Best Practices in Rural Transit Assessment

FINAL REPORT

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DISCLAIMER

Forward

[as per the procedural manual: “If a foreword is required, it will be written by the CRP Program Officer.” (p32)]

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SUMMARY

Best Practices in Rural Transit Assessments

Research on transit service assessments has historically been focused on urban transit systems leading to a disparity in the frequency, approach, and requirements of rural transit service assessments across the United States. Rural transit service assessments are necessary to evaluate the performance of a system, identify improvements for the future, and better match service to demand. Rural transit providers generally collect less data and have less technology and smaller administrative staff than their urban counterparts. Due to these constraints, rural transit providers generally conduct fewer service assessments and instead focus on the daily requirements of service provision to meet basic life needs. The purpose of this research is to evaluate the current state of practice of rural transit assessment by surveying State Departments of Transportation (DOTs), rural transit operators, and state transit associations. The survey results are used to identify best practices and case studies for further investigation to identify scalable recommendations and create a guidebook for rural transit assessments. The results of this research, including the companion product – a Rural Transit Assessment Guidebook – provide resources and information that can influence State DOT philosophies and rural transit operators about making effective use of service assessments.

The literature review provides the basis of exploration for existing rural public transportation system assessments. Existing literature from the US Department of Transportation, the National Academies of Science, and other research organizations inform best practices for measuring the performance of public transportation. Specifically, this literature identifies the purpose of assessments, types of metrics, reporting frequency, logistics and data needs, the primary audience, and the post-assessment usability.

This research includes a survey that had 107 responses that represent 36 states, including 30 state DOTs, 74 rural transit operators, and three state transit associations. The survey results address the frequency to which State DOTs and transit providers conduct assessments, the amount of time spent, the use, effectiveness, and greatest benefit of assessments. The survey also informed the selection of agencies to interview for the case study analysis. Case studies offer information on why and how transit assessments are being done, the benefits, how agencies determine if the assessments were effective and what they are used for in the future. The nine case studies are as follows:

- Massachusetts Department of Transportation;
- San Miguel Authority for Regional Transportation;
- Minnesota Department of Transportation;
- Mississippi Department of Transportation;
- North Carolina Department of Transportation;
- Pennsylvania Department of Transportation;
- Hualapai Transit;
- Pigeon Forge Mass Transit; and
- Yuba-Sutter Transit Authority.

Synthesis findings from the literature review, survey, and case studies are summarized below from the approach to the final application of the rural transit assessment, including methodology, benefits, and usability of the assessment as guided by the research questions.

Approach to Assessments

Rural transit providers and State DOTs have different opinions on the definition and use of an assessment. Additionally, there is general confusion over the difference between an assessment and a compliance review. This confusion can be exacerbated throughout the assessment process as State DOTs and transit providers may have conflicting needs and priorities for the assessment. For example, compliance reviews are conducted by State DOTs on a more regular basis and and have shorter timelines. In contrast, transit providers may only conduct assessments when certain triggers are met based on data, such as service improvements, and may require substantial staff time. Assessments are most commonly completed every three years, on a rolling basis, and are completed to fulfill state law requirements or as a condition of funding.

Data and Metrics

Data and metrics utilized for rural transit assessments should be responsive to operating in a rural environment and distinct from standards necessitated for urban areas. Transit providers and State DOTs collect a host of data to conduct assessments, including ridership, hours, miles, financial information, complaints, on-time performance, fuel usage, trip denials, employment information, and demographics. The data is used to evaluate a variety of performance metrics. Transit providers in rural areas may face unique challenges in data collection, which can impose limitations on the scope and determination of appropriate performance measures. The metric used most often by the state DOTs is passengers per revenue hour, whereas the top metric used by transit providers is the cost per passenger.

Benefits of an Assessment

Assessments can benefit both the transit provider and State DOTs by identifying unmet needs and areas for improvement. Assessments can help inform decision-making, increase transparency and communication between provider and DOT, promote Federal compliance, and set a roadmap for stakeholders. Potential changes resulting from the assessment include hiring new staff positions, capital purchases such as software or other technology, fleet changes, marketing/education campaigns, increased collaboration and partnerships, routing/schedule changes, service enhancements, and fare changes. Assessments can be beneficial in improving system efficiency for transit providers and offer insights for State DOTs into how service is operated at a local level.

Application: Utilizing the Outcomes of the Assessment

Rural service assessments can be utilized in the short term to make service improvements, identify needs, and increase communication between transit providers and State DOTs. In the long-term, assessments can be used to prioritize capital investments, identify funding needs, inform planning and service recommendations and enhance regional coordination. State DOTs most frequently cited using assessments to monitor statewide trends, determine funding awards, and ensure FTA compliance. Effectiveness is determined by the plan implementation by providers, achieving performance targets, and performance improvement. Comparatively, transit providers use assessments to monitor performance, adjust where needed, and improve service. Rural service assessments, when completed regularly, are used to assess performance and function as a powerful tool to increase transparency, promote data-driven decisions, meet the transit needs of the community being served, and plan for the future.

CHAPTER 1

Introduction

Background

A rural transit service assessment is an evaluation of the performance of a system in order to establish and evaluate metrics to determine the effectiveness of a system, plan for future improvements, evaluate performance, identify service markets, predict future performance, compare to peer systems, and better match service to demand. While assessments may be called by various names (Comprehensive Operational Analysis, Short Range Transit Plan, Transit Development Plan, Comprehensive Regional Transit Plan, Strategic Plan, and the list goes on), the content and purpose of each are similar. Assessments include evaluating metrics such as service availability, productivity, service delivery, safety and security, maintenance, financial performance, fleet and facilities, technology, community impact, and administration.

Transit services in rural America come in many different shapes and forms. In many cases, they have grown out of former human and social service transportation routes and demand response services. Rural transit providers generally collect less data on passenger trips and the amount of service provided, have less technology, and have smaller administrative staffs than their urban counterparts. Due to these constraints, rural transit providers generally conduct fewer service assessments and are more focused on the day-to-day requirements of providing services to meet basic life needs. However, there is a significant disparity in the frequency and requirement of rural transit service assessments, which varies by state. Some states, for example, have a rolling requirement of individual assessments for all rural transit providers at least every five years. Others will conduct assessments for all providers all at once in one year, then wait five years and do it again. At the opposite end of the spectrum, some states have no structured requirement for the frequency of rural transit assessment. Also varying widely across states is whether or not some level of funding or support is provided to conduct assessments, the intent of the assessment, how the results are used, and the effectiveness of the assessment program.

Federal Transit Administration (FTA) and State funds obligate the State Transit Offices to have a robust administrative structure to address and ensure compliance with the various laws and regulations that govern these dollars. Even though federal funds are provided through the grant to address these obligations, the state administering agencies are also subject to fiscal policies imposed by the various state governments. These present many challenges to the state transit administering agencies. In 2016, NCHRP 20-65 Task 66 research explored how the FTA administrative funds are being used among the states, their role in the administration of the grant program, and the discovery of common and creative uses for this money. Research findings indicated that subrecipients struggle to meet compliance requirements, which creates additional administrative work for State Departments of Transportation (DOTs) as they provide assistance to subrecipients.

Furthermore, the research indicated that limited funding and increased monitoring requirements are challenging the already stretched state transit office staff. An increasingly common approach for project management at the state level is for State DOTs to standardize the transit service assessment and plans for subrecipients to ensure that the state and the local transit system have the information and guidance needed to remain compliant and achieve goals for success. This state-funded effort at rural service assessment creates a systematic approach to assist in the administration and oversight of subrecipients. Furthermore, a

standardized format for service assessments and plans expedites the state transit office's monitoring of subrecipient performance and compliance.

The state-directed assessment process is helpful for many rural transit operators because they otherwise would not have the financial means nor the staff time to conduct a thorough assessment. For others, the state-directed assessment forces them to dedicate time to participate in a planning process that does not prove to have effective results to guide them toward improved services. If the state-sponsored assessment occurred on the state's schedule, for example, the process might not be appropriately timed to capture the financial or service changes that the system is facing at a local level (e.g., major employers moving into the area and bringing an increase in jobs and traffic congestion). The results of this research will provide resources and information that can influence State DOT philosophies and rural transit operators about how to make effective use of service assessments. The cycle of working within their current environment limits State DOT staff opportunities for education and awareness about practices that other State DOTs have discovered and successfully implemented. Each State works within a unique environment with individual circumstances that impact how the DOT and its subrecipients perform service assessments. State DOT managers are constantly seeking to maintain appropriate performance monitoring and assessment practices for rural transit systems. These monitoring and assessment practices identify potential issues before they become real problems for local transit systems. Likewise, they identify best practices that can be shared with other providers in the state. In conducting the research, the following questions were sought to be explored and answered:

1. What is the states' role in rural transit assessments?
2. How frequent are assessments done, and how is it determined when to do an assessment?
3. What type of data is collected for the assessment, and what metrics are examined?
4. How do you define and measure a 'successful' assessment?
5. What are the benefits of conducting an assessment?
6. What are the assessment results used for in the present and future?

Research Purpose and Overview

The purpose of this research is to evaluate the current state of practice of rural transit assessments by surveying State DOTs, rural transit operators, and state transit associations. The survey results are used to identify best practices and case studies for further investigation to identify scalable recommendations and create a guidebook for rural transit assessments.

Organization of the Report

This report documents the research team's work and presents findings and recommendations. The approach taken to this research is summarized in Chapter 2. Findings from the review of literature are presented in Chapter 3. Analysis of the survey results is discussed in Chapter 4. Chapter 5 presents the results of the Case Studies. Chapter 6 summarizes key findings. The companion product of Task 81 is a guidebook for state DOTs and rural public transportation providers to conduct rural transit assessments. A link to the "Rural Transit Assessment Guidebook" is provided in Appendix A.

CHAPTER 2

Research Approach

The following steps were taken to conduct this research and is organized into the following sections:

- Literature Review
- State DOT and Rural Transit Provider Survey
- Case Studies

Literature Review

Performance evaluation is increasingly becoming a routine element in the policy-making and investment decision process. At its most basic, public transportation providers receiving federal funding must report information to the National Transit Database. However, beyond this federal requirement is an increasing focus from transit providers, State Departments of Transportation (DOTs), and other funding partners to use data to improve service and guide the investment of scarce resources.

Performance assessment for rural transit providers presents a unique set of challenges. The review of past literature uncovered a shortage of research focusing specifically on rural transit performance measurement, likely because public transportation has historically been categorized as an "urban" service. However, rural public transportation is an increasingly important service to many residents living outside of urbanized areas, particularly for older residents who may be unable to drive, allowing seniors to age in place. As public transportation becomes a more common rural issue, understanding how better to use data to assess its performance has emerged as a pressing need.

Existing literature provides many lessons on best practices when measuring the performance of public transportation, even if the focus is not specific to rural areas. This review of the literature will explore the following topics regarding transit service performance assessment:

- Purpose
- Types of Metrics
- Reporting Frequency
- Logistics/Data Needs
- Audience/Perspective
- Post-Assessment

The literature review will provide the basis for further exploration of existing and potential rural public transportation system assessment. The literature that was reviewed included reports and research synthesis documents from multiple sources, including the US Department of Transportation, the National Academies of Science, and other research organizations.

State DOT and Rural Transit Provider Survey

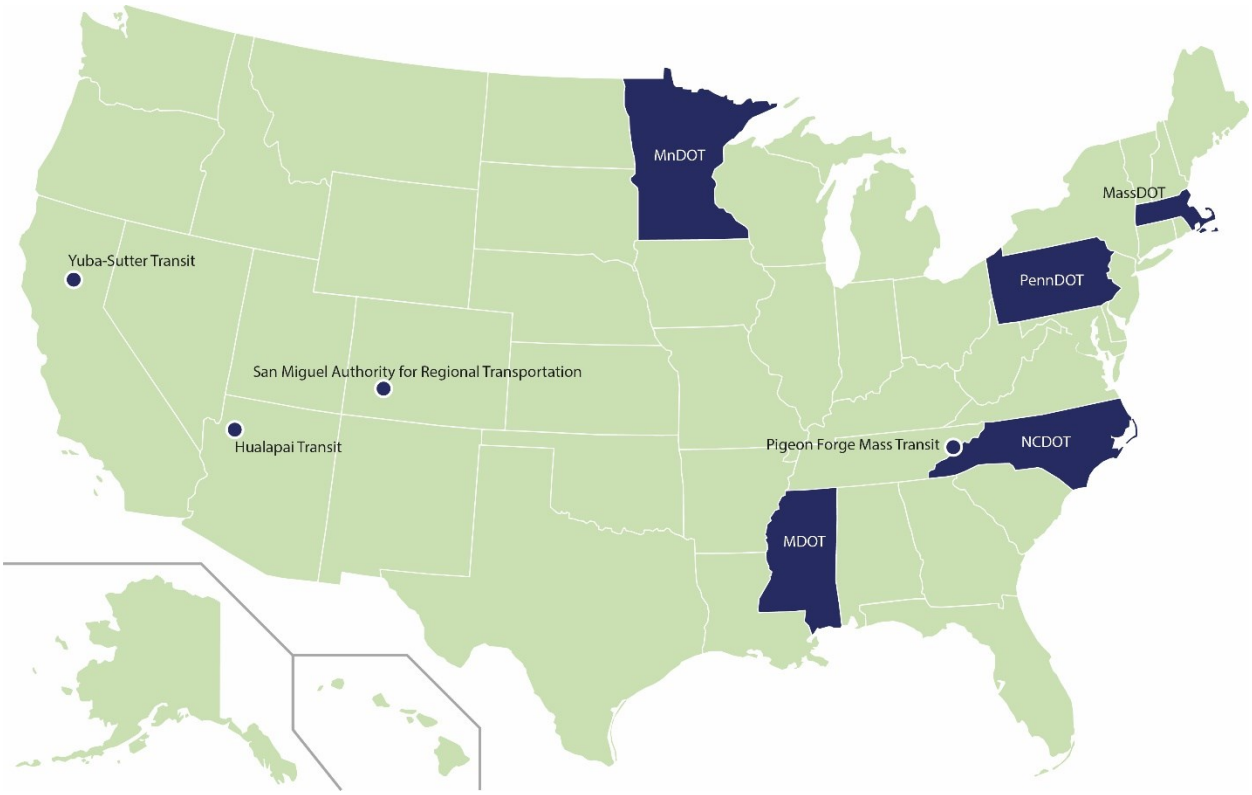
To learn more about the current practices of rural transit assessment at the state and local level, a survey was created and distributed to state DOT transit contacts, RTAP representatives, state and regional transit associations, and national transportation organizations such as AASHTO and RTAP. The survey responses

provided information from 30 state DOTs regarding how they conduct rural transit assessments. Additionally, the survey was completed by 74 transit agencies from 16 states and three state/regional transit associations. The survey was also used to identify best practices and solicit potential case studies.

Case Studies

Case studies were identified from the survey and further explored best practices for inclusion in the guidebook. Figure 1 maps the nine-state DOTs/transit providers selected as case studies and for follow-up interviews.

Figure 1. Map of Case Studies



CHAPTER 3

Literature Review

Purpose

Defining the purpose of a performance evaluation program, regardless of whether it is an urban or rural context, is a fundamental element to the effectiveness of the effort.

As was noted in *TCRP Report 88: A Guidebook for Developing a Transit Performance Measurement System* (Kittelson and Associates, Inc., 2003) (hereafter referred to as *TCRP Report 88)*:

Transit agencies use performance measures for three main reasons:

1. Because they are required to do so;
2. Because it is useful to the agency to do so; and
3. Because others outside the agency need to know what is going on.

The Federal Transit Administration (FTA) requires regular annual statistics from all public transportation operators receiving federal funding. State DOTs, as the direct recipients of federal §5311 (rural) funding, are responsible for reporting annual operating, financial, and other statistics to the FTA through its National Transit Database (NTD) reports. State DOTs rely on the rural transit operators to report the required information to them and, in turn, report it to FTA.

In addition to what is required by federal regulation, *TCRP Synthesis 139: Transit Service Evaluation Standards* (Dan Boyle & Associates, Inc., 2019) (hereafter referred to as *TCRP Synthesis 139*) found that transit agencies should develop metrics that relate to the agency's strategic plan or core mission. To that end, the report notes that typical performance metrics in public transportation focus on the effectiveness and efficiency of the system – measures such as trips per revenue hour or on-time performance. However, the last two decades have seen an increase in the focus on measures related to customer service, the customer experience, and broader community benefits stemming from transit.

Metric Types

An essential aspect of evaluating the performance of a public transportation system is establishing appropriate metrics to define effectiveness. Current practice and research define numerous metrics that agencies can adopt, though not all are appropriate to those operating in rural environments. Below is an overview of these metrics.

Federal Reporting Requirements

The FTA has multiple reporting requirements for states receiving federal §5311 funding. While these reporting requirements are less extensive than those for entities receiving §5307 funding, they create a general performance measurement baseline for rural transit systems receiving federal funding. The *NTD Rural Module Reporting Manual* (Federal Transit Administration, 2013) lists the annual reporting requirements described in the NTD reporting forms (see Table 1).

Starting in 2019, the federal government also required small and rural transit operators to participate in group Transit Asset Management (TAM) Plans developed by the State DOTs that established baseline conditions and performance targets on four asset categories:

- Equipment: Construction, service vehicle, maintenance
- Rolling Stock: Buses, vans, railcars, ferries, other passenger vehicles
- Facilities: Administrative and maintenance, passenger and parking
- Infrastructure: Rail fixed guideway, signal systems, structures, power

As noted in the *FTA Group TAM Plan Sponsor Workbook* (Federal Transit Administration, 2018), ". . . most Tier II [small and rural] agencies will have relatively limited or no infrastructure assets, and therefore infrastructure requirements and performance measure will not apply."

TAM Plans must be updated every four years, with annual performance targets related to asset management updated annually. The FTA notes that subrecipients of §5311 report TAM information into the NTD annually in the same way as other required data, typically reported via the State DOT.

Finally, FTA released a Public Transportation Agency Safety Plan rule that took effect in 2020. This rule deals with processes, strategies, and methods to ensure the traveling public's safety while using transit services. This rule exempts agencies that receive only §5311 and/or §5310 (elderly and disabled) funding.

The NTD RU-20 form defines the measures across operating, funding, and asset categories that must be reported annually by states on behalf of §5311 subrecipients. These are shown in Table 1.

Table 1. NTD Rural Measures

NTD Operations Measures	NTD Funding Measures	NTD Asset Measures
Modes operated	Total Annual Expenses	Number and Types of Vehicles
Annual Vehicle Revenue Miles	Fare Revenues	Number of Maintenance Facilities
Annual Vehicle Revenue Hours	Contract Revenues	Number of Volunteer Drivers and Personal Vehicles in Service
Regular Unlinked Passenger Trips	Local Funds	Transit Asset Conditions
Sponsored Unlinked Passenger Trips	State Funds	
Reportable Incidents	Federal Assistance	
Fatalities		
Injuries		

Potential Measures

NTD does not, however, provide performance targets, which is a central concern of this research. The literature indicates that metrics for evaluating service in rural areas necessitate different standards compared to urban areas. As noted in *Research Results Digest 376: Data Needs for Assessing Rural Transit Needs, Benefits, and Levels of Service* (KFH Group, 2012) (hereafter referred to as *Research Results Digest 376*), ". . . general standards for what can be considered good or poor performance in urban communities do not

readily translate. The nature of the rural operating environment means that, in general, productivity will likely be lower and trip lengths will be longer."

Research Results Digest 376 goes on to say, "Development of performance standards is more appropriate at the state level [as opposed to federal benchmarks], where the actual operating environments, economic and regulatory conditions, and state-level program goals and objectives can be taken into account. The population density and terrain of rural Maryland is quite different from those of rural Montana."

Research Results Digest 376 recommends the following measures for establishing performance targets for rural systems, which can be calculated using rural NTD data:

- Passenger trips per vehicle revenue hour
- Operating cost per vehicle revenue hour
- Operating cost per Vehicle revenue mile
- Operating cost per passenger trip
- Farebox recovery ratio
- Safety incidents per 100,000 vehicle miles

The report notes that transit providers operating in rural areas face unique challenges in data collection that impose limitations on the scope of performance measures that rural systems can use. Based on these limitations, examples of data elements that are assigned a priority of "low" are:

- Square miles of the service area
- Route miles
- Demand-response trips that were on-time
- Demand-response trip requests that could not be accommodated (including trip denials as well as missed trips)
- Passenger trips by trip purpose
- Passenger trips by demographic group

The reasons cited in *Research Results Digest 376* (KFH Group, 2012) for assigning a priority of "low" to the above items included lack of technical capabilities and issues relating to service area size, as explored below in the section on Data Needs and Logistics.

There are over 400 additional potential measures for states, counties, regions, or municipalities to choose from in rural areas laid out in *TCRP Report 88* (Kittelson and Associates, Inc, 2003*)*. These were well summarized in the Mineta Institute's report *Transit Performance Measures in California* (Caroline Rodier & Isaac, 2016), in addition to measures from various California Metropolitan Planning Organizations (MPOs). The Mineta Institute report breaks down those performance measures and what they assess into the following categories:

1. **Service Availability**: Ease with which passengers can use transit services.
2. **Service Delivery**: Quality of the service delivery.
3. **Safety and Security**: Likelihood of a crash or crime occurring.
4. **Community Impact**: Impacts on the community members at large.
5. **Maintenance**: Maintenance activities and reliability of the fleet and facilities.
6. **Financial Performance**: Efficient use of resources to meet travel demand.
7. **Agency Administration**: Internal operations of the agency.

