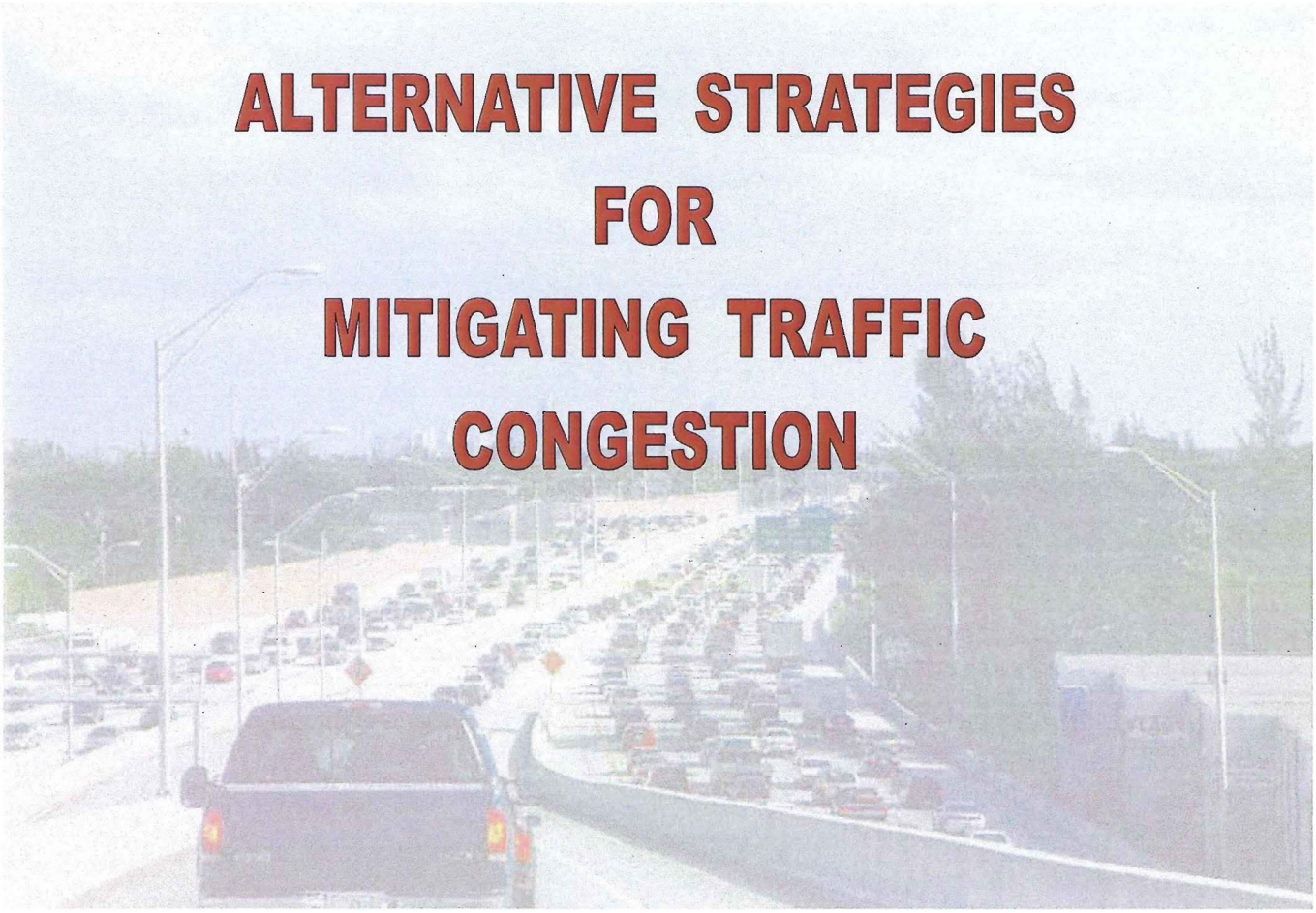
Draft

Miami-Dade County
Metropolitan Planning Organization (MPO)

ALTERNATIVE STRATEGIES FOR MITIGATING TRAFFIC CONGESTION



Prepared by the Metropolitan Planning Organization (MPO)

October 2000
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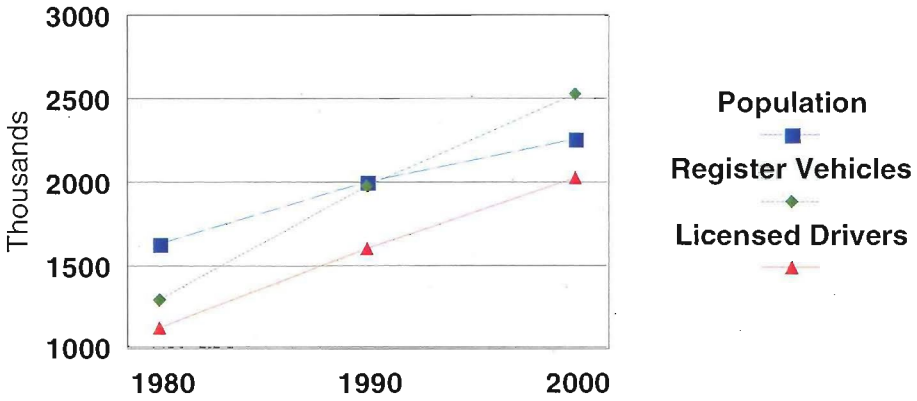
Miami-Dade County has experienced in the past 20 years, a high rate of socio-economic growth that has affected drastically the life of all residents. The growth in population has created a need for housing and employment, that has required the construction of transportation infrastructure within a very short period of time. Consequently, other problems have been created.

Trends in Population, Registered Vehicles and Licensed Drivers



Miami-Dade County

More vehicles are running on our roadways and people have to travel longer distance. Unfortunately, the land available for the construction of new highways is limited. Since 1987, the State and the county have only built 39.9 and 118 center miles of new roadways, respectively. More has to be done, but resources are limited. Based on that, other options for alleviating traffic congestion need to be considered.

Following, there is a description of several strategies to alleviate traffic congestion that have been successfully implemented in other cities. These strategies are focusing in short and medium term alternatives, as well as those oriented to change driving behavior and to provide extra capacity to the roadways without adding new lanes.

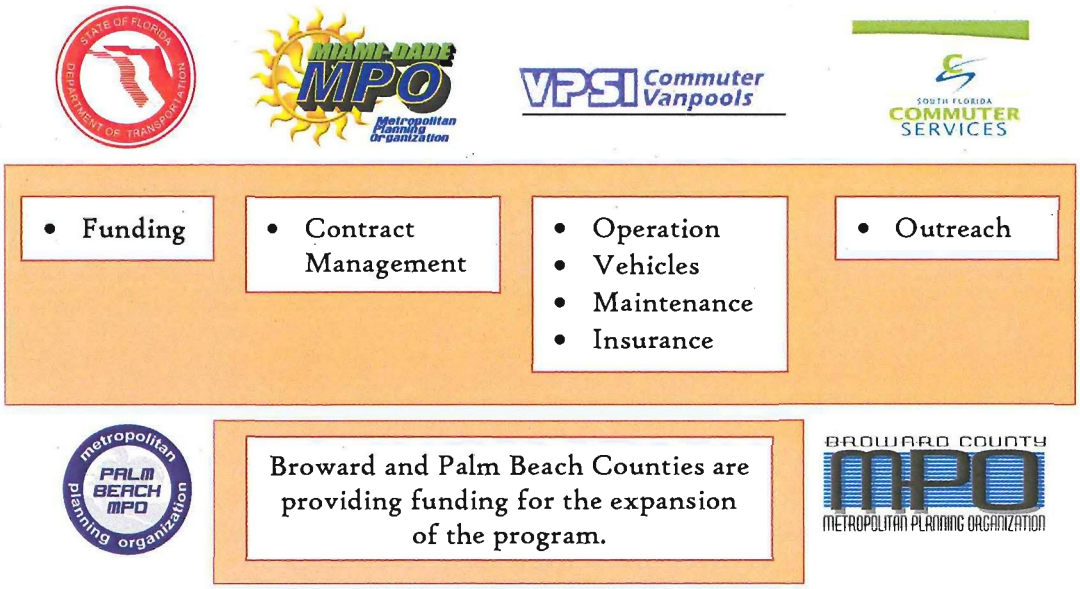
A. CONCEPT

A vanpool program is in place in Miami-Dade County aimed at alleviating traffic and encouraging the removal of solo drivers from our congested roads. The program started in 1998 and provides vans to commuters traveling together on a regular basis to and from work. Program management and operation is contracted with VPSI, Inc..

B. HOW DOES IT WORK?

A group of 7 to 15 persons commutes together to work in a comfortable van driven by one of the participants. One person is responsible for the van, who is called a volunteer driver. The group is organized and other participants are selected as back-up drivers. Usually, the group decides how many stops they are going to have along the route, as well as when and where to meet.

C. PUBLIC/PRIVATE INTERACTION



D. HOW MUCH DOES IT COST?

Based on the size of the group and the monthly mileage, an individual monthly contribution is determined as appropriate. Currently, the MPO provides a $400.00 subsidy per vehicle per month. The balance of the cost is shared by all members of the group except the volunteer driver. Direct costs such as gasoline, parking and tolls are shared by all participants as needed.

The monthly fee includes the lease of the vans, insurance (no-deductible), as well as all scheduled and non-scheduled maintenance.

E. BENEFITS

1. Employees
   a. Lower the stress and anxiety of commuting.
   b. Save time by using HOV facilities.
   c. Additional time to spend working or relaxing while commuting.
   d. Save costs comparing to using their own vehicle.
   e. Extend the life span of individual private vehicles.
   f. Commuters participate in the Emergency Ride Home Program (ERHP). In the event of a personal or family emergency or if required to work unscheduled overtime, participants in the vanpool can use an ERH trip payment voucher to cover the cost (minus driver tip) of a taxi trip home up to six times per year.
   g. Tax free benefit up to $780 per year. Under IRS Code 132(f), an employer is permitted to pay employee commute cost (up to $65.00 tax free per month) if they ride transit or vanpool to work. Or an employer may permit employees to allocate up to $65.00 per month of their salary as pre-tax income for vanpool fees.

2. Employers
   a. Reduce parking needs.
   b. Improve accessibility and parking availability for customers and visitors.
   c. Enhance public image.
   d. Improve employee morale.
   e. Contribute to alleviate traffic congestion and improve the overall community quality of life.

3. County
   a. Provide a regional alternative for regional commuters in Miami-Dade, Broward and Palm Beach counties.
   b. Improve air quality and help ease traffic congestion.
   c. Enhance public image
   d. Support federal and state policies in promoting alternative modes of transportation, other than driving alone.

