



Genesee Transportation Council

**GREATER ROCHESTER TRANSPORTATION OPERATIONS
AND MANAGEMENT ORGANIZATION FEASIBILITY STUDY**

FINAL REPORT

MARCH 2006



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EXECUTIVE SUMMARY

OVERVIEW AND OBJECTIVES

The **Greater Rochester Transportation Operations and Management Organization Feasibility Study** (“the study”) examined the effectiveness of the current organizational structure for interagency coordination on transportation systems management and operations (TSM&O) issues. The study convened stakeholders to discuss how that organizational structure affects the region’s ability to optimize the operational efficiency, safety, and security of transportation infrastructure in light of current and anticipated needs. The following factors were among those motivating this regional self-assessment:

- A growing need for **region-wide, interagency, and multi-modal cooperation** to coordinate operations activities, project deployment, and other issues of common concern;
- The ongoing deployment of **Intelligent Transportation Systems (ITS)**, whose benefits are maximized through effective interagency coordination;
- An **increasing emphasis on transportation systems operations** in federal and state transportation policy as a means of improving regional mobility; and
- The need to **effectively identify and secure funding** in a coordinated manner to deploy and sustain TSM&O infrastructure and activities, in the face of competing needs for those funds.

Project Steering Committee

- Genesee Transportation Council (CTC)
- City of Rochester
- Monroe County Department of Transportation (MCDOT)
- New York State Department of Transportation (NYSDOT)
- New York State Thruway Authority
- Rochester-Genesee Regional Transportation Authority (RGRTA)

The study was commissioned by the Genesee Transportation Council (GTC, the Metropolitan Planning Organization (MPO) for the Genesee-Finger Lakes Region that includes Rochester), in cooperation with a multi-agency Steering Committee (see sidebar). The study was conducted by a consultant project team that began work in August 2005 and completed in March 2006.

METHODOLOGY

The study was initiated through a kick-off roundtable discussion among members of the Steering Committee to discuss study objectives and expectations, and to identify issues of common and individual concern about interagency coordination.

Following this meeting, the project team conducted a series of one-on-one interviews with stakeholders in the Greater Rochester region, including: representatives of transportation operations and planning agencies (local, state, county, and regional); local, county, and state police; and emergency management personnel. These interviews provided insight into responsibilities, needs, motivations, and concerns related to TSM&O activities in Greater Rochester.

The project team analyzed the experience of the Greater Rochester region and compared it to the experiences of six peer regions: Allentown, PA; Hartford, CT; Milwaukee, WI; Columbus, OH;

Buffalo, NY; and Syracuse, NY. Emerging national and state policies related to TSM&O were also examined, including the increasing emphasis on systematic, integrated ITS deployment coordination as reflected in the SAFETEA-LU Federal transportation reauthorization.

Following the stakeholder and peer region interviews, the project team conducted a roundtable workshop to discuss the research findings and to develop points of consensus about the region's interagency coordination organizational structure. A consultant to the Federal Highway Administration (FHWA) Office of Operations, Mr. John Mason, participated in this roundtable workshop to offer an executive briefing on the Administration's ongoing initiatives to promote regional operations coordination.

The study objectives, findings, and recommendations have been compiled into a Final Report that was reviewed by the Steering Committee and is available through the Genesee Transportation Council.

THE GREATER ROCHESTER EXPERIENCE

Greater Rochester's existing *ad hoc* coordination forum, the Transportation Management Committee (TMC), evolved out of a pre-existing Expressway Committee in the early 1990s, mirroring the spirit of the 1991 ISTEA legislation and the emergence of Intelligent Transportation Systems. The TMC was and continues to be an informal committee open to all interested parties. Practically speaking, the TMC is anchored by the region's two primary roadway operating entities, NYSDOT - Region 4 and MCDOT.

The Committee meets quarterly, and its agenda changes to reflect pressing issues of the day, such as project deployment, construction coordination, and incident management. The flexibility and informality of the TMC are widely acknowledged to be the Committee's greatest strengths. Stakeholders described the TMC as first and foremost an "information exchange forum," a function that participants feel has inherent value.

Through the TMC, the region successfully coordinated the deployment of its multi-agency Regional Traffic Operations Center (RTOC) which houses MCDOT, NYSDOT, NY State Police and the Greater Rochester International Airport Operations Group, among several other initiatives. The group continues to work together to coordinate ongoing traffic operations and to deploy additional ITS infrastructure, including traffic signal controller integration, CCTV deployment, and fiber optic integration.

Other factors that have played an important role in the regional operations coordination over the past ten years are: the 1996 *Improved Mobility Areawide Guidance Evaluation* (IMAGE) strategic plan; the 2000 *Rochester Regional ITS Architecture*; and the leadership of individuals who serve as ITS and operations "champions," both within specific agencies and among elected officials.

Benefits of Interagency Operations Coordination

- Faster incident detection and response
- Increased cost-effectiveness and functionality of ITS deployment
- Coordination of transportation and emergency response across jurisdictional boundaries
- Sharing of resources
- Ability to share information in real-time among agencies and with travelers
- Improved transportation system network improvement – reduced congestion, delays, and air pollution
- Provides viable and cost-effective alternatives to conventional infrastructure expansion
- Improved satisfaction among the traveling public

FIVE THEMES

The experience of Greater Rochester and the six peer regions illustrates that organizational approaches to TSM&O are as diverse as the settings in which they occur, and are often shaped by needs, emergent leadership, and institutional precedents unique to a particular location. However, the project team did identify five “themes” that provide a framework for evaluating the organizational approach employed in Greater Rochester:

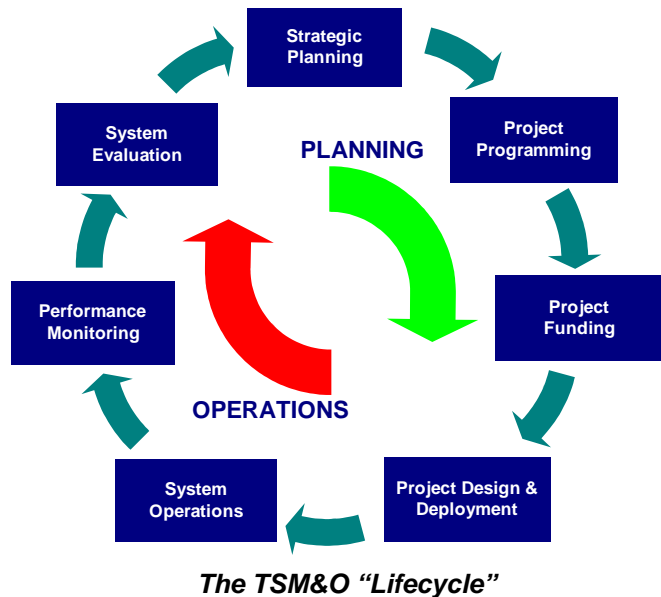
1. ***Effective interagency consultation depends not only on bringing the relevant agencies to the table, but also on having the appropriate individual(s) represent each agency.*** The tight-knit nature of the *ad hoc* TMC is offset partially by the challenges of maintaining appropriate and consistent representation and commitment among relevant agencies.
2. ***Not every aspect of a coordination effort requires leadership, but when a collaborative effort takes shape, it is most often successful when one member takes initiative.*** An asset of the current TMC framework is its ability to provide a regional information sharing and collaboration platform for initiatives championed by one or more of the Committee’s member agencies.
3. ***Nationally, the ITS architecture development process raised awareness concerning interagency coordination. In areas where coordination already existed, the opportunity to improve, evolve, or cement institutional relationships is sometimes missed.*** The TMC continues to excel at tactical coordination among agencies, but stakeholder interviews revealed a number of specific and “big picture” issues that some feel are absent from the regional agenda.
4. ***While MPOs rarely have a direct hand in transportation systems management or operations, they can play a very valuable role as convener and facilitator and in connecting TSM&O to the regional transportation planning process.*** Clear opportunities for GTC to assume an expanded role in regional TSM&O activities emerged during the study (discussed further below).
5. ***A specific project provides a common point of reference for a group of individuals or agencies that are exploring ways to coordinate and/or collaborate. Defining an alliance entirely by one project has risks, however, especially if and when the mission is completed.*** Past experiences (e.g., RTOC development) and ongoing challenges (e.g., CCTV and fiber optic deployment) illustrate the durability of the TMC and its ability to transform and refocus its mission in response to evolving circumstances, unlike many informal committees in peer regions.

FUTURE CHALLENGES

The future interagency coordination challenges of Greater Rochester are influenced by trends occurring at the national level in response to implementation of TSM&O practices, ITS technological maturation, and an evolving policy and funding environment. Changing demands and expectations require a more integrated approach to planning, implementation, operation, and evaluation of TSM&O activities throughout the entire “lifecycle” connecting strategic and regional planning to operations and tactical coordination (see diagram below).

Because the TMC currently focuses most of its efforts on near-term operations, planning and deployment of specific projects, and tactical operations coordination, the project team recommends increasing the Committee’s involvement in the following domains:

- **Greater emphasis on strategic coordination** in addition to project-based and tactical coordination;
- Developing **systems performance metrics** (to identify the impacts and benefits of TSM&O activities) linked to broader regional transportation objectives and criteria of key decision makers and funding sources; and
- Strengthening the **connection between TSM&O and the regional transportation planning process** to link broad transportation needs to operations solutions, and vice versa.



POINTS OF CONSENSUS

Through the roundtable discussion following the interview phase of the project, the Steering Committee and other regional stakeholders identified the following points of consensus regarding TSM&O coordination in Greater Rochester:

- There is a clear preference for the TMC to remain informal (*ad hoc*), building upon its past successes of remaining flexible in response to needs and a manageable commitment for participants;
- In general, stakeholders favor *evolutionary*, rather than *revolutionary*, transformation of the TMC in undertaking new activities or functions;
- A collective reassessment and articulation of the goals, mission, and activities of the TMC, rather than altering the organizational structure of the TMC *per se*, could renew the Committee's focus and mandate for the future;
- For both pragmatic and philosophical reasons, it would be valuable for the Genesee Transportation Council to assume a more prominent role in the activities of the TMC; and
- The TMC is a vehicle for addressing a number of specific regional TSM&O needs, including education and outreach of peers and decision makers as well as ITS data archiving and management.

RECOMMENDATIONS FOR ACTION

Based upon the preceding points of consensus, the observations of the project team, and the ingredients of success witnessed in peer regions, the following items are recommended for action to preserve and enhance the ability of the TMC to meet the future challenges facing the region:

Create a Mission Statement for the TMC

- *Clearly articulate the existing and proposed future activities and responsibilities of the Transportation Management Committee through a candid roundtable dialogue among participating agencies. Address past successes and shortcomings as well as future challenges and opportunities. Discuss the expectations of each participating agency, reasons for agency participation, and reasons for non-participation of less active participants.*
- *Develop a TMC Mission Statement based upon this consensus vision of the goals, objectives, and functions of the TMC.*
- *Self-assess the appropriateness of the current ad-hoc structure in light of the agreed Mission Statement and the corresponding roles and responsibilities of each participant.*

Strengthen the Involvement of GTC

- *Identify specific roles for active participation of GTC on the TMC, such as chair or secretary responsibilities.*
- *Use GTC's participation in the TMC as an opportunity to explore and define specific ways to strengthen the linkages between TSM&O and the regional transportation planning responsibilities of the MPO. Evaluate the feasibility and desirability to link planning and operations through performance measures, integration of operations with regional transportation planning, and other elements of the "lifecycle" approach to TSM&O.*
- *Identify specific mechanisms to "mainstream" TSM&O considerations in the project programming cycle. This may include, for example, an ITS/operations review of proposed projects by the TMC or a checklist/scoring approach to evaluate how well projects address pre-defined regional TSM&O objectives.*

Update the Regional ITS Strategic Plan

- *Develop an updated regional strategic plan for Transportation Systems Management and Operations that: articulates a regional vision and concept of operations; identifies needs, deficiencies, and opportunities; and presents a project-based deployment strategy that can be readily incorporated into the regional TIP as funding and coordination opportunities are identified.*

Create a Regional Concept of Transportation Operations (RCTO)

- *Develop one or more RCTOs for critical areas of regional operations coordination. This effort could be coordinated with the development of an updated strategic plan as a tool for identifying agency responsibilities, system deficiencies, and prioritized investment requirements.*

1. INTRODUCTION

This document is the final report of a study examining the effectiveness of interagency coordination for transportation systems management and operations in the Greater Rochester, NY region, including the planning, deployment and operations of Intelligent Transportation Systems (ITS).

The Genesee Transportation Council (GTC), the Metropolitan Planning Organization (MPO) for the Genesee-Finger Lakes Region that includes Rochester, commissioned and managed the study with the guidance of a multi-agency Steering Committee representing other local, regional, and state agencies (identified later in this chapter). The study was conducted on behalf of GTC by a consultant team¹, hereafter referred to as the “project team.”

1.1 Study Purpose

The purpose of the Greater Rochester Transportation Operations and Management Organization Feasibility Study is to identify a preferred organizational structure that allows the region to optimize the efficiency, safety, and security of its existing and planned transportation infrastructure.

Greater Rochester is at a crossroads in its approach to regional coordination of transportation systems management and operations. Over the past several years, the region has a successful track record of implementing operations programs (e.g. HELP freeway service patrol vehicles), deploying Intelligent Transportation Systems (ITS) technologies (e.g., the Regional Traffic Operations Center (RTOC)), and opening channels of interagency communication (e.g., the Transportation Management Committee (TMC)).

However, recognizing the growing importance and expectations of transportation system management and operations both locally and nationally, participants in the process have identified a need to conduct a proactive self-assessment of the existing, ad hoc approach to interagency coordination that have facilitated these past successes.

This evaluation centers upon several questions that have been raised by stakeholders about upcoming challenges and opportunities that will confront the region over the next several years:

- Is the region poised for success in conducting future transportation system management activities, an increasingly important aspect of transportation operations, planning, and evaluation?
- How well can the region identify, plan, implement, and operate Intelligent Transportation Systems (ITS) infrastructure that often relies upon effective interagency coordination to maximize the benefits of this technology?
- How well positioned is the region to leverage ITS and operations funding that requires proactive, interagency effort and is an increasingly significant piece of Federal and state transportation investment?
- Does the existing coordination process bring together the right participants around the table, and does it address an appropriate geographic portion of the region (now predominantly Monroe County)?

