

FLORIDA DEPARTMENT OF TRANSPORTATION'S TRAFFIC ENGINEERING AND OPERATIONS PUBLICATION





INSIDE THIS ISSUE

3	District Four Begins Enforcement of No Trucks on I-595 Express
4	Intelligent Transportation Society of Florida (ITS Florida)
5	ITS Florida 2020 Board of Directors
6	Turnpike Testing Video Detection Solutions
8	Break Time Photo Contest for ITS Florida 2021 Calendar
9	More Than Just SunGuide
10	Express Bus Service Now Available on Palmetto Express, 75 Express
11	Award Announcements ITS Professional of the Year Award 2019
12	Intelligent Transportation Systems Maintenance and Operations Formulas
13	Contacts

FDOT TRAFFIC ENGINEERING AND OPERATIONS MISSION AND VISION STATEMENTS

MISSION

Provide leadership and serve as a catalyst in becoming the national leader in mobility.

VISION

Provide support and expertise in the application of Traffic Engineering principles and practices to improve safety and mobility.

Looking to be a Contributor for the Next Issue of the TSM&O Disseminator?

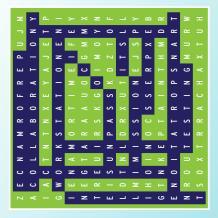
Email Jennifer Langford (Jennifer.Langord@dot.state.fl.us) with your story subject and title.

We would love to have your contribution be a part of the next edition.

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District Four Begins Enforcement of No Trucks on I-595 Express

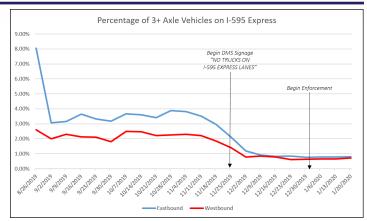
By Nicole Forest, District Four TSM&O Resource Manager, FDOT

Effective January 2020, District Four began enforcing new regulation specifying no trucks on the I-595 Express Lanes in Broward County, in order to streamline express lanes operations from one facility to another.

Prior to the change, the I-595 Express operated under a 2014 pilot program allowing vehicles with three or more axles to enter the reversible facility. Upon the addition of the I-95 and I-75 Express Lanes in Broward County, which prohibit multi-axle vehicles, the pilot project's truck regulation was revisited. It was noted, multi-axle vehicle usage had steadily decreased and accounted for an average of two percent of the total express lanes traffic in 2018.

To implement the change, District Four first focused outreach efforts toward Florida's Trucking Association and local partners – the Fort Lauderdale International Airport and Port Everglades. Once acknowledgment and future compliance was received by trucking agencies, District Four design staff recommended signage changes for the corridor. New sign panels affirming "NO TRUCKS" were installed at each of the five entrance ramp sign structures, as well as signs stating "EXPRESS LANES – TWO AXLE VEHICLES ONLY – BUSES ALLOWED"

In addition to physical sign installations, overhead dynamic message signs announcing "NO TRUCKS ON I-595 EXPRESS



LANES" were displayed for five weeks throughout the corridor, prior to enforcement.

District Four organized the implementation phase as an educational grace period for multi-axle vehicle motorists due to the complex nature of the I-595 reversible express lanes and the connection to the I-95 and I-75 express networks.

To ensure total cooperation, Florida Highway Patrol troopers managed the enforcement while the Florida Turnpike SunPass Operations team assisted in email blast communications to customers. Since implementing the newest restriction, SunPass Operations identified a 99.9 percent compliance rate.

The multi-agency project proved to be an extensive but successful operational change for District Four's express lanes network.

For more information on I-595 Express Operations, please visit <u>http://595express.info/</u> or email Nicole Forest, TSM&O Resource Manager at <u>Nicole.Forest@dot.state.fl.us</u>.

Intelligent Transportation Society of Florida (ITS Florida)

President's Message

Greetings,

With the continued advancements of intelligent transportation systems (ITS) technologies, 2020 promises to be a very exciting, challenging, and rewarding year for ITS Florida. Our organization is composed of dedicated public, private, and academic transportation professionals with a vibrant mission and noteworthy goals.

ITS Florida Mission: The Intelligent Transportation Society of Florida promotes safe and efficient transportation by delivering nation-leading innovation, information, advocacy, and interest in ITS solutions for our members, policy makers, industry leaders, and Florida's diverse population, visitors, and commercial enterprises.