F. CURRENT EXPERIENCE

Miami-Dade County started the operation in 1998. After the success of the program, Broward and Palm Beach counties joined the program in 2002 and 2004, respectively. As of May 2005, there are 104 active vanpools in the program. In 2005, the program eliminated over 260,000 person-trips and 8.4 millions of passenger-miles from our roads. Additionally, the program saved over 540 parking spaces per month.

G. WHAT CAN BE DONE TO ENCOURAGE MORE PEOPLE TO JOIN THE PROGRAM?

1. Continue promoting the establishment of the vanpool program.
2. For county employees that may want to form a vanpool, parking should be provided free of charge at county facilities and gas could be accessible to participants at the motor pool at county cost.
3. MPO Board members may send letters to employers for encouraging to promote and facilitate the formation of vanpools in their work site.
4. VPSI and SFCS continue contacting employers and promoting the establishment of the program at regional level.

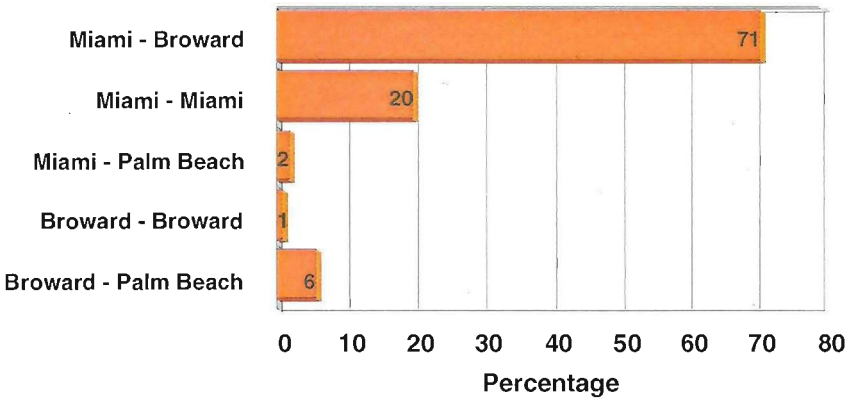
H. CURRENT STATUS

The Florida Department of Transportation (FDOT) is conducting a study to assess the need to transition the South Florida Vanpool program to another host agency and determine the best operating arrangement to maximize cost effectiveness.

I. HIGHLIGHTS

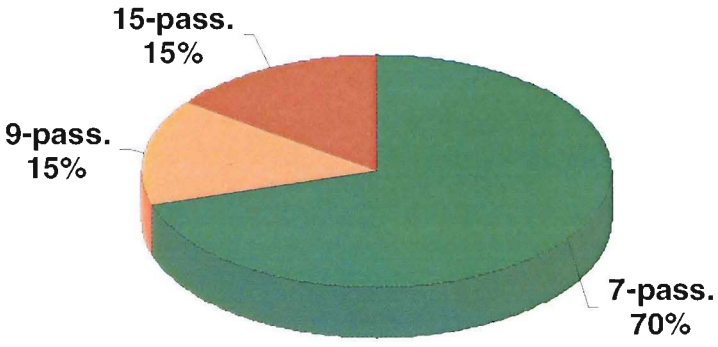
Distribution of Vanpools

Note: The percentage shown in this graph illustrates total number of vans in both directions. For example, Miami – Broward includes vans going from Miami to Broward and viceversa.



March 2005

Vehicle Size Preference - 2004



III. SUBSCRIPTION BUS SERVICES

A. CONCEPT

A special service is provided for a group of individuals based on specific needs of transportation. According to the size of the group a bus, minibus or a van is used to move people from point to point. This concept allows limited intermediate stops.

B. HOW DOES IT WORK?

A demand for this service is determined and a route is designed according to the needs of the group based on a fixed schedule. The service could be established during peak periods only or during a continuous service for a longer period. The size of the vehicle is determined based on demand and the individuals subscribe to the service and pay a monthly fee.

This service is similar in concept to the vanpool program but with the difference that in this case, the service is established and people call for subscription. There is no need for forming a group or having a volunteer driver. Usually, subscription services are provided by public and private transit operators and by employers.

C. BENEFITS

Similar to those listed in Section I for the Vanpool Program.

D. CURRENT EXPERIENCE

Several years ago, MDTA initiated this strategy in the Hammocks area. The Homeowners Association supported the concept, materials were distributed but demand for service was not as expected. Additionally, no funding was available to provide the service at reasonable cost.

A. CONCEPT

Telecommuting is one the alternatives considered to alleviate traffic congestion by allowing employees to work at home. This practice is being implemented by many private companies.

B. HOW DOES IT WORK?

The employee is allowed to work from home on certain days. In order for establishing a telecommuting project, employees have to have the facilities for working at home. This may include at least: the hardware (computer, printer, etc...), software (the same available at the work site for compatibility) and communication links (fax, modem, telephone, etc...). Telecommuting is not suitable for every job, employer, person or situation.

C. PROS AND CONS

1. **Benefits to the Employers**
   a. Increase employees' productivity
   b. Reduce parking needs
   c. Save energy (gas, light, ...) and reduce energy related costs
   d. Reduce office space and expenses
   e. Reduce the number of work trips, alleviating traffic congestion
   f. Reduce absenteeism and sick leave

2. **Benefits to the Employees**
   a. Improve morale of the employees
   b. Save car related cost for employees (gas, parking, depreciation, etc...)
   c. Provide flexibility to employees in terms of the working hours.
   d. Provide comfort to employees in terms of dressing codes
   e. Reduce expenses related to clothing, parking, meals,...
   f. Autonomy and control of working schedule and conditions Improve morale of the employees.

3. **Inconveniences for the Employers**
   a. Lack of supervision
   b. No standard attendance reporting procedures
   c. Liability and insurance considerations
   d. Occupational health and safety issues

4. **Inconveniences for the Employees**
   a. Isolation
   b. Increase cost of employees regarding:

- ✓ Purchasing of hardware and software
- ✓ Increase energy related costs at home (light, A/C, etc...)
- ✓ Increase number of non-work related trips

c. Lack of office support
d. Tendency to overwork
e. Pressure to work harder to justify telecommuting

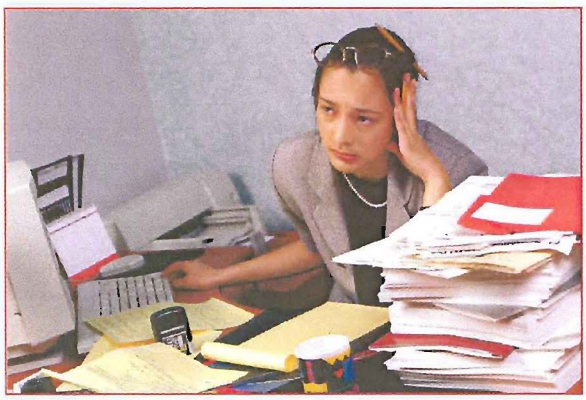
D. CURRENT EXPERIENCE

1. No formal implementation has been done at county level.
2. Private companies have some programs in place.

E. RECOMMENDATIONS

1. At County Level
   a. Promote the establishment of telecommuting programs through public statement of support by elected officials and county administrators.
   b. Contact other counties and cities that have implemented this program to obtain more information about the results at government level.
   c. Some county departments may initiate a demonstration program to determine the feasibility and results derived from this alternative.

2. Private Sector
   a. Board members may encourage employers for establishing this alternative.
   b. Technical support for implementing this program is available from the county and the South Florida Commuter Services.



A. CONCEPT

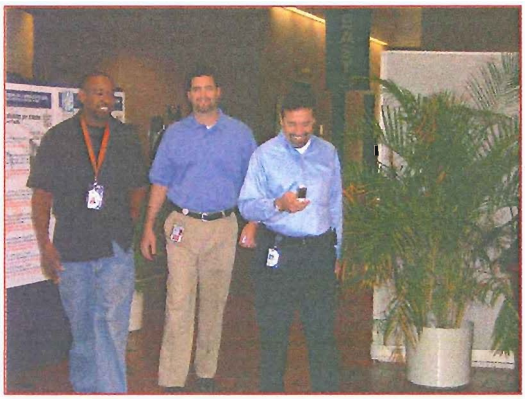
This strategy is aimed at reducing traffic congestion during peak periods by either shifting commute travel times or by eliminating commutes on a certain day of the week.

B. HOW DOES IT WORK?

There are several options in this alternative:

1. Flextime

   This option provides flexibility to employees for coming to work during a specific span of time. Usually, this period may range from 6:00 am to 9:00 am in the morning, and from 3:00 PM to 6:00 PM in the afternoon.



2. Compressed Work Schedule

   This option allows employees to work 10 hours a day for four days a week. A fifth day is off anytime during the same week.

3. Staggered Work Hours

   This option is defined as an eight-hour day, five-day work week, with starting and ending times staggered by time intervals. These intervals are usually within a range of 15 and 30 minutes.

C. BENEFITS

1. Alleviate traffic congestion during peak period.
2. Eliminate trips from the roadways, improving air quality.
3. Reduce driving time.

D. HOW IT CAN BE IMPLEMENTED?

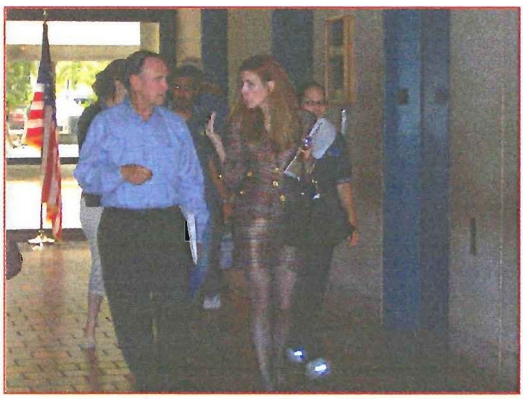
Employers with over 100 employees are the best candidates for implementing this alternative. The South Florida Commuter Services (SFCS) assists employers in implementing this type of alternative.

E. CURRENT STATUS

1. The South Florida Commuter Services continues contacting employers to promote ridesharing alternatives.
2. Private sector has been more proactive in establishing this strategy for alleviating the morning and afternoon stress of driving. Additionally, they are contributing to alleviate traffic congestion in our roads.
3. At county level, some offices have been using this strategy for years.

F. RECOMMENDATIONS

1. The county should be more proactive by promoting the establishment of these strategies at county buildings.
2. The county could encourage municipalities to also consider the establishment of these strategies.
3. A letter could be prepared for the signature of Board members for encouraging employers to consider the establishisment these alternatives in their work places.
4. Technical support for implementing this program could come from the county, the South Florida Commuter Services and local universities.



VI. TRANSPORTATION MANAGEMENT ASSOCIATIONS (TMAs)

A. CONCEPT

TMAs are private, non-profit groups formed to facilitate private sector involvement in addressing transportation issues. Some times, public/private partnerships are created for implementing specific projects that required the use of public funding.

