

## Transit, Call Centers, and 511: A Guide for Decision Makers

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**TCRP REPORT 134**

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**Transit, Call Centers, and 511:  
A Guide for Decision Makers**

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**TRANSPORTATION RESEARCH BOARD**

WASHINGTON, D.C.

2009

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The need for TCRP was originally identified in *TRB Special Report 213—Research for Public Transit: New Directions*, published in 1987 and based on a study sponsored by the Urban Mass Transportation Administration—now the Federal Transit Administration (FTA). A report by the American Public Transportation Association (APTA), *Transportation 2000*, also recognized the need for local, problem-solving research. TCRP, modeled after the longstanding and successful National Cooperative Highway Research Program, undertakes research and other technical activities in response to the needs of transit service providers. The scope of TCRP includes a variety of transit research fields including planning, service configuration, equipment, facilities, operations, human resources, maintenance, policy, and administrative practices.

TCRP was established under FTA sponsorship in July 1992. Proposed by the U.S. Department of Transportation, TCRP was authorized as part of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). On May 13, 1992, a memorandum agreement outlining TCRP operating procedures was executed by the three cooperating organizations: FTA, the National Academies, acting through the Transportation Research Board (TRB); and the Transit Development Corporation, Inc. (TDC), a nonprofit educational and research organization established by APTA. TDC is responsible for forming the independent governing board, designated as the TCRP Oversight and Project Selection (TOPS) Committee.

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The TCRP provides a forum where transit agencies can cooperatively address common operational problems. The TCRP results support and complement other ongoing transit research and training programs.

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# FOREWORD

By Lawrence D. Goldstein

Staff Officer

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*TCRP Report 134: Transit, Call Centers, and 511: A Guide for Decision Makers* provides a comprehensive review of the operational characteristics of 511 telephone traveler information systems and how 511 systems interact with transit system call centers. This report inventories existing 511 systems throughout the country, documents the extent of transit participation and transit agency experiences with 511, and presents guidance to assist transit agencies and 511 system administrators in determining a viable transit-511 telephone strategy.

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When in July 2000 the U.S. Department of Transportation (U.S. DOT) designated “5-1-1” as the three-digit telephone number for access to traveler information nationally, it was envisioned as a central source of highway and public transportation information for the traveling public. Once, designated, however, implementation procedures as well as funding options were left entirely to state and local agencies. In response, transit agencies expressed concern that the 511 system would ultimately affect their call center operations by generating a significant increase in call volume, requiring both additional staffing and costs.

By March 2009, there were forty-two 511 traveler information systems operating throughout the country with varying degrees of transit system interaction. Battelle Memorial Institute, under TCRP Project A-31, interviewed the operators of those systems along with nearly thirty transit agencies to explore current interactions, perceived and actual operational difficulties, impact on call center cost and quality of service, and opportunities for future improvements. Based on an evaluation of those interviews and information gathered from a transit-rider focus group, the researchers provide guidance on formulating transit-511 telephone strategies appropriate to varying local conditions, needs, and resources. The researchers also explore implications for transit agency application of available and emerging telephone customer information technologies.

The guide addresses a wide range of factors that vary by region, and that variation is important in understanding how and why approaches to implementing 511 systems differ. These factors include the importance of providing multi-modal (traffic and transit) information through a single-phone system; the necessity to provide consolidated information for multiple transit agencies; the often greater demand by transit information seekers for more complex information (including schedule, route and trip-planning information) that is not adequately addressed through an automated system like 511; and the relative visibility of and awareness by transit information seekers of the “5-1-1” number versus local transit customer service center numbers.

Transit agencies can use the results of this study in three primary ways. First, they can consider the state-of-the-practice information and recommendations on call center technologies and practices to reassess their own practices. Second, they can use the information

on current transit 511-related practices and experiences to expand their overall understanding of the potential role of 511 as part of a comprehensive call center/customer information strategy. Third, they can use the 511 guidance to decide whether and how to pursue participation in the 511 phone system or, if they are already participating, to reassess their level of and expectations from that participation.

The study presents several key findings: (1) few 511 systems include even basic transit content and features recommended by the national 511 Deployment Coalition; (2) few transit agencies or 511 system administrators cite any significant adverse impacts associated with their 511 telephone system participation; and (3) in most regions, even modest benefits of transit participation in 511 phone systems justify participation. Significant benefits are most likely realizable primarily in certain environments—those with multiple transit providers and significant numbers of travelers who make day-to-day mode choice decisions based on a combination of traffic and transit information. Significant benefits can also include relief to transit call centers by providing a one-stop shop for comprehensive traffic and transit information.

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## S U M M A R Y

# Transit, Call Centers, and 511: A Guide for Decision Makers

This report presents the results of TCRP Project A-31. The Federal Communications Commission (FCC) has designated 511 as the national telephone traveler information number. Individual 511 systems are implemented and operated by state and local agencies. Intended to provide multimodal traveler information, 511 systems include information on highways and transit systems. Currently, there are 42 operating 511 systems in the United States. Most of these systems cover an entire state. Only a few 511 systems include live operators; the rest are entirely automated. Many 511 systems include both telephone and Internet websites. This study focuses only on 511 telephone systems.

This project was intended to primarily address concerns expressed by some transit agencies that participation in a 511 system could result in significant increases in call volumes to their call centers, thereby degrading service quality to their customers or necessitating investments in staffing and/or technology to maintain service quality. This project investigated national experience with transit content and information on 511 telephone information systems. This study featured the following major research activities:

- An examination of transit agencies' overall customer information strategies and the role of call centers in those strategies,
- A comparison of transit call center technologies and techniques with those utilized in non-transit call centers,
- Twenty-nine case studies of transit agency experiences with 511 telephone systems,
- Interviews with twelve 511 system administrators to investigate their experiences with transit on 511, and
- A focus group with transit riders to investigate their perceptions of automated telephone information in general and 511 in particular.

This report synthesizes the results of these investigations to provide a comprehensive picture of the state of the practice. Further, it presents conclusions and recommendations that will assist both transit agencies and 511 system administrators in making decisions about transit content on 511.

This summary presents major study conclusions organized into two sections: the first focuses on the national experience with transit on 511, and the second focuses on transit call center strategies. Following these conclusions, study recommendations are presented, including 511 decision-making guidance and recommendations pertaining to transit call center strategies in general.

## Major Conclusions

Two major categories of conclusions are presented, the first involves transit agencies and 511 and the second relates to the overall utilization of advanced tools and techniques within transit call centers. The conclusions related to transit and 511 are based on 29 transit agency case studies, interviews with 511 system administrators, and a transit customer focus group. The conclusions related to call center technology are based on interviews with transit and non-transit call center operators, as well as a literature review.

### Experience with Transit on 511

Although there is national guidance on 511 system operations, decisions about specific 511 systems are at the sole discretion of the state, regional, or local agencies that administer these systems. Hardly any of the 42 operational 511 systems include all of the transit information recommended in the national guidance—just over half of them include no transit content or features whatsoever. The reasons why there is no widespread, extensive transit involvement in 511 vary, but this is not because of any adverse impact on transit call centers. No transit agencies report any significant increase in call volumes or any other ill effects of 511 participation. Rather, this lack of transit involvement is simply because most 511 system administrators and transit agencies do not see significant advantages in providing transit information via 511. There are several reasons for this perspective, as follow:

1. Throughout most of the United States (with several large urban areas being the notable exceptions), the decisions made by 511 administrators and transit agencies suggest that they believe that for any given trip, the vast majority of travelers want *either* traffic or transit information, but not both. Therefore, there is very limited value in providing both types of information together. Further, their decisions suggest that the agencies believe that most transit trips are served by a single transit provider and therefore there is little value in having information available for multiple transit providers on 511.
2. The 511 decisions regarding transit information suggest that many agencies believe that most transit information requests will require speaking with a knowledgeable transit call taker and are therefore unlikely to be adequately addressed by a 511 system. Transit focus group participants, while expressing a general willingness to use automated systems, emphasized that the ability to speak to a live operator is critical. For those transit information requests that can be addressed in an automated fashion, it is usually easier and, given the other considerations, considered to be just as effective to invest in that automation at the transit call center.
3. Most transit agency customer service numbers are well established and transit agencies and some transit customers believe they are at least as visible (few 511 systems are effectively marketed to transit users) and usually just as easy to remember (e.g., 555-RIDE) as 511. Therefore, the prevailing thinking is that anyone looking for transit information is just as likely, if not more likely, to obtain it most efficiently by calling an individual transit agency directly.
4. Most decisions about transit participation on well-established 511 systems were made several years ago when an existing, highway-oriented telephone information system was rebranded as 511 or, even further back, when the original, pre-511 phone system was created. In a number of cases, the staff that was involved in the transit decision making—at the 511 system administrator agency and/or the transit agencies—have left and current staff are not always certain of the rationale for the current strategy. If transit participa-

tion decisions were to be revisited now in light of the proliferation of 211 and 311 systems, increased availability of real-time transit information suitable for 511, and other factors, transit participation strategies might be adjusted.

5. A final factor explaining the lack of widespread transit participation in 511 telephone systems is that a number of transit agencies and 511 system administrators have found that transit information needs are better addressed through 511 websites. The web-based user interface seems particularly well suited to providing detailed schedule and route information and trip planning functionality.

In the cases where transit agencies have participated in 511, it is hardly ever because they or the 511 system administrator view 511 as a key component in an overall transit information strategy. Rather, it is usually because the agencies are trying to support the concept of 511 as multimodal (even though they do not feel that many travelers want multimodal information) and costs to provide basic transit presence, such as a call transfer to transit customer service, are usually not prohibitive (and hardly ever borne by the transit agency). To a lesser extent, decisions to include transit also reflect the view that 511 may reach some visitors and new residents who might have a harder time finding transit agency phone numbers than 511. In very few cases—the San Francisco Bay Area being the most notable—the decision to include transit on 511 was based on the belief that a large number of travelers need multimodal information on a regular basis and will view the ability to access that information through one phone call as a significant convenience.

### **Transit Call Center Strategies**

Staffed telephone customer service is a foundational, critical component of a transit agency's customer information strategy. Customer inquiries that are not easily addressed using other media such as printed materials and websites can be effectively handled by phone. Inquiries like planning complex itineraries are cited by transit customers as among their most important information needs. Most transit agencies believe that the majority of their customers prefer and expect live operator customer service. Agencies also perceive that live operator service is particularly important to senior and disabled customers who are not comfortable using the Internet and customers who are not familiar with the transit system. Although many transit agencies are taking increasing advantage of web pages—and, to a lesser extent, interactive voice response (IVR) systems—these tools are viewed by the agencies as complementing, rather than replacing, live operator customer service. Transit agencies value their telephone interactions with customers as an important means of establishing and maintaining their relationships with their customers.

Both transit and non-transit call center strategies vary significantly depending on the size of the organization and its call volume. Large organizations that handle many calls use more sophisticated technologies, performance monitoring methods, etc. For example, non-transit organizations are more likely than most transit agencies to use IVR and the Internet to reduce the number and duration of live operator-assisted phone calls. Many transit agencies with significant call volumes could benefit from greater utilization of technologies and practices used more routinely by non-transit organizations.

### **Recommendations**

Recommendations are offered in two areas: the first concerns 511 decision-making guidance for transit agencies and 511 system administrators, and the second pertains to transit call center strategies in general.

## 511 Decision-Making Guidance

Although this guidance is intended to support decision making associated with new 511 systems, since most of the United States is now covered by 511, 511 system administrators and transit agencies associated with even the most mature 511 systems are strongly encouraged to use these guidelines to reconsider their 511-transit strategies.

Overall, it is recommended that most transit agencies work with their 511 system administrator to provide the basic information recommended in the national 511 Deployment Coalition guidance, including a list of services offered, hours of operation, service disruptions, and a call transfer option to transit call centers. Although in most circumstances such participation is not likely to produce significant benefits, it is fairly inexpensive to implement and maintain. In such cases, the primary value of participation is three-fold (1) it supports and advances the general principles of interagency, multimodal coordination, (2) it will be of value to those relatively few travelers in most regions who value consolidated traffic, transit, and multi-agency transit information, and (3) it will be a convenience for new residents or visitors who may find 511 easier than the phone numbers for individual transit customer service centers. In those relatively few cases where a transit agency is expected to pay a significant amount to support 511 participation, these real but limited benefits should be weighed carefully against the costs. Table S-1 summarizes specific decision-making factors for basic 511 transit content.

The question of whether it is useful and cost-effective to provide additional or advanced transit information and features on 511 will depend on a wide range of site-specific factors. Those factors are summarized in Table S-2. As shown in Figure S-1, overall, relatively few agencies will find a compelling case for advanced information, but most will benefit from providing basic transit information on 511. Providing advanced information via 511 can be a resource-intensive process, both in the short term and long term. In addition to having a supportive 511 system administrator and sufficient resources at the 511 agency and transit agency, there needs to be a persuasive reason for providing advanced transit information on

**Table S-1. Decision factors related to basic transit information on 511.**

Decision Factor	Implication
Local 511 embraces national 511 vision of a multimodal resource	If the 511 system administrator views the system as a highway/traffic-only resource, it is likely that a transit agency will not have any opportunity to participate in 511. If transit does participate, they are not likely to derive any significant benefit.
Transit agency required to contribute to 511 system costs	If the transit agency is required to contribute significantly toward the cost of the 511 system, the benefits to transit often will be less than the costs.
Cost of call transfers from 511 to transit agencies	If resources for 511 are extremely limited, the cost of call transfers from 511 may outweigh the relatively minor benefits of 511 participation that many transit agencies will realize. In those cases, the transit agency phone number can be listed on 511 rather than providing a call transfer capability.
Commitments to keep service disruption information accurate and up to date	The relatively minor benefit (e.g., a resource for those proportionally few travelers who may find their way to a given 511 system looking for transit information) of this information is lost if the information is not accurate and current.
Level of detail of schedule and fare information	If the schedule and fare information is very detailed and therefore likely to change often, the effort necessary to keep it accurate and current will often outweigh the value of having it on 511. It is assumed that the 511 Deployment Coalition's guidance to include schedule and fare information refers to high-level schedule and fare information, which is almost always worth listing on 511.

**Table S-2. Decision factors related to providing additional transit information on 511.**

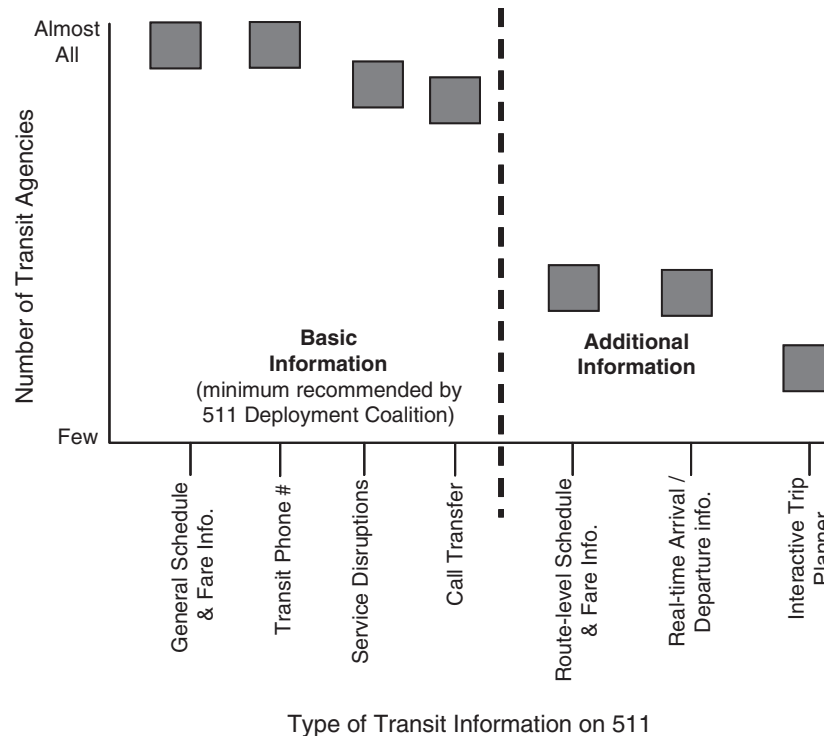
Decision Factor	Implication
<b>511 System Factors</b>	
Technical and financial capability of the 511 system to support advanced transit content/features	Limitations of the 511 system in regard to the number of callers, complexity of the menu system, and ability to effectively interface with transit databases may preclude advanced transit information and features on 511. Funding limitations may prevent upgrades to the 511 system to support these features and/or the 511 system administrator may not have the staff resources needed to carry out the on-going activities associated with these more advanced transit features.
Ability and commitment to market 511 to transit users	The value of transit information on 511 is a function of the number of transit information seekers who use 511. If a 511 system is not historically viewed and used as a transit information resource, the absence of an on-going marketing campaign targeted to transit users means that the value of having advanced transit information on 511 usually will not warrant the cost.
<b>Transit Agency Factors</b>	
Technical and other resources necessary to keep information accurate and current on 511	Just as the 511 system administrator may lack the necessary resources, so might the transit agency. Unless a 511 system administrator is willing to take sole responsibility for obtaining information updates from the transit agency (and most administrators will be unable or unwilling to do so indefinitely), the absence of transit agency resources will preclude advanced information on 511.
Ability and commitment to market 511 to transit users	In order for the investment in advanced transit information on 511 to be worthwhile, either the 511 system administrator or the transit agency must be willing and able to commit to a long-term marketing strategy to establish and maintain 511 as a multimodal resource.
Transit agency has, or intends to implement, its own IVR	If a transit agency has, or is planning to implement, their own IVR, in most cases there is little benefit in making the same information and features also available directly on the 511 system. The exceptions to this include regions where 511 is effectively marketed to support multimodal planning and many travelers make mode-choice decisions frequently. If the transit agency does not have their own IVR but wants one, then the 511 system may provide an opportunity to fill that need either as a stop-gap until the transit agency can implement their own IVR, or as a long-term strategy that eliminates the need for a transit agency IVR. The suitability of 511 as a long-term replacement for a transit agency IVR will depend on effective marketing of 511 to transit users and the feasibility of maintaining accurate and up-to-date information on the 511 system.
Number of customer inquiries that could be handled all or in part via IVR	If very few transit customer inquiries can be addressed with an IVR system, the cost to provide such information on 511 probably is not justified. If many inquiries could be so addressed, the decision will depend on other factors noted in this table (e.g., marketing, ability to keep information accurate, etc.).
Current cost of long-distance charges for customer service calls	In some cases, transit agencies pay a considerable amount for local long-distance calls to their customer service center (e.g., from within their service area but from a different area code). In these cases, if calls to 511 are toll free (and they almost always are) and the 511 system administrator pays for call transfers out of 511 to the transit agency, having transit information on 511 can reduce local long-distance costs for transit.
Ability to effectively process current and anticipated transit customer service call volumes	If a transit agency lacks an IVR and is struggling to keep up with incoming demand on their customer service line, providing extensive information on 511 can help a transit agency meet customer needs. Whether it makes more sense to meet those needs via 511 versus upgrades to their own call center will depend on the other factors as noted in this table.
511 system user interface	The value of advanced transit content and features on 511 depend significantly on the ability of transit users to conveniently and reliably access that information. Impediments such as a poorly performing 511 voice recognition system or inconvenient placement of transit information in the 511 menu structure would argue against a significant investment in advanced transit information on 511. These impediments will pose a particular challenge to cell phone users and seniors.

*(continued on next page)*



**Table S-2. (Continued).**

Decision Factor	Implication
<b>Travel Environment Factors</b>	
Number of transit trips that involve multiple transit providers	Other considerations aside, it is much more valuable to have transit information on 511 when there are multiple transit providers in a region. Further, it is more valuable when many transit trips involve multiple providers because 511 callers can get information on all providers with a single call. When there is only one transit provider in a given travel market, the “one-stop shop” rationale for transit information on 511 does not apply.
Number of travelers making mode choice decisions on a frequent basis (daily, weekly)	The value of advanced transit information on 511 is significantly enhanced when many travelers make mode-choice decisions based on daily traffic conditions. Under those conditions, having traffic and transit information available in one call to the 511 system represents a significant convenience and could greatly facilitate consideration of transit in mode-choice decisions.
Number of tourists or newcomers	In most regions, the transit customer service phone number is at least as familiar and accessible to long-term residents seeking transit information as is 511. Under those conditions—and other factors aside—it is hard to argue that the cost to provide telephone-based transit information anywhere other than through the transit agency is cost effective. However, in regions where there are many tourists and/or many new residents—especially if they come from regions where 511 includes transit—there is greater justification. Whether that justification outweighs the costs will depend on other factors.



**Figure S-1. General recommendations for transit agency 511 information.**



511. The most compelling reasons pertain to the nature of the travel environment, namely the presence of conditions that make consolidated (“one call does all”) traffic and transit and multimodal transit information valuable to travelers. Those conditions include significant and variable traffic congestion and a wide range of viable modal travel options. When such conditions are present, it will also be very important to promote 511 aggressively to establish awareness of it as a multimodal resource.

Another compelling rationale for advanced transit content and features on 511 is in the case where one or more transit agencies feel that many of their customers would benefit from automated information (no operator available) but they do not have the funds to implement their own system. In such cases, advanced transit information on 511 can serve as either a short- or long-term solution.

### **Transit Call Center Strategies**

Two recommendations are provided in regard to overall transit call center strategies. First, transit agencies of varying sizes are encouraged to evaluate the potential benefits of more extensive utilization of advanced call center technologies and practices. This could include medium-sized agencies implementing IVR systems or large agencies enhancing the sophistication of their IVR systems to serve a wide range of customer inquiries. Other examples of technologies that may benefit larger agencies include call-volume demand forecasting, as well as performance monitoring and customer satisfaction monitoring software. Potential benefits that may be realized through greater utilization of advanced technologies and techniques at transit agencies include the following:

- Reducing the amount of manual, paper-based processes at large call centers by using workforce management technologies that track daily work logs and automate most tasks;
- Reducing the amount of time spent on repetitive information requests by implementing IVR systems and posting such information on the agency website;
- Ensuring customer service quality for agencies with large call volumes (e.g., more than 1,000 calls per day) by implementing quality monitoring technologies; and
- Improving customer management, particularly at those agencies that wish to provide personalized information (such as service alerts) through the use of customer relationship management and customer interaction management software.

The second recommendation is to encourage transit agencies to consider 511, 311 (consolidated municipal services information), and 211 (consolidated social service agency information) together, as part of their overall customer service strategy. In particular, 311 systems can have a significant impact on transit agency customer service operations including, as occurred in the City of San Francisco, having the 311 call center replace the transit agency call center. Transit agencies that are entities of a municipal government are encouraged to engage with the municipality early in any 311-related discussions so that transit agency considerations are appropriately taken into account and that any changes can be phased in over time.

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## CHAPTER 1

# Overview

The telephone number reserved by the Federal Communications Commission (FCC) for local telephone traveler information is 511. Many states and regions around the country have implemented 511 telephone systems for communicating traveler and transit information. This project investigated national experience with transit content and information on 511 telephone information systems (this project did not investigate the “co-branded” 511 websites that many 511 administrators have implemented). This study included the following:

- An examination of transit agency customer information strategies and the role of call centers in those strategies,
- Call center technologies and techniques utilized outside the transit industry,
- Experiences of transit agencies with 511 telephone systems,
- Experiences of 511 system administrators with transit content, and
- Transit customer perceptions of automated telephone information in general and 511 in particular.

This report synthesizes the results of these investigations to provide a comprehensive picture of the state of the practice and presents conclusions and recommendations that will assist both transit agencies and 511 system administrators in making decisions about transit content on 511.

Chapter 1 of this report provides an overview of the research study. Chapter 2 summarizes the research methodology. Chapter 3 presents the study findings. Chapter 4 presents conclusions and recommendations.

### 1.1 Background

The 511 telephone number is intended to become the nationwide, multimodal transportation (transit and traffic) telephone information resource. These systems are designed to provide improved customer information for travelers, including transit customers. The following excerpt is from the May 2005, 511 National Progress Report (1):

In 1999, the U.S. DOT petitioned the FCC to designate a nationwide three-digit telephone number for traveler information. At the time, over 300 different telephone numbers were found to be providing some sort of highway- or public-transportation-related information to the public. On July 21, 2000, the FCC designated 511 as the national travel information number. The FCC ruling leaves nearly all implementation issues and schedules to state and local agencies and telecommunications carriers. There are no federal requirements and no mandated way to pay for 511. Consistent with the national designation of 511, the FCC expected that transportation agencies would provide the traveling public with a quality service that has a degree of uniformity across the country.

Very few of the 511 systems currently in operation throughout the United States provide an option for a caller to speak with a live operator. Most of the systems are entirely automated and provide information either through voice recordings or computer-synthesized voice. The national 511 Deployment Coalition guidance recommends that all roadway information be automated. Their guidelines generally assume automated approaches to 511.(2) However, the details of 511 implementation are left to local implementers. There is no mandate that 511 systems cannot include operators. Guidance from the 511 Deployment Coalition recommends that every 511 system include, at a minimum, the following information for every transit agency within the 511 service area:

- A description of the agency’s service area,
- Schedule and fare information,
- Information about service disruptions, and
- A connection (call transfer) to the agency’s customer service center.

Some transit systems expressed concern that 511 deployments could affect their call-center operations with a significant increase in calls, that is, from calls transferred from the 511 system to their call center. The concern was that these additional calls could either necessitate hiring additional staff members (thereby increasing costs) or result in degraded service quality and customer complaints.

In light of the concerns and uncertainties expressed by some transit agencies regarding participation in 511, and given the wide variation in how transit and 511 administrators around the country have chosen to address transit information, research was needed to document experiences and impacts. Further, guidance should be developed that will assist both transit agencies and 511 system administrators.

## 1.2 Objectives

The objectives of this project were as follows:

1. To document transit agency experiences with 511 telephone traveler information systems, including costs, benefits, opportunities, and risks associated with integrating transit call centers with 511; and
2. To create guidance to assist transit decision makers in deciding whether to participate in 511 deployment and, if so, then how to do so.

## 1.3 Research Tasks

The project consisted of eight research tasks, divided into two phases, as shown in Table 1. The original Tasks 7 and 8 were changed to those shown in Table 1 based on the results of the Phase I research and at the direction of the TCRP study panel. The original versions of these tasks focused on developing and validating tools such as spreadsheets or software programs that transit agencies could use to evaluate alternative 511 participation strategies and make decisions. Phase II of the study was revised in two ways, first to change “tools” to “decision-making guidance” after it became clear that the sorts of experiences that transit agencies have had with 511 do not warrant and would not support a tool or model per se, but would be best expressed in more general decision-making guidance. The second change was to add two new research

activities that expanded the investigation of transit-511 issues to include 511 system operators and transit users (the original scope of work focused strictly on transit agencies). That change was made because the Phase I findings indicated that 511 system-administrator-related factors are at least as important as transit agency considerations in explaining how transit-511 decisions have been made and the impacts of those decisions.

Phase I included the following activities:

- Gather background information on the overall customer information strategies used by the transit industry and outside organizations.
- Document the call center strategies employed by transit agencies, including their staffing, technologies, and metrics.
- Discuss the status of 511 system deployments across the United States and the transit participation and content in those 511 systems.
- Conduct and document 29 case studies on the experiences of 511 participating and non-participating transit agencies across the country.
- Outline 511 decision-making guidance for transit agencies.

Phase II included the following activities:

- Conduct telephone interviews with 12 of the 511 system administrators across the country to investigate how they made their decisions regarding transit information on their systems and to document their experiences with transit.
- Conduct a focus group with transit riders to investigate their perceptions regarding automated telephone transit information in general and transit information on 511.
- Develop 511 decision-making guidance based on the results of the Phase I and Phase II study activities.
- Prepare the project final report documenting the entire study.

**Table 1. Research tasks.**

Phase	Task
Phase I	Task 1 – Research transit traveler information practices
	Task 2 – Research transit call centers involvement in 511
	Task 3 – Conduct transit agency case studies
	Task 4 – Outline decision tools (decision-making guidance)
	Task 5 – Develop interim report
	Task 6 – Revise work plan
Phase II	Task 7 – Complete 511 decision-making guidance
	Task 8 – Perform 511 system administrator interviews and conduct a transit rider focus group
	Task 9 – Develop final report

## CHAPTER 2

# Research Approach

This chapter describes the research approach used to carry out the study. The approach featured six major activities. The first four activities focused on understanding call center strategies at transit and non-transit organizations and investigating specific transit agencies' decisions and experiences with 511 telephone traveler information systems. Based on the results of those early activities, the following two additional research activities were identified, focusing on the two other primary transit 511 stakeholder groups:

1. The 511 system administrators (i.e., the organizations that operate the 511 systems, which are not transit agencies in all cases), and
2. Transit users.

