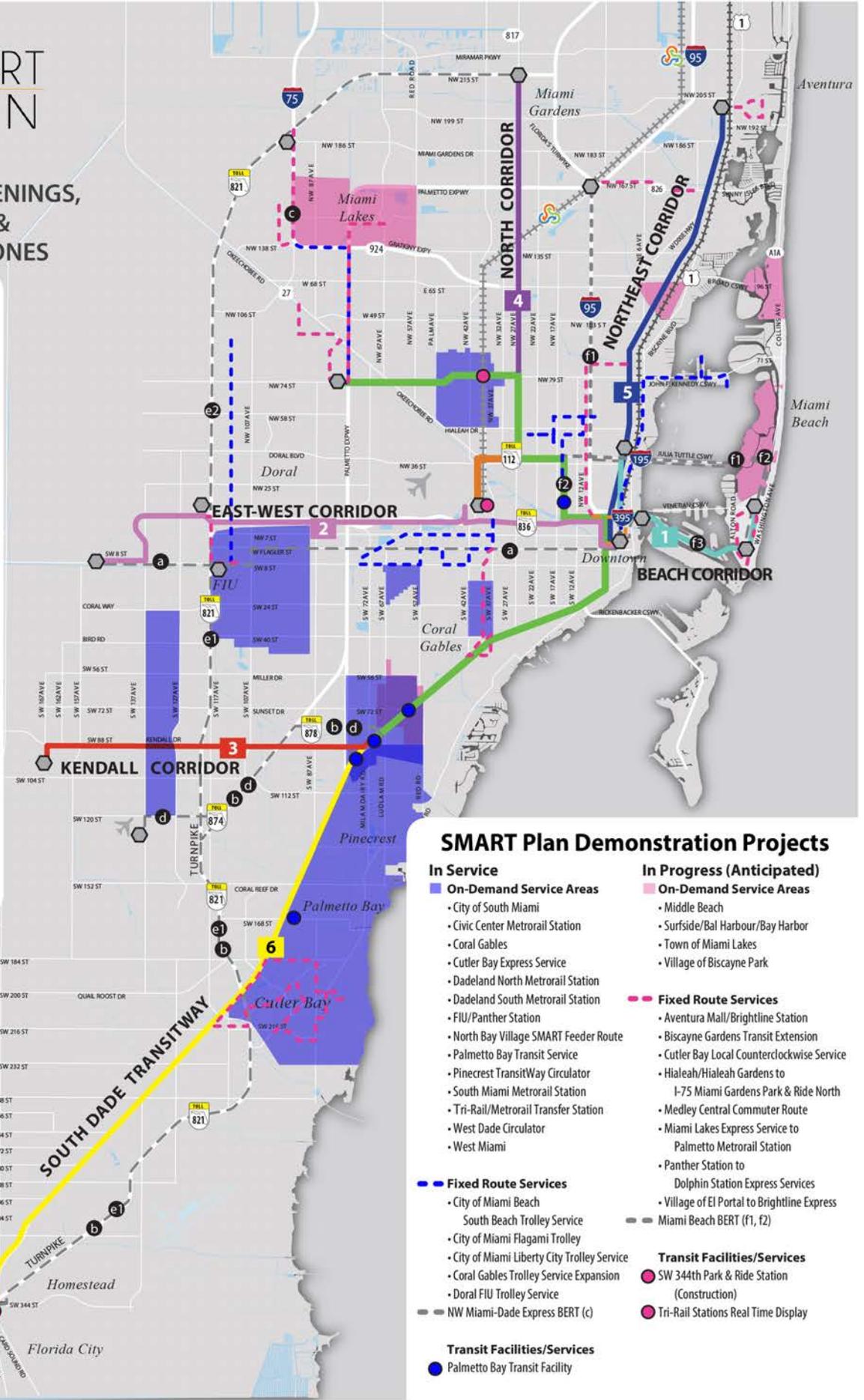
### Rapid Transit Corridors: (In alphabetical order)

- 1 Beach Corridor
- 2 East-West Corridor
- 3 Kendall Corridor
- 4 North Corridor
- 5 Northeast Corridor
- 6 South Dade TransitWay