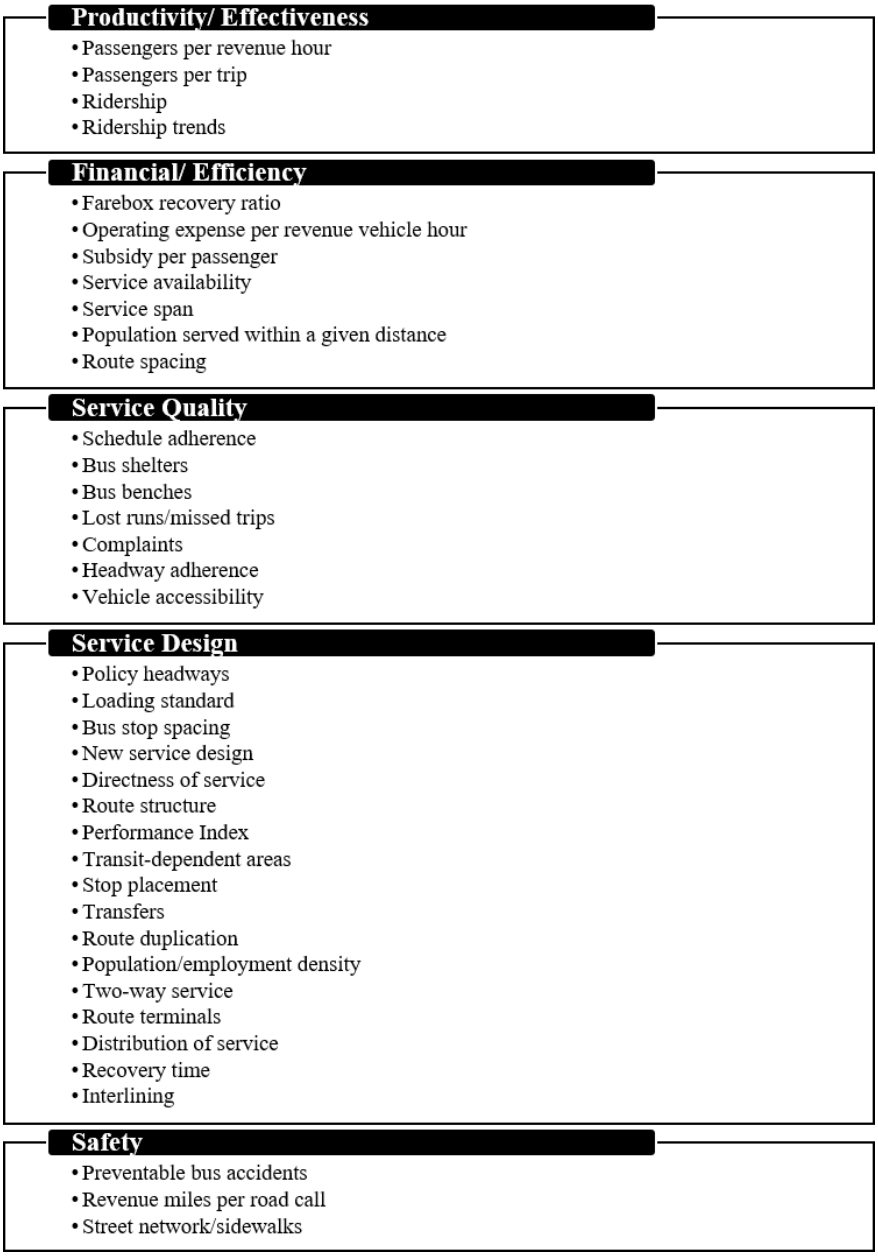
Figure 2. TCRP Report 88 Performance Measure Categories by Goals

Service Availability	Service Monitoring and Delivery	Safety and Security	Community Impact	Maintenance
– Service Coverage – Frequency – Hours of Service – Stop Accessibility	– Missed trips – Complaint rate – On-time performance – Customer response time – Reliability factor – Number of fare media sales outlets – Customer satisfaction – Headway regularity – Passenger environment – Customer loyalty	– Accident rate – Incidents of vandalism – Crime rate – Number of vehicles with specified safety devices – Passenger safety – Police officers per transit vehicle	– Personal economic impact – Demographics – Communications – Mobility – Service equity – Community economic impact – Environmental impact – Visual impact	– Road calls – Average spare ratio vs. scheduled spare ratio – Fleet cleaning – Maintenance work orders – Fleet age – Maintenance effectiveness – Fleet maintenance performance

Travel Time or Speed	Capacity	Economic/Financial	Paratransit	Comfort
– Transit/auto travel time – Route directness – Travel and system speed – Transfer time – Headway regularity	– Vehicle capacity – Load factor – Passenger capacity	– Ridership – Productivity – Cost-effectiveness – Cost-efficiency – Energy consumption – Risk management	– Denials – Vehicle accessibility – Late cancellations – No-shows – Phone hold times – ADA compliance	– Passenger environment – Customer satisfaction – Passenger loads – Stop amenities – Equipment reliability – Vehicle cleanliness

More recently, *TCRP Synthesis 139* surveyed 51 North American transit operators, 12 of which were considered "small" agencies (operating fewer than 75 vehicles in peak service). The survey asked questions about performance measures and assessment programs. Examples of typical measures the surveyed agencies used were as follows:

Figure 3. TCRP Synthesis 139 Performance Measures Used



Report Frequency

At a minimum, rural transit operators are required to report agency information to the NTD by way of the State DOT on an annual basis. These reports are due at the conclusion of the state's fiscal year.

The literature does not have a recommended frequency of reporting. The *TCRP Report 88* indicates the following regarding the frequency of reporting:

Throughout the literature review and the transit agency interviews, one common theme among virtually all transit properties was regularly scheduled performance reporting. Some agencies conducted monthly reporting on their performance standards, and others preferred quarterly, semi-annual, or annual reporting. **The frequency of performance reporting will depend upon many factors, including system size, data collection capabilities, and staff resources.**

Data Needs and Logistics

The literature notes that performance reporting is only as valuable as the quality of the data supporting it. *TCRP Report 88* states that "Because significant errors in reported results can lead to incorrect conclusions about system performance, wasted effort by the agency correcting problems that may not exist, and reduced user confidence in the entire performance-measurement program, it is important to check the results before they are reported and distributed."

Furthermore, *TCRP Synthesis 139* notes that agencies should keep metrics simple, broad, and few in number. TCRP Synthesis 139 notes, "Data availability is not sufficient to guarantee that its analysis will bring value. Selecting metrics that can be measured without spending excessive staff time in collecting, cleaning, and analyzing data is a key consideration."

Furthermore, transit agency respondents in *TCRP Synthesis 139* noted the following with regard to data needs and logistics:

- Data should be analyzed in a consistent and transparent manner;
- Service evaluation can be a complex and time-consuming process;
- Transit agency staff have a general desire for more automated data collection and analysis;
- Investment in new technologies to collect and evaluate data and attention to data collection protocols were common strategies to overcome challenges in performance assessment.

In terms of technical capabilities, the authors of *Research Results Digest 376* noted that technical capabilities related to geospatial analysis are a barrier in rural areas. Many rural transit providers must serve long-distance trips to far-flung metropolitan areas for life-critical trips, such as medical appointments or grocery shopping. Additionally, many rural transit providers operate in countywide or multi-county jurisdictions, including impassable geographic natural barriers such as lakes, mountains, rivers, or national forests. Both of these elements will distort measures of transit operations normalized to service area size, often requiring nuanced geospatial analysis to address. This level of analysis is often outside the resources of rural transit agencies.

Audience/Perspective

As the goals of public transportation have expanded, the audiences for evaluations and assessments of the transit system have also diversified. *TCRP Report 88* identifies multiple perspectives from which service can be evaluated. These include the customer perspective, community perspective, agency perspective, and vehicle/driver perspective.

TCRP Synthesis 139 touches on the importance of understanding the audience in discussing key challenges facing performance evaluation systems. In the survey conducted as a part of the project, the

authors note that agencies identified a lack of "buy-in" to performance evaluation by board members, other stakeholders, and the public as challenges in using performance metrics to drive agency changes.

Customer

TCRP Report 88 recognizes two areas of greatest concern to passengers: service availability and the comfort and convenience of the service when it is available. The authors note, "If service is available for a given trip, a customer may choose transit if its comfort and convenience are competitive with other available modes."

TCRP Synthesis 139 notes the emerging trend among transit agencies of service evaluation focused on the passenger experience. These agencies use metrics such as wait time instead of more traditional transit operations metrics, such as scheduled versus actual arrival times.

Community

TCRP Report 88 writes that public transportation can serve the community, region, or state as a whole, and not just the transit riders. These benefits can take the form of:

Economic Development: Public transportation in rural areas can assist those unable to drive to and from work, benefitting employers by opening up the pool of potential employees.
Human Service Transportation: The elderly and people with disabilities often rely on informal networks for transportation, such as family members, friends, or neighbors. Providing transportation service for these customers also benefits those on whom they otherwise would rely for travel. It also reduces the number of missed medical appointments and other trips by establishing more reliable transportation, which benefits medical providers and insurers.

Communities may also be interested in performance assessments due to the funding relationship with the service provider. Often, states, counties, municipalities, or special districts contribute a portion of the necessary operating funding for rural transportation systems. They have a vested interest in ensuring that the funding devoted to the service is being used efficiently and effectively.

Agency

The *TCRP Report 88* notes that agencies will have their own perspective and needs regarding performance reporting. Most transportation agencies are required to balance annual budgets and thus have a powerful incentive to ensure efficient operations and effective use of funding. There may be other measures of interest for agencies related to Human Resources, such as Health Insurance Premium Utilization Rate, preventable accidents, Worker's Compensation claims, pension fund stability, or other organizational measures related to the agency's bottom line.

TCRP synthesis 139 found that two critical elements to a system's performance evaluation success were: 1) support from agency leadership and the board or governing body, and 2) ongoing communication and education within the organization and with stakeholders, decision-makers, and the public. This underscores the importance of the agency as a key audience for such an evaluation program.

Vehicle/Driver

Transit operations, particularly in community centers, can have a direct impact on traffic flow. This can improve general traffic flow through the use of transit to ease capacity constraints on key corridors or worsen traffic congestion through bus operations blocking personal vehicle flow. *TCRP Report 88* notes

that "Increasing traffic congestion can result in longer travel times, less reliable service, and potentially increased costs to agencies. Similarly, actions taken to make transit service faster and more reliable, such as bus signal priority measures, may impact the quality of service of automobile drivers and passengers."

Post-Assessment

TCRP Report 88 notes multiple potential uses of performance evaluation programs. These include:

- Evaluate overall organizational performance
- Evaluate departmental performance
- Evaluate individual performances (e.g., individual driver performance)
- Evaluate past performance, such as long-running trends or the impacts of policy changes
- Identify agency needs
- Identify passenger benefits through information such as customer complaints
- Identify community benefits, such as employment transportation for low-income workers
- Compare transit performance with similar transit systems
- Predict future performance, such as declining on-time performance leading to declining ridership

One of the challenges noted in the literature is taking action based on performance metrics. *TCRP Synthesis 139* wrote that one of the top-cited challenges was "The process of achieving buy-in and consensus around evaluation standards and what to do if these are not met." Nonetheless, the report found that the most common effective action resulting from a performance evaluation program was adjusting service levels.

Authors found two issues commonly cited for not being able to more effectively use performance evaluations to determine service levels: the inability to expand service was warranted due to budget limitations and the inconsistent application of standards across transit service. While the first issue is often beyond the ability of transit operators to change, a top recommendation from that report is the establishment of transparent, consistent standards and resulting actions in performance evaluation programs.

The report *Best Practices in Evaluating Transit Performance* (Florida Department of Transportation, 2014) produced by the Florida Department of Transportation references the Federal Highway Administration's (FHWA) Performance-Based Planning and Programming Guidebook as a way to link performance and policy and investment decisions. The process defined by FHWA is divided into four sections, with each step of the process connected to the next to ensure that goals translate into specific measures. Both public involvement and data are critical throughout the process, as described by the Florida Department of Transportation:

1. **Strategic Direction**: Used to shape decisions about policies and investments. Based upon a vision for the future, this section includes utilizing goals and objectives to shape priorities and performance measures to support objectives and compare strategies over time.
2. **Analysis**: Driven by data on performance, along with public involvement and policy considerations. Agencies conduct analysis in order to develop investment and policy priorities. The analysis includes identifying trends, targets, and strategies and comparing alternatives.
3. **Programming**: Decisions are made based on their ability to support the attainment of performance targets or contribute to desired trends and account for a range of factors.
4. **Implementation and Evaluation**: Performance measures are selected for tracking goals and objectives and for service performance monitoring, evaluation, and reporting. These activities occur throughout implementation on an ongoing basis.

Public transportation agencies and State Departments of Transportation can use this as a framework for assessing performance and taking action based on the information produced by the evaluation system.

CHAPTER 4

State DOT and Operator Survey

Purpose

The team surveyed State DOTs, rural transit operators, and state/regional transit associations in order to understand the variation of current assessments nationwide and identify interviewees with best practices for case studies. The results of the survey are presented below.

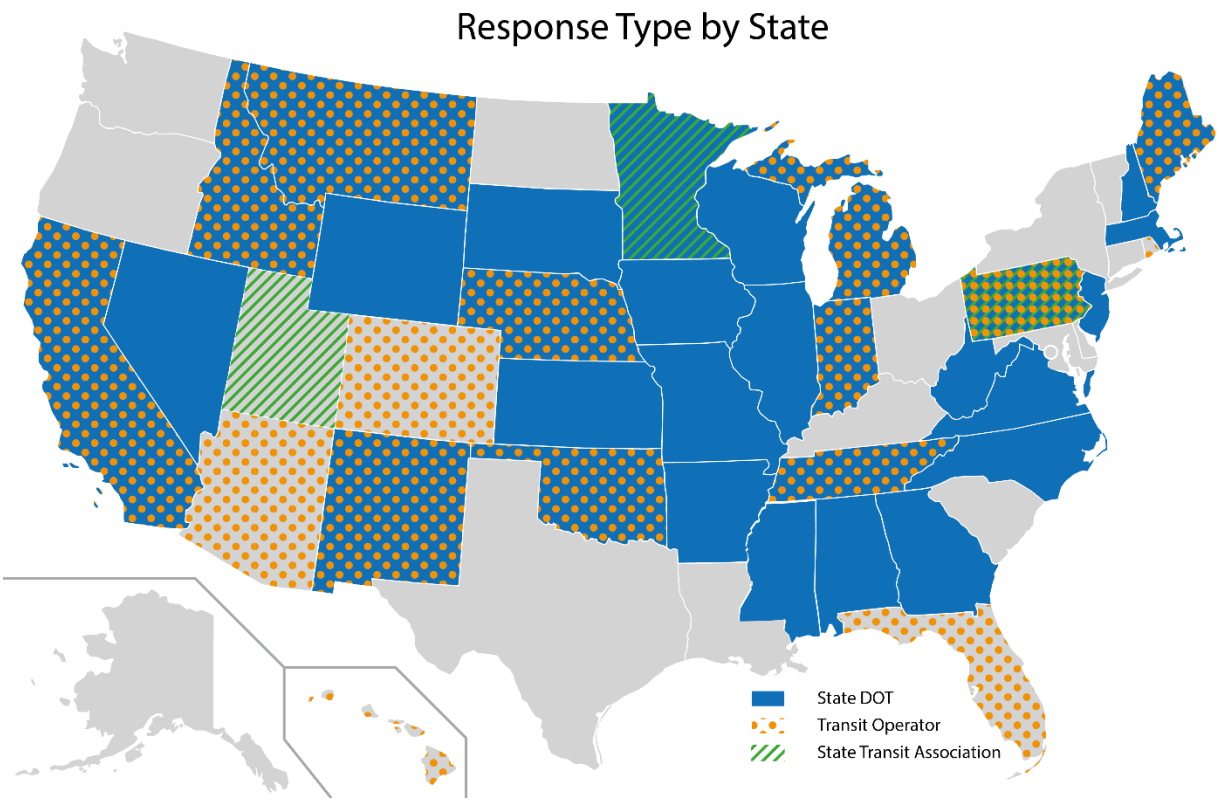
Methodology

An online survey was set up, and links to the survey were shared with all state DOTs, state RTAP associations, state and regional transit associations, and AASHTOs Multi-State Transit Technical Assistance Program members, along with a fillable PDF and instructions on how to return the survey for those who may be unable to access the online survey due to firewall issues. Organizations shared the survey with the rural transit operators in their state, and RTAP published it in their bi-weekly newsletter. The surveys sent out are in Appendix B. Follow-up emails, and telephone calls were then done with State DOTs, for which no response was received within two weeks. Additionally, the team reached out to State DOTs, where responses conflicted with rural transit providers' responses to seek clarification. Several State DOTs responded to the survey in a manner that indicated they were referring to compliance reviews in their responses and not service assessments. Follow-up calls were made to these DOTs to confirm responses.

Result Summary

Responses were received from 107 audiences that represented 36 states, as shown in Figure 4. This included 30 state DOTs, 74 rural transit operators, and three state transit associations. State DOTs had a higher instance (60 percent) of conducting rural transit assessments regularly than transit providers (38 percent). Amongst transit providers, 74 percent have conducted an assessment but do not perform them regularly and only when required, such as when directed to by the State DOT or specific triggers are met. Twenty percent of State DOTs utilize triggers to determine when to do an assessment. Overall, one-third of State DOTs have not conducted assessments (either on a rolling basis or when triggered), and 16 percent of transit providers have. It should be noted that there was inconsistency amongst state DOTs and transit providers in the same state regarding conducting assessments. Twelve transit providers in seven states reported never having conducted an assessment, but three of these state DOTs reported having conducted assessments.

Figure 4. Map of Response Type by State



Frequency of Assessments

The frequency cited most often by State DOTs and transit providers for conducting assessments was every one to three years, followed by every three to five years. Of the State DOTs that do assessments, 94 percent do so for all rural providers in the state. One-third of states that conduct assessments do so all at once, and the other two-thirds use a rolling basis. Those using a rolling basis, on average, conduct one-third of the assessments each year.

Table 2. Frequency of Regular Transit Assessments

Frequency	State DOT	Transit Provider
1 to 3 years	13	14
3 to 5 years	3	8
5 to 7 years	2	2
7 to 10 years	0	1
10+ years	0	0

Both transit providers and State DOTs were asked if triggers determine when to conduct an assessment. Transit providers had a higher instance than State DOTs of using triggers to determine when to do an

assessment. Common triggers for doing an assessment include changes in ridership or productivity, changes in funding, increases in service denials, on-time performance issues, crowding, customer feedback, and changes in land use. Service changes that might trigger an assessment are when ridership increases or decreases by a certain amount, the service area changes, or community/customer requests for service. Changes in ridership were the most common with 11 of 14 transit providers. The most common trigger was ridership, reported by 11 of the 14 transit providers that provided feedback on triggers used.

States Roles in Conducting Assessments

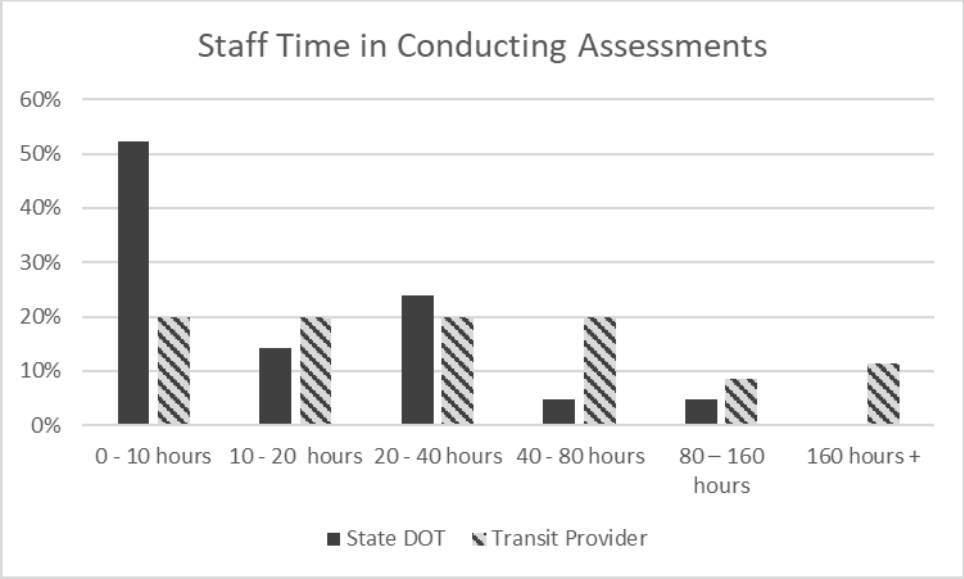
State DOTs largely reported that assessments are either done in-house by the DOT or consultants are used. Amongst transit providers, they reported that most assessments are done in-house. Of the eleven states where both the DOT and a transit provider responded to the survey, there were discrepancies between who the state DOT reported conducting the assessment and whom the transit provider conducted in eight states. This indicates that either the transit provider and the state have differing opinions on what an assessment is or that the DOT does not understand what is being done locally.

Table 3. Comparison of Who Conducts Assessments

Who conducts the assessment	State DOT	Transit Provider
Transit Provider	13%	55%
State DOT	42%	4%
MPO/Regional Planning Agency	4%	13%
Consultant	42%	28%

States reported having multiple roles in conducting assessments. Project oversight/management was the greatest role (57 percent), followed by FTA compliance (40 percent). Seventeen percent reported having no role in conducting the assessment. The time commitment varied between the transit provider and State DOT, with state DOTs spending less time in general than transit providers (Figure 5). When assessments are done in-house (by either the State DOT or the transit provider), less staff time is spent than when outsourced.

Figure 5. Staff Time Spent Conducting Assessments



Forty-one percent of transit providers and 46 percent of State DOTs reported using technical aides, templates, or briefs when conducting the assessments. Technical assistance from consultants, planning agencies, and the state DOT is used by 59 percent of transit providers and 70 percent of State DOTS. Overwhelmingly consultants represented the most used technical assistance used.

Funding and Costs for Assessments

Seventy-three percent of state DOTs reported that funding is available to conduct the assessments, but only 24 percent of transit providers stated funding is available. Transit providers (95 percent) reported that the greatest amount came through the MPO when receiving funding, whereas State DOTs reported federal funding as the greatest. Eight transit providers reported the cost to conduct the assessments. It ranged from $60,000 to $350,000, with an average of $123,000. The State DOTs mostly reported they either do not track this cost specifically, it is part of an overall administration budget, varies based on the provider's size, or it is determined based on an RFP process.

Table 4. Funding Sources to Conduct Assessments

Funding Source	State DOT	Transit Provider
State DOT	69%	74%
MPO	25%	95%
Local Contribution	25%	26%
Federal Formula	92%	66%
Grants	25%	40%

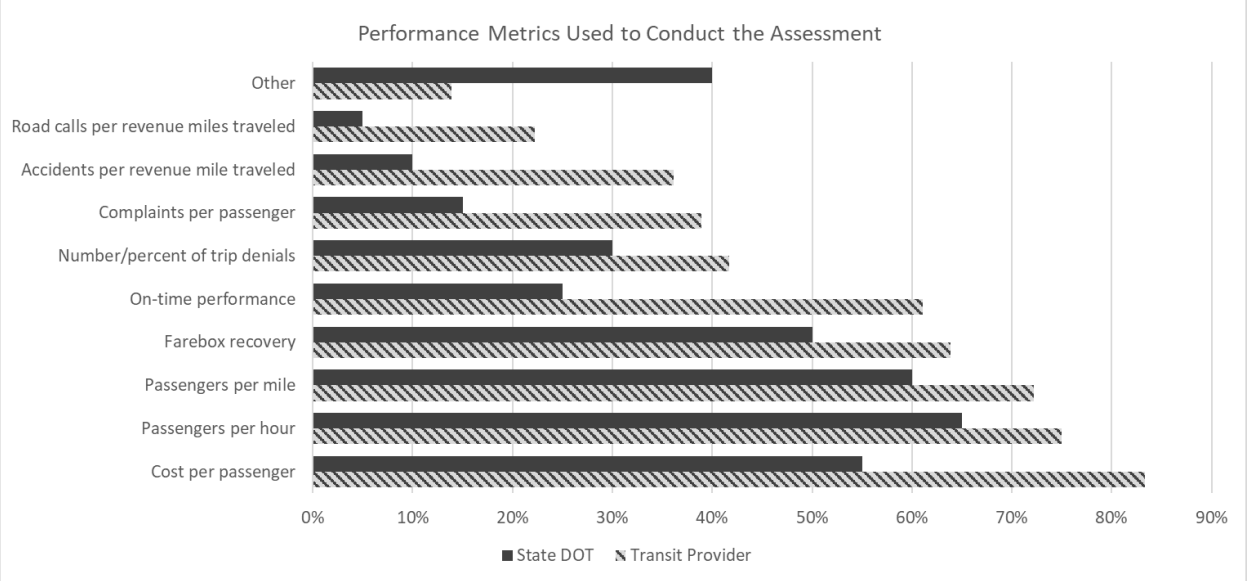
Data/Content/Metrics to Assessments

Transit providers and state DOTs collect a host of data to conduct assessments, including ridership, hours, miles, financial information, complaints, on-time performance, fuel usage, trip denials, employment information, and demographics. The data comes from a variety of sources such as capital improvement

plans, operational plans, prior documents, various in-house reports, grant material, maps, marketing material, drivers/dispatcher assessment forms, passenger surveys/questioners, policy and procedure documents, agency websites, accounting records, various technologies, the census, and other federal sources.