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- Are existing interagency coordination efforts sufficient in magnitude and breadth to address the future transportation system challenges of the region, including:
 - Developing planning and policy recommendations;
 - Setting investment priorities;
 - Initiating funding requests;
 - Project implementation and operations;
 - Performance assessment; and
 - Integration with the regional transportation planning process
- How is Greater Rochester performing relative to other peer regions and national guidelines in migrating towards an effective transportation system management posture?

1.2 Existing Coordination Practices in Greater Rochester

Currently, coordination in the Greater Rochester region occurs through a voluntary association of agencies who derive mutual (but not necessarily identical) benefits from an efficiently operated regional transportation system. At the most basic level, the information sharing process among agencies enables each to better perform its respective functions, in addition to the collective benefits of coordinated transportation system management and operations (TSM&O).

There are several 'pillars' of interagency coordination that shape the institutional dynamic in the region:

- The Discussion Forum (i.e., the Transportation Management Committee);
- The Plans (i.e., the 1996 IMAGE report and the Rochester Regional ITS Architecture);
- The Facility (the Regional Traffic Operations Center); and
- The Project Champions.

Each of these elements is discussed in greater detail below.

1.2.1 THE FORUM: TRANSPORTATION MANAGEMENT COMMITTEE (TMC)

The primary manifestation of interagency coordination in Greater Rochester is the Transportation Management Committee (TMC). It consists of representatives of all major transportation and emergency management agencies operating in the region, including the Monroe County DOT, City of Rochester, New York State Department of Transportation (NYSDOT) – Region 4, New York State Thruway Authority, Genesee Transportation Council (the MPO), Monroe County Emergency Management Services, and the New York State Police and the Monroe County Sheriff's Department. There is also an "outer ring" of participants who tend not to participate actively in Committee business on a regular basis unless there is a special topic of interest. These include the Rochester Business Alliance, the Automobile Club of Rochester, and local municipal associations such as the Monroe County Supervisors Association.

Befitting of an ad hoc organization, there are no formal requirements for participation in the TMC, and interest and participation in the Committee has varied over time. Participating agencies are free to designate their own representatives to the TMC; the profile of individuals active in the TMC reflects a combination of professional roles and responsibilities as well as personal interest in the business of the Committee. The TMC has no bylaws and it is reliably a “meeting of equals.”

The TMC is an outgrowth of the former Expressway Committee, formed in the 1980s, that addressed a more narrowly-defined issue of safety on regional highways. By the early 1990s, the mission of the Expressway Committee evolved to include a broader set of transportation coordination concerns, mirroring the philosophy of the 1991 Federal ISTEA legislation. A \$15 million Federal earmark grant administered by NYSDOT for a regional traffic signal coordination project was a major catalyst for this transformation.

Today, the TMC is viewed foremost as an information exchange forum. Though it is not a decision making body, the Committee helps participating agencies stay “in the loop” with regard to transportation system operations, planned events and construction, and ITS project deployment in the region. In effect, the committee’s existence enhances other decision making activities throughout the region by raising awareness of issues requiring collective decision making through other forums.

TMC meetings are held quarterly and last approximately 1½ hours. The brevity and manageable frequency of the meetings is seen as an asset by the participants—it keeps the discussion concise and prevents regular participation in the TMC from becoming overly burdensome given participant’s other responsibilities.

Monroe County DOT and NYSDOT - Region 4 are the lead agencies within this regional consortium, reflecting their prominent role in transportation operations and ITS investment. Monroe County DOT has traditionally assumed responsibility for chairing meetings and developing meeting agendas, in spite of attempts to rotate these roles among committee participants. Perhaps reflecting this leadership dynamic, much of the content of TMC meetings focuses on operations issues such as ongoing and upcoming traffic events, debriefing on recent incident management activities, and project construction updates.

The business of the TMC has tended to evolve over time based upon the relevant issues of the day and the needs of the participating entities. This flexibility is perceived as an asset because the Committee can adapt to changing conditions, envelop new stakeholders, and refocus its resources and meeting agenda in accordance with evolving conditions. It also allows the TMC to capture the benefits of interagency coordination without being handicapped by the more onerous administrative requirements and bylaws of a formal organization.

There is general satisfaction that what the Committee does it does well, but there is some feeling that the TMC does not accomplish all functions equally well. While the TMC excels at promoting the exchange of operational information (e.g., special event information, construction information, etc.), there is some sentiment that the TMC does not sufficiently address others that are less directly associated with system operations, including strategic planning and securing funding for new initiatives.

1.2.2 THE PLANS: IMAGE AND THE REGIONAL ITS ARCHITECTURE

Two seminal plans form the planning basis for transportation management and operations in Greater Rochester: the *Improved Mobility Areawide Guidance Evaluation (IMAGE)* report (1996)

and the *Rochester Regional ITS Architecture* (2000). Both of these initiatives were spearheaded by NYSDOT with broad participation of other agencies in the region.

The IMAGE report was an ITS early deployment plan for Metropolitan Rochester, similar to other plans developed across the country in the ISTEA era of the 1990s. It is perceived by many stakeholders in the region to provide a guiding strategic vision for ITS deployment that is still highly relevant almost ten years later. This is because the IMAGE initiative involved a massive outreach effort to identify transportation needs that are largely unchanged. The plan also defined an ITS deployment plan that includes many basic infrastructure elements and ITS systems that have yet to be deployed. The plan is regularly referenced by agencies in the region for guidance on future opportunities for collaboration and investment.

Unlike many regions, the activities of the Transportation Management Committee provided ongoing ITS deployment coordination in Greater Rochester prior to the development of the Regional ITS Architecture. The architecture served to further promote dialogue and refine the regional vision for ITS service delivery, providing a high-level framework for future ITS deployment initiatives.

1.2.3 THE FACILITY: THE REGIONAL TRAFFIC OPERATIONS CENTER

The Regional Traffic Operations Center (RTOC) is a Monroe County-owned facility that is home to both Monroe County and NYSDOT Region 4 traffic operations personnel, as well as NYSDOT Region 4 traffic signal maintenance and ITS groups. Additionally, a State Police barracks is housed at the facility, providing a complementary incident management and emergency response capability. The Greater Rochester International Airport operations group is also co-located at the RTOC, allowing for additional multi-modal transportation and security coordination. The facility is a physical manifestation of tactical interagency coordination, and provides a host of practical benefits when key operations personnel can “rub shoulders” on a day-to-day basis under one roof.

The development of RTOC was a key recommendation of the 1996 IMAGE plan. The facility is widely recognized for its value in promoting interagency coordination and improving regional traffic operations on a tangible level. Moreover, it is material evidence of the region’s success in executing the strategic recommendations of that plan.

1.2.4 THE PROJECT CHAMPIONS

In the current ad hoc environment, implementation of new ITS and transportation operations initiatives rely heavily on project champions – i.e., lead deployment agencies and individual project advocates within those agencies. While the TMC, regional ITS planning documents, and collegial atmosphere are supportive of interagency coordination, policy, engineering, and funding decisions are ultimately executed at the agency level.

Of particular note, a former Director of the Monroe County DOT, played a significant role in bringing earmarked federal ITS funds to the region in the 1990’s and was a critical champion in realizing technology deployment at the level seen today. Similarly, other individuals currently active in the TMC serve as advocates for interagency collaboration both regionally and within their respective organizations.

1.3 National Perspectives on Coordinated Transportation System Management

1.3.1 BACKGROUND

U.S. surface transportation policy is in the midst of a decades-long migration from the capacity building mindset of the Interstate Highway Program to a focus on increasing transportation system efficiency and performance. In cities of the post-industrial Northeast in particular, the challenge of accommodating increasing vehicle miles traveled with essentially static roadway capacity is being addressed through concepts such as multi-modalism, managed growth, transportation demand management (TDM), and transportation system management (TSM).

The emergence of Intelligent Transportation Systems (ITS) in the mid- to late-1990s has provided the transportation community with new tools to address the challenges of this new era. While the technologies were often viewed initially as solutions in themselves, ITS deployment experience has shown that how those technologies are used, by whom, and for what purpose are critical determinants of their effectiveness. ITS tools are enabling technologies that support real-time transportation management and interagency collaboration on a level unprecedented just a few years ago.

1.3.2 BENEFITS OF INTERAGENCY OPERATIONS COORDINATION

The benefits of interagency coordination of transportation operations and ITS deployment are well understood and substantiated by performance data from across the country.² A few of the better known motivations for coordination include:

- Faster roadway incident detection and response, resulting in reduced delay to travelers;
- Increased cost-effectiveness of ITS deployment through shared infrastructure costs and greater functionality;
- Coordination of traffic management across jurisdictional boundaries, increasing effective roadway capacity;
- Improved operation and coordination of multi-modal transportation systems;
- Better and more available real-time information, increasing satisfaction for the traveling public and supporting inter-agency coordination;
- Improved public safety and security through surveillance, emergency response, and transportation infrastructure management; and
- Development and implementation of a shared, regional, interagency vision for transportation system operation.

In metropolitan areas all across the country, the process for developing Regional ITS Architectures has demonstrated the benefits of interagency coordination, whether pertaining to ITS projects or

² The USDOT ITS Joint Program Office (JPO) maintains an extensive database concerning ITS deployments (<http://www.its.dot.gov/index.htm>). In addition to data about ITS deployments, the database also documents benefits and costs of different types of projects. Documentation about the benefits of ITS integration, specifically, can be found at <http://www.benefitcost.its.dot.gov/its/benecost.nsf/ByLink/IntegrationLinks>

any other type of initiative. Many participating agencies found that they benefited from the structured interaction with their partners in planning, operations, and/or management. Where interagency relationships have not existed or where they have been informal, the process has helped to cement linkages through the development of operational concepts and memoranda of understanding or agreement.

1.3.3 INTERAGENCY COLLABORATION IN FEDERAL AND STATE TRANSPORTATION POLICY

The profile of interagency collaboration for technology deployment and real-time transportation operations management has been increasing in recent years at all levels of transportation policy and investment. The Federal migration towards more systematic, interagency coordination and ITS implementation is reflected in the past several transportation reauthorizations:

- Intermodal Surface Transportation Efficiency Act (ISTEA, 1991): Encouraged the development of ITS as a transportation system management tool and promoted the development of regional ITS early deployment plans (EDPs);
- Transportation Equity Act for the 21st Century (TEA-21, 1998): Required the development of Regional ITS Architectures to foster streamlined, collaborative, and multi-functional ITS deployment. Subsequent FHWA/FTA rule/policy-making stipulated that all ITS projects using federal funding be consistent with this regional vision for ITS service delivery;
- Safe, Accountable, Flexible and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU, 2005): Strengthens existing requirements to improve operational efficiency of existing transportation infrastructure. The legislation requires MPO Long Range Transportation Plans to include operational and management strategies that improve the performance of the existing transportation facilities to relieve vehicular congestion and maximize the safety and mobility of people and goods. SAFETEA-LU also mandates new statutory requirements for Congestion Management Systems (CMS) planning that emphasizes increased efficiency of existing infrastructure.

Another major new system management component of SAFETEA-LU is the “Real-Time System Management Information Program.” According to preliminary FHWA guidance on the provision, the program “will establish a real-time system management information program to provide, in all States, the capability to monitor, in real-time, the traffic and travel conditions of the major highways of the U.S. and to share that information to improve the security of the transportation system, address congestion problems, support improved response to weather events and surface transportation incidents, and facilitate national and regional highway traveler information.” This program suggests an increased emphasis on not only transportation system efficiency and performance, but also the ability to link this with performance planning and traveler information systems.

At the state level, NYSDOT has undertaken an organizational overhaul under an initiative that is known as “Transformation.” One outcome of this effort has been the creation of four divisions, one of which is the Statewide Transportation Policy and Strategy Division. Serving the role of an “integrator,” staff within this division will work with partners such as MPOs in areas where different issues, such as planning and operations, intersect.

Transformation has been a multi-year project and it is described with significant uncertainty by transportation professionals throughout the state. Nonetheless, it is inevitably going to have a significant influence on the way NYSDOT personnel do business and, therefore, how NYSDOT interacts with its partners at each level of government. Transformation is also identifying organizing

principles, such as inter-regional trade and tourism corridors, and promoting statewide policies, such as “fix it first.”

1.3.4 REGIONAL APPROACHES TO SYSTEM MANAGEMENT AND ITS COLLABORATION

As national transportation policy has shifted from infrastructure construction to system preservation and operational efficiency, regions face new challenges that necessitate revisiting long-standing coordination activities and day-to-day responsibilities. For example, ITS often introduces new requirements for interagency coordination in order to achieve its intended benefits. “Off line” or “paper” relationships may evolve into “real-time” and “electronic” ones. There are also new regional-scale ITS service delivery needs that require coordination across jurisdictional boundaries—for example, the implementation of a regional emergency vehicle traffic signal pre-emption or arterial management system.

Nationally, the response to the need for increased ITS coordination has been varied in both motivation and structure. A number of regions, including Greater Rochester, have established ad hoc structures to promote information exchange and to coordinate the activities of multiple actors at the local, regional, and state levels. Others regions have established more formalized, legal organizations to accomplish this function – NITTEC in Buffalo and TRANSCOM in New York City being two in-state examples.

The approach taken by individual regions is typically a legacy of particular local circumstances, including major ITS project deployments, regional ITS architecture development, special events, Homeland Security, or particular needs (e.g., Rochester’s desire to improve freeway incident management through the TMC).

However, as public expectations for transportation system efficiency increase, ITS deployment and operations become increasingly integrated across jurisdictional boundaries, and operations performance becomes a metric against which transportation investment is planned and evaluated, regions must evaluate the ability of their existing institutional framework to deliver against this evolving set of requirements.

1.3.5 FEDERAL FRAMEWORK FOR TRANSPORTATION OPERATIONS COLLABORATION AND COORDINATION

A recent FHWA Office of Operations report³ provides a framework for evaluating transportation operations collaboration and coordination in a given region. The report cites five components of a successful regional collaboration and coordination model: **Organizational Approaches** (Structure), **Processes**, **Products**, **Resources**, and **Performance**.