ITS Florida's goals and the committee(s) responsible for implementing each goal are grouped into external and internal goals:

External Goals

- Advocate ITS on behalf of our members (Outreach).
- Provide the premier forum for ITS information exchange among public, private, and academic sectors (Events).
- Partner with other transportation associations (Member Services and Events).
- Promote the development and expansion of ITS markets (Outreach).
- Provide members with information on current ITS markets and opportunities (Outreach).
- Develop and support guiding principles for the planning, implementation, and operation of ITS (Advisory).
- Promote collaboration among ITS stakeholders (Outreach).
- Advise the FDOT ITS program on ITS issues (Advisory).

Internal Goals

- Maintain a strong chapter structure (Management).
- Maintain financial stability in all accounts (Management).
- Expand membership (Member Services and Outreach).
- Provide services responsive to member needs (Member Services).

- Facilitate effective professional capacity building (PCB) and training (PCB).
- Engage membership in chapter activities (Member Services and Outreach).
- Show leadership in regional and national ITS activities (Events and Outreach).

As ITS Florida President in 2020, I want to focus on the topic of workforce development and attracting more professionals to our industry. I will work with the chapter membership to find a way to bring more recognition to those who are on the front lines of ITS deployment and operations like Road Rangers, TMC operators, and ITS device installers and maintainers. Regarding ITS Florida's goal of promoting the development and expansion of ITS markets, I will explore expanding ties to other ITS organizations in the Caribbean and in Central and South America. Lastly, I will reach out to all members to gather feedback on our organization's activities and listen for ideas to grow our industry and membership.

Addressing training needs, please mark your calendar for this upcoming ITS Florida event:

TRANSPO 2020

Joint meeting of ITS Florida and the Institute of Transportation Engineers (ITE) Florida Puerto Rico District on October 11 -14, 2020 at the Hyatt Regency Coconut Point Resort and Spa in Bonita Springs, Florida.



ITS Florida really needs and welcomes your input to continue to grow our organization. Please feel free to contact me with your ideas, suggestions and concerns at pfc@ iteris.com or (202) 550-5795.

Pete Costello 2020 ITS Florida President

ITS Florida 2020 Board of Directors

By Sandra Beck, ITS Florida

Meet the 2020 Board of Directors

The Intelligent Transportation Society of Florida (ITS Florida) held its annual elections with results as follows:

Mr. Jim Clark, P.E., Rhythm Engineering, will move into the Immediate Past President role, leading the Management Committee for 2020.

Mr. Pete Costello, Iteris, has served on the Board of Directors for many years, moving from a Director-at-Large position, through the officer positions, to now lead ITS Florida as President for 2020.

Mr. Craig Carnes, Metric Engineering, will serve as our 2020 Vice President. He has served as the Treasurer and Secretary as well as Director-at-Large on the ITS Florida Board for the last several years.

Mr. Pete Ganci, Control Technologies, has served on the Board as a Director-at-Large and most recently as the ITS Florida Treasurer. He will be the ITS Florida Secretary for 2020.

Mr. Rob Price, P.E., Lee County, is our 2020 Treasurer. He has previously served as a Director-at-Large.

Directors-At-Large

Elected:

Dr. Nithin Argarwal, Ph.D., University of Florida Transportation Institute, will be starting his first term as Director-at-Large in 2020.

Mr. Russell Allen, Atkins, will be starting his first term as Director-at-Large in 2020.

Mr. Fabio Capillo, Manatee County, will be continuing his term as Director-at-Large in 2020.

Dr. Mohammed Hadi, Florida International University, will be continuing his term as Director-at-Large in 2020.

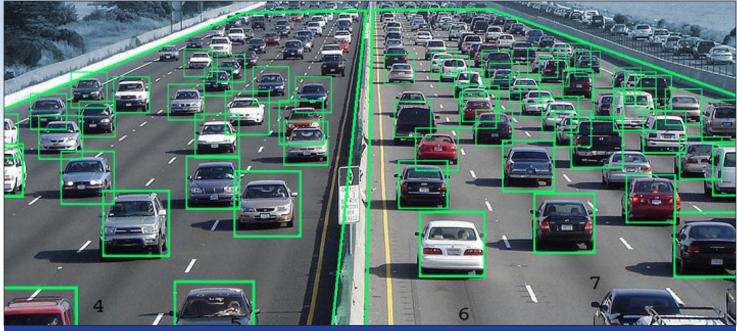
Mr. Jeremy Huffman, Southern Manufacturing, was elected to a second two-year term as Director-at-Large.