B. HOW DOES IT WORK?

Most TMAs are formed on a voluntary basis, while others are initiated from ordinances mandating the establishment of programs to help alleviating traffic congestion. The general steps to initiate a TMA are:

1. Introduce the idea to a group of employers or businesses.
2. Define the boundaries of the TMA.
3. Identify specific transportation issues affecting the area.
4. Brainstorming the problems and develop practical solutions.
5. Educate others and obtain commitment.
6. Establish bylaws, goals, objectives and mission statement for the incorporation of the TMA.
7. Develop an Action Plan.
8. Promote awareness in the community.

C. HOW IT CAN BE IMPLEMENTED?

The South Florida Commuter Services (SFCS) assists employers and businesses in implementing this type of alternative. The Center for Urban Transportation Research (CUTR) provides the annual evaluation to the TMA.

Funding is a vital element of the TMAs. Often, the private sector and local governments provide financial assistance during first years of the TMA. Eventually, TMAs combines membership dues, in-kind services, grants and other contributions for the stable growth of the TMA.

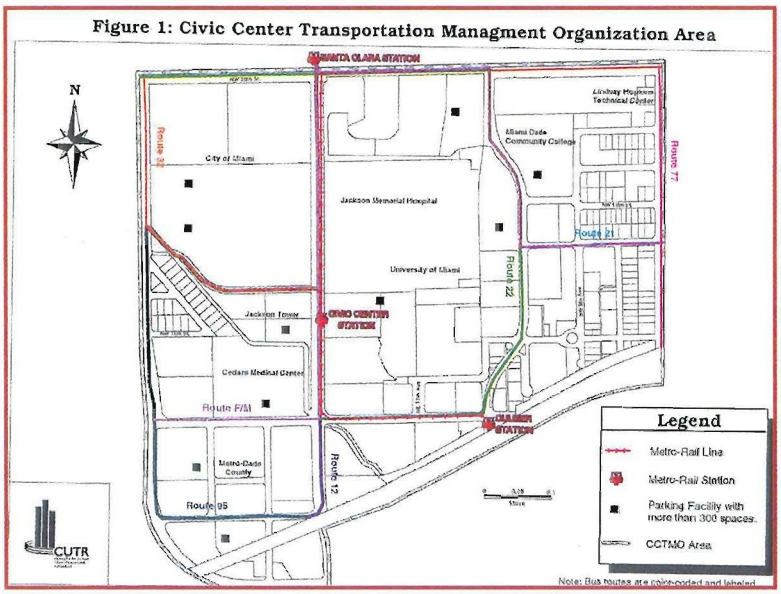
D. SERVICES OFFERED BY TMAs

Information and Assistance		Incentives
Carpool Matching	Transit Information	Preferential Parking
Vanpool Matching	Emergency Ride Home Programs	Transit Pass Sales
Flexible Work Hours	Staggered Work Shifts	Shuttle Bus Service
Compressed Work Weeks	Parking Management	

E. TMAs IN MIAMI-DADE COUNTY

Currently, there is only one TMA in the County, the Miami Beach TMA (MBTMA). This TMA was created with the assistance of the MPO, the FDOT, the SFCS and the City of Miami Beach. It's major accomplishment was the establishment of the ELECTROWAVE.

Another TMA was created in the Civic Center area, but it's not in operation. Additionally, the FDOT-6 has contributed to the SFCS to create two Transportation Management Innitiatives (TMI) in the areas of Doral and Downtown Miami. There are two coordinators that have been working extensively in assisting employers and businesses in those areas to promote strategies oriented to alleviate traffic congestion.



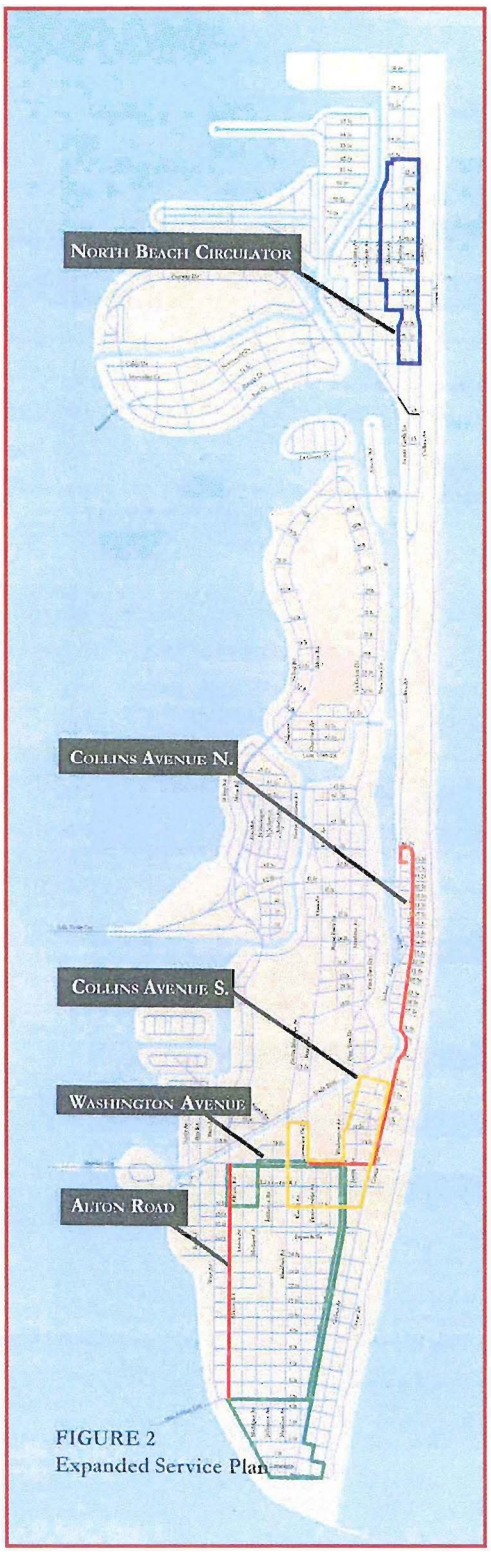


FIGURE 2
Expanded Service Plan

A. CONCEPT

Carpooling is an arrangement where two or more individuals share a private automobile on a continuing basis to work.

B. HOW DOES IT WORK?

Ussually, two or more persons that work in the same place make internal arrangement to commute together. Under these circunstances, all related cost are shared by the participants in the carpool. Other way to participate in a carpool is through a ridesharing programs that assists individuals in forming carpools.

C. BENEFITS

1. Less stress while driving
2. Financial savings due to sharing commuting costs
3. Reduces need for parking
4. Use of HOV Lanes, saving travel time
5. Contributes to reduce pollution
6. Participates in the Emergency Ride Home Program

D. CURRENT EXPERIENCE

The South Florida Commuter Services (SFCS) is the FDOT Ridesharing Program responsible for providing these services.

SOUTH FLORIDA COMMUTER SERVICES

A. CONCEPT

One lane in an existing facility is dedicated for special use during peak periods. This lane is used in the direction of the heaviest traffic in the morning and it reverses in the afternoon to the opposite direction.

B. HOW DOES IT WORK?

Usually, this alternative is implemented on arterial roads, not on expressways. Analyses must be conducted to evaluate traffic volumes on both directions in order to determine the direction of the lane to be taken and the difficulties that may arise as a result of this action. There are two ways for implementing this alternative:

1. In 3-lane or 5-lane roadways the implementation is easy because usually the center lane is normally used as a turning lane. In this situation, this lane is converted to a reversible lane and turning movements are not allowed.
2. In a 4-lane facility, one lane is taken from the direction with less traffic volume in the morning peak and vice versa in the afternoon peak.

C. PROS AND CONS

1. Benefits
   a. Increase the capacity of the roadway without need for new construction.
   b. Alleviate traffic congestion.
   c. Implementation costs are low.
   d. Effectiveness can be measured in a short term.

2. Inconveniences
   a. High risk of driver confusion during the initial phase of implementation.

D. HOW IT CAN BE IMPLEMENTED?

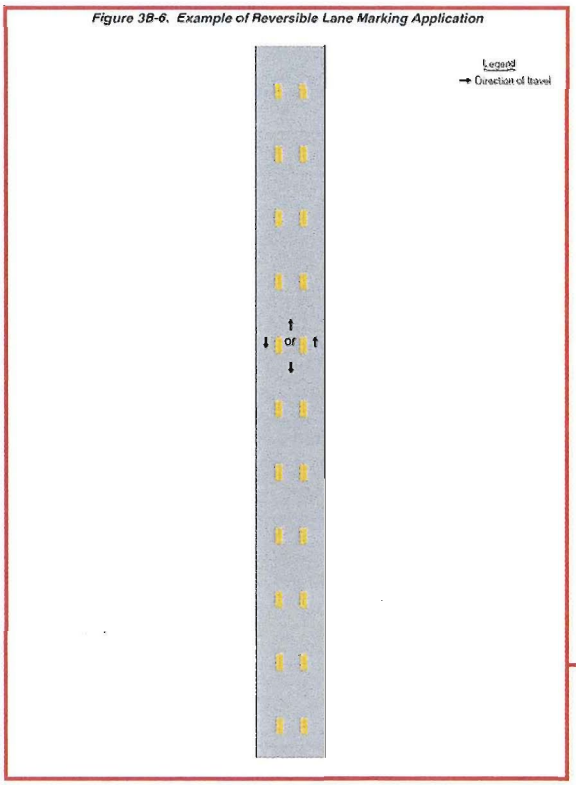
Traffic analyses are conducted to determine those arterial roads suitable for implementing this alternative, as well as the actions needed for implementation, such as: traffic signalization, pavement markings, signage, enforcement measures and most important, a public campaign to educate the public.

E. CURRENT EXPERIENCE

In Miami-Dade County there are no current applications, but in other cities this alternative has been successfully implemented.

F. RECOMMENDATION

It is recommended that a study be conducted to evaluate the feasibility of implementing this strategy along those congested corridors for providing additional capacity without adding lanes.



This sketch from the Mannual of Uniform Traffic Control Devices (MUTCD) illustrates the marking of a reversible lane on arterial. This is a three lane roadway which allows for the center lane to be used as the reversible lane. In this case, this case change directions according to the heaviest traffic volume direction.

The simple way of implementing this reversible lane is by marking the pavement as appropriate, install signage to advise drivers that this is a reversible lane and by installing a traffic light indicating to drivers if they can use or not the lane. Usually, this is designated by a green light allowing drivers to access the lane or by a red light which prohibit the access toi the lane. Some places use an "X" in red or a "Circle" in green.

IX. USE OF SHOULDERS ALONG EXPRESSWAYS

A. CONCEPT

This concept is based on allowing transit buses to use he shoulders along expressways to bypass traffic congestion.