Each of these components can be implemented across a spectrum of formality depending upon specific regional requirements, as illustrated in the figures accompanying each bullet below:

³ FHWA Office of Operations, *Regional Transportation Operations Collaboration and Cooperation: A Primer for Working Together to Improve Transportation Safety, Reliability and Security*

- **Organizational Approaches** (structure of interagency relationships, policies, and institutions);

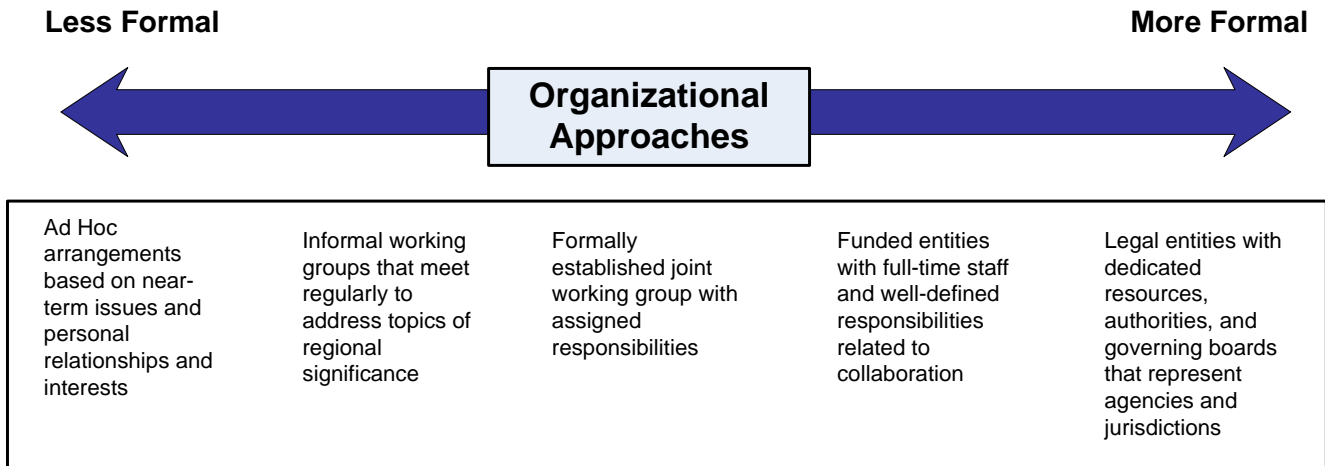


Figure 1-1: Range of Organizational Approaches⁴

- **Processes** (activities that enable regions to achieve a mutual agenda);

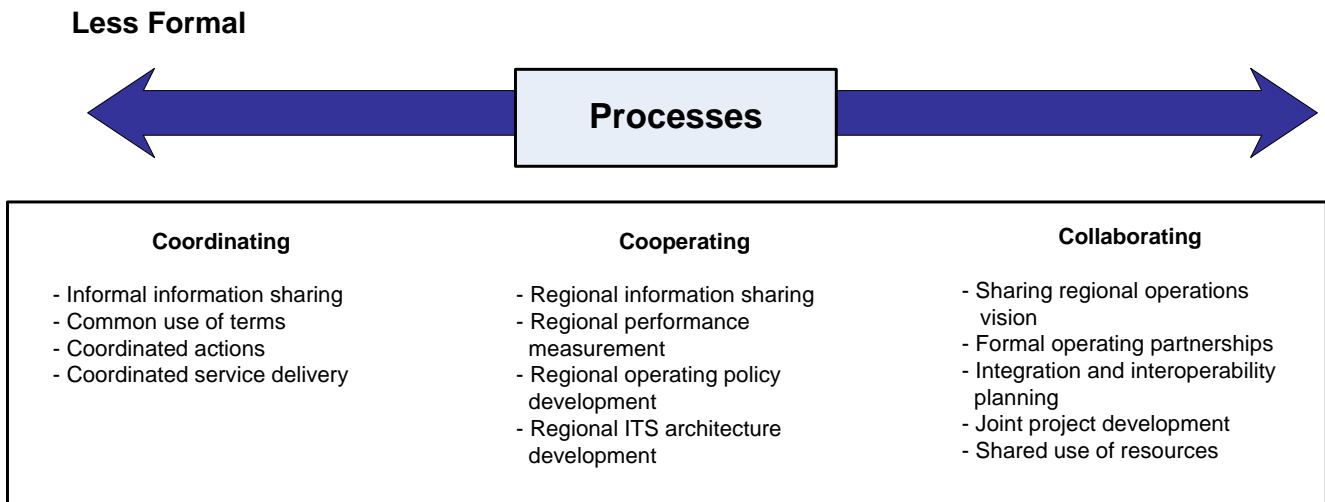


Figure 1-2: Range of Process Interactions:⁵

⁴ Adapted from FHWA Office of Operations, *Regional Transportation Operations Collaboration and Cooperation: A Primer for Working Together to Improve Transportation Safety, Reliability and Security*

⁵ *ibid.*

- **Products** (the outcomes of carrying out Processes);

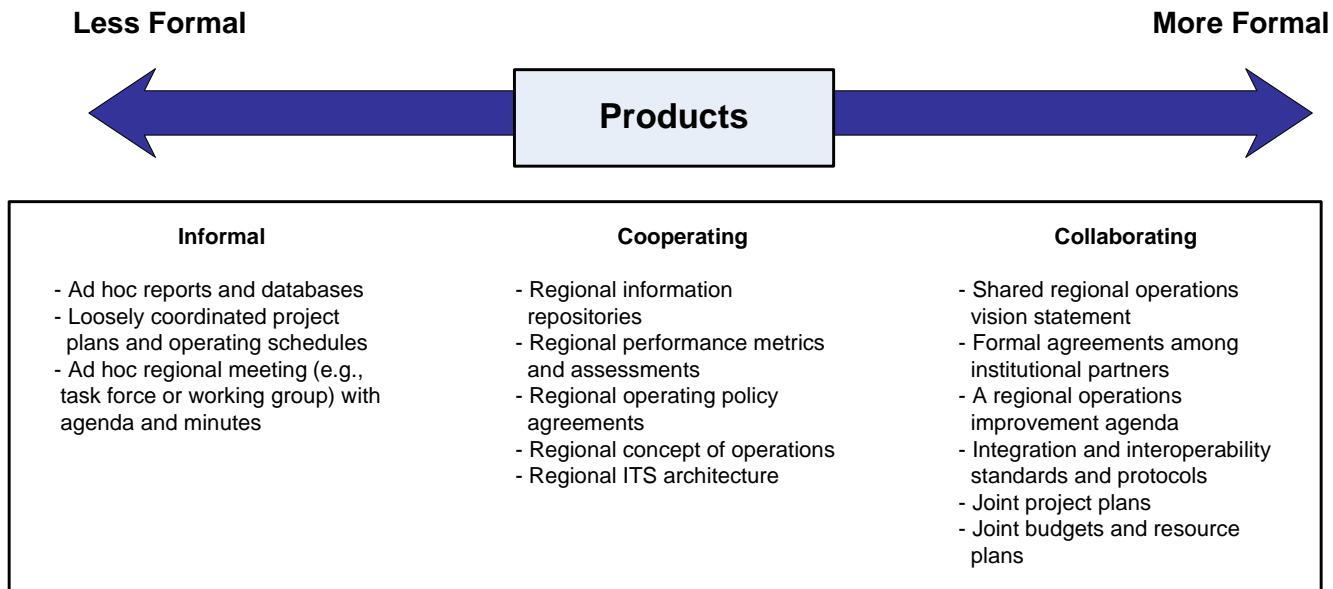


Figure 1-3: Range of Products⁶

- **Resources** (cash, personnel, facilities, and equipment used to carry out collaboration and coordination); and

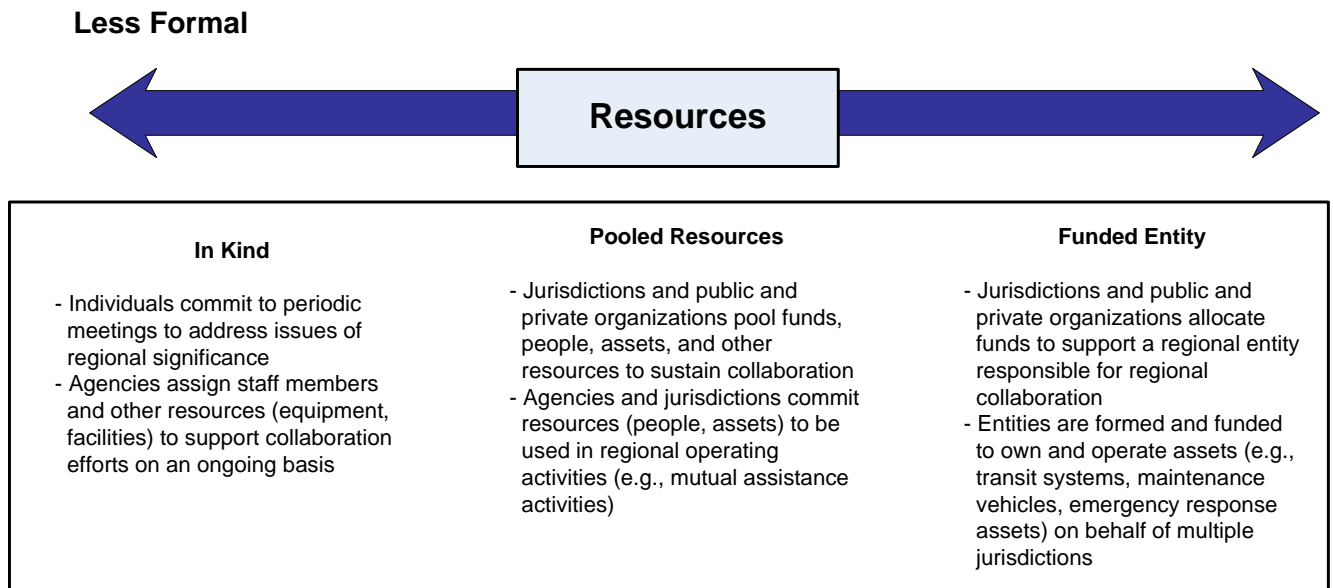


Figure 1-4: Range of Resource Strategies⁷

⁶ Ibid.

⁷ Ibid.

- **Performance** (the ability to monitor the success of coordination and collaboration against a set of transportation, safety, security, environmental, etc. objectives).

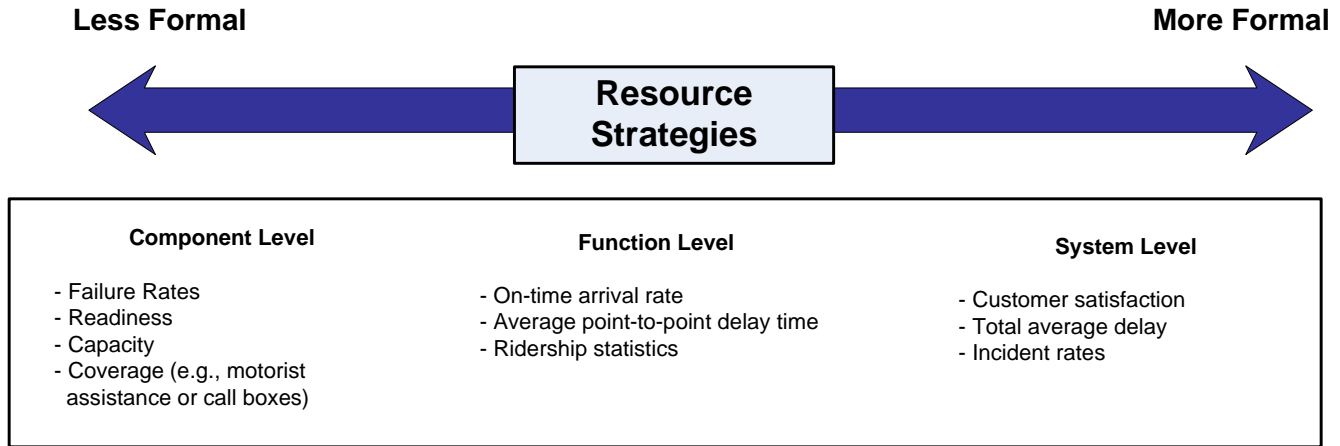


Figure 1-5: Range of Metrics and Measures of Performance⁸

While the report acknowledges that each region needs to identify its own path towards improved interagency collaboration and coordination, the authors emphasize that, in general, increased formalization of interagency relationships generally leads to better collaboration. This is because formalized relationships are most likely to overcome institutional inertia and “stove-piping” to develop a singular regional vision for transportation operations, implement a regional Concept of Operations, focus adequate resources, and “mainstream” mutual interests into existing transportation planning, programming, evaluation, and funding processes.

While the report suggests that regions will eventually migrate toward formalization of these five resources, such decisions must be based upon an evaluation of the function and effectiveness of existing interagency relationships in any given region.

1.4 Study Methodology

1.4.1 APPROACH

This study does not assume that formalization of institutional relationships, as discussed in the preceding section, is an imminent and foregone conclusion in Greater Rochester. The members of the Steering Committee have expressed the sentiment that regional transportation management collaboration generally works well in Greater Rochester. By evaluating how existing interagency relationships are likely to serve future needs, the region is assuming a proactive posture for future ITS planning, deployment, evaluation, and funding opportunities.

The primary objective of the project team is to foster consensus among members of the Steering Committee (and, by association, the TMC) regarding the future of interagency coordination in the region. Included in this is the identification of short- and long-range strategies that are drawn from lessons learned locally and from other regions in the country. Noting the history of the TMC, this

⁸ *ibid.*

report places an emphasis on *evolutionary*, rather than *revolutionary*, options that offer benefits to the committee and to the region.

To facilitate this approach, the study synthesizes information received from several primary sources:

- Guidance and background information from the project Steering Committee;
- Input from other stakeholders involved in regional transportation and incident management;
- Existing plans, reports, and documents collected by the project team;
- Peer region interviews and background information; and
- Research and policy documents articulating national policy and highlighting best practices.

The project involved a multi-step process of information collection, synthesis, and reporting as illustrated in Figure 1-6 and discussed below.

- **Steering Committee Input: Background, Objectives, and Outcomes** – At the outset of the study, the project team convened a kick-off meeting with the Steering Committee to review the project scope, methodology, and outcomes. Of particular interest to the project team was using the opportunity to understand the expectations of each participating agency for the study, and to begin to construct an understanding of the existing institutional dynamic in the region.
- **Identify and Review Background Documentation** – The project team reviewed existing documentation provided by the Steering Committee members as well as Transportation Management Committee meeting agendas. This activity provided insight into existing ITS policies, practices, and institutional organization in Greater Rochester.
- **Regional Stakeholder Interviews** – The project team conducted one-on-one interviews with each of the Steering Committee member agencies as well as other agencies involved in transportation and/or emergency management in the Greater Rochester region. These interviews offered a chance for the project team to gain a more in-depth comprehension of the roles and responsibilities of agencies and individuals in ITS coordination and system operations, as well as the needs, concerns, motivations, and opportunities perceived by each interviewee. A majority of these interviews were conducted during a site visit by the project team on October 19 and 20, 2005; follow-up interviews were conducted by telephone at other times.
- **Review National Policy and Best Practices** – In parallel with the Greater Rochester stream of activity, the project team identified and reviewed national research, policy guidance, and examples of best practices in ITS institutional coordination. Of particular note is the FHWA report, *Making the Case for Regional Transportation Operations Collaboration and Coordination* discussed above and elsewhere in this document.