Mr. Andrew Young, TransCore, will be starting his first term as Director-at-Large in 2020.

Mr. Fred Heery, P.E., will be continuing his work with the ITS Florida Board as an ex officio, non-voting member of the board, representing the FDOT.

For more information on ITS Florida, please check the ITS Florida website at <u>www.ITSFlorida.org</u> or contact Ms. Sandra Beck, Chapter Administrator, at <u>ITSFlorida@ITSFlorida.org</u>.





Computer vision capabilities have increased dramatically in the last decade and the algorithms behind the technology are constantly being improved to increase the accuracy of the data returned. Vehicle detection is just the tip of the iceberg in terms of what this technology can offer. Photo courtesy of TrafficVision.

Turnpike Testing Video Detection Solutions

By Mary Lou Veroline, TSM&O Technical Writer, Florida's Turnpike Enterprise

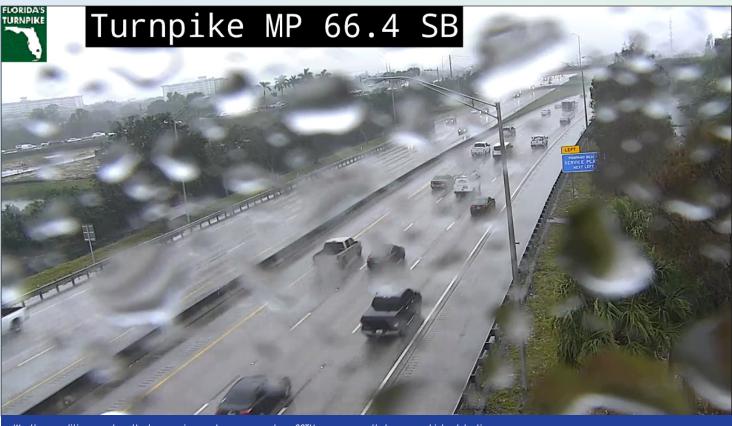
Florida's Turnpike Enterprise currently employs more than 600 closed-circuit television (CCTV) cameras to monitor traffic across its nearly 500-mile system. Cameras capture incidents daily, and with crash numbers on the rise, it is becoming unrealistic to think that operators at the Turnpike Traffic Management Center (TMC) can visually monitor, effectively, a system of this size in real-time.

The Turnpike's ITS Technology Group embarked on a comparative study to evaluate two vehicle detection products designed to automatically monitor a mapped zone for predetermined event types. In this study, various event types were classified as either actionable or nonactionable.

Actionable events were identified as those that would benefit from TMC operator intervention such as debris, pedestrians, or stopped vehicles on the roadway. Wrong-way vehicles were also categorized as actionable event types, but there were none to evaluate during the time of this



Disabled vehicles are a traffic hazard on their own, but when you add a pedestrian standing alongside their vehicle on a high-speed roadway, the risk of a life-threatening event increases exponentially.



Weather conditions, such as the heavy rain seen here on a roadway CCTV camera, greatly hamper vehicle detection.

study. Non-actionable events were identified as those that were beneficial to be aware of, but not requiring immediate attention, such as slow-moving traffic and congestion.

The Turnpike's product evaluation study took place between March 1-27, 2019, utilizing five cameras between Mainline mileposts 116 and 138. For each product being evaluated, FTE engineers were able to set thresholds for data to be included and excluded. For example, they could tell the software to only return data for mapped lanes and paved shoulders, not grass shoulders, or identify limits for days of the week or hours of the day, among other parameters.

Results of the evaluation study were similar for both products when it came to identifying actionable events, each accurately detecting those incidents close to 90 percent of the time. We did find that one product captured events multiple times however, thereby skewing its data. In terms of specific event accuracy, debris alerts were the least effective as debris can come in numerous shapes and sizes, making it difficult to predict. Pedestrians and stopped vehicles returned accurate results more frequently for a similar (but opposite) reason; they are more closely relative in terms of shape and size.

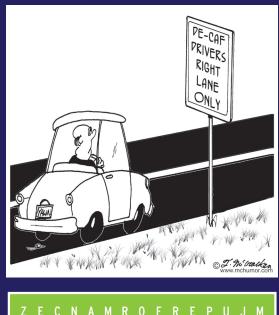
Since the detection software gets its information from roadway CCTV cameras, weather played a factor in the return of accurate results. Both rain and fog affect visibility, therefore, detection ability was also negatively impacted. Nighttime darkness did not factor as heavily into results as the algorithms were able to detect vehicle lights allowing for identification of stopped vehicles and pedestrians standing in the vicinity of a stopped vehicle. Debris proved to be more of a challenge as highway lighting was not enough to return results in some instances.

