

GENESEE TRANSPORTATION COUNCIL

RESOLUTION

Resolution 23-8 *Accepting the Regional Traffic Operations Center Strategic Plan as evidence of completion of UPWP Task 5903*

WHEREAS,

1. The *FY 2023-2024 Unified Planning Work Program* includes Task 5903, Regional Traffic Operations Center Strategic Plan, for the purpose of developing a strategic plan for the Regional Traffic Operations Center (RTOC) that will guide the RTOC's activities over the next ten years;
2. Said Task developed an inventory of current staffing, management, equipment, space, operating polices, and services provided by the RTOC; conducted a Strengths, Weaknesses, Opportunities, and Threats analysis to better understand issues and opportunities at the RTOC; developed a business concept to identify the RTOC's service delivery goals and associated strategies; prepared a needs assessment that documented the required actions to implement the business concept; and identified recommendations for improving the RTOC's service capabilities that align with federal, state, and regional transportation operations goals;
3. Said Task has been completed and has resulted in the *Regional Traffic Operations Center Strategic Plan*, which provides guidance for RTOC operations for the next ten years; and
4. Said Plan has been reviewed by GTC staff and member agencies through the GTC committee process and has been found to be consistent with the goals, objectives, and recommendations of the Long Range Transportation Plan.

NOW, THEREFORE, BE IT RESOLVED

1. That the Genesee Transportation Council hereby accepts the *Regional Traffic Operations Center Strategic Plan* as evidence of completion of UPWP Task 5903; and
2. That this resolution takes effect immediately.

CERTIFICATION

The undersigned duly qualified Secretary of the Genesee Transportation Council certifies that the foregoing is a true and correct copy of a resolution adopted at a legally convened meeting of the Genesee Transportation Council held on June 8, 2023.

Date _____

CHRISTOPHER REEVE, Secretary
Genesee Transportation Council

Executive Summary

Introduction

This Strategic Plan aims to contextualize the existing state of the Monroe County James R. Pond Regional Traffic Operations Center (RTOC) and provide guidance and actions for the facility and its staff to pursue over the next ten years of operation. This plan outlines a vision for the future and the steps which may be necessary to achieve it. As regional transportation operations evolve in a constantly changing technology environment, it is critical to have a plan that provides direction and purpose while also remaining flexible enough to accommodate changing priorities as the decade ahead unfolds. In addition to assessing the RTOC through multiple dimensions guided by Transportation Systems Management & Operations (TSMO) guidelines, a careful review of strengths, weaknesses, opportunities, and threats was conducted to develop a plan that is practical, realistic, and achievable.

Inventory

The James R. Pond RTOC is located in its own building on the grounds of the Greater Rochester International Airport. The RTOC facility is the result of partnership between Monroe County Department of Transportation (MCDOT) and New York State Department of Transportation (NYSDOT), who have come together under one roof to provide traffic operations and management services. New York State Police (NYSP) are also co-located within the RTOC and maintain their own dedicated facilities. The rest of the RTOC is shared equally between MCDOT and NYSDOT with each agency monitoring video walls, which provide Closed Circuit Television (CCTV) feeds, dynamic traffic signal maps, and other equipment needed to enable traffic management.

Four MCDOT positions work on the main operations floor at a time. NYSDOT maintains a minimum of two consultant operators per shift, though this number may increase depending on the scale of traffic events, weather events, and more. Throughout the development of this Strategic Plan it was noted that staffing deficiencies within the RTOC have resulted in challenges for efficient daily operations.

The RTOC's MCDOT staff operates from 6 AM to 6 PM, Monday through Friday. During weekday hours where MCDOT is not present and during weekends/holidays, NYSDOT staff takes over dispatching duties and communicate route issues to MCDOT, as NYSDOT personnel cannot control signal timing changes.

The RTOC receives data from Intelligent Transportation Systems (ITS) field equipment, such as CCTV, Road Weather Information Systems (RWIS), Traffic Signals, and System Sensors 24/7/365 which inform operators of traffic and weather conditions. This data helps guide and dictate operator actions related to signal retiming, dispatching resources such as H.E.L.P. Trucks, and more.

Currently the RTOC utilizes four H.E.L.P. Trucks to patrol and respond to motorists along one hundred miles of regional roadway, split into numerous operational "beats". H.E.L.P. Trucks are operational during the weekday peak hours, from 6 AM to 10 AM and from 2:30 PM to 6:30 PM.