The data is used to evaluate a variety of performance metrics. The metric used most often by the state DOTs is passengers per revenue hour, whereas the top metric used by transit providers is the cost per passenger (Figure 6). "Other" metrics assessed include costs per revenue hour or mile, state of good repair and maintenance logs, changes in unlinked passenger trips or miles (total and revenue), and developments served (residential, shipping centers, entertainment locations, educational institutions, and healthcare facilities).

Figure 6. Performance Metrics Used to Conduct Assessment



Use of Service Assessments by State DOTs and Transit Agencies

The state DOTs use the results to monitor statewide trends, determine funding awards, prioritize capital investments, ensure FTA compliance, and to work with the providers to implement plans. At the local level, the state DOTs said they are used for local decision making such as policy changes, improving service, and ensuring they comply with FTA regulations. Transit providers reported (74 percent of those who left a comment) that they are primarily used to monitor performance, adjust where needed, and improve service. For both transit providers and state DOTs, potential changes as a result of the assessment results include hiring new staff positions, capital purchases such as software or other technology, fleet changes, marketing/education campaigns, increased collaboration and partnerships, routing/schedule changes, service enhancements, and fare changes.

The state DOT's listed benefits to conducting assessments as identifying unmet needs, gaining insight into the transit operator, determining funding allocation, assessing FTA compliance, and justifying service changes and associated funding. Transit providers listed benefits as identifying needed improvements, garnering public feedback, expanding service, discovering efficiencies and adjusting service, educating the public on the service, and monitoring service.

Defining an Effective Assessment

The state DOTs stated that the effectiveness of the assessments is determined by the successful outcome of implementing the plan, achievement of performance targets, improvements in performance measures, lack of repetitive findings, and ridership increases. The providers stated that the effectiveness of the assessments is determined by improvements in performance measures (service utilization, productivity, and efficiency), ridership increases, achievement of targets/milestones, increased customer satisfaction, decreases in trip denials, the number of recommendations implemented, improved on-time performance, and financial efficiency. Several providers stated they do not look at the effectiveness of the assessment.

Key Findings

In the survey process, several themes evolved, which led to key findings. The following key findings were identified through the survey process were as follows:

- State DOTs conduct assessments on a more regular basis than transit providers, whereas transit providers are more likely to conduct an assessment when specific triggers are met based on data.
- The discrepancies between the state DOTs and transit providers on who conducts the assessments indicate that transit providers and the state DOTs have differing opinions on what an assessment is and that the DOT does not understand what is being done locally.
- There is confusion between what constitutes a service assessment and an FTA compliance review, particularity at the state level.
- When assessments are done in-house (by either the State DOT or the transit provider), less staff time is spent than when outsourced.
- Over half of the respondents do not use any technical assistant aides, templates, or briefs to conduct the assessments. Technical assistance (consultant or planning agency) is used by 70 percent of the state DOTs and 59 percent of transit operators.
- State DOTs reported that funding was available, but transit providers largely reported it was not. It might be that the philosophy of the DOT and the transit provider's experience that influences this answer. Experienced transit providers, for example, might know to ask the DOT for funding, and newer managers might not know to ask – especially if the DOT does not offer it.
- The cost to conduct an assessment varied greatly.
- The type of data used and where it comes from varies based on the transit provider's technology and policies and practices.
- Results of the assessment are used to not just change service but to identify the need for new staffing positions, technology, marketing, and fleet changes.
- State DOTs see the greatest benefits of conducting an assessment as identifying unmet needs and gaining insight into how service is operated. Transit providers see the greatest benefit is that assessments identify needed improvements and ways to improve efficiency.

CHAPTER 5

Case Studies

This study includes five case studies of state DOT's and four transit agencies. Interviews for the case studies were chosen based on the survey's findings. These case studies offer more in-depth information on why and how transit assessments are being done, the benefits, how agencies determine if the assessments were effective and what they are used for in the future. Key findings include:

- Assessments are required per state law or a condition of funding in many cases, where they are not technical assistance and or the DOT typically provides funding to conduct one. However, it is the responsibility of the transit provider to request it.
- An assessment is determined successful if the recommendations are implemented.
- Both transit agencies and state DOTs are very interested in performance management
- There is disagreement over the definition of what a comprehensive performance assessment is
- There is a fear of using performance measures to "punish" transit operators
- The top benefit is understanding needs and costs to include in capital plans
- Systems with a culture of making data-driven decisions are much more prepared and willing to conduct assessments

Massachusetts Department of Transportation

Background Information

In 2013 a transportation finance bill was passed that required each regional transit authority (RTA) established under chapter 161B of the General Law (161B includes both rural and urban systems) to develop a comprehensive regional transit plan (CRTP) that incorporates all modes of service operated by an RTA. The law outlined nine elements that each plan must contain, and by 2015 each RTA had created a plan. However, the law did not state how frequently these plans must be completed. In late 2018 the Governor's Commission on the Future of Transportation report first recommendation was to "Prioritize investment in public transit as the foundation of a robust, reliable, clean and efficient transportation system."

Subsequently, the FY 2019 Massachusetts State Budget Outside section 72 created a Task Force on Regional Transit Authority Performance and Funding (herein referred to as the task force) and section 74, which required the RTAs to enter into a memorandum of understanding (MOU) as a condition of receiving state operating funding. The Task Force was charged with investigating how the RTAs can improve transit service to meet identified community needs, conduct regular service planning, maximize ridership, and ensure that fares/local funding/and contract or other revenues cover an appropriate share of costs. In 2019 the Task Force released their report titled A Vision for the Future of Massachusetts Regional Transit Authorities. This report listed 24 recommendations, including updating the 2015 CRTPs. Following publication of the Task Force Report, a commitment to update the CRTP was included in each RTA 2-Year Memorandum of Understanding (MOU) with the Massachusetts Department of Transportation Rail and Transit Division (MassDOT) executed in August 2019. It is the goal of MassDOT that these plans are updated every five years but that the RTAs do ongoing assessments of their service to monitor performance.

States Role

In Massachusetts, the state's role is project oversight/management. A consultant is hired by MassDOT Rail and Transit Division to work with each RTA to create an individualized plan that meets their needs. All 15 RTA assessments are conducted simultaneously, typically by a single consultant, and the process takes roughly a year to complete. On average, MassDOT spends 40-80 hours per RTA on these assessments. This time is primarily spent coordinating with the consultant, meeting with RTAs as needed, and reviewing reports and documents. MassDOT entirely funds the CRTP updates, each plan costs roughly $75,000 to $80,000 to complete. State funding comes from a line item in the capital plan for capitalizable planning elements and technical assistance funds that are itemized in the legislation.

Approach to Assessments

All reports utilize a standard scope and report format/template. This ensures continuity across the plans and a uniform process. While certain elements are standardized and required in the plan, RTAs may elect to dig deeper into certain elements or adjust the flow of chapters. MassDOT takes a hands-off approach to developing the plan's specifics and has the consultant coordinate with each RTA. The RTA is very involved with creating the plan from the onset, holding biweekly meetings with the consultant, reviewing each section/chapter along the way, assisting with public outreach, and providing input into their need, concerns, limitations, and goals.

Methods/Data/Content/Strategies

The consultant works with each RTA to collect data. The consultant creates a master list of potential data, and it is reviewed with the RTA to determine what is available. Data collected from the RTA includes ridership, financial data, assets, service levels, policies, and on-time performance. If available, route level data was provided, as was stop level boarding and alighting data. The RTAs have a varying degree of technology and data capabilities, which did create limitations in collecting data as not all currently collect data at the route level. Where the dataset was obtained from was documented for each data point collected. The consultant worked closely with the RTA to make sure that all data sets utilized that were not collected directly from the RTA were up to date, accurate, and acceptable. These data sets include documents published on the RTAs website (TAM Plans, public schedules and maps, annual reports, miscellaneous planning documents, audit reports, and financial statements), data from the national transit database (NTD), and information and data reported to the state through Black Cat/Grants Plus and the MOU requirements. The data was used to analyze the performance of the system, each mode, and where applicable at the route level. Where data was available, each plan was required to examine several metrics; RTAs could also elect to add metrics.

	Utilization of Performance Metrix
✓	Passengers per hour
✓	Passengers per mile
✓	Cost per passenger
✓	Farebox recovery
✓	On-time performance
✓	Number/percent of trip denials
✓	Complaints per passenger
✓	Accidents per revenue mile traveled
✓	Road calls per revenue miles traveled
	Other

The recommendations and strategies in the final plan resulted from a collaborative process between the consultant and RTA. Gaps and needs were identified through the outreach process and data analysis. Strategies to improve service varied greatly by RTA but could include the following:

- Efficiency changes/rerouting that did not require additional service or revenues
- Service improvements that require additional service or revenue
- Increased collaboration and partnerships
- Marketing/education about the services
- Fare changes
- Improved fleet condition
- Capital purchases such as scheduling software or other technology
- New staff positions

Benefits

MassDOT sees several benefits to conducting the CRTPs regularly. The CRTPs help provide transparency to the public and MassDOT and that state operating and capital funds distributed to the RTAs are being spent in the best possible manner and ensure that the service being provided meets the needs of the public. The CRTPs help prioritize capital investments and coincide with the capital planning process. By tying in the CRTPs to the capital plans, MassDOT can better articulate to the legislature statewide transit capital needs and include the projects in the MassDOT annual capital investment plan. These plans provide a five-year outlook for capital needs which is preferred over an annual capital planning process

The CRTPs help the RTAs prioritize actions to improve service. They are a tool for the agency to direct their resources in the best way possible and better understand how tax dollars are being spent. They help improve efficiency for the RTA.

Determining Effectiveness

The primary measure of effectiveness is that the RTAs utilize the plans and begin implementing recommendations. Additionally, MassDOT determines if a plan is effective based on performance and MOU targets. Hopefully, the MOU metrics show a connection to the CRTPs to quantify effectiveness, but this has yet to be determined as MOUs were first instituted in FY 2020. The global pandemic had a significant impact on RTA service and performance. The MOUs outline several performance targets the RTAs strive to meet. Meeting those targets or improving upon the metrics indicates that the CRTPs effectively bring about change. Each CRTP outlines the agency's goals over the next five years; progress towards those goals is a measure of effectiveness.

Future Use of Assessments

MassDOT hopes to use the assessments to prioritize capital investments and discretionary grants. Each year discretionary grants are available for the RTAs to apply for. The grants are competitive, and in FY21, $3.5 million was awarded to 10 RTAs for 11 different projects. These grants provide funding to pilot new services/routes, implement technology improvements, modernize operations, generate cost savings, and reduce GHG emissions. Many of the projects receiving funding were recommendations outlined in the CRTPs. Additionally, in the future, MassDOT is contemplating using the results of the performance section of the assessment as part of the determination in state operating assistance levels provided.

San Miguel Authority for Regional Transportation

Background Information

The San Miguel Authority for Regional Transportation (SMART) was formed in 2016 by voters in Telluride, Mountain Village, and the R1 School District in San Miguel County. Transit services include a local fixed route, three commuter routes, seasonal shuttles, vanpool, a county commuter shuttle, and ADA paratransit. State, county, fare revenue, local sales, and property taxes provide funding to support operations of the SMART services.

The 2019 Strategic Operating Plan (SOP) was the first assessment for the new transit system. While the system is relatively young and no precedent for planning existed, transit systems across the state conduct assessments. The purpose of the SMART SOP was to evaluate the current transit needs, optimize existing services, and plan for the future. Additionally, it provided an opportunity for community input and buy-in for a relatively new service.

Agency's Role

SMART procured a consultant to do the assessment, which took 12 months to complete from issuing the RFP. 5304 grant funds from CDOT were applied for to conduct the assessment and covered 80 percent of the cost. The remaining 20 percent local match is derived from dedicated local transit funds. The 2019 assessment cost was $47,000.

Approach to Assessments

While a consultant does the assessment, recommendations are based on local input and then further refined by SMART based on what they know their staff and system can achieve. No technical aides, templates, briefs, guidebooks, report forms/templates, or standard scope was used to develop the SOP. Instead, SMART relied upon the chosen consultant to develop this material based on an agreed-upon scope. The plans approach included extensive public outreach, and throughout the whole process, the governing Board was kept informed with updates and opportunities to participate in the planning process.

Methods/Data/Content/Strategies

Data collected for the SOP included demographics, ridership, service metrics such as miles and hours, costs, revenues, asset information, customer service data, and service area coverage. Many of the service data points were derived from in-house reports that track performance measures by route quarterly. Additional data was obtained through interviews, stakeholder meetings, and public and stakeholder input. Data is heavily relied upon to conduct the assessment. It is the backbone for the performance measures

(passenger/hour, cost/passenger, farebox recovery, on-time performance, complaints per passenger, accidents per rev mile) used in evaluating the service.

The recommendations and strategies in the final plan resulted from a collaborative process between the consultant and SMART. Strategies to improve service varied based on the mode but often include the following:

- Efficiency changes/rerouting that did not require additional service or revenues
- Service improvements that require additional service or revenue
- Increased collaboration and partnerships such as adding new communities to the service area
- Marketing/education about the services

Benefits

SMART sees the primary benefit of doing an assessment is that it provides real-world, objective data that can be used to drive informed decision-making.

Determining Effectiveness

The primary measure of effectiveness is the number of recommendations successfully implemented in the plan period. SMART is in the process of implementing all of the recommendations in the plan. Once implementation is complete SMART will consider the need for a new or updated SOP as the system is always planning and evaluating its future.

Future Use of Assessments

The SOP is used by SMART, Gunnison Valley Transportation Planning Region Committee (GVTPR), and the State DOT to inform planning. The assessments are SMARTs' primary feedback on their continual process/service improvement evolution. The SOP is a blueprint for SMART, laying out recommendations in three phases that span six years.

Minnesota Department of Transportation

In 2009, the Minnesota Department of Transportation (MnDOT) established a strategic direction for Greater Minnesota Transit, inclusive of 80 counties and 50 public transit systems, with a vision of a high-quality, coordinated transit network that is integrated into the overall state transportation system and meets the mobility needs of the people of Minnesota. The Greater Minnesota Transit Investment Plan (2017) was the first strategic statewide analysis to help transit agencies and MnDOT understand current performance and identify a roadmap for the future. MnDOT guided the assessment; however, the analysis was led by consultants under the direction of a dedicated MnDOT staff person. From an agency perspective, MnDOT differentiates between *assessment* which is reflective of transit agency compliance (i.e., triennial reviews), and *analysis,* which is a deeper synthesis of the transit agency with the goal of understanding the transit agency now, how the agency is operating, and where the agency wants to go in the future. Ideally, transit agency analyses would include time for receiving public and stakeholder input to identify any potential gaps in information. In the future, MnDOT would like to use the comprehensive analysis to monitor growth, establish transit agency benchmarks and establish data dashboards to compare performance across transit agencies to determine MnDOT funding priorities for the future. The goal of the assessments is to advance the vision for Greater Minnesota Transit and continue fostering a strong and transparent relationship between MnDOT, the transit agency, and the community.

Background Information

According to Minnesota Statute, *Section 174.247,* an annual transit report is required to be published to provide residents and elected officials an overview of public transit services in Minnesota. The annual report must include an overview of the transit system and critical funding information, including funding sources, operating and capital costs, and total monetary needs for the transit system for the year of the report and the ensuring five years. *Statue 174.247 subdivision 1a*. directs the commissioner of MnDOT to develop the *Greater Minnesota Transit Investment Plan,* which contains a goal of meeting at least 80 percent of total transit service needs in greater Minnesota by July 2015 and 90 percent of total transit service in greater Minnesota by July 1, 2025. The Transit Investment Plan must include analysis of ridership, transit service needs, cost, revenue analysis, and address special transportation service ridership and needs.

Since 2009, MnDOT has developed the Greater Minnesota Transit Plan, the 20-year strategic plan which identified future transit needs and demand for service. In response to the directive in MN Statue subdivision 1a, MnDOT developed the Greater Minnesota Transit Investment Plan (GMTIP) in 2011, which provided a link between the vision, goals, and strategies from the 2009 plan and the funding allocations to each public transit system. As an investment plan, the document also outlined the investment priorities under different funding scenarios. The 2017 GMTIP updated the work in the 2011 GMTIP and calculated the investments required to reach the target of meeting 90 percent of transit needs by 2025.

States Role

Greater Minnesota comprises 80 counties and is served by more than 50 public transit systems, covering the entire state except for the Twin Cities metro region. While most transit funding for the Twin Cities is received directly by the Metropolitan Council, a vast majority of transit funding for Greater Minnesota is received by the State. This means that MnDOT's Office of Transit and Active Transportation (OTAT) is involved in overseeing the funding and performance of every Greater Minnesota transit system. Specifically, OTAT administers the federal Section 5311(f) grant program in the State. For the assessments, MnDOT dedicates a specific staff person to manage the assessment and then utilizes third-party consultants responsible for developing the assessments. The dedicated MnDOT staff person works directly with transit agencies and transit agency staff throughout the duration of the assessment. On average, MnDOT devotes up to 10 hours per agency for the assessment. Between 80 and 85 percent of the cost of the plans are funded by State funds; however, in the future, MnDOT is considering using other funding sources, including Section 5311 funds, other dedicated planning funds, or requiring transit agencies to contribute funds. The average cost per assessment is $75,000.

Approach to Assessments

In conjunction with the assessment consultant, MnDOT utilizes both a standard report and template for all of the Greater Minnesota transit agencies. All reports utilize a standard scope and report format/template. This ensures continuity across the plans and a uniform process. Standard Excel templates are used during the assessment, including reviewing the five-year capital plans, operating budget, and specific financial templates for both constrained and unconstrained five-year scenarios for the budget and resulting recommendations. Transit agencies play an active role in creating the plan from the onset, holding biweekly meetings with the consultant, reviewing each section/chapter along the way, assisting with public outreach, and providing input into their need, concerns, limitations, and goals.

Methods/Data/Content/Strategies

The 2017 assessment used two different types of metrics for measuring performance, those at the state level and metrics for local agency use. First, MnDOT uses performance measures to track progress at the state level, such as ridership. MnDOT also uses evaluation criteria to assess transit systems for strengths and weaknesses to make informed funding decisions. In comparison, transit system guidelines and

standards-track progress at the local level are controlled and monitored by the transit agency, separate from MnDOT.

MnDOT relies on state-based regulations to guide its plans, projects, and investments in support of public transit. The GMTIP has four performance measures covering (1) ridership, (2) fleet condition, (3) span of service, and (4) on-time performance. The GMTIP identifies targets for each performance measure, and MnDOT will annually report progress towards addressing these targets. The OTAT annually evaluates transit system performance to prioritize operating and capital projects. MnDOT ranks each system based on a series of specific criteria and assigns each transit system a score. The transit systems are nominally ranked based on the evaluation criteria, and scores within the bottom 10 percent are targeted for additional technical assistance from MnDOT. Funding allocations are not made based on this information but help inform MnDOT about system strengths and weaknesses. Specific performance measures used to conduct the assessment include the following:

	Utilization of Performance Metrix
✓	Passengers per hour
✓	Passengers per mile
✓	Cost per passenger
✓	On-time performance
✓	System Revenue to Expenses
✓	Cost per trip
✓	Cost per Service Hour
✓	Percentage of service in underperforming routes
✓	Percentage of countywide need (hours per capita)
✓	Minimum level of access
✓	Rural Service Volume
✓	Span of Service

During the last assessment, one challenge across transit agencies was determining and establishing uniform data benchmarks that are transferable across all agencies. MnDOT plans to consider utilizing National Transit Database (NTD) definitions to help guide discussions about data and ensure that data is being reported consistently. This data consistency would allow MnDOT to evaluate transit agencies across the State and establish benchmarks in the future because the definition would be the same. However, the benchmarks would be responsive to the specific transit agency.

Since MnDOT has only conducted two assessments and only one statewide assessment, the State is still setting strategies for its assessments. Specifically, plans should identify gaps and future direction for strategic planning and outline the capital expenses expected by the transit agency. By understanding the capital cost needs, MnDOT can better plan and align State finances to meet the needs of the individual agencies, such as staffing, technology, or fleet needs. Additionally, the assessments should continue to provide information to transit agencies about who they are as an agency, where they are at that point in time, and where they want to go in the future. Transit agencies can better inform the communities they serve and interested stakeholders when they have the necessary information.

Benefits

Functioning as the primary funding source for rural transit agencies in Minnesota, the primary benefit of completing an assessment is that the process provides a roadmap for all parties involved. Parties specifically highlighted include policymakers, committees, and the transit agencies themselves. The assessments reinforce FTA compliance but also help develop the conversation between transit agencies and MnDOT. Through the assessment, staff works together to identify successes and challenges experienced by the transit system, establish appropriate benchmarks for the individual transit agency, and determine areas for future growth.

Determining Effectiveness

As described in the previous section, the benefit of the assessment is the development of a roadmap. As a result, MnDOT can identify and set implications as a result of not following the roadmap. MnDOT has considered developing and utilizing effectiveness indicators. However, the challenge arises when comparing effectiveness between transit agencies that may operate differently from another. MnDOT wants to work closely with the transit agencies to determine individual needs and remediation. The Agency prefers not to tie together effectiveness with punishment for not meeting certain measures. Rather MNDOT and the transit agency can work together to identify the problem, including external factors that may be impacting the transit agency and what steps can be taken to resolve the problem.