While the detection of actionable events was the primary focus of this product evaluation study, it is worth noting that Turnpike engineers were also comparing the collection of traffic metrics (vehicle speeds and counts) as well as the non-actionable events mentioned earlier (slow-moving vehicles and congestion) for future analysis. Both products reported similarly effective (roughly 90 percent) findings in those categories as well.

The pilot team has summarized the study findings and presented a product recommendation to Turnpike leadership. The pilot team anticipates a second-phase limited rollout to further evaluate the benefits of this technology.

For more information, please contact John Easterling at (954) 934-1620 or by email <u>John.Easterling@dot.fl.state.</u> <u>fl.us</u>.

Break Time





EXPRESS DEPLOYMENT WORKSTATION CONGESTION SUNPASS SOCIETY MAINLINE TESTING PERFORMANCE INTELLIGENT MISSION COLLABORATION ITS TRANSPORTATION

Photo Contest for ITS Florida 2021 Calendar

ITS Florida is calling all members to be creative and submit photos for its awardwinning calendar!



ITS Florida is having its annual photo contest to select the best in Florida to be used in the 2021 ITS Florida Calendar. The calendars will be distributed at the end of 2020 to all FDOT Districts as well as the Florida legislature.

How to Enter

Please submit photographs in **high-resolution**, **landscape*** format (jpg, png) and a document identifying each photo with a short caption that can be used in the calendar. Please also include contact information for the submitter of the photo(s) should ITS Florida have any questions. Photos should be submitted on CD/DVD via mail delivery. The mailing address to submit photos to is:

Ms. Sandy Beck ITS Florida P.O. Box 56468 St. Petersburg, FL 33732 Phone: (727) 430-1136 Email: <u>itsflorida@itsflorida.org</u>

Deadline for Submittals is Friday, July 31, 2020 by 5:00 p.m.

Photos submitted in last year's contest may be resubmitted for consideration. ITS Florida will not automatically include last year's photos into this year's contest. To be considered for this year's contest, they must be resubmitted.

For questions, please contact Mr. Jonathan Tursky at <u>Jonathan</u>. <u>Tursky@TransCore.com</u> or Ms. Sandy Beck (contact information listed above).

*Photos in the portrait format may be used as an insert only as this format does not fit the cover or monthly layout.

Please note that all photos submitted to ITS Florida for the calendar photo contest shall become property of ITS Florida. No copyrighted photos will be accepted.



More Than Just SunGuide

By Pete Vega, District Two TSM&O Program Engineer, FDOT

On Thursday, December 5, at 1:25 p.m., I received some bittersweet news from one of the most admired colleagues in the ITS Industry. Dr. Robert Heller let me know that on January 3, 2020, he would be

hanging up his hat with the Southwest Research Institute (SwRI) as he headed down the path of retirement. It felt like receiving a gut punch in the 10th round of a boxing match. I learned of this development just prior to the start of the 1:30 p.m. ITS Florida Annual Meeting presentation on the status of the Department's ITS program. Once I recovered from the shock of the announcement, a sense of happiness for Dr. Heller came over me as I shared the news with the audience attending this presentation.

For those of you unfamiliar with Dr. Heller, he was part of one of the most influential teams in the history of the Department's ITS Program. For the newbies, I guess I should begin on day one, when we first met the team from SwRI in 2003. At the time, the Department was searching for a firm to develop an all-inclusive traffic management software that would be used by all Florida Transportation Management Centers (TMCs). From recollection, the competitors were Lockheed-Martin, SwRI, and Telvent. In all honesty, SwRI was considered a distant third option versus the other two competitors. The belief among the group was that SwRI had no chance in "heck" against these established firms. Despite that, "surprise-surprise", they've been in a long-term relationship with the Department for over 17 years now.

I was part of the technical review committee in the selection process and can honestly say that Dr. Heller and his cohort, Steve Dellenback, wowed us with their expertise, honesty, and wry sense of humor during the interviews. Once chosen, everyone on the team truly believed this was the best choice to lead the Department, and as time proved, Robert and Steve took the program to unimaginable levels while assisting with the design of the statewide SunGuide software. Robert's dry humor was just the anecdote needed to overcome the pains of never-ending meetings during the development of the software. I'll be honest in saying, there were times when many members of the Department team wanted to wring his neck, however we quickly realized he'd been right all along.