B. HOW DOES IT WORK?

Transit buses are allowed to use the right lane shoulder to bypass traffic congestion once speed is 35 mph on a regular traffic lanes. Segments are properly identified along the expressways where this bypass is authorized. Bus drivers can not exceed 35 mph while on the shoulder and must yield to merging, entering and exiting traffic, as well as other vehicles on the shoulders.

In addition to Miami-Dade County, Maryland, Virginia, Minnesota, Washington, British Columbia, Ontario are among the jurisdictions that have implemented or are considering implementing bus use of shoulder programs.

C. MINIMUM REQUIREMENTS

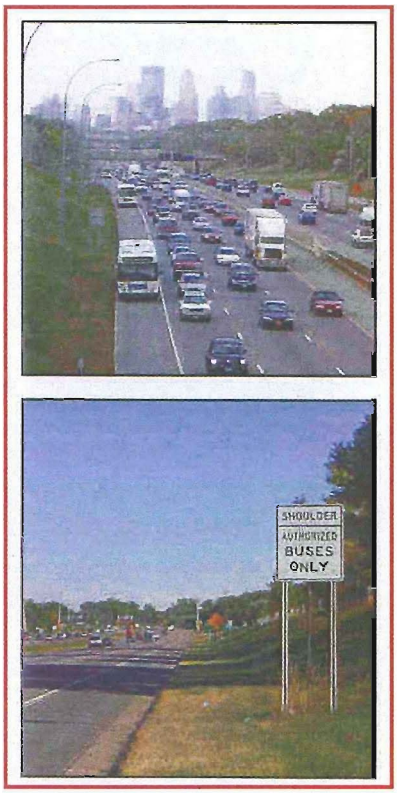
1. Shoulders have to be paved and 10 ft wide minimum
2. Agengy with jurisdiction over the facility must approve it prior to implementation
3. Signages are required for:
   a. Information to drivers
   b. Speed
   c. Begin and finish of the segment
   d. Enforcement
4. Bus drivers need to be trained
5. Buses will yield to any vehicle on the shoulders

D. PROS AND CONS

1. Benefits
   a. Allows MDT express routes to bypass congestion
   b. Low capital cost
   c. Saves travel time
   d. Effectiveness can be measured in a short term

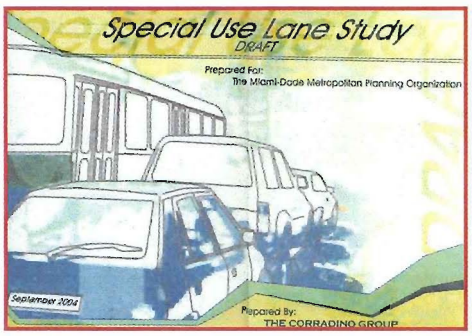
2. Inconveniences
   a. Driver confusion during the initial phase of implementation
   b. Education campaign is needed before implementation
   c. Safety issues have high priority before implementation

E. MINNEAPOLIS EXPERIENCE



1. Use of shoulder started operation in 1992.
2. Minnesota Statutes were amended to allow transit buses to use shoulders only as a bypass of traffic congestion when mainline traffic speed is below 35 mph. Buses may never exceed 35 mph.
3. Buses operating on the shoulder must yield to merging, entering, and exiting traffic and must yield to other vehicles on the shoulder.
4. There are over 80 shoulder segments totaling over 220 miles used by transit buses as established by law. Every year they add approximately 20 - 30 miles to the system.
5. Over 1,500 transit trips per day are using these facilities.
6. No major improvements or modifications have been made to the shoulders.
7. No major accidents have occurred since 1998. The largest loss in a single accident was $3,000.
8. An average of over 15,000 trips per collision
9. Only appropriate signage has been used to warn drivers about the use of the shoulders.
10. No enforcement has been in place since 1992.
11. Average budget for improvements and maintenance is $1.5 M per year.
12. Customers perceive savings two times greater than actual.

F. CURRENT EXPERIENCE



Miami-Dade County is in the process of implementing this strategy along major congested corridors. The MPO conducted the "Special Use Lane Study" that recommends the implementation of this strategy.

1. **Actions Taken**
   a. A letter of Agreement is being drafted for the signature of the parties involved.
   b. MDT developed four (4) express routes:
      - ✓ SR-826 Express: Dadeland South Metrorail Station – SR-826 – Westland Mall
      - ✓ SR-836 Express: Kendall Drive – Turnpike Extension – SR-836 to Miami Intermodal Center (MIC)
      - ✓ SR-836 Express: Kendall Drive – Turnpike Extension – SR-836 to Downtown Miami
      - ✓ Broward Connection: Pembroke Lakes Mall – Pines Boulevard – I-75 – Miami Gardens drive – SR-826 – Palmetto Metrorail Station

   c. The Second Phase of the Special Use Lane Study is underway.

d. As a result, an implementation plan will be proposed including solutions to operational, engineering and safety concerns expressed by the parties involved. This plan will also include estimated costs and time frame for implementing the recommended routes.
e. The express route servicing Broward is expected to be in operation by this Summer 2005. Shoulders will not be used at this phase.
f. The SR-836 Express is expected to be in operation by the end on this year or beginning 2006.

G. RECOMMENDATION

It is recommended that emphasis be placed in the implementation of this strategy by coordinating with FDOT and MDX a marketing campaign to educate the drivers and for providing a continuous evaluation while routes arer in operation.

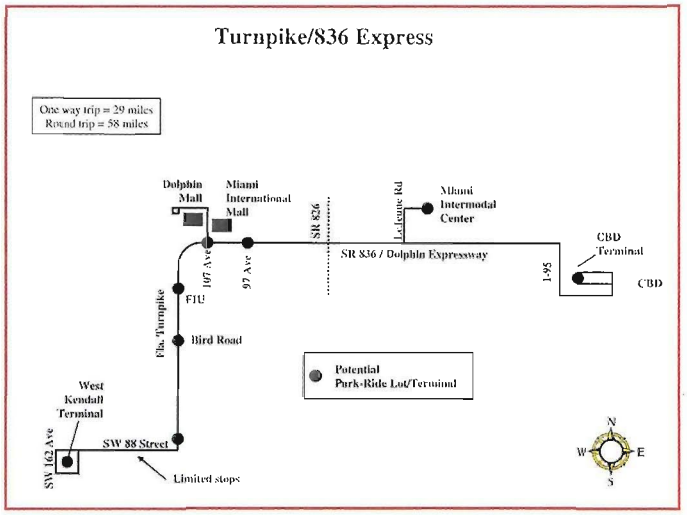


Figure #1: 10 & 20 minute headway

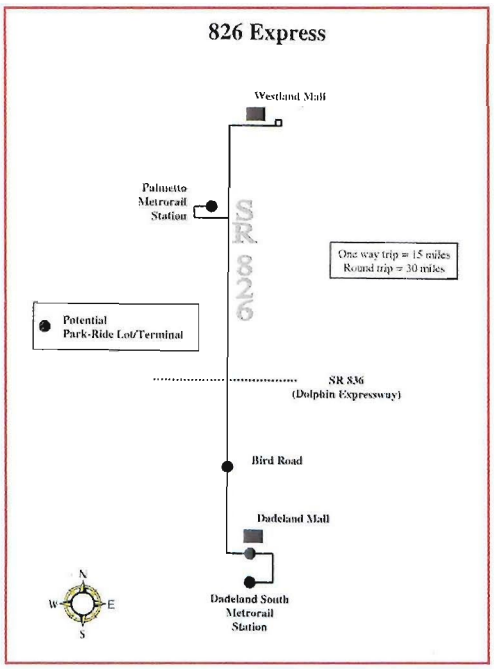


Figure #2: 20 minute headway

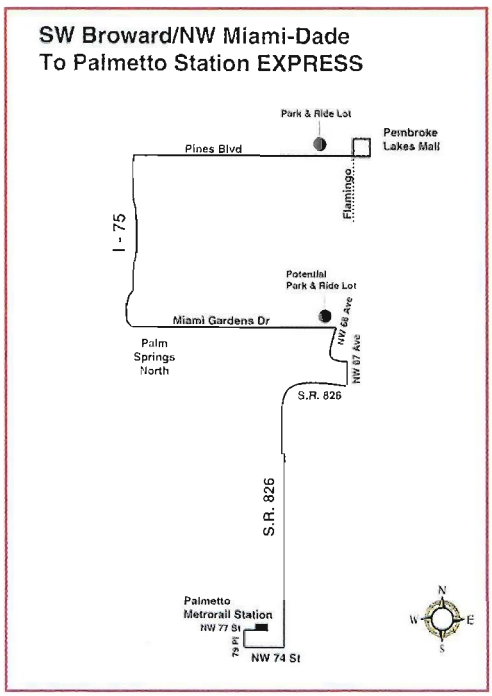


Figure #3: 20 minute headway

X. RESOURCEFUL USE OF STREETS AND HIGHWAYS (RUSH)

A. CONCEPT

The Resourceful Use of Streets and Highways (RUSH) program was designed to provide the county with a tool for expediting and implementing effective low cost improvement projects on a timely basis. This concept was intended to correct obvious deficiencies that in the past had to be over-engineered or studied with expensive documentation to achieve an obvious results. There are small, low cost improvements that can be built quickly, provide effect relief, and contribute to immediate traffic benefits.

B. HOW DOES IT WORK?

A steering committee composed of two representatives of the Florida Department of Transportation (FDOT), two representatives of the Miami-Dade County Public Works Department and one representative of the Metropolitan Planning Organization was in place for evaluating improvements at congested intersections and small roadway segments.

Candidate locations were evaluated on the criteria established by the steering committee. Different weights were assigned to each factor considered in the criteria, according to their importance in meeting the program's goals. The following factors were included in the criteria:

a. Need for Right-of-way acquisition
b. Magnitude of environmental impacts
c. Ability to complete design and construction within 1-2 years
d. Availability of data
e. Project cost
f. Multi-modal, operational and safety benefits

This criteria screens out expensive or lengthy design and construction projects. Once the locations were selected, the projects were placed into the county's Transportation Improvement Program (TIP) where funds were programmed for construction.