Future Use of Assessments

As an agency, MnDOT has seen the value of assessments in establishing a roadmap and identifying future needs of transit agencies. One of the evaluated questions is how often a comprehensive analysis should be completed because transit agencies have competing priorities with providing day-to-day service to communities and long-term planning in coordination with consultants and MnDOT. The OTAT is actively developing a plan for future assessment efforts, including developing a specific timeline, perhaps every four years, for a comprehensive analysis. Learning from the last transit assessment, MnDOT has also identified an increased need to allow time to communicate with the community, including members of the public, policy, and other stakeholders. Community engagement would include more time for dialogue through surveys and meetings. The information gathered through public and stakeholder engagement would also be included in the assessment. Additionally, this early and often approach to engagement could generate political buy-in with major stakeholders to understand the purpose of the assessment, the needs of the particular community, and how those inputs could be integrated into the assessments.

Ultimately, the goal of future assessments would be to explore who a transit agency is now and what procedures and system improvements and strategies can be deployed in the future to meet the specific agency needs. MnDOT can use the information gathered to determine a reasonable financial strategy and help the transit agency meet its goals. Given the large area and diversity of the transit agencies, MnDOT wants to ensure that the State is responsive to the agency's individual needs while continuing to be responsive and strategic to the overarching needs and goals of the State.

Mississippi Department of Transportation

Background Information

The Mississippi State Legislature created the Mississippi Department of Transportation (MDOT) in the Regular Session of 1992 by Senate Bill No. 2763. The act's purpose was to "create a Mississippi Department of Transportation governed by elected Transportation Commissioners." On behalf of the MDOT, the Public Transportation Division, through the Office of Intermodal Planning, is responsible for fulfilling the mandated duties by the FTA, including transportation program management and grant administration. The Public Transit Division's responsibilities include, but are not limited to, assuring compliance with rules and regulations, planning for future transportation needs and ensuring integration and coordination among transportation modes and providers, and making technical and management assistance available to local projects, providers, and plans.

The Public Transit Division consults and collaborates with stakeholder groups, MPO's and advisory entities in the planning and implementation of the FTA formula grant programs. These groups /entities include the Interagency Advisory Committee (ITC) and various Regional Coordinated Planning Work Groups. The ITC is composed of representatives from other state agencies interested in providing or purchasing transportation services funded via 5316, 5317, rural general public, and/or specialized transit programs. The Regional Coordinated Planning Groups are designed to foster increased coordination of services and the sharing of resources between public/private transit organizations and human services agencies. These regional coordination groups also participate in local transportation needs assessments and gaps. The regional groups are composed of representatives of public, private, and non-profit transportation and human services providers, local/state elected officials, colleges/universities, public/private businesses, and members of the public.

States Role

MDOT's Public Transit Division administers the *Connect MS* Program to provide coordinated, rural transportation throughout Mississippi. Across the state, there are 62 transit providers organized into six distinct groups or Regional Partners. They are responsible for assessing regional transportation needs, identifying transportation gaps, and developing alternatives and recommendations to address unmet needs and gaps. Regional coordination is the key for developing innovative arrangements to meet the transportation needs of the local communities while multiplying the service provided by individual providers.

MDOT is responsible for 80 percent of the oversight in relation to the Regional Partners, specifically overseeing the annual assessment of transit agencies. The DOT also provides technical assistance in the form of funding or staff support to transit agencies as needed. On average, MDOT allocates up to 10 hours per assessment. However, the time varies depending on the length of the site visit (½ day for urban providers and one full day for rural providers), the need of the transit agency, and time for discussing any data discrepancies or challenges the transit agency is currently facing. The MDOT completes one assessment per year per agency in addition to another assessment each year to inspect transit facilities, vehicles, and other capital assets. The discussion that follows will highlight the transit agency performance assessment. However, MDOT follows similar procedures for capital asset assessments.

Approach to Assessments

MDOT has developed a standard excel template for guiding transit agency assessments but is currently in the process of transitioning the template to a statewide online platform for future use. Twice a year, Section 5311 transit agencies are required to submit transit system performance data to accompany their requests for reimbursements from MDOT. As a result of this requirement, prior to the annual assessment, MDOT is able to review the performance data and review existing plans in place. The standard excel template allows MDOT to review the transit agency data and conduct a pre-site assessment. Upon the MDOT's pre-assessment evaluation, the agency is able to develop questions and identify any data discrepancies. The MDOT can notify transit agencies prior to the on-site visit about the additional information they need or discussion areas. For example, if a transit agency has a large fluctuation in ridership, the MDOT can notify the transit agency prior to the on-site visit that ridership data will be discussed. As a result of this pre-planning effort, the transit agency is able to gather additional data or prepare information to provide MDOT. If the result of the change in ridership is due to performance challenges, MDOT and the transit agency can effectively discuss necessary interventions to make improvements.

While MDOT primarily serves in an oversight function, the DOT can also provide technical assistance to rural agencies. The MDOT can allocate funds so that transit agencies can procure consultants to support the agency with financial planning or route-specific planning. On an average year, at least one transit agency requests technical assistance from MDOT.

Methods/Data/Content/Strategies

The MDOT monitoring excel tool collects all the necessary performance data from finance to operations. The tool also requires agencies to meet all federal requirements, including Title VI, ADA compliance, and Capital Asset Management Plans (CAM). On average, the Excel tool generates between 20 and 24 pages of performance information. MDOT also relies on NTD data for evaluation and utilizes various checklists during the site visits. Assessments include a complete range of solutions and strategies for rural transit services; these include:

- Efficiency changes/rerouting that did not require additional service or revenues
- Service improvements that require additional service or revenue
- New staff positions
- Increased collaboration and partnerships
- Capital purchases such as scheduling software or other technology
- Marketing/education about the services
- Fare changes
- Improved fleet conditions

Benefits

The assessment process serves as a mechanism for ensuring compliance and allows MDOT to develop relationships with the regional partners/subrecipients. Together, MDOT and the Regional Partners can identify plans and ideas to serve the public better. Throughout the year, MDOT and the Regional Partners stay in frequent communication. As a result of this ongoing communication and data transparency, the assessment process results in clear communication between all parties, supports necessary training and education, and identifies areas of improvement. The pre-assessment information and templates allow MDOT to clearly understand the transit agency they are meeting with. It allows transit agencies to prepare all necessary information for the discussion. The site visits allow MDOT to view the transit service from the rider's perspective, and often during the site visit, the DOT allocates time to ride the system.

Determining Effectiveness

MDOT does not currently set thresholds for performance for transit agencies due to the variability in rural transit services. Rural providers in the state differ vastly in revenue miles, ridership, and service provided. In order to accommodate this variability, MDOT focuses on the agency-specific performance and reviews the data for any extreme fluctuations. If fluctuations are consistent, the MDOT and the transit agency work together to identify solutions or ways to improve either by providing technical assistance, hiring a consultant for support, or providing additional DOT staff. When developing interventions, regional partners take ownership in developing goals, milestones, and timelines for achieving results. The MDOT asks partners how they will measure success and demonstrate results.

Future Use of Assessments

MDOT continues to improve its assessment process by adapting existing tools, working with Regional Partners, and relying on internal staff expertise to modify the process. As a part of this process, MDOT frequently engages with regional planning partners and sister agencies to share recommendations, develop goals, and strengthen customer service and community outreach. For example, due to the COVID-19 pandemic shortages for procuring vehicles, MDOT was able to work with sister agencies to find transit vehicles to disburse to operations and maintenance facilities throughout the state. MDOT plans to continue to support transit agencies so they are empowered to evaluate their performance and operations and develop implementation plans with targeted timelines and measures for continued success and improvement in the future.

North Carolina Department of Transportation

Background Information

North Carolina Department of Transportation (NCDOT) Integrated Mobility Division (IMD) is responsible for multimodal transportation planning throughout North Carolina. The IMD plans and administers three modes of transportation: Pedestrian, Public Transit, and Bicycle. In addition, the IMD focuses on personal mobility and integrates the various aspects of mobility that range from land use and urban and rural needs to innovative pilot projects that enhance community vibrancy.

The IMD organization structure includes a Director and four departments:

- Planning and Programming
- Finance and Compliance
- Safety and Education
- Innovation and Data

Planning and programming activities include grants administration, regional technical assistance, complete streets policy implementation, State Transportation Improvement Programs (STIP) projects, and Transportation Demand Management. In addition, North Carolina's strategic framework includes the vision for "Connecting North Carolinians to opportunities." To do so, the IMD will support strategies and tactics that enhance access for seniors, veterans, and persons with disabilities, support transit-friendly land use, support, and enable greater flexibility in funding transit investments and other important focus areas.

Mobility Development Specialists and Bicycle and Pedestrian Planners work in cooperation to administer grants and programs statewide. The state includes eight regions: four western regions and four eastern regions. There are 99 public transportation systems in North Carolina, including locally operated public transit systems and consolidated public transit (serving multiple counties). Rural Operating Assistance Program (ROAP) grant funding for rural transit operations is distributed in all 100 counties, and 26 systems

receive State Maintenance Assistance for Urban and Small Urban Program (SMAP) state operating assistance.

States Role

Before creating the IMD, NCDOT Public Transit Division (PTD) funded and provided consultants for various rural transportation planning efforts across the state. In some cases, the transit assessments were funded with a combination of state and local dollars. For example, Community Connectivity Plans were funded at 90 percent with State funds, and the local community was responsible for the remaining 10 percent. For those studies, NCDOT PTD was responsible for project oversight and management, cost development, public outreach, market analysis, and other required aspects of the plan. Local transit systems were responsible for assisting the PTD's consultants by providing data, participating in meetings, and reviewing/approving reports. The PTD staff dedicated up to 40 hours per plan or service assessment.

In previous years, NCDOT, PTD provided 90 percent to 100 percent of planning funds for regional or locally developed transit assessments. The cost of the planning assessment varied depending on the system size and the scope of work.

Since the creation of the IMD, NCDOT has not conducted local or regional transit assessments, and there is no cycle for transportation assessments. However, it intends to begin overseeing multimodal studies. The funding sources will be conditional on the scope and purpose of the assessment. For example, Federal Transit Administration Section 5311 funds will be used if the assessment is primarily for rural transit. Funding could also come from a combination of State and Federal funds. Because the IMD is multimodal, it also incorporates Federal Highway Administration (FHWA) grant funding programs as appropriate for multimodal studies.

Approach to Assessments

The Division is working with a consultant to create a plan template for regional transportation assessments. Technical assistance will likely be requested from a consultant once the transportation assessment template is created. The local provider will also be directly involved in the planning process. The provider will be required to provide operating statistics and financial projections unless those data are provided through NCDOT's contractor, Institute for Transportation Research and Education (ITRE), North Carolina State University.

Methods/Data/Content/Strategies

Data collected includes demographics, operating statistics, and financial projections. This data is used to evaluate performance measures such as passengers per hour or mile and cost per passenger. One challenge NCDOT has experienced with collecting data is that some see it as 'checking the box.' Whenever some planning efforts funded in part or whole by the State are viewed as this by the local transportation provider, NCDOT works to communicate the purpose of the study to the local transit system. IMD feels that the limitations can be overcome if the plan's goal is framed around the appropriate talking points so that the local stakeholders understand why it is needed and how it can benefit them. It is also essential for the study and study purpose to be data-driven.

Assessments include a complete range of solutions and strategies for rural transit services; these include:

- Efficiency changes/rerouting that did not require additional service or revenues
- Service improvements that require additional service or revenue
- Increased collaboration and partnerships
- Marketing/education about the services
- Improved fleet condition

- Fare changes
- New staffing positions
- Technology solutions such as scheduling software

Benefits

The transportation assessments are data-driven, and they provide both the local transit system and the State with the documentation necessary for access to State funding. In addition, financial information collected during the assessments inform requests for State funding allocations. The assessment process also offers an important opportunity for collaboration that might otherwise not be achieved at the local and regional levels.

Determining Effectiveness

An assessment is determined successful if the recommendations are implemented.

Future Use of Assessments

NCDOT hopes to use the assessments as a way to inform requests for state allocation funding.

Pennsylvania Department of Transportation

Background Information

PennDOT is responsible for managing the investment of Commonwealth funds in public transportation operations and capital and maximizing the Commonwealth's return on investment. Within the state, there are 34 fixed route (scheduled local bus, light rail, and commuter rail) systems, 44 community transportation systems, passenger rail service between Pittsburgh and Philadelphia, and 13 intercity bus routes provided by four intercity bus companies. In 2007 Act 44 was passed that created a public transportation trust fund with dedicated funds from the sales tax, lottery, and turnpike commission. The trust fund was established to provide both operating and capital funding for systems across the state. The Act outlined how funding was distributed and established a performance-based formula for state operating assistance. A condition of the formula funding for all systems operating fixed route or fixed-guideway was that performance reviews be conducted every five years. The law outlined elements the review must include, mandated a peer comparison, required a five-year trend analysis, and established that four minimum performance standards must be set. These standards are passengers per revenue hour, operating revenue per revenue hour, operating cost per revenue hour, and operating cost per passenger.

In addition to the performance reviews conducted every five years, PennDOT is required to publish an annual performance report with operating profiles for all urban, rural, and community transportation systems. Each profile includes service area statistics, a breakdown of operating expenses and funds, and five-year trends for ridership, revenue miles, revenue hours, and four performance measures.

States Role

In Pennsylvania, the state's role is project oversight/management. PennDOT's Bureau of Public Transportation hires consultants to work with each other in creating an individualized plan that meets their needs. Plans are done on a rolling basis, with seven completed each year. On average, PennDOT spends 20-40 hours per assessment, and this time is primarily spent coordinating with the consultant and reviewing

reports and documents. PennDOT entirely funds the assessments, and state funding comes from the public transportation trust fund.

Approach to Assessments

All reports utilize a standard scope, report format/template, interview guide, and data collection form. This ensures continuity across the plans and a uniform process. All plans look at 13 key functional areas: scheduling and operations, maintenance, planning, capital program, customer service, marketing, and public relations, procurement, finance, information technology, human resources/labor relations, safety and security, management, and governance. Each performance review goes through a prescribed process that involves seven steps:

1) Selection of at least five peers based on similar revenue miles, hours, vehicles operated in maximum service and service area population to analyze how the agency compares to the peers for the four performance measures outlined in Act 44.
2) Consultant submits data request form and agencies supplies all necessary data and info
3) On-site interviews over two days with management, staff, and board members
4) PennDOT establishes draft five-year performance targets
5) Transit agency reviews draft report and performance targets set
6) A consensus is reached between the PennDOT and the transit agency on the report and performance targets
7) The transit agency creates an action plan that details how they will achieve the performance targets and address key functional area findings. This plan must be approved by the board and submitted to PennDOT. The transit system must report to their governing body and PennDOT on the progress of the plan

The provider is very involved with creating the plan from the onset, providing data, participating in interviews, providing feedback on peer selection, and reviewing each section/chapter along the way.

Methods/Data/Content/Strategies

The consultant works with the provider to collect data outlined on the data and document request form. Data collected include background information such as business plans and current strategies, governance and general management, human resources, oversight and review documentation, financial data including fare revenue, service levels, policies, service data and ridership, asset and maintenance information, customer service, safety and security, strategic and capital plans, and marketing and public relations documents. Data is provided at the system level and comes from various in-house reports and accounting records at the transit agency.

After completing the assessment, the transit agency must submit an Action Plan within 90 days to outline how it will address the observations or suggestions outlined in the plan. Categories for the assessment include ridership, revenue, operating costs, and others. Suggested actions could include the following:

- Efficiency changes/rerouting that did not require additional service or revenues
- Increased collaboration and partnerships
- Marketing/education about the services
- Fare changes
- Improved fleet condition
- Capital purchases such as scheduling software or other technology

Benefits

The assessments provide PennDOT with insight into how the agencies operate, which better equips them to provide technical assistance and understand trends in the industry. The plans provide the transparency that state operating and capital funds distributed to the transit agencies are being spent in the best possible manner and to ensure that high-quality transportation is being provided to the most citizens at the best cost. The assessments aid the transit provider in short-term planning and provide education and information to the transit provider so that they understand their performance measures and how they compare to other systems.

Determining Effectiveness

Effectiveness is measured by the agency's progress in achieving the suggested action (recommendations) in the action plan.

Future Use of Assessments

These plans help PennDOT measure and track public transit performance and use that information when planning and budgeting for future years. It also allows for identifying best practices, which can be shared with other providers.

Hualapai Transit

Background Information

In 1883, an executive order established the Hualapai Reservation (pronounced Wal-lah-pie) in northern Arizona, encompassing about one million along 108 miles of the Grand Canyon and Colorado River. As a sovereign Indian nation, the Hualapai Tribe is governed by an executive and judicial branch. The executive branch comprises a nine-member Tribal Council that oversees twelve administrative departments. Prior to 2014, there was no unified transit service on the reservation. However, there was a van service for seniors and persons with disabilities and an employee shuttle service provided by a third-party contractor.

The Hualapai Tribe recognized the need to improve mobility for residents, and in December 2014, the Hualapai Tribal Council approved a Long Range Transportation Plan (LRTP). The LRTP completed, with the assistance of a consultant team, identified both transportation and transit needs for the Hualapai Tribe. Additionally, the Arizona Department of Transportation (ADOT) Planning Assistance for Rural Areas Program provided funding support for the LRTP. In August 2016, after completing the LRTP and public engagement, the Hualapai Tribe applied for federal funding for the startup of Transit services. The Tribal Council appointed the Public Services Department as the management entity for Hualapai Transit which started operations in February 2017.

States Role

ADOT awarded the Hualapai Tribe with a Section 5311 Rural Public Transportation grant, in conjunction with an FTA grant, to prepare a Transit Feasibility Study and identify an implementation plan. The cost of the LRTP assessment, at its time of development in 2016, was approximately $45,000. In partnership with the Hualapai Tribe Planning Director, ADOT provided general oversight and supervision of the Transit Feasibility Study. Moreover, ADOT served as a member of the Technical Advisory Committee (TAC) and the core Project Management Team (PMT). The role of the TAC was to provide input on technical issues related to the study and deliverables. The PMT included the consultant hired for the study and the Transit Manager for ADOT to discuss findings and recommendations. After completing the study, ADOT worked

with the Tribal Council and Tribal Public Services Director to take the necessary actions needed to prepare grant applications to secure tribal budgetary funds to support the development of a transit system.

Approach to Assessments

The LRTP served as the primary assessment tool to identify transit needs through data analysis, surveys, community discussions, and coordination with existing transit service providers for the Hualapai Tribe. The plan's objective was to develop strategies to simplify travel within the Hualapai Reservation and neighboring areas and provide a plan for developing transit service, including fare structure, ridership estimates, costs, organization, and funding sources. The LRTP was the only system-wide, comprehensive assessment completed for Hualapai Transit. On a regular basis, approximately every six to eight months, Hualapai Transit evaluates transit service, including ridership and performance. To date, performance has been strong, so an additional system-wide assessment has not been necessary.

Methods/Data/Content/Strategies

The consultant hired to complete the LRTP assessment, which established transit service, utilized industry-accepted performance measures, ridership data, community surveys, and templates for comprehensive operational analysis. The LRTP included a strengths, weaknesses, opportunities, and threats (SWOT) analysis and short, mid-, and long-term improvements for the transit system. The plan identified the necessary components to implement transit service, including the mission and goals, staffing plans, service plans, capital, and financial plans.

The consultant utilized their own templates for the LRTP, which identified performance measures to be implemented in the second year of operations and based on ridership, revenue miles, and budget. Performance measures identified include passenger per hour, cost per mile, cost per hour, and cost per ride. The plan recommends that these measures be used to evaluate route types per day, the cost share of routes, and the total cost to the program. Other performance measures included on-time, missed calls, complaints, accident rates, marketing efforts, and customer satisfaction.

Benefits

The assessment identified the transit need which existed for the Hualapai Tribe. The consultant worked closely with the Tribal Council, the PMT, and the TAC to educate the stakeholders about the transit service so the Tribe would be prepared to operate the transit service. The LRTP provided Hualapai Transit with the tools to adapt existing routes to meet the community's needs.

Determining Effectiveness

The Hualapai Tribe is a small community spread across a large service area with a population of approximately 2,000 residents. Hualapai Transit relied on a community transit survey, community outreach events, and stakeholder input to determine support for transit during the LRTP. Hualapai Transit works closely with the community to ensure that transit meets their needs and utilizes questionaries to gauge customer satisfaction with service.

Future Use of Assessments

Hualapai Transit has been able to conduct high-level service assessments utilizing performance and ridership data. In the future, assessments will be used to identify specific route changes or other system

improvements as needed. The needs of the community will guide any future assessments. Hualapai Transit has a small staff led by a Director who functions as a final decision maker, which allows the system to be efficient and responsive to the needs of the community. Additionally, Hualapai Transit has implemented many of the short-, mid-, and long-term recommendations identified in the LRTP, including the proposed fare structure, transit routes, and other implementation activities required to launch the service.

Pigeon Forge Mass Transit

Background Information

Pigeon Forge Mass Transit in eastern Tennessee operates six fixed routes and ADA paratransit service. While assessments are not codified in law or required by the DOT, the Tennessee Department of Transportation Office of Public Transportation (TDOT) does request performance information and measures. The request from TDOT often triggers the need for a service assessment, which is done approximately every five years. The system closely monitors internal performance and the external environment (road networks, land use, etc.) on an ongoing basis and takes a proactive approach in the planning process. This allows the system to capture opportunities for improving service. In addition to the overall service assessment, the City of Pigeon Forge and the transit system jointly conduct a financial assessment every year. The annual financial assessment includes 5-year projections.

Agency Role

TDOT provides funds, through the Section 5303 and 5304 grant programs, to MPOs and transit systems for conducting transportation plans, including transit assessments. It is the responsibility of the transit agency to request technical assistance and funds. The funding level received varies based on the size of the agency and details of the request but typically constitutes an 80/20 match, with the 20 percent match being state or local funding. Pigeon Forge received 5304 funding in SFY21 for their "Pigeon Forge Transit and Mobility Strategic Plan." The cost to conduct the study is $125,000, of which $100,000 is federal funding and $25,000 from the state. A consultant is hired to conduct the assessment. Pigeon Forge works directly with the consultant to provide necessary data and input and review throughout the assessment process. Overall the agency spends 20-40 hours working on the plan with the consultant.

Approach to Assessments

TDOT works closely with the consultant hired to conduct the assessment. The consultant has the flexibility to craft an approach to assessment in place of a standardized template, to synthesize the data and input provided by providers. As a result of this flexible approach, the assessment can be both responsive and reflective of each agency’s specific needs.

Methods/Data/Content/Strategies

Data collected includes operating statistics, maintenance reports, and accounting records. This data is used to evaluate performance measures such as passengers per mile, farebox recovery, and cost per passenger. Pigeon Forge has not had an issue collecting data as it is part of their daily operations and reports, which allow them to monitor the system regularly.

Using the data collected, recommendations are made to improve the system. Assessments include a complete range of solutions and strategies for rural transit services; these include:

- Efficiency changes/rerouting that did not require additional service or revenues

- Service improvements that require additional service or revenue
- Capital purchases with a focus on technology
- Increased collaboration and partnerships
- Marketing/education about the services
- Improved fleet condition
- Fare changes
- New staffing positions

Benefits

The assessment helps Pigeon Forge identify weaknesses and develop recommendations to make improvements.