I won't get into all the Robert Heller stories, since there are probably at least one hundred, but will share day one of the real-world testing of SunGuide. Robert and Steve flew into Jacksonville to assess the software's operational capabilities in a Department TMC. Unbeknownst to me or TMC supervisory staff, was the fact that the RTMC operator was having a particularly hard day and put a sign on my office window that said (in bold letters) "SUNGUIDE SUCKS!!!" So, here are the both of them walking onto the floor, only to be greeted by this sign. Boy, the look on their faces was unforgettable! Somehow, Robert immediately examined this situation and turned it into a positive by assessing the problem to determine a solution.

SwRI gathered the information needed and concluded that we'd undersized the workstations for this powerful software. Within a few weeks, the District Two RTMC increased the capacity of its workstation memory to handle all 16 signs, 45 closed-circuit television (CCTV) cameras and 50 microwave vehicle detection system (MVDS) units. Dr. Heller earned a lot of respect from our team after that event since he did not point fingers, took responsibility for the situation, and presented a satisfactory solution for all. Since then, we've greatly increased the deployment that SunGuide handles to over 700 CCTV cameras, 140 dynamic message signs (DMS), 200 automatic vehicle identification (AVI) units and 700 MVDS units.

In my reflection back to the "good old days" when we first met Robert and Steve, it behooves me to mention the key Department partners who assisted in the selection of SwRI. My gratitude is extended to the late Anne Brewer (iFlorida), the late Larry Rivera (Spec Master), the late Chester Chandler (Creator of all SunGuide), Dr. Charles Wallace (TIM Guru), Jesus Martinez (Godfather of Express Lanes), Rory Santana (Godfather of ITS), Liang Hsia (Mastermind of SunGuide), Gene Glotzbach (Caretaker of SunGuide), Tahira Faquir (the "Sun" in SunGuide), and many others who made the Department's ITS program one of the greatest in the country. Oh, and for the other hilarious Robert Heller stories, just catch me at one of our meetings and I'll be glad to share!

For more information, please contact Pete Vega at (904) 360-5463 or by email at Peter.Vega@dot.fl.state.fl.us.



Express Bus Service Now Available on Palmetto Express, 75 Express

By Javier Rodriguez, District Six TSM&O Program Engineer, FDOT

The Florida Department of Transportation, in partnership with Miami-Dade Transit and Broward County Transit, has begun Express Bus service on State Road 826/ Palmetto Express and I-75/75 Express.

On January 13, 2020, Broward County Transit began providing a cross-county express bus service to and from three stops: Sunrise BB&T Center Park-N-Ride, Miami Gardens Park & Ride West, and the Miami Airport Station. This route runs every 30 minutes during morning and evening peak times. Miami-Dade Transit launched its express bus service from the Miami Gardens Park & Ride West to the Palmetto Metrorail station late last year and runs every 15 minutes during weekday peak times.

Express Bus service provides commuters with a reliable and premium transit option that takes advantage of express lanes while reducing roadway congestion for vehicles on both the express lanes and non-tolled general use lanes by reducing the number of single-occupant vehicles.

The express lanes and the express bus service are part of several congestion management techniques added to the corridor. Other techniques include the addition of intelligent transportation systems (ITS) technologies, specialized incident management services, and dedicated law enforcement. A ramp signaling system along the Palmetto Expressway will be activated in the future.

The combination of these services provides users with more travel choices and incentivizes high-occupancy travel through transit. These new services are designed to increase highway performance and improve traffic flow on both the express lanes and the non-tolled general use lanes.

Palmetto Express and 75 Express are part of the regional express lanes network in southeast Florida. It is the area's first system-to-system express lanes connection. Palmetto Express runs between SW 24 Street and NW 67 Avenue. 75 Express in Miami-Dade County runs along I-75 from the Palmetto Expressway to NW 170 Street, then continues on to I-595.

For more information on routes Palmetto Express and 75 Express, please visit <u>Miami-Dade Transit</u> and <u>Broward County</u> <u>Transit</u>.

Award Announcements

Congratulations Javier Rodriguez!



ITS Professional of the Year Award 2019

This award is to recognize that person, or persons, who has contributed significantly to the ITS community during the calendar year. The person nominated should be noted for contributing to the ITS mission/ goals of ITS FL.

The criteria for this award includes: 1) the person has contributed to ITS mission; 2) the person has been instrumental in project management, project completion, project planning, development of planning, financial, or other strategies; and 3) the person has had a key role in some significant program or project, which may include activities of ITS Florida itself.