To supplement operator capabilities, SOPs and other reference materials are available to MCDOT and NYSDOT staff. Portions of the SOP content are specific to each agency, while other portions address combined operational concerns. Members of the RTOC Steering Committee and operations staff engaged in the development of this Strategic Plan noted that the SOPs are not always useful to operators as many of them are written in a format more akin to technology user manuals rather than actual operational procedures based on specific scenarios.

A database has been developed by the RTOC for the purpose of tracking performance and dispatch metrics. These metrics have been determined by RTOC leadership. Performance measurement database results are planned to be compiled into periodic reports.

In order to facilitate internal and external partnerships, agreements and Memoranda of Understanding are crafted to share resources and/or data. Currently, most of these agreements are informal in nature, meaning that they can be forgotten and nullified as staff changes over time. The RTOC staff has expressed willingness to formalize agreements that would benefit from formalized documentation.

SWOT Analysis

A SWOT Analysis considers Strengths, Weaknesses, Opportunities, and Threats, and is a critical component of any planning report. In the context of the RTOC Strategic Plan, the SWOT Analysis assessed existing conditions with an eye towards internal and external influences that could benefit or potentially hinder the RTOC's future direction.

The RTOC has many strengths, although their documentation is limited throughout the Strategic Plan and serve to help how the facility can evolve and improve operations throughout the 10-year time horizon of the plan. The greatest strength of the RTOC is that it is a mature facility that has continually operated 24/7/365 since 2002 and has well-established operations. The RTOC also has the tools necessary to fulfill its existing services, from ITS field equipment to the H.E.L.P. program. Additionally, the RTOC's internal relationships between MCDOT, NYSDOT, and NYSP promote collaboration internally and externally.

Discussions with RTOC staff highlighted numerous weaknesses the facility currently faces. A lack of centralized systems, technology, and networks utilized by both MCDOT and NYSDOT was noted as a challenge as it often results in operators having to engage in redundant efforts which can create operational inefficiencies. Furthermore, Incident Response Plans (IRPs) and situational based-SOPs are sparse, leading to potentially inconsistent practices across operational shifts within MCDOT and NYSDOT. Another weakness noted is an insufficient number of formalized agreements and MOUs with partner agencies. Current agreements are largely informal "handshake" agreements that may be nullified during times of both internal and external staff changes. With data-driven decision making serving as a cornerstone of modern transportation operations, the RTOC is still in the process of developing a fully formed performance measurement program. As the RTOC has developed a performance measurement database, such a program does not seem far off, however a larger integration of metrics into the daily operations of the RTOC will be required for a complete program.

One major opportunity that was identified for the RTOC is the Infrastructure Investment and Jobs Act. This act promises roughly \$350 billion for Federal highway programs over the next 5 years. While it is unclear how the RTOC may be influenced, it is possible that a small portion of these funds could go towards RTOC facility upgrades and operations.

General threats to the RTOC come internally and externally. The COVID-19 pandemic highlighted how unprecedented external circumstances can impact a local facility such as the RTOC. The lack of a Continuity of Operations Plan in the face of situations such as these may seriously curtail or even halt RTOC operations. Internally, staffing challenges have illustrated the extent to which the RTOC is able to fully execute its mission of managing regional transportation operations.

Business Concept

The Business Concept developed for the Strategic Plan primarily focuses on identifying current and future goals for the RTOC. These goals would assist in the development of needs and gaps as well as recommendations for the RTOC to pursue over the next 10 years of operation.

The following tables identify future service delivery goals, divided into separate operational dimensions, for the RTOC. Any applicable goals identified in the GTC TSMO Plan or NYSDOT Strategic TSMO Plan are presented in the second column.

Workforce and Staffing	
Goal(s)	Related Statewide/Regional Goals
<ul style="list-style-type: none"> Expand the technical capacity and expertise of the RTOC staff Develop a workplace culture that encourages innovation 	Prepare for Emerging Technologies with a Potential Transformative Impact on Regional Transportation (GTC)
	Implement TSMO as a Low-Cost Solution to Regional Transportation Needs (GTC)

Table 1: Workforce and Staffing Future Service Goals

Business Processes	
Goal(s)	Related Statewide/Regional Goals
Strengthen inter and intra-agency communications to maximize service delivery	Improve Safety and Efficiency of the Multi-Modal Transportation System through Coordinated Management and Operations (GTC)
	Support Long-term TSMO Operations and Capital Investments Through Sustainable Funding and Asset Management Strategies (GTC)
	Enhance system safety and reliability by minimizing the impacts of travel disruptions (NYSDOT)
	Move People Efficiently (NYSDOT)
	Support reliable and efficient freight movement (NYSDOT)
	Serve as a trusted source of multimodal travel information (NYSDOT)
	Provide real-time traveler information (NYSDOT)