Determining Effectiveness

Effectiveness is measured by comparing the previous and current assessments to determine which areas have seen progress.

Future Use of Assessments

The assessments are used by the City, transit agency, and TDOT to improve transit in the region. The assessments show Pigeon Forge where service needs to improve in the future and used to help with staffing, equipment needs, funding requests, and establishing new routes. Information in the assessments is incorporated into the 5-year Financial Plan for the City by its Finance Director.

Yuba-Sutter Transit Authority

Background Information

Public transit services are provided in Yuba and Sutter Counties (as well as commuter service to Sacramento) under a joint power agreement between Sutter and Yuba Counties and the Cities of Marysville and Yuba City by Yuba-Sutter Transit (YST). Transit services include six local fixed routes, dial-a-ride, rural routes, and Sacramento Routes. State, regional and local funding programs provide funding to support operations of the YST services. Passenger benefits include fare subsidies for students and persons 65 or older/disabled, allowing passengers to travel on any route for $5 per month.

The Sacramento Area Council of Governments (SACOG) requires that any transit agency receiving State Transportation Development Act (TDA) Funds must have a current Short Range Transit Plan (SRTP). The TDA was enacted in 1971 to improve California's public transportation and provides funding for public transportation in urban and non-urban areas. YST performs assessments (in the form of an SRTP) every five to seven years. The last assessment was completed in 2014. In addition to the regular assessments, certain changes may trigger an assessment, including:

- Change of growth requires new development and new routes
- Number of special plans approved with significant housing element
- Outlying community (300,000 houses) with one commuter stop outside of Sacramento – voicing need for transit

Agency's Role

YST hires a consultant to do the assessment, which is typically completed in 12-18 months. On average, YST spends 80-160 person-hours on these assessments. This time is largely spent coordinating with the consultant, public outreach, and reviewing reports and documents. To fund the assessment, YST submits to Caltrans a grant application. The state funding typically covers 80 percent, with the remaining 20 percent from the MPO or local funds. The last assessment cost $150,000.

Approach to Assessments

YST relies on the consultant to provide a template for the report, but certain elements are consistent throughout all SRTPs in the SACOG region. All plans include evaluating service and capital alternatives, a service/operating plan, a capital plan, and a financial plan. Since SRTPs are required per the COG, YST coordinates with SACOG throughout the plan process.

Methods/Data/Content/Strategies

Data collected by YST for the SRTP includes service hours, operating hours, ridership, service miles, non-revenue miles, operating miles, fare revenue and funding and other data reported/recorded to the NTD and as part of the TAM plan. YST collects many of these data points on a monthly basis through their contractor to share at monthly board meetings. Additionally, per the TDA, Regional Planning Agencies must conduct an annual Unmet Transit Needs Finding process each year. These needs must be incorporated into the update of the SRTP. Data is heavily relied upon to conduct the assessment. It is the backbone for the performance measures (passenger/hour, passenger/mile, cost/passenger, farebox recovery, accidents per rev mile, road calls per rev mile) used in evaluating the service.

The recommendations and strategies in the final plan resulted from a collaborative process between the consultant and YST. Strategies to improve service varied based on the mode but often include the following:

- Efficiency changes/rerouting that did not require additional service or revenues
- Service improvements that require additional service or revenue
- Increased collaboration and partnerships
- Marketing/education about the services
- Improved fleet condition
- Technology solutions that improve operations and/or the passenger experience
- Alternative modes such as microtransit or commuter bus
- Improvements that would increase ridership

Benefits

YST sees several benefits to conducting the SRTPs regularly. The SRTPs are an opportunity for an expert third party to provide an unbiased evaluation of the service to determine what is and is not working well. The data helps prioritize changes to improve the technology, provide better service and make minor route modifications. It provides an opportunity to examine alternative service models, reallocate resources, and integrate with other regional services to meet the region's mobility needs better. The recommendations of the SRTP will improve the service and make transit a more viable option for residents.

Determining Effectiveness

The primary measure of effectiveness is the number of recommendations that are successfully implemented in the plan's five-year period. Performance metrics are compared to previous years, and an improvement in metrics is determined to be an effective assessment. In particular, an increase in the key performance metric passengers/service hour.

Future Use of Assessments

YST uses the results of the SRTP to implement service changes, in particular alternative service models in areas served by underperforming routes. It also allows them to plan for new services in the future as demand changes due to new developments.

CHAPTER 6

Key Findings

To address the historical disparity in frequency, approach, and requirements of rural transit service assessments across states, compared to urban systems with more robust resources, this chapter presents key findings to support the purpose of the research to evaluate the current state of practice of rural transit assessments. Specifically, key findings from the literature review, survey responses, and case studies can provide resources and information that can influence State DOT philosophies and rural transit operators about making effective use of service assessments.

Findings from the Literature Review

A review of current literature offers insights into the purpose of an evaluation program, regardless of whether it is in an urban or rural context, and establishes appropriate metrics to define effectiveness. Findings from the literature indicate, and best practices are in Table 5 for:

- Metrics for evaluating service in rural areas need to be responsive to operating in a rural environment and distinct from standards necessitated for urban areas
- Federal reporting requirements can create a general performance measurement baseline for rural systems
- Transit providers in rural areas face unique challenges in data collection, which can impose limitations on the scope and determination of appropriate performance measures
- There is no minimum frequency of assessments, and often rural assessments are guided by other community or agency factors beyond minimum federal reporting requirements
- Data for the sake of gathering data is not sufficient for rural agencies. The data should be measurable, reflect the geospatial diversity of the service area, and require limited additional staff time to prepare and analyze the data
- The audience of the assessment is diversified and can be addressed from multiple perspectives, including the customer perspective, community perspective, agency perspective, and vehicle/driver perspective
- The results of the assessment can be used for different purposes; however, the but the most common use of assessments is for public transportation agencies to adjust service levels and monitor performance

Table 5. Literature Review Best Practices

Best Practices	
1	Develop metrics that relate to the agency's strategic plan, vision, or core mission
2	Go beyond data collection; instead, analyze, interpret, and use the data to understand the system's performance
3	An assessment is only as valuable as the quality of the data supporting it. Keep metrics simple and measurable without spending excessive time collecting and cleaning up the data. Utilize the resources that exist and reporting features included in existing software
4	Include measures beyond the effectiveness and efficiency of the system, such as those related to customer service, the customer experience, and broader community benefits stemming from transit
5	To better understand system needs, public outreach should include dialogue with various stakeholder groups to understand their perspectives related to the transit system.
6	Be transparent in the report and use consistent standards in performance evaluation programs

Findings from the Survey

Amongst the 107 survey respondents, findings from State DOTs and providers (rural transit operators, and state transit associations) provide insights about current assessments, including their frequency, benefits, usability, and effectiveness.

Compared to providers, State DOTs:

- Conduct assessments on a more regular basis (every three years was most common)
- Spend less time conducting assessments
- Utilize less staff time if assessments are done in-house rather than outsourced
- Utilize assessments to monitor statewide trends, determine funding awards, prioritize capital investments, ensure FTA compliance, and work with providers to implement plans
- Benefit from identifying unmet needs and gaining insights about how service is operated
- Determine effectiveness through the implementation of the plan, achievement of performance targets and improvements in performance measures, and ridership increase

Compared to State DOTs, providers:

- Collect more information than required by State DOTs
- Conduct an assessment when certain triggers are met based on data
- Likely to perform the assessment in-house
- Utilize assessments to monitor performance, adjust where needed, and improve service
- Benefit from identified improvements and improved efficiency
- Determine effectiveness by improvements in performance measures, ridership increases, achievements of targets/milestones, increased customer satisfaction, and number of recommendations implemented

Discrepancies between the two groups indicate:

- Differing opinions on the definition and use of an assessment
- DOTs do not always know of the diversity of local activities
- Providers may not know how to ask for funding to do assessments
- Most do not use technical aids, templates, or briefs to conduct assessments
- The type of data used and where the data comes from varies greatly
- Results of the assessment are used to change service, identify the need for new staffing positions, technology marketing, and fleet changes
- There is confusion over the difference between an assessment and a compliance review

Promising practices include:

- Conducting assessments regularly
- Use outside resources such as the DOT, MPO, or consultants if unsure about how to do an assessment or lack time to do so properly
- If the DOT is leading the assessment, make sure to include the provider in all aspects and not just as a stakeholder
- Defining the difference between an assessment and a compliant review, with the expectations for each
- Use the assessment not just to change service but to identify the need for new staffing positions, technology, marketing, and fleet changes

Findings from the Case Studies

Survey respondents provided recommendations for case studies, specifically five State DOTs and four transit agencies, which offer more in-depth information on why and how transit assessments are being done, the approach utilized including data, methods, and strategy, and the outcomes of the assessment. Key findings include and best practices are in Table 6:

- Assessments are required per state law or a condition of funding in many cases. Where they are not, technical assistance and/or the DOT typically provides funding to conduct one; however, it is the responsibility of the transit provider to request it
- An assessment is determined successful if the recommendations are implemented
- Both transit agencies and State DOTs are very interested in performance management
- There is disagreement over the definition of what a comprehensive performance assessment is
- There is a fear of using performance measures to "punish" transit operators
- The top benefit is understanding needs and costs to include in capital plans
- Systems with a culture of making data-driven decisions are much more prepared and willing to conduct assessments

Table 6. Case Study Promising Practices

Promising Practices	
1	If funding from the DOT is available for conducting an assessment, the DOT should communicate the funding availability to providers
2	Conduct assessments on a regular basis, not only when there is a trigger to do so
3	Assessments are typically done every 3-5 years, review the document annually and assess progress
4	Do not use performance measures as a mechanism for the punishment of transit operators
5	Consistently implement a culture of data-driven decision making
6	If a DOT wants to ensure assessments are completed, then require the assessment as a condition of receiving funding or codified in law. The condition of funding should be completing the plan and not obtaining performance measures
7	Incorporating the results of the assessment into financial plans
8	Make sure that all parties who would be responsible for implementing recommendations from the assessment are part of the process from the onset

Summary of Key Findings

By conducting rural service assessments regularly, both transit providers and State DOTs benefit from identifying needs and areas of improvement. Assessments can help inform decision-making, increase transparency and communication between provider and DOT, promote Federal compliance, and establish a roadmap for the future for stakeholders. For transit providers, assessments can be a tool for improving system efficiency, improving customer satisfaction, and achieving performance targets. Comparatively, DOTs can use assessments to monitor trends, understand how service is operated, and prioritize planning and funding investments. Rural service assessments, when completed regularly, can be a powerful tool to increase transparency, promote data-driven decisions, meet the transit needs of the community being served, and plan for the future.

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Appendix A Rural Transit Assessment Guidebook

Best Practices in Rural Transit Assessment

GUIDEBOOK

AUGUST 2022

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1 Developing Rural Transit Assessments

A rural transit assessment evaluates current service and the demand for service to identify needs and make recommendations to better the service provided. Ultimately assessments act as a plan or roadmap for how the transit agency can implement change to improve the service, which is different from a performance evaluation, which is just one element of a service assessment. A service assessment is also different than a compliance review. A service assessment is broader with the goal of identifying priorities for improvement over a number of years where a compliance review is more focused on a particular element of the system and may require immediate action.

The purpose of this guidebook is to provide state DOTs and rural transit providers with the benefits and steps needed to conduct an assessment. The process used in conducting a service assessment comprises eight steps and is outlined in Figure 1. Each phase of the assessment is explored in further detail in subsequent subchapters. The guidebook also provides information on the data needed to conduct the assessment, options for public involvement, typical timelines, cost ranges, how often to conduct assessments, types of contracting mechanisms to hire consultants, and how the results can be used.

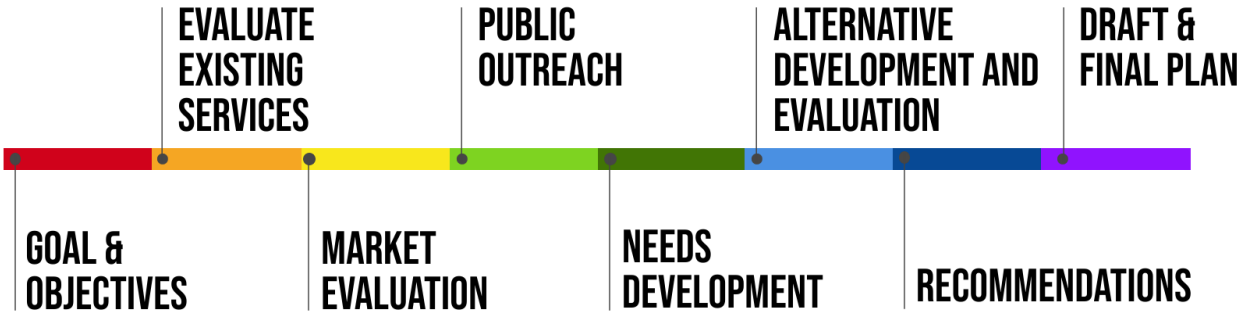

Figure 1. Steps to an Assessment

1.1 Goals and Objectives

In order to ensure the Plan addresses the broader transportation and community issues, a series of project goals and objectives should be identified based on the mission and vision of the transit agency. While goals outline priorities, objectives are concrete statements with measurable actions necessary to implement the goals (Figure 2). To be useful, objectives must be supported by performance measures that allow citizens, stakeholders, and policymakers to measure how the assessment has met its goals and where further refinements are necessary. Goals and objectives are the foundation of the assessment, and a common approach used is to keep them “SMART”: Specific, Measurable, Achievable, Realistic, and Time Specific.

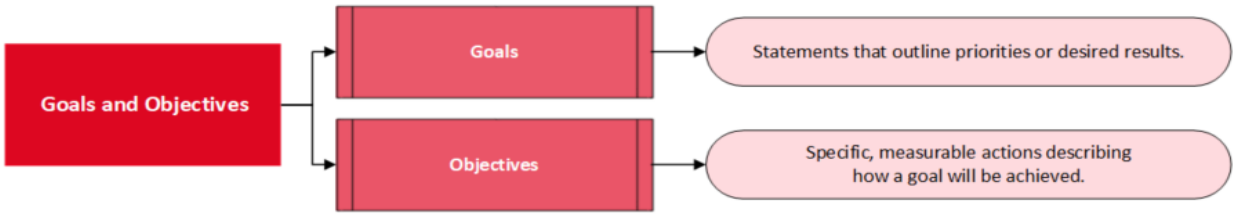

Figure 2. Goals and Objectives Step

To develop goals and objectives, key players such as stakeholders, interest groups, and community group representatives need to be assembled. Using a collaborative process to develop the goals and objectives for the assessment will create a more versatile plan that incorporates the needs of various interest groups. Goals should be realistic, broadly focused, provide the ability to create objectives, describe a desired future outcome, and be limited in number. Objectives support the goals, and each goal can have numerous objectives. Objectives should be measurable, simple and easy to understand, realistic and attainable, relevant, and support the goal.

1.2 Evaluate Existing Services

The purpose of evaluating existing conditions (a performance evaluation) is to understand the operating characteristics and how the system is performing. It is one of the beginning steps in a service assessment The performance evaluation should include an overview of the system, route/service profiles, trend/performance analysis, capital information, and connectivity. A peer benchmark analysis can also be done to compare how the system is performing to comparable transit systems. The Rural Integrated National Transit Database (NTD) (https://www.ftis.org/rural_iNTD.aspx) is a resource that can be used to select peers and easily access NTD data. It ranks similar systems using a likeness score based on operating characteristics and environments.

The system overview provides background information about the provider, such as a brief history, structure/governance, service area, span and days of service, and types of transit operated. This section should include a map with the routes/service areas and transit agency jurisdiction.

Route/service profiles provide a more detailed summary of current services. They should include the name of the service, its type, a short description, and if multiple operators exist, the name of the operator. This section should also include tables of the current level of service provided for each route (days operated, span of service, frequency) and tables or figures outlining the service metrics for the most recent year (ridership, revenue hours, revenue miles, operating costs, fare revenue).

Analyzing historical trends and existing performance provides an understanding of how the system is performing. It is a data-driven process that looks at all aspects of service, including financial, performance, level of service, assets/maintenance, safety and security, and customer service. **Section 2** provides more information on the data needs and potential metrics to analyze. Service can be evaluated against existing benchmarks, comparable peers, national trends, and best practices. The *Rural Transit Fact Book*[1] is a

[1] Upper Great Plains Transportation Institute, Small Urban and Rural Center on Mobility, Rural Transit Fact Book, https://www.ugpti.org/surcom/resources/transitfactbook/

useful resource on statistics and information for rural transit across the country. *TCRP Report 141*[2] (A Methodology for Performance Measurement and Peer Comparison in the Public Transportation Industry) provides guidance on selecting peers. The methodology has been incorporated into the Florida Transit Information System – Rural Integrated National Transit Database System[3].

The capital overview should provide a brief outline of the system's facilities, fleet, and technology. Facility information to include is the function, ownership/maintenance responsibilities, condition, and if utilized by transit vehicles. The vehicle inventory should break the vehicles down by type and provide information on the quantity, age, mileage, and condition. A listing of technology utilized by the provider should include the vendor, year procured, and limitations that exist. Much of the capital information is available in the agency Transit Asset Management Plan.

Connectivity explores how the transit system connects with other transportation systems such as neighboring public transit providers, interstate bus, passenger rail, commuter transportation services such as vanpools, and if applicable transportation network companies. This section should summarize what the connections are, any transfer or fare agreements, and any data available on ridership transfers between systems.

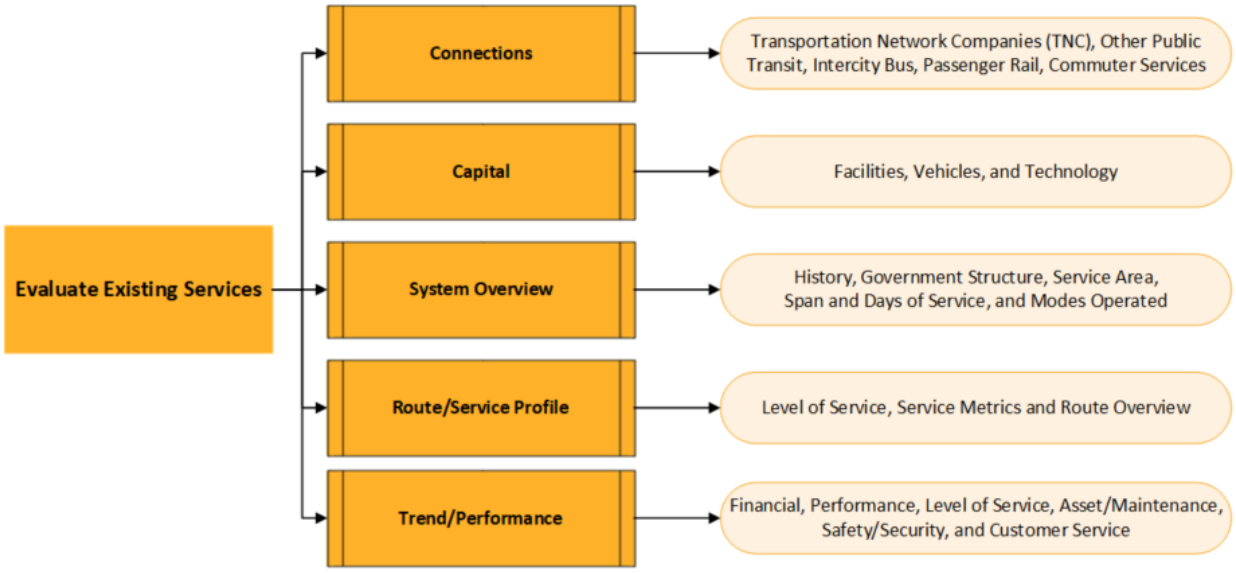

Figure 3. Evaluating Existing Services Steps

1.3 Market Evaluation

The market evaluation helps quantify and identify need based on current demographic and socioeconomics, travel patterns, employment, and land use. If the service area has large seasonal fluctuations in populations and visitors, this should be accommodated for in evaluation the market.

[2] National Academies, Transportation Research Board, Transit Cooperative Research Program, Report 141, https://www.trb.org/Publications/Blurbs/163872.aspx

[3] Florida Department of Transportation, Florida Transit Information System, Rural Integrated National Transit Database (Rural iNTD), https://www.ftis.org/

Demographic and socioeconomic characteristics to assess include population densities, income levels, households without access to vehicles, protected Title VI populations, and concentrations of older populations. Collectively this data can be used to create a transit needs index for the region. Demographic and socioeconomic data is available through the census, the section on data needs provides further information. Maps can be made by using Geographic Information System (GIS) software such as ArcMap or using online platforms such as ejscreen.epa.gov, policymap.com, and socialexplorer.com.

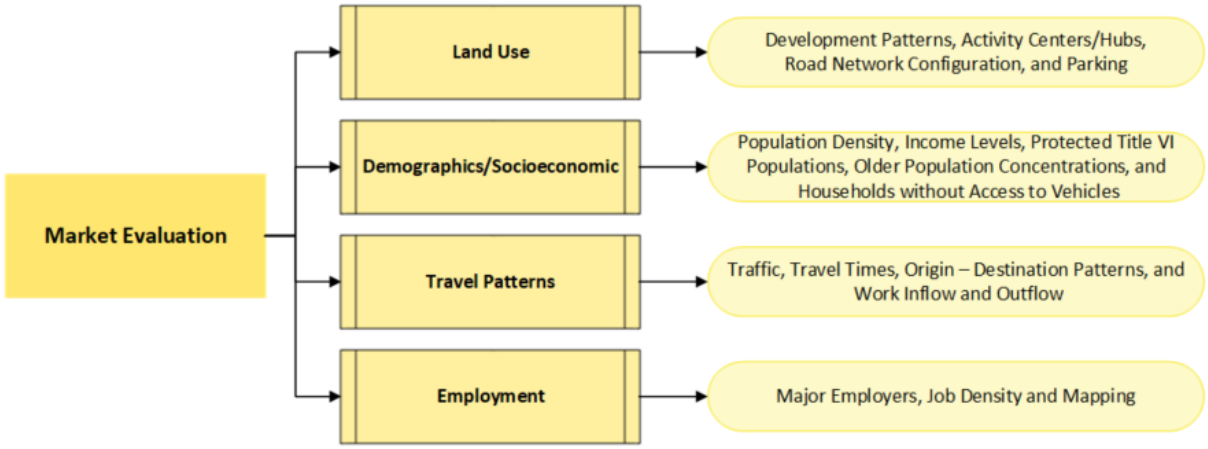

Figure 4. Market Evaluation Steps

Travel studies have shown that the most common trip taken daily is the trip to work, understanding where clusters of employment are important in understanding potential transit demand. OnTheMap, a tool developed by the census, visually displays job densities and allows the user to create maps on job densities, inflows and outflows, where people who live in the area work, and the distance and direction individuals are traveling to/from for work.