### Bus Express Rapid Transit (BERT) Corridors

- a Flagler Corridor
- b S. Miami-Dade Express
- c N.W. Miami-Dade Express
- d S.W. Miami-Dade Express
- e1 Florida's Turnpike Express (S)
- e2 Florida's Turnpike Express (N)
- f1 Beach Express North
- f2 Beach Express Central
- f3 Beach Express South

\*Map Not Drawn to Scale



## SMART Plan Demonstration Projects

### In Service

- On-Demand Service Areas**
  - City of South Miami
  - Civic Center Metrorail Station
  - Coral Gables
  - Cutler Bay Express Service
  - Dadeland North Metrorail Station
  - Dadeland South Metrorail Station
  - FIU/Panther Station
  - North Bay Village SMART Feeder Route
  - Palmetto Bay Transit Service
  - Pinecrest TransitWay Circulator
  - South Miami Metrorail Station
  - Tri-Rail/Metrorail Transfer Station
  - West Dade Circulator
  - West Miami
- Fixed Route Services**
  - City of Miami Beach
  - South Beach Trolley Service
  - City of Miami Flagami Trolley
  - City of Miami Liberty City Trolley Service
  - Coral Gables Trolley Service Expansion
  - Doral FIU Trolley Service
  - NW Miami-Dade Express BERT (c)

### In Progress (Anticipated)

- On-Demand Service Areas**
  - Middle Beach
  - Surfside/Bal Harbour/Bay Harbor
  - Town of Miami Lakes
  - Village of Biscayne Park
- Fixed Route Services**
  - Aventura Mall/Brightline Station
  - Biscayne Gardens Transit Extension
  - Cutler Bay Local Counterclockwise Service
  - Hialeah/Hialeah Gardens to I-75 Miami Gardens Park & Ride North
  - Medley Central Commuter Route
  - Miami Lakes Express Service to Palmetto Metrorail Station
  - Panther Station to Dolphin Station Express Services
  - Village of El Portal to Brightline Express
  - Miami Beach BERT (f1, f2)

### Transit Facilities/Services

- SW 344th Park & Ride Station (Construction)
- Tri-Rail Stations Real Time Display

### Transit Facilities/Services

- Palmetto Bay Transit Facility

## THE SMART TRAILS MASTER PLAN:

This plan was developed as a multifaceted SMART Plan implementation effort and identifies potential first/last mile (FLM) connections between the SMART Plan corridors and the regional non-motorized trail system. In addition, this plan offers an evaluation process for assessing the efficacy of FLM non-motorized connections at existing and future SMART Plan stations. The plan included 20 countywide proposed SMART Trail connections to high-demand destinations, 14-miles of new active transportation facilities, and six shared-use path bridges with \$62 million in SMART Trails investment. Over the past two years, funding has been provided for seven SMART Trail connections: Ludlam Trail, Rickenbacker to Vizcaya Metrorail Station/Underline, DTPW Complete Streets Pushbutton Projects, Miami Springs-Okeechobee Station Pedestrian Bridge, Bike Boulevard: Model City/Brownsville, the Miami River Greenway to Metrorail, and the Turnpike Trail to the Dolphin Park & Ride (in the initial program priorities stages for 2021). Additionally, while not in the SMART Trails Master Plan, the Miami-Dade TPO, in coordination with the City of Miami Gardens, identified funding for two non-motorized blueway trails.

*Ludlam Trail  
Conceptual  
Rendering*



*The Underline  
Conceptual  
Rendering*



## PANDEMIC RESPONSE:

When the Novel Coronavirus (COVID-19) pandemic arrived, Miami-Dade County took immediate action to ensure the safety of all transit employees and riders by increasing safety measures, instituting new protocols, and implementing more frequent and expanded cleaning and sanitizing procedures for the Metrorail, Metromover, and Metrobus fleets.