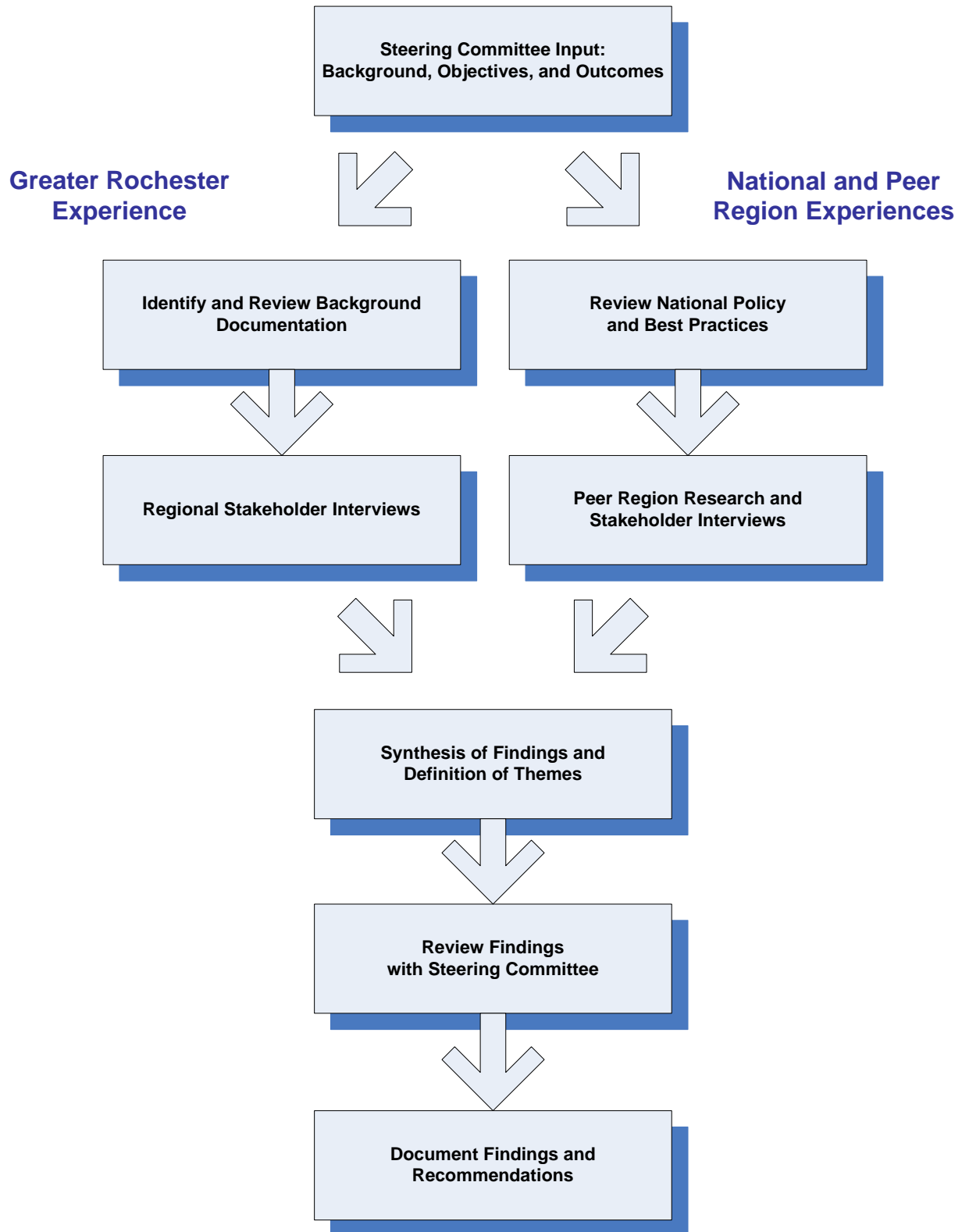


Figure 1-6 Study Methodology

- **Peer Region Research and Stakeholder Interviews** – Following the review of national best practices, the project team worked with GTC to select peer regions from both within New York State and around the country. Criteria for selection included similarity to the Greater Rochester region (e.g., population, climate, transportation system) as well as a representation of diverse approaches to interagency ITS coordination. The selected peer regions were: Syracuse, NY; Buffalo, NY; Allentown, PA; Milwaukee, WI; Hartford, CT; and Columbus, OH. Additional information on the peer region interviews is included in Chapter 2.
- **Synthesis of Findings and Definition of Themes** – The project team drew together observations and lessons learned from both Greater Rochester and the national/peer city experience to identify themes and central issues related to interagency coordination needs, responsibilities, and best practices. These are summarized in Chapters 2 and 3 of this report.
- **Review Findings with Steering Committee** – Preliminary project findings were presented to the project Steering Committee and other invited regional stakeholders in a roundtable discussion facilitated by the project team. The roundtable also included an executive summary presentation by John Mason, a six-term Mayor of Fairfax, Virginia and a consultant to FHWA’s Office of Operations, about the Administration’s recent initiatives on interagency coordination for ITS planning and operations.
- **Document Findings and Recommendations** – This Final Report documents the project team’s findings and recommendations, incorporating Steering Committee feedback on the draft document and the roundtable discussion described above.

1.4.2 PROJECT TIMELINE AND MILESTONES

This study began in August 2005 and was completed in March 2006. The following is a summary of major project milestones:

Project Initiation Conference Call	August 31, 2005
Project Kick-Off Meeting	September 15, 2005
Peer Region Interviews	September – November, 2005
On-Site Stakeholder Interviews	October 19-20, 2005
Stakeholder Follow-Up	October-November, 2005
Submission of Draft Final Report to Steering Committee	November 23, 2005
Stakeholder Roundtable Discussion and FHWA Operations Coordination Presentation	November 30, 2005
Submission of Final Report to Steering Committee	March 2006

1.4.3 STEERING COMMITTEE

The project was directed by a Steering Committee comprised of the following individuals representing regional, municipal, and state agencies:

Genesee Transportation Council

Richard Perrin, AICP, Executive Director
Erik Frisch, Program Manager (Study Project Manager)

City of Rochester

John Thomas, Transportation Specialist

Monroe County Department of Transportation

Terrence Rice, PE, Director
James Pond, PE, PTOE, Associate Traffic Engineer

New York State Department of Transportation

Joan Dupont, PE, Regional Planning Program Manager, Region 4
James Willer, PE, Manager, Regional Traffic Operations Center, Region 4

New York State Thruway Authority

George White, Traffic Supervisor

Rochester-Genesee Regional Transportation Authority (RGRTA)

David Cook, VP Purchasing and Grants Administration
Chip Walker, Project Manager

2. RESEARCH FINDINGS

2.1 Introduction

Federal policy, in particular, has placed increasing emphasis on regional interagency relationships in recent years. ISTEA (1991) introduced a new approach for coordinating regional transportation planning, centered on the Metropolitan Planning Organization (MPO). Under TEA-21 (1998) and now SAFETEA-LU (2005), the role of operations and ITS coordination has continued to expand.

However, whereas MPOs have a federal mandate to coordinate regional transportation planning, there is no designated regional leader regarding transportation system operations, leaving each region to find its own way of creating the appropriate and relevant institutional linkages. Nationally, a number of best practices and innovations have emerged from these diverse regional experiences in response to local needs and institutional structures.

Confronting this circumstance as an opportunity, this study was undertaken with a dual purpose: to understand the perspectives of key stakeholders within the Rochester region and to understand the vantage point of peer regions that have taken different approaches to addressing the same issue. This chapter includes brief descriptions of each of the surveyed regions, identifying the core of their ITS planning experience, their organizational approach, and finally the key challenges or obstacles faced along the way. This information provides the foundation for Chapter Three, in which we present five themes concerning effective interagency efforts.

2.2 Analysis of Peer Regions

In consultation with the steering committee and staff of the Genesee Transportation Council, the project team identified four regions outside of New York State to use as peers for this project. The steering committee noted a few important criteria for selecting the peers, such as population size and climate. Members also noted unique local attributes to consider, such as the location of the Thruway south of the City of Rochester.

Based on this dialogue, the project team collected information on and interviewed individuals from the following peer cities:

- **Allentown, Pennsylvania**
- **Hartford, Connecticut**
- **Columbus, Ohio**
- **Milwaukee, Wisconsin**

In addition, to get a better understanding of circumstances specific to New York State, the team also conducted interviews in **Buffalo** and **Syracuse**, two upstate cities that are comparable to Rochester in many respects.

In each location, a member of the MPO staff who deals specifically with operations and/or ITS was contacted for a telephone interview. In some cases, follow-up interviews were conducted with

secondary references, such as the state DOT. Contact information for peer region interviewees is included in the Appendix.

2.3 Peer Regions

2.3.1 ALLENTOWN, PENNSYLVANIA

Allentown, Pennsylvania is located in a region known as the Lehigh Valley, north of the Philadelphia metropolitan area. The region is bisected east-west by both Interstate 78 and US Route 22. It is not uncommon for residents of the eastern section of the MPO planning area, which is adjacent to New Jersey, to use I-78 to commute to Manhattan. Interstate 476 carries traffic north-south through eastern Pennsylvania, connecting with the major highways in the Philadelphia area to the south and Interstate 80 to the north.


2.3.1.1 ITS Planning Experience

The Allentown region's most significant experience with ITS deployment pertains to a major overhaul of one of the principal east-west limited access arterials, US-22. After the region was told by the Federal Highway Administration that capacity expansion was out of the question, the district office of the Pennsylvania Department of Transportation (PennDOT) decided instead to overhaul the highway. Recognizing the significant impact of such a massive construction project, PennDOT and its partners decided to employ a variety of Intelligent Transportation Systems to help mitigate traffic impacts during the rehabilitation. These deployments included ramp meters, variable message signs, and queue detection that was linked to a web-based user interface.

Because the construction often resulted in traffic detours onto local streets, the project required extensive coordination with local signal control operations. Significantly, US-22 carries mostly local traffic, whereas the parallel I-78 carries the through traffic. One implication of this was that they could count on local drivers to find optimal detour routes based on local familiarity with the region's secondary roadway network.

While PennDOT is the primary sponsor of freeway ITS and ITS planning, the regional planning commission (Lehigh Valley Planning Commission, or LVPC) has initiated a pilot project to work with municipalities to implement coordinated signal systems and closed loop traffic responsive signal systems in specific corridors. This coordination is conducted informally on a case-by-case basis, often in conjunction with new development and signal infrastructure. All traffic signals in the region are municipally-owned, so this activity fills a crucial void at the corridor/region level. There is currently not a systematic, region wide initiative to coordinate traffic signal operations at the regional level to optimize corridor performance or incident management.

ALLENTOWN, PA



Population: 600,000

Key Infrastructure: I-78, US-22, I-476

ITS: Ramp meters, Queue detectors, CCTV cameras, limited freestanding integrated signal control systems

Lead Agency: PennDOT District 5, Lehigh Valley Planning Commission

Organization: Bi-lateral collaboration between DOT and MPO

Key Challenges: Attracting additional stakeholders, including local municipalities responsible for traffic signal operations.

2.3.1.2 Organizational Approach

Interagency ITS coordination efforts to date have largely been project-driven and temporary in nature. PennDOT's district office and the Lehigh Valley Planning Commission are the two primary stakeholders with regard to the ITS programs in the area. They worked closely with each other during the US-22 project, and PennDOT's project manager utilized some of the same committees that had been created and formalized following the region's ITS early deployment planning (EDP) effort in 1996.

The MPO, State Police, Chamber of Commerce, PennDOT, and the Transit Authority, were represented on the ITS Steering and Technical Committees by executives and staff, respectively. Notably, an MOU was developed for the executive-level Steering Committee after it had been working together on the EDP for about a year but the project was completed shortly thereafter and the group stopped meeting.

According to one participant, one key fact was that many of the same stakeholders had worked together on the early deployment plan and shared a desire to "keep it going" after the EDP was complete. While the major regional stakeholders maintained their interest, it seems that the earlier experience helped pave the way for the US-22 effort, especially because so much of it involved cooperating with local agencies on detours.

2.3.1.3 Challenges and Lessons Learned

For better or worse, interagency coordination in the Lehigh Valley mainly involves only the MPO and the district office of PennDOT. Fortunately, these two agencies maintain a good working relationship, especially as embodied in the staff representative from each. One illustrative example occurred when PennDOT wanted funding to deploy more CCTV cameras on the highway network and members of the MPO board wanted a highway service patrol operation put in place. Seen as a fair trade, both sides were satisfied.

Both individuals interviewed for this study mentioned the difficulty of engaging other participants in the process. Because of the local municipal control of traffic signals, this is an impediment to implementation of regional corridor management strategies. As one would expect, local stakeholders are eager to participate when there is an explicitly relevant matter. Data sharing has been something that several stakeholders have expressed interest in and some of the deployments, as well as the focus of the regional ITS architecture development process, reflect this. Data sharing in the Allentown region has included the deployment of cameras on the roadway network and the collection of traffic data from the loop detectors.

2.3.2 HARTFORD, CONNECTICUT

Hartford, the capital of Connecticut and the state's second largest city, has a metropolitan area population of approximately 1.2 million people. Two major interstates in southern New England converge in downtown Hartford, Interstates 84 and 91. These routes are major through routes between the Boston and New York metropolitan areas. Numerous radial arterial corridors connect the city with adjacent communities representing a mixture of local (town) and state jurisdiction. There are no county-level transportation planning or operating entities. The Capital Region Council of Governments (CRCOG) is the MPO for the Hartford area.

2.3.2.1 ITS Planning Experience

In 1997, an ITS Strategic Plan was developed for the greater Hartford area, representing the first formal ITS planning initiative in the region. The creation of this document was led by the Connecticut Department of Transportation (ConnDOT), the major early adopter of ITS technology in the state.

ConnDOT has led the other major ITS planning initiative in the region: the development of the Regional ITS Architecture. However, this effort was conducted in close collaboration with CRCOG, two other Regional Planning Agencies, and a host of other regional stakeholders. The vision of ConnDOT is to create one seamless statewide architecture from this document, rather than creating discrete regional architectures for regions that have close operational linkages in this compact state.