### 2.1 Literature Review

The literature review was conducted primarily in support of Task 1, which documented overall customer information strategies utilized by transit agencies as well as specific call center strategies employed by transit in comparison to those employed by private companies and other government organizations (e.g., Department of Motor Vehicles). The literature review, including general (non-transit-specific) call center references played a key role in the development of the interview questionnaire used to collect information for Tasks 1, 2, and 3 (the 29 transit agency case studies). Information was also obtained from other sources including TCRP reports, relevant internet sites, and conference proceedings. Specific information was collected on 511 systems to determine system details, interoperability, and cost-benefit information.

### 2.2 National Inventory of Operational 511 Systems

This inventory was conducted in support of Tasks 2 and 3, which analyzed how transit agency call center approaches and experience vary according to 511 participation. This inven-

tory established the basis for those comparisons by establishing a comprehensive list of all operational 511 systems and a summary of transit participation on each system.

The primary activity in developing the 511 system inventory was to call each operational 511 system and then document the transit-related information, including transit menu items, general or basic transit information (e.g., current service disruptions, services provided, service areas, hours of operation, telephone number for transit customer service, etc.), automated call transfer to transit agencies' customer service lines, and real-time vehicle arrival/departure information. Operational 511 systems were identified in large part by consulting the running list maintained by the national 511 Deployment Coalition (<http://deploy511.org/deploystatus.htm>, as of November 2007). However, since that list is updated only periodically, and since new 511 systems are coming on line every few months, the operational status of a number of 511 systems was also tracked by monitoring various publications, including daily and weekly transportation technology e-mail newsletters. In fact, new 511 system launches and the research team's 511 inventory work continued through the writing of this report in March 2009.

Because the calls to the 511 systems were made from outside the service areas of the individual systems, it was necessary to use the traditional 10-digit phone numbers, the so-called "back door" numbers in the 511 community, for access to these services. Many of these numbers are listed on the FHWA's 511 web page ([http://ops.fhwa.dot.gov/511/locations/location\\_numbers.htm](http://ops.fhwa.dot.gov/511/locations/location_numbers.htm)).

To obtain the most accurate and current information, as well as to establish first-hand familiarity, the research team felt it was important to review each operational 511 system directly, by calling it and working through the menu items. The results of that research were cross-referenced against the findings of the FTA in their own transit-related 511 inventory. The latest update of the FTA inventory work was completed in July 2007 and is documented in "Profiles of 511 Traveler Information Services—Update 2007." (3)

## 2.3 Transit Agency Case Studies

Interviews were conducted with 29 transit agencies. The case studies focused on the following two sets of issues:

1. Overall customer information strategies and specific call center approaches (staffing, technologies, metrics tracked, etc.); and
2. Transit agencies' 511 experiences and perspectives.

In selecting transit agencies for analysis, the objective was to obtain representation across several key parameters, including

- **Participation versus non-participation in 511 systems**—including integration and non-integration, where integration was defined by the research team for the purposes of this study as including an automatic call transfer from 511 to a transit agency.
- **Transit agency size**—based on the number of vehicles operated by the transit agency, and subjectively placed into categories of small, medium, and large.
- **Transit agency service area characteristics**—such as large urban, small urban, suburban, and rural.
- **Geographic location**—representing various regions throughout the United States.
- **Type of 511 System**—such as statewide or regional.

Table 2 summarizes the 29 transit agency case studies across these parameters (excluding geographic location). Although seven case studies were completed with transit agencies that are not integrated with 511 systems (that is, there is no call transfer from 511 to transit), the sample is skewed some-

**Table 2. Summary of transit agency case study sample.**

511/Transit Agency Characteristic	Number of Transit Agencies Studied
<b>511 Participation/Non-Participation</b>	
Participating and integrated (call transfer to transit)	22
Participating but not integrated (no call transfer)	3
Non-participating	4
<b>Transit Agency Size</b>	
Small (< 50 vehicles)	8
Medium (51-300 vehicles)	10
Large (300+ vehicles)	11
<b>Transit Agency Service Characteristics</b>	
Large urban	16
Small urban/suburban	13
Rural	4
<b>511 System Coverage</b>	
Statewide	17
Regional	12

Note: The numbers reported for transit agency services characteristics do not sum to the total of 29 transit agency case studies performed because some agencies have been characterized as having multiple primary service area types (e.g., both urban and suburban).

what toward transit agencies that are integrated with 511 systems. This is because, partly through the case studies, the research team found that they were gathering very little useful information from transit agencies that do not participate in 511 at all. In nearly all of these cases, the transit agencies did not participate because the 511 system was not set up to allow transit agencies to participate and/or the 511 sponsor never invited transit to participate. The research team concluded that there was very little to be learned from speaking with transit agencies in such circumstances. When this trend became clear, it was decided that the resources associated with additional case studies could be better spent on speaking with more agencies that were participating in 511 systems and had actual 511 experiences and perspectives to share.

Table 3 presents the list of transit agency case studies, organized according to operational 511 system (of which there were 42, as of March 18, 2009). The list of agencies includes two that are not transit operators—the Metropolitan Transportation Commission (MTC) in the San Francisco area and District 6 of the Florida Department of Transportation (FDOT). Interviews with those agencies were conducted to support the transit agency interviews done in the San Francisco region and in Southeast Florida, respectively.

The transit agency interview discussion guide contained 29 questions, with the first 20 questions pertaining to overall customer information strategies (e.g., information provided, methods used, accommodation of special needs customers, etc.) and specific call center methods (e.g., centralized/decentralized, staffing, use of various technologies, rationale for technology investments, use of a wide range of performance metrics, etc.). The following eight questions focused specifically on 511:

- The agency's level of 511 participation;
- Which 511 statistics are tracked;
- Participation in other traveler information systems;
- A wide range of potential impacts from 511 participation including call volume changes, costs, customer responses, etc.;
- A wide range of potential pros and cons considered when deciding on 511 participation;
- Planned 511 changes;
- Perspective on 511 as an alternative to their own interactive voice response system; and
- Advice to other transit agencies contemplating 511 and general reflections.

A copy of the full interview guide is included in Appendix A.

The transit case studies included various combinations of telephone interviews, written questionnaires, and site visit interviews. Initially, 1- to 2-h telephone interviews were conducted with nearly all of the transit agencies, always preceded by an e-mail to the agencies with a copy of the interview questions. In a few cases, the interviewees chose to respond in

Table 3. Transit agency case studies.

511 System Information			Transit Agency Case Studies							
511 System and Level of Transit Integration	Coverage		Transit Agencies Interviewed	No. of Buses or Vans	Property Size	Service Area Character				
	State	Region				Large Urban	Small Urban and/or Suburban	Rural		
<b>Transit Integration (call transfer from 511 to at least one transit agency)</b>										
1	Alaska	X	1	<b>Anchorage “People Mover”</b>	55	Med		X		
2	Arizona	X	2	<b>Lake Havasu City Transit</b>	19	Sm		X	X	
			3	<b>Pima County Rural Transit</b>	8	Sm			X	
			4	<b>Valley Metro (Phoenix)</b>	492	Lrg	X			
3	California – Northern/Sacramento	X	5	<b>El Dorado Transit</b>	58	Med		X		
4	Cincinnati/Northern Kentucky		X	6	<b>Transit Authority of Northern Kentucky “TANK”</b>	101	Med		X	
5	Florida – Central (Orlando)		X	7	<b>LYNX (Orlando)</b>	237	Med	X	X	
6	Florida – Southeast (Miami, Dade, and Broward Counties)		X	8	<b>Broward County Transit</b>	275	Med	X		
				9	<b>Miami-Dade County Transit</b>	783	Lrg	X		
				10	<b>South Florida Regional Transportation Authority (Tri-Rail)</b>	26	Sm	X		
				11	<b>Florida Department of Transportation</b>	NA				
7	Florida – Northeast (Jacksonville)		X	<i>see Florida regional systems</i>						
8	Florida (Statewide)	X		<i>see Florida regional systems</i>						
9	Boston/Eastern Mass.		X							
10	Florida – Southwest		X							
11	Georgia	X								
12	Maine	X		12	<b>Island Explorer (Bar Harbor)</b>	17	Sm		X	X
13	Minnesota	X		13	<b>Duluth Transit Authority</b>	72	Med		X	
14	New York (Beta Version)	X								
15	North Carolina	X		14	<b>Charlotte Area Transit (CATS)</b>	312	Lrg	X		
16	San Diego		X	15	<b>Metropolitan Transit System (MTS)</b>	288	Med	X		
				16	<b>North County Transit District</b>	165	Med		X	
				17	<b>AC Transit</b>	614	Lrg	X		
17	San Francisco Bay Area		X	18	<b>Bay Area Rapid Transit (BART)</b>	669	Lrg	X		
				19	<b>Santa Clara Valley Transportation Authority</b>	520	Lrg	X		
				20	<b>San Francisco Municipal Railway (Muni)</b>	815	Lrg	X		
				21	<b>Metropolitan Transportation Commission (MTC)/Muni</b>	NA				
18	Utah	X		22	<b>Sun Tran (St. George)</b>	7	Sm		X	
19	Virginia (Statewide)	X		23	<b>Washington Metropolitan Area Transit Authority “WMATA”</b>	1,441	Lrg	X		
				24	<b>Blacksburg Transit (BT)</b>	35	Sm	X		



Table 3. (Continued).

511 System Information				Transit Agency Case Studies						
511 System and Level of Transit Integration		Coverage		No. of Buses or Vans	Property Size	Service Area Character				
		State	Region			Transit Agencies Interviewed	Large Urban	Small Urban and/or Suburban	Rural	
<b>Transit Presence but No Integration (have general transit info. and/or list transit phone no., but no transfer)</b>										
20	New Hampshire	X		25	<b>Manchester Transit Authority (MTA)</b>	15	Sm		X	
21	Rhode Island	X			<i>Attempted</i>					
22	Tampa Bay		X	26	<b>Pinellas Suncoast Transit Authority</b>	180	Med		X	
23	Vermont	X			<i>Attempted</i>					
24	Washington State	X		27	<b>King County Metro (Seattle)</b>	1,177	Lrg	X		
25	Wyoming	X								
<b>No Transit Presence (no transit options or information at all on the 511 system)</b>										
26	Colorado	X		28	<b>Regional Transit District (Denver)</b>	695	Lrg	X		
27	Idaho	X								
28	Iowa	X		29	<b>Des Moines Area Transit Authority</b>	113	Med		X	
				30	<b>Ottumwa Transit Authority &amp; 10-15 Regional Transit</b>	13/52	Sm		X	X
29	Kansas	X								
30	Kentucky	X								
31	Montana	X								
32	Nebraska	X								
33	Nevada	X								
34	New Mexico	X								
35	North Dakota	X								
36	Oregon	X		31	<b>Tri-Met (Portland)</b>	656	Lrg	X		
37	South Dakota	X								
38	New Jersey	X								
39	Louisiana	X								
40	St. Louis, MO		X							
41	California-Eastern Sierra		X							
42	Tennessee	X								

writing. In those cases, subsequent short telephone calls and/or e-mail exchanges were always conducted to clarify and elaborate on certain responses. Many of the other phone interviews (those where the agency did not send written responses) were also followed by e-mail exchanges and/or additional phone calls to follow up on various issues.

In the case of two 511 systems—those for the San Francisco area and Southeast Florida—issues of sufficient complexity surfaced through the phone interviews and e-mail exchanges as to warrant on-site follow-up. San Francisco had a number of different types of transit agencies participating in various degrees, and had a very long and rich experience with 511, including real-time transit information on 511. Southeast Florida is the only example identified of transit agencies substantially sharing in the costs of a 511 system, in this case the annual operations and maintenance costs of approximately \$5 million. For these two 511 systems, some additional transit agencies were interviewed on-site as were the 511 system sponsors (MTC and FDOT).

The primary point of contact for most of the transit agency interviews was the customer service manager. In some cases, the contact was the call center manager. For some of the smaller agencies, interviews were conducted with the agency general manager or director, who typically also has the responsibility for customer service and telephone information (most small agencies do not have call centers, per se).

## 2.4 Non-Transit Call Center Interviews

As part of the research comparing transit call center approaches to those used at call centers outside the transit industry, interviews were conducted with three U.S. organizations: a local bank branch located in New England (Watertown Savings Bank); a large, national consumer durables manufacturer (name withheld by request); and an office of state government (the Commonwealth of Massachusetts Registry of Motor Vehicles). Although by no means offering a statistically reliable

cross-section of information, a small sample of non-transit agencies was thought to be useful in complementing information from the literature review with first-hand information. The original objective was to include one or two additional organizations—a large, national, on-line retailer and an international package delivery service—but repeated attempts to recruit these organizations were unsuccessful. The overall criterion for selecting organizations to interview was to find organizations that field a significant number of customer inquiries by phone. The rationale for selecting the specific organizations that were interviewed was to obtain variation in the size of the organizations, the extent to which the telephone is utilized for customer interaction, public/private status, and type of product or service.

The non-transit call center interviews utilized the first half of the same questionnaire used for transit agencies (see Appendix A)—that is, the 511 questions were omitted. All of the interviews were performed by telephone, in some cases with follow-up phone calls and/or e-mail exchanges to clarify or elaborate responses. All interviewees were provided with the questions in advance. Interviews lasted between 45 to 75 min.

## 2.5 511 System Administrator Interviews

Although 511 system administrator interviews were not originally included in the study, this activity was added after it was concluded through the Phase I research activities that 511 system administrator policies and decisions were at least as important in explaining transit agency 511 decisions and experiences as were factors associated with the transit agencies. The Phase I findings were based entirely on information collected from transit agencies. Adding interviews with 511 system administrators was therefore deemed useful both to further investigate why and how administrators reached their decisions regarding transit but also to validate a finding that was based on only one side of the 511-transit relationship.

A total of twelve 511 system administrators were interviewed. The pool of interviewees was systematically constructed so as to include a representative sample of systems. System attributes considered included geographic location, coverage area (statewide and regional), service area population density, and type of transit content. A roughly equal number of systems were represented in each of the following three categories in regard to transit content and features:

- Systems with no transit content or features;
- Systems with only an option to transfer a call to transit agency customer service, and
- Systems with a call transfer option plus other transit information such as service disruptions, detailed schedule or

**Table 4. 511 system administrator interview sample.**

Type of Transit Content and Features	511 Systems Represented in Interviews
No Transit Content or Features	1. Colorado
	2. Oregon
	3. Iowa
	4. Washington State
	5. Kentucky (statewide system)
	6. Alaska
Only Call Transfers to Transit	7. North Carolina
	8. Georgia
	9. Boston/Central MA
Call transfers plus additional transit information	10. Utah
	11. San Diego
	12. Arizona

fare information, or real-time information (vehicle arrivals/departures).

Table 4 lists the 511 systems represented in the interviews, categorized by the type of transit content and features of these specific systems. Despite efforts to include more regional systems (there are relatively few), all but two of the interviewees represented statewide 511 systems. Eleven of the twelve 511 system administrators represented state departments of transportation; the other administrator represented a metropolitan planning organization (MPO).

A discussion guide composed of six primary questions—several containing a number of follow-up questions—was developed and sent to each interviewee in advance. The questions spanned the following topics:

- How the decision regarding transit content was made,
- Satisfaction with the current state of the system in regard to transit content and plans for changes,
- Transit agency participation in funding 511 system implementation and/or operation and maintenance, and
- Availability of transit-related 511 system operating statistics (e.g., number of call transfers to transit).

The twelve 511 system administrator interviews were conducted by telephone from November 2008 through January 2009.

## 2.6 Transit Rider Focus Group

This activity was added to the study based on the results of the early (Phase I) study findings and at the suggestion of a representative of the 511 Deployment Coalition and the TCRP study panel. At the conclusion of Phase I, a briefing on interim findings was presented to representatives of U.S. DOT and the 511 Deployment Coalition. One of the major findings was that many 511 system administrators have chosen



not to follow the transit-related guidance issued by the 511 Deployment Coalition in 2003, which calls for a basic package of transit information and options for every transit agency within the 511 service area. The 511 Deployment Coalition representative indicated that because the commission considers whether and how to adjust their guidance and/or increase their efforts to encourage 511 system administrators to follow the current guidance, it would be useful to hear how transit users feel about 511.

With the overall objective being to improve the understanding of transit user perceptions of 511, two specific focus group objectives were identified by the study team. The first objective was to investigate transit users' perceptions regarding those types of transit information that are believed to be of most value to travelers (schedules, fares, disruptions, arrival/departure times) and that can be handled effectively by an automated telephone information system (that is, without an operator), regardless of whether that system is operated by an individual transit agency or is a 511 system. The second objective was to investigate the fundamental rationale for providing transit information on 511. That rationale is expressed as a series of assumptions shown in Table 5. The first three items were explicitly noted in the 511 Deployment Coalition's 2003 guidance; the last two items were identified by the study team as presumably part of the overall rationale for transit information on 511.

Study resources dictated a single focus group conducted in a single location with a local sponsor to recruit participants, provide incentives, and host the focus group. The ideal focus group region, one that would support investigation of the broadest range of issues, was identified as having a variety of transit services and a wide range of transit 511 information content and features. After contacting numer-

ous transit agencies around the country (including those in the San Francisco Bay Area, Seattle, San Diego, Phoenix, and Cincinnati/Northern Kentucky) the Utah Transit Authority (UTA), located in Salt Lake City, was selected. The selection was based both on practical considerations (they were one of only two sites interested and willing to participate), as well as the fact that they met the critical, minimum site selection criteria established by the study team: the presence of a mature 511 system that includes the basic UTA information and options as recommended by the 511 Deployment Coalition.

UTA's interest in assisting the study team with conducting the focus group was based on two key issues. First, UTA was in the midst of planning for and deploying, an interactive voice response (IVR) system. Second, given that they were a participant in Utah's statewide 511 system, they were interested in exploring their customers' reactions to the 511 system. Another benefit to selecting UTA was that the Utah Department of Transportation (UDOT), which operates the statewide Utah 511 system, was interested in understanding more about the multimodal aspect of the system, considering what could be done to improve the system, and meeting UTA's needs. UDOT participated in a post-focus group meeting with the study team and UTA to discuss the results of the focus group.

Once the selection was made, UTA's marketing department recruited focus group participants from their customer service telephone line. Ten participants were recruited to participate in the meeting (six participants actually attended), which was scheduled to take place from 7:00 P.M. to 8:30 P.M. on January 7, 2009, in Salt Lake City.

Prior to conducting the focus group, a discussion guide was developed by the study team and shared with UTA and

**Table 5. Assumptions investigated in the transit rider focus group.**

Assumptions Identified by the 511 Deployment Coalition	For long-time area residents and/or for newcomers to the area, 511 is easier to remember than a specific transit agency phone number (and newcomers will be at least as likely to be aware of, or learn about, the local 511 system as they would be to learn the phone number for specific transit agencies).
	It is easier to market 511 than to market individual transit agency-specific information numbers.
	A significant number of calls made to transit agencies are for information that could be provided entirely via an interactive voice response system such as 511 and do not require talking to an operator (and therefore calls to transit agencies could be reduced).
Other Assumptions	By consolidating information on multiple transit agencies on 511, callers could avoid having to remember, and call, multiple transit agencies.
	By consolidating transit and traffic information on a single phone system, callers would be encouraged to do multimodal trip planning and/or those that already do such planning would find the single source of information more useful than making separate calls to traffic and transit information lines.

UDOT to solicit comments. The final discussion guide included questions in the following four categories:

- Participants' background information, including how long they have been riding UTA and what UTA services they use the most;
- Participants' use of transit customer information systems, including what information they typically seek and their experience with automated transit information systems;
- Participants' experiences with and perspectives on Utah's 511 system; and
- Other participants' questions or comments about 511 or transit information by phone.

The final focus group discussion guide is included in Appendix B.

Since only one focus group was conducted and given the participants' very limited experience with 511 and the absence of advanced transit information and features (detailed, route-specific schedule information or vehicle arrival/departure information), this focus group activity does not provide definitive answers to questions about transit users' perceptions of 511. However, it does provide some preliminary, useful insights that, when combined with feedback that other transit agencies or 511 system administrators may have, or will collect, can be useful in shaping 511-transit strategies.

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## CHAPTER 3

# Findings and Applications

This chapter presents the study findings, which are provided in the following six areas:

1. Transit agency telephone information strategies,
2. Other organizations' telephone information strategies,
3. Overview of transit agency involvement in 511 systems,
4. Transit agency 511 case studies,
5. 511 system administrator interviews, and
6. Transit rider focus group.

### 3.1 Transit Agency Telephone Information Strategies

Findings related to transit agency telephone information strategies are presented in three subsections:

- Overall customer information approaches,
- Transit call center strategies, and
- Implications of agency size and type.

The results presented in this section are drawn both from the literature review as well as the telephone interviews conducted with 25 transit agencies.

#### 3.1.1 Overall Customer Information Approaches

##### 3.1.1.1 Customer Information Needs and Preferences

The broad categories of trip-related information—pretrip and en route—constitute a core focus for transit customer information. Studies such as *TCRP Report 45: Passenger Information Services: A Guidebook for Transit Systems* (4) revealed specific customer needs or elements associated with trip-related information. Pretrip information needs were identified as consisting of elements such as location of the nearest bus

stop, routes that travel to the desired destination and transfer locations, fare, and time of departure and approximate duration of the trip. This guidebook identified that while en route, customers needed information on how to transfer to another route, as well as related cost and waiting time; identification of the correct bus to board; location of the final destination in relation to the bus stop, and return trip information (e.g., departure times and changes in route numbers).

In a study (5) conducted by Battelle Memorial Institute and MultiSystems (now TranSystems) for FTA, a series of 12 workshops was conducted in 4 states with 284 participants to identify customers' needs and preferences for traveler information. The participants were asked the following questions:

- What kinds of transit information do customers want and expect agencies to provide?
- Where should this information be made available to transit travelers?
- What are the preferred alternative ways to provide this information?
- When should this information be made available to be of the most use to transit travelers?
- What are the critical human factors issues involved with presenting and displaying transit information?

The results revealed that riders were interested mainly in pretrip information to make informed decisions about their trips. Static information is of interest mostly to riders before they start their trips. Riders were concerned about the reliability and accuracy of the information being provided. Along with pretrip information, riders were interested in real-time information while waiting at the wayside. The study also found that most riders generally were not aware of the advanced information media offered by transit agencies (e.g., Internet trip planner and information available through mobile phones and personal data assistants [PDAs]).(6, 7)

A consumer research study was conducted by the Utah 511 advisory group and a Bay Area TravInfo® focus group to determine the needs and preferences of transit customers with respect to 511 traveler information. (TravInfo was the San Francisco Bay Area intermodal traveler information system that preceded the Bay Area 511 system.) Based on the data received from respondents, it was found that transit information can be defined according to the following seven categories (8), which are listed in order of importance:

- Schedules and on-time status,
- Transit news/updates,
- Routes and maps,
- Conveniences (such as elevators and bike racks),
- Fares,
- Contact information for transit operators, and
- System regulations.

Also, it was also found that riders usually need traveler information when they are making a trip that they normally do not make, when there are service disruptions, or when they need to know the real-time status of a transit vehicle. (9)

In 2001, another survey was conducted by ITS America to determine the information needs of travelers. Among the survey respondents, 20% were transit riders. The survey revealed that the transit customers want to know about service delays, travel time or arrival time estimates, and the level of crowding on transit vehicles. The respondents wanted such information to be in real time and updated every 10 to 15 min. (10) The survey also showed that commuters making longer trips (greater

than 30 min), or riders traveling to unfamiliar locations, are most likely to use 511.

### 3.1.1.2 Information Provided by Transit Agencies

The literature includes the results of a nationwide survey of transit agencies in the United States that identified the types of information agencies provide to their customers. Of the 30 transit agencies that responded to the survey, most provided at least the following types of information: (11)

- Operational information (e.g., route detours);
- Route and schedule information;
- Proposed service changes;
- Public meeting information;
- Security;
- Safety (e.g., mind the gap);
- General information (e.g., how to ride, fare information); and
- Transit in the community (e.g., transit agency teamed with local business).

One of the questions asked of the transit agencies interviewed for this study pertained to the type of information they provide to customers. The results—consistent with the general needs and preferences of customers (as detailed in the previous section on Customer Information Needs and Preferences)—indicate that most transit agency customer information focuses on trip planning, schedule, fare, and how-to-ride information. Figure 1 summarizes the interview results related to

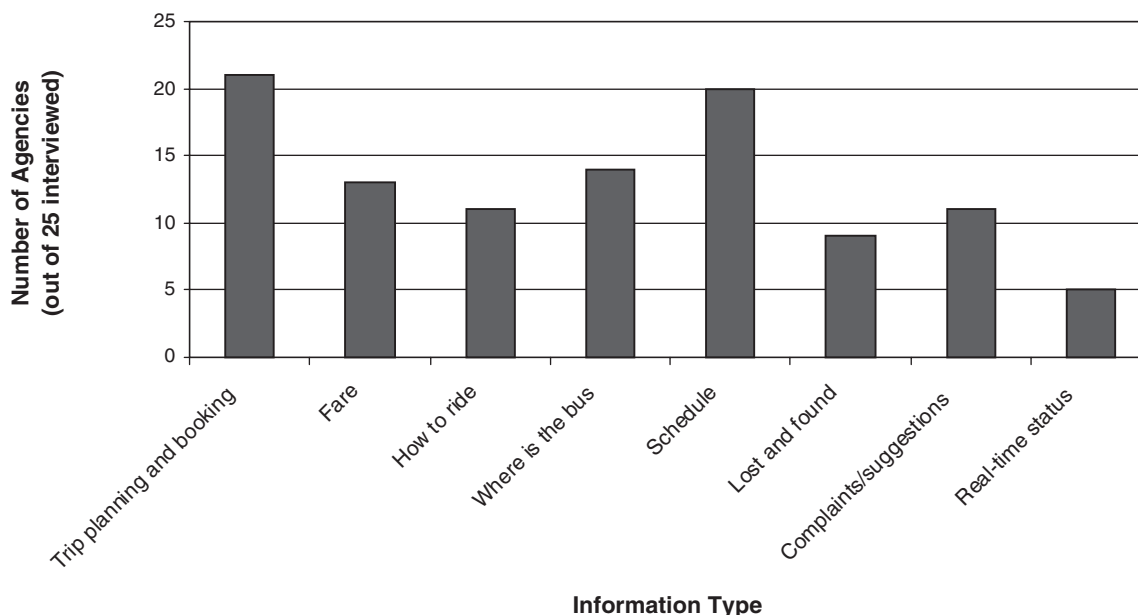


Figure 1. Transit information disseminated by transit agency call center.

the type of information provided. Interviewees also reported that questions and comments related to lost and found and complaints/suggestions also constitute significant portions of the information they provide. Transit call centers at the agencies that provide paratransit and ridesharing services provide related information such as how to apply for paratransit eligibility and make trip reservations, in addition to providing basic rider information.