C. BENEFITS

These actions will:

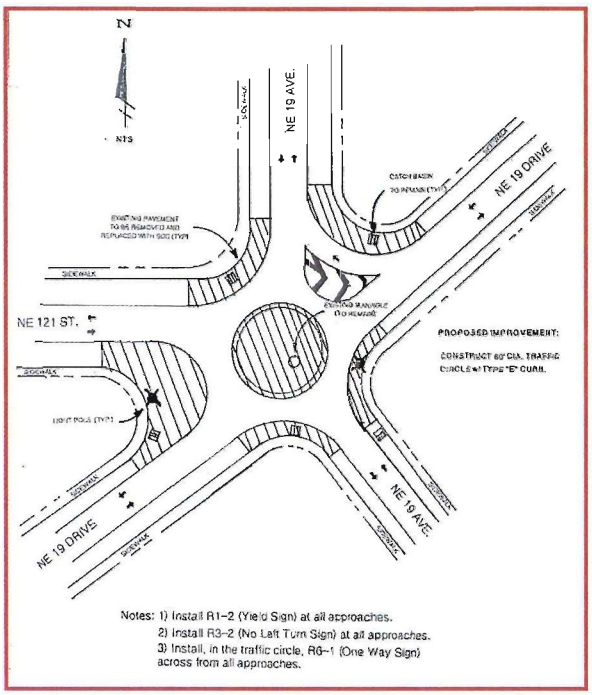
1. Relief traffic congestion.
2. Improve the public image of transportation agencies.
3. Project priority can be established jointly by all agencies.
4. Reduce the number of conflict points.
5. Consider the needs of pedestrians and bicyclists.

D. HOW IT WAS IMPLEMENTED?

A study was conducted to implement the RUSH concept and to identify locations that could be considered for low cost intersection improvement projects. Recommendations were made for 20 locations that includede schematics drawings.

Due to the fact that this was a pilot project, several funding issues contributed to not improve all recommended locations. FDOT, Public Works and the MPO participated actively in this process.

E. EXAMPLE LOCATION



Location: NE 19th Ave. – NE 19th Dr. & NE 121st St.

Problems: Intersection too wide, no good directional control, no physical delineation of the travel way and parking permitted along all sides of the roadways.

Recommendations: Construct a round-a-bout within the main area of the intersection to provide positive guidance and traffic calming. Other recommendations include the replacing of the lightpoles, landscaping and markings pavement.

Estimated Cost: $50,000

Jurisdiction: County Road

F. RECOMMENDATION

It is recommended to reactivate RUSH and conduct a second study to determine additional locations for low cost improvement projects.

G. LIST OF LOCATIONS

#	Juris-diction	LOCATION	IDENTIFIED PROBLEM	PROPOSED IMPROVEMENT	ESTIMATED COST ($)
1	C/C	NW 22nd Ave & NW 111th St	Median nose protrudes into crosswalk	Reposition of median nose	3,940
2	S/S	NW 7th Ave & NW 119th St	Median nose protrudes into crosswalk	Reposition of median nose CONSTRUCTION COMPLETED 7-18-02	5,000
3	C/S	Kendale Blvd. & Killian Parkway	SB approach needs alignment	Realign intersection CONSTRUCTION COMPLETED FEB-04	35,600
4	C/C	W Flagler & W 102nd Ave	Needs NB right turn lane	Construction of a right turn lane	27,400
5	C/S	SW 112th Ave & Kendall Dr	Needs NB right turn lane	Construction of a right turn lane IT DOESN'T APPEAR TO BE A NEED	18,250
6	C/C	SW 109th Ct & SW 104th St	Needs dual NB left turn lane	Construction of a left turn lane	24,425
7	C	Maynada Bump Bridge	Sight distance problems	Safety improvements	4,000
8	C/C	Douglas Rd & Ingraham Hwy	Sight problem, bike accidents	Improvement to bike path	5,000
9	C	NE 19th Ave, 19th Dr &	Multi-leg intersection	Improvement to intersection	43,195
10	C	NW 77th Ct & NW 154th St	Needs NB left turn lane	Construction of a left turn lane	25,815
11	S/S	US 1 & Red Road	NB left turn lane is too short	Extend NB left turn lane. IT WILL PURSUE UNDER PUSHBUTTON CONTRACT	50,000
12	C/C	SW 97th Ave & SW 48th St	Need left turn for all approaches	Extend SB left turn lane. Mod. signal.	30,000
13	C/C	SW 107th Ave & SW 184th St	Poor transition for NB traffic from S 184th	Widening to accommodate left turns	2,000
14	C/C	SW 107th Ave & SW 160th St	NB left & right turns needed; poor alignment	Redesign intersection	16,800
15	S/C	SW 87th Ave & SW 96th St	Need NB & SB left turns	Provide NB & SB left turn lanes UNDER DESIGN	28,525
16	C/C	SW 92nd Ave & SW 64th St	Need left turn lanes all approaches	Provide L-turns lanes	50,000
17	S/C	SW 87th Ave & SW 48th St	EB left turn lane too short	Extend EB L-turn lane INCLUDED IN PROJECT FM 4146272, UNDER DESIGN	18,350
18	S/C	SW 87th Ave & SW 128th St	NB Congestion	Develop 2 lanes on North side of the int. CONSTRUCTION COMPLETED 12/15/02	30,000
19	C/S	NW 32nd Ave & NW 119th St	SB left turn lane is too short	Extend SB left turn lane CONSTRUCTION COMPLETED	5,000
20	C	Biscayne Blvd.	Lack of bus bay	Provide bus bays (2)	30,000
				TOTALS	453,300

A. CONCEPT

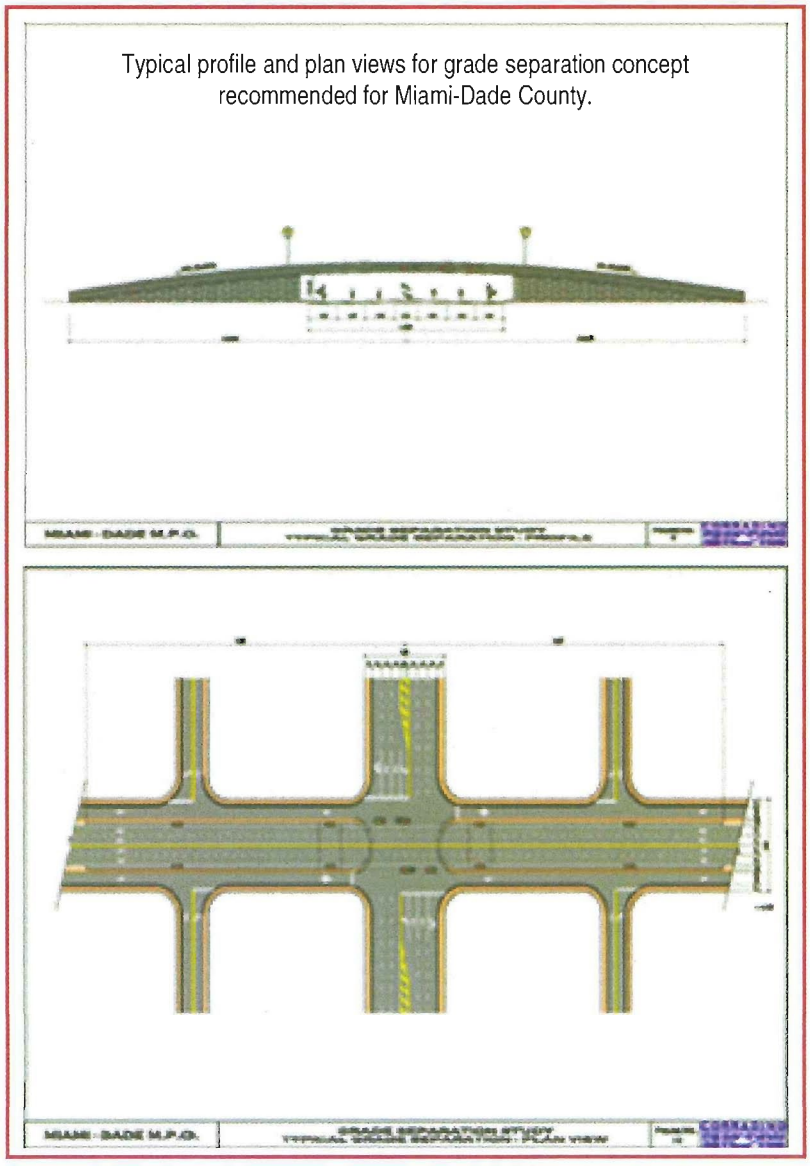
This strategy proposes the physical separation of different flows of traffic.

B. HOW DOES IT WORK?

There are several approaches to this separation.

1. One of the them is by grade separating the through movement on the heaviest volume street and maintaining the secondary through movement and all left and right turning movements at grade. This approach could use a cut and cover section to place the through movement below grade.
2. Other approach is by separating the turning movements using fly-overs. In this option, the throught movement is being kept at grade.
3. A third approach elevates the through traffic, leaving all turning moivements at grade.

Each above referenced approaches are selected based on criteria previously established according to each intersection. All of them are mostly related to the traffic volume and number of accidents.



Typical profile and plan views for grade separation concept recommended for Miami-Dade County.

C. BENEFITS

1. Increase capacity
2. Improve traffic flow
3. Reduce traffic accidents

The major inconvenience of grade separation is the high cost of construction, traffic inconveniences during construction and the implementation time that usually takes years.

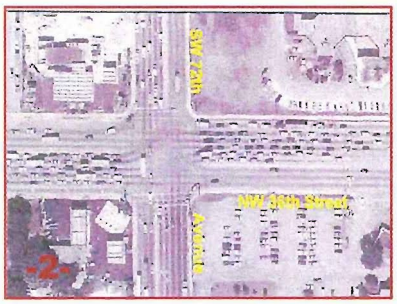
D. CURRENT EXPERIENCE

Several years ago, the Florida Department of Transportation completed a grade separation project along Biscayne Bouelavard and NE 205 Street.

Currently, the Metropolitan Planning Organization (MPO) is conducting a study to evaluate other intersections within the county to apply this concept. The 30st busiest intersections were evaluated and as a result, five locations were recommended for implementation.

1. SW 8th Street across SW 107th Avenue
2. NW 36th Street across NW 72nd Avenue
3. SW 8th Street across 87th Avenue
4. US 1 across SW 27th Avenue, and
5. N. Kendall Drive across SW 127th Avenue

Another intersection is being evaluated undre this study, SW 152nd Street acrocc SW 117th Avenue.

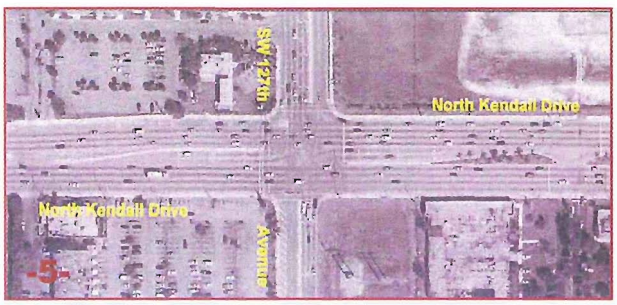


E. RECOMMENDATIONS

1. Once the study is finally completed, recommendations should be submitted to FDOT and the Public Works Department for further considerations and future construction.

