



Ramp Signaling Frequently Asked Questions

Q. What are Ramp Signals?

- A. Ramp Signals are an important traffic management technique designed to keep traffic flowing on the highways and help reduce crashes. They are traffic control devices that are located along several entrance points of Interstate 95 (I-95) in Miami-Dade County. They change from red to green lights to regulate the rate at which vehicles enter the highway to reduce the disruptions caused by traffic merging at the entrances. They are serving to improve traffic flow on the mainline and are helping motorists enter the highway safely and more efficiently. Ramp Signals work based on real-time traffic conditions and are typically activated during the weekday rush-hour period to ease congestion during times of heavy expressway use.



Q. Why are Ramp Signals being installed along I-95 in Miami-Dade County?

- A. With traffic congestion constantly increasing, a sound management of the region's transportation system is vital to the movement of people and goods throughout the region. The Florida Department of Transportation (FDOT) is activating the Ramp Signaling System as part of the 95 Express project to reduce traffic congestion during the weekday rush-hour period along I-95. The signals have proven to be an effective traffic management technique in several metropolitan areas around the country and are being implemented in South Florida in response to our growing traffic demands. They are a low-cost alternative to traditional widen-only type projects and are providing motorists with real-time benefits along northbound I-95.

Q. Where are the signals located?

- A. The Ramp Signaling System is being activated in two parts and follows the project limits of the 95 Express. Phase 1A of the system was activated in February 2009 along northbound I-95 and is typically operating during the afternoon rush-hour period (4-7pm). Phase 1B is scheduled for activation in April 2010 primarily along the southbound portion of the highway during the morning rush-hour period (6-9 am).

Phase 1A

- ◆ Eight (8) Ramp Signals in total
- ◆ Northbound I-95, from NW 62 Street to NW 167 Street/Golden Glades Interchange

Phase 1B

- ◆ Fourteen (14) Ramp Signals in total
- ◆ Southbound I-95, from NE 203 Street/Ives Dairy Road to NW 62 Street, (12) twelve ramp signals
- ◆ Northbound I-95, from NE 183 Street/Miami Gardens Drive to NE 203 Street/Ives Dairy Road, (2) two ramp signals



Q. How do Ramp Signals located at highway on-ramps improve traffic flow?

A. Generally, many cars try to merge onto the highway all at once. Drivers on the mainline slow down to let the cars enter, and these slower speeds quickly cause backups. If cars enter the highway in a spaced, controlled manner, they merge easier and with less disruption to mainline traffic. A short wait on the ramp allows drivers to increase their average expressway speed and shorten expressway travel times. By regulating the flow of traffic entering the highway during peak traffic hours, the overall flow of traffic on the expressways will be smoother. This regulated flow means we can accommodate more vehicles per hour on the highway, improve commute times and provide a higher degree of safety.

Q. Do all Ramp Signals operate in the same way?

A. Yes, all ramp signals essentially operate in the same way. However, because of the different entrance point geometrical and operational characteristics, there are some modifications at certain on-ramps to ensure system effectiveness, such as allowing one or two cars to enter the highway per green light. Each on-ramp is clearly marked with specific directions and advanced warning signs with flashing beacons to let drivers know if the ramp signals are turned on.

Whenever you use any signalized on-ramp, remember to follow these three basics steps:

1. When the signal is red: Pull up to the marked white line on the pavement before the "Stop Here on Red" sign to activate the ramp signal light.
2. When the signal light turns green: One or two vehicles, as indicated by the signage on the ramp, should proceed and merge onto the interstate.
3. Motorists should remain patient. A short wait on the ramp will help reduce travel times and improve the overall commute along the mainline.

Q. Why are some Ramp Signals operating while others are turned off? Are there different hours?

A. Yes, ramp signals operate at different hours according to real-time traffic conditions. This means that the signals are turned on based on their need to control unregulated ramp traffic from disrupting the mainline, particularly during times of heavy expressway use. Northbound ramp signals are typically turned on during the afternoon rush-hour period and southbound ramp signals will be typically turned on during the morning rush-hour. However, the signals may also be activated during the "off-peak" hours in the case an incident or special traffic event affects regular expressway operations.





Q. Why are there different time cycles at Ramp Signals?

- A. The red-green cycles varies from ramp to ramp. The green light is typically on for two seconds, and the red light may vary anywhere from two to thirteen seconds depending on the level of congestion on the highway. Ramp signals work according to “real-time” traffic conditions and cycle times will be adjusted to control traffic at that moment. Traffic sensors in the pavement indicate how heavy traffic volumes are on the highway. Lighter volumes will typically speed up the red-green cycle to let more cars enter the expressway. Similarly, if the sensors detect heavier traffic on the highway, the red-green cycles would be adjusted to space out merging traffic.