**3.1.1.3 Dissemination Methods/  
Technologies Utilized**

The fact that transit agencies utilize a variety of print and electronic media for disseminating traveler information to their customers is well documented in the literature. Both print and electronic media are developed by agencies per guidelines set by the ADA and the ADA Accessibility Guidelines (ADAAG), as applicable. (12, 13) A study regarding the effectiveness of rider communication (14) included a survey

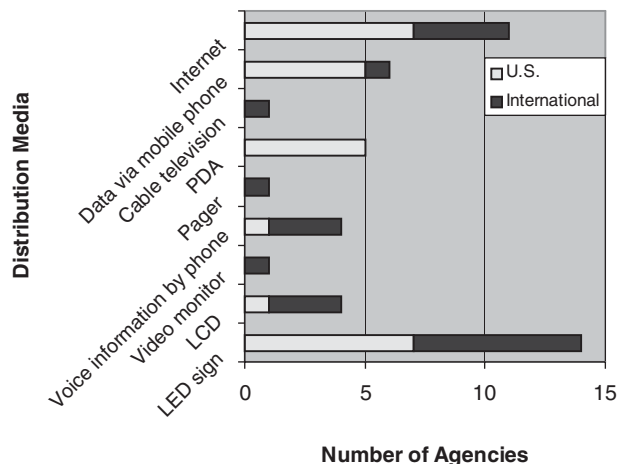
of 30 transit agencies that documented the number of agencies that use each type of dissemination media for various types of information. The results are shown in Table 6. The percentages associated with each dissemination medium in the columns indicate the percentage of transit agencies that utilize each particular medium for disseminating at least one type of information. For example, 23% of agencies utilize printed materials (“paper”). The numbers within the individual cells of the table show how many agencies—out of the 30 surveyed—utilize a particular medium for disseminating a specific type of information. As shown in Table 6, print materials (23%), websites (22%), and telephones (19%), are the most commonly used dissemination methods.

Figure 2 summarizes the results from *TCRP Synthesis 48: Real-Time Bus Arrival Information Systems (15)* regarding the dissemination media used for real-time transit information provided by transit agencies in and outside of the United States. In addition to showing that real-time information is more common for agencies outside the United States, the results

**Table 6. U.S. transit agencies’ dissemination media by type of information.**

	Dissemination Media (%)												
	Paper (23%)	Static sign at transit stop/station (13%)	Electronic sign at transit stop/station (3%)	Public address system (3%)	On-board electronic sign (1%)	Internet (website) (22%)	Telephone (19%)	Mobile telephone (1%)	Wireless Application Protocol (WAP)-enabled device (1%)	Kiosk (5%)	E-mail or page (5%)	Wireless device (PDA, iPod) (1%)	Other (3%)
<b>Operational Information:</b>													
Next bus/train/ferry arrival/departure time (either real time or scheduled)	15	15	10	6	3	15	19	1	2	8	2	1	1
Detours/delays	23	18	7	8	1	20	22	3	1	5	10	3	4
Vehicle location		1	0	1	2	2	6	0	0	0	0	0	0
Trip and/or connection time	14	10		2	1	16	16	1	1	6	3	1	1
Fare payment	26	15	0	0	1	24	21	2	1	6	7	1	5
Parking availability	5	1	2	0	0	6	6	1	1	3	3	1	0
<b>General Information:</b>													
Maps, routes, schedules, and fares	30	22	0	0	0	30	23	0	1	10	5	2	4
Rider’s Guide	27	6				24	13			4	1	0	4
Information for disabled riders	26	7		1	1	25	21	1	1	2	4	1	2
Trip planning (including Point A to Point B planning, find closest stop, find service at a location)	10	4				17	20	2	1	3	2	1	4
<b>Safety/Security:</b>													
Reminders about notifying officials about suspicious packages or activity	19	13	5	7	2	13	3	1	0	3	4	0	0
Evacuation of transit facilities/vehicles	8	5	2	4	0	5				0	1		3
Escalator/elevator outages	1	3	1	0	0	3	3	0	0	0	1	0	0
Amber Alerts		1	0	1	0	0	0	0	0	0	0	0	1

Source: *TCRP Synthesis 68: Methods of Ridership Communication* (Table 6, p. 52).



Source: TCRP Synthesis 48: Real-Time Bus Arrival Information Systems (p. 13).

**Figure 2. Distribution media for real-time bus arrival information.**

indicate that wayside and changeable electronic signs (commonly known as dynamic message signs [DMS]) are the most common dissemination method for real-time information, followed by the Internet and telephone/PDA. This study indicates that real-time information is seldom provided manually, by live operators on transit customer information phone lines.

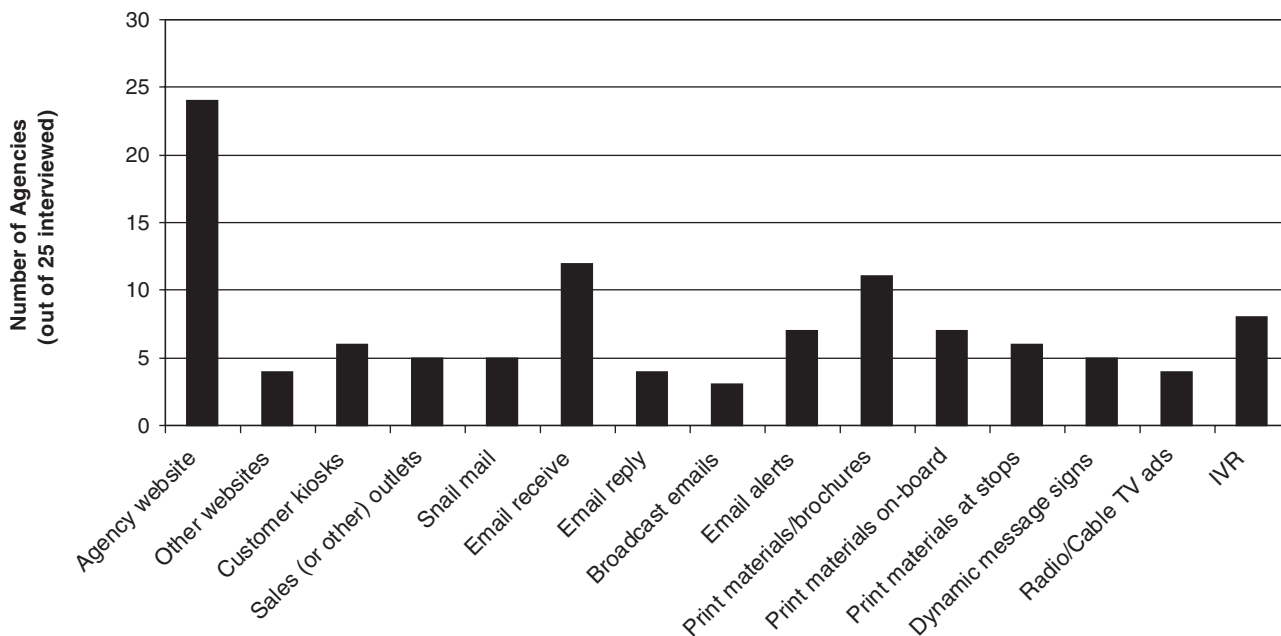
One of the questions asked of the transit agencies interviewed for this study focused on the type of dissemination media utilized. All 25 of the agencies responding to this question provided information via telephone by live operators, making this dissemination method the core, foundational method for transit customer information. Figure 3 shows the

other dissemination media utilized in addition to telephone by the transit agencies that were interviewed. The Internet (transit-agency-specific websites) is also very common. Other common dissemination media include e-mail (for agencies sending out alerts to customers and for customers providing input to the agency) and printed materials. The study team believes that the relatively low utilization of printed media is a function of how the question was asked and how interviewees interpreted the question (i.e., the question was open-ended—agencies were not specifically prompted for each medium, and many of them may not have mentioned printed material because they thought it was a given, or not the focus of this phone-oriented study). In reality, essentially all transit agencies provide information via printed media.

### 3.1.1.4 Matching Dissemination Methods/ Technologies with Customer Needs and Preferences

The 25 transit agencies that were interviewed for this study were asked several questions relating to understanding and meeting the needs of their customers, including the following:

- What is the specific role served by telephone information in your overall customer information strategy (e.g., do you use the telephone to provide specific types of information or to meet the needs of specific types of customers)?
- What methods do you use to accommodate customers' special needs?
- How do you determine customer needs and preferences and their satisfaction with customer information?



**Figure 3. Transit information dissemination media other than telephone.**



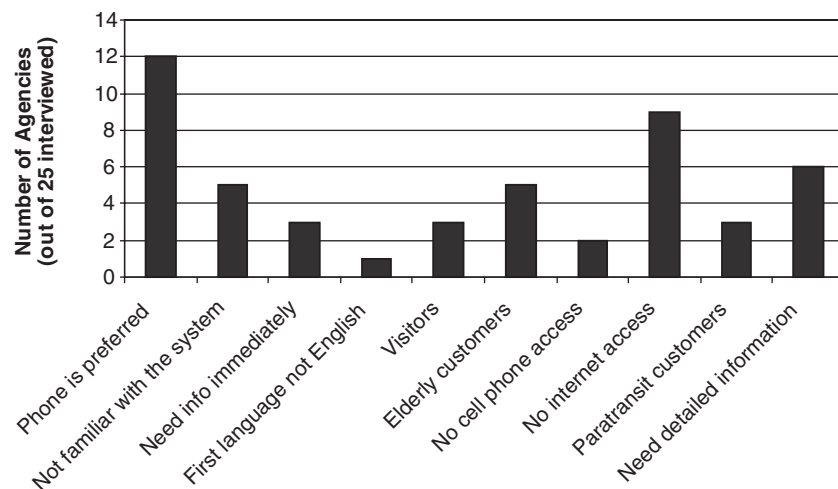
Figure 4 summarizes the results of the interview question, *Do you see your telephone customer service as serving a different need or type of customer than your other customer service media?* This question was open ended (i.e., interviewees were not presented with a list of specific, potential answers). As indicated previously in Figure 2, the most common answer (noted by almost half of the 25 agencies interviewed) was that the telephone is simply the dissemination medium that they think most of their customers prefer. Further, compared to an IVR, staffed telephone information lines are fundamental because many callers, especially the elderly, want to speak with “a real person.” Overall, the agencies’ telephone information is the core, fundamental communication method used for customer contact. Also, agencies rely on telephone-based communication for relationship building, and advertise their customer service telephone numbers on their websites, in printed information brochures, and through other media (e.g., DMS). Transit agencies use the telephone as a primary means for the following types of customer information requests:

- Information requests on what/how/where/when questions. For example, questions can include “how to ride a fixed route bus,” “when is the next bus on route No. X,” or “where can I get my monthly pass?” These questions require live interaction with an agency representative. Such questions are received mostly from infrequent riders or visitors.
- Information requests from customers who are looking for personalized information that suits their specific needs and preferences.
- Information requests on the real-time status of transit vehicles, detours, or service disruptions, received mostly at agencies that do not have electronic information resources available to customers. Generally, such calls are received

- when customers are en route and looking for immediate information assistance,
- Information requests from customers with special needs (e.g., customers who are senior citizens, customers with disabilities, or non-English-speaking customers).
- Requests for paratransit and rideshare reservations.

The second most common role served by telephone information, and noted by just over one-third of the agencies, is that the telephone provides a means for serving those customers that do not have access to the agency’s website. Other relatively common answers (noted by 20% or more of interviewees) were that telephone information plays a specific, important role in serving customers who are unfamiliar with the transit system, elderly customers, and customers who need very detailed information. The general impression was that the direct, two-way, human-to-human communication possible through the telephone makes this medium the core method for meeting the most challenging information needs of customers. Also, with most demand-response services relying on making trip reservations and confirmations via telephone, the phone plays a particularly critical, central role for paratransit agencies and customers.

Two of the questions asked of the transit agency interviewees focused on how they determine their customers’ needs, preferences, and capabilities, as well as their satisfaction with the agency’s customer information services. All agencies gather this sort of information on an on-going, daily basis through some combination of customer comment/complaint mechanisms, including caller comments to agency customer service operators and caller voicemail, fax, and/or e-mail messages. Agencies seem to perceive this as a basic means of feedback. Most agencies supplement this sort of feedback with customer surveys that are administered on-board, on-line, or by telephone.



**Figure 4. Types of customers and information requests addressed by telephone.**

Several interview questions related to how transit agencies accommodate their customers' specific information needs, preferences, and limitations. All of the agencies interviewed have telephone typewriter (TTY) or telephone device for the deaf (TDD) lines available for disabled customers. Some agencies, like Blacksburg Transit in Blacksburg, VA, are part of a statewide 211 service that provides transit information in addition to other critical human services. (A nationwide telephone number serving 65% of the U.S. population as of June 2007, 211 provides information on basic human needs and physical and mental health, as well as referrals to human services organizations, and is coordinated by United Way of America and the Alliance of Information and Referral Systems.) Most agencies provide printed information materials in large print and Braille to be compliant with ADA. Over half of the agencies interviewed provide bilingual customer information, and Spanish was, by far, the most common non-English language accommodated.

### 3.1.2 Transit Call Center Strategies

#### 3.1.2.1 Central versus Decentralized Call Centers

All of the transit agencies we interviewed had a single, physically consolidated call center for their regular non-paratransit services. In some cases, (e.g., Charlotte Area Transit Service [CATS] and Valley Metro), physically separate call center facilities are used for paratransit. Transit call centers typically have an organizational structure that is comprised of call takers who are managed by supervisors and supervisors who are managed by call center managers. Sometimes there is one level below that of the call takers: receptionists who receive customer calls and forward them to call takers.

#### 3.1.2.2 Hours of Operation and Staffing

Generally, the call centers at the agencies that were interviewed operate from early morning (e.g., 6 A.M. or 7 A.M.) to evening (e.g., 6 P.M. or 7 P.M.), and, on occasion, until 11 P.M. These call centers operate a large number of shifts (e.g., 11 shifts at LYNX between 8 A.M. to 8 P.M.) based on the needs to meet the call volumes at specific times. At some agencies, the call center hours were found to vary over the year due to changes in transit schedules after each "pick" or "bid," which often is done three to five times per year. For example, the Island Explorer schedules two shifts of call takers (with nine operators) between the months of June to September, while only one shift (with two operators) is needed between the months of October to June. This is because the Island Explorer only operates during the summer and early fall. Further, some agencies have extended service hours. For example, King County Metro reported that they manage a 24-h per day/7-day per week call center operation to assist customers with information. This amounts to 20 to 25 shifts on an average weekday.

Generally, transit call center operations were found to be smaller in size (less than or equal to 10 operators). In fact, some of the agencies (Lake Havasu City Transit and El Dorado Transit) have dispatchers answer the customer phone calls. Also, the number of operators was found to change due to changes in service hours, as discussed above. In fact, some agencies have to hire part-time call takers to meet their demands at certain times of the year.

The scheduling of operators and allocation of other resources (e.g., computers and telephone lines) are done manually, based on the experience of call center managers and through the analysis of daily call logs. Some agencies have sophisticated tools (e.g., Synergy Software at WMATA and E-WFM at Valley Metro) that help to analyze reports of telephone system usage and subsequently assist with reallocating call center resources. Other agencies have developed these tools in house. For example, with the help of the University of Washington, King County Metro developed a queue model using call tracking data in their management information system (MIS) to manage daily call center operations.

Most agencies that were interviewed reported that they have a well-established recruitment process for hiring customer service representatives (CSRs). Generally, the study team found that the agencies focus on recruiting candidates that have prior experience in the customer service industry and have good communications skills, especially for telephone-based communication. The CSRs are expected to be patient, professional, and concise. Sometimes, the CSRs are expected to have multitasking skills and to make decisions when needed. Additionally, when interviewed, the candidates are tested for a variety of technical skills related to the transit industry. The list of skills desired by the interviewed transit agencies is as follows:

- Able to work as both dispatchers and call takers,
- Cash-handling capability,
- Able to respond to what-if questions,
- General knowledge of the mass transit environment,
- Bilingual/multilingual speakers,
- Understand modern communication practices such as e-mail,
- Familiar with computers,
- Recordkeeping skills,
- Knowledge of the service area,
- Able to help customers with navigation,
- Understanding of transit safety and security, and
- Good with map-based information.

#### 3.1.2.3 Technologies

The literature review yielded limited information on *transit* call center technologies in particular, but the literature on call center operations (i.e., including non-transit call centers) was



useful in identifying a set of technologies characteristic of call centers in general. (16-18) That list of technologies, ranging from the fairly basic, common technologies, to the very advanced and less common technologies, was then used as a checklist (prompts) in the 25 transit agency telephone interviews that were conducted. These technologies were organized into two categories, basic and advanced, and are presented in Table 7.

Most of the technologies described above are not utilized by the transit agencies that were interviewed. As shown in Figure 5, the interviews indicated that voicemail, automatic call distribution (ACD), voice recording, and interactive voice response are the most prevalent technologies used by transit agencies. Voicemail is implemented in more than 85% of the interviewed agencies, and ACD is implemented at 65%. Since none of the interviewed agencies use speech analytics, this technology does not appear in Figure 5.

Figure 6 summarizes the reasons that transit agency interviewees gave for investing in call center technologies. The most commonly cited rationale for technology investments, as noted by just over half of the agencies interviewed, was to improve customer satisfaction. Many agencies identified a desire to improve the productivity of their call centers—to handle more calls with a given number of operators—as a prime motivation for technology investments. A few agencies that have not implemented many technologies cited financial constraints as the reason for their lack of investment. One agency said that they felt it was less expensive to meet call demand by adding operators than by implementing technology.

A recently published article in *Metro Magazine* reports several efforts made by agencies across the country to revamp call center operation with the use of technology, including the

**Table 7. Call center technologies.**

Call Center Technology	Description
<b>Basic Technologies</b>	
Automatic Call Distribution (ACD)	A technology that automatically distributes incoming calls to customer agents in a call center. ACD sends calls to the next available phone operator based on a routing strategy that is configured in the ACD software.
Voicemail	A commonly used technology that can be employed by customers to leave a message when their call can not be answered by a telephone operator. Advanced technologies such as CTI allow telephone operators to view these messages in their mailboxes.
Voice Recording	A technology used by call center operators to record telephone conversations between customers and call takers for quality control and future analyses.
<b>Advanced Technologies</b>	
Interactive Voice Response (IVR)	A telephone technology that detects and responds to customer requests through either voice or use of a touch keypad on a phone. IVR systems are usually installed in call center environments to filter customers based on the type of information being requested. Also, IVR systems assist in operating an automated call center during non-business hours.
Guided Speech IVR	An advanced IVR technology in which a live operator monitors customer prompts and helps the IVR system understand the customer responses to those prompts since customer responses can be misinterpreted by a computer system.
Computer Telephony Integration (CTI)	A technology that integrates a telephone system with computers. This allows telephone operators to use their computers to manage phone functions such as monitoring incoming and outgoing calls; answering, hanging up or conferencing phone calls; and monitoring call queue lists.
Customer Relationship Management (CRM)	A technology used by call centers to manage customer information and their relationships with customers. CRM helps transit agencies automate various call center functions such as building a contact database of customers, storing and analyzing customer data to determine customer needs and preferences, and performing marketing and sales activities.
Customer Interaction Management (CIM)	CIM is a technology used by call centers as an integrated portal for communicating with customers. CIM technologies are installed with a CRM system and allow a variety of modes of communication such as e-mail, telephone, fax, chat, and voice chat (using the customer information stored in the CRM database) from a single user interface.
Text to Speech (TTS)	Also known as speech synthesis, TTS is a technology used to produce human language speech from text inputs. Transit call centers use TTS to provide information through their IVR systems during non-business hours.
Speech Analytics	An automated process to extract specific information from telephone conversations. This technology can help agencies determine customer needs and preferences in an automated fashion.

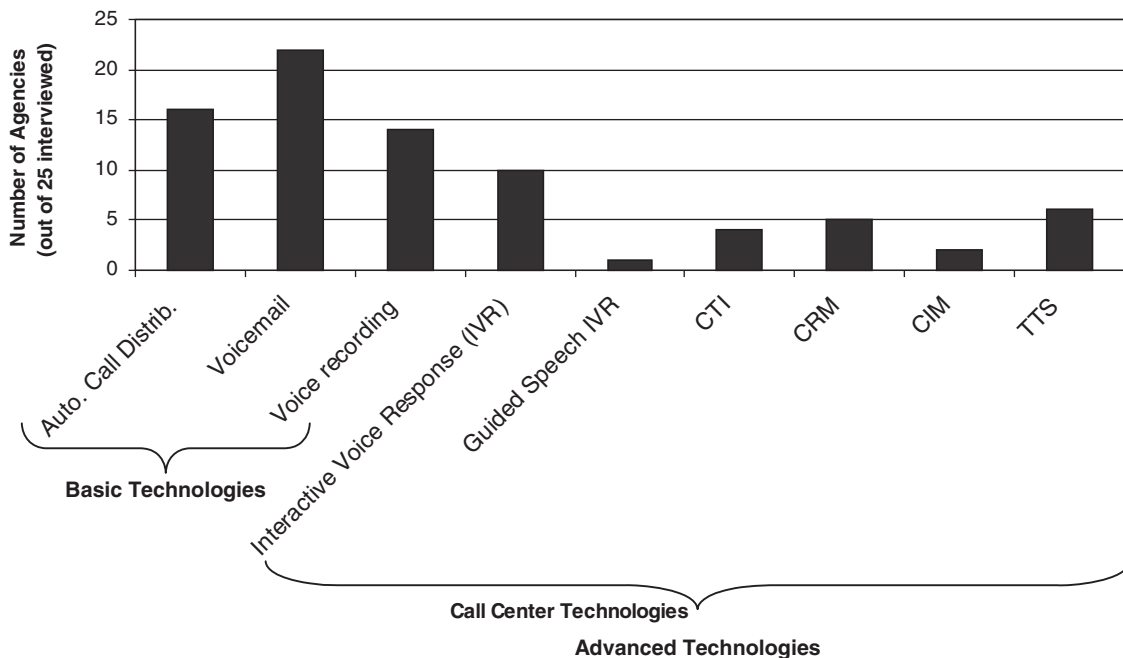


Figure 5. Technology use in transit call centers.

following steps taken by transit agencies to handle the problems faced by their customers while calling in:

Many transit systems are beginning to address these types of customer service issues by revamping their call centers to provide simplified trip planning options, more user friendly automated systems or, in some cases, a live person with the ability to assess complaints and address them immediately. (19, p. 100)

Agencies that were interviewed adopted call center technologies mainly for customer service improvement (e.g., at Capital

Metro Transportation Authority [CMTA], Austin, TX, and Pinellas Suncoast Transit Authority [PSTA], St. Petersburg, FL), CSR training/retraining (Southeastern Pennsylvania Transportation Authority [SEPTA], Philadelphia, PA), and complaints management (Pace Suburban Bus, Chicago, IL). According to this same article, CMTA found that the deployment of a 24-h IVR system helped reduce the number of calls handled by live operators by 20% to 25% within the first several months of its implementation. Similarly, PSTA has imple-

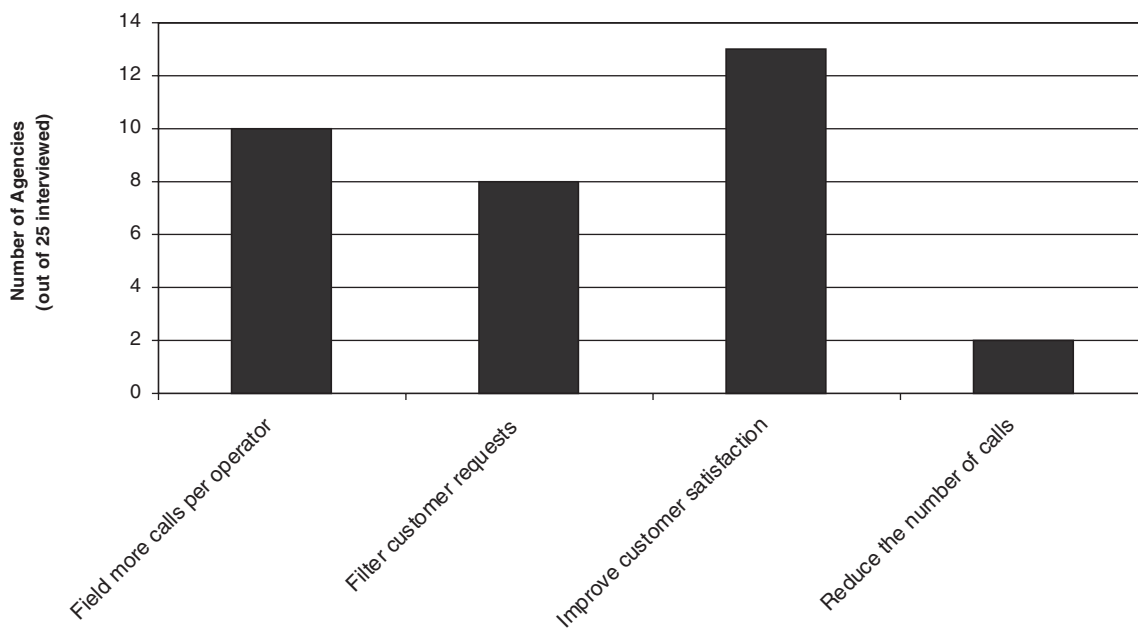


Figure 6. Reasons for implementing transit call center technologies.

mented IVR-based trip planning software (HASTINFO from GIRO, Inc.) that helps the agency deal with customers calling in to get assistance with complicated trip planning requests. The software helps PSTA train new CSR recruits as well. (20)

Training, one of the important aspects of call center operations, is needed to ensure good, quality customer service. The director of customer service at SEPTA said, “Many of our customer service reps did not have adequate skills to become good customer service liaisons.” (21, p. 102)

In order to test the skills of prospective CSRs, SEPTA adopted computerized tests to screen the applicants. Such tests help the Human Resources Department assess CSR candidates “on a number of topics, including math, reading, writing, grammar, customer service and computer databases.” (22, p. 102) This enhanced recruiting process has helped SEPTA bring down average talk time from 30 to 17 min per call. Also, the abandoned call percentage went down from 3.5% to 2%. These changes have improved the efficiency and utilization of call center employees at SEPTA by helping to reduce the number of agents from 57 to 47 in 10 years.

### 3.1.2.4 Metrics

*Metrics* refers to a variety of statistics that call centers may track to monitor different aspects of their performance. The review of the general call center literature was useful in identifying a list of metrics utilized, to varying extents, in modern call center operations. (23-25) These metrics were used as a checklist (prompts) in the 25 transit agency telephone interviews conducted for this study. The metrics were organized into two categories, basic and advanced, and are presented in Table 8.

Figure 7 summarizes the results of the transit agency interviews in terms of the number of agencies using the metrics

shown in Table 8. Essentially, all of the transit agencies that were interviewed track overall call volume in some fashion (thus, that metric is not included in Figure 7). Figure 7 indicates that, overall, the candidate metrics shown in Table 8 are fairly routinely utilized by a number of transit agencies. Most of the metrics in Table 8 are tracked by about half (between 10 and 16 agencies) of the 25 agencies interviewed. Not unexpectedly, the “basic” metrics are among the most commonly utilized. Only one of the eight candidate metrics—“percent calls not resolved at the first attempt”—was tracked by less than one-third of the agencies interviewed.

In a few cases, agency interviewees identified a metric not included in the candidate list. Two examples are the Washington Metropolitan Area Transit Authority (WMATA) and CATS, both of which track the number of calls answered on their IVR systems. This metric can be helpful in determining the utility of the IVR technology with respect to manually providing information. CATS reported that 90% of their calls are handled by their IVR system. Further, LYNX monitors several measures beyond the aforementioned list, including the attendance of their call center staff, number of calls transferred, number of calls received, and number of complaints handled by each agent per month. LYNX also monitors measures obtained from the 511 system. Denver Regional Transit District (RTD) monitors the amount of time that each operator spends on the phone since they have a specific number of hours (within a daily schedule) allocated for answering customer calls.