GENERAL CHARACTERISTICS OF THESE INTERSECTIONS

- Traffic Volumes Peak Direction: Over 3,000 veh. per hour
- Through Traffic: Over 2,500 vehicles per hour
- Level of Service (LOS): E or F
- Average Speed: 16 MPH
- Cycle length: 120 seconds
- Green ratio: Between 30% and 60%
- Vehicles held at red: 1,700 vehicles
- Average Construction Costs: $6.0M (2004$)
  Right-of-Way not included

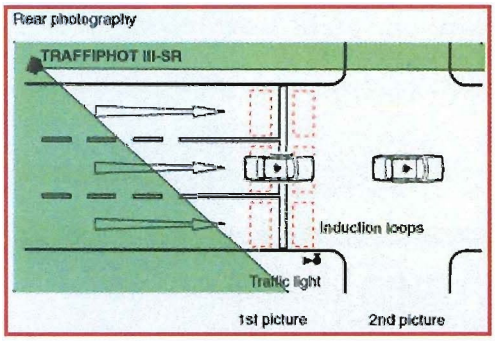


A. CONCEPT

The idea behind this program is to take a photo of the plate of a car running a red light. In order to do that, electromagnetic induction loops are embeded in the pavement, monitoring all lanes approaching the intersection. These loops transmit traffic information to the signal control box that triggers the red light camera, that is also connected to the signal control box. Then, the camera is activated after a predetermined grace period at the start of each red phase in the traffic signal.

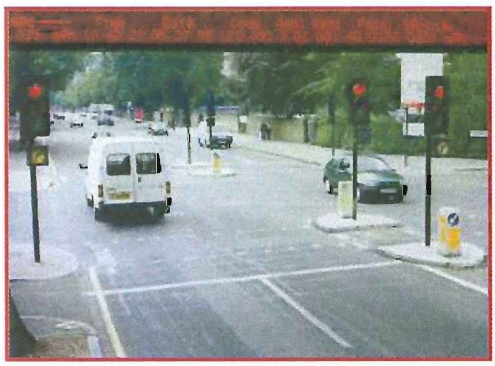
When a violation occurs, the video camera captures the images of the vehicle license plate and records the date, time, seconds into the red phase, as well as the location of the violation. Automatically, a ticket is issued and mailed to the owner of the vehicle.

B. HOW DOES IT WORK?



1. **Non-Moving Violation Ticket:**

   In New York, the program was developed and implemented using an approach that considerably simplifies the process.
   a. The ticket issued is considered a non-moving violation, therefore, the fine is equivalent to a parking ticket.
   b. The record of the driver is not affected.



2. **Moving Violation Ticket:**

   San Francisco calls for a moving violation that:
   a. Require, in addition to the photo of the plate, a photo of the person driving the vehicle at the moment of the violation for proper identification.
   b. The record of the driver is negatively affected by 1 point in his/her driver license.
   c. Notices to appear in court must be mailed within 15 days of the date of the violation.
   d. Failure to appear will result in cancellation of the driver's license or vehicle registration.
   e. Additional equipment is required to take a frontal picture of the driver.

C. BENEFITS

1. The number of motorist and pedestrian accidents have been reduced in those intersections where the program has been implemented.
2. The number of red light violations has been reduced by more than 50% at these locations.
3. Driver's aggressive habits have changed or modified.
4. Pedestrians, bikers and responsible drivers have been benefited by the reduction of red light running violations.
5. This program allows policemen to focus on other enforcement needs and reduces the stress produced by chasing cars or stopping violators while traffic is moving.
6. Nationwide, citations issued by the program generate additional funding for other related projects.

D. RED LIGH PROGRAMS IN U.S.

red light cameras are in use in more than 100 U.S. communities. Following is a list of main cities using this technique.

State	Main Cities	
Arizona	Phoenix	Scottsdale
California	Los Angeles Sacramento San Diego	San Francisco San Mateo
Colorado	Denver	
Delaware	Dover	
District of Columbia	Washington	
Georgia	Marietta	Savannah
Illinois	Chicago	
Iowa	Davenport	
Maryland	Annapolis	Baltimore
New York	New York	
North Carolina	Charlotte	Raleigh
Ohio	Dayton	Toledo
Oregon	Portland	
Rhode Island	Providence	
South Dakota	Sioux Falls	
Texas	Garland	
Virginia	Alexandria	Fairfax
Washington	Lakewood	

E. CURRENT EXPERIENCE

1. New York (Non-moving Violation)
   a. This project was the first one using this technology and was implemented in 1994.
   b. Implementation costs $15.5M/3-year.
   c. Total project includes 18 intersections.
   d. More than 450,000 tickets issued and over $18.5M collected through 1996.
   e. $50 fine (parking ticket).
   f. Over 65% of the tickets are paid to the first notice.
   g. Conviction rate is 85% of those who appear in court.
   h. Number of accidents have been reduced.
   i. Driver's habits have been dramatically changed.
   j. 60% decrease in the average number of violations per location.
   k. Program is been expanded to other intersections.

2. San Francisco (Moving Violation)
   a. The city started this program in October 1996, as a pilot project, in four locations.
   b. A total of $250,000 was authorized from sale tax to install the equipment.
   c. Two vendors received $30,000 per intersection to cover expenses.
   d. Vendors receive $17.50 of the $104 fine per paid ticket.
   e. State Legislature amended the California Vehicle Code to allow "automated enforcement".
   f. During the first six months of operation, over 3,000 citations had been mailed out.
   g. 20 more locations are being added by early 1998.
   h. Red light running violations were reduced by 40%.
   i. To cover expenses, a bill was introduced to raise the fine from $104 to $271 and now is $390 per ticket.
   j. General public, advocacy groups and politicians support the expansion of the program.

F. OTHER COUNTRIES USING THIS TECHNOLOGY

1. Australia
2. Austria
3. Belgium
4. England
5. Germany
6. Netherlands
7. Switzerland
8. Israel
9. Singapore
10. South Africa

G. CONCERNS IN MIAMI-DADE COUNTY

1. Legal Issues
   a. Amendment of state statutes needed to allow automated enforcement for red light violations.
   b. Privacy issues have been raised regarding the identification of the drivers using a frontal photograph. In some locations, photographic records are considered confidential to reduce the impact on this issue. In Miami-Dade County a recommendation is made based on a non-moving violation ticket that not requires a frontal picture.
   c. Drivers are presumed guilty rather than presumed innocent. In order to provide a due process, some locations have established a procedure to allow drivers to prove he or she was not driving.

2. Financial Issues
   a. Need to identify funding sources for implementing the program.

3. Administrative Issues
   a. If the driver is not the owner of the vehicle, the process to identify the driver is time consuming.
   b. Coordination among the different agencies and the vendor in establishing the program.
   c. Development of a vigorous public involvement program, in order to obtain public acceptance and support.

4. Public Issues
   a. Some people are opposed to the implementation of the program, due to the impression of "Big Brother is watching us".
   b. Locations where cameras are installed should be identified, to warn drivers about the program.

5. Technical Issues
   a. Technical problems in taking frontal photograph of the drivers.
   b. Frontal photography adds complexity to ticket issuance, drivers' identification, engineering aspects and drivers' privacy.
   c. External conditions such as windshield glare and obstructed facial views, significantly complicate the process making impossible to convert many valid infractions into tickets.
   d. Frontal photography requires more extensive installation work to place the cameras at the proper locations.

H. HOW IT CAN BE IMPLEMENTED?

An amendment to the Florida Statutes needs to be introduced and new legislation would be required. Past efforts to introduce a bill have failed. Strong opposition has been found at congresional level. For several years, Palm Beach and Broward Counties have working together to introduce a bill at the Legislative Session. However, their efforts have been unsuccessful. Additional actions should be taken to demonstrate the effectiveness of this alternative.

I. RECOMMENDATIONS

It is recommended that Miami-Dade County coordinates with Palm Beach and Broward Counties to pass a resolution endorsing a pilot project for implementing a Red Light Camera Enforcement Program. Additionally, a study should be conducted to determine the pros and cons of this strategy. This will include:

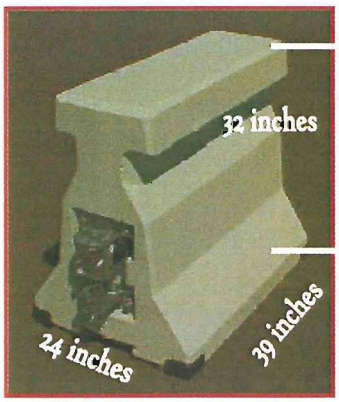
1. an evaluation of the needs for implementing this strategy in Miami-Dade County,
2. an estimated cost per intersection
3. funding sources
4. an implementation plan, including responses to major concerns and constraints
5. a survey to identify the perception of the community regarding this project, and a list of actions to be taken for implementing a pilot project for Miami-Dade County

A. CONCEPT

A Zipper Lane is moveable barrier which makes a lane to provide additional capacity in the peak direction. The moveable barrier is a string of connected concrete barriers that is designed to allow lateral movement.

B. HOW DOES IT WORK?

A Zipper Machine is used to move the barrier in the desired direction providing the additional capacity. The facilities where moveable barriers are located will provide an additional traffic lane that can be used for different purposes. Each concrete interlocking unit is about 32 inches high by 39 inches wide and 24 inches in depth, weighing approximately 1,500 pounds.

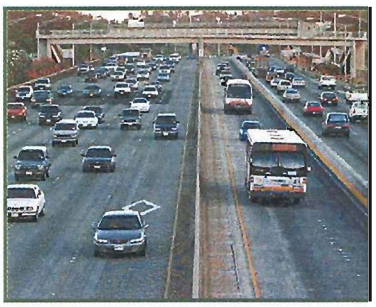


Approx. Weight: 1,500 pounds

The Zipper Lane could be used as a regular lane or an exclusive lane for buses, vanpools and carpools. It could be deployed during weekday in the morning and afternoon peak periods. The moveable barriers are stored in the median of the road facility. As appropriately scheduled, the Zipper Vehicle begins to move the barriers towards opposite direction where traffic is low to provide the additional capacity to the peak direction. Once traffic is normal, the zipper vehicle moves the barriers back to their storage place along the median, returning the freeway to its normal lane configuration. These lanes can be used with or without access restrictions.

C. BENEFITS

1. Increase capacity during peak periods
2. Relief traffic congestion and reduce delays
3. Could be used for different purposes: additional regular traffic lane, exclusive bus lane, HOV/HOT lane, contra flow bus lane, maintenance of traffic during construction, etc...