Land use factors to examine are projected changes in development, activity centers/major hubs, traffic congestion and roadway network, and parking. It is important to understand both the existing land use but also future land use designations. Residential development activity can project changes in population where corridor or economic development can have high transit demand. Activity centers are places that attract residential travel such as employment centers, educational institutions, shopping center or medical facilities. An analysis of traffic can indicate areas of high demand but also indicate areas where it may be difficult to maintain schedule times.

1.4 Public Outreach

Engaging the public and key stakeholders is a fundamental process for conducting an assessment. Public outreach is the process of obtaining, analyzing and incorporating public feedback into the plan. It begins with developing a Public Involvement Plan which lays out the types of outreach to be conducted and the method, key stakeholders, logistics, roles and responsibilities, and provides a schedule of events. **Section 4** provides information on various in-person and digital/remote strategies and how to get the word out that you are looking for public input. Once outreach is complete the results are synthesized and key findings identified, the results can then be incorporated to identify needs.

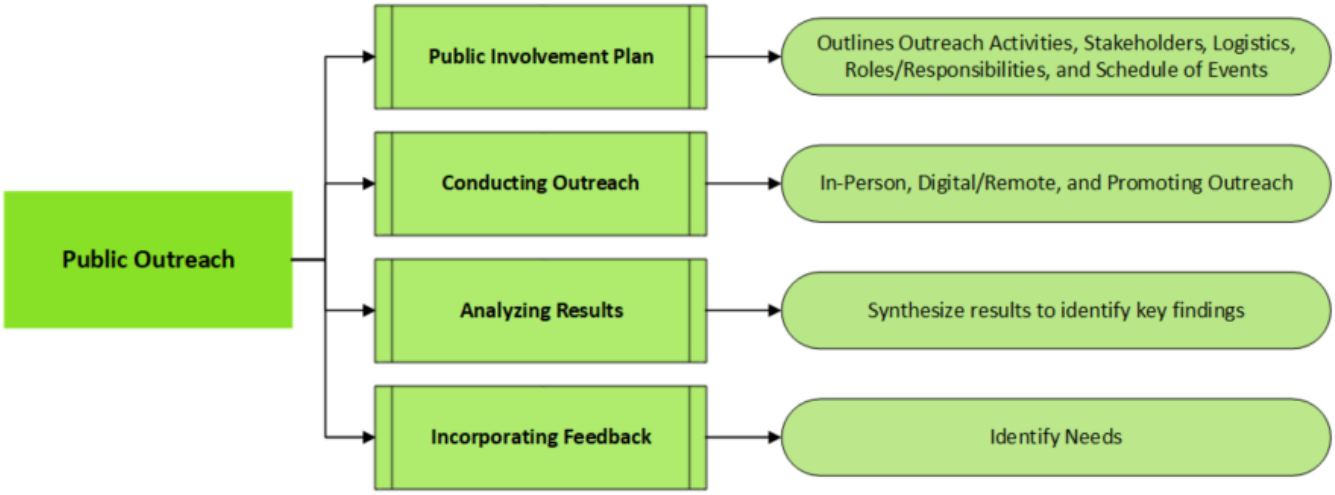

Figure 5. Public Outreach Steps

1.5 Needs Development

The needs development identifies opportunities for improving and enhancing service. It takes the findings in the existing conditions overview, public outreach, market analysis, and review of past studies to develop a comprehensive lists of improvements that would enhance service, fill gaps, and improve service delivery. Needs should be realistic and look towards performance, assets and policies to determine if there is need to expand or reduce service, change alignments, switch modes, upgrade facilities or fleets, improve technology, implement policies or change procedures. Once all needs are identified they should be categorized by type.

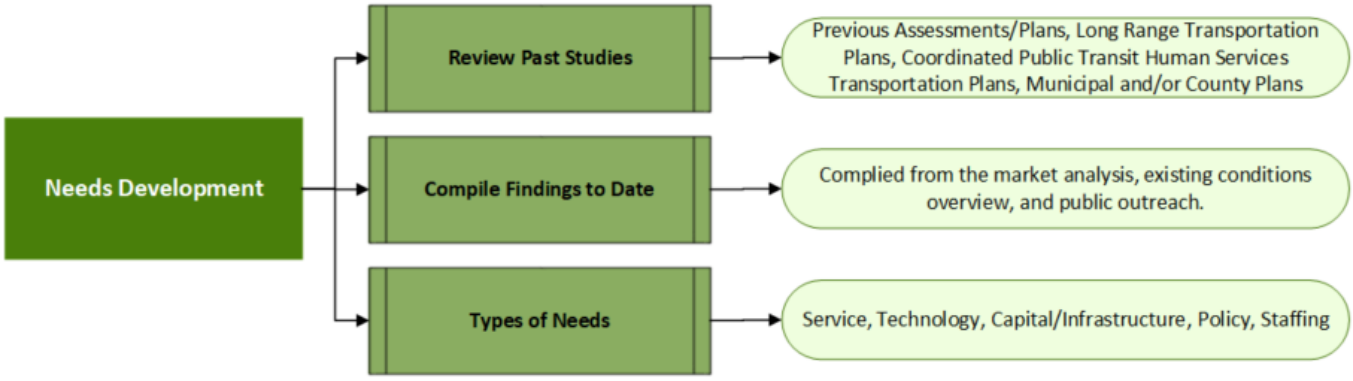

Figure 6. Needs Development Steps

1.6 Alternative Development and Evaluation

Unmet needs are the driving force for developing and evaluating alternatives. Alternatives should be developed that address the needs identified, meet the goals and objectives of the plan, are not fiscally constrained, and potentially implementable within in the lifespan of the plan. One common practice is to hold a workshop to develop and share ideas for potential alternatives to meet needs. The workshop commonly consists of 3-6 individuals who know the system well, have an understanding of the public's needs, and would be involved in any implementation. Once the list is developed it should be evaluated in

order to prioritize alternatives. In creating a prioritization process criteria and thresholds need to be developed in order to score each alternative.

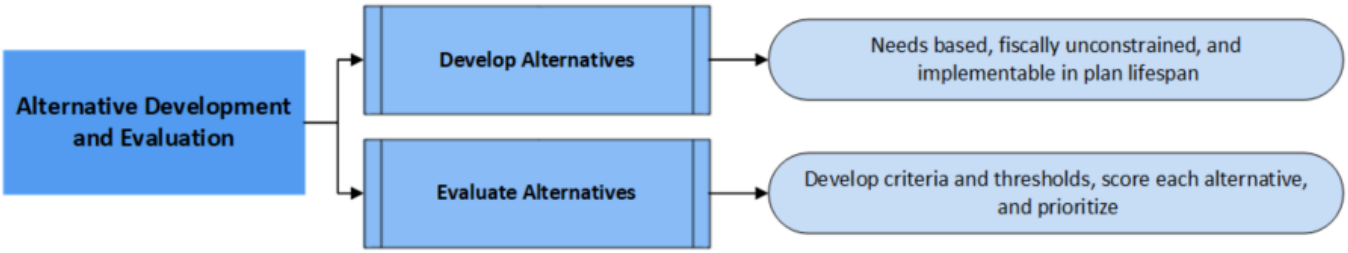

Figure 7. Alternative Development and Evaluation Steps

1.7 Recommendations

The recommended alternatives is a final list of recommendations, ranked based on the evaluation. The list of recommendations should include estimated costs, outline any additional requirements needed to implement, a potential timeframe to implement each, and be categorized by type. Operating costs are based on the projected annual hour to operate the service and the cost per hour. Capital costs include facility, vehicle and technology and can be derived from known costs if units have been previously purchased, state bid lists costs and peers. APTA maintains a fleet database with fleet specifics, including costs, from over 150 different transit agencies[4]. The USDOT ITS Joint Program Office has transit technology fact sheets that provide benefits and costs and a list of sample agencies that have deployed the technology[5]. Facility costs vary greatly based on the size and functions but the Independent Cost Estimates for Design and Construction of Transit Facilities in Rural and Small Urban Areas published by the National Cooperative Highway Research Program can be used to aid in estimating costs.

[4] American Public Transportation Association (APTA), Public Transportation Vehicle Database, https://www.apta.com/research-technical-resources/transit-statistics/vehicle-database/

[5] U.S. Department of Transportation, Intelligent Transportation Systems, Joint Program Office, ITS Professional Capacity Building Program, Transit Technology Fact Sheets, https://www.pcb.its.dot.gov/factSheets/default.aspx

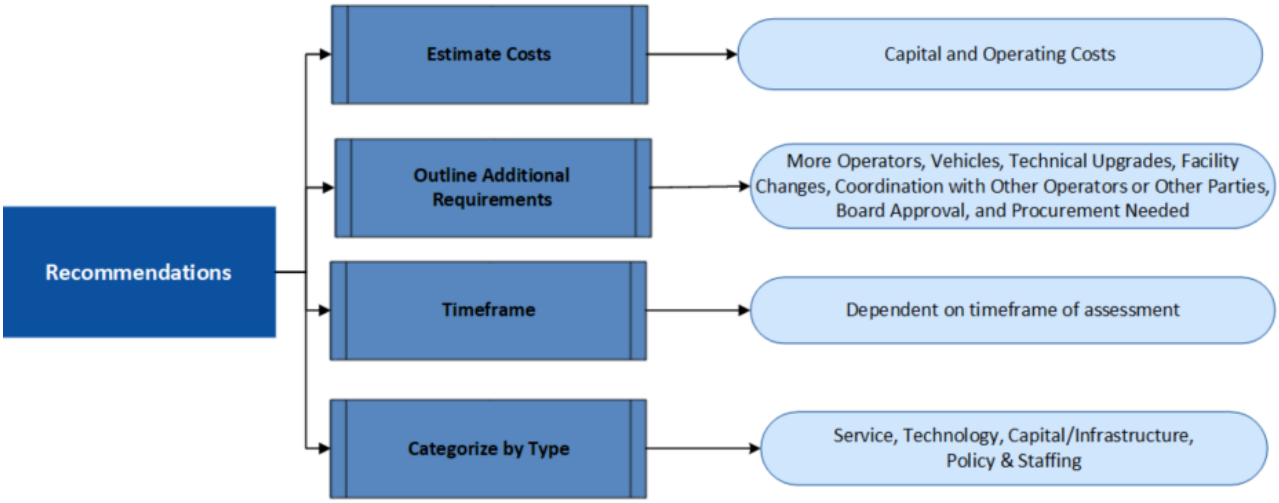

Figure 8. Recommendation Steps

By outlining additional requirements to implement recommendations such as workforce needs, coordination, procurements, and upgrades assists in assist in developing potential timeframes. The timeframe for each recommendation is dependent on the overall timeframe of the plan. Many agencies elect to utilize a short, medium, and long-term timeframe categories. **Section 5** provides further information on trends and best practices for plan timeframes. The timeframe assigned to each recommendation should not only consider the level of priority identified in the evaluation process but also funding levels, ancillary needs, and capital procurements. Lastly each recommendation should be categorized by the type that it is.

1.8 Draft and Final Plan

The draft and final plan should include an overview of the process used, list of recommendations, financial plan, implementation plan and outline any unfunded needs. The overview should summarize the previous steps and provide a snap shot of the current system, the operating environment and needs. The prioritized and evaluated list of recommendations are specific strategies that address the needs and are in line with the goals and objectives. Recommendations should include enough information to illustrate the changes. Maps should be provided where appropriate for service changes, as well as details on the type and level of service to be operated. Capital/infrastructure recommendations should outline the number, type and size of vehicles needs and any facility classifications and functions. Technology recommendations need to outline the functions(s) that the technology will perform. Staffing positions should include the position title and an overview of the tasks they will perform. Policies should state the type and intent of the policy.

Financial plans link recommendations to available financial resources. To create a financial plan assumptions need to be developed regarding funding sources, fare revenues, inflation, and unit costs. Revenues need to be projected and then matched with estimated recommendation costs. Revenues include both existing sources and potential new sources. The recommendation costs should have been developed in the previous phase and are based on assumed unit costs, the level of service to be operated for service related recommendations, and comparable capital costs.

The implementation plan outlines the improvement, the year it is to be implemented, annual operating cost, capital costs, potential funding sources, responsible party, special requirements, and the goal/objective the recommendations is meeting. It should include both funded and unfunded recommendations. Unfunded recommendations do not need to have an implementation year.

Figure 9. Draft and Final Plan Steps

2 Data Needs

Data to conduct an assessment can come from a variety of places including federal, state, local and internal sources. Data here is broken down into two types: internal data (Table 1) which is about the service operated and external data (Table 2) which is about the market/demand. Each type of data is broken down into categories, potential source(s), level of data needed, and the level of effort needed to collect the data. Next it compiles the data elements to outline key measures used to evaluate rural transit systems, what data is needed, and the level of analysis. **Appendix 1**, Data Request Template, provides a sample data collection list that can be used.

Internal data is that which the transit agency produces and includes service, asset, safety, customer service, performance, and financial data. Performance, financial, service, safety and customer service data should include five years of annual data for the mode and system level; route level data need be the most recent year only. Common sources for the data include scheduling software, financial audits and operation records. Asset data is derived from the TAM plan and is the current inventory.

Data that is readily available and does not require specialized software to view and analyze or are already tracked and reported as part of NTD reporting are considered to have a low level of effort to collect. This would include items readily found on agency's websites such as fare levels, hours of service, or route frequency. Medium level of complexity is for data that is readily available but does require specialized software to view and analyze. However, new reporting functions may be needed as it is not currently reported to the NTD. Several demand response data points around service capacity (missed trips, no-

shows, denied trips) are considered a medium level of complexity. High level of complexity is when the data is not readily available or tracked by the agency and would require new systems be put in place to do so. An example would be route level performance statistics.

If stop level passenger count data (boardings and alightings) is available from automatic passenger counters, geolocated fareboxes, or other means, this data should be included and mapped to better understand ridership patterns. Additional data that can be mapped if available includes pickup and drop-off locations for demand response trips or deviation requests, (if the latitude and longitudes are available) and distribution of bus stop amenities.

External data can provide insights into the market/demand of the service area. External differs from internal data sources because it is prepared, collected, and distributed by sources outside of the transit agency. Common external data sources include the US Census Bureau, which hosts data sets including the 10-year Census data, 5-year American Community Survey (ACS), and the Longitudinal Employer-Household Dynamics (LEHD) dataset. The US Census Bureau website[6] includes the datasets, tables, maps, and other regional profiles. Census data is reported at various levels of statistical division, including block groups or divisions of census tracts generally defined to contain between 600 and 3,000 people[7]. Data can also be sorted directly on the US Census Bureau website allowing users to filter for specific criteria such as population, households without access to a vehicle, and other demographics such as age, race, and ethnicity. External data can be inputted into GIS software to prepare maps and identify market trends.

External data can also be used to forecast the potential demand of an area in the future. If the data is overlayed with internal data, users can analyze information to identify areas where there may be gaps in service or potential future demand. For example, if Census data indicates an area where a large portion of the population is over the age sixty-five may indicate a need for paratransit service if service does not exist in that area. Other local or regional data may be available through the Metropolitan Planning Organization (MPO), city, town, county, or organization such as a Chamber of Commerce to aid in additional local level analyses.

[6]U.S. Census Bureau, Explore Census Data, https://data.census.gov/cedsci/
[7] U.S. Census Bureau, Glossary, https://www.census.gov/programs-surveys/geography/about/glossary.html#:~:text=Block%20Groups%20(BGs)%20are%20statistical,data%20and%20control%20block%20numbering

Table 1. Internal Data Elements Needed

Data Element	Category	Potential Source	Level of Data Needs	Effort Level to Collect
Canceled trips	Performance	Scheduling software	Mode - Demand Response Only	Medium
Complaints	Customer Service	Operations records, Customer service	System	Medium
Denied trips	Performance	Scheduling software	Mode - Demand Response Only	Medium
Facility Inventory	Asset	TAM plan	System	Low
Fare revenue	Financial	NTD, Farebox reports, Annual Audits	System, Mode, Route (if data is available)	Low: System and Mode Low-High: Route (Will vary based on system)
Fare structure	Financial	Website, schedules	System, Mode, Route (if varies)	Low
Frequency	Service	Website, schedules	Route	Low
Funding by source	Financial	NTD, Annual audit	System	Low
Hours of service	Service	Schedules	Route	Low
in-vehicle travel time	Performance	Scheduling software	Mode - Demand Response Only	High
Major mechanical failures	Safety	Maintenance logs	Vehicle type	Medium
Missed trips	Performance	Scheduling software	Mode - Demand Response Only	Medium
no-shows	Performance	Scheduling software	Mode - Demand Response Only	Medium
Number of trips	Service	Scheduling software	Mode - Demand Response Only	Medium
On-time performance	Performance	Scheduling software for DR; AVL for MB.	Mode, Route (if data is available)	High
Operating Cost	Financial	Annual audit	System, Mode, Route (if data is available)	Low: System and Mode Low-High: Route (Will vary based on system)
Phone hold time	Customer Service	Phone System	System	
Preventable accidents	Safety	Operations records	System, Mode	Medium
Reported major safety events	Safety	NTD safety	System, Mode	Low

Vehicle revenue hours (VRH)	Service	NTD for System and Mode. Internal for Route	System, Mode, Route (if data is available)	Low: System and Mode Low-High: Route (Will vary based on system)
Vehicle revenue miles (VRM)	Service	NTD for System and Mode. Internal for Route	System, Mode, Route (if data is available)	Low: System and Mode Low-High: Route (Will vary based on system)
Unlinked passenger trips (UPT)	Service	NTD for System and Mode. Internal for Route	System, Mode, Route (if data is available)	Low: System and Mode Low-High: Route (Will vary based on system)
Route/service area maps	Service	GTFS, Maps, scheduling software	System, Route	Low
Technology Inventory	Asset	TAM plan	Systemwide	Low
Unique passengers	Service	Scheduling software	Mode- DR.	Medium
Vehicle Inventory	Asset	TAM plan	Vehicle type	Low
Vehicles operated in peak service	Service	NTD	System, Mode	Low

Table 2. External Data Sources Needed

Data Element	Potential Source	Level of Data Needs	Effort Level to Collect
Households without access to a vehicle	Census table number B25044	Census - Block Group	Medium
Jobs	LEHD - on the map	Census Block	Medium
Major employers	Chamber of Commerce, Planning department.	Location of Employers	Low
Percent of population living below poverty	Census table number C17002	Census - Block Group	Medium
Percent of population over 65	Census table number B01001	Census - Block Group	Medium
Population	Census table number B01001	Census - Block Group	Medium
Population with a mobility limitation	Census table number S1810	Census Tract	Medium
Service area size	Census	Boundary file	Medium

3 Performance Measures

Performance measures evaluate the outcomes of a system and inform the effectiveness and efficiency of service. An outcome represents a specific result a program is intended to achieve and is different from an output. For example, providing transit service to a large rural area is an output as a result of time, staff, funding, and day-to-day transit administration (Figure 10). Identifying the effectiveness of that service delivery is an outcome. Outcomes and performance measures evaluate whether that delivery of service achieved agency objectives, as described in **Section 1.1.1**.

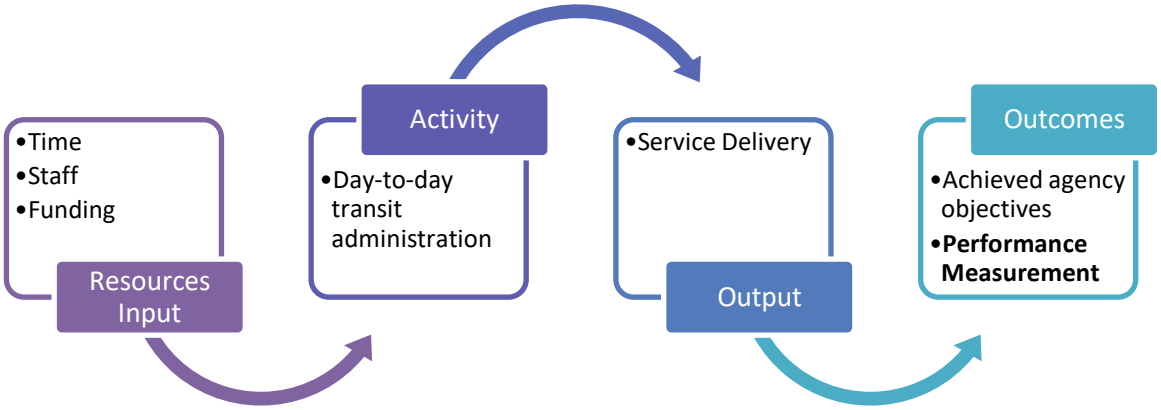

Figure 10. Example Performance Measurement Flow-Chart

Performance measures support a performance-based approach to planning, programming, and assessment. When completing an assessment, internal and external data can help with the identification and application of performance measures. Additionally, both primary and secondary performance measures may be optional for monitoring service planning and/or a requirement of state or federal law as part of funding agreements. As outlined in Table 3, primary performance measures are minimum measures that should be used to assess service and include financial, asset, customer service, performance, safety, and level of service measurements. Secondary performance measures can support primary performance measures that, if the data is available, go into a greater level of service analysis. Secondary performance measures as outlined in Table 4 include additional measures for system-wide, modal, and route level analysis.

Before identifying performance measures that may be appropriate for the system, consider the existing level of service, type of service operated (Bus (MB), demand response (DR), commuter bus (CB), demand taxi (DT), and vanpool (VP)), as well as the data readily available. Common data needed include ridership, vehicle revenue hours, vehicle revenue miles, and cost data, which is often complied for NTD. Data reported to NTD can be a useful starting point for identifying and implementing performance measures to assess service.