The measures shown in Figure 7 provide an overview of transit call center operational performance and assist management in evaluating and adjusting their staff assignments so they may utilize their resources effectively. Many of these statistics are available from technologies such as ACD and CRM. Agencies with limited technology resources utilize

**Table 8. Call center metrics.**

Basic Metrics	
	Average call duration
	Average number of calls in the queue
	Number and percentage of calls abandoned
	Number of calls/inquiries per hour
	Number and percentage of calls answered
	Average delay while waiting in a queue
Advanced Metrics	
	Information requested
	Number of agents ready to take calls
	Average number of agents in wrap-up mode
	Average call duration including wrap-up time
	Average time taken to pick up a phone call
	Average time until a call is abandoned
	Not ready time
	Idle time
	Percent of calls not resolved at the first attempt
	Call volume

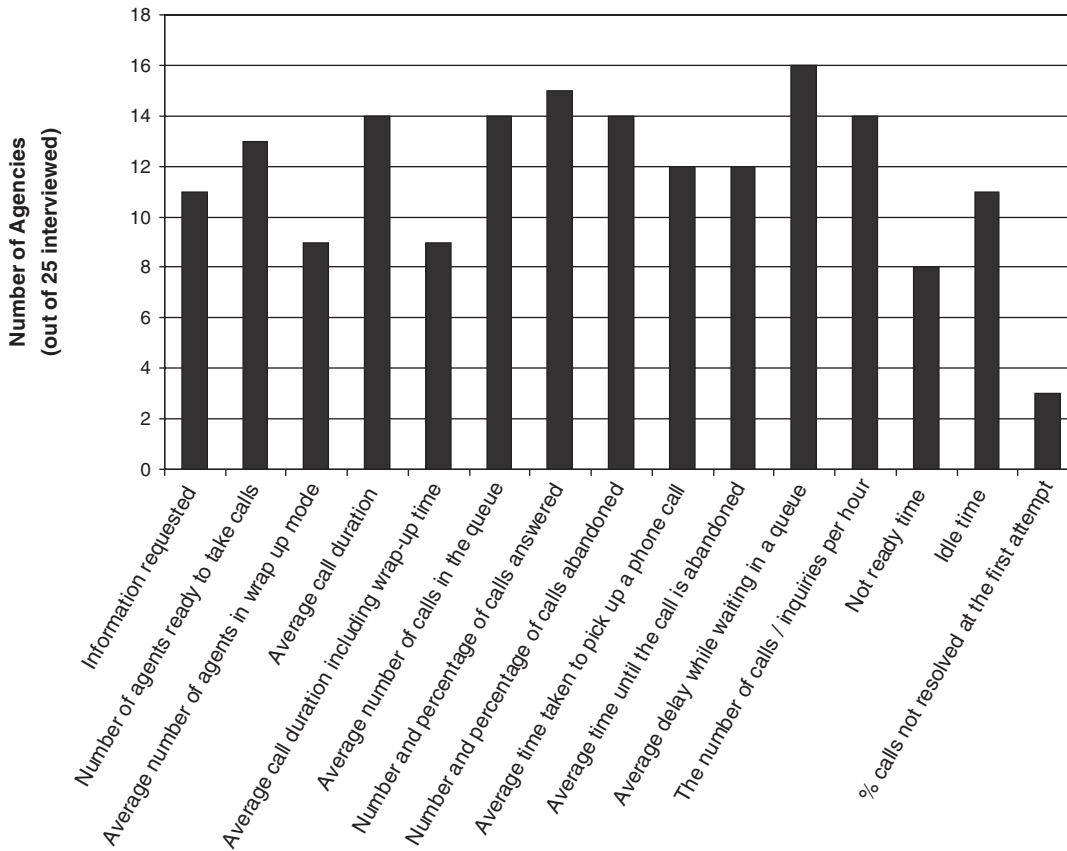


Figure 7. Call center metrics tracked by transit agencies.

other measures and methods for tracking call center performance, including supervisory monitoring, customer feedback, call monitoring (recorded audio), training, and reviewing complaints and comments.

### 3.1.3 Implications of Agency Size and Type

Transit agencies across the United States vary tremendously in terms of their size, characteristics, needs, and capa-

bilities. To better understand the impact of agency size on issues related to telephone customer information, the results of the transit agency telephone interviews have been sorted and summarized by transit agency size (size was defined by the number of vehicles the agency operates with small  $\leq 50$ ; medium = 51–300; large = 300+).

Table 9 compares the small, medium, and large transit agencies interviewed in terms of a number of factors that characterize the level of complexity or rigor of telephone customer

Table 9. Agency call center complexity versus agency size.

Measure of Call Center Complexity	Size of Transit Agency		
	Large	Medium	Small
% of agencies with advanced technologies	78%	50%	33%
% of agencies tracking advanced metrics	100%	75%	22%
% of agencies with advanced demand forecasting methods	33%	13%	0%
% of agencies with advanced quality monitoring methods	44%	50%	22%
% of agencies with advanced customer satisfaction monitoring	33%	25%	0%
% of agencies with extended hours of operation	78%	75%	67%
% of agencies with call center staff with advanced skills	78%	88%	44%
% of agencies providing bilingual information	70%	88%	56%
% of agencies providing real-time information*	30%	0%	33%

☐ = Small agencies less complex than medium and large agencies.

\* Does not necessarily imply information based on automatic vehicle-location technology. For example, includes vehicle status information as determined by dispatch-driver radio communication.

information activities. For each factor, the percentage of small, medium, and large transit agencies interviewed demonstrating “advanced” versus “basic” call center approaches has been calculated. Table 10 provides supporting information that identifies the types of specific agency methods and practices that were categorized as either advanced or basic for each factor. For each factor, if a given agency demonstrated at least one of the “advanced” attributes, it was classified as advanced. For example, if an agency utilized any of the four quality monitoring techniques that the study team classified as “advanced”

for the purposes of this exercise, they were categorized as “advanced” for that measure.

The shaded rows in Table 9 highlight the results where the expected relationship between agency size and complexity was strongly evident (i.e., where smaller agencies were less complex than larger agencies). For example, small agencies utilize less complex call center methods than medium or large agencies. This pattern was found for nearly all of the factors. For most factors, there was no consistent difference found between medium and large agencies, suggesting that some medium

**Table 10. Categorization of call center attributes as “advanced” versus “basic.”**

Measure of Call Center Complexity	Characterization of Agency’s Self-Reported Methods	
	Advanced	Basic
Technologies	<ul style="list-style-type: none"> <li>• IVR</li> <li>• Guided speech IVR</li> <li>• CTI</li> <li>• CRM</li> <li>• CIM</li> <li>• TTS</li> <li>• Speech analytics</li> </ul>	<ul style="list-style-type: none"> <li>• ACD</li> <li>• Voicemail</li> <li>• Voice recording</li> </ul>
Metrics	<ul style="list-style-type: none"> <li>• Percent of calls not resolved at the first attempt</li> <li>• Not ready time</li> <li>• Average number of agents in wrap-up mode</li> <li>• Average call duration including wrap-up time</li> <li>• Information requested</li> <li>• Idle time</li> <li>• Average time taken to pick up a phone call</li> <li>• Average time until the call is abandoned</li> <li>• Number of agents ready to take calls</li> </ul>	<ul style="list-style-type: none"> <li>• Average call duration</li> <li>• Average number of calls in the queue</li> <li>• Number and percentage of calls abandoned</li> <li>• Number of calls/inquiries per hour</li> <li>• Number and percentage of calls answered</li> <li>• Average delay while waiting in a queue</li> </ul>
Demand Forecasting Technique	<ul style="list-style-type: none"> <li>• Use of software</li> <li>• Customized tool to review data</li> </ul>	<ul style="list-style-type: none"> <li>• Manual review of reports</li> <li>• Subjective perceptions of historic patterns and volumes</li> </ul>
Quality Monitoring Technique	<ul style="list-style-type: none"> <li>• Statistics from a software program</li> <li>• Market research/survey</li> <li>• Customer feedback</li> <li>• Real-time supervisory monitoring of calls</li> </ul>	<ul style="list-style-type: none"> <li>• Informal supervisory observation</li> <li>• Non-real-time supervisory call monitoring (e.g., call recordings)</li> <li>• Manual review of complaints/comments</li> </ul>
Customer Satisfaction Monitoring Technique	<ul style="list-style-type: none"> <li>• Online surveying/comments</li> <li>• Email surveying/comments</li> </ul>	<ul style="list-style-type: none"> <li>• On-board surveying</li> <li>• Telephone surveying/comments</li> </ul>
Hours of Operation	<ul style="list-style-type: none"> <li>• Weekdays 15+ h</li> <li>• Saturday 8+ h</li> <li>• Available on Sunday</li> </ul>	<ul style="list-style-type: none"> <li>• Weekdays ≤15 h</li> <li>• Saturday ≤8 h</li> <li>• Not available on Sunday</li> </ul>
Call-Taker Skill Requirements	<ul style="list-style-type: none"> <li>• Any of various skills above and beyond basic telephone and communication skills (e.g., prior work experience in mass transit, prior experience in customer service, bilingual skills, able to also perform dispatch duties)</li> </ul>	<ul style="list-style-type: none"> <li>• Basic telephone and communication skills (e.g., patient, customer-friendly)</li> </ul>
Bilingual Capability	<ul style="list-style-type: none"> <li>• Offer English plus at least one other language</li> </ul>	<ul style="list-style-type: none"> <li>• Offer English only</li> </ul>
Real-Time Information Provided	<ul style="list-style-type: none"> <li>• Real-time information available (e.g., next bus)</li> </ul>	<ul style="list-style-type: none"> <li>• No real-time information available</li> </ul>

level of agency size represents the tipping point where more complex and rigorous call center methods become common. The somewhat counterintuitive findings for real-time information (i.e., small agencies are as likely to provide real-time information as are large agencies) is a function of the small sample size and the fact that the small agency sample included the Acadia National Park Island Explorer service, a rare example of a small agency that provides “next bus” type information.

### 3.2 Telephone Information Strategies of Other Organizations

This section compares and contrasts the call center operations of transit and non-transit organizations whose call center operations are considered state of the art. Information on non-transit call centers was collected from call center literature (26-29) and supplemented with telephone interviews. Three organizations were interviewed including a state motor vehicle department; a local bank branch office; and a very large, national consumer durables manufacturer. These organizations provided insight on call center organizations of various sizes responsible for different types of products and services.

#### 3.2.1 Similarities and Differences between Transit and Non-Transit Call Centers

The study team identified the following similarities and differences between transit and non-transit call centers:

- Call center approaches vary widely depending mostly on the size of the organization; larger organizations employ more sophisticated approaches.
- Non-transit organizations typically utilize more advanced call center technologies than even the larger transit agencies. For example, the consumer durables manufacturer interviewed uses all of the technologies asked about on the survey, whereas many of even the largest transit agencies interviewed use only some of those technologies.
- Non-transit organizations, particularly the larger and more sophisticated ones, use IVR technologies more than the average transit agency to limit the number of live operator interactions. Non-transit organizations, especially those with high call volumes, often employ more sophisticated IVR menu structures/ACD schemes and make a greater effort to route specific types of customer questions to specific operators.
- Transit and non-transit organizations utilize similar approaches to staffing call centers and setting call-taker skill requirements. The study team’s judgment is that non-transit organizations tend to use more sophisticated human resource strategies than do even the largest transit agencies.

- The quality monitoring technologies used and the performance metrics tracked by non-transit call centers are similar to those employed by transit agencies. The size of the organization and number of calls seems to be the key driver both within and outside the transit industry. There does seem to be a slightly greater use of the most sophisticated techniques in non-transit organizations.

#### 3.2.2 Implications for Transit Agencies

Overall, it was found that transit and non-transit agencies use many of the same call center methods. Those methods vary primarily in relation to call volumes. Organizations handling the highest call volumes use more of the most sophisticated methods. However, it was also found that although many of the same methods were used, non-transit call centers tend to use more of the advanced methods than do transit call centers with comparable call volumes. Based on our telephone interviews, in those cases where transit agencies use less technology than non-transit agencies, it is either because they lack the resources, or because they do not feel that the more advanced, costly methods are necessary given their call volumes. These findings have the following implications for transit agencies:

- **Consider employing advanced call center technologies.** Although the smallest agencies with the lowest call volumes do not warrant major call center technology investments, somewhat greater use of technology by agencies of varying sizes would provide benefits for many organizations. Some general benefits of using call center technology include
  - Decreasing the amount of manual, paper-based processes at larger call centers (those with more than 10 call takers that are typically found at medium/large urban or rural transit agencies) by using workforce management technologies that can track daily work logs and automate most tasks;
  - Reducing the amount of time spent on repetitive information requests by implementing IVR systems and posting such information on the agency website;
  - Ensuring customer service quality for agencies with large call volumes (e.g., more than 1,000 calls per day) by using quality monitoring technologies; and
  - Improving customer management, particularly at those agencies that wish to provide personalized information such as service alerts, through the use of CRM and CIM software.
- **Provide more personalized information.** Many non-transit call centers provide highly personalized information to callers. One way they accomplish this service is by creating individual customer accounts based upon the products purchased. This captured information enables



non-transit centers to respond to their customers with personalized information.

- **Offer more up-to-date information.** Non-transit call centers often provide very timely and personalized information to their customers (e.g., the status of a catalog order). Transit agencies can use advanced technologies to increasingly provide similar personal and timely information.
- **Consider call center/customer information-specific customer satisfaction surveying.** Transit industry call centers mostly rely on customer surveys conducted by agency marketing departments for determining customer needs and preferences. Since the nature and objective of such surveys can be different and may not cover needs that are specific to call centers, transit call centers should consider conducting their own mail or online surveys, similar to those performed by non-transit industries, to determine needed improvements in call center operations.

### 3.3 Overview of Transit Agency Involvement in 511 Systems

This section documents the extent and nature of transit agency presence on the 511 systems that were operational as of March 2009, and analyzes transit-related 511 operating statistics. The specific 511 experiences of a broad spectrum of individual transit agencies, those integrated and not integrated with 511, are included in the transit agency case studies presented later in this chapter. In order to establish proper context, the transit-related portions of the national 511 Deployment Coalition's guidelines for 511 systems is presented before the inventory of 511 systems and related information.

#### 3.3.1 Transit-Related 511 Guidelines from the 511 Deployment Coalition

The following summary (30) outlining the origin, purpose, and organization of the national 511 Deployment Coalition is taken from the U.S.DOT Joint Program Office web page on 511:

Mindful of both the opportunities and challenges 511 presents, AASHTO, in conjunction with many other organizations including APTA and the Intelligent Transportation Society of America (ITS America), with support from the U.S.DOT, established a 511 Deployment Coalition. The program kicked off in January 2001.

A Policy Committee of leading executives from all elements of the transportation and telecommunications sectors has been formed to guide the 511 Coalition. The goal of the 511 Coalition is "the timely establishment of a national 511 traveler information service that is sustainable and provides value to users." The intent is to implement 511 nationally using a bottom up approach facilitated by information sharing and a cooperative dialogue through the national associations represented on the Policy Committee. The mission of the Policy Committee is to provide guidance on how to achieve this goal.

In the early days of 511, as the very first systems were being planned and deployed, the 511 Deployment Coalition developed a series of white papers on technical and policy topics to support the efforts of individual deployers. Over time, those separate papers were rolled into an overall document entitled, *Implementation and Operational Guidelines for 511 Services*, which has been updated several times. The most recent update is Version 3.0, which is dated September 2005. (31) In the last several years, with most 511 systems established, there has been very little additional guidance developed.

The transit-related 511 guidelines in the latest version of the *Implementation and Operational Guidelines* can be summarized as follows:

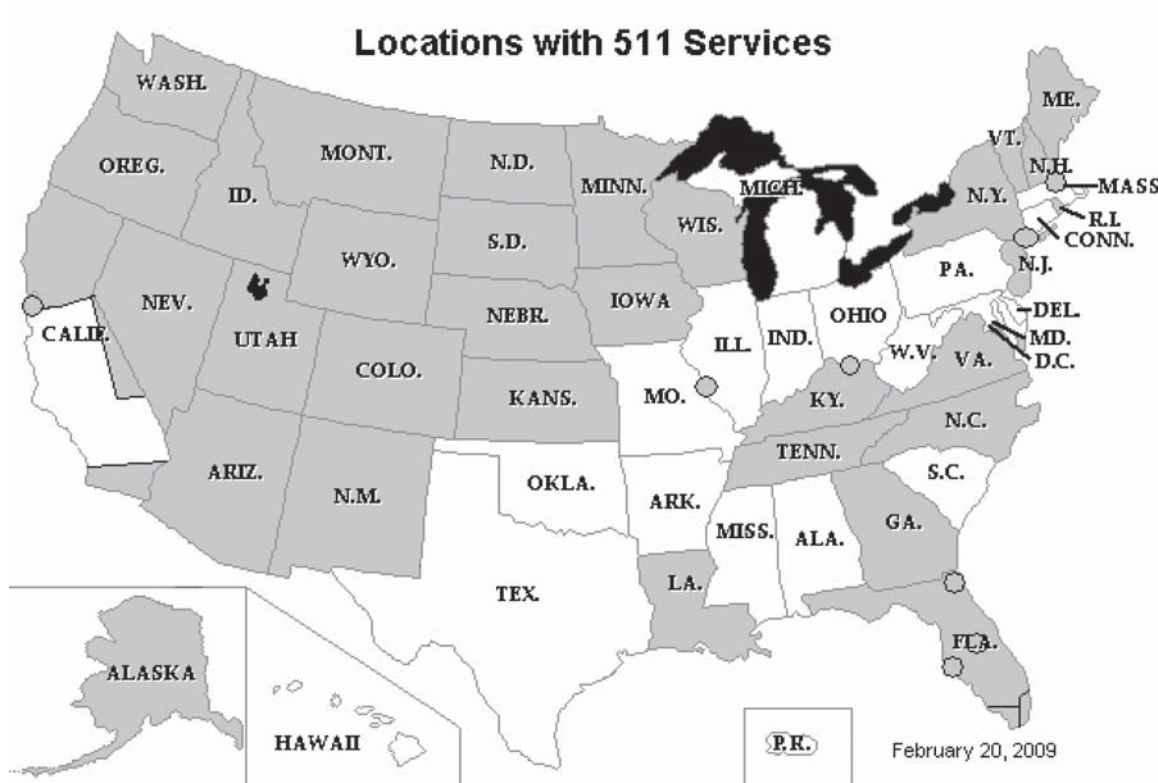
- For each transit agency in the region, a 511 system should include, at a minimum, a description of the agency's service area, schedule and fare information, information about service disruptions, and a connection to the agency's customer service center.
- Also recommended—although not included in the "basic transit 511 information" category due to the associated challenges—are regional or corridor-specific transit information and real-time transit arrival or departure times.
- A 511 system should work in conjunction with transit agency customer service centers. A 511 system is not intended to replace these operations, but to (1) provide compatible and supplemental information, usually in the form of recorded messages and (2) connect callers to transit agency customer service centers, if so desired by the specific agency.
- A 511 system can and should be designed to provide automated messages that will answer callers' questions prior to seeking assistance from transit customer service center operators. Ideally, thoughtful design will reduce the number of calls to be fielded by transit agency operators, thereby allowing them to handle only the calls that require their expertise and to increase the number of calls they can successfully manage.
- Trip planning can be accomplished over an IVR system, like 511, but it is a complex process. An alternative way to provide this service is to provide connections to the transit agencies' customer service centers.

#### 3.3.2 Extent and Type of Involvement

##### 3.3.2.1 Operational 511 Systems

There are 44 operational 511 systems as of March 2009, 42 of which are in the United States (there are two Canadian systems, one serving Nova Scotia and one serving Yukon). Figure 8 graphically summarizes the operational status of these systems nationwide. Most 511 systems cover entire states. Eleven states currently include no 511 systems and have no





Note: Shaded states have active 511 systems as of March 6, 2009.

Source: Federal Highway Administration, March 6, 2009; <http://deploy511.org/deployment-stats.html>.

**Figure 8. Summary of 511 deployment.**

plans to deploy systems. Of the 44 operational systems, 12 cover specific regions or metropolitan areas. The circles on the map provided in Figure 8 indicate these regional systems (e.g., St. Louis, MO). Interestingly, some of the largest metropolitan areas in the United States—including Los Angeles, Chicago, Houston and Dallas—currently are not covered by any 511 system.

The vast majority of 511 systems are operated by state departments of transportation (DOTs). Rare exceptions include the San Diego and San Francisco Bay Area regional systems, which are operated by their respective MPOs, the San Diego Association of Governments (SANDAG) and the Metropolitan Transportation Commission (MTC). Many of the 511 systems are not new telephone information systems. These systems were typically operational for many years providing highway information as conventional 10-digit toll-free information numbers. They became 511 systems when the necessary programming on the phone switches allowed callers within the service area to reach the system by dialing 511. Early in the federal 511 program, \$50,000 was offered to each state to cover such reprogramming costs. In most cases, the pre-511, 10-digit toll-free phone number was retained, and can also be used to reach the system.

Perhaps because of their origins as highway/traffic-only systems, almost none of the 511 systems' main menus list transit

or public transportation as their first choice. The exceptions are Alaska (ferries) and San Francisco. Additionally, almost none of the 511 systems have the option of speaking with a live 511 operator, with the exceptions being the Georgia and South Florida 511 systems.

### 3.3.2.2 Transit Agency Participation in 511 Systems

In order to determine transit agency involvement in the operational 511 systems, each of the 42 systems in the United States was called, using the “backdoor” (standard 10-digit) phone numbers. Table 11 presents these results by system, with transit presence or participation in 511 categorized into the following three types: (1) general information on transit services (e.g., services provided, service disruptions, the telephone number for the transit agency's customer service line, hours of operation, fares, etc.); (2) the ability to automatically transfer to the transit agency; and (3) real-time transit information (e.g., vehicle arrival/departure time estimates). The results can be summarized as follows:

- As of March 2009, 22 of the 42 total 511 systems have no transit presence or content whatsoever.
  - Most of these systems provide only highway/traffic information, which may include road-weather information.

**Table 11. Transit participation on active 511 systems.**

	511 System/Service Area	511 System Launch Date	"Backdoor"/ Local Phone	Type of Transit Information/Options		
				General Info (Service Disruptions, Fares, etc.)	Call Transfer to Transit Agency	Real-Time Transit Info
1.	Cincinnati/Northern Kentucky	June 2001	513-333-3333	X	X	
2.	Nebraska	Oct 2001	800-906-9069	None		
3.	Utah	Dec 2001	866-511-UTAH	X	X	
4.	Arizona	Mar 2002	888-411-ROAD	X	X	
5.	Orlando/Central Florida	June 2002	866-510-1930		X	
6.	Minnesota	July 2002	800-542-0220	X	X	
7.	Southeast Florida	July 2002	866-914-3838	X	X	
8.	Iowa	Nov 2002	800-288-1047	None		
9.	South Dakota	Nov 2002	866-MYSD 511	None		
10.	Kentucky, Statewide	Nov 2002	866-RDREPORT	None		
11.	San Francisco Bay Area, CA	Dec 2002	866-736-7433	X	X	X
12.	Montana	Jan 2003	800-226-7623	None		
13.	Vermont	Jan 2003	800-ICY-ROAD	None		
14.	North Dakota	Feb 2003	866-MY ND 511	None		
15.	Alaska	Apr 25, 2003	866-282-7577	X	X	
16.	Maine	May 2003	866-282-7578	X		X
17.	New Hampshire	May 2003	866-282-7579	None		
18.	Washington State	July 2003	800-695-ROAD	X		
19.	Oregon	Dec 2003	503-588-2941	None		
20.	Kansas	Jan 2004	866-511-KDOT	None		
21.	North Carolina	Aug 2004	877-511-INNC		X	
22.	Sacramento/Northern CA	Sept 2004	877-511-TRIP		X	
23.	Tampa Bay, FL	Sept 2004	800-576-3886	X		
24.	Colorado	July 2007	303-639-1111	None		
25.	Virginia	Aug 2004	800-578-4111	X	X	
26.	Rhode Island	Mar 2005	888-401-4511	None		
27.	Florida, Statewide	Nov 2005	866-511-3352	None*		
28.	Idaho	Nov 2005	888-432-7623	None		
29.	Wyoming	July 2006	888-996-7623	None		
30.	Tennessee	Aug 2006	877-244-0065	None		
31.	Nevada	Aug 2006	877-687-6237	None		
32.	Louisiana	Dec 2006	888-762-3511	None		
33.	Jacksonville/Northeast Florida	Oct 2006	866-511-3352		X	
34.	San Diego, CA	Jan 2007	619-839-0198		X	X
35.	Southwest Florida	Apr 2007	866-511-3352		X	
36.	St. Louis, Missouri	May 2007	877-478-5511	None		
37.	California, Eastern Sierra	May 2007	800-427-7623	None		
38.	Georgia	Aug 2007	877-MYGA511		X	
39.	New Jersey	Aug 2007	866-511-NJDT	None		
40.	Boston/Eastern Massachusetts	Oct 2007	617-374-1234		X	
41.	New Mexico	Dec 2007	800-432-4269	None		
42.	New York (Beta Version)	Jan 2009	888-465-1169	X	X	

\* The Florida statewide system serves as a gateway that can transfer callers to the regional 511 systems in Florida. Although those regional systems include transit information, no transit information is directly accessible on the main, statewide system menu.

- Nearly all of the 22 systems that have no transit presence or information are statewide systems. Most of these systems are for large states with relatively low population densities (e.g., Iowa, Wyoming, and Nevada). The exceptions are New Jersey and Rhode Island. The regional systems that lack transit information are St. Louis and California—Eastern Sierras.
- Of the 20 systems with some form of transit present or content, the type of information provided is represented as follows (note that because some systems have multiple types of information, the list below does not sum to 20):
  - Two have only general transit information (e.g., list the phone number for a transit agency);
  - Seven have only an option to transfer to transit agencies;
  - Nine have both general transit information and call transfer options; and
  - Three—San Francisco, San Diego, and Maine (Bar Harbor area)—include real-time transit information.

### 3.3.2.3 *Transit Participation in Relation to 511 Deployment Coalition Guidelines*

The current state of transit participation in 511 is poor relative to the basic, minimum transit participation recommended by the 511 Deployment Coalition. The Coalition recommends that every 511 system include every transit agency. However, 22 out of the 42 currently operational 511 systems contain no transit presence, information, or options. Even of those 511 systems that do include transit, most of them do not include all of the information and options recommended by the Coalition:

- Some 511 systems with transit information do not include a call transfer feature. This is the exception as most 511 systems with transit do include a transfer.
- About half of the 511 systems that include transit do not provide any meaningful general information, such as service disruptions, schedules, and fares.
- Many of the 511 systems that do include transit agencies do not include all of the transit agencies in the region.

### 3.3.2.4 *References from 511 Systems to 211 or 311*

There are currently no formal guidelines, like those produced by the 511 Deployment Coalition, that definitively identify how 511 systems should interface or relate to either 311 or 211 systems. The FCC designated 211 to be used for the locally/regionally operated “community information and referral services” phone systems. The FCC designated 311 to be used for locally/regionally operated, staffed (live operator) phone systems for “non-emergency policy and other government services” information. Although the exact relationship between 511 and these other “N11” numbers has not yet been determined or recommended, it has been suggested that, at a minimum, these systems should reference one another. This is especially true in the case of 511 referencing 211, because many demand-response services are coordinated by the agencies reflected on 211 systems. (32)

Although not every menu option of every operating 511 system has been explored as part of this study, every main menu and most of the transit-related submenu options have been explored thoroughly. In that experience, only one linkage to another N11 number was found. Specifically, the New York City Metro Region portion of the New York statewide 511 system includes a call transfer option to New York City’s 311 system.

### 3.3.3 **Differences between 511-Integrated and Non-Integrated Agencies**

In addition to documenting the general level of transit agency participation in 511 systems, one objective of Task 2 of this study was to investigate whether transit agencies participating in 511 systems differ from non-participating transit agencies according to several parameters. Those parameters

include the sophistication and specific approaches used for overall customer information and call center operations (e.g., technologies and metrics) as well as the extent of involvement in broader, non-511 telephone traveler information systems, including websites, highway advisory radio (HAR) and DMS. This section presents the results of that analysis.

#### 3.3.3.1 *Customer Information and Call Center Approaches*

A number of the questions asked of the transit agency interviewees focused on various aspects of their overall customer information strategy and specific aspects of their call center operations. In Chapter 2, a methodology was presented showing how the agencies’ responses to these questions was used to characterize agencies as either “advanced” or “basic” in regard to a variety of aspects of call center operations. In Section 3.1.3, the advanced versus basic categorization of agencies was examined according to agency size. Here, those agency categorizations are sorted according to whether the agency is integrated with 511. Integration is defined for this study as those agencies that have the ability to transfer from the 511 system to the transit customer information line.

Table 12 shows that, for most of the call center factors, the non-511 integrated agencies were found to be as advanced, or more advanced, than those that are integrated. The shaded rows in Table 9 highlight the results where the expected relationship between agency size and complexity was strongly evident, that is, where smaller agencies were less complex than larger agencies.

There are two potential hypotheses on the relationship between transit agency call center sophistication and 511 integration. The first is that more advanced agencies will be more likely to be integrated because participation in 511 either requires a certain level of robustness or sophistication in call center technologies and capabilities, or because the type of agencies that invest in sophisticated call center operations are more likely to experiment with 511 as a new way to reach customers. The second hypothesis is the opposite, reasoning that the agencies with less advanced call center operations are the most likely to integrate with 511. Presumably, this would be because these agencies see 511 as a way to supplement their own services without having their own after-hours capability, IVR or other more advanced telephone customer service capabilities.