Table 2: Business Processes Future Service Goals

Systems and Technology	
Goal(s)	Related Statewide/Regional Goals
Minimize travel delay and disruption through deployment of advanced transportation technologies	Maximize Transportation System Performance from the User Perspective
	Target New Investment in ITS and Communications Infrastructure in Locations with the Greatest Impact and Value

Table 3: Systems and Technology Future Service Goals

Performance Measurement	
Goal(s)	Related Statewide/Regional Goals
Expand the quality and quantity of transportation operations data available for decision-making	Support enterprise-level systems and data for performance driven TSMO approach (NYSDOT)

Table 4: Performance Measurement Future Service Goals

Interagency Partnerships and Agreements	
Goal(s)	Related Statewide/Regional Goals
Goals: Expand collaboration and cooperation with outside agencies and regions	Promote Partnerships and Collaboration to Support Regional Operations (GTC)
	Integrate TSMO into Regional Planning and Policy Making (GTC)
	Maximize Program Efficiency through Resource and Cost Sharing (GTC)
	Promote Interoperability and Value-Add Services through Shared and Open Data (GTC)
	Strengthen partnerships with internal and external stakeholders (NYSDOT)

Table 5: Interagency Partnerships and Agreements Future Service Goals

Needs Assessment

In order to best shape recommendations, the RTOC was assessed to determine existing needs or gaps that should be addressed. In this section, Needs are identified as elements agreed upon by members of the RTOC Steering Committee and outlined in both the Inventory and Business Concept, while gaps are identified as inconsistencies between the vision and goals established for the RTOC and the current state of operations.

Within the operational dimension of Workforce and Staffing, the needs and gaps primarily focused on staffing to support efficient operations with the addition of new and expanded RTOC services. The RTOC cannot function as intended without the support of its employees, and while the number of employees is critical, those employees must also reflect the needs of the facility in terms of skills, knowledge, abilities, and qualifications.

Within the Business Processes operational dimension, the identified needs addressed operational consistency and resiliency. The development of a COOP plan was a primary need identified moving forward, after the COVID-19 pandemic highlighted how unforeseen events could impact operations. Additionally, it was determined that many of the existing SOPs utilized by RTOC staff did not necessarily provide situational protocols to follow when taking actions to respond to events impacting regional transportation. Gaps were also identified in relation to the RTOC’s dissemination of traffic information – while tools like social media are used to make some traffic announcements to the public, the RTOC Steering Committee has expressed a desire to expand these types of services in the future to reflect real-time data for travelers. Lastly, it was learned that the RTOC was not accounted for in many regional planning documents. As the RTOC can be a valuable asset for the region’s traffic system it will be important to integrate the RTOC into regional discussions, reports, and designs through TSMO planning, design, and construction activities.

The Systems and Technology related needs and gaps identified largely focus around addressing the asymmetry of MCDOT and NYSDOT networks, systems, and equipment. In most cases the two agencies

utilize different software which can lead to inefficiencies in certain scenarios. Consolidating systems or integrating them where possible could reduce redundancies and streamline workflows. As the Steering Committee expressed interest in widening their situational awareness, data acquisition/sharing with other agencies will be crucial. While it treads the line between this operational dimension and the Performance Measurement dimension; “Predictive analysis/forecasting to enable proactive approach to traffic management” relates more towards the technology side of the RTOC’s development of a performance measurement program. Utilizing traffic system data with analytical and modeling software can allow the RTOC to take a more proactive stance in traffic management.

The Performance Measurement dimension will be a major consideration for the RTOC in the near future, as a recently developed database will be used to launch the facility’s performance measurement program that will utilize data analytics to better understand the transportation system and RTOC operations. In regard to this dimension, all associated gaps revolve around elements that facilitate this program. For example, the “Transportation Operations Analyst” gap will need to be satisfied, as that position is critical to maintaining and utilizing the database and producing reports which allow RTOC leadership to make more informed operational decisions.

The Interagency Partnerships and Agreements dimension needs and gaps primarily revolve around fostering new and maintaining existing agency relationships. The RTOC is inherently the result of the partnership between MCDOT and NYSDOT (and NYSP), however additional relationships allow the facility to expand its services and situational awareness through sharing of resources and/or data. While there are numerous identified needs and gaps, “Formalization of internal and external agreements/MOUs (as applicable and beneficial)” is one of the most critical gaps in this dimension, as fulfilling it would help the RTOC organize its partnerships while also solidifying them into the future without the risks associated with informal, handshake agreements.