Table 3. Primary Performance Measures

Type of Measure	Measure	Data Needed	Level of Analysis		
			System Wide	Modal	Route Level
Performance	Passenger trips per vehicle revenue hour	- Total passenger trips - Vehicle revenue hours	X	MB, DR, CB, DT, VP	X
Performance	Ridership changes (annually and monthly)	- Ridership	X	MB, DR, CB, DT, VP	X
Performance	On-time performance	- Total trips - Trips completed on-time		MB, DR, CB,	X
Financial	Operating cost per vehicle revenue hour	- Vehicle revenue hours - Operating cost	X	MB, DR, CB, DT, VP	X
Financial	Operating cost per passenger trip	- Ridership - Operating cost	X	MB, DR, CB, DT, VP	X
Financial	Farebox recovery	- Fare revenue - Operating cost	X	MB, DR, CB, DT, VP	X
Financial	Operating cost per vehicle revenue mile	- Operating cost - Vehicle revenue miles	X	MB, DR, CB, DT, VP	X
Asset/Maintenance	Road calls per 100,000 VRM	- Road calls - Vehicle revenue miles	X	MB, DR, CB, VP	
Asset/Maintenance	Average vehicle age	- Number of vehicles - Vehicle ages	X	MB, DR, CB, VP	
Customer service	Complaints per 100,000 UPT	- Ridership - Complaints	X	MB, DR, CB, VP	
Safety/security	Preventable accidents per 100,000 VRM	- Ridership - Vehicle revenue miles	X	MB, DR, CB, VP	
Level of Service	Passenger trips per capita	- Ridership - Service area population	X	MB, DR, CB, DT, VP	

Table 4. Secondary Performance Measures

Type of Measure	Measure	Data Needed	Level of Analysis		
			System Wide	Modal	Route Level
Performance	Average passenger trip length	- Pickup and drop off odometer readings by trip		DR	
Performance	Average travel time	- Pick up and drop off times by trip		DR	
Performance	Passenger trips per vehicle mile	- Ridership - Vehicle revenue miles	X	MB, DR, CB, DT, VP	X
Performance	Average revenue speed	- Vehicle revenue miles - Vehicle revenue hours		MB, DR, CB, DT, VP	
Performance	Percent above load capacity	- Vehicle load capacity - Average vehicle capacity		MB	
Performance	Passengers per trip	- Ridership - Number of trips		DR	
Performance	Trip denials per 100,000 passenger trips	- Ridership - Denials		DR	
Performance	Percent of late cancellations	- Ridership - Late Cancellations		DR	
Performance	Percent of no-shows	- Ridership - No-shows		DR	
Performance	Missed trips	- Ridership - Missed trips		DR	
Performance	Route directness	- End-to-end route length - Straight line distance between ends		MB	
Financial	Subsidy per UPT	- Ridership - Operating cost - Fare revenue	X	MB, DR, CB, DT, VP	X
Financial	Cost per capita	- Service area population - Operating cost	X	MB, DR, CB, DT, VP	
Financial	Operating revenue per Vehicle revenue hours	- Vehicle revenue hours - Fare revenue	X	MB, DR, CB, DT, VP	

Asset/Maintenance	Met TAM targets	- TAM targets - Vehicle ULB and facility TERM scores	X		
Asset/Maintenance	Spare ratio	- Vehicles operated in maximum service - Active vehicles	X	MB, DR, CB, VP	
Asset/Maintenance	Vehicles within ULB	- Active vehicles - Vehicle ULB	X	MB, DR, CB, VP	
Asset/Maintenance	Fleet Cleaning	- Active vehicles - Fleet cleaned in a given period of time		MB, DR, CB, VP	
Customer service	Phone hold time	- Average phone hold time	X	DR	
Customer service	Percentage of missed phone calls	- Missed calls - Total calls	X	DR	
Safety/security	Injuries per 100,000 PMT	- Ridership - Injuries		MB, DR, CB, DT, VP	
Safety/security	Fatalities per 100 million revenue miles	- Vehicle revenue miles - Fatalities		MB, DR, CB, DT, VP	
Safety/security	Safety incidents per 100,000 vehicle miles	- Vehicle revenue miles - Safety incidents		MB, DR, CB, DT, VP	
Level of Service	Vehicle miles per capita	- Vehicle revenue miles - Service area population	X		
Level of Service	Population per peak vehicle	- Vehicles operated in maximum service - Service area population	X		
Level of Service	Vehicle revenue miles per square mile of the service area	- Service area size - Vehicle revenue miles	X		
Level of Service	Percentage of trips or coverage of Demographic groups (senior, People with disabilities, poverty)	- Total service area population by demographic group - Population with demand response service or within ¾ mile of a bus route by demographic group	X		
Level of Service	Vehicle revenue hours per capita	- Vehicle revenue hours - Service area population	X		
Level of Service	Percent of the population served by transit	- Total service area population - Population with demand response service or within ¾ mile of a bus route	X		

4 Public Involvement

Actively involving the public is a vital component in the planning, policy development, and implementation of public transportation. When conducting a rural transit assessment, actively involving and collaborating with policymakers, stakeholders, partners, and members of the public is critical for decision-making. Public involvement involves the practice of organized interaction to serve an established objective which can be achieved by soliciting participation, sharing information, and receiving feedback[9].

When deciding on the approach and design to the public involvement process, consider:

- Deploying a variety of public involvement techniques that target different groups or individuals to ensure an inclusive process that is accessible and equitable for all
- Set goals and objectives for the public involvement process driven by the goals or outcomes for the assessment
- Identify the people or groups to be included as well as groups who do not traditionally participate
- Assure that the proposed strategies and techniques aid decision-making[8] and select outreach events that help meet the objectives of the assessment

Outreach events and notifications can be simple or complex, depending on time and cost allocated and staff resources available. Public involvement can range from low complexity to high complexity as well as low to high cost. An example of the level of effort for cost and complexity is shown in Figure 11. Low to medium cost and complexity public involvement includes distributing posters, flyers, and handouts, sending out emails to stakeholders, posting on existing social media pages, and setting up a voicemail account to receive messages. High complexity and cost efforts include public hearings, focus groups, drop-in sessions, and on-board surveys. Examples of public involvement outreach events and the effort level/complexity, relative cost, audience, and participation potential are shown in Table 5.

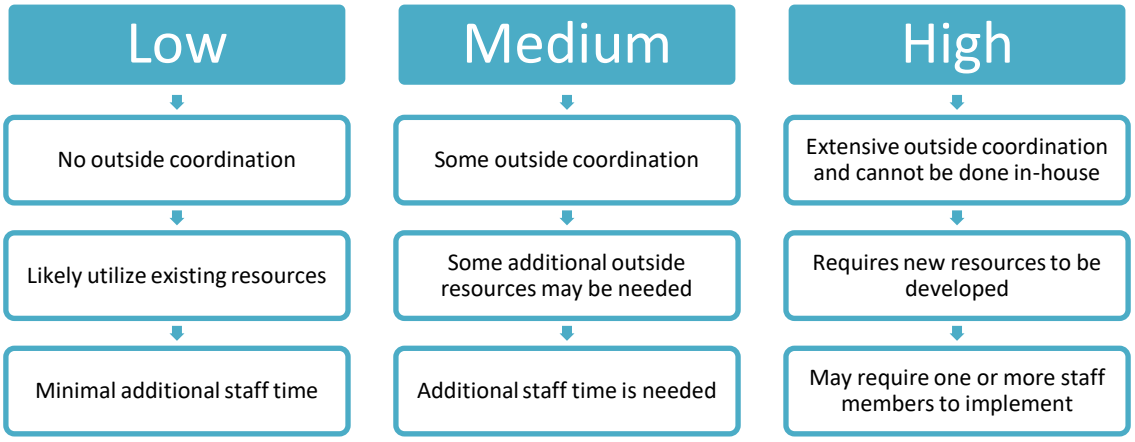

Figure 11. Public Involvement Level of Effort for Cost and/or Complexity

[8] Federal Highway Administration, Public Involvement Techniques for Transportation Decision-Making, https://www.fhwa.dot.gov/planning/public_involvement/publications/techniques/fhwapd96031.pdf

Table 5. Outreach Events to Collect Feedback

Outreach Event	Effort Level/ complexity	Relative Cost	Audience	Participation Potential[9]
Public Hearing/Meeting	High	High	General public	12-200 people per event
Virtual Meeting Room	High	High	General public	50-200 per room
Webinar	Medium	Medium	Targeted groups	25-2,000 people per event
Charrettes	High	High	Motivated members of the general public	8-12 people per event
Drop-in Sessions	High	High	General public	20-30 people per event
Pop-up Events	High	Medium	Targeted groups	50-100 people per event
Stakeholder Meetings	Medium	Medium	Businesses, institutions, advocacy representatives, human services	No more than 20 people
Focus Groups	Medium	Medium	Targeted audiences	8-15 people per event
Online Surveys	Medium	Medium	General public or targeted audiences	5 min or less to complete
Hotlines - Call-in lines to leave messages	Low	Low	General public	0.75-3.5 messages per 10,000 residents
Project email address/ongoing comments	Low	Low	General public	Very little utilization
Presentations at Regularly Scheduled Event	Low	Low	Members of the event, potentially interested members of the public	Typically 5-30
Operator Interviews	Low	Low	Bus operators	1-2 people per interview
On-Board Rider Surveys	High	High	Bus Riders	4-5 surveys per hour spent

Materials are typically branded with the transit agency name or logo and give the public the opportunity to engage on issues that directly impact them. Transit providers should inform riders and the public in a timely fashion and provide credible information for consideration. Staff need to carefully plan ways to contact the public, provide the needed information, hear their views, respond to comments and questions, and incorporate concerns into the decision-making process. As shown in Figure 11, which describes the public involvement level of effort, some outreach promotion requires little to no additional coordination, and others require more extensive outside coordination. Table 6 describes the ways to

[9] National Center for Applied Transit Technology, Virtual Engagement Guidebook, https://n-catt.org/wp-content/uploads/2021/08/Virtual_Engagement_Guidebook_Final.pdf

promote outreach events once the preferred event(s) has been determined to meet the objectives of the assessment. Low complex and low-cost efforts such as posters and flyers can be made in-house, likely in one day. Comparatively, sending flyers directly to homes in the community requires compliance with specific mailing requirements, outside coordination, and planning.

Table 6. Ways to Promote Outreach Events

Outreach Promotion	Level of effort/ complexity	Relative Cost	Target Audience	Reach
Posters (11x17) placed at public places	Low	Low	General public	Varies based on foot traffic
Flyers on-board vehicles and at stops	Low	Low	Riders	¼ of people boarding at the stop may read and 1/10 on board
Car Cards	Medium	Medium	Riders	1/10 unique passengers per vehicle will read it
Handouts/leaflets	Medium	Medium	Riders; General public	Varies based on location
Mailings (Address list exists)	Medium	Medium	Demand response riders; All residents	2-5% that is sent out participate
Seat drops	Medium	Low	Riders	Half of vehicles seated capacity will read it
Social media advertising	Medium	Medium	Social media users	1,000's if use a targeted approach
Robocalls	Low – if technology is in place already	Low	Demand response riders	35% of calls will be listened to[10]
Press Release	Low	Low	News readers	16% of adults read newspapers[11]
Email blasts	Low – if lists exist, medium - if they do not	Low	Interested individuals, stakeholder groups	Varies based on list size
Every Door Direct Mailing	High	High	Residents and business owners in a geographic area	500 addresses per USPS route
Agency websites and social media	Medium	Low	Followers	82% of people use social media in the US.

[10] Only 19% of people will pick up an unknown number https://www.pewresearch.org/fact-tank/2020/12/14/most-americans-dont-answer-cellphone-calls-from-unknown-numbers/ and 16% listen to voicemails https://www.cbsnews.com/news/are-you-still-checking-voice-mail/#:~:text=Only%2018%20percent%20listen%20to,People%20want%20a%20response%20now.

[11] Letter.ly, 21 Extraordinary Newspaper Statistics You Should Know About in 2022, https://letter.ly/newspaper-statistics/

5 Time and Cost Commitments

Developing and completing an assessment requires time and cost commitments from State DOT's and transit providers. Time is required to gather information, analyze data, evaluate service, conduct public outreach, and potentially develop an RFP. Costs are associated with completing the assessment. Research indicates there may be a discrepancy in cost resources available to transit providers, such that 73 percent of State DOTs report that funding is available to conduct assessments, but only 24 percent of transit providers stated funding is available.

Time and costs associated with completing an assessment were provided by State DOT's and transit providers, as shown in Figure 12. The longer an assessment takes to complete, the greater the spread of costs associated with that effort and the higher the average cost. An assessment that takes less than six months to complete has an average cost of $45,000. Comparatively, assessments with durations of more than six months and more than one year have an average cost of $73,000 and $150,000, respectively. Assessments that extend beyond one year have a greater spread of costs compared to assessments with shorter periods which is correlated with the extended time, resources, and effort required to complete assessments after one year.

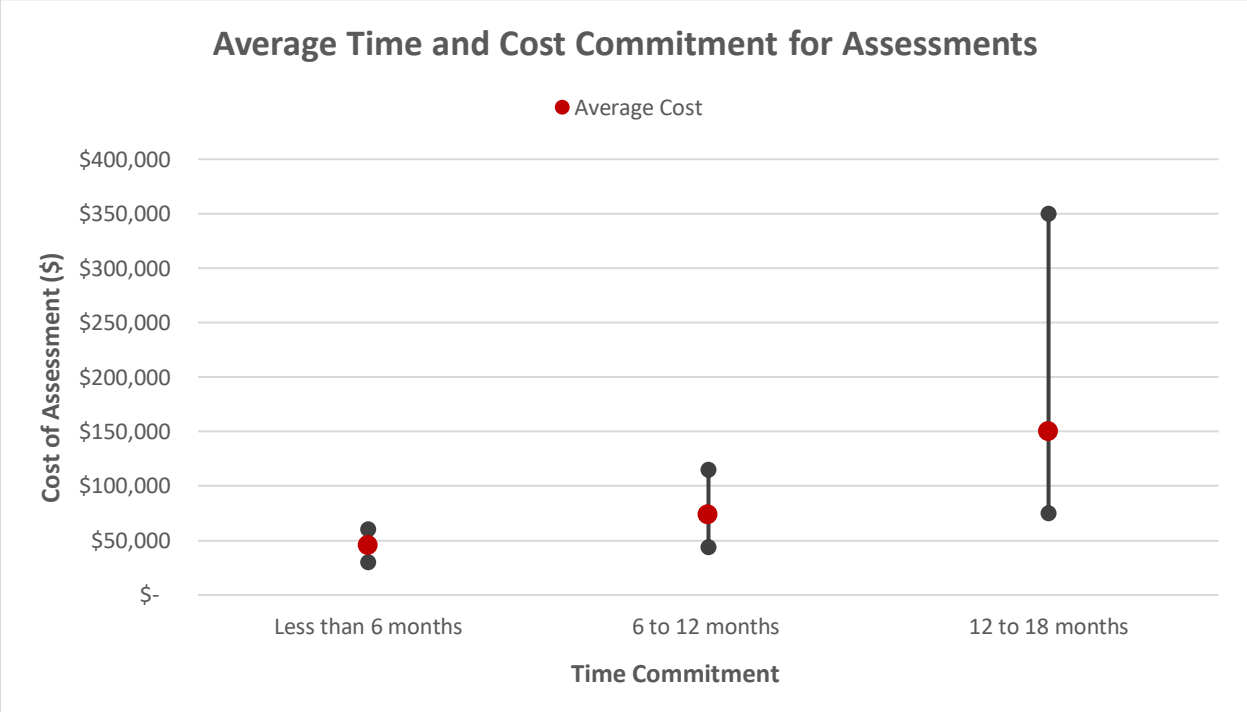

Figure 12. Average Time and Cost Commitment for Assessments

When developing a schedule for completing the assessment, it is important to include time to address all eight steps for conducting a service assessment as outlined in this guidebook. However, the longer the time duration, the higher the cost that is likely to be incurred. It is recommended to complete an assessment between 6 to 12 months to maximize time, effort, and cost.

An example of a proposed six-month schedule is shown in Figure 13, and a long-duration 12-month schedule is shown in Figure 14. The time allocated toward public outreach occurs throughout the entire duration. In a 12-month schedule, additional time is allocated to each stage, specifically for evaluating existing services, needs development, and preparing the draft and final plans.

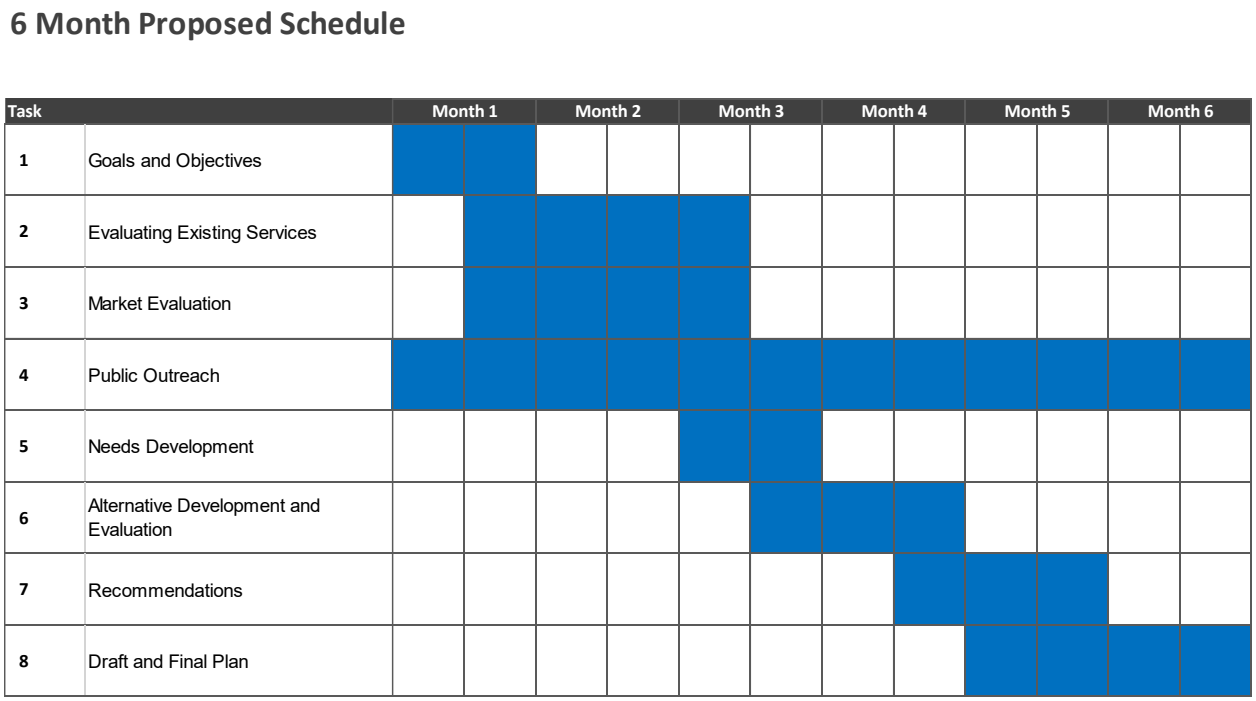

Figure 13. Example of a 6-Month Proposed Schedule for an Assessment

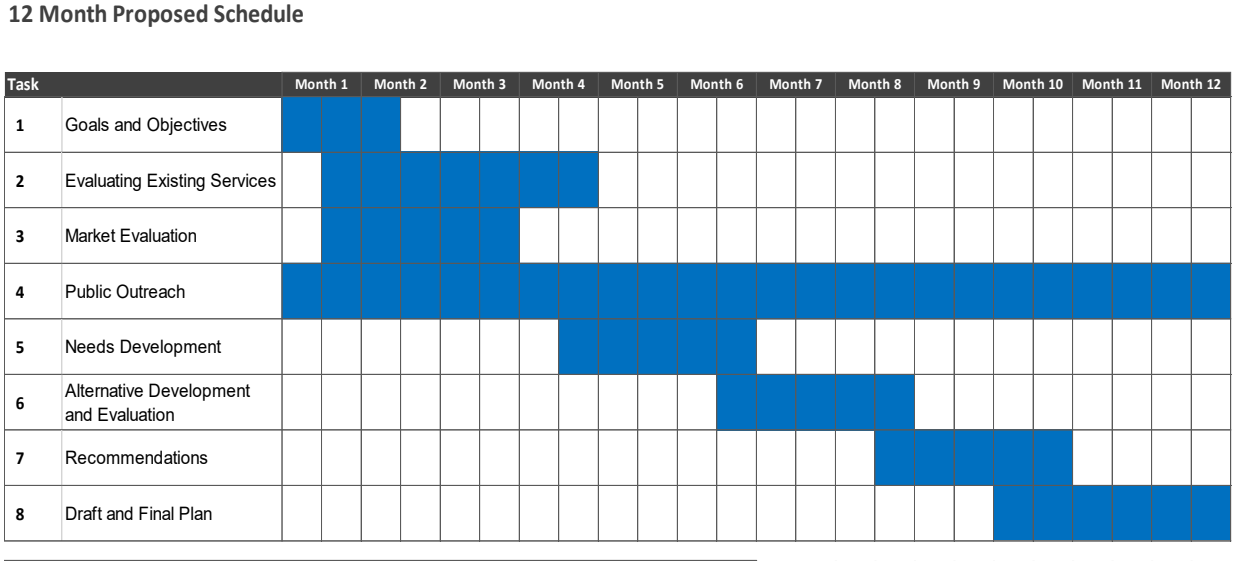

Figure 14. Example of a 12-Month Proposed Schedule for an Assessment

6 RFP Development

Request for proposals or "RFPs", and existing contracts, are the primary types of contract mechanisms used. RFPs are documents that announce a project, such as an assessment, describe the work to be performed, and solicits bids from qualified contractors to perform set work. Existing contracts have pre-negotiated terms and allow transit agencies to negotiate scopes and contracts much quicker. They could be with regional planning agencies, educational institutions, or on-call contracts with consultants. Consultants can be available for on-call support throughout the duration of an assessment or hired to provide technical assistance with specific components. For example, consultants can provide system-wide financial or ridership analyses or just develop performance measures. Local regional planning agencies similarly can provide support with the assessment for data or other analyses. State DOT's can also assist with developing the RFP, identifying a consultant, or other technical support.

RFP's for assessments typically include the following information:

- Project overview or background - information about the scope of work, background about the transit provider, and the need for the assessment or plan
- Scope of work and deliverables – outlines the technical assistance needed and the proposed content of the plan or assessment
- Requirements – RFP identifies specific areas of support needed to meet local, state, or federal requirements, as applicable
- Timeline or high-level schedule
- Cost estimate per plan or plans
- Public engagement requirements, as applicable
- Identify any resources available to consultants to support the development of the assessment

7 Frequency of Assessment

Assessments should be completed at a frequency that allows users (*i.e.,* State DOT's, transit providers, MPOs) to maximize their usability. At a minimum, rural transit providers are required to report agency information to the NTD through the State DOT on an annual basis. These reports are due at the conclusion of the state's fiscal year. Additionally, transit providers typically conduct regularly scheduled performance reporting. Some agencies conduct monthly reporting on their performance standards, and others prefer quarterly, semi-annual, or annual reporting. A detailed discussion on the development of performance standards is found in **Section 1.2**.

Assessments are different from reports or documents required for FTA compliance; however, assessments may include information identified or prepared for compliance reporting. Typically, FTA compliance reports are required every year or every three years in the form of a triennial review. An assessment is the evaluation of the performance of the system. The results of the assessment, as shown in Figure 15, can be used to determine effectiveness, address unmet needs, and plan for the future.