The MPO has undertaken the development of a Congestion Management System (CMS) for the region. Through this process, GPS vehicle probes are used to collect arterial traffic performance data in select corridors during peak periods. Signal timing coordination occurs at the municipal level, with the City of Hartford operating a freestanding traffic management center (distinct from ConnDOT's). Occasionally the MPO will act as a facilitator between municipalities and ConnDOT on a variety of issues.

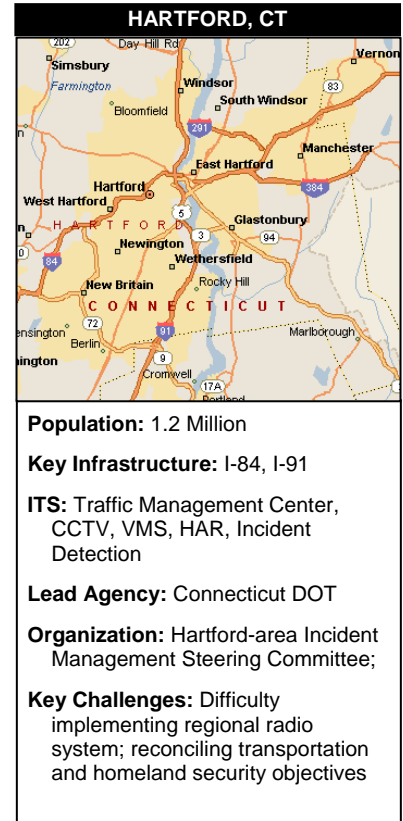
2.3.2.2 Organizational Approach

In general, ConnDOT is dominant in ITS planning and operations given the small size of the state and its extensive ITS deployments in greater Hartford and elsewhere in the state. Much of the state operates as a single mega-region, and thus it makes sense to develop ITS strategy and policy at the statewide level. Most ConnDOT ITS activity is focused on the regional freeway network at the present time.

Given Connecticut's congested transportation network, transportation system efficiency and incident management are both high-profile issues in the state. In 2000, a high-level Transportation Strategy Board (TSB) was appointed by the legislature to address transportation issues deemed to be of critical importance to economic development and quality of life in the state. In 2003, the TSB established a permanent statewide Task Force to address incident management issues. This action created a supportive atmosphere and high-level stakeholder endorsement for the transportation system management activities of CRCOG and its counterparts across the state.

In parallel to ConnDOT's ITS deployment activity, however, there is significant investment in Homeland Security and emergency preparedness that is led by a separate but related set of public safety stakeholders on issues such as regional radio interoperability. CRCOG is playing a central role as a regional facilitator on the emergency preparedness front and in the related area of roadway incident management in the Hartford area.

Nonetheless, CRCOG remains extremely active in ITS planning in the region. Their participation was critical in the formation of an Incident Management Steering Committee (a recommendation of the Strategic Plan) for the greater Hartford area, composed of public safety, towing, transportation, and planning agencies. CRCOG provides staff support for the Committee and sets the agenda for its meetings.



Another example where the MPO served as the champion is with the Congestion Management Program, in combination with two other planning regions. This initiative used GPS probes to collect congestion data, collected ConnDOT traffic detector information, and used a regional transportation model to interpret the raw data.

2.3.2.3 Challenges/Obstacles Faced

In addition to incident management, homeland security has emerged as a major impetus to act regionally. This has led to substantial coordination on emergency response coordination, disaster planning, mutual aid agreements, and technology interoperability. From this perspective, transportation is perceived as an emergency support function rather than incident management supporting transportation. This can create challenges in the definition of project needs and coordination among disparate federal, regional, and statewide initiatives that directly or tangentially impact ITS deployment.

Not all attempts to address regional collaboration needs have progressed smoothly. Recognizing the need to address radio communications interoperability, the Incident Management Steering Committee proposed a regional radio system that failed to overcome technological and institutional obstacles.

2.3.3 COLUMBUS, OHIO

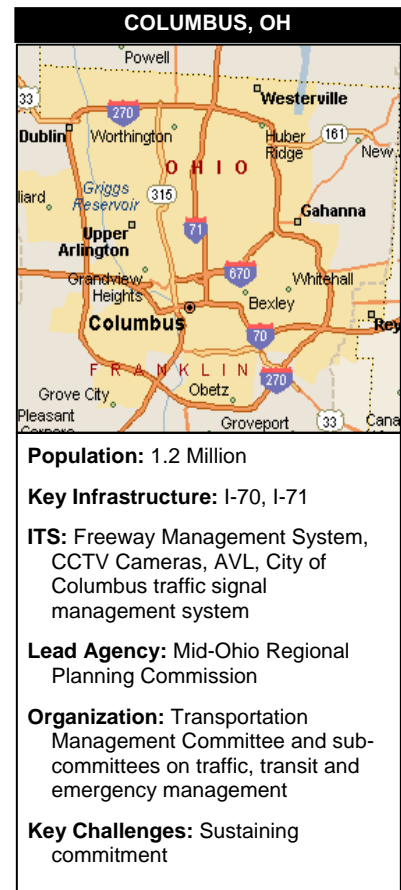
The Mid-Ohio Regional Planning Commission (MORPC, the MPO) covers 2 full and 2 partial counties that are home to 1.2 million people and includes Columbus, which sits in the cross-hairs of Interstates 70 (east-west) and 71 (north-south). There is a significant amount of growth in the region, making Delaware County the 10th fastest growing county in the United States over the last decade.

2.3.3.1 ITS Planning Experience

While Columbus' deployment of ITS is not untypical of other regions (e.g., CCTV, CAD/AVL, etc.), there is a notable trend of interagency collaboration in the region over the last decade, even before TEA-21 emphasized the importance of coordination and prompted the later development of regional architectures.

The focus of the ITS program has included linkages between transportation and emergency response agencies, between the Ohio Department of Transportation (ODOT) and transit agency's operations centers, and in creating a freeway management system. The latter of which has involved substantial investment in cameras on the highway network, which play a complementary role to the city's coordinated signal system. In fact, it was the enthusiasm of a city engineer that led to the design and creation of the system, even though it primarily covers freeways and arterials under state jurisdiction.

Another notable ITS initiative in Columbus is the linking of snowplows from the City's DPW fleet with the transit agency. The installation of AVL equipment on the snowplows and the sharing of this data with the Central Ohio Transit Authority (COTA) has allowed coordinated operations between the two agencies.



MORPC is leading a regional initiative to improve signal coordination in cooperation with its city, county, and transit partners. The objective is to improve regional signal operations through equipment modernization and implementation of an open architecture.⁹

2.3.3.2 Organizational Approach

The rather intense interagency coordination that can be seen in Columbus began in the mid-1990s with the early deployment plan initiated by the MPO. This plan came to be known as the ITS Consensus Building Plan. The effort required 18 months of work by two full time planners, much of that time spent understanding who the participants were in order to ensure inclusiveness.

The MPO established a Transportation Management Committee whose 30 members met every other month. In support of the full committee were three sub-committees: transit, traffic and emergency response, each of which involved 6-10 members of the full committee. The sub-committees met on alternate months and in general had non-overlapping membership. When this created any dislocation, MPO staff extended special invitations to other stakeholders to ensure all appropriate connections would occur.

More recently, the MPO has implemented a reorganization that, among other things, created a new position for a Chief of Management and Operations, signalling very clearly to peer agencies that the MPO has a role outside of planning. According to MORPC staff, this has strengthened the agency's existing good reputation as the region's convener and facilitator.

2.3.3.3 Challenges and Lessons Learned

The Consensus Building Plan effort evolved into the creation of an ITS Integration Strategy, which was completed in 1999. There was a significant sense of accomplishment but also a substantial incidence of "burn-out." Following the publication of the Integration Strategy, MPO staff found it difficult or impossible to convene meetings.

When the architecture development process was undertaken in 2004, MPO staff still found it difficult to regenerate interest in collective meetings and, except for two workshops to go over the draft final architectures, the work was completed as a hub-and-spoke effort with MPO staff collecting updated information from each stakeholder.

At this point in time, the MPO is concentrating on the shortage of formalized agreements, primarily in the form of Memoranda of Agreement (MOA), associated with joint ITS initiatives or data sharing opportunities. The perception shared by the MPO staff person interviewed for this study was that ground rules (such as producing MOAs) should have been more clearly established before the process began, rather than attempting to add them in mid-stream.

This same principle was a critical issue when there was a regional effort to plan and implement a co-located transportation operations center (TOC), something that had been identified as a high priority in the 1999 Integration Strategy. After a tour of several successful TOC sites, the regional stakeholders spent 18 months, ultimately unsuccessfully, trying to develop an MOA for the center's implementation but eventually an impasse was accepted and no progress has been made.

2.3.4 MILWAUKEE, WISCONSIN

Milwaukee, in south-eastern Wisconsin, is the northern anchor of the Gary-Chicago-Milwaukee (GCM) Corridor ITS Priority Corridor. The GCM Corridor was designated by USDOT in 1993 as a

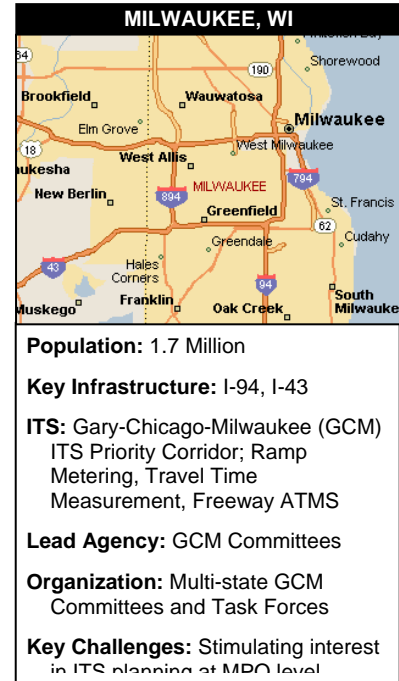
⁹ Additional information on this signal coordination initiative may be found at www.morpc.org/web/transportation/its/ITSsignals.html.

test-bed for technology deployment and interagency operations coordination in the three-state mega-region on the western and southern shores of Lake Michigan. It consists of 16 urbanized counties in Indiana, Illinois, and Wisconsin, over 2,500 miles of highway, plus the region's transit and, rail, port, and aviation facilities. The GCM corridor has incubated the development of several innovative large-scale ITS planning efforts and interagency traffic management and traveler information initiatives.

The City of Milwaukee's population is nearly 600,000 and there are approximately 1.7 million in the metropolitan area. Interstate 94 is the major thoroughfare and the route that connects the city to Chicago, about 100 miles to the south.

2.3.4.1 ITS Planning Experience

As with many other topics, the region's experience with planning ITS is largely driven by its location in the GCM corridor, as would be the case for cities located on the eastern seaboard, from Boston to Washington, DC. The GCM Corridor was designated as an ITS priority corridor in the early 1990s and that has driven a significant amount of the region's deployments. Freight transportation is a major focus, with Chicago registering the 3rd largest truck volume in the United States. Congestion mitigation is also a major concern, as is the link between congestion and air pollution, with each region of the corridor dealing with non-attainment status to some extent.



Locally, much focus has been on evolution of the signal system and implementing coordinated signal control. Traffic signal control is distributed among local, county, and state jurisdictions, not atypical of many other regions. Coordination challenges on the arterial streets even has a multi-modal dimension—the City of Milwaukee has deployed signal prioritization systems but, for example, the transit agency has not included the associated technology on their new buses.

A freeway management plan was developed in the 80's and ramp metering has been an important facet of the plan's implementation. Efforts to expand metering beyond the central business district have met with mixed success. More recently, the focus has shifted to incident management and to improving coordination among the many local jurisdictions associated with the region's several significant corridors.

2.3.4.2 Organizational Approach

Through the designated GCM corridor, there is a long standing institutional structure for coordination of various kinds of efforts, especially transportation issues. The core group includes the DOTs of all three states (i.e., Wisconsin, Illinois, and Indiana), the major city transportation, transit and planning agencies, FHWA, FTA and also some private-sector consultants. In all, there are over 700 individual members including approximately 70 public, private or community organizations. There is an executive director and a consultant staff that coordinates the various committees and other functions of the association.

One of the GCM initiatives is called the Traffic Incident Management Enhancement (TIME) project. This group has meetings monthly and draws transportation operators and emergency responders from throughout the corridor. The TIME meetings have provided the primary venue for addressing

issues such as interoperability, which is critical with such a large and diverse set of member organizations.

In addition to the “super-regional” approach of the GCM organization, there is also a Wisconsin-based initiative called the Integrated Corridor Operations Project (ICOP), which is focused on achieving coordination among the many stakeholders associated with a specific corridor. An emphasis has been placed on signal integration as an effective focal point for the broad and diverse stakeholder set that exists in any corridor.

2.3.4.3 Challenges and Lessons Learned

In discussions with the Southeastern Wisconsin Regional Planning Commission (SEWRPC, the MPO), the primary concern seemed to imply that there is a saturation problem wherein the relevant stakeholders are so involved in organizations such as the GCM corridor, TIME, and ICOP, that it is hard to get them actively engaged in an exercise at the regional level.

For example, the MPO has recently tried to convene a working group to help develop the ITS component of the next regional Long Range Transportation Plan. The initial meeting and one follow-up had only moderate attendance and enthusiasm was apparently very low. The MPO is concerned about getting adequate input because it is trying to develop an idea for creating a subset of the metropolitan Transportation Improvement Program (TIP) that would include only operations-related projects. In part this would enable operations projects to be evaluated on a separate set of criteria and there is the possibility of dedicating a certain amount of funds to this category. In part, the MPO staff heard that the lack of interest reflected a view that, with so little funding available, operators had trouble thinking about what they might want to implement many years down the line.


2.3.5 BUFFALO, NEW YORK

Buffalo, just 75 miles west of Rochester, is New York’s second largest city with approximately 300,000 and 1.1 million in the metropolitan area (slightly larger than Rochester). A defining characteristic of Buffalo is that it shares an international border to the west with Niagara Region, Ontario. As a result of this location, many activities that occur in the region take on not only a multi-jurisdictional aspect, but an international dimension as well.