The study team’s opinion is that these two opposing theories are not supported by the results in Table 12, along with the input from the case studies and the transit agencies, and our own observations of those agencies. Unfortunately, the limited sample size constrains our ability to draw authoritative conclusions. However, on the basis of our conversations and visits with more than two dozen agencies, we do not see agencies’ 511 participation decisions as having anything to do with the relative sophistication or lack thereof of their call

**Table 12. Agency call center complexity versus 511 integration.**

Measure of Call Center Complexity	Agencies' Level of 511 Participation	
	Integrated	Not Integrated
Agencies with advanced technologies	58%	43%
Agencies tracking advanced metrics	58%	86%
Agencies with advanced demand forecasting	16%	14%
Agencies with advanced quality monitoring	37%	43%
Agencies with advanced customer satisfaction monitoring	26%	0%
Agencies with extended hours of operation	74%	71%
Agencies with call center staff with advanced set of skills	68%	86%
Agencies providing bilingual information	60%	14%
Agencies providing real-time information	15%	43%

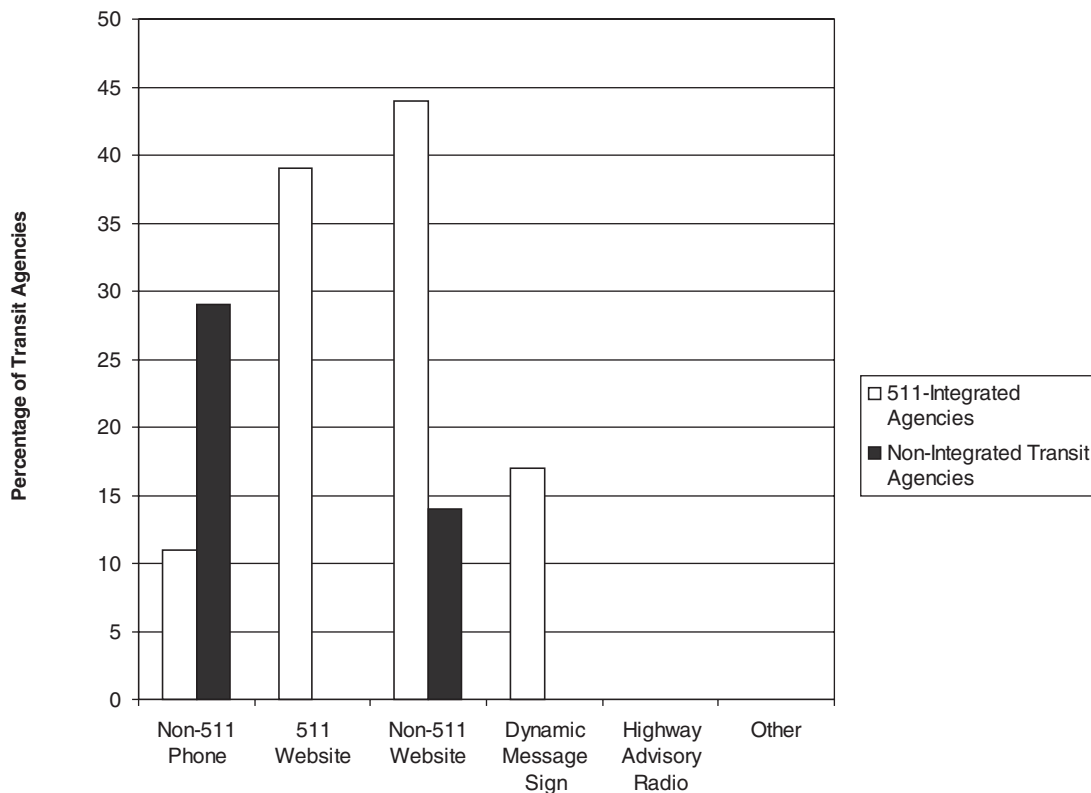
centers. Participation is more a function of whether the 511 system in question includes transit information at all, and whether the 511 sponsor provided transit with an opportunity to participate. Most transit agencies, regardless of their size or call center sophistication, took advantage of opportunities to integrate with 511 if offered the choice.

**3.3.3.2 Participation in Non-511 Traveler Information Systems**

Each transit agency was asked if they participated in any non-511 traveler information systems like 511 websites, non-

511 websites, DMS (which are included in a multimodal traveler information system, excluding signs operated by the transit agency dedicated strictly to their information) and HAR. Each agency also was offered an “other” category to capture any other type of broader traveler information system involvement. Figure 9 graphically summarizes these interview results.

Overall, there is not a high degree of participation in any of a variety of broader traveler information systems. Among either the 511-participating or non-511 participating agencies, no more than 44% of the agencies were involved in any given dissemination method. The sample size (results are based on 25 transit agency interviews) and the differences between the



**Figure 9. Participation in broad traveler information systems.**



number of 511-participating (18) and non-participating (7) transit agencies preclude any authoritative conclusions. However, it does appear that participation in a 511 phone system is correlated with participation in other broader traveler information systems. For three of the four dissemination methods described in Table 9, where there is any participation, participation is higher among 511 phone system participants than for non-participants. For example, participation in 511 websites is much higher among 511 phone participants (44%, or 8 of 18 agencies interviewed) than among non-participants (14%, or 1 of 7 agencies interviewed). The one area where participants are not significantly more involved than non-participants is non-511 phone systems. However, the relatively small gap and small sample size preclude the formation of any strong conclusions.

These results suggest that transit agencies participating in 511 telephone information systems are more likely to participate in other broader traveler information systems.

### 3.3.4 Transit-Related 511 Operating Statistics

Calling 511 systems and assembling an inventory of their transit presence and options is one way to understand, at a high level, the role that transit agencies are playing with regard to 511 systems. Another way to understand transit agency 511 participation and linkages is to look at transit-related 511 statistics, such as the percentage of total 511 menu requests that are for transit-related options, or the number of call transfers out of 511 to transit.

For each of the 29 transit agency case studies conducted and documented in Section 3.4, the transit agency was asked whether they saw, or regularly tracked, any 511 statistics related to their agency. Practically none of the transit agencies were aware of, or had seen, any such statistics, with the one exception being LYNX in Central Florida. None of the transit agencies felt that 511 participation impacted their call volumes. Although fully documenting all 511 systems was not a focus of this study, in the course of the case studies the research team did become aware of a few 511 operators who keep transit-related 511 statistics. We chose to present those statistics here, rather than as part of the case studies, because they are more instructive as general indicators of the relationship between transit and 511 rather than the impacts experienced by any one agency. Additionally, we chose to present these statistics here because they did not surface through the transit agencies.

The following transit-related 511 operating statistics were collected from the following agencies:

- **LYNX transit (Central Florida)**—Number of call transfers out of the Central Florida 511 system to LYNX and the percentage of all 511 calls that include a transfer to LYNX.
- **MTC, Bay Area 511**—Extensive statistics for both transit overall, and for individual agencies, including the percentage of all 511 menu selections that are for transit; the number of call transfers to all participating transit agencies; and the number and percentage of submenu selections within each transit agency’s menu. This last data category allows for the comparison of the number of call transfer requests to a given transit agency and to the number of requests for other items pertaining to that agency, when the information is resident on 511. This provides some indication of how many callers’ information needs are fully served on 511 without the transfer to a live operator.
- **Arizona 511**—The number and percentage of all 511 menu selections that are transit-related and the number and percentage of all outgoing 511 call transfers that are to transit agencies.
- **511 Virginia**—The percentage of selections for transfers. Transfers are the only way to get to transit information on this system.
- **511 Deployment Coalition**—The percentage of all 511 calls, nationwide, that includes a transit selection.

These statistics are shown in Table 13. It is clear that even for the small, core set of basic transit-related 511 statistics represented in Table 13, the availability of the information is quite variable. Few 511 systems have very comprehensive information. The San Francisco Bay Area 511 system stands out as having the most comprehensive and detailed transit-related statistics. The following observations are drawn from Table 13:

- Nationally, transit menu selections/calls are a relatively small proportion of all 511 calls/menu selections. The unusually high percentage shown for the San Francisco 511 system is, in part, a function of the great popularity of the Muni vehicle arrival times feature, which alone accounts for about 1% of all 511 requests.
- Transfers out of 511 to transit agencies—which are obviously a function of the overall popularity of transit on any given 511 system—range from several hundred per month to tens of thousands per month in San Francisco.
- In the San Francisco Bay Area 511 system, the proportion of a transit agency’s total menu requests that are for something other than a transfer to a transit operator varies dramatically, from 80% for Muni to less than 40% for many agencies. In most cases, there is no clear explanation for the variation. Two exceptions are San Francisco’s Muni and AC Transit. In Muni’s case, the high percentage (80%) of non-operator menu requests (that is, requests for data resident on the 511 system) is a function of the popularity of the arrival times feature, which alone accounts for 77% of all Muni menu requests. For AC Transit, the unusually

**Table 13. Sample of available transit-related 511 statistics.**

Transit-Related 511 Statistic	511 System/Transit Agency				511 Deployment Coalition (National Statistics)
	LYNX (Central Florida 511)	MTC (San Francisco 511)*	Arizona 511	511 Virginia	
Transit-related calls/menu selections		24% of all 511 menu selections	1%-2% of all 511 menu selections		9% of all 511 calls
Transit transfers from 511	0.4% of all 511 calls (~350 transfers per month)	32,800 transfers per month to AC Transit 6,600 transfers per month to Golden Gate Transit 6,100 transfers per month to Muni	5.2% of all calls (1,650 call transfers per month to Valley Metro)	< 1%	
Transit agencies' 511 menu requests that are for something other than a transfer to a transit operator		15% for AC Transit 80% for Muni 23% for Golden Gate Transit 42% for Santa Clara Valley 35% SamTrans			

\* Statistics associated with individual transit agencies are available for all of the more than 20 transit agencies that participate in the San Francisco 511 system; only a few examples for 3 agencies are shown here.

high percentage of transfers is probably related to the fact that that agency advertises 511 as their primary customer service number. Therefore, rather than getting just, or mostly, callers interested in getting automated 511 information, they get the full spectrum of customer inquiries. In fact, because AC funnels all calls to 511, this statistic is a good indicator of the overall percentage of their customer inquiries that can be handled without a live operator (15%). **This would confirm the subjective perceptions of most transit agency personnel that were interviewed, who feel that most customer service calls to their agency will require interaction with an operator.**

What is not revealed in the sampling of available transit-related 511 statistics shown in Table 13 is whether the calls transferred from 511 to specific transit agencies are “new” calls to transit or “shifted” calls. The amount of transferred calls can be significant—on the order of tens of thousands per month for large transit agencies in large, transit-oriented 511 systems like San Francisco. New calls would represent calls from people who would not otherwise have called the transit agency directly (such as tourists) and these would represent a net increase in calls to the transit agency. Shifted calls would be calls that would otherwise have gone to the transit agency directly, but the caller decided to try 511 instead. An example of this type of caller would be a veteran transit user and caller to the transit agency who noticed a reference to 511 on some of the transit agency’s materials and decided to try it. Under-

standing exactly what types of calls these are would increase the understanding of the impact of 511 on participating transit agencies. Case studies shown in Section 3.4 revealed that 511-participating transit agencies did not detect any 511-related change in their customer service call volumes, which may be evidence enough that most 511 transfers are probably “shifted” rather than “new” calls to transit.

The analysis of sample transit-related 511 statistics indicates that there is not enough data available to understand any other impacts and effectiveness for transit. Further, the fact that practically none of the transit agencies interviewed were aware of, or provided access to, what limited statistics are available suggests that 511 operators have not reached out to their participating transit agencies. This also may indicate that the transit agencies have not asked the operators for such data.

### 3.4 Transit Agency Case Studies

This section presents the 29 case studies of transit agencies that were performed. Conclusions based on the case studies are presented in Chapter 4.

The case studies are organized into the following three major categories based upon the level of transit involvement in the 511 system:

1. **Transit agencies integrated with 511**—These transit agencies are all represented on the menu system of their respective 511 systems and 511 callers can automatically transfer

from the 511 system directly to the transit agency's Customer Service Department.

2. **Transit agencies with a presence on 511, but no integration**—These transit agencies have a presence on the 511 menu system (e.g., listing the types of services they provide and/or identifying the transit agency's customer service phone number) but 511 callers cannot automatically transfer to the agency's Customer Service Department.
3. **Transit agencies with no 511 presence**—These agencies are not represented on their respective 511 systems in any way.

In cases where multiple transit agencies—as well as other agencies involved in 511 (like state DOTs and/or MPOs)—participate in the same 511 system, these case studies are grouped together based on the common 511 system. For example, the several case studies of the San Francisco area agencies are presented in the subsection on San Francisco Bay Area 511.

The format of the transit agency case studies includes a brief introduction that describes the agency and their participation in 511, followed by subsections on:

- **Rationale for Participation**—The factors considered by the agency in deciding how to participate, or not to participate, in 511, and the basis for their ultimate decision.
- **Impacts**—The actual impacts, both positive (benefits) and negative, experienced by the agency as a result of their 511 involvement. This includes the costs and other financial issues, like funding, staffing, technologies utilized, customer service call volumes, customer feedback, coordination with other agencies, etc.
- **Issues**—The problems, concerns, challenges, and other sorts of issues that were encountered or are expected.
- **Outlook**—The overarching observations on 511 participation, including advice to other transit agencies and plans for future 511 participation at the time of the interviews.

### 3.4.1 Transit Agencies Integrated with 511

#### 3.4.1.1 Arizona 511

The statewide Arizona 511 system was implemented and is operated and maintained in-house by the Arizona Department of Transportation (ADOT). Prior to the conversion to 511 in March 2002, the system operated for many years as a highway/traffic-only, toll-free, statewide telephone information system. The system was expanded between 2003 to 2005 as part of the FHWA's National 511 Model Deployment to include transit information in conjunction with a wide range of other modifications and enhancements. As part of those enhancements, a transit option was added to the main menu, with sub-menu options for Phoenix area transit (Valley Metro), Tucson

SunTran, Native American transits, and for the more than one dozen other rural/regional transit providers statewide. An automatic call transfer to customer service function was provided for each transit agency. Each transit agency was also provided the opportunity to use whatever prerecorded information they desired. For example, recordings for service area and hours of operation, as well as a voice recording for “flood-gate” messages like those used for service interruptions.

Most of the marketing of the ADOT 511 system focuses on highway information or targets highway users. For example, ADOT places messages stating “for roadway information, call 511” on DMS but installed a number of standard, painted roadside signs around some of the major metropolitan areas to refer drivers to 511 for transit information.

**Havasu Area Transit (HAT).** HAT is a rural/regional transit provider in Arizona whose FTA grants are administered by ADOT's Public Transportation Division. HAT provides fixed-route and complimentary paratransit service to residents of the city and the Desert Hills and Horizon Six subdivisions. Service is provided on 5 fixed routes that include a total of 24 stops. (33) The estimated population of the HAT service area is approximately 55,000. Lake Havasu is located approximately 125 miles from Phoenix, on the Arizona–California border.

HAT's location with the Arizona 511 system is within the submenu for regional transit providers. HAT information and options on 511 consist of prerecorded information identifying the phone number for HAT customer service (their dispatch office), dispatch office hours, service area, fares, and an option to transfer to HAT customer service. HAT reports that they do not utilize 511 to provide floodgate information, such as service disruptions.

**Rationale for participation.** The HAT transit manager started in HAT in 2005 and therefore may not have been with the agency when it was contacted by ADOT about 511 participation. It was not surprising then, that he was not certain about the genesis of HAT's involvement in 511. The Arizona 511 Manager, who also led the technical activities for the Arizona 511 National Model Deployment during the Model Deployment project, noted that he attempted to contact each of the rural/regional transit providers, but in those cases where he was unable to reach anyone, he went ahead and included their agency on the 511 system.

**Impacts.** HAT indicated that they are not aware of any impacts resulting from their participation in the 511 system. They have not contributed financially to the implementation, operation, or maintenance of the 511 system. They are not aware of any transit-related 511 statistics for the Arizona system but would be interested in seeing them if they existed. Overall, HAT did not recognize any costs or benefits with the 511 systems.



**Issues.** HAT cited no issues with 511 participation.

**Outlook.** Overall, HAT seems to lack any specific perspective on 511. They seem to view it as benign and essentially inconsequential. No one currently at the agency seems to have been involved in the decision to participate in 511. HAT may not have played any real role in the decision since the 511 sponsor, ADOT, is also the funding administrator and provider of technical support to HAT and the state's other rural/regional providers. HAT identified no specific planned changes in their 511 participation but they did indicate that they intended to follow up with ADOT to update their prerecorded information on 511 and to see if they can get any transit-related 511 statistics.

**Pima County Rural Transit.** Like HAT, Pima County Rural Transit is another rural/regional transit provider in Arizona whose FTA grants are administered by ADOT's Public Transportation Division. Pima County Rural Transit provides fixed-route and demand-response service for over thousands of square miles throughout south-central Arizona. Their approximately 200-mi-wide service area spans from the Tucson area in the east to the vicinity of Ajo, a small town of less than 5,000 population to the west. (34) Pima County routes provide connectivity to all of the urban public transportation services in their service area as well as to airports. All service is provided by contractors, who use eight vans/mini coaches.

Pima County's menu location in the Arizona 511 system is within the submenu for regional transit providers. Pima County Transit information and options on 511 consist of prerecorded general information on routes and services and an option to transfer to Pima County customer service. Pima County reports that they do not utilize 511 to provide flood-gate information, such as service disruptions.

**Rationale for participation.** Pima County's sole motivation for participating in 511 was to provide their customers with an alternative and easy-to-remember phone number. Pima County was recruited for participation by ADOT, who then handled most of the issues associated with getting Pima County on the 511 menu. Pima County's main concern when they made their decision to participate in 511 was the potential time investment required to get set up on the system.

**Impacts.** Pima County indicated that they did not know if their 511 participation has had any impact on them. They do not track any 511 statistics and were unaware if any were available.

Pima County Transit has not contributed financially to the 511 system. However, they did devote some staff time early on to provide the content for their prerecorded message on 511. Pima County never considered the need for an IVR for their operation and, therefore, did not even consider the benefit of a 511 IVR.

**Issues.** Pima County cited no issues with 511 participation.

**Outlook.** Overall, Pima County indicates that generally, 511 is a "good thing." They think its value will increase as more people become aware of 511 systems around the country. They do not think that many people are currently aware of 511. With the expectation that the profile of 511 will rise over time, they note that it's "good to get in on the ground floor."

**Valley Metro (Phoenix).** Valley Metro is the regional transit system in the Phoenix metropolitan area. Under the Valley Metro brand, local governments joined to fund the valley-wide transit system that the public sees on the streets. Valley Metro's service area consists of 413 sq mi with a population of about 2,061,000. Services provided by Valley Metro include local, express, and RAPID commuter bus service, or bus rapid transit, neighborhood circulators, dial-a-ride, vanpool service, and an online carpool matching system. When completed in 2008, Valley Metro will operate the Phoenix region's first light rail line. Among the various services operated directly by Valley Metro, or under their brand by various contractors, Valley Metro utilizes 790 fixed-route and demand-response vehicles. (35)

Valley Metro makes a wide range of information available on the Arizona 511 system in the form of prerecorded messages. They also include options to transfer to their Customer Service Department from various points within the Valley Metro 511 menu. Transfers from the different 511 submenus go directly to different portions of Valley Metro's customer service menu system. Valley Metro information and options on 511 consist of the following:

- A bus selection that, following a brief voice recording identifying the basic local, express, and RAPID services provided through the Phoenix metropolitan area, presents the following submenu options:
  - A selection for fares that includes prerecorded information and an option to transfer to Valley Metro's CSRs,
  - A selection for detours that includes prerecorded information, including service disruptions and an option to transfer to Valley Metro's customer service,
  - A selection for planning assistance that transfers to Valley Metro's customer service, and
  - A leave-a-comment selection that transfers to a voice-mail box.
- A dial-a-ride selection that provides prerecorded information and an option to transfer to Valley Metro's customer service.
- A rideshare selection that provides prerecorded general information followed by the following two submenu options:
  - A carpool matching selection with an option to transfer to Valley Metro's customer service and

- A commuter vanpool program selection with pre-recorded general information and an option to transfer to Valley Metro’s customer service.
- A regional light rail selection that provides prerecorded information on when service is expected to begin and is followed by two submenu options:
  - A light rail construction selection with an option to transfer to Valley Metro’s customer service and
  - A community involvement program selection with an option to transfer to Valley Metro’s customer service.

Valley Metro reports that although they have the ability to provide floodgate information on service disruptions, they do not use this feature because inputting and updating that information is a fairly labor-intensive, manual process (calling into the 511 system and recording the information). As part of the Arizona 511 National Model Deployment, Valley Metro planned to provide real-time estimates on bus arrival times for some of their bus rapid transit (BRT) stops. This was never done because they were unable to find a way to get the proprietary formatted bus status information from the Valley Metro fleet management system into 511.

**Rationale for participation.** Valley Metro cited a number of motivations for participating in the statewide 511 system, including the following:

- Wanting to “keep a place at the table” and be a part of the multimodal, multi-agency system;
- Wanting to be a good and supportive partner of the 511 deployer and operator (ADOT);
- Wanting to provide their customers with an easy-to-remember phone number; and
- Wanting a means to garner lessons learned that could be useful to the operation of their own IVR system.

Valley Metro noted only one concern with 511 that they considered before participation. This concern was the possible inconvenience that their customers could experience when calling 511, only to find out that they would have to transfer in order to speak with a Valley Metro CSR. They “didn’t want customers to have to wade through a lot of needless menu options.”

**Impacts.** Valley Metro has not had to contribute to the cost of developing or operating and maintaining the statewide 511 system. The only investments they made, associated with their 511 participation, is the staff time to attend meetings and work with ADOT. Transfers out of the 511 system to Valley Metro are all paid for by ADOT.

Valley Metro noted no changes in the volume of calls coming in to their phone system as a result of 511 participation.

They were not aware that any statistics were available from ADOT on the transit aspects of the 511 and expressed no particular interest in such information. Valley Metro reported that they have not changed how they market their customer services to their customers.

Valley Metro does cite benefits of 511 participation. These benefits include providing an easy-to-remember phone number (especially for tourists and visitors) as a way to maintain and strengthen relationships with other agencies involved in 511, and a way to garner lessons learned that could impact how they operate their own telephone information system.

Valley Metro indicated that the performance of the 511 system’s voice recognition was a major concern early on, but they believe that it has been improved to an acceptable level.

Valley Metro does not view the 511 system as an alternative to their own IVR system, which they continue to operate and enhance. They feel that with a well-established transit customer base already familiar with Valley Metro’s customer service phone number and system, and given the assumption that most callers will ultimately want to transfer to a Valley Metro operator, there is no point in unnecessarily inconveniencing their customers by routing them through 511. They also noted the significant expense and effort that Valley Metro has put in over the years to deeply establish their own customer service phone number in the minds of their customers. They did state that for transit agencies just starting out, or those that had no telephone infrastructure of their own, the regional 511 system could substitute.

**Issues.** Valley Metro cited no significant issues or concerns regarding their participation in 511.

**Outlook.** Overall, Valley Metro views their experience with 511 positively and plans to continue to participate in the system indefinitely. They report that “overall, 511 is a good investment and it brought transit to the table.” Valley Metro strongly encourages other transit agencies to explore the option of participating in their area’s 511 system, at least as an additional way to reach customers, especially tourists and visitors, and as a means to strengthen relationships with other agencies involved in 511.

#### 3.4.1.2 *El Dorado Transit* (Sacramento, California, Area)

El Dorado Transit provides local bus service throughout El Dorado County, several commuter routes, and paratransit service for people with disabilities. In Fiscal Year (FY) 2006, El Dorado’s annual, systemwide ridership was about 325,000. (36)

As a small agency, El Dorado Transit has an informal call center. Dispatchers handle the requests for dial-a-ride reser-

vations, and office workers handle the general inquiries. El Dorado Transit also provides rider alerts via email.

The only El Dorado Transit information or option on the Sacramento Region 511 system is the option to transfer to El Dorado Transit. The Sacramento Area Council of Governments (SACOG) manages the regional 511 system, which provides travel information for Sacramento, Yolo, Placer, El Dorado, Sutter, and Yuba Counties.

**Rationale for participation.** El Dorado Transit indicated that participating in the Sacramento Region 511 was a way to ensure that transit was represented in a multimodal environment. In addition, the agency wanted to take advantage of the different ways to disseminate information about transit services and, therefore, allow access to information from as many sources as possible.

**Impacts.** El Dorado Transit did not identify any impacts, either positive or negative, from participating in 511. The agency noted that 511 was not “heavily marketed” in the area, which might have led to this low profile.

El Dorado Transit did not see 511 as a replacement for their own customer call system. They feel that customers on local routes and dial-a-ride services are not likely to use 511 as those customers are used to calling the existing customer service number. However, the agency believed that it was possible that some of the regional commuters (e.g., passengers on express routes to Sacramento) might see the signs advertising 511 at the park-and-ride and decide to try it. Others might see the link to 511 from the El Dorado Transit website. Finally, first-time transit users might see the number and try the service.

**Issues.** El Dorado Transit did not identify any issues with 511. However, in preparation for this interview, we discovered that the telephone transfer option did not work. Callers selecting the transfer option are placed on hold for a few minutes and then returned to the main menu.

**Outlook.** El Dorado Transit did not identify any proposed changes in their 511 participation. They value it as a means to demonstrate their commitment to regional, multimodal traveler information resources.

### 3.4.1.3 Transit Authority of Northern Kentucky

The Transit Authority of Northern Kentucky (TANK) provides bus service in Boone, Campbell, and Kenton Counties in Kentucky, with connections to downtown Cincinnati, OH. TANK’s service area comprises 561 sq mi with a population of 326,000. Annual system ridership was 3.8 million in 2005. Tank operated a total of 98 regular and paratransit vehicles in 2005. (37)

The Advanced Regional Traffic Interactive Management and Information System (ARTIMIS) is the 511 system for the Cincinnati and Northern Kentucky region. The system became operational in June 2001. Callers who select the public transportation option can choose TANK. The system provides information about major service disruptions and transfers callers directly to the TANK’s call center.

**Rationale for participation.** It was not possible to find the individuals at TANK who made the decision to participate in the ARTIMIS system.

**Impacts.** TANK has not experienced any impacts from participation in the 511 system. If any calls are transferred to the agency, then it’s “very, very few.”

**Issues.** No issues were identified. However, in preparation for this interview, we discovered that the telephone transfer option did not work.

**Outlook.** Although TANK did not see any major benefits from participating in 511, they also did not see any harm. Whereas TANK’s core ridership already knows how to access information, the system could help people arriving from out of town or the airport.

At the time of the interview, TANK was evaluating a series of ITS upgrades. Based on the background information provided during the study, TANK will look into the costs and benefits of increasing their participation in 511.

Generally, TANK views 511 positively, as long as participation does not divert funds from service provision. If grants are available, then they would be worth pursuing. (“Do it now before funding disappears.”) If there are costs to the agency, then they feel they will need to more carefully consider potential implications of participation.

### 3.4.1.4 Central Florida Regional Transportation Authority

The Central Florida Regional Transportation Authority or “LYNX” is the public transportation provider for Orange, Seminole, and Osceola Counties, FL, an area that includes the cities of Orlando, Kissimmee, and St. Cloud. The LYNX service area totals approximately 2,540 sq mi and has a population of about 1,537,000. LYNX provides fixed-route and demand-responsive bus service and administers a vanpool program. (38)

The Central Florida 511 system was originally implemented as a regional system in June 2002, and it can still be accessed directly. Since then, as other regional systems were implemented in Florida, a consolidated, statewide 511 service was established that allows callers to transfer to the Central Florida system, or any of the other regional 511 systems. The Florida

Department of Transportation (FDOT) operates the Central Florida 511 system.

LYNX information on 511 is included under the public transportation main menu item. LYNX options are limited to three call transfer options (1) transit information that transfers to LYNX's IVR; (2) access to LYNX, which transfers to LYNX's paratransit IVR; and (3) carpool, which transfers to LYNX's rideshare line. No other information on LYNX is provided on 511.