D. ZIPPER LANES IN OPERATION

1. Arlington, Virginia
2. Boston, Massachusetts
3. Dallas, texas
4. Honolulu, Hawaii
5. Long Island, New York
6. Manhattan, New York
7. Montreal, Canada
8. San Diego, California
9. San Juan, Puerto Rico
10. Tappan Zee Bridge, New York
11. Washington, District of Columbia

E. CURRENT EXPERIENCE

The MPO prepared a document regarding Zipper Lanes in October 2003. The firm that patented the system made a visit to Miami. A meeting was held and information was provided. However, no additional action has been taken.

A. CONCEPT

The Superarterial concept is an area-wide system of arterial streets that are developed or improved to increase the capacity of the various corridors.

B. HOW DOES IT WORK?

In order to convert a regular arterial street to a superarterial, an evaluation has to be made to determine which traffic improvements are needed to increase the capacity in that particular corridor. Some of the possible improvements include:

1. Traffic channelization
2. Traffic signal improvements
3. Street and/or intersection widening
4. Left/right turn lanes
5. Turn and/or parking prohibitions
6. One-way streets
7. Eliminate parking
8. Grade separations
9. Reversible lanes
10. Application of Intelligent Transportation System (ITS)
11. Lighting improvements
12. Bus turnout bays
13. Signal preemption
14. Railroad grade separations

C. BENEFITS

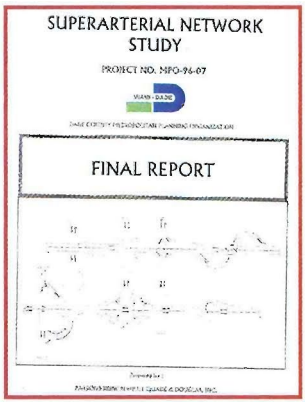
1. Increase capacity
2. Improve traffic flow
3. Reduce pollution and delays
4. When this concept is developed on arterials along the highway system, it provides additional capacity, as well as an alternate route to traffic congestion on the highways

D. HOW IT CAN BE IMPLEMENTED?

County and State officials can work together in preparing a project of this type along one of the existing highways. Cost is a determining factor.

E. CURRENT EXPERIENCE

A study was conducted by the MPO in October 1998 which identify corridors and improvements that can be implemented.



F. RECOMMENDATIONS

1. It is recommended to update the above referred study.
2. Similar to the transit alternative analysis currently conducted at various corridors, studies should be developed at corridor level to evaluate existing traffic conditions and provide specific recommendations focusing in increasing the capacity of the facility by combining these techniques with transit services.

A. CONCEPT

Car sharing is a program where participants have access to a vehicle on an as needed basis. This is a short-term rent a car, but instead of rent by day is based on rent by hour.

B. HOW DOES IT WORK?

Based on the experience in other places, basically the program work as follows:

1. This service is provided by a private company or by a non-profit organization.
2. A person has to register to have access to the programs.
3. Cars are properly identified and parked at different locations. These locations are selected based on residential developments or working activity centers.
4. Usually, the public and private sectors work together to provide funding for the program.
5. These programs are based on membership, therefore, intensive marketing and outreach plans are developed to attract as many members as possible.

C. HOW DO YOU GET THE CAR?

1. When membership is paid, the person received a personal key (passkey or fob).
2. This passkey provides access to the car and to open a lockbox that contains the ignition key.
3. Members reserve the car through the internet or by a phone call. This reservation could be the same day depending of the availability of the vehicle.
4. Members are free to select any available location.
5. Invoices are billed monthly.

D. COSTS

Cost vary according to the city and the company that operate the program. However, there are basic costs related to the program, such as:

1. Application fee
2. Membership fee
3. Security deposit
4. Hourly rate and/or mileage rate
5. Other indirect costs are: late return fee and a $1,000 - $500 insurance deductible in case of an accident

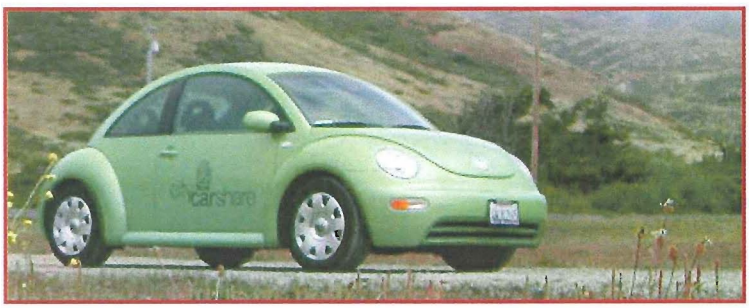
E. BENEFITS

1. Reduce the number of cars on streets and highways
2. Reduce pollution
3. Reduce demand for parking spaces
4. Cost includes insurance, maintenance, repair and gas.
5. Due to the short length of the trip, electric vehicles are an excellent choice for this program.
6. The targeted market for these programs are for those persons that own only one car and travel less than 7,000 miles per year. Based on these factors, these programs, in term of cost, are less expensive that drive a private car.

F. CURRENT EXPERIENCE

1. Major providers:
   a. FlexCar
   b. City CarShare
   c. ZipCar
   d. hOurCar
   e. i-go-cars
   f. Via Car
   g. Philly CarShare

2. As of December 2004, there were over 15 car sharing programs in the nation with over 61,000 members sharing about 900 vehicles.
3. Major cities where Car Sharing programs have been implemented include:
   a. Portland
   b. San Diego
   c. Seattle
   d. Washington
   e. New York
   f. San Francisco
   g. Boston
   h. Minneapolis
   i. Chicago
   j. Detroit
   k. Philadelphia and many others



4. The average costs related to the program are:
   a. $30.00 subscription fee
   b. $10.00 monthly administrative fee
   c. $300 - $500 refundable deposit
   d. $8.50 per hour or $125.00 per day (125 free miles, gas, cleaning and parking)
   e. Other companies charge $4.00 per hour and 44 cents per mile. Gas, cleaning and parking also included.
   f. There is $20.00 fine for leaving the car dirty or with less than half a tank of gas.
   g. Insurance policy includes: liability, collision and comprehensive.

h. Reimbursement are provided when the member fill the tank without using the credit card provided by the company (full reimbursement with receipt) and when car is cleaned (up to $15.00 with receipt).

G. RECOMMENDATIONS

1. Contact the providers to get additional information for implementing this program in Miami-Dade County.
2. At least, one of the companies (ZipCar) indicated in his website that they are considering Miami as one of their future locations.

A. CONCEPT

Station Cars are electric vehicles (EVs) driven to an from mass transit stations by transit riders. This program is similar to the Car Sharing program, however is mostly focused on transit users.

B. HOW DOES IT WORK?

1. This service is provided by a private company. Usually, in a partnership with transit agencies and universities.
2. A person has to register to have access to the programs.
3. Cars are properly identified and parked at transit stations or major activity centers.
4. Contrary to car sharing, station car programs only use electric vehicles. This required the need for a charging station located at transit stations, universities, etc...
5. Usually, the public and private sectors work together to provide funding for the program.
6. Also, these programs are based on membership, therefore, intensive marketing and outreach plans are developed to attract as many members as possible.

C. HOW DO YOU GET THE CAR?

1. When membership is paid, the person received a personal key (passkey).
2. This passkey provides access to the car and to open a lockbox that contains the ignition key or the it could be keyless based on available technology.
3. Members reserve the car through the internet or by a phone call.
4. Members are free to select any available location.
5. Invoices are billed monthly.

D. CHARGING STATIONS

E. COSTS

As car sharing programs, cost vary according to the city and the company that operate the program. In New York, a station car program was implemented charging $199 per month. However, in other places it could be more expensive up to $375 per month.

The targeted market for this program are mostly work trips. This allows major employers to facilitate charging stations at their facilities, as well as transit stations. Additionally, based on the positive impact to the environment, universities are another good market for station car programs.

F. BENEFITS

Benefits are similar to those listed for car sharing programs. The main benefits are:

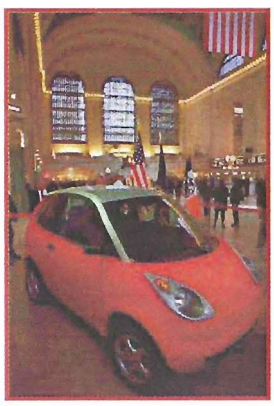
1. Reduce the number of cars on streets and highways
2. Reduce pollution
3. Reduce demand for parking spaces
4. Due to the short length of the trip, electric vehicles are an excellent choice for this program.

G. DIFFERENCES BETWEEN CAR SHARING AND STATION CAR PROGRAMS

1. Although both programs are similar in concept, they were developed simultaneously, but independently. Car Sharing was originally developed in Europe while the Station Car concept was developed in the United States.
2. Car Sharing usually starts, based on the initiative of the private sector. Station Cars are being developed through a series of pilot projects sponsored by governmental organizations and corporations.
3. Car Sharing provides several locations throughout neighborhoods with a few vehicles. Station Car locations are more centralized at high density residential areas, convention centers, airports and transit stations.

H. CURRENT EXPERIENCE

1. New York
   a. Joint public/private partnership between New York Power Authority (NYPA), Ney York Metropolitan Transportation Authority (NYMTA) and Ford Motor Co.
   b. Cost to members: $199 per month
   c. Vehicle: two passenger EV with a range of approximately 50 miles and top speed at 55 mph.



2. San Francisco, California
   a. Program was oriented to transit riders that have to drive to and from mass transit stations.

b. For this specific markets, EVs have only two seats and less amenities than regular EVs.
c. 39 charging ports were installed at several transit stations.
d. Some locations were integrated to Kiosk stations that verifies driver's identification, check that cars were correctly connected and begin the charging cycle.

3. Anaheim
4. Atlanta
5. Denver
6. University of California, Irvine
7. University of California, Riverside
8. Washington
9. Miami

Several years ago, Miami-Dade Transit coordinated with one of the rental car companies to install a station car pilot program at the metrorail Civic Center Station. Unfortunately, this effort failed due to some situations with the rental car company.

A. CONCEPT

This service is normally established as a feeder for rail or bus routes. However, it also works as a circulator to provide accessibility to employer's site, activity centers and/or other locations. The service provides frequent stops and is oriented to cover small areas.

B. HOW DOES IT WORK?

Shuttle services is the most flexible alternative for moving people. This can be based on fixed schedule or not. Different to jitneys, shuttle services (van or minibus) usually are provided by employers. This service could also be contracted with a private operator. A route is established according to the needs of the area. The alignment of the route may vary from point "A" to point "B" or as a circulator. Shuttles stop at any point along the route for picking and dropping passengers, but there are some specific destinations as main stops. Fare is optional.

C. BENEFITS

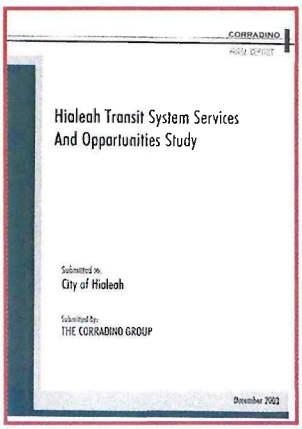
1. Coverage area is limited.
2. Provide continuous service.
3. Service is faster and frequent.
4. Provide accessibility and connectivity to main activity centers.
5. Eliminate additional trips during non-peak periods (lunch, shopping...)