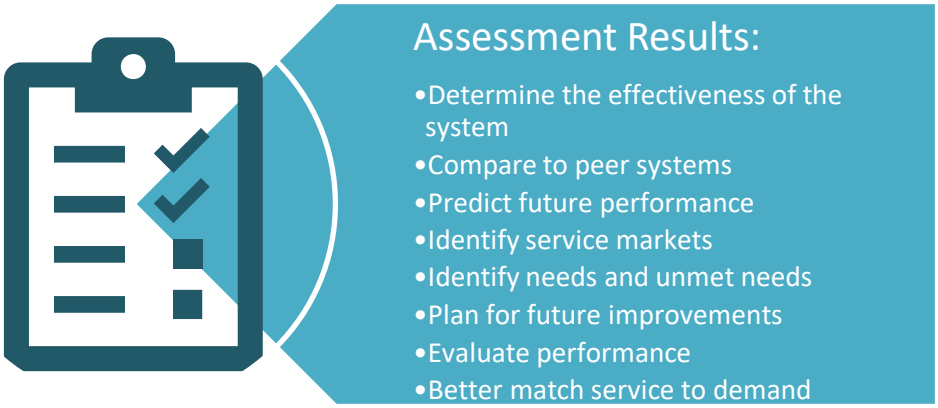

Figure 15. Using the Results of an Assessment

7.1 Recommended Frequency

The recommended frequency for transit providers is to complete one assessment every three to five years, with updates provided annually. This frequency allows State DOT's and transit providers to leverage staff knowledge, allows for the inclusion of triennial findings, and balances resource needs, including staff time, data, and funding required. Additionally, annual updates can provide an opportunity for transit providers to update data, evaluate existing performance measures (if applicable), and continue an open dialogue with the DOT.

Survey results found that the frequency cited most often by State DOTs and transit providers for conducting assessments was every one to three years, followed by every three to five years. Of the State DOTs that do assessments, 94 percent do so for all rural providers in the state. One-third of states that conduct assessments do so all at once, and the other two-thirds use a rolling basis. Those using a rolling basis, on average, conduct one-third of the assessments each year. The disadvantage to conducting an assessment too frequently or not frequently enough is that the findings may not be detailed enough or relevant for performance improvement.

8 Using the Assessment Results

The value of an assessment is using the results to address any identified unmet needs and make improvements. Research indicates that assessment results can be beneficial for State DOT's, transit providers, and metropolitan planning organizations for various reasons. The following section describes the greatest benefits, top uses, and how each of these stakeholders determines the effectiveness of an assessment.

Assessment results can be informative and useful when applied to make programmatic or systematic changes. As shown in Figure 16, potential service changes due to assessments include hiring new staff, capital purchases such as software, technology, or fleet, modifying service or fares, and increasing collaboration with stakeholders and the public. Additionally, assessments can serve as a baseline for

future assessments and performance management, including service monitoring, establishing benchmarks, standards, or other performance measures.

When the existing conditions are known by all stakeholders, these results can increase transparency, identify opportunities for assistance, and improve communication. Assessment results can have direct impacts on communities being served. By identifying areas of improvement, stakeholders can work collaboratively to make changes for a better future.

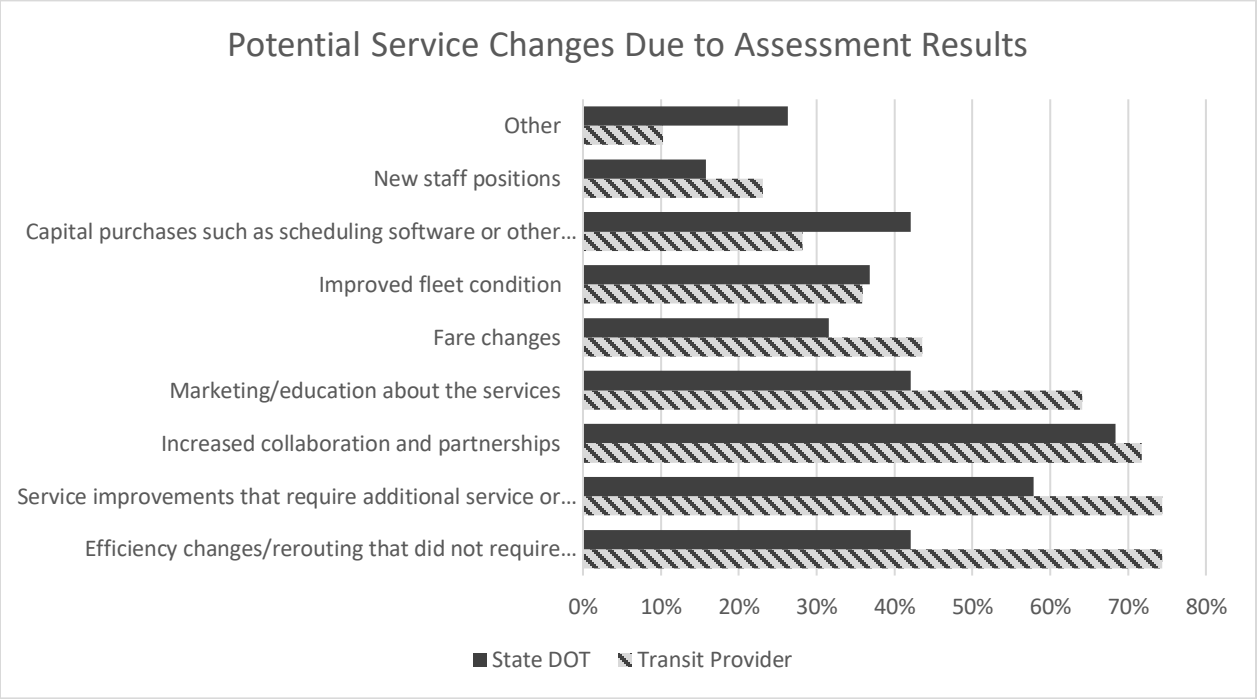

Figure 16. Potential Service Changes Due to Assessment Results

8.1 State DOT

State DOT's can gain valuable insight into rural transit providers' day-to-day operation and service provision. Assessments lead to identifying unmet needs and areas of improvement which can support DOT's as they determine funding allocations. For example, an assessment may identify capital fleet needs for an agency, which a State DOT can then prepare for accordingly in the financial planning process. State DOT's can also provide technical assistance to providers when needed to best meet the provider's needs. Other assessment benefits include assessing transit providers' compliance with FTA requirements and understanding service change and funding impacts.

State DOT's indicate the greatest benefits to conducting assessments include identifying unmet needs, gaining insights into the transit agency and service, determining funding allocations, assessing FTA compliance, and justifying service changes and associated funding. State DOT's use the results from the assessments for a variety of use-cases, including:

- Implementing the results of the assessment to improve the system
- Developing financial plans and strategies

- Prioritizing capital investments and aiding in the decision process for awarding discretionary grants and other funding
- Determining state operating assistance levels
- Identifying procedures and system improvements
- Ensuring FTA compliance
- Monitoring statewide trends
- Identifying best practices and areas for collaboration amongst providers
- Empowering transit agencies to make data-driven decisions
- Implementing potential changes as a result of the assessment results such as hiring new staff positions, planning for capital purchases such as software or other technology, fleet changes, marketing/education campaigns, increasing collaboration and partnerships, routing/schedule changes, service enhancements, and fare changes

Greatest Benefit

Identify unmet needs, transparency, gain insight into how service is operated

Top Uses

Monitor statewide trends, determine funding awards, prioritize capital investments, ensure FTA compliance, and work with the providers

Defining Effectiveness

Plan is implemented, achieving performance targets, improvements in performance measures, ridership increases

8.2 Transit Providers

Transit providers can better improve transit service for the community they serve by completing assessments. Transit providers benefit from the insights gained from assessments, including identifying service gaps, areas of improvement, or any deficiencies. The assessment process allows the incorporation of public feedback, which can provide insights into the day-to-day operations and offer opportunities for public education. Additionally, providers can evaluate the effectiveness of assessments by improvements in performance measures (as described in **Section 1.2**), including service utilization, productivity, and efficiency. Transit providers can identify if they have achieved targets/milestones, increased customer satisfaction, improved on-time performance, or financial efficiency.

Transit providers use the results from the assessments for a variety of use-cases, including:

- Monitoring performance - Primarily (74% of providers) adjusting where needed and improving service
- Understanding how the community has changed and what their needs are
- Financial planning for the future and justifying funding requests
- Learning from peer agencies

- Implementing changes as a result of the assessment results, including hiring new staff positions, capital purchases such as software or other technology, fleet changes, marketing/education campaigns, increased collaboration and partnerships, routing/schedule changes, service enhancements, and fare changes

Greatest Benefit

Identify needed improvements and improve efficiency

Top Uses

Monitor performance, adjust where needed and improve service

Defining Effectiveness

Improvements in performance measures, ridership increases, achievement of targets/milestones, increased customer satisfaction, number of recommendations implemented

8.3 Metropolitan Planning Organization

Local MPOs and other Regional Planning Associations (RPAs) can play a role in the assessment process and can also benefit from the results. MPOs and RPA's can play a hands-on role and may be hired to complete an assessment or play a supporting role by offering data support. As described in **Section 1.2,** MPOs can provide external data support and assist transit providers with accessing market/demand data. Results from the assessment may be added to the external data depository. Additionally, MPOs may utilize the results from the assessment to make funding decisions, as applicable, for Transportation Improvement Plans (TIP).

MPOs use the results from the assessments for a variety of use-cases, including:

- External data collection
- Informing Unified Planning Work Programs (UPWP) and other planning processes/documents
- Incorporating into Transportation Improvement Plans to allocate funding
- Incorporating into regional planning documents

Greatest Benefit

Gathering data and information on transit providers in the region

Top Uses

Informing regional planning documents and plans

Defining Effectiveness

Understanding of existing conditions; Implementing reliable and current data into existing databases, plans, and other documents.

Appendix 1. Data Request Template

	Data Need	Description
Service Information	Last 5 years - Annual Ridership by mode	Table format
	Last 5 years - Monthly Ridership by mode	Table format
	Route Descriptions	Route descriptions, service spans, and frequency table
	Most recent full year - Annual ridership by route (service)	If a route only operates during part of the year, please indicate
	Most recent full year - Average daily Ridership	Average daily ridership by Weekday, Saturday, and Sunday by route (service) or annual ridership by day and route/service type.
	Last 5 years - Annual revenue hours by mode	Table format
	Most recent full year - Annual revenue hours by route (service)	For routes with reduced service, please separate hours associated with each service level if applicable.
	Last 5 years - Annual revenue miles by mode	Table format
	Last year - Annual revenue miles by route (service)	For routes with reduced service, please separate miles associated with each service level if applicable.
	Last 5 years - Unique Passengers	Unique passengers for demand response (Report ADA paratransit, Microtransit, and Demand Response as different services)
	Operating days by route	The number of days operated broken down by Weekday/Saturday/Sunday service. If routes operate a reduced service during any period, please count the reduced separately and note accordingly.
Geographic	Route shape files	GIS shapefile set, KML/KMZ file, or GTFS feed
	Flag stop areas shapefile(s)	GIS shape files or kmz for designated flag stop locations (or no stop zones)
	Stop database	database of all stops with inventory and either lat/long coordinates or unique identifier that crosslinks to the GTFS file
	Deviated Fixed Route zones	Either a shapefile set or KML/KMZ file
	Microtransit Service area	Either a shapefile set or KML/KMZ file
	Major employers	GIS shape file, kmz, or list of major employers
	Priority Development areas	GIS shape file, kmz, or list of Priority Development Areas
Assets	Vehicle Inventory	Table or document for the current fleet with class, model, manufacturer, year, Capacity (seated, standing, and wheelchair), on-board technology (e.g., AVL, TSP, APC, Camera, Farebox), mileage, and useful life benchmark. Report non-service vehicles separately. In addition, please indicate the breakdown for active/contingent/inactive by vehicle type/class and the maximum operated in peak service
	Facility Inventory	Table or document including name, location, type, year built, who has capital responsibility, annual rent (if rented), indoor and outdoor storage capacity (where applicable), number of maintenance bays (where applicable), TERM Scale
	TAM Plan	The most recent version of the board-approved plan
	Technology inventory	List of technology (software and Hardware), the vendor, and if you have any concerns with the technology, please indicate so.
Financial	Fare Structure	by service and pass type
	Fare Outlook	Anticipated fare policy changes for future years
	Last 5 years - Pass Sales	Number of Fixed route passes sold by type and information on how this is allocated to each route in determining revenue by route/service
	Last 5 years - Annual revenue by mode	Including farebox and contract revenue.
	Last year - Annual revenue by route (service)	Farebox and contract revenue. Please include information on how revenue not collected from the farebox is distributed amongst routes.

	Contracts	list of organizations contracted with and annual revenue. Includes those where revenue offsets operating costs, not those where they buy passes and distribute, that falls under farebox revenue. Also, include any grants that cover part of the operating cost for a service and provide information on the terms of the grants.
	Last 5 years - Annual operating costs by mode	Include the overhead/administrative amounts
	Last year Annual cost by route (service)	Include the overhead/administrative amounts, and describe how allocated
	Last 5 years - Annual funding sources by mode	Funding sources by Federal, state, local, farebox, contracts, partnerships, other
	Last 5 years - Capital Flexed	The percentage or amount of capital flexed to operating for maintenance
	Last 5 years - Annual budget	By Admin/operating/maintenance expense categories
Safety and Performance Data	Last 5 years - annual fatalities by mode	Table format
	Last 5 years - annual injuries by mode	Table format
	Last 5 years - annual safety events by mode	Table format
	Last 5 years - Annual preventable Accidents by mode	Table or Document Format
	Last 5 years - Major Mechanical Failures	Number of major mechanical failures (road calls) annually by mode
	Last 5 years - On-time maintenance	Percent of Preventative Maintenance done on-time by vehicle classification
	Last 5 years - Overloads by route	The number of instances, by route, where passengers were left behind and the total count left behind due to capacity constraints
	Last 5 years - Complaints	Table or Document Format (Valid complaints only)
	Last 5 years - Customer Service Phone Hold Time	Table or Document Format (Demand response reported separately from general customer service line)
	Last 5 years - Annual Missed Trips	By mode, the percent of missed trips
	Last 5 years - On-time performance	Annual by route broken down by Weekday/Saturday/Sunday and average for all fixed routes. Annual by service for demand response by Weekday/Saturday/Sunday. Please include criteria for determining on-time performance by mode. For ADA paratransit, please specify if early, on-time, or late, and the amount late.
	Existing Performance measures/targets	Document or Tabular performance measure targets
Outreac	Key Stakeholders	List or database of key stakeholders/influencers you are engaged with, including email or other contact information if available
	Transit Advocates	List of key advocacy groups you normally engage with
	Employer relationships	List of primary employers/businesses utilizing the service
	Past outreach efforts	Outreach conducted in the last five years with public comments, survey results, etc.
	Partners	List of major partners
	List of currently scheduled meetings	For advisory boards, committees, and the alike
	Government Officials	List of municipal you serve or commonly engage with
	Regional council Coordinating list	The list can be included in the Key Stakeholder list
	Preferred Meeting Time	List of preferred times for public meetings/events
	Preferred Venues	List of preferred venues for public meetings/events
	Organization chart	Image, document, or description of organizational structure
	Logo	Vector file is preferred but a png. or jpg. Is acceptable
	Annual Reports	Last 5 years
	Other reports	Other relevant reports completed in the past 5 years
	Coordinated Human Service Public Transportation Plan	The most recent version. If your service covers two plan regions, please share both
	Shelter placement policy	Formal policy if available or informal guidelines for determining stop amenities
	Title VI Program update	The most recent version submitted to the FTA
	Policies	Additional policies for the following items: • Scooters (the electric razor type)? • Do you have a bag policy/limit or a similar policy for other items? • What is your animal policy? • What is your Wheelchair securement policy?

Staffing Information	Full-time equivalent (FTE) positions for drivers, maintenance, schedule/dispatch, administrative, or other.
Additional ADA Paratransit/Demand Response Information	For the following metrics, please report ADA paratransit, Microtransit, and Demand Response as different services): o Denied trips (annual, last 5 years); o No-show (annual, last 5 years); o Late cancelations (annual, last 5 years); o Same day cancelations (annual, last 5 years); o Please include definitions for establishing the above criteria

Appendix B State DOT and Operator Survey

State DOT Survey for Best Practices in Service Assessments

Please fill this form out if you are a representative from a state DOT.

1. Which state are you associated with?

2. What is your name and title?

3. What is your phone number?

4. What is your email address?

5. Are rural transit service assessments done on a regular basis?

   ◯ Yes ◯ No skip to question 9

6. How frequently are rural transit service assessments done? (select only one)

   ◯ 1 to 3 years ◯ 3 to 5 years ◯ 5 to 7 years ◯ 7 to 10 years ◯ 10+ years

7. Are the assessments done for all rural transit service providers in the state or just some?

   ◯ All providers ◯ Some providers

   If "Some providers" why is it done for some but not for others?

8. Are assessments done on a rolling basis or all at once?

   ◯ All at once

   ◯ Rolling basis (Please describe)

9. Are there triggers for conducting assessments if they are not required on a regular basis?

   ◯ They are done on a regular basis

   ◯ No there are not triggers

   ◯ Yes there are triggers (please describe what they are and what size/type of service change might trigger one)

10. Are performance metrics tracked regularly that could identify a need for an assessment?

    ◯ Yes ◯ No

11. Are the service assessments done by the transit providers or for the transit providers?
    - ☐ By the transit providers
    - ☐ For the transit provider

12. To what level is the local transit service provider involved in the assessment?

13. Is there a standard scope of work for every assessment statewide or a guidebook used for conducting assessments?
    ☐ No ☐ Yes – Standard scope ☐ Yes – Guidebook used ☐ Yes - Standard report format/template

14. Are you using any technical assistance aides, templates, or briefs to conduct the assessments?
    - ◯ No
    - ◯ Yes (please describe what is used and where it is from)

15. Is funding provided to conduct assessments?
    ◯ Yes ◯ No

16. Who provides the funding and what percentage?
    - ☐ State DOT
    - ☐ MPO/regional planning agency
    - ☐ Local contributions
    - ☐ Federal formula funding
    - ☐ Grants
    - ☐ Other

17. How much does the assessment cost/what is the budget for rural transit service assessments statewide and individually?

18. Is technical support provided to conduct the assessment?
    - ◯ Yes, Consultant
    - ◯ Yes, Planning Agency
    - ◯ Yes, Other
    - ◯ No

19. How much staff time (State DOT and local transit service provider) is required to complete each assessment?
    ◯ 0 - 10 hours ◯ 10 - 20 hours ◯ 20 - 40 hours ◯ 40 - 80 hours ◯ 80 – 160 hours ◯ 160 hours +

20. What type of data and information is needed to conduct the assessment?

21. Which performance metrics are used to conduct the assessment? Select all that apply

- ☐ Passengers per hour
- ☐ Passengers per mile
- ☐ Cost per passenger
- ☐ Farebox recovery
- ☐ On-time performance
- ☐ Number/percent of trip denials
- ☐ Complaints per passenger
- ☐ Accidents per revenue mile traveled
- ☐ Road calls per revenue miles traveled
- ☐ Other (please specify)

22. What types/magnitude of service changes are made due to the results of the assessments? Select all that apply

- ☐ Efficiency changes/rerouting that did not require additional service or revenues
- ☐ Service improvements that require additional service or revenue
- ☐ New staff positions
- ☐ Increased collaboration and partnerships
- ☐ Capital purchases such as scheduling software or other technology
- ☐ Marketing/education about the services
- ☐ Fare changes
- ☐ Improved fleet condition
- ☐ Other (please specify)

23. How are the results used at the State DOT level?

24. How are the results used at the local level?

25. What is the greatest benefit the State DOT receives from the assessments?

26. How is the effectiveness of the assessment determined?

27. Have you identified any “best practices” and if so by whom?

- ○ No
- ○ Yes (please specify)

28. Do you have an example of a rural transit assessment that you would recommend/allow TRB to use as a sample?

- ○ No
- ○ Yes (please specify)

29. Thank you for your time and participation. Do you have any other comments?

This is the end of the survey

Transit Operator/Provider Survey for Best Practices in Service Assessments

Please fill this form out if you are a representative from a Transit Operator/Provider.

1. What is the name of the transit service?

2. Which state are you primarily located in?

3. What is your name and title?

4. What is your phone number?

5. What is your email address?

6. Have you ever done a rural transit service assessment?
   - ◯ Yes
   - ◯ No skip to question 24

7. How frequently are rural transit service assessments done? (select only one)
   - ◯ 1 to 3 years
   - ◯ 3 to 5 years
   - ◯ 5 to 7 years
   - ◯ 7 to 10 years
   - ◯ 10+ years
   - ◯ They are not done on a regular basis
   - ◯ When we are directed to by the state DOT

8. Are there triggers for conducting assessments if they are not required on a regular basis?
   - ◯ They are done on a regular basis
   - ◯ No there are not triggers
   - ◯ Yes there are triggers (please describe what they are and what size/type of service change might trigger one)

9. Are performance metrics tracked regularly that could identify a need for an assessment?
   - ◯ Yes
   - ◯ No

10. Who primarily conducts the assessment?
    - ◯ It is done in-house
    - ◯ The state DOT
    - ◯ The MPO/regional planning agency
    - ◯ We hire a consultant

11. Are you using any technical assistance aides, templates, or briefs to conduct the assessments?
    - ◯ No
    - ◯ Yes (please describe what is used and where it is from)

12. Is funding provided to conduct assessments?
    - ◯ Yes
    - ◯ No

13. Who provides the funding?

- [ ] No funding received
- [ ] State DOT
- [ ] MPO/regional planning agency
- [ ] Local contributions
- [ ] Federal formula funding
- [ ] Grants
- [ ] Other (please specify)

14. How much does the assessment cost?

15. Is technical support provided to conduct the assessment?

- ◯ Yes, Consultant
- ◯ Yes, Planning Agency
- ◯ Yes, Other (please specify)
- ◯ No

16. How much staff time is required to complete each assessment?

◯ 0 - 10 hours ◯ 10 - 20 hours ◯ 20 - 40 hours ◯ 40 - 80 hours ◯ 80 – 160 hours ◯ 160 hours +

17. What type of data and information is needed to conduct the assessment?

18. Which performance metrics are used to conduct the assessment? Select all that apply

- [ ] Passengers per hour
- [ ] Passengers per mile
- [ ] Cost per passenger
- [ ] Farebox recovery
- [ ] On-time performance
- [ ] Number/percent of trip denials
- [ ] Complaints per passenger
- [ ] Accidents per revenue mile traveled
- [ ] Road calls per revenue miles traveled
- [ ] Other (please specify)

19. What types/magnitude of service changes are made due to the results of the assessments? Select all that apply

- [ ] Efficiency changes/rerouting that did not require additional service or revenues
- [ ] Service improvements that require additional service or revenue
- [ ] New staff positions
- [ ] Increased collaboration and partnerships
- [ ] Capital purchases such as scheduling software or other technology
- [ ] Marketing/education about the services
- [ ] Fare changes
- [ ] Improved fleet condition
- [ ] Other (please specify)

20. How will the assessment be used in the future?

21. What is the greatest benefit received from the assessments?

22. How is the effectiveness of the assessment determined?

23. Do you have an example of a rural transit assessment that you would recommend/allow TRB to use as a sample? (when done skip to question 26)

- ○ No
- ○ Yes (please specify)

24. Is there any reason you have never done one?

25. Do you think there would be any benefits to doing one?

26. Thank you for your time and participation. Do you have any other comments?

This is the end of the survey.