**Rationale for participation.** Overall, LYNX indicated that they chose to participate in 511 because the 511 sponsor gave them a "good deal," and that although they had no specific 511 objectives, LYNX simply wanted to participate, be involved, and be a supportive partner to the 511 sponsor. The "deal" they struck with FDOT was that in return for FDOT adding LYNX to the 511 system, including arranging and paying for call transfers out of 511 to LYNX, LYNX agreed to support the overall 511 marketing effort by adding 511 references to their own marketing materials.

**Impacts.** LYNX reports that they experienced only one impact as a result of their participation in 511. Per their agreement with FDOT, they now include 511 on all of their customer information materials and on all LYNX buses.

LYNX has not observed any changes in their customer service call volumes as a result of their 511 participation. They are provided some transit-related statistics showing only the number of call transfers out of 511 to each of the three LYNX transfer options on 511. In a typical month, about 350 calls will come to LYNX via 511. LYNX does not necessarily consider these calls as 511 impacts because they do not know whether these are "new" calls (which would be impacts) or they are from callers who would otherwise have called LYNX directly (not an impact).

LYNX does not currently view 511 as an alternative to their own IVR system, although they have not looked seriously at the issue. They cited two potential concerns. First, callers would have to "wade through" the non-LYNX levels of the 511 menu. Second, LYNX would have some concern about the on-going operations and maintenance of their information on 511, including periodic update processes. Having their own IVR allows them to maintain control and ensure quality control over these processes.

**Issues.** LYNX identified no issues or problems with 511.

**Outlook.** LYNX seems to view 511 as beneficial, but more as a means to stay involved and supportive of their partner agencies than as a component of their customer service strategy addressing any specific objectives. As they said, "we got a good deal and we wanted to be involved." LYNX currently has no changes planned in regard to participation in 511.

LYNX's advice to other transit agencies is that they should consider 511 participation, barter with their 511 sponsors to see what sort of arrangement they can strike (e.g., LYNX's deal to get free 511 participation in return for their marketing of 511), and consider a 511 pilot demonstration.

### 3.4.1.5 *Island Explorer (Bar Harbor, Maine)*

Island Explorer, which is operated under contract by Downeast Transportation for the Maine Department of Transportation, provides seasonal (June to October) fixed-route bus service on eight bus routes serving towns on Maine's Mount Desert Island, including Bar Harbor and Acadia National Park. The Island Explorer service began in 1999 and is supported by a number of public and private organizations, including Acadia National Park, L.L. Bean and other businesses, and Friends of Acadia, an independent, non-profit organization.

The statewide Maine 511 system is operated by the Maine DOT and became operational in May 2003. Information on Island Explorer is available on 511 via the "Acadia National Park" main menu item, under the Island Explorer submenu. During the operating season, automated real-time vehicle departure times are available. During the off-season, a recording is provided identifying the operating season and the fact that during the operating season, arrival time information is available.

**Rationale for participation.** Island Explorer's participation in Maine 511 was partly tied to a large, multifaceted technology demonstration, an ITS field operational test that was sponsored jointly by U.S.DOT and the Department of the Interior, and focused on travel in and around Acadia National Park. The objective of the test was to utilize technologies to reduce traffic congestion and improve the quality of the park visitor experience. Five of the nine technology components that were deployed focused on Island Explorer and provided the means to generate real-time vehicle departure time estimates (e.g., automatic vehicle location) and disseminate them via electronic signs at selected stops. Telephone information dissemination was not an explicit part of the Island Explorer deployment. However, the Maine 511 system was being developed around the same time and the 511 sponsor, Maine DOT, thought it would be appropriate to include the Island Explorer information on 511. In this regard, Island Explorer did not pursue 511 participation in order to satisfy any specific operational objective and had no specific expectations, but rather, simply agreed with Maine DOT that their information was appropriate for 511. Island Explorer did not carefully consider any pros and cons of participation.

**Impacts.** Downeast Transportation reports that they experience no real impacts associated with their participation in



511. They said that they get “a question or two every few weeks from someone who couldn’t get what they wanted from 511,” but that the volume of calls is negligible.

In the discussion of impacts in the transit agency interviews, each agency was asked whether they viewed 511 as an alternative to implementing their own IVR. The Island Explorer experience is a clear case of where 511 was definitely seen as, and functioned quite effectively as, an alternative to an IVR dedicated to Island Explorer. Of course, the Island Explorer is very different from most transit agencies and their IVR-related needs were extremely narrow since they were really just looking for an automated platform for disseminating vehicle departure times by phone.

**Issues.** Downeast Transportation identified no issues or concerns with their 511 participation.

**Outlook.** Overall, Downeast Transportation views their 511 experience positively and plans to continue indefinitely. When asked to sum up their 511 thoughts and advice to other transit agencies, they replied, “More information is good information—there’s no such thing as too much information. 511 is a plus, it’s just another way to let people know what we do and what we offer.”

#### 3.4.1.6 Duluth Transit Authority (Minnesota)

The Duluth Transit Authority (DTA) provides regular route bus service and contracted paratransit services in the cities of Duluth and Proctor, MN, and Superior, WI, an area that encompasses approximately 143 sq mi and a population of 123,000. The DTA operates 41 buses during peak hours on 27 routes. Paratransit service is provided using six vehicles. (39)

The statewide Minnesota 511 system is operated by the Minnesota Department of Transportation (Mn/DOT), and it became operational in July 2002. The DTA can be accessed from the 511 main menu via the transit option and then by selecting either “DTA regular route” or “DTA STRIDE” (paratransit) from among the four transit agency options under “Duluth.” The DTA indicated that they have information on 511, such as hours of operation and customer service phone number. However, as of October 17, 2007, the only option under either of DTA’s listings is to be transferred out of 511 to DTA’s Customer Service Department. Although it appears that the 511 system is able to provide general information, this information is currently blank. Under both of the two DTA menu options, the message is: “(blank) operates a service. For hours, schedules and rates, I can transfer you to (blank).” DTA reports that they do not provide service disruption information via 511.

**Rationale for participation.** DTA identified the following four motivations for participating in the statewide 511 system:

- “Simple to do, and it couldn’t hurt.”
- Wanted to be included in the multimodal, multi-agency 511 system. In other words, they wanted to keep a seat at the table.
- Wanted to be a good, supportive partner for the 511 sponsor (Mn/DOT).
- Wanted to provide their customers with an alternative, easy-to-remember phone number.

DTA did not report that they considered any potential drawbacks with 511 participation. It seems that 511 participation was a fairly simple and uncomplicated decision for them. They characterized 511 participation as being “an easy add on.”

**Impacts.** DTA reports that their participation in 511 has not impacted them significantly and answered in the negative when asked specifically about each of the six impact-related questions in the interview, covering topics ranging from costs to call volume changes in their customer information center to changes in technology or call center staffing. DTA indicated that they were provided one report from Mn/DOT showing 511 system statistics in 2005 but have not seen anything since.

DTA does not contribute financially to the 511 system. They indicated that the effort required on their part was to set them up in the 511 system. This effort was quite minimal and consisted of a couple of e-mails to Mn/DOT, who then did all the work (e.g., setting up the call transfers).

**Issues.** DTA cited no issues or concerns with their participation in 511.

**Outlook.** Overall, DTA seems to have a positive, but only mild and general opinion regarding 511. When asked what advice they would have for other transit agencies considering 511 participation, they responded, “In the way that it was done here, why not? There’s nothing to lose.” They currently have no changes planned regarding their participation in 511.

#### 3.4.1.7 Charlotte Area Transit (North Carolina)

The Charlotte Area Transit System (CATS) is managed by the Public Transit Department of the City of Charlotte. CATS provides fixed route and demand response bus service and vanpool services in Mecklenburg County, including the City of Charlotte and the six suburban towns surrounding Charlotte: Davidson, Huntersville, and Cornelius to the north; and Matthews, Pineville, and Mint Hill to the south. CATS also provides service to the four cities and towns in surrounding

counties. The total size of the CATS service area is 445 square miles, with a population of about 681,000. CATS is currently planning a regional transit system which will include bus rapid transit, light rail, commuter rail, and expanded bus service within a six-county area. (40)

The North Carolina statewide 511 system is operated by the North Carolina Department of Transportation and the system became operational in August 2004. CATS appears as one of several transit agencies listed under the buses option in the main menu selection for public transportation. Information and options related to CATS are limited to a short, recorded message identifying the phone number and hours of operation for CATS' own staffed customer service phone line and an option to transfer to that service.

In addition to their staffed customer service, CATS operates their own IVR system. CATS reports that 90% of their total incoming customer service calls are handled by the IVR, with only 10% requiring attention from a call taker. CATS IVR information includes scheduled bus arrival times, information on transit hubs and the routes they serve, information on the guaranteed ride home (general description and arranging a ride), and information on other transit services (vanpool, paratransit, fares and passes, locations of printed bus schedules, and lost and found).

**Rationale for participation.** CATS' motivation for participating in the 511 system was to "have a place at the table" and to be a good, supportive partner to the 511 implementer, the North Carolina Department of Transportation. They did not hope or expect that 511 would impact their own customer service call volumes. CATS reports that no potential negatives were considered when they were evaluating the 511 participation decision.

**Impacts.** CATS has not noticed any impacts related to their participation in 511. Although they have seen no statistics from the 511 system, they guessed that transfers from 511 probably account for less than 1% of their total incoming customer service calls. CATS does not contribute financially to the 511 system in any manner.

CATS does not see 511 as any sort of substitute for their own IVR. Their IVR has real-time access to their scheduling database, which supports their scheduled arrival times feature. They indicated that the 511 sponsors "won't pay for" that capability on 511 and even if they would, CATS wouldn't feel comfortable turning that responsibility over to 511.

**Issues.** CATS indicated that the only issue that came up when they were arranging their participation with the 511 sponsor was the question of whether CATS would list the 511 number on their printed materials. CATS declined to do so, feeling that there was no point in encouraging their cus-

tomers to call 511, only to be transferred out of 511 to CATS customer service.

**Outlook.** Overall, CATS is positive about 511, but does not seem to view the system as being of any real consequence to them. They have no specific objectives they are trying to accomplish with 511, rather, they simply wanted to be a good regional partner and get involved. CATS summed up their 511 participation as "painless and not a big deal." They did not identify any reasons why other transit agencies should not participate in 511. The only advice offered to other transit agencies is that if they (the transit agency) don't have their own IVR, and if their 511 sponsor is willing to add transit IVR functionality, 511 might be a real resource and opportunity for them.

### 3.4.1.8 San Diego 511

The San Diego regional 511 system covers San Diego County, CA, and it became operational in February 2007. The area MPO, SANDAG (San Diego Association of Governments) led a partnership of public agencies in developing, and now operating, the regional 511 system. Partner agencies include the California Highway Patrol, the California Department of Transportation, Metropolitan Transit System (MTS), North County Transit District (NCTD), and San Diego SAFE (Service Authority for Freeway Emergencies). San Diego 511 provides up-to-the-minute information on traffic conditions, incidents and driving times, schedule, route and fare information for San Diego public transportation services, carpool and vanpool referrals, bicycling information and more.

Historically, the San Diego region utilized several transportation telephone information services, a multimodal system operated by the California Department of Transportation (Caltrans) as well as two dedicated transit-only information lines. The Caltrans system was called 1-800-COMMUTE, and the San Diego system was only one of numerous regional 1-800-COMMUTE systems they operated around the state. Transit information on 1-800-COMMUTE was limited to transfers to transit customer information lines. The San Diego 511 system replaced the 1-800-COMMUTE system, which is no longer operational in San Diego, although it continues to be used in regions in California that do not yet have 511, including Los Angeles.

The two consolidated (multi-agency), regional transit information phone systems consist of an IVR called "Info Express," and another, staffed information service called the "Regional Transit Information Office," which strictly features live operator support. Both of these systems continue to operate, and call transfer options out of 511 lead to them.

Public transportation is a main menu option on the San Diego regional 511 system. Menu and submenu options

within the public transportation portion of 511 consist of the following:

- Buses;
  - A selection for lost and found transfers to a San Diego Transit Store operator;
  - An automated trip planner transfers to the Info Express IVR;
  - A departure times selection provides automated, real-time vehicle departure time estimates by route, direction, and stop, for some bus routes; and
  - An operator selection provides a transfer to the Regional Transit Information Office, which is the regional, operator-only (staffed) transit information line.
- A trolleys option with call transfers only, either to a lost and found or general trolley operator;
- A Coaster commuter rail service option for call transfers only, either to a lost and found, special events, or general Coaster operator;
- A paratransit option that transfers calls to individual service providers, referenced by city or agency name; and
- A commuter trains option that transfers calls to any of several different commuter rail providers.

Recently, the real-time vehicle departure feature was added and although operational, has not been formally announced or advertised. SANDAG, the regional 511 sponsor, estimates that the times are (as of October 2007) about 70% accurate. They note that they have found that the voice recognition on 511 is challenged by cell phone calls made from noisy environments, such as some transit stops, and that the touch tone option on 511 works very effectively for the departure times feature.

**Metropolitan Transit System (San Diego).** The Metropolitan Transit System Provision of MTS provides bus and rail services directly or through contract with public or private operators in San Diego, CA. The MTS service area is approximately 218 sq mi and includes a population of about 1.1 million. MTS passenger services include light rail operated by San Diego Trolley on three lines with a total of 53 stations and 53.5 total miles, 82 fixed bus routes that are operated by contractors (including the San Diego Transit Corporation), and paratransit service provided by MTS Access and ADA Suburban Paratransit. Total annual MTS ridership is about 86 million passengers. (41)

Information on MTS services is included on the 511 system, all under the main menu selection for public transportation. MTS information on 511 is of two types (1) real-time vehicle departure time estimates for select bus routes (the system is being expanded to other bus routes and other services, e.g., light rail); and (2) call transfers, either to the regional, consolidated transit IVR (e.g., for automated trip planning),

the regional, consolidated staffed transit information customer service call center, or to various service- and subject-specific live operators (e.g., lost and found for trolleys). Service disruption information is not posted on 511, but it is included on the regional transit IVR.

**Rationale for participation.** MTS cited the following three main motivations for their participation in 511:

- They wanted to be involved in this regional, multimodal system, and they wanted to keep a “place at the table.”
- They were interested in providing customers an alternative, easy-to-use phone number, especially for visitors and newcomers to the region.
- They wanted to provide callers in North San Diego County with a means to make a toll-free, regional transit information call. With the demise of the previous, multimodal telephone information system (1-800-COMMUTE), and the fact that North San Diego County has a different area code, 511 provided that service.

When developing their 511 strategy, MTS indicated that they considered the following potential negative aspects of 511 participation:

- The possibility that call volumes into their own customer information phone systems would increase, and
- The possible inconvenience to their customers who might call 511 only to find out that they needed to transfer to a transit-specific phone system for the information sought.

MTS was quick to point out that neither of these potential concerns materialized. When asked why they thought that their call volumes might increase as a result of 511 participation, they indicated that this was presented as a virtual certainty, and seemed to be the “common wisdom” expounded at an early, national 511 Coalition meeting. The logic seemed to be that 511 would make it so easy to get transit information, there would be a flood of new calls. MTS indicated that over time, their thinking on potential call volume increases associated with 511 participation has evolved. They now view any potential new transit interest stimulated by 511 as a good thing.

**Impacts.** MTS indicated that they noticed no 511 impacts thus far, other than some relatively minor 511-related cost expenditures. MTS does not directly contribute funding to 511 operation, but they did devote some staff time in 511-related meetings and spent some money adding 511 references to some of their printed materials. On all MTS informational materials, “511” appears and, depending on the context, it is sometimes accompanied by other transit telephone information numbers.



MTS was asked if the existence of the San Diego 511 system changed their view on their own IVR system, the regional Info Express automated phone system. MTS stated that they would consider shifting their IVR functions to 511 when it becomes comparable in functionality to Info Express. However, shifting services does not offer much benefit to MTS since they already made a considerable investment in the Info Express system and the potential savings associated with shifting IVR to 511 would be limited to operations and maintenance.

**Issues.** Overall, MTS seemed to have no major issues or concerns with 511, or the process to develop it. However, they did briefly note that they believe the regional 511 planning process might have been better executed. They felt that there was lots of “hurry up and wait” time, punctuated with periods when very quick decisions from the participating agencies were required, sometimes without enough deliberation. MTS also noted that they felt the San Diego 511 vendor could have, earlier in the process, shown greater sensitivity to the unique needs and preferences of the San Diego region, rather than starting with a 511 model developed for another region.

**Outlook.** Overall, MTS views their 511 participation quite positively. With 511, their customers are provided an alternative, easy-to-remember phone number. MTS participation in 511 discussions strengthened and maintained their commitment to regional transportation efforts. Most significantly, 511 provided a toll-free transit information number for North County. Their previous toll-free number was eliminated with the demise of the pre-511, regional transportation information phone system (1-800-COMMUTE).

Overall, MTS encouraged other transit agencies to at least participate in regional 511 discussions in order to “make sure that transit is at the table, that its issues are considered” and to “make sure they are a gracious participant in the process to plan and develop 511, regardless of who the lead 511 agency is.” The only other insight MTS offered that could be construed as suggestions for other transit agencies is that, even if the other transit agencies believe that calls to their customer service line will go up as a result of 511 then they should try to view this increased interest in transit as a positive thing and an opportunity.

The only change in 511 participation that MTS is pursuing is to expand the real-time vehicle departure feature to add additional bus routes and other services like light and commuter rail.

**North County Transit District.** North County Transit District (NCTD) provides fixed-route and demand-response (general public and paratransit) bus, commuter rail, and—starting in December 2007—light rail service in northern San Diego County. NCTD’s geographical service area encompasses 1,020 sq mi of northern San Diego County extending from Del Mar in the south, northeasterly to Escondido, north

to the Riverside County line and west to the Orange County line. The area includes the unincorporated communities of Fallbrook and Ramona, as well as Camp Pendleton, a Marine Corps base. Other cities in the service area include Solana Beach, Encinitas, Carlsbad, Oceanside, Vista, and San Marcos. The total population of the NCTD service area is more than 800,000. NCTD operates a total of 221 vehicles with 149 buses, 28 commuter rail vehicles, and 44 demand-response vehicles. (42)

Information on NCTD services is included on the 511 system and listed under the main menu selection for public transportation. NCTD information on 511 is of two types (1) real-time vehicle departure time estimates for a subset of the bus fleet and (2) call transfers, either to the regional, consolidated transit IVR, Info Express (e.g., for automated trip planning), the regional, consolidated staffed transit information customer service call center, or to their own customer service call takers.

NCTD did not change many of their promotional materials to include the 511 phone number but does plan to do so in the future. They feel that reeducating their customers on 511 will be a challenge, since the previous regional, multimodal transportation information number (1-800-COMMUTE) is deeply engrained in the minds of their customers. They describe this process of reorienting callers to 511 as a “sea change.”

**Rationale for participation.** NCTD pointed to the following factors as motivating their participation in the regional 511 system:

- They wanted to be a part of this major, regional, multimodal traveler information resource, and they wanted to keep a “place at the table.”
- They wanted to be a good, supportive partner to the agencies deploying 511.
- They hoped that, in the long run, some of their customer service calls would be diverted to 511.
- They wanted to provide customers with an alternative, easy-to-remember phone number.
- They observed the success of 511 in the San Francisco Bay Area, wanted San Diego to achieve similar success, and NCTD to be a part of it.

Overall, NCTD stated that “there was no reason to say no to 511 and there was no cost to us. We were a willing participant all the way.” NCTD said that none of the potential disadvantages associated with 511 participation that the research team asked them about in the interview played any part in their decision to join 511. They said they had “no real reservations and were optimistic.”

**Impacts.** Overall, NCTD has not yet identified any changes as a result of their participation in 511, although they feel that

it's "too early to tell." (Note that the interview was conducted only three months after the system became operational.) In addition to the fact that they have not yet changed their own marketing materials to reference 511, NCTD indicated that Caltrans' park and ride signs still reference the old, pre-511, 1-800-COMMUTE system. They feel that both factors could impact the number of calls to 511. They also noted that marketing of the 511 system performed by the 511 sponsor does not target transit users. NCTD expects that there will be some of that transit-specific marketing in the future and plans to be involved.

NCTD does not contribute directly to the financing of the 511 system. Their investment thus far has been limited to the staff time associated with their participation in 511-related meetings.

NCTD did have some transit-related 511 statistics, but only for the popularity of the public transportation menu option in general (i.e., nothing specific to their agency). The general statistics indicate that the public transportation menu option accounts for about 8% of all menu requests.

NCTD considers 511 a supplement, rather than an alternative, to their own IVR (they participate in the regional Info Express IVR) or their own staffed customer service phone system (they participate in the Regional Transit Information Office regional system and have their own small customer service group of 10 employees, who answer phones among other duties). They feel that many transit customer service calls will require interaction with a live operator and that until such a time as the current staff is overwhelmed, they do not see 511 replacing any of their other telephone information services. Although 511 is not expected to replace any other phone services in the foreseeable future, NCTD does hope that some of their operator calls will eventually divert to 511, which was one explicit motivation for their participation in 511.

**Issues.** NCTD identified two challenges or concerns with their 511 experience. First, they noted that putting their information into the 511 system has been fairly time consuming, and that this process included the consultant they use for their IVR activities (the regional Info Express IVR). Second, like MTS, they were disappointed that the regional 511 consultant initially brought a one-size-fits-all approach to the San Diego 511 system, unsuccessfully attempting to adopt the San Francisco Bay Area 511 model to San Diego. NCTD indicated that they, and the other regional 511 partners, had to work closely with the consultant to get what they wanted.

**Outlook.** Overall, NCTD seems very pleased with their 511 experience and, although they generally feel it is too early to see results yet, they expect a number of benefits. They seem to have no reservations about 511 and encourage other transit agencies to investigate 511 participation. Their only other

advice to transit agencies relates to the two issues noted previously, which are (1) plan on devoting significant time to getting your agency's information into 511 and for general 511-related planning meetings and (2) in order to make sure that the 511 system deployed meets the needs of your region and agency, plan on working closely with the 511 implementers, who may be inclined to try to apply a 511 system model that they've used elsewhere.

NCTD summed up their motivation for 511 participation as another way to serve their customers and a logical continuation of their historic, technology-based customer service investments, saying "You just want to be of service to your passengers any way you can; joining 511 is just like when you first added a website."

NCTD's future plans for 511 consist of continuing to add real-time departure times for additional routes and services and shifting their customer service marketing to eventually feature 511 as the primary phone number for customer service.

### 3.4.1.9 Sun Tran (St. George, Utah)

The Utah 511 system became operational in December 2001, which was in time for the 2002 Winter Olympics held in Salt Lake City. The Utah 511 system provides information on traffic, public transit, road conditions, and ferry services. The public transit option provides only information about the Utah Transit Authority (UTA), which serves Salt Lake City.

SunTran is a small transit agency serving the City of St. George, which is in southwest Utah. SunTran has three bus routes and paratransit service for people with disabilities. It is operated by the City of St. George. (43)

**Rationale for participation.** SunTran is not represented on Utah's 511 system. According to SunTran, the agency never made a decision not to participate in 511, rather, they were never offered a chance to participate.

**Outlook.** SunTran could not identify any compelling reasons for participating in 511, stating that "It may not be worth it." They seemed to feel that the value of 511 could be limited since they are such a small agency.

### 3.4.1.10 Washington Metropolitan Area Transportation Authority

The Washington Metropolitan Area Transportation Authority (WMATA) operates the second largest rail transit system and the fifth largest bus network in the United States. Metrorail and Metrobus (Metro) serve a population of 3.5 million within a 1,500 sq-mi area. The transit zone consists of the District of Columbia, the suburban Maryland counties of Montgomery and Prince George's and the Northern Virginia counties of Arlington, Fairfax, and Loudoun and

the cities of Alexandria, Fairfax, and Falls Church. The Metro-rail system consists of over 1,000 rail cars serving 5 lines covering 106 miles and including 86 stations. The Metrobus system includes more than 1,200 buses, 12,301 bus stops, and 3,133 shelters. (44)

Metro is included in the Virginia statewide 511 system, which is operated by the Virginia Department of Transportation. The 511 system became operational in February 2005. Metro information is located within the public transportation main menu option. The information and options for Metro are limited to an option to transfer to Metro's customer service line and a listing of the Metro customer information phone number. For some other transit agencies on the Virginia 511 system, additional information is provided, including basic information on services provided.

Metro operates their own IVR system, which is where all incoming customer service calls are directed (there are then multiple opportunities to transfer to a customer service operator). The Metro IVR is extensive, and contains a wide variety of information arrayed under five main menu options for (1) trip schedule, (2) fare information, (3) general information, (4) patron services, and (5) customer assistance (transfer to operator). Among the information provided under the trip schedule option are real-time bus arrival time estimates and service disruption announcements.

**Rationale for participation.** It was not possible to reach the individuals at WMATA who were involved in the decision to participate in 511.

**Impacts.** The Metro call center representatives seemed to have very little, if any, involvement or awareness of 511. This lack of involvement combined with Metro's very low profile on 511, suggest that 511 is in no way a central or significant component of their customer service strategy. It appears that the Metro call center perceives no impact resulting from their continuing participation in 511.

Although the call center representatives did not comment directly on the question of whether they view 511 as an alternative to their own IVR, it seems clear—based on their continued reliance on their own IVR—that they do not view 511 as an alternative.

**Issues.** WMATA identified no issues or concerns—past or present—regarding their 511 participation.

**Outlook.** WMATA, or at least those who could be reached (call center manager and staff), were not aware of 511 or WMATA's participation in it, and therefore have no pro or con perspective. Although it appears that 511 participation does not generate any adverse impacts on call center operations, at least as perceived by WMATA, 511 is clearly not an important, or even explicit, part of WMATA's telephone customer service strategy.

### 3.4.1.11 Blacksburg Transit (Virginia)

Blacksburg Transit (BT) serves the Town of Blacksburg, Virginia Tech, and communities in the New River Valley. The system's service area covers 28 sq mi with a population of 56,000. BT provides fixed-route bus service and paratransit service for people with disabilities. The agency has 33 buses and 11 vans. In 2005, system ridership was almost 2.4 million one-way trips. About 95% of the system's riders are Virginia Tech students, faculty, and staff. (45)

BT does not have a formal call center for customer information. Instead, its operations and administrative staff field the agency's telephone calls. The agency does have a "fairly robust" website and its passengers can also sign up for Blacksburg Alerts via phone, fax, or e-mail.

The Virginia Department of Transportation operates the statewide 511 system. BT is included in the public transportation option on the main menu. The system offers the option to transfer to BT's customer service center and provides the agency's phone number. No other information is provided.

**Impacts.** BT was not aware of any impacts of their participation in 511. Almost all of BT's riders are college students, and BT feels the students are more likely to look for information on the Internet than they are to use the phone. BT's buses have WiFi capacity, so passengers can access web-based information even when they are on the vehicle.

**Issues.** BT cited no issues or concerns with their 511 participation.

**Outlook.** Overall, BT was neutral about participation in 511. Although BT saw no real disadvantages to participation, they also did not see any particular advantages for their customers.

### 3.4.1.12 Southeast Florida 511

The South Florida 511 Traffic and Transit Information Service is provided by the Florida Department of Transportation (FDOT), Miami-Dade Expressway Authority, and the SunGuide Partners. The system provides highway and transit information for Miami-Dade, Broward, and Palm Beach Counties. This 511 system is one of just a handful nationwide that includes the option of speaking to a live 511 operator.

Callers may select public transit from the main menu. This option allows callers to select one of the following four transit organizations or the regional ridesharing service:

- Broward County Transit (BCT),
- Miami-Dade Transit (MDT),
- Palm Tran,

- South Florida Regional Transportation Association (SFRTA)/Tri-Rail, and
- South Florida Ridesharing and Emergency Ride Services.

For each of the four transit agencies, callers can choose among the following general options, with some minor variations between agencies:

- Schedules for interactive schedule information,
- Fares for prerecorded information or transfer to agent,
- General information,
  - Lost and found for Prerecorded information,
  - Special events for prerecorded information or transfer to an agent,
  - Trip planning for transfer to an agent,
  - Comments/complaints/suggestions for transfer to an agent,
  - More options,
    - Bicycle policy for prerecorded information or transfer to an agent,
    - Wheelchair accessibility for prerecorded information or transfer to an agent,
    - Maps and schedules by mail for prerecorded information or transfer to an agent, and
    - Special transportation services for passengers with disabilities, which provides prerecorded information or transfer to an agent.