Q. What is the waiting time on the signalized ramps?

- A. Waiting times will vary depending upon how many cars are ahead of you on the ramp. In the slowest situation— a thirteen-second red and a two-second green cycle - four cars each minute would be allowed to enter on a specific ramp; in the fastest situation, fifteen cars each minute could enter. For those traveling a good distance on the expressway, the time spent on the ramp is gained back - and more - with faster speeds on the highway itself. Depending on the location and time of day, if someone is only traveling a short distance during the peak period, it might be just as fast to use a local city street. Also, some signalized on-ramps will be used less frequently than others, and the wait may be shorter at those locations.

Q. Can Ramp Signals save the commuter time and/or money?

- A. Over the years, every ramp signaling project in the United States has been subjected to extensive "before and after" tests. In Miami-Dade County, information gathered by FDOT revealed that Phase 1A of the Ramp Signaling System has increased average travel speeds by 6 mph during the afternoon rush-hour period. This increase in speeds is providing motorists with real-time improvements and is helping them save time and money on their weekday afternoon commute.

The Ramp Signaling System has worked to:

- ⇒ Increase average travel speeds on the highway
- ⇒ Reduce travel times during the weekday afternoon rush-hour period
- ⇒ Decrease the level of congestion associated with unregulated ramp traffic
- ⇒ Improve merging process for motorists entering the highway
- ⇒ Increase overall safety levels by reducing stop and go traffic along the entrances



Q. Does Ramp Signaling make the expressways safer?

- A. Phase 1A of the Ramp Signaling System has not been operating long enough to collect significant crash information. However, studies conducted in other parts of the country have concluded that highway crashes are reduced as a result of the ramp signaling system. The Minnesota Department of Transportation conducted a study of expressway conditions with their ramp signals turned off. All 430 ramp signals in the Minneapolis/St. Paul metro area were turned off for six weeks in the fall of 2000, and the results show a definite safety benefit in favor of ramp signals. With the ramp signals turned off, there was a 26% increase in crashes—rear-end crashes were up by almost 15%, "run off the road" crashes increased by 60%, and sideswipe crashes were up 200%. Research shows that most expressway crashes occur during stop-and-go traffic conditions by inattentive drivers. Ramp signaling provides a smoother flow of traffic, which minimizes this condition.

Q. Won't congestion continue to increase at the locations where Ramp Signals are supposed to improve traffic?

- A. Overall, traffic congestion in metropolitan areas such as Miami-Dade County will continue to grow. However, ramp signals are helping to reduce the type of congestion known as "bottlenecking." Whenever ramp traffic enters the highway - and then shifts left from lane to lane - it creates a slowing pattern behind that entrance zone and increases congestion. Ramp signals reduce this type of congestion by ensuring that vehicles enter the highway in a spaced and steady manner. They break up the groups of merging vehicles that create disruptions on the mainline and ensure there are enough gaps available for each car to fit. This type of traffic control mechanism manages the overall flow of the highway and helps to reduce congestion on the highway.

Q. What about the impact of Ramp Signaling along neighboring city streets, doesn't this program create local congestion?

- A. No, ramp signals do not create local congestion. Traffic sensors at the beginning of each ramp detect if traffic is backed up onto mainline city streets and alert the ramp Signals to speed up the red-green cycle to avoid back-ups. Additionally, FDOT staff housed at Transportation Management Center (TMC) monitors the system visually (via Closed Circuit Television Cameras) and through the information received from the traffic detectors and may adjust cycle times if necessary as well. It is important to note, however, that if local congestion along city streets currently exists, it will not be eliminated by the signals. It is also important to remember that there is often a bit of confusion during the first few days of all signaling projects, which does cause a bit more traffic congestion near the ramps. As drivers become accustomed to the signals and adjust their travel patterns, this temporary congestion disappears.





Q. With Increasing costs in fuel, concerns about energy usage and air quality, isn't it wasteful and polluting to have cars waiting along the on-ramps?

- A. No, it is not. Energy and air quality are improved by reducing the stop and go traffic often caused by merging vehicles at the highway entrance points. While vehicles burn some gas waiting on a signalized ramp, the increased travel speeds on the highway makes up for the gas emitted on the ramps. In terms of air quality, environmental experts have concluded that ramp signal program slightly reduces the quantities of nitrous oxide, carbon monoxide, and reactive hydrocarbons - the pollutants in smog. Again, this is a trade-off: while there might not be any measurable differences along the on-ramps themselves, with decreased expressway stop-and-go driving and smoother flow, the overall air quality actually improves.

Q. Is installing Ramp Signals expensive?

- A. No, in terms of return on investment, installing ramp signals is not expensive. The travel time savings provided to motorists as a result of the ramp signals outweigh the cost of installing the system.

Q. What about the people who violate the traffic signals on the signalized on-ramp?

- A. The ramp signals are considered traffic control devices and motorists who fail to obey a traffic control device are subject to penalties permitted by law. Pursuant to Florida Statute 316.074(1) failure to stop at a ramp signal when the light is red is considered a moving violation, it carries a fine of \$179.00 and an assessment of three (3) point to the violators drivers license.