2.3.5.1 ITS Planning Experience

The centerpiece of Buffalo’s experience with ITS is the Niagara International Transportation Technology Coalition, or NITTEC. With 14 member agencies from both sides of the border, the traffic operations center that NITTEC has established is particularly comprehensive. NITTEC has also deployed an extensive network of CCTV cameras, dynamic message signs, weather sensors (RWIS), and other technologies. Traffic signal jurisdiction is divided among state, county, and municipal entities and is not integrated regionally under the NITTEC umbrella.

The region’s position straddling the US-Canadian border necessitates a degree of interagency transportation coordination that is uncharacteristic of most metropolitan areas, even multi-state ones. NITTEC is a practical response by stakeholders to pool resources, coordinate technology investments, plan



<p>Population: 1.1 million</p> <p>Key Infrastructure: I-90, Border Crossings</p> <p>ITS: Traffic Management Center, CCTV, RWIS, DMS</p> <p>Lead Agency: Niagara International Transportation Technology Coalition (NITTEC)</p> <p>Organization: A bi-national 14-agency coalition to coordinate operations (NITTEC)</p> <p>Key Challenges: Linking operations (NITTEC) with planning (MPO)</p>
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strategically, and address system operations issues that do not respect jurisdictional boundaries.

Of particular note is the fact that NITTEC administers a revolving technology seed program called the Mobility Improvement for Transportation Revolving Loan Fund. Begun with a \$5 million FHWA grant, the program is used to promote the deployment of ITS within the Buffalo-Niagara region.

2.3.5.2 Organizational Approach

Although NITTEC is the region's notable ITS experience, the organizational approach, especially in relation to the MPO, is also noteworthy. NITTEC has dedicated staff and a structure of subcommittees that address topics such as incident management and strategic planning. In addition to the board, which includes representatives of the 14 member agencies, the coalition maintains a comprehensive list of stakeholders.

The Greater Buffalo Niagara Regional Transportation Council (GBNRTC, the MPO), as an ex-officio member of NITTEC, recognizes the coalition's unique position with respect to technical resources and, in particular, data. Rather than replicate the membership of NITTEC, GBNRTC has focused its attention on its responsibility to perform capital programming. To do this, NITTEC management and staff invest their time and energy into monitoring NITTEC activities so that they can identify initiatives that may eventually become projects in search of federal funds. As part of this effort, MPO staff also try to recognize important issues that should be presented to the MPO board. The purpose of this approach is to ensure that the board is not surprised when a project appears.

It was noted by MPO staff that, in general, ITS projects that come before the MPO have already come before NITTEC's strategic planning committee. When that happens, there is a level of comfort that the planning of ITS projects has been coordinated. Nonetheless, MPO staff regard the linking of planning and operations as something that is best accomplished by strong staff-to-staff relationships between NITTEC and GBNRTC.

2.3.5.3 Challenges and Lessons Learned

The linking of operations and planning is the main issue that the MPO is trying to address in Buffalo. Staff have been working on an approach that encourages project sponsors to pursue specific objectives, such as utilizing ITS when appropriate in conventional projects and communicating with other relevant agencies when developing a project concept.

The development of the regional ITS architecture was led by NITTEC because, as explained by staff at the MPO, they were in the best position to identify the right person from each agency to attend the meetings. For both NITTEC and GBNRTC, however, getting the message communicated from that liaison to others at each agency, especially upper-level managers, is not always accomplished or accomplished well.

Finally, it was noted in the interview that a facet of Buffalo's culture is its isolation from Albany. The effect of this isolation is that agencies feel the region is relatively autonomous. As a result of this, agencies in the region tend to band together in the absence of external direction. This has improved the basic relationships between agencies and created a certain kind of trust and confidence between partners.

2.3.6 SYRACUSE, NEW YORK

Syracuse, Rochester's neighbor to the east has about 150,000 residents, with a total of approximately 750,000 in the metropolitan area. Interstate highways are a major defining characteristic of the city, with I-81 running north-south as a mainly elevated facility. I-90, the New

York State Thruway, traverses the region east-west but somewhat north of the downtown, while I-690 parallels the Thruway, bisecting downtown.

2.3.6.1 ITS Planning Experience

Somewhat like Rochester, Syracuse's ITS history has been largely determined by earmark funding provided during the 1990s. The funding was made contingent on a regionally coordinated decision making process and although the Syracuse Metropolitan Transportation Council (SMTC, the MPO), was not initially involved, NYSDOT ultimately sought out SMTC not only to participate but to lead the coordinated effort. Explicitly, this was an acknowledgement of the MPO's niche as convener of regional dialogues, related to ITS or otherwise.

With respect to the ITS being planned in Syracuse, a CCTV camera network has been growing steadily over the years and recently NYSDOT-Region 3 has built a new transportation management center (TMC). The City has a TOC that mainly deals with its signal system, but some view that system as woefully out of date. There is no arterial management plan in place.

2.3.6.2 Organizational Approach

As noted above, coordination was initially stimulated by a condition placed on the federal ITS earmark given to the region. One ingredient in the MPO's successful approach to convening stakeholders to address that need was that it had previously hosted some ITS training workshops, thereby establishing a de facto ITS stakeholder group with shared experiences to address questions related to strategic planning of ITS projects.

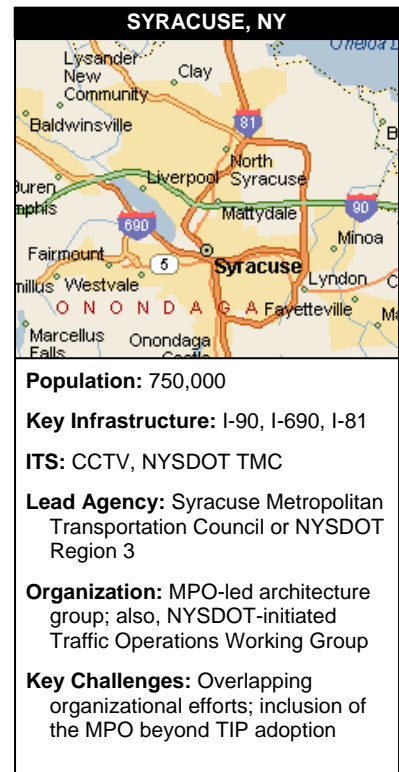
More recently, NYSDOT-Region 3 has initiated a traffic operations working group to support the new TMC. The group has very strong participation by public safety agencies and personnel. It is focusing on topics such as detour routes off of I-81 and also incident management. Many of the same people who had participated on the MPO-led committee are involved in this working group.

The MPO also participates in the Local Emergency Planning Committee, which it sees as important in the wake of the 9/11 attacks but also following the passage of SAFETEA-LU, which established security as its own separate planning factor.

2.3.6.3 Challenges and Lessons Learned

The creation of the traffic operations working group seems to be having a negative effect on the MPO-led coordination group, mainly because the same individuals are involved in both and the purposes are so similar. However, the new working group does not deal with the planning issues that are the MPO's principal concern, meaning that those questions are going unanswered under the current arrangement.

From the MPO's perspective, there is considerable coordination throughout the region but there are also distinct signs that important opportunities are being missed. The transit agency, for example, is



installing AVL and has offered the city and county an opportunity to piggyback on the procurement/deployment process but there has been no effective coordination.

The MPO is also frustrated about the fact that it is almost always disregarded after projects have been adopted and put on the TIP. Because much of the coordination occurs after the programming stage, this limits SMTC's ability to assume its well-recognized position as facilitator. At best, in some circumstances, MPO staff interviewed for this study said that they feel "they have a voice, but not a say" in the proceedings.

2.4 Conclusion

This sampling of six peer regions illustrates that organizational approaches can be as diverse as the settings in which they are found, and are often shaped by needs, emergent leadership, and institutional precedents. From the very formal (NITTEC) to the wholly personal (Allentown), from large scale (GCM) to moderate (Syracuse), and across other ranges, one can immediately recognize that circumstances and history can be major determinants. Nonetheless, some trends and patterns emerge and in Chapter Three, five themes are presented regarding effective organizational strategies.

3. THEMES

3.1 Introduction

By conducting interviews with four regions outside New York and two within, the project team obtained a sample of organizational approaches to the coordination of ITS planning and implementation. Drawing from these interviews, our own experience, and the literature discussed in Section One, we have identified five themes concerning what makes interagency coordination efforts effective. Reduced to one or two words each, these themes address *liaisons*, *leadership*, *regional architectures*, *focal projects*, and *the role of the MPO*.

By design, these five statements should not be shocking or surprising. They are simple observations about the key ingredients in strong working relationships. Each theme is presented as a brief statement, followed by an introduction section that elaborates on the context, background, and key points for Greater Rochester. Anecdotes are drawn from some of our case studies in order to illustrate these points, either through achievement or struggle. Finally, we offer a synthesis of the perspectives that were shared with us during our interviews of local stakeholders here in Rochester.

3.2 The Five Themes

3.2.1 LIAISONS

Effective interagency consultation depends not only on bringing the relevant agencies to the table, but also on having the appropriate individual(s) represent each agency.

3.2.1.1 Introduction

The value gained from interagency coordination involves two functions performed by each individual who sits at the table. First, the representative is able to share information about their agency and its activities. Second, she or he is able to bring information back from the meetings to inform colleagues, supervisors and others, extending the reach of the committee into the participating organization. This two-way street is essential to maximizing the value of interagency coordination. Most importantly, it depends on having the appropriate person representing each agency.

In some settings, interagency coordination is needed at different levels and representation is differentiated accordingly. There may be a policy committee or board of directors that is populated by elected officials or upper-level managers. In this case, there is often a complimentary technical committee, populated with agency staff, that provides advice and direction to the policy committee.

The main danger in this area comes when an agency is not represented by the appropriate person, either through evolving responsibilities of the representative or lack of consistency in agency representation from meeting to meeting. On one hand, this harms the committee because it may not learn all that it should about the agency's activities. On the other hand, this harms the agency in question because an inappropriate delegate may not be able to debrief his/her colleagues effectively, especially if they are low on the learning curve.

3.2.1.2 Examples from Peers

In several locations, especially Buffalo and Milwaukee, the existence of large and extensive organizations allowed a differentiation between the various committees. An upper level committee could cater to executives and decision-makers while an array of technical or specialty sub-committees could effectively create a forum for agency staff to interact on their respective areas of specialization.

In smaller communities, such as Allentown, committees tend to specialize in response to specific needs, such as an individual project. In such cases, the interagency dynamic is more dependent on the relationship between the key individuals because one person usually has to be the conduit for technical as well as policy issues.

3.2.1.3 Rochester Synthesis

During our interviews in Rochester, we were consistently impressed by the tight-knit nature of those involved in the Transportation Management Committee. Strong personal relationships exist and this rapport enables candor at meetings that benefits the overall effectiveness of the group. The level of trust associated with this camaraderie enables the group to examine new ideas and to take on challenging initiatives, such as the development of the RTOC.

Rochester interviewees cited the small scale of the region as an important factor influencing how interagency coordination occurs. A relatively small number of individuals fulfill multiple system operations and management roles, creating a tight-knit professional community that interacts frequently and has a high degree of familiarity with major issues. As a result, there is no need for the creation of multiple sub-committees to address specialized issues, as the participants would often be one and the same.

Two other challenges identified in the interviews were: 1.) situations where the person delegated to the committee is not necessarily in the best position (i.e., job title or role) to represent his/her agency; and 2.) situations where knowledge of the TMC's activities does not penetrate beyond the TMC representative to upper management and/or other individuals who should have greater awareness of the TMC's objectives and activities.

3.2.2 LEADERSHIP

Not every aspect of a coordination effort requires leadership but when a collaborative endeavor takes shape, it is most often successful when one member takes initiative.

3.2.2.1 Introduction

Leadership comes in many forms and sometimes centers on an individual and sometimes on an entire agency. In some situations, generally when the mission or assignment is particularly clear or when the endeavor has gained full momentum, leadership seems to be needed less in order for partners to make progress. In other situations, often at the beginning of a program or when there is greater complexity, leadership is needed in order to establish an agenda and give shape to the mission.

3.2.2.2 Examples from Peers

Columbus: The MPO created a new position (Chief of Management and Operations) to send a clear signal to peer agencies that the MPO was serious about engaging in coordination of operations.

Allentown: In a community of limited size, the dedication of a single PennDOT engineer enabled a complex outreach effort associated with the overhaul of US- 22.

Columbus: Although the freeways were under the state's jurisdiction, a city DOT engineer took the initiative to design a freeway management system.

Milwaukee: Despite a web of established organizations, the retirement of a key individual from the city's DOT and the promotion of another champion at the state DOT has left the region without a charismatic standard-bearer.

3.2.2.3 Rochester Synthesis

Indications of institutional leadership abound in Rochester and our interviews revealed significant respect for the work of the agencies that helped to develop the RTOC facility. There are also signs of individual leadership. Indeed, certain individuals seem to have achieved special status within the circle of concerned agencies. There are frequent references to "the Jims" in recognition that much of the regional interagency coordination that goes on is truly "inter-Jim" coordination¹⁰.

There are comparable references to Frank Dolan, the former Director of the Monroe County DOT, who had a significant role in bringing earmarked federal transportation funds to the region for investment in ITS projects during the 1990s. A number of our interview subjects referred to his individual contribution to putting the region on a course that emphasizes advanced technologies, even if he is not an active participant in the current TMC.

3.2.3 REGIONAL ITS ARCHITECTURES

Nationally, the architecture development process raised awareness concerning interagency coordination of transportation operations. In areas where coordination already existed, the opportunity to improve, evolve, or cement institutional relationships is sometimes missed.

3.2.3.1 Introduction

Witnessing the significant ITS deployments that occurred in the early and mid-1990s, Congress included provisions encouraging coordination when it enacted TEA-21 in 1998. This resulted in a great deal of effort invested in architecture development all around the country, especially in the year or two leading up to the April 2005 deadline. Just as ITS deployment varies significantly around the country, approaches to meeting the architecture requirement differed from one city, state, and region to another.

In many places, investment in ITS had been done without any coordination and the architecture development process yielded dramatic rewards. In places where coordination existed, especially with respect to ITS, the deadline was often viewed more as a nuisance than as an opportunity. As a result, whatever agency took responsibility (either by choice or default) often focused on one specific area.

While this outcome left regions no worse off than they would have been without the experience, it appears that there may be a false sense of accomplishment, which some occasionally describe as "resting on one's laurels." The implication is that a false sense of security may exist where agencies did not invest genuine energy in the architecture process. Similarly, regions that undertake substantial outreach activities during the architecture process but "fold up the tents" at the

¹⁰ Jim Willer and Jim Pond are the team leaders at RTOC for NYSDOT and Monroe County, respectively.

conclusion of the process are ill-equipped to transition from architecture *development* to architecture *implementation*.