The schedule option provides static schedule information based on customer input. An IVR guides customers to enter details about origin, destination, time of day, and travel direction. The IVR system returns information about the next scheduled vehicle that meets the customer's travel requirements.

Customers selecting South Florida Ridesharing and Emergency Ride Services from the main transit menu can choose between general prerecorded information and an option to transfer to an agent.

A significant feature of the South Florida 511 system is the cost sharing arrangement. FDOT provided the initial capital investment and the four transit agencies share responsibility for ongoing operating and maintenance costs.

**Florida Department of Transportation.** The Florida Department of Transportation (FDOT) is not a transit operator but this organization was interviewed because of the unusually complex relationship found between the 511 sponsor and transit agencies in the Southeast Florida 511 system. FDOT is one of the three organizations sponsoring the 511 system and the system equipment is located at FDOT's District VI office in Miami.

**Genesis of the Southeast Florida 511 system and transit involvement.** The 511 system was initially designed to pro-

vide highway information, and the region's transit agencies were not included in the original plans. However, FDOT added transit to the original highway contract in FY 2004 and obtained federal funds to help cover the capital costs. Program development took 2 years and deployment costs were \$2.8 million. Known as the Consumer Information Network (CIN), the transit application included information from the previously noted agencies (BCT, MDT, Palm Tran, SFRTA/Tri-Rail, and South Florida Ridesharing and Emergency Ride Services).

CIN was originally developed in response to policy initiatives of the South Florida Regional Transportation Organization (RTO), which envisioned 511 as a multimodal, one-stop shop for traveler information. The RTO was formed in 1998 with a focus on regional transportation and air quality issues. Membership included the transit agencies and MPOs from the three counties comprising South Florida. The organization was folded into the SFRTA in 2003 and continued its efforts to support regional mobility and collaboration. (46) By providing customers with one-stop access to transit information, and especially to regional itinerary planning, CIN supported regional mobility goals and priorities.

**A unique cost-sharing relationship.** The responsibility for funding the transit portion of the 511 system (CIN) was left to FDOT and individual transit agencies. FDOT obtained federal funds to cover the project's initial capital costs and hired a vendor to oversee CIN. The transit agencies agreed to cover operating and maintenance costs over the term of the contract, which ran from FY 2004 to 2005 through FY 2007 to 2008.

FDOT designated Miami-Dade Transit as the lead transit agency for CIN. The four participating transit agencies negotiated shares of the annual operating and maintenance costs based on the volume of calls handled by their call centers. The cost sharing arrangement was negotiated for the first 4 years of operation, from FY 2004 to 2005 through FY 2007 to 2008. Total operating costs were approximately \$2.5 million during the 4-year period. Table 14 shows the percentage share and annual operating and maintenance costs for the four transit agencies.

**Table 14. Consumer information network operating and maintenance costs by agency, 2004 to 2008.**

Agency	Share (Percent)	Operating and Maintenance Costs
Miami-Dade Transit	40	\$997,765
Broward County Transit	30	\$748,324
South Florida Regional Transportation Association/Tri-Rail	20	\$498,882
Palm Tran	10	\$249,441
<b>Total</b>	<b>100</b>	<b>\$2,494,412</b>



**Issues and challenges in implementing and operating the 511 transit component.** The major technical issue associated with CIN was the difficulty of integrating route and schedule information from multiple transit agencies into a single customer information system. The CIN vendor team was responsible for collecting route and schedule information from the participating transit agencies and incorporating that information into a database that supported the telephone-based schedule information and an online itinerary planning application. The agencies used different route scheduling software applications, and this complicated the process. MDT, Tri-Rail, and Palm Tran used one route scheduling application, while BCT used a different product. Converting BCT's data into a format compatible with that from the other three agencies required an extra step and, at times, resulted in inaccurate schedule and/or itinerary information.

Many of the other issues that FDOT encountered were consistent with those on any complex multijurisdictional project. These included concerns about the scope of services, qualifications of the vendor, and timing of payments to FDOT from the transit agencies.

**Outlook.** FDOT is replacing the current South Florida regional 511 system with one that will communicate directly with the statewide 511 system. This system will utilize a traffic data entry and message-generation technique consistent with an umbrella, statewide 511 system that was implemented in 2005, 3 years after the separate, region-specific South Florida 511 was implemented. As part of this replacement, FDOT will no longer contract with the vendor that is now supporting the South Florida 511 system and CIN, for which the transit agencies pay but FDOT administers the contract. This means that transit agencies will now need to make alternative arrangements if they want to continue providing information via 511. The elimination of this contract mechanism ends the transit agencies' means to access the CIN support vendor and it also may result in FDOT eliminating some of the local 511 hardware.

**Broward County Transit.** BCT provides bus and para-transit service within Broward County and also offers connections to Miami-Dade Transit, Palm Tran, and Tri-Rail. BCT's service area covers 410 sq mi with a population of 1.6 million. BCT operated 41 routes and served 41.6 million trips in 2005. BCT is a Broward County government department. (47)

Callers who select this transit agency from the public transit option on the CIN main menu may choose between pre-recorded messages or a transfer option that routes them to BCT's call center where they are placed in a queue to speak with an agent. Menu choices are as follow:

- Schedules—Interactive schedule information,
- Fares—Pre-recorded information, and
- General information:
  - Lost and found—Transfer to agent,
  - Special events—Pre-recorded information,
  - Trip planning—Transfer to agent,
  - Comments/Complaints/Suggestions—Transfer to agent,
  - More options:
    - Bicycle policy/wheelchair accessibility—Pre-recorded information or transfer to agent,
    - Maps and schedules by mail—Pre-recorded information, and
    - Special transportation services for passengers with disabilities—Transfer to agent.

The transfer option routes callers to BCT's call center where they are placed in a queue to speak with an agent. BCT rarely provides floodgate messages.

**Rationale for participation.** Although customers could already obtain route and schedule information for each of the South Florida transit agencies, they could not develop an itinerary for a trip that crossed jurisdictions. Customers would have to call each agency separately and combine the information themselves. For Broward County, the South Florida 511 system offered the opportunity to improve customer service by making regional itinerary planning available through a single telephone call or web page. The original discussions about the desired features of a South Florida 511 system called for regional itinerary planning via Internet and IVR.

**Impacts.** Although FDOT covered the initial capital costs of the South Florida transit 511 system, the four transit agencies had responsibility for ongoing operating and maintenance expenses. Costs were allocated in proportion to the volume of calls in each agency's call center with BCT's share at 30%. According to FDOT, Broward's negotiated costs for the project were approximately \$748,000 over a 4-year period. In addition, the agency paid approximately \$118,000 in change orders. All agencies, including BCT, agreed that the cost allocation formula was fair. BCT's concerns were largely about the high operating costs in relation to the perceived value of CIN.

Participation in 511 has not had any significant impacts on BCT's existing call center operations. The agency still maintains its own call center, and the volume of telephone calls has not changed since CIN was introduced. Although FDOT collects statistics on call volumes and transfers, BCT was not aware that such statistics were available. Should metrics become available, BCT would be especially interested in obtaining more information about the volume and types of calls to 511 during the hours when the BCT call center is closed.

**Issues.** By far the most significant issue for BCT is the failure of the 511 telephone system to include the trip planning function that was originally envisioned. One of the major incentives for BCT to participate in the CIN system was the opportunity to provide regional itinerary planning for its customers. Although a telephone-based trip planning component was a high priority for BCT, it has not been implemented to date. According to BCT, the transit partners initially agreed to include this feature, but they withdrew their support during the planning process and focused on a web-based planner instead. Finally, although CIN does allow customers to access schedule information for each agency individually, the information for BCT routes contains errors.

In addition, the Internet-based itinerary planner appears to be flawed. According to BCT, the online trip planner frequently creates impractical or unrealistic itineraries. For example, it developed itineraries with multiple transfers when a one-seat ride was available. Even when the transit agencies input updates and corrections, the system did not appear to capture the changes properly. BCT finally removed the hyperlink to the 511 site from its web page because of the perceived unreliability of the online trip planner.

Data transfer was an ongoing issue for BCT, in part because the other participating transit agencies used different routing/dispatching software products. For BCT, the process of exporting data to the 511 contractor was smooth and “fairly effortless.” Converting the data into a format for use in the CIN trip planning component was not as straightforward, however, and required significant intervention on the part of the vendor to make it work.

Finally, planning and coordination did not always happen as smoothly as desired. Most of the participants had no prior experience developing a customer information system of this scale. As a result, initial assumptions were not always correct, and staff did not always know what questions they should have asked until it was too late. Although this easily could be true for many public projects, the steep learning curve associated with developing CIN was expensive for BCT.

**Outlook.** Overall, BCT believes that they did not get what they paid for since the telephone-based itinerary planning system was never implemented (the other transit agencies did not want it). Prior to the 511 system, the agency already had a telephone-based trip planner, lost-and-found system, and complaint system. They believed that the 511 system would establish a regional trip planner covering all four South Florida transit agencies, but the telephone trip planner was never implemented and the online trip planner was flawed. As a result, it has been difficult for BCT to explain the benefits of the system to the public, especially when free online itinerary planners like Google Transit or Public Routes are available.

(“There is nothing worse than disappointing the public.”) Had the system worked as promised, BCT believes that the investment would have been justified.

As a result, BCT’s future participation in the South Florida 511 system is uncertain. FDOT indicated that it would not pursue a new contract for CIN at the end of the vendor contract, which expired in November 2008. To keep the system running beyond that date, BCT’s costs are projected to include \$800,000 in upfront expenses and \$300,000 annually for operations and maintenance.

This is a large investment for a project that has not met the agency’s expectations, especially in the current funding environment. BCT does not have a dedicated transit funding source and, as a county agency, BCT must compete with other county departments for funding. In addition, a future statewide referendum to roll back property taxes would affect transit funding throughout the state.

Consequently, BCT is considering dropping out of the 511 system when FDOT withdraws from the program. BCT has agreed to continue to provide route and schedule data if an organization steps in to take responsibility for continuing CIN but, as an alternative, the agency is considering moving toward a free online trip planner like Google Transit or Public Routes.

**South Florida Regional Transportation Authority/Tri-Rail.** Tri-Rail provides regional commuter rail service in Miami-Dade, Broward, and Palm Beach Counties. On weekdays, Tri-Rail operates 25 northbound and 25 southbound trains daily; on weekends and holidays it operates 8 trains in each direction. Tri-Rail served 3.1 million trips in 2005 and has experienced a 40% increase in ridership over the last 14 months. (48)

Callers who select this transit agency from the public transit option on the CIN main menu may listen to prerecorded information or transfer to Tri-Rail’s call center, where they can speak with an agent or leave voicemail after hours. Main menu choices for Tri-Rail are as follow:

- Schedules—Interactive schedule information,
- Fares—Transfer to call center, and
- General information:
  - Lost and found—Transfer to call center,
  - Special events—Transfer to call center,
  - Transfer to an agent for trip planning,
  - Suggestions/complaints/comments—Transfer to call center,
  - More options:
    - Bicycles or wheelchair accessibility—Prerecorded information or transfer to call center, and
    - Map and publications by mail—Prerecorded information or transfer to call center.



When customers transfer to Tri-Rail's call center, they can speak with an agent or leave voicemail after hours. Tri-Rail has 13 customer service agents and maintains a fully staffed customer call center from 4:00 A.M. to 11:00 P.M.

Tri-Rail does not usually provide floodgate information to the 511 system about service disruptions. Although 511 is on Tri-Rail's telephone notification list, staff indicated that timing was an issue. Generally, Tri-Rail does not provide train-specific delay information because most disruptions are cleared up by the time the information is posted.

**Rationale for participation.** In the late 1990s, the South Florida RTO was established to focus on regional transportation and air quality issues. Planned in response to this policy direction, the South Florida 511 system was intended to encourage regional mobility by enabling customers to access regional travel information, including transit. In 2003, state legislation folded the RTO into the newly formed South Florida Regional Transportation Association. Tri-Rail, which was also integrated into the new SFRTA, participated in the 511 system with a goal of benefiting the traveling public.

**Impacts.** Although Tri-Rail did not participate in CIN with an expectation of realizing cost savings, the effort has been a "tremendous drain." During the planning phases, two staff members devoted at least 10 h per week to the project.

Tri-Rail has observed a significant increase in the volume of calls to its customer service center in the past year, but the agency attributes this change to additional rail service, higher gas prices, and ridership growth—not to participation in 511. The agency has not received any CIN performance metrics from FDOT or the vendor.

Tri-Rail pays 20% of the annual CIN operating and maintenance costs. According to FDOT, Tri-Rail's share has totaled nearly \$500,000 over the 4 years (FY 2004 to 2005 through FY 2007 to 2008). Tri-Rail pays its share of the CIN costs out of its operating budget. Like other Florida transit agencies, Tri-Rail may face a sizable budget shortfall if a statewide referendum to roll back property taxes is successful. If the funding environment changes in the future, Tri-Rail might have to choose between maintaining rail service and funding the 511 system.

Tri-Rail has not experienced any major problems providing schedule data for the 511 system. Tri-Rail does not use scheduling/routing software and submits its schedule data to the vendor manually. Schedules are changed as circumstances dictate and not on a defined calendar basis.

**Issues.** Tri-Rail noted that the online regional trip planner often produces incorrect itineraries. Although this issue was not directly related to the telephone 511 service, it influenced perceptions of the value of the 511 system overall (web and phone) by agencies and their customers. Tri-Rail staff did not

express confidence in the accuracy of the system or the quality of the data. In fact, Tri-Rail references the availability of 511 in its newsletter but does not otherwise promote the service aggressively. The agency maintains its own call center, believing that no computer can replace the "human factor" when working with the public. In particular, staff cites the importance of communicating in three major languages (English, Spanish, and Creole) and their dialects, as well as the need to recognize outdated or colloquial names for locations and landmarks. In addition, Tri-Rail's customer service agencies can modify itineraries to account for delays in rail service.

Finally, consistent with many complex technology procurements, staff raised questions about the vendor's qualifications to undertake this project. Given the complexity and scale of this project, Tri-Rail staff emphasized the importance of ensuring "aggressive" and "highly proactive" project management.

**Outlook.** Tri-Rail's future participation in the South Florida 511 system is uncertain. FDOT indicated that it would not renew the contract when it ended in November 2008. Palm Tran already announced its decision to pull out of the system, and BCT is considering doing the same. That would leave SFRTA/Tri-Rail and Miami-Dade Transit as the two active participants in the system.

As a regional agency charged with promoting collaboration and coordination, SFRTA/Tri-Rail believed they could be a logical host for South Florida's 511 system in the future. However, making this move would require additional resources to manage the project. Given the potential for a budget shortfall if property taxes are rolled back, Tri-Rail would not have the resources to manage a project of this size.

**Miami-Dade Transit.** MDT is the largest transit agency in the state of Florida and one of the largest departments within Miami-Dade County government. MDT covers a service area of 306 sq mi with a population of 2.4 million. MDT operates four modes: Metrobus routes, Metrorail rapid transit, Metro-mover people mover, and Special Transportation Services paratransit service. In 2005, MDT reported more than 104 million one-way trips. (49)

Callers who select this transit agency from the public transit option on the CIN main menu may listen to prerecorded information or choose to transfer to MDT's call center where they are placed in queue to speak with an agent. Main menu choices for MDT are as follow:

- Schedules—Interactive schedule information,
- Fares—Prerecorded announcement, and
- General information:
  - Lost and found—Prerecorded information,
  - Special events—Prerecorded information or transfer to agent,

- Transfer to an agent for trip planning,
- Comments/complaints/suggestions—Prerecorded information, and
- More options:
  - Bicycles—Prerecorded information,
  - Wheelchair accessibility—Prerecorded information,
  - Maps and schedules by mail—Prerecorded information or transfer to agent, and
  - Specialized transportation services for people with disabilities—Prerecorded information.

The transfer option routes callers to MDT’s call center where they are placed in queue to speak with an agent. Miami-Dade issues floodgate messages for situations like hurricanes and major sporting events.

In February 2007, MDT’s call center moved into a centralized 311 call center for Miami-Dade County. (The 311 telephone number is reserved for government information and non-emergency services.) MDT calls are now integrated with all other 311 calls. Although the MDT call center physically moved into the 311 facility, MDT has maintained its own customer service phone number. Customers seeking transit information do not access an IRV, instead they speak directly with agents who use the itinerary planning applications developed for the CIN system.

**Rationale for participation.** In the late 1990s, the South Florida RTO recommended developing a 511 system to help facilitate regional transportation planning and coordination. Prior to that time, each transportation agency provided travel information for its own service area. Customers seeking information about a multijurisdictional trip (e.g., Miami International Airport to Fort Lauderdale) had to call the agencies responsible for service in each locality. The 511 system was intended to encourage regional mobility by enabling customers to access regional travel information.

As the largest transit agency among the four participating organizations, MDT was designated as the lead agency. Although at times the staff perceived this role as a burden, the agency also recognized that leading the project would help ensure that the regional system met their needs. Of particular interest to MDT was the opportunity to upgrade its own computer system to support itinerary planning.

**Impacts.** As the largest participating transit agency, MDT also pays the largest share of the ongoing operating and maintenance costs at 40%. According to FDOT, MDT’s share has been close to \$1 million over the 4 years of program implementation from FY 2004 to 2005 through FY 2007 to 2008. Unlike the other transit agencies in South Florida, MDT benefits from a dedicated funding stream. A half-penny surtax, passed

in 2002, has helped support a wide range of transit improvement projects at MDT.

Although the transition to 311 was independent of participation in CIN, the change has been challenging for MDT. Before the move, a cost-benefit analysis was conducted to identify the issues associated with consolidating these functions. The transition, which required moving to a new location and consolidating staff, raised questions about union representation, job classifications, and pay ranges and was difficult for both the agencies and their call center staff.

Merging the call centers meant that agents who previously only handled 311 inquiries—most of which had scripted answers—were now also responsible for responding to customer inquiries for itinerary planning. Although the 311 agents use the Internet-based itinerary planner developed for CIN, the transition has been difficult and many county call agents did not want to make the move to 311.

The change also had labor implications, because MDT call agents and county call agents were represented by different bargaining units. Ultimately, the union that represented the county call agents was selected to represent the entire 311 call center.

MDT has not received any performance metrics from FDOT or the vendor. Staff members have tried to download the data from the web, but the files were encrypted.

**Issues.** The process to develop CIN from initial concept to implementation took years. Because this was a regional project, participants encountered institutional issues and pursued the project in the face of changing priorities. As the lead agency, MDT found itself managing personalities as much as the process. The planning process, described as “painful” at times, took a lot of time and money. It was difficult to achieve consensus. Nevertheless, MDT emphasized that the players were well intentioned and all participants worked together to develop the final system.

Despite years of effort, however, MDT believes that CIN was not well marketed. The project had a “soft launch,” and did not receive much notice. In retrospect, MDT speculated, a more aggressive marketing campaign might have generated more users. More users, in turn, could have helped build a larger base of support for the next phase of the project.

MDT encountered data issues with CIN. MDT exports data to the 511 vendor twice a year, at the time of each new driver “pick.” Within MDT, it has been a challenge for the Planning Department to meet the deadline for submitting schedule changes to the vendor. To help facilitate this process, one staffer developed an internal schedule and meets individually with MDT departments to help move data and information through the system.

MDT also noted some technical issues with system navigation. Specifically, users who select certain items through the 511 telephone system cannot return to the main menu.

**Outlook.** The outlook for maintaining transit information on the South Florida 511 system is uncertain. FDOT indicated that it would stop hosting the servers at the end of the vendor contract in November 2008. Palm Tran already announced its decision to pull out of the system, and BCT is considering doing the same. That would leave MDT and SFRTA/Tri-Rail as the two active participants in the system.

MDT acknowledges several important benefits from participating in the 511 system. First, the 511 system introduced regional transit itinerary planning throughout South Florida via the system's website. Second, the system can provide information to customers around the clock, even when customer agents are not available. Third and finally, it enabled MDT to upgrade its IVR system and to provide web-based itinerary planning. Despite these benefits, however, MDT has not made a commitment to participating in 511 after the current contract has run out.

From the start, MDT considered participation in 511 as an extension of its services, not a replacement. Consequently, in the absence of continued funding or support for the regional transit 511 system, MDT plans to maintain its own IVR system, now part of the county's 311 services. In addition, like its fellow South Florida agencies, MDT is exploring the potential for a free application like Google Transit to replace the online trip planner, at least on an interim basis.

### 3.4.1.13 San Francisco Bay Area 511

The San Francisco region's 511 system serves the entire nine-county Bay Area. The system is distinguished in two important respects. First, it is among the earliest 511 systems. Second, it is one of the richest 511 systems in terms of transit participation. Having 5 years of 511 operating experience—in addition to many years of experience within the systems that came before this 511 system—and having been among the most ambitious systems in regard to transit agency participation and transit content, there is much of interest in the Bay Area 511 experience.

One of the unique aspects of the Bay Area 511 system is that it is one of the very few 511 systems that did not originate as a state DOT-operated, conventional (i.e., 10-digit), traffic/highway-only telephone information system. Prior to moving to the three-digit 511 number, the Bay Area system operated for several years as a regional, multi-agency, transit information-centric telephone information system called TravInfo. Unlike nearly all other 511 systems—most of which are operated by state DOTs—the Bay Area 511 system, as well as its precursor

system, is operated by the Metropolitan Transportation Commission (MTC), the MPO for the region. Consistent with the transit roots of the system, the Bay Area 511 system is one of only a few 511 systems where the first option listed on the main menu is for transit or public transportation, rather than for a highway or traffic-oriented option.

Given the vitality of public transportation in the region, as well as the transit emphasis on 511 and its precursor information system, it is not surprising that some of the most extensive transit agency participation in any 511 system has occurred in the San Francisco Bay region. The system is unique both in terms of the large number of transit agencies that are included on the menu system (approximately 43 transit agencies and 20 paratransit agencies), and also because it is one of only a few 511 systems that include real-time transit vehicle arrival time estimates (currently, only for San Francisco Municipal Railway, but the system is being expanded).

The Bay Area 511 telephone information system includes the following top-level menu options:

- Traffic,
- Public transportation,
- TransLink (the new regional fare system),
- Rideshare,
- Bicycling,
- Transfer to FastTrack (electronic toll collection system for bridges), and
- Transfer to Sacramento 511.

Several options are available under each menu item. For example, under traffic, both general traffic conditions and driving times are available for specific roadways. The submenu under the public transportation option includes the following choices:

- Transit agencies (say the name or select from a list to get access to each individual agency's submenu),
- TransLink,
- Commuter incentives,
- Airports,
- Paratransit, and
- All Nighter Service (a regional all-night bus service that serves BART stations after BART stops running at midnight).

Transit-related floodgate messages may be input at several different places in the 511 menu structure, including the main menu level, public transportation menu level, and individual transit agency menu level.

**Alameda-Contra Costa Transit District (AC Transit).** AC Transit is the third-largest public bus system in California, serving 13 cities and adjacent unincorporated areas in

Alameda and Contra Costa counties—the East Bay area of the greater San Francisco region. Approximately 1.5 million people live in AC Transit’s 364 sq-mi service area. AC Transit provides regular fixed-route, paratransit, and school services using a variety of bus vehicle types for a total of 682 vehicles. Annual regular fixed-route service (excluding paratransit) ridership for 2005 to 2006 was estimated at 67 million. (50)

AC Transit makes a wide range of information available via the Bay Area 511 telephone system. The agency’s submenu on the Bay Area 511 system includes an opening floodgate pre-recorded message (e.g., a voice recording of any general service disruption or other announcements), after which the following options are available:

- Cash fares (prerecorded information);
- Pre-paid passes (prerecorded information);
- Lost and found (a transfer to an AC Transit call taker);
- Damaged passes (a transfer to voicemail);
- Customer relations (for complaints, commendations, and suggestions, which results in a transfer to an AC Transit call taker); and
- Information (for schedule and trip planning, which results in a transfer to an AC Transit call taker).

For options that consist of a call transfer to AC Transit, before completing the transfer, the 511 system first states the hours of operation for the AC Transit customer service telephone line.

The prerecorded information for AC Transit is maintained by MTC, the 511 system operator, although AC Transit is responsible for ensuring that their 511 information is current and correct. For updates, AC Transit notifies MTC via phone, fax, or e-mail, of the information they want updated. MTC then uses professional voice talent to record the updates. AC Transit reports that they generally do not provide service disruption information to 511. They have few service disruptions that are broad enough (i.e., impacting more than a single bus) to warrant dissemination on 511, and have no quick and easy way to add service disruption messages to 511 themselves (they would have to relay the message to the 511 system administrator).

**Rationale for participation.** Transit agency participation in the Bay Area 511 system was orchestrated by the system developer and operator, MTC. MTC staff attempted to contact each transit agency in the region to invite them to participate. When they could not reach an agency, they left a message indicating that the agency would be added to the 511 menu and that basic service information and a call transfer to the agency’s customer service department would be included.

AC Transit reports that it was not a difficult decision for them to participate in 511. The key factor motivating their

decision to participate was that they wished to remain a good regional partner with MTC and wanted to support MTC’s 511 efforts. Secondary and less significant motivations were as follows:

- Especially for newcomers to the region, 511 could serve as an easy-to-remember number.
- Any calls that may be diverted to 511 and away from the AC Transit customer service operators would ease the work load for AC Transit call takers. Although cited as a possible benefit, and therefore part of the 511 participation decision, AC Transit was quick to note that they never envisioned any significant shifting of calls to 511, believing that most transit information calls require interaction with a live operator.

The only potential adverse impact AC Transit reports considering in their 511 participation decision was the possibility that their callers might feel inconvenienced by being routed through 511, only to find that they still had to transfer to speak with an AC Transit CSR. The possibility for inconvenience was attributed mostly to the 511 voice recognition system, which AC Transit perceived as operating poorly during the early days of 511 system operation.

**Impacts.** Overall, AC Transit reports that they have experienced no significant impacts as a result of participation in 511. They have not been asked to contribute anything to the cost to deploy and operate the 511 system itself. MTC has taken full responsibility (funding of the Bay Area system is discussed further in the MTC case study later in this section). Neither has 511 participation necessitated any changes in call center operations, either for staffing or technology.

During the first 6 months of 511 operation, AC Transit received a number of complaints from their customers about the 511 menu system and voice recognition performance, but those complaints have fallen off dramatically as the 511 system was refined and callers became familiar with the system. During the early period when callers were struggling with the 511 menu, AC Transit requested that “AC Transit” be allowed as a caller input at the very top of the 511 menu. MTC denied the request, saying that the large number of transit agencies makes it impossible to list each as a top-level menu option. (Public transportation is a top-level menu option and, after making this selection, a caller can request a specific transit agency by name.)

AC Transit has made one major change, however, to leverage the value of their participation in 511. They converted their customer service marketing (brochures, website, etc.) to identify 511 as the single telephone information number for their agency. The only remaining references to their prior, seven-digit customer service number are on their bus



station signs, and there are plans to replace those with signs only showing 511. In this way, even though they believe that many callers to 511 will ultimately transfer to speak with an AC Transit operator, AC Transit has truly embraced 511 as their telephone information portal. Factors underlying that decision include 511 being an easy number to remember and the possibility that some calls—even if only a very small percentage—may be handled by 511 and therefore save a call to AC Transit customer service operators (all incoming customer service calls are ultimately handled by live operators). AC Transit has a call direction system, but not a full IVR system.

Although not noted by AC Transit, another possible motivation for their embrace of 511 could be cost savings. When routed through 511, the cost to transfer non-local callers (which includes many callers from nearby areas, such as Berkeley, that are in a different area code than AC Transit) to AC Transit is borne by the 511 sponsor. Otherwise, AC Transit would incur that cost (most agencies ensure that all calls to their customer service center are toll free). Lending some support to this notion is the fact that some other Bay Area agencies interviewed indicated that this was a key motivation for AC Transit when participating in the pre-511 regional telephone information system.