Draft Recommendations

Draft Recommendations are presented in the table below. The recommendations proposed are the product of all the RTOC assessments that were conducted in previous sections of the Inventory through the Needs Assessment. Recommendations were primarily drafted to meet the needs and gaps identified in the Needs Assessment; however specific RTOC Steering Committee feedback was also utilized. The Draft Recommendations section of the full Strategic Plan provides additional important context for each recommendation, and overlaps with the goals and objectives listed in other regional planning documents. Recommendations were assessed by the Steering Committee for applicability to their current interests and activities, represented in the table below by the number of star icons. The more icons listed, the greater the applicability of the recommendation to the RTOC Steering Committee at the time of review in March 2023.

Draft Recommendations	
Recommendation	Applicability
Consider additional MCDOT Traffic Control Operators to support the existing staff.	☆☆
Evaluate staggered shift schedules for MCDOT operations staff beyond 6pm to increase efficiency and streamline NYSDOT operations during traditional off-hours for MCDOT.	☆
Evaluate the benefits of cross-training additional personnel on second and third shift operations tours in basic signal maintenance to improve off-hours response efficiency.	☆☆

Draft Recommendations	
Recommendation	Applicability
Reassess Traffic Operations Specialist (formerly Transportation Analyst) position description and develop hiring plan to fill vacant position.	★ ★ ★
Consider training on interpretation of alternate (e.g., third party providers) data sources to improve real-time operational decision-making.	★
Investigate reconfiguration of space to improve internal communication such as quadrants or pods for operators and supervisors.	★ ★ ★ ★
Review the current RTOC operator training program and consider the benefits of a structured and formalized program with standard curriculum to augment job shadowing.	★ ★
Develop and maintain a Continuity of Operations Plan (COOP) that accounts for the unique structure of the RTOC.	★ ★ ★
As part of the ongoing conversion of SOPs to digital format, the RTOC should consider developing operational, scenario-based guidance.	★ ★
Assess appropriate remote access into TMC Software or Devices to supplement COOP and improve RTOC operational resiliency.	★ ★ ★ ★
Consider developing procedures and protocols for expanding/enhancing the use of social media to disseminate (and potentially crowdsource) real-time traffic event information.	★ ★
Evaluate standardization of TMC-related networks, systems, and processes to create uniform workflows for NYSDOT and MCDOT in daily operations.	★ ★ ★
Evaluate the need for the creation of a new technology piloting and testing program to streamline the introduction of new standard systems and technology.	★ ★
Investigate the possibility of using open-source or non-proprietary software at the RTOC to foster greater interoperability and reduce costs.	★
Evaluate the benefits of requiring Application Programming Interfaces (APIs) and documentation for future developments and integrations with new systems/databases.	★ ★
Assess the feasibility of developing a data fusion engine to merge data from multiple sources, such as travel time information coming from toll tag readers, Bluetooth sensors, and/or third-party providers to streamline incoming data for more efficient reference by operators.	★ ★ ★
Utilize and assess the performance measurement database for the collection/analysis of data and develop a maintenance plan.	★ ★ ★
Assess staff priorities in addition to agency goals in the development of performance metrics to ensure that the performance measurement database is collecting statistics of value to the RTOC.	★ ★
Assess the benefits of frequently processing/distributing measures of effectiveness (MOE's) for RTOC systems and Operators to improve operational effectiveness.	★
Consider training operators in how to use performance monitoring and how to populate the data needed for performance monitoring to increase operational efficiency.	★
Consider developing formalized memoranda of understanding (MOU's) and inter-agency agreements that facilitate multi-agency cooperation & operations.	★ ★ ★
Evaluate the need to promote additional coordination with agencies responsible for arterial transportation management.	★ ★ ★

Draft Recommendations	
Recommendation	Applicability
Seek opportunities to share resources and data with other agencies and/or third parties (e.g., communication networks, cameras) as a means of developing beneficial relationships, improving situational awareness, and receiving a larger pool of data to enhance operations.	★ ★ ★
Examine multi-agency procurement with a goal of achieving cost reductions in order to implement projects that benefit the RTOC and other local stakeholders.	★ ★
Assess the need for data privacy and confidentiality protocols, including for media and other agencies co-located in the RTOC observing otherwise restricted material to define legal obligations and avoid litigation.	★ ★
Weigh the benefits of developing a decision support system to support RTOC operators while working towards standardization of event responses.	★ ★ ★
Standardize use of Systems Engineering processes to more easily implement and integrate new services, equipment, and software at the RTOC.	★ ★
Actively use and participate in updates to the Regional ITS Architecture.	★ ★ ★

Table 6: Draft Recommendations and Applicability