### COVID-19 Safety measures on-board transit vehicles



*Routine cleaning  
and disinfecting*



*Mask usage requirement  
reminders*



*Plexiglass on  
Metrobuses*

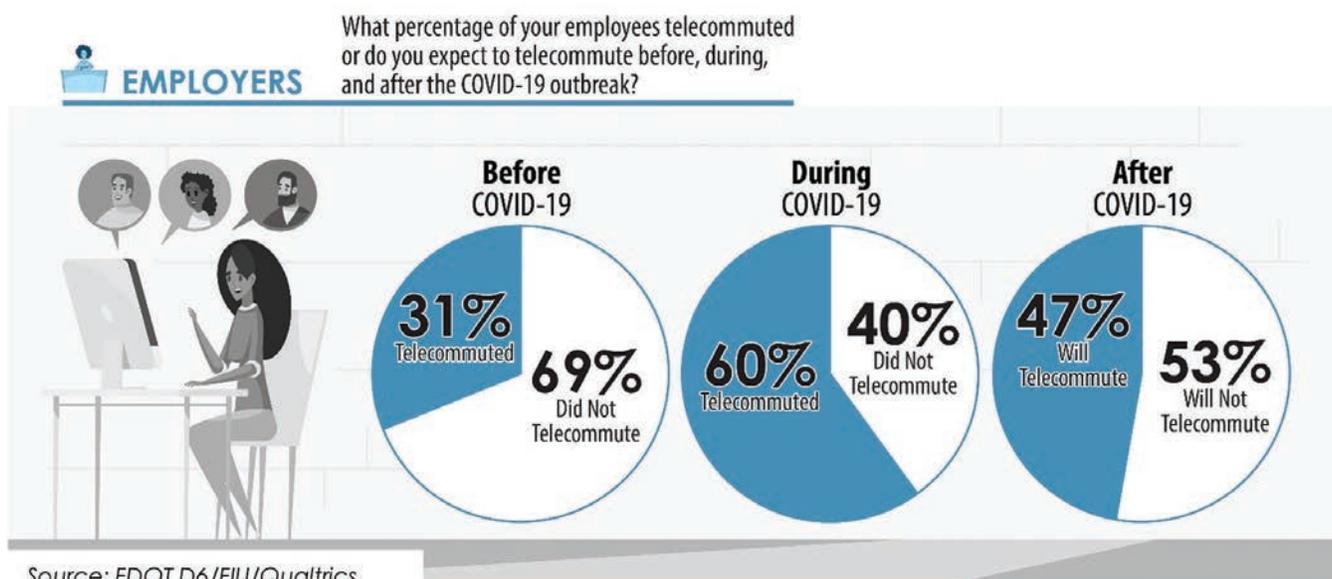
## TELECOMMUTING SURVEY AND STUDY:

The COVID-19 pandemic resulted in a pivot to remote working for many people. As a result, the Miami-Dade TPO embarked on a survey to determine if telecommuting could be a feasible strategy “to flatten the congestion curve” in Miami-Dade County.

According to a statewide survey in September 2020, the number of employees telecommuting during the pandemic doubled to 60%, relative to pre-pandemic levels. This trend has resulted in significant reductions in traffic, particularly during peak traffic times disproportionately affected by work commutes. While telecommuting may not be sustained over the long term at pandemic levels, surveyed employers expect that almost half of employees will telecommute even after the pandemic is no longer a threat.

In addition to the quality of life and economic benefits of the reduced traffic congestion, there are significant environmental benefits. Every telecommute on average saves more than 16-miles traveled on a daily basis, according to the 2019 Global Public Transport Report prepared by mobility-as-a-service company Moovit, which found an average work trip commute in Miami-Dade County is just under 8.5-miles. With well over 1 million employees, or working adults, residing in Miami-Dade County, even a five percent reduction in work commuting could result in up to 2 million fewer miles traveled on an annual basis. Further encouraging the continuing development of this telecommute trend could help improve air quality by removing an enormous amount of transportation-generated emission pollutants, improving the sustainability and resilience of the region.

As a follow up to the survey effort, the Miami-Dade TPO has coordinated with South Florida Commuter Services to implement a pilot program focused on promoting telecommuting and identifying resources to breakdown telecommuting barriers. The objective of the pilot is to maintain and further increase the current cohort of telecommuters in the region in effort to utilize telecommuting as a congestion mitigation strategy.





Miami-Dade Transportation  
Planning Organization

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