3.2.3.2 Examples from Peers

Buffalo: The existence of NITTEC led to what some stakeholders perceived as a low-value architecture process. It did become clear, however, just how difficult it can be for information to travel from technical staff who participated in the exercise to upper-level managers who are responsible for making relevant decisions.

Allentown: The region's architecture is not elaborate because few agencies were involved in the process. Nonetheless, the exercise was taken seriously and new initiatives of common interest were identified, especially in the area of data sharing.

3.2.3.3 Rochester Synthesis

In Rochester, stakeholders interviewed did not point to the regional ITS architecture process as a critical catalyst of interagency coordination. Many interview subjects participated in the architecture process, but it did not alter how agencies coordinated transportation systems management and operations in the region. In contrast, Rochester's ITS early deployment plan, known as the IMAGE plan, has served as a principal guidance document for region for approximately ten years. Where the architecture became the glue holding together multiple agencies in some regions, it appears that the strategic plan from 1996 serves this role in Rochester.

Several interviewees commented that the way the IMAGE plan was developed helped to transform the former Expressway Committee into the Transportation Management Committee. Because many of the individuals active today were involved in the development of the IMAGE plan, there is the same sense of shared toil that other regions have more recently experienced with their regional architectures.

One difference appears to be that, while an early deployment plan does represent a consensus opinion about *what* should be implemented, neither the plan itself nor the process used to develop it focus on *how* ITS projects should be implemented, especially where coordination and collaboration are concerned. In fact, it appears that confidence in the IMAGE plan may have led to downplaying the value of the architecture and consequently something of a missed opportunity that, effectively, is being addressed through this study.

3.2.4 ROLE OF THE METROPOLITAN PLANNING ORGANIZATION (MPO)

While MPOs rarely have a direct hand in transportation systems management or operations, they can play a very valuable role as convener and facilitator and in connecting TSM&O to the regional transportation planning process.

3.2.4.1 Introduction

The standing of Metropolitan Planning Organizations (MPOs) was significantly elevated by ISTEA in 1991; yet after 15 years, most MPOs are still exploring their role in light of subsequent laws and regulations. The core of an MPO's mission is to prioritize federal transportation funds by facilitating a dialogue among regional stakeholders, a consideration of obvious interest to the TMC. ISTEA placed a special emphasis on intermodalism and as a result, MPOs in many areas have played an important role in addressing funding needs for things such as bicycle and pedestrian infrastructure, transit, and the connections among and between these modes.

ISTEA took as a main premise that a transition was occurring from construction to management of transportation infrastructure. This trend is epitomized in state and national policies with names such as “fix it first”, “linking planning and operations,” and, most recently, “system management.” But because MPOs, in general, do not have operational responsibilities, their role is often uncertain.

However, MPOs have generally grown to become very effective facilitators of regional dialogues, largely because of the financial authority that they are given by federal law. As regional facilitators, many MPOs have led policy development on a variety of technical and social issues related to transportation. In some regions, it is because they do not have a direct stake in the implementation or operation of individual projects that MPOs are able to serve very effectively as mediators in area-wide debates.

Moreover, the involvement of MPOs in TSM&O activities promotes a linkage between operations and planning, a concern of increasing importance as transportation system operations and management is viewed as a solution to any number of regionally-identified mobility, safety, air quality, and even economic development considerations that emerge in the regional planning process. Furthermore, as TSM&O moves into the transportation mainstream, this strengthened connection between needs and (operations) solutions creates a more compelling argument for investment in the TSM&O domain (and measurable performance metrics to evaluate the effectiveness of these efforts).

3.2.4.2 Examples from Peers

Columbus: The MPO initiated the ITS Consensus Building Plan in the mid-1990s which led to the creation of the Transportation Management Committee and several issue-specific sub-committees.

Allentown: While PennDOT does much of the planning and design work, the MPO has provided consistent policy and funding commitment and helped maintain stakeholder support among its members.

Buffalo: While the MPO defers to NITTEC on the identification of operations-related projects, it asserts its role with respect to capital programming and endeavors to strengthen the bond between planning and programming.

Syracuse and Milwaukee: MPOs in both of these areas have expressed frustration about gaining traction. In Milwaukee, the MPO has had trouble getting partners engaged in identifying ITS elements for the new long range transportation plan. In Syracuse, the MPO feels it “has a voice but not a say,” especially after it approves funding for a project.

3.2.4.3 Rochester Synthesis

In Rochester, there is very little mention of GTC (the MPO) by members of the TMC or other stakeholders. Relationships have largely grown out of operational linkages, as in the county’s responsibility for the city’s signal system or the deployment of traffic cameras that are linked to RTOC. Should GTC ever become a part of an ITS deployment, such as receiving data collected by certain kinds of detectors, it seems likely this would help them establish operational relationships.

In the meantime, however, the potential for GTC to contribute its abilities as a moderator or facilitator appears unrecognized or, if it is recognized, overlooked. The act of hosting the study that produced this report may or may not be an effective demonstration of the role GTC can play in the region’s ITS community. Interestingly, without mentioning GTC, some stakeholders referred to the TMC’s need for administrative support and others indicated that there are issues related to time management and participation that should be addressed.

FOCAL PROJECTS

A specific project provides a common point of reference for a group of individuals or agencies that are exploring ways to coordinate and/or collaborate. Defining an alliance entirely by one project has risks, however, especially if and when the mission is completed.

3.2.4.4 Introduction

Interagency alliances typically exist for one of two reasons: in the first case, a specific issue or event served as a catalyst for the formation of the organization. The stimulus could be a commonly perceived need, a problem, or an opportunity, which could include funding. In the second case, an organization is formed because of a shared sense for the inherent value of coordination.

The recent flurry of activity to develop regional ITS architectures, it should be noted, represents something of a hybrid. Like some other initiatives promoted by USDOT, the architecture requirement was the result of federal policy supporting (or requiring) interagency coordination. As a result, task forces, committees and other formats were assembled with varying success. This is important to point out because it appears clear that more blanket encouragement is going to be forthcoming from USDOT and while it is well founded, it is critical to appreciate the difference between creating a group for a specific mission and creating one for its inherent value.

3.2.4.5 Examples from Peers

Allentown: The overhaul of US Route 22 necessitated very close collaboration among PennDOT and many local stakeholders, especially with respect to managing detours.

Columbus: Over 30 individuals participated in the Transportation Management Committee and its sub-committees on transit, traffic, and emergency preparedness, but when the ITS Integration Strategy was completed, the group lost its mission and ability to convene in meaningful numbers.

Buffalo and Milwaukee: The large and formal coalitions (NITTEC and GCM Corridor, respectively) have missions that enable them to maintain momentum even in the absence of a specific project focus.

3.2.4.6 Rochester Synthesis

In Rochester, there have been several points of focus in recent years, including the development of the IMAGE plan, the planning of RTOC, and the updating of the coordinated traffic signal system. There is a palpable sense of ownership regarding the IMAGE Plan that gives participants in its development a strong sense of belonging. In contrast to some peer regions, the completion of the IMAGE early deployment plan infused the TMC with a renewed sense of mission.

Similarly for RTOC, the completion of construction represents only one phase of the project. Although it now pertains overwhelmingly to the agencies co-located there, the existence of the RTOC ensures a baseline level of interaction and day-to-day collaboration between technical staff of the County and State DOTs, in addition to the State Police.

There are numerous other technology initiatives in the foreseeable future that will require a continuation of this cooperative spirit, including: integration of 2070 traffic signal controllers; upgrading of the shared video switch; deployment of additional NYSDOT and County camera sites; and expansion of the regional fiber optic plant. Participating agencies will need to again coalesce

resources, expertise, and institutional support around these common objectives in order to realize their full operational potential and cost effectiveness.

3.3 Conclusion

Many ingredients are needed in order for interagency coordination to be effective but in the preceding discussion we have identified five themes that appear to be the most important, based on our interviews in Rochester and the six case studies, as well as the literature we reviewed:

- Effective interagency consultation is dependent not only on having the relevant agencies present at a meeting but on having the appropriate individual represent each agency at the table.
- Not every aspect of a coordination effort requires leadership but when a collaborative endeavor takes shape, it is most often successful when one member takes initiative.
- Nationally, the architecture development process raised awareness concerning interagency coordination of transportation operations. In areas where coordination already existed, the opportunity to improve or cement institutional relationships was often missed.
- While MPOs rarely have a direct hand in deploying or operating any aspect of an intelligent transportation system, they can play a very valuable role as convener and facilitator of regional transportation activities, whether related to planning, operations, or both.
- A specific project provides a common point of reference for a group of individuals or agencies that are exploring ways to coordinate and/or collaborate. Defining an alliance entirely by one project has risks, however, especially if and when the mission is completed.

Each of these themes was articulated as a diagnosis rather than as a prescription. They were also deliberately phrased in a way to stimulate discussion among stakeholders of the process. In the fourth and final chapter, the discussion will turn to recommendations that are focused specifically on Greater Rochester.

4. CONCLUSIONS AND RECOMMENDATIONS

The fact that transportation systems management and operations (TSM&O) is assuming a higher profile in national surface transportation policy and investment, as evidenced by the provisions in SAFETEA-LU for example, is a positive endorsement of the efforts of many in Greater Rochester and other peer cities. On the other hand, as ITS technologies step “out of the laboratory,” and systems management and operations activities are held accountable through competitive funding and performance measures, these regions must ensure that their institutional capacity to collaborate and innovate keeps pace with the evolving demands.

This chapter presents conclusions from the study process recommendations for ensuring that Greater Rochester can meet the challenges and capitalize on the opportunities presented by this emerging environment. Because successful solutions to interagency coordination needs are ultimately rooted in local needs and conditions, this chapter draws heavily upon the issues and ideas expressed by Steering Committee members and other participants through the interview process and a roundtable workshop held at the offices of the Genesee Transportation Council on November 30, 2005.

4.1 A Lifecycle Framework for Transportation Management and Operations

As discussed in the opening chapter, the future interagency coordination challenges of Greater Rochester and other peer regions are shaped by trends occurring at the national level in response to maturation of systems management and operations technologies (ITS), practices, policies, and funding streams. Changing demands and expectations on the part of transportation system operators, emergency responders and security interests, planners, funding agencies, and the traveling public require a more integrated approach to planning, implementation, operation, and evaluation—in other words, the entire transportation systems management and operations activities “lifecycle.”

This lifecycle approach to regional transportation systems management and operations coordination is premised upon the following observations:

- 1.) Successful transportation systems management and operations requires strong linkages between tactical coordination and strategic planning. In other words, lessons from day-to-day operational experiences should feed into “big picture” issues such as defining a regional concept of transportation operations, strategic deployment planning, and prioritization of ITS investments.
- 2.) Transportation systems management and operations activities must be integrated with the regional transportation planning practice. TSM&O contributes to regional transportation objectives regarding mobility, air quality, safety, etc. Regional transportation plans (including the project-based Transportation Improvement Program, or TIP) should acknowledge TSM&O as a tool in the regional toolbox of transportation solutions alongside more conventional improvements like roadway capacity expansion. Conversely, systems management and operations investments should reflect regional transportation priorities and provide demonstrable value to the decision-makers responsible for funding these activities.

Exhibit 4-1 provides a graphical representation of the lifecycle framework. Note that each step is linked in sequence to every other step, completing the circuit between tactical coordination and strategic planning. Project programming and financing decisions result from a strategic planning

process that includes both regional transportation goals and self-assessment (performance measures) from real-time transportation systems management and operations activities.



Exhibit 4-1. Transportation Systems Management and Operations Lifecycle

Within the regional transportation planning process as practiced by Metropolitan Planning Organizations (MPOs) and others, cycles linking system performance, strategic planning, and project programming and funding have been *de rigueur* for many decades. Yet this approach is not yet widely applied to TSM&O. Given past policies, incentives, and funding mechanisms for ITS (heavily reliant on earmarks and stand-alone planning processes like regional ITS architectures) and the difficulty of obtaining sustained funding for operations activities, this situation is not entirely surprising.

4.1.1 IMPLICATIONS FOR GREATER ROCHESTER

For Greater Rochester to thrive in the emerging TSM&O era, the study team recommends moving towards a lifecycle approach to interagency coordination.

During this study, interviewees identified two principal functions of the existing Transportation Management Committee: 1.) ITS project deployment coordination (project management, design review, information sharing); and 2.) quarterly tactical coordination and information sharing to support routine freeway operations, incident response, construction scheduling, events, etc. The value of these activities is widely recognized by the Committee's active participants, yet they represent only a portion of the functions depicted in the lifecycle framework (namely, Project Design & Deployment and System Operations).

Thus to fully implement the lifecycle framework in Greater Rochester, the following enhancements to the existing coordination process must be considered:

- Expanding the scope of coordination activities beyond *tactical* coordination to include **greater emphasis on strategic coordination**;
- Placing **increased emphasis on systems performance measurement**, to identify the impacts and benefits of system management and operations activities and link them to both broader transportation objectives, investment criteria, and metrics of concern to key decision-makers and funding agencies; and
- **Strengthening the connection between transportation systems management and operations activities and the regional transportation planning process**, so that TSM&O initiatives are integrated with the larger planning, evaluation, and investment decisions occurring in the region.

4.2 The Future of the Transportation Management Committee

The recognized effectiveness of the Transportation Management Committee—flexibility, inclusiveness, and demonstrated value to member organizations among them—is a key asset in addressing the region’s future interagency coordination challenges.

The objective for this study, as stated in the Request for Proposals, is “*to identify a preferred organizational structure that allows the region to optimize the efficiency, safety, and security of its existing and planned transportation infrastructure.*” This objective reflects a shared desire among stakeholders in the region to address issues that are common in many metropolitan areas: limited financial resources, aging infrastructure, and increased utilization of advanced technology.

From the outset, the project team emphasized that its objective would be to “*foster consensus among members of the Steering Committee (and, by association, the TMC) regarding the future of interagency coordination in the region. Included in this is the identification of short- and long-range strategies that are drawn from lessons learned locally and from other regions in the country.*” This objective reflects the fact that there is widely shared interest in positioning the committee to be maximally effective.

In the course of interviews in the region, each stakeholder shared ideas about the future of the TMC as well as specific steps that could be taken to enhance its effectiveness. Some of these were very discrete and pragmatic steps while others were more visionary and far reaching. At a roundtable workshop held on November 30, 2005 at the offices of the Genesee Transportation Council, members of the Steering Committee (NYSDOT, Monroe County DOT, City of Rochester, RGRTA, NYS Thruway Authority, and GTC) and other participants (Monroe County Sheriff’s Department, Monroe County Emergency Communications Department, NY State Police, and the NY Division of the Federal Highway Administration) engaged in a facilitated discussion of these ideas.