Certificate of Outstanding Achievements

This is an "open-ended" class of awards that may be given by ITS Florida for outstanding service by individuals or organizational units. Past awards have been given for individuals who have performed superior service as, for example, chairs of ITS FL conferences, to FDOT districts for deploying new, integrated RTMC's, and for individuals who have provided outstanding service, such as volunteers serving at ITS conferences.

2019 Winners:

- FDOT District Three for their deployment of ITS FM for all ITS corridors.
- **FDOT District Five** for the opening of their new (and impressive) Regional Transportation Management Center.
- **FDOT District Six** TSM&O Office for successfully transitioning operations and maintenance of the traffic signal devices along a 100-mile stretch of US 1 in the Florida Keys.







January - February 2020 • TSM&O DISSEMINATOR 11



Intelligent Transportation Systems Maintenance and Operations Formulas

By Clint Smith, TSM&O Program Development Engineer, FDOT and Gaurav Sultania, HNTB

The Florida Department of Transportation (FDOT) is responsible for an extensive and expanding Intelligent Transportation Systems (ITS) program. Sustaining this program requires both routine and periodic maintenance.

The ITS Program developed maintenance workload formulas with input from the FDOT District Offices, a historical review of maintenance contract scopes from across the state, and each District's annual maintenance costs. The goal of developing and using maintenance workload formulas is to ensure that ITS maintenance is properly funded to continue operating at maximum performance.

The forecasting of future maintenance costs is a sophisticated process. The unit costs are based on factors such as device types, quantities, contract overhead, location, and historical maintenance costs. The formulas are updated periodically to keep pace with the needs of the State and the ITS industry.

The FDOT Central Office estimates each District's annual maintenance budget by multiplying ITS device quantities against their associated maintenance unit rates. Unit rates reflect historical costs and are annually adjusted for inflation as well as system modifications. Some budgeted items include ITS devices such as: closed-circuit television (CCTV) cameras, microwave vehicle detection systems (MVDS), dynamic message signs (DMS), and road weather information systems (RWIS). The formulas were updated in 2019 to include connected vehicle (CV) units, wrong-way driving detection (WWD) systems, tree trimming costs, and truck parking availability systems (TPAS).

The ITS program is operated and maintained by the FDOT on nearly 2,200 roadway miles with the goal of making travel in Florida safer and more efficient. Some of the ways the FDOT strives to achieve this goal is by smoothing and optimizing traffic flows, minimizing crashes and their associated delays, and by providing motorists with real-time information on traffic conditions. The ITS Operations staff are based in Transportation Management Centers and Regional TMCs. They monitor roadway conditions using data gathered from many sources, such as internal input from CCTV cameras, MVDS, RWIS, inputs from data agency partners, as well as crowdsourced traffic applications. The operators are also responsible for managing incidents through coordination with partner agencies such as the Road Rangers Service Patrols (RRSP), Severe Incident Response Vehicle (SIRV) Teams, the Florida Highway Patrol (FHP), and others. Additionally, operators may oversee Express Lane operations, ramp metering, signal timing, and more.

Similar to the ITS Maintenance Formulas, ITS Operations Formulas were needed to help address the District's funding needs. To ensure the Districts receive sufficient funding to operate their transportation systems effectively and efficiently, the ITS Operations Formulas were developed to calculate expected TMC funding needs for five fiscal years. Much of each formula is based on input from previous efforts, FDOT District Offices, as well as reviews of historical operations contract scopes, annual costs, and workloads.

Much like the ITS Maintenance Formulas, forecasting future operations cost is made more difficult by the unique environments in which each District operates. The Operations Formulas take into consideration a District event per mile ratio, workload and congestion levels, labor/service rates, and historical operational costs.

The Department will continue to refine these formulas through annual reviews. This fine-tuning will allow the Department to be better prepared for industry changes, such as the anticipated influx of connected and automated vehicle technologies will likely have on how TMCs of the future operate. The annual review of operations formulas may result in the allocation of funds for additional TMC positions as new technologies are introduced by industry. With all of the technological advances coming into the fields of ITS maintenance and operations, one constant we can look forward to is the continued partnership between the FDOT Central Office and the Districts, as we work together to plan, budget, and chart the future of our industry.

For more information on the ITS Maintenance and Operations Formulas, please contact Clint Smith at 850-410-5626 or by email at <u>Clinton.Smith@dot.state.fl.us</u>.

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