D. HOW IT CAN BE IMPLEMENTED?

There has to be a need in the area for this type of services. Mostly municipalities or employers have to take the first steps for the provision of this service. In the case of municipalities a feasibility study is conducted to justify the service. An implementation plan is developed with operating and funding requirements.

E. CURRENT EXPERIENCE

The MPO has been instrumental in the development of shuttles and municipal transit services in Miami-Dade County. The MPO has sponsoring studies through several programs for the establishment of these services. Based on the recommendations made in these studies, shuttle and transit services have been implemented in: Miami Beach (the ELECTROWAVE), Aventura, Hialeah, Coral Gables, Brickell Area, Miami Springs and North Miami Beach, among others.



F. HIGHLIGHTS

Hialeah Transit Services

Coral Gables Trolley

Miami Beach
ELECTROWAVE

South Miami Trolley

A. CONCEPT

An intermodal facility is any facility connecting two or more transportation modes. The concept behind this alternative is to provide better physical facilities, at low cost, that can create an attractive transferring point for diverting people from private cars to public transit or other modes such as bicycle, pedestrian, etc...

B. HOW DOES IT WORK?

Locations are evaluated and selected based on a set of factors that can justify the investment in building these intermodal facilities. Some of these factors include number of modes that connect at each location, ridership or potential use for single drivers, convenience for transferring to other mode, safety, security, parking, and other amenities needed for attracting people to these facilities. Usually these locations are located in the suburbs to attract single drivers to transit or in the urban areas to provide better facilities and faster service for transferring to other modes of transportation.

These intermodal facilities may integrate buses, rail, jitneys, taxis, bicycles, pedestrians, private cars (Park&Ride and Kiss&Ride facilities) in one location with all amenities convenient for easy transfers.

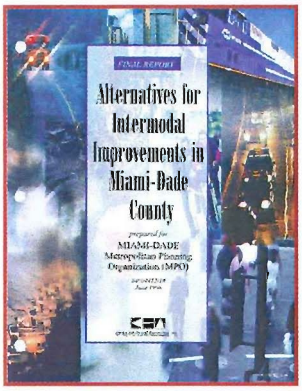
C. BENEFITS

1. Improve the quality of transit services.
2. Improve the image of transit in the region.
3. Relief congestion.
4. Promote accessibility of the intermodal facility and the modes it serves.
5. Encourage drivers to use public transit.
6. Promote public/private ventures.
7. Promote economic development for the region.
8. Provide connectivity to other locations and activity centers.
9. Facilitate access to different modes of transportation.

D. HOW IT CAN BE IMPLEMENTED?

Similar to the RUSH concept, funding (federal, state and local) could be allocated in the Transportation Improvement Program (TIP) for design and construction of these facilities.

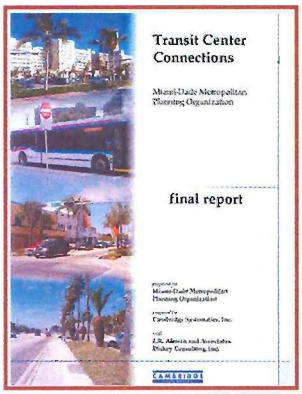
E. CURRENT EXPERIENCE



Two studies were conducted by the MPO regarding this strategy. In 1998, the Alternatives for Intermodal Improvements in Miami-Dade County identified 25 locations for establishing these facilities. This study also included a schematic design for each site. Two of the facilities recommended are already built.

Recently, another study entitled Connecting Traffic Generator, also identified locations for implementing transit oriented development facilities.

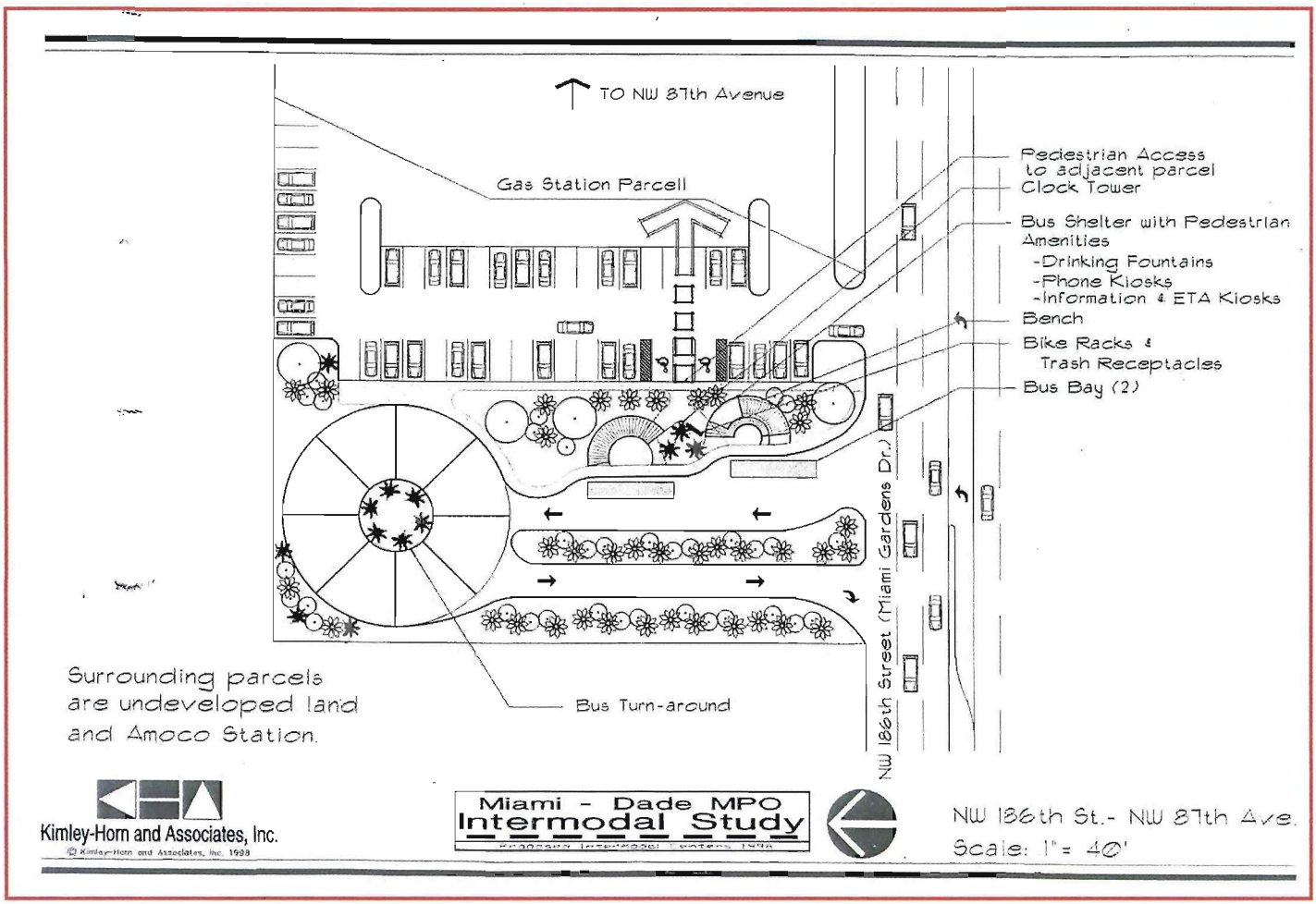
F. RECOMMENDATION



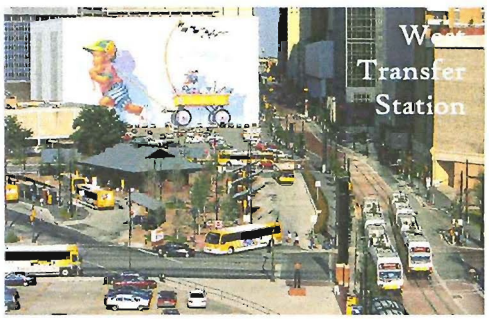
1. Review the locations identified in the first study and coordinate with Miami-Dade Transit (MDT), Public Works Department and the Florida Department of Transportation (FDOT) for selecting some of these locations for implementation.
2. Allocate funding in the Transportation Improvement Plan (TIP) as appropriate, for design and construction.

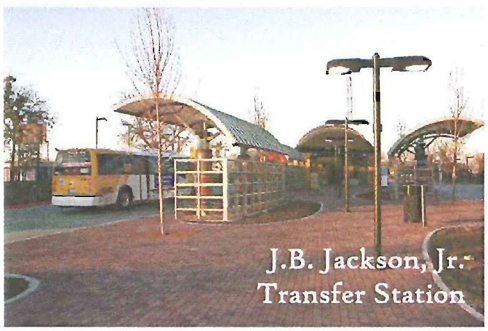
G. HIGHLIGHTS

Proposed Intermodal Locations			
1	MDCC North Campus	14	Westchester Shopping Center
2	MDCC South Campus	15	Miami International Mall
3	NW 7th Avenue & NW 183rd Street	16	Flagler & 79th Street
4	Miami Lakes Technical Education Center	17	NW 27th Avenue & NW 207th Street
5	Cutler Ridge Mall	18	Golf Club at Miami Gardens Drive
6	Collins Avenue & NE 44th Street	19	US #1 & 79th Street
7	Coconut Grove (McFarlane Road)	20	SW 117th Avenue & 152nd Street
8	Collins Avenue & 72nd Street	21	Flagler & 42nd Avenue
9	Miami Beach Convention Center Area	22	Florida City – Palm Dr. & FEC ROW
10	Government Center Area	23	NW 87th Avenue & Miami Gardens Dr.
11	US #1 – Aventura Mall	24	US #1 & 163rd Street
12	FIU – Tamiami Campus	25	NE 125th St./Dixie Highway/NE 6th Ave.
13	Golden Glades	26	5th Street & Alton Road



Schematic of proposed facility
Estimated cost $1.0M (1998 dollars)





Pictures shown transfer station from Dallas, Texas

XIX. OTHER OPTIONS

A. TRANSIT SERVICE IMPROVEMENTS

B. DESIGN CRITERIA FOR TRANSIT FACILITIES

C. DEVELOPMENT OF PUBLIC/PRIVATE PARTNERSHIPS

D. PROVISION OF PUBLIC TRANSPORTATION BY PRIVATE OPERATORS

E. LAND USE PLANNING AND POLICIES

F. GOODS MOVEMENT MANAGEMENT

G. PARKING MANAGEMENT

H. ACCESS MANAGEMENT

I. ITS APPLICATIONS