What emerged from the discussion were several points of consensus. In accordance with the TMC’s history, each represents an evolutionary step, reflecting the changing needs of the transportation environment. In keeping with the project team’s objective of facilitating such resolution, these points are presented below as conclusions. Accompanying each of these conclusions are recommendations that reflect the project team’s perspective on the steps that can be taken to achieve the outcomes envisioned by the Steering Committee members and their colleagues in the region.

4.3 Points of Consensus about the TMC

4.3.1 REMAINING INFORMAL

The informality of the Transportation Management Committee was noted often by interviewees throughout the study as one of its most important assets. This *ad hoc* model stands in contrast to, for example, the formal charter and bylaws of NITTEC in the Buffalo-Niagara region. Among TMC stakeholders, there was unwavering support for remaining informal because the group's casual dynamic is essential to its vitality.

4.3.2 MISSION STATEMENT

Some interviewees expressed a belief that the group would benefit from the articulation of a mission statement. As one person put it, each member probably envisions essentially the same mission statement, it just hasn't been written down.

When this anecdote was shared during the roundtable, there was agreement that there would be a benefit derived from the act of documenting the mission statement and from refining it, especially at a moment such as this when new directions for the group are being charted. During the roundtable discussion, the sense of the group was that committing a mission statement to paper was not in conflict with remaining informal, consensus-oriented, and evolutionary.

While reaching the decision to develop a mission statement is important, we also suggest that the process employed for developing the statement has the utmost significance. We are aware that the statement is already fairly clear in most members' minds. This certainty is generally a benefit to the region but the group and the resulting statement would probably benefit from an examination of long-held assumptions, even if no changes result.

4.3.3 CREATING A FORUM FOR STRATEGIC PLANNING

As previously noted, one of the major motivating factors for this study is concern about the scarcity of funds for TSM&O activities and ITS projects. This reality led to two interdependent points of consensus: the need to coordinate funding strategies and the need to collectively revisit ITS strategic planning.

The first point is in part a response to the continuing importance of earmark funding for ITS projects. Although there are efforts, especially within the new federal transportation legislation, to "mainstream" ITS projects, it remains the case that today advanced technology is largely implemented through earmarked funds. In light of this fact, members of the committee agreed that funding applications need to be coordinated. This need for a coordinated approach may actually intensify as TSM&O and ITS funding is mainstreamed and faces increased competition from more conventional investments for a limited pool of funds.

The second point is related to the fact that the IMAGE report, the region's Strategic ITS Planning document, is ten years old. While there is still great confidence in the IMAGE report, there was agreement during the roundtable that the region would benefit from a renewed and ongoing dialogue about strategic planning issues, especially in light of the project deployments and new challenges that have emerged in the past decade.

As the sum of these two points, the group agreed that the region needs a forum for linking operations and planning. Furthermore, the group felt that the TMC could serve as the venue for this forum simply by expanding its agenda, much as it did during the early 1990s in response to the

emergence of ITS. In this way, the present changes reaffirm the TMC's desire to undergo evolutionary change as circumstances demand.

4.3.4 LEVERAGING THE MPO

In light of many factors, among them the importance of federal funding and the direction of federal legislation, the group addressed the growing significance of the Genesee Transportation Council, Greater Rochester's MPO, to the activities of the TMC. In some respects, this consensus reflects practical realities, such as the fact that GTC is well equipped to host TMC meetings and to provide staff support. In other respects, explicitly acknowledging GTC as a major player illustrates the group's commitment to effectively linking transportation planning and operations.

Because the MPO's job is to facilitate regional dialogue about transportation planning issues, the group also agreed that having GTC convene the Transportation Management Committee lends the TMC added credibility as a regional effort. This is especially relevant as the deployment of ITS and the implementation of interagency operations efforts expands beyond Monroe County.

4.3.5 ROLES OF THE TMC

In addition to discussing the structure, composition, and character of the TMC, the group also touched on some topics pertaining to what new or additional roles the TMC can play in the region.

4.3.5.1 Education and Outreach

The group shared the opinion that decision-makers, as well as peers beyond the individuals who participate directly in the activities of the TMC, need to be better educated about the concept of Transportation System Management and Operations (TSM&O), especially ITS, as a matter of mainstreaming the TSM&O mentality and improving the willingness of agencies to invest in ITS infrastructure and operations activities. As one participant noted, the need to do education and outreach could certainly benefit from GTC taking a central role in the TMC.

4.3.5.2 Data Collection and Management

One topic that is often mentioned, especially in the context of linking planning and operations, is data. Whether it is the collection or management of data, there was an expression of concern that data initiatives are done ad-hoc and not according to any guiding principle or larger vision. The sense of the group was that the development of such a vision or strategy should be led by the TMC.

4.4 Recommendations for Action

In many ways, the Transportation Management Committee has provided recognized value to its participating agencies. It has served as a forum for information sharing on emerging operational issues of multi-agency concern in the absence of an alternative venue. The TMC has evolved in response to changing transportation needs, project deployments, policy objectives, and members' collective interests. The Committee's value is widely recognized by those who participate in and sustain its existence.

In general, the project team recommends an *evolutionary*, as opposed to *revolutionary*, adaptation of the TMC to meet emerging challenges and to fulfill opportunities raised by stakeholders during the course of the project.

The preceding section presented the points of consensus that were reached by members of the Transportation Management Committee. To complement that outcome, this section includes the

project team's recommendations for the TMC. In keeping with the project team's approach to this study, this explicit differentiation reflects the Committee's tradition of determining its own future based on a variety of inputs and factors. The advice that follows indicates the project team's perspective on the ingredients of success witnessed in Rochester's peer cities.

4.4.1 CREATE A MISSION STATEMENT

It is our sense that the members of the TMC share a desire to see their organization achieve a higher level of effectiveness both in existing and new areas of activity. The idea of becoming a "formal" organization was often brought up during our meetings, but we were consistently reminded that the group's casual dynamic is essential to its vitality.

An alternate approach to this question, which leads to a more fundamental examination of the TMC's purpose, is to consider what functions this multi-agency body needs to fulfill and what value each member agency expects from its involvement. The lifecycle framework presented at the beginning of this chapter provides one mechanism for undertaking this examination. With this approach, the TMC can ask itself what organizational structure is appropriate given the functions it want to pursue and the level of resources, institutional commitment, expertise, etc. that are available to the existing *ad hoc* committee.

The team understands that there is a certain appeal to becoming a formal organization—for example, to have greater recognition within the region. This is not exclusive of remaining informal. Indeed, the creation of a mission statement will help the group articulate its reason to exist. In turn, a succinct definition of the group's purpose makes it much easier to raise its visibility in the region.

Items for Action:

- *Clearly articulate the existing and proposed future activities and responsibilities of the Transportation Management Committee through a candid, roundtable dialogue among participating agencies. Address past successes and shortcomings as well as future challenges and opportunities. Discuss the expectations of each participating agency, reasons for agency participation, and reasons for non-participation of less active participants.*
- *Develop a TMC Mission Statement based upon this consensus vision of the goals, objectives, and functions of the TMC.*
- *Self-assess the appropriateness of the current ad-hoc structure in light of the agreed Mission Statement and the corresponding roles and responsibilities of each participant.*

4.4.2 STRENGTHEN THE INVOLVEMENT OF GTC

The project team strongly favors a closer association between the TMC and the MPO, building upon its existing role as a convener of regional dialogues, for the following reasons:

- **Regional Focus:** GTC is a regionally-focused organization that is inherently inter-jurisdictional. Its existing relationships with agencies at the local, regional, state, and federal levels can be leveraged to facilitate TSM&O coordination more naturally than other entities in the region whose focus is more specific in jurisdiction, mode, or function (e.g., traffic, public safety).

- **TSM&O and Regional Planning Coordination:** Involving GTC in Transportation Systems Operations and Management can help the region migrate from tactical operations and project coordination to strategic coordination based on a “lifecycle” approach (discussed in Section 4.1). Examples include: integration of regional *operations* and regional *transportation planning* goals, plans and projects; increasing the availability of real-time operations data for transportation planning purposes; and developing TSM&O performance measures that rigorously demonstrate the linkage between operations investments and measurable benefits.
- **Project Funding:** Because of GTC’s responsibilities related to the expenditure of Federal transportation funds in the region, greater involvement of the GTC will help to build awareness of the existence and effectiveness of operations activities and will allow these types of investments to compete “on par” with more conventional forms of transportation infrastructure investment. Similarly, this relationship will foster greater integration of operations components (e.g., fiber optics, traffic signal upgrades, traffic cameras, transit ITS) into otherwise “conventional” construction projects. The ability to effectively compare and integrate TSM&O and conventional investments is increasingly critical as ITS investment steps “out of the laboratory” and must compete for its share of mainstream funding sources rather than dedicated or earmarked funding streams..
- **Evolving Federal Policy:** Federal policy increasingly requires MPOs to think about TSM&O as a complement to its more traditional planning domain. Increasing the role of GTC in the TMC is a proactive and forward-thinking approach to addressing this emerging area of Federal policy emphasis while meeting other more tangible needs for regional operations and ITS coordination.

By giving GTC a specific role in the committee, such as the chair and secretary responsibilities, the TMC is helping GTC progress along this path. Ultimately, this will mean an increase in the collective institutional knowledge regarding TSM&O and ITS in the region, which can only benefit the TMC and its mission.

Items for Action:

- *Identify specific roles for active participation of GTC on the TMC, such as chair or secretary responsibilities.*
- *Use GTC’s participation in the TMC as an opportunity to explore and define specific ways to strengthen the linkages between TSM&O and the regional transportation planning responsibilities of the MPO. Evaluate the feasibility and desirability to link planning and operations through performance measures, integration of operations with regional transportation planning, and other elements of the “lifecycle” approach to TSM&O.*
- *Identify specific mechanisms to projects to “mainstream” TSM&O considerations in the project programming cycle. This may include, for example, an ITS/operations review of proposed projects by the TMC or a checklist/scoring approach to evaluate how well projects address pre-defined regional TSM&O objectives.*

4.4.3 UPDATE THE STRATEGIC PLAN

Throughout this project, we have been impressed by the longstanding impact and general satisfaction with the IMAGE report more than ten years following its completion. Without questioning the lasting benefit of that plan, updating the plan offers certain benefits, as much

because of the process (interagency dialogue on “the big picture”) as the product (a renewed strategic vision). In light of the MPO’s increasing participation in the group, the development of a new strategic plan would provide an opportunity to cement a bond between the ITS strategic plan and the region’s long range transportation plan.

As noted at the 11/30 workshop, there are certainly new technologies and new strategies that have developed during the intervening years since the IMAGE report, even if the underlying needs of the region have remained essentially unchanged. There are also years and years of collective national and regional experience with the systems that have been deployed and with the establishment of RTOC. The development of a new strategic plan would give stakeholders an opportunity to re-examine what strategies have most benefited the region, what approaches have maximized those benefits, and also the attributes of implementation that have increased success.

Finally, the act of looking forward beyond short-term considerations dovetails well with the creation of the TMC’s vision statement. The region appears ready for a new set of long-range objectives on the horizon, much as RTOC was when the IMAGE Report was originally developed. Furthermore, identifying long-term goals may help illuminate institutional needs that will prompt further evolution of the TMC, must as the IMAGE Report helped the Expressway Committee take its next step at that time.

Items for Action:

- *Develop an updated regional strategic plan for Transportation Systems Management and Operations that: articulates a regional vision and concept of operations; identifies needs, deficiencies and opportunities; and presents a project-based deployment strategy that can be readily incorporated into the regional TIP as funding and coordination opportunities are identified.*

4.4.4 CREATE A REGIONAL CONCEPT OF TRANSPORTATION OPERATIONS (RCTO)

An RCTO is a management tool for developing a vision for a specific operational area and a roadmap of the investments and relationships needed to achieve that vision. According to the Federal Highway Administration’s Office of Operations, the RCTO is *“derived through sustained collaboration among stakeholders. It contains the shared regional objective for transportation operations and what is needed to achieve that objective – specifically physical improvements, relationships and procedures, and resource arrangements. An RCTO is created out of ongoing collaboration primarily between managers responsible for operating the transportation system on a day-to-day basis.”*

There are several aspects of transportation operations in Greater Rochester that could benefit from the creation of a Regional Concept of Transportation Operations, including traveler information, integrated corridor management, freeway incident management, and data collection for example.

Because of the relative importance of arterial management in Greater Rochester, as well as the significant institutional issues related to implementing an integrated corridor management strategy, *arterial management* is an excellent candidate topic for a Regional Concept of Transportation Operations. An RCTO for arterial management could address questions such as: how will the region coordinate traffic management in corridors that cross jurisdictional boundaries? Should control systems (e.g., signals) be coordinated across jurisdictional boundaries? How can the arterial and freeway networks be managed seamlessly to improve overall traffic operations? Are there technological standards that need to be adopted and implemented? What agreements and resources must be in place in order to execute this vision?

Alternatively, during the November 30, 2005 roundtable discussion, stakeholders expressed interest in creating a vision for *data collection and management*. Clearly, this is an area in which efforts are often made on a project-by-project basis and often in an ad-hoc manner, in Rochester and throughout the country. Rochester, as well as most other regions, would benefit greatly from articulating a vision of the data situation in advance of individual initiatives. Questions of interest include: What data are needed or desired by stakeholders? Given that, what can be collected and what steps are needed to transfer or communicate it from one agency to the other? Is there any pre-processing that is needed before it should be shared? Are there important data needs that are not supported by existing or planned deployments and, if so, do the systems that could generate that data have independent appeal?

These are the types of questions that a Regional Concept of Transportation Operations is intended to address. Undertaking such an initiative could be a very exciting direction for the TMC to explore as it positions itself to undertake greater strategic planning functions. As interagency coordination in Rochester and other regions has benefited in the past from a common focal point, development of the RCTO may be a fitting catalyst for launching the transformation of the TMC.

Item for Action:

- *Develop one or more RCTOs for critical areas of regional operations coordination. This effort could be coordinated with the development of an updated strategic plan as a tool for identifying agency responsibilities, system deficiencies, and prioritized investment requirements.*

APPENDIX

Contact Information for Stakeholder and Peer Region Interviewees

Study Region Interviewees

* denotes Steering Committee Member

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continued

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