AC Transit reports that they do not perceive any increase or decrease in calls to their customer service line, either before or after the regional phone systems' conversion to 511, or after they began marketing 511 as their primary number. This is a subjective assessment since AC Transit does not have access to any 511-related statistics (i.e., number/percentage of AC Transit menu selections, call transfers from 511 to AC Transit, etc.).

Prior to 511, AC Transit seemingly had no plans for their own IVR system, and they still have no such plans. Therefore, when asked whether they viewed 511 systems as possible substitutes for individual transit agency IVRs, their response centered on 511 systems and transit agencies in general, rather than their particular circumstance. They indicated that they view some potentially significant obstacles to using 511 as a substitute for agency-specific IVRs, noting the following:

- Individual transit agencies may not feel they adequately control a regional 511 system (e.g., can make decisions about menu structures, etc., to satisfy their customers' particular preferences);
- The regional 511 sponsor may not sufficiently view the transit agencies as their customers or end users;
- A regional or statewide 511 system may be subject to the “whims and needs” of regional or statewide agencies, and therefore may not be something an individual transit agency can count on in the long term; and

- Particularly in a region with many transit agencies (like the Bay Area) it can be very difficult for a single 511 system to satisfy the needs and preferences of all transit agencies (that is, they believe that using 511 as a substitute for individual transit agencies' IVRs holds greater promise in smaller regions with fewer transit agencies to satisfy).

**Issues.** Overall, from AC Transit's perspective few significant issues or problems were encountered with 511. Those that were encountered, such as early concerns about the complexity of the 511 menu system and voice recognition performance, have largely been resolved.

**Outlook.** Overall, AC Transit has viewed their participation in 511 as a positive experience and intends to continue to actively participate indefinitely. They encourage other transit agencies throughout the country to consider involvement in their respective 511 systems. Overarching comments on their 511 experience and the benefit of 511 include the following:

- “511 is an opportunity. The three-digit number is easy and straightforward and, if implemented correctly, it is another way to reach your customers.”
- “If nothing else, agencies should consider doing 511 in addition to their own customer information number.”
- “511 makes it easier for the first time rider, or really anyone, to get through to transit.”
- “511 just gives customers another option—which is great!”

AC Transit expressed interest in the following 511-related plans and desires:

- Converting all of their roadside signs to show 511 as the customer service phone number rather than the current seven-digit number.
- Investigating the concept of a regional, consolidated, “after-hours-only” staffed transit call center. (This may or may not relate directly to the 511 system.) Such a system would serve calls during times when individual transit agency customer service lines are closed. The concept, which is being spearheaded by MTC, is in the very early stages of consideration.
- Ultimately including estimated bus arrival time information on the 511 telephone information system. They are currently in discussions with MTC, which is leading the effort to expand transit arrival times on 511. Currently, AC Transit is doing an arrival times demonstration on several routes, but the information is not made available via 511.
- Having access to 511-related statistics (e.g., call transfers from 511 to AC Transit), which they intend to request from MTC.

**San Francisco Bay Area Rapid Transit District (BART).** BART operates heavy rail, subway service in the San Francisco Bay Area. Their system consists of a fleet of approximately 600 cars operated on 5 major lines over 104 miles of track, much of it in subways, tunnels, or the 3.6-mi Transbay Tube that runs under the San Francisco Bay and connects the East Bay with San Francisco. BART service is provided in the four counties of San Francisco, Alameda, Contra Costa, and San Mateo. The BART system includes 43 stations. (51)

BART participates in the Bay Area 511 system, although not in an intensive manner in terms of information content. The only user option under the BART portion of the menu is to be transferred to the BART customer service line. As with all of the transit agency call transfers out of 511, before completing the transfer to BART, the 511 system informs callers of the hours of operation of the BART customer service center. BART's own customer service line features an auto-attendant greeting that provides callers with several options. Once an option is selected, callers are transferred to a live operator. BART is developing their own IVR system which is expected to be operational late in 2007. BART's IVR will be driven by a web database. Eventually, the system will access the BART real-time information system that is currently used to provide real-time arrival information on BART platforms. The BART IVR is also planned to include station-to-station schedules and information on fares.

The only information that BART provides routinely to the 511 system is changes in the hours of operation of the BART customer service information line. BART is aware of, and seems to value, their ability to provide service disruption or other floodgate messages to the MTC for inclusion on 511. MTC reports that BART periodically provides faxes that contain updates to the information provided on 511. The regional 511 operations staff contacts BART (as well as several other agencies) on a set daily schedule (twice during each morning and evening rush hour in the case of BART) to solicit information for posting on 511.

**Rationale for participation.** As with all of the Bay Area transit agencies, BART was recruited to participate in the regional 511 system by the regional 511 sponsor, MTC. BART's decision to participate in 511 was motivated by a desire to be a good regional partner and to support MTC's efforts with 511. Overall, BART does not generally view 511 as playing a significant role in their customer information strategy. They feel that almost every caller ultimately wants and needs to speak with a live operator and therefore they see very limited value to putting more information on 511 (e.g., schedules, fares, etc.—such as provided for AC Transit on 511). They also felt that routing callers through 511 who would eventually want to speak to a BART operator could inconvenience their customers.

Generally, BART wishes to maintain their own immediate contact with customers and they feel that they have the resources to provide high-quality service themselves, including comprehensive and accurate information on all BART service as well as information on other services with which BART connects. BART feels that they have the ability to provide more information effectively to their customers than can the 511 system. Although emphasizing that it is not a driving factor in BART's decisions about 511 involvement, they also note some concerns about the quality of the 511 voice recognition system. Finally, BART acknowledged that part of their preference for using their own customer telephone information system is because they have used the same phone number for many years, and it is well known by their customers.

Although they do not see 511 as a major component of their customer information strategy, BART does feel that 511 provides them with two important benefits

- It provides an easy-to-remember number for people who do not know the BART customer service number, and
- The meetings and interactions associated with 511 help BART stay in touch with what other agencies are doing.

In terms of BART's motivation to invest in developing their own IVR as opposed to putting automated, IVR-type information on the regional 511 system, the primary motivations seem to be that (1) BART feels they have the resources to provide a very high-quality IVR service to their customers, developed to address BART's specific needs and preferences, and (2) since the regional 511 system includes only pre-recorded, voicemail-type messages and (with the exception of estimated arrival times) is not driven by an underlying information database, BART does not view the 511 system as a true, robust IVR.

**Impacts.** BART reports that neither their 511 participation nor the 511 system overall have impacted them in any significant way. BART has not been asked to directly contribute to financing either the implementation or operation of the 511 system. The only cost impact has been in the form of BART staff time. They report that in the early days of 511 development, one or two of their staff members spent "a lot of time" attending meetings.

BART has observed no change in the volume of calls coming to their call center. However, this is based on a subjective assessment, since they do not have access to MTC's 511 call statistics. When informed that such statistics were available, BART indicated mild interest—they were somewhat curious but mostly felt that if there was anything significant, they would have observed the impact in the call center. They also noted that they get all of the key statistics they need regarding their own call center from their own system.



BART has not changed how they market customer service—all of their marketing continues to emphasize their own telephone number. They indicated that they do not see a strong argument in their marketing 511 when it does not provide much value to their customers (who would have to transfer from 511 to BART to get any information). They indicated that they have received no feedback from their customers regarding 511.

The research team asked BART whether they had considered the potential cost savings made possible by the fact that when a local long distance call (one from within the region but from a different area code than BART) comes to BART via 511, the 511 system pays for the call rather than having BART pay for the call. They said that they had considered the same issue when the 511-precursor regional transit information line (TravInfo) was developed and they decided that the cost savings were not compelling. They did note that AC Transit opted to run all of their calls through TravInfo for this very reason and that they saved a lot of money.

**Issues.** Overall, BART has not had any significant issues or problems with the regional 511 system. Rather, they simply find its value to them to be fairly limited and, although wanting to provide general support to the concept, they have not heavily utilized 511. As noted, they have some concerns about 511, such as voice recognition performance (at least early on), limited value as an IVR, etc. Their decisions regarding 511, however, have been driven primarily by their belief that with their extensive knowledge and adequate resources, they are best suited to serving the information needs of their customers.

Before the site visit interview with BART, the research team was under the impression that BART might have had some concerns with 511 potentially diverting calls from their customer information center, and the impact of that call reduction on their customer service staffing. BART indicated that this was not a concern of theirs with 511, but in relating their experiences with a different project, they did note that they, at one point, did have this concern. In that case, the concern was that reductions in call volumes would translate to a reduction in hours of operation for their call center (noting that below a certain staffing level it becomes very difficult to provide extended service). Although this did not end up being a “BART-Bay Area 511” issue, the fact that BART has considered such impacts in other contexts suggests that this type of concern is at least possible with 511.

**Outlook.** BART has no changes planned in regard to their 511 participation. Overall, although they do not find 511 to be a key part of their customer information strategy, they feel that it does provide an easy-to-remember number for those

who do not know the BART number, and 511-related meetings help them stay in touch with others in the region. Their advice to other agencies considering 511 is to at least investigate 511 and to compare the 511 option to what they could accomplish themselves. BART feels that, at a minimum, it is important that a transit agency “have a seat at the table” on 511 deliberations.

The only significant change planned for their own customer information telephone system is that BART intends to provide real-time estimates of vehicle arrival times. BART has provided real-time information on their station platforms for many years. A limited demonstration is now being conducted on their website, and once the feature has been expanded on the website, they will focus on dissemination via phone. BART has made no plans for providing this information via 511 (they noted that they perceive 511 discussions of arrival times to be centered on buses and therefore not relevant to them).

**San Francisco Municipal Railway (Muni).** Muni provides transit service within the city and county of San Francisco 24 h per day, 7 days per week. With over 800 total vehicles including historic streetcars, modern light rail vehicles, diesel buses, alternative fuel vehicles, electric trolley coaches, and their world-famous cable cars, Muni’s fleet is among the most diverse in the world. Muni is a part of the San Francisco city government. Together with the Department of Parking and Traffic, Muni is part of the San Francisco Municipal Transportation Agency. Muni is one of America’s oldest public transit agencies, the largest in the Bay Area, and the seventh largest system in the United States. It currently carries more than 200 million riders annually. (52)

Muni’s situation relative to customer service telephone information is unique among the agencies studied in this project, in so much as the City of San Francisco recently implemented a citywide, live operator (there is no IVR), 311 telephone information system. The FCC has designated 311 as a national number for non-emergency police, fire, and municipal business. Administration of 311 systems is the responsibility of local and municipal governments.

The San Francisco 311 center began operations in February 2007 and, at that time, assumed all customer service call center functions for Muni, as it did for many municipal agencies. The objectives of the system included improving customer service and reducing the volume of 911 calls. The San Francisco 311 center is a large, purpose-built, professionally staffed, state-of-the-art call center located in the same building as some of Muni’s offices. The 311 center is staffed and operational 7 days per week, 24 h per day, 365 days per year. Language translation is offered for dozens of languages.

San Francisco 311 operators use the following three main information sources for addressing Muni-related customer requests:

- Muni “scheduler” software;
- The NextMuni System (for real-time vehicle arrival time estimates); and
- The regional Trip Planner System, the same one that is available on the regional 511 website ([www.511.org](http://www.511.org)).

Muni views the 311 center as representing a major improvement over their prior Muni-operated call center in terms of the greatly extended hours of operation and overall level of sophistication, including the use of tracking numbers for each call. Muni also noted that use of the Trip Planner by the 311 staff has focused a great deal of attention on the tool, helping to surface and correct problems and, in general, accelerating the refinement of the tool and increasing its value to the region.

Many of the 311 call takers are newly hired, although a number of Muni’s former CSRs were transferred to 311. This transfer occurred only after service representatives successfully completed the 6-week 311 training course, which included passing a test. Muni reports that there have been some challenges with union employees transferring departments, as well as with the employees that did not pass the 311 qualifying test.

In addition to their 311-based live operator customer service activities, Muni is also an active and leading participant in the regional 511 system. As well as the optional floodgate message at the top of the Muni menu, the Muni submenu includes the following options:

- Fares (pre-recorded information);
- Next bus (automated, real-time vehicle arrival time estimates);
- Operator (transfer to a Muni CSR [at San Francisco 311]); and
- Passes (pre-recorded information).

Currently, Muni is the only Bay Area transit agency that is providing real-time vehicle arrival time information via 511. The project began as a limited-scale demonstration in July 2005, providing information for streetcars on six Muni lines. The demonstration has been very successful. In a typical month, the 511 system fields more than 20,000 Muni arrival time requests. Arrival times are, by far, the most popular of the Muni 511 menu options, accounting for 70% to 80% of total Muni 511 requests in a typical month. The volume of Muni arrival time requests is large enough to represent a sizable portion of all transit 511 menu selections; about 14% in

July 2007, a typical month, and 3% of all 511 menu requests in July 2007. Traffic-related menu requests typically account for about 75% of all monthly 511 requests. At the time of the research team’s site visit, efforts were underway to expand the NextMuni program fleet-wide and to make the additional arrival time information available on 511 by the end of 2007.

Two of the major tasks in the development of the Muni 511 arrival times demonstration were as follows:

- Develop the conversion process for translating the proprietary NextBus arrival time data from Muni’s real-time information system vendor into a format that could be posted on 511 and
- Work with the vendor to develop the process for uploading schedule changes in an automated way into the 511 arrival times module.

**Rationale for participation.** It was not possible to definitively identify Muni’s original motivations for participating in 511. Repeated attempts to arrange a full interview with the Muni personnel who were involved in the early 511 deliberations were not successful, although one very brief telephone exchange did occur as part of those attempts. The current Muni contact, who is focused at least as much on 311 as 511 and who was not involved in early 511 deliberations, indicated that the arrival times demonstration really drove Muni’s escalating participation in 511. MUNI noted that the demonstration was financed by MTC and that MTC is contributing \$11.2 million for the expansion of Muni arrival times on 511. For their part, MTC, which recruited transit agencies for participation in 511, indicates that “some of the smaller agencies [which would not include Muni] were pretty excited to be included . . . most agencies had no real problem with participating . . . everyone was supportive.”

Based on the feedback from MTC and the cumulative information from Muni (both from the current contact and the limited input received from the staff member who had been involved in early 511 decisions), the research team speculates that Muni had no powerful, compelling motivations or specific objectives in regard to initial 511 participation. Rather, they probably saw no drawbacks and wanted to support MTC, which can be a source of funds, in the 511 effort. With the inception of the Muni 511 arrival times demonstration concept and funding from MTC, Muni’s interest in, support for, and expectations regarding 511 escalated.

**Impacts.** Muni did not note any changes in their incoming call volumes as a result of participation in 511. They expressed mild interest in Muni-related 511 system statistics, feeling that transfers from 511 do not impact them that much.

The only financial impact they experienced with 511 participation has been staff time associated with participation in regional 511 meetings. Muni has borne 511-related costs for the 511 arrival times demonstration. Although MTC provided the funding for system development and operation, Muni has expended some significant time to resolve data transfer issues from their system to NextBus and then to 511. They are working with NextBus to automate the schedule uploading process, but this was described as fairly labor intensive. Muni was not able to provide specific cost estimates. No other 511-related impacts were identified by Muni.

Overall, Muni seems to find value in 511, certainly as the mechanism that made possible their foray into telephone, real-time arrival time estimates. They also note that they see a “good fit” between the San Francisco 311 system’s Muni customer information system and the regional 511 system. The two systems complement one another because 511 is entirely automated (no live operator) and 311 is a live-operator-only system—and also because the 511 system provides a single portal for a wide range of regional information that would never be a part of the city’s 311 system.

Muni also emphasized another major benefit of their involvement in 511. It was the regional 511 effort, including the 511 website, that drove the development and refinement of the Trip Planner tool that, in turn, has become a critical information resource to Muni’s (311) CSRs. In turn, 311’s reliance on the Trip Planner helped improve the tool.

**Issues.** Overall, it does not appear that Muni has any significant concerns about the 511 system. They have, however, encountered the following issues and challenges in their 511 and 511-related activities:

- Some technical challenges, mostly related to data conversion, associated with the 511 arrival times demonstration, including getting the proprietary NextBus data into 511, and getting Muni schedule and route information into NextBus and then onto 511; and
- Some initial concerns on the part of MTC about how the City of San Francisco’s 311 system could “erode the brand identity” of 511, and the impact of potential diversion to 311 of Muni-related calls that would otherwise have gone to 511. Regarding the former, Muni has encouraged 311 call takers to make callers aware of the Muni information available via 511. Regarding the latter, Muni says that MTC feels that the positive 511-related impacts of the 311 system (311-related increase in use and refinement of the regional Trip Planner) more than compensate for the possible negative impacts from potential shifting of some calls from 511 to 311.

**Outlook.** Overall, Muni views their 511 experience very positively and plans to continue their participation indefi-

nately, including expanding the 511 arrival times information to cover their entire fleet. They see 511 as a good fit with their own staffed customer information line, the city’s 311 system.

The only significant planned change in Muni’s 511 participation is the expansion of their vehicle arrival time feature to encompass the entire Muni fleet.

**Santa Clara Valley Transportation Authority (VTA).** VTA provides bus, light rail, historic trolley, and demand-response (paratransit) service throughout Santa Clara County and partners with other systems for bus and rail service between Santa Clara County and Alameda, Santa Cruz, San Mateo, and San Francisco Counties. VTA’s more than 520-vehicle bus fleet serves an urbanized area of 326 sq mi with a population of approximately 1.73 million. The 28.6-mi light rail system is operated with a fleet of 50 cars. (53)

In addition to operating their own customer service call center and IVR system, VTA actively participates in the Bay Area 511, making available a wide range of prerecorded information on 511 and allowing call transfers from 511 to VTA CSRs. In addition to the ability to provide a floodgate message (e.g., for service disruptions) at the top of their menu, the VTA 511 submenu includes the following options:

- Routes and schedules (transfer to VTA call takers);
- Service announcements (prerecorded information);
- Fares (prerecorded information);
- Passes (prerecorded information);
- Bicycles (prerecorded information, including a phone number and e-mail address for additional information);
- Elevator and escalator status (prerecorded information);
- Identification cards for persons with disabilities (prerecorded information);
- Customer relations (for information on lost and found and access for persons with disabilities, both of which transfer to VTA call takers).

VTA reports that they generally do not use the floodgate message capability provided by 511. They provide updated information quarterly to MTC for posting on 511. VTA has altered their marketing of customer information services since joining 511. In addition to their own call center and website information, they now also reference the regional 511 system on many of their materials, including their route map and individual schedules.

**Rationale for participation.** VTA does not believe that they made an explicit decision to participate in 511, but rather that they did not protest the MTC-led effort to include a large number of the regional transit providers on the 511 system. This is consistent with the information from MTC, who made the 511 recruiting contacts to each transit agency

and when they could not make direct contact, left messages indicating that the agency would be added to 511 unless they asked to be omitted. Overall, VTA views 511 as a good supplement to their own customer information number, considering it “just one more option for our customers and a great service.”

A long list of pro and con factors were provided to VTA by the research team and VTA was asked to identify which, if any, factors were considered as part of their decision-making process for 511 participation. They indicated that none of the factors played any real role, that the decision was made simply because it seemed like a good supplement to their own activities, and that they saw no negative implications. They made a point of noting that they definitely did not hope that 511 would divert calls from their own call center, saying that such diversions could have impacts on VTA’s union call takers, who wouldn’t want that work to be outsourced. They also indicated that they would be leery of ever letting another entity, like 511, handle their operator calls.

VTA never had any concerns about potential increases in call volumes to their customer service line as a result of 511 participation.

**Impacts.** Overall, VTA views 511 participation as beneficial and a supplement to their telephone customer information services. They primarily view 511 as useful as a way to reach visitors or newcomers to the area who are not familiar with reaching individual transit agencies directly.

VTA did not contribute to the funding of either the development or operation and maintenance of the regional 511 system. The only 511-related expenses they have experienced are staff time to attend “a couple” of meetings. They did not make any changes to call center staffing or technologies because of 511. However, they did devote some time to exporting their route and schedule information to 511, for use in the Trip Planner offered on the Bay Area 511 website.

VTA has noticed no changes in their call volume related to 511, noting that if there are increases, they are obscured by the significant overall increase in calls that VTA has experienced over the last several years, which they believe are not related to 511. VTA was unaware that MTC has 511 call statistics related to the VTA submenu, but expressed interest in receiving such information and plan to follow up with MTC. The primary statistics of interest to VTA are as follows:

- Popularity of VTA menu options (relative to one another);
- Call transfers from 511 to VTA and whether the caller requested the VTA operator or the VTA IVR; and
- Call transfers from 511 broken out by time of day and day of week, to help VTA understand their call center staffing requirements.

VTA does not view the potential cost savings associated with the 511 system paying for incoming local long-distance calls (rather than VTA paying for them) as significant.

VTA does not currently consider the regional 511 telephone system as an adequate substitute for their own IVR. They indicated that “in an ideal world, where we could get everything we want from 511 [e.g., dictate menu structure] and have total control, then we would be interested.” They would not care where the server is, and they believe that if they completely controlled the system it would essentially be like their own IVR and they would not care where the hardware was located. However they do not think they are anywhere close to that point yet with 511. They would want control, the ability to ensure quality and consistent formats in order to remain responsive to what VTA customers want.

**Issues.** VTA did not identify any significant issues or problems with the regional 511 system. They did note two items that have been of some concern, however, as follows:

- Voice recognition performance on 511 is “not perfect, although it’s getting better. Voice recognition software systems in general are really not there yet,” and
- The effort associated with providing the 511 website (not related to the phone system) with updated schedule and route information.

**Outlook.** Overall, VTA views their 511 experience positively and finds benefit in the 511 telephone information system as another way to reach their customers, especially visitors or those new to the area. VTA’s advice to other transit agencies considering 511 is to view it as “just another tool, one more way to get information out” and “an easy number to remember, which is great for visitors.”

The only proposed change in VTA’s 511 participation is to add VTA real-time arrival time estimates once their fleet management system (i.e., automatic vehicle location with schedule adherence monitoring) is implemented. At the time of the team’s interview, a Request for Proposals for the system was expected to be released by the end of 2007. As a condition for receiving a share of the \$20 million portion of the Bay Bridge funding that has been set aside for transit information, MTC has required that any agency able to provide arrival time information to 511 must do so. VTA has been participating in MTC-led regional discussion of the expansion of the 511 arrival times feature. They reported that, to date, the focus has been on issues like bus stop IDs (as a means to request specific arrival times) and the complications associated with developing and maintaining a regional database of such IDs, rather than on how arrival time estimates will be communicated from individual agencies to the 511 system.



**Metropolitan Transportation Commission (MTC).** MTC is the transportation planning, coordinating, and financing agency for the nine-county San Francisco Bay Area. MTC functions as both the regional transportation planning agency—a state designation—and, for federal purposes, as the region’s MPO. (54)

MTC led the development of, and operates and maintains, the Bay Area 511 system, including both the telephone and website elements. There is no cost to individual transit agencies for participation in the 511 system other than whatever time they choose to devote to participation in regional 511-related meetings, and providing updated information to the 511 system.

MTC contacts transit agencies for inputs to 511 on a periodic basis, which varies depending on the type of agency and information. Regional rail and ferry operators (e.g., BART, Muni, Altamont Commuter Express, Golden Gate Ferry), the Bay Bridge, and California Highway Patrol are contacted daily in what MTC refers to as “beat calls.” Transit agencies are provided multiple means to submit information to MTC for inclusion on 511, including e-mail subscriptions (where MTC subscribes to agencies’ periodic e-mail notices in order to keep track of changes), a centralized 511 e-mail address (to which agencies can direct e-mails), and faxes. MTC uses professional voice talent to record all of the transit agency content on 511, including floodgate messages and information on schedules, fares, etc.

A significant focus of MTC’s transit-related work on 511 has been the Muni real-time vehicle arrival times demonstration (described in detail previously in the Muni case study). MTC funded that demonstration and led the work to develop the interfaces between Muni’s vehicle tracking system vendor, NextBus, and the 511 system. Those interfaces include the real-time vehicle arrival times estimates, as well as up-to-date comprehensive route and schedule information (arrival times are made available to callers by line/route and stop). Based on the success of the arrival times demonstration, which included only a handful of Muni’s lines, MTC is now leading the effort to expand the arrival times feature to include the entire Muni fleet, as well as other transit agencies.

Findings related to various issues and topics regarding MTC’s transit 511 activities are organized into several major topic areas and summarized throughout the rest of this section.

**Leading and funding the 511 system.** Overall, MTC views their work with transit 511 as experimental. Not necessarily because of any uncertainty about its value or whether things will work, but because this is a way to explore what is of value, what works, and what information and techniques are most valued and cost effective. They see transit-related 511 as another way to promote mobility in the region, a way to make the overall 511 service multimodal and support con-

sideration of transit, and a mechanism for exploring exactly what benefits, costs, and challenges are associated with transit information on 511. They have taken a leadership role because they felt it was a truly regional opportunity/responsibility that no local agency would be willing to tackle.

A variety of funding sources have been used to support Bay Area 511, and the transit aspects of it. Initially, federal Congestion Mitigation and Air Quality (CMAQ) funds were used in conjunction with matching funds from the state Service Authority for Freeways and Expressways (SAFE), in conjunction with State Transit Assistance (STA) funds. CMAQ funds are no longer being used and have been replaced by federal Surface Transportation Program (STP) funds. Expansion of the 511 real-time vehicle arrival times feature is utilizing portions of the \$20 million set aside from the Bay Bridge project for transit information projects.

**Recruiting transit agencies.** Although a few individual agencies had some interest, there was no groundswell of transit agency-led interest in 511 and transit agency participation was secured by proactive action on the part of MTC. MTC recruited transit agencies for participation in 511. They contacted each agency to discuss participation and, when they could not make contact, left messages indicating that MTC would add the agency to the 511 menu system and provide for a call transfer from 511 to that agency’s customer information line unless the agency objected.

Overall, MTC found that transit agencies were very positive about being included in the 511 system, which is not surprising considering that no actions or funding were asked of the agencies—they simply had to agree to let MTC add them to the menu. In particular, smaller agencies seemed to view 511 as an opportunity and an easy way for their customers to reach them. MTC reports that no real concerns were brought up by agencies during recruitment. It does not appear that agencies expressed any concerns about the impact of 511 on their own customer service call volumes.

**Transit agency 511-related concerns.** Overall, transit agencies have had very few concerns with the 511 telephone information system. To the extent there have been “problems,” it is more a case of agencies being uninterested in 511 overall. There are two specific complaints that MTC has encountered. The first has to do with agency’s concerns about the quality of the 511 voice recognition system. MTC acknowledges that the system performed poorly early on and, although it has been improved significantly, additional improvement would be useful. The second issue, which MTC has heard about from several transit agencies, is “misdirected transfers,” that is, transfers out of the 511 system that were sent to the incorrect transit agency. MTC reports that they did get some complaints from 511 callers and that one transit



agency pulled out of 511 because they were getting calls transferred from 511 that were supposed to go to a different agency.

**Maintaining transit information.** As was the case with the development of 511 overall, as well as the transit component, MTC assumed responsibility for inputting transit agencies' updates to 511 simply because they felt that if they did not do this, it might not get done. MTC is now wrestling with their leadership role for maintaining transit information on 511. Generally, they feel that most agencies do not seem very interested in maintaining their information on 511. They note that they feel like they have to "chase" the agencies to extract information from them, and feel that this may suggest that the 511 phone system is ultimately not very important to some transit agencies.

MTC says that they have not yet looked closely at the numbers, but they knew that maintenance of transit information is a significant expense and are beginning to wonder if the benefits are worth the costs. MTC notes that the recording of transit-related messages on 511 alone represents a significant on-going expense. They estimate that half of the 4- to 6-hr quarterly recording sessions is devoted to transit. They estimate that, including the professional voice talent and editing, the cost to update messages for even one small transit agency could be between \$5,000 and \$8,000.

One could speculate that rather than revealing a change in opinion on the part of transit agencies about the value of 511, the current ambivalence among many agencies is consistent with their original perspectives. In retrospect, the fact that nearly all of the transit agencies were pleased to join 511 does not necessarily suggest a high degree of support and commitment, because they were not asked to demonstrate any real commitment or make any investment. MTC paid for everything and did everything for them. Although MTC's actions were quite logical inasmuch as they wanted to get transit 511 off the ground, it suggests that the real measure of transit agencies' true commitment and support for 511 has yet to be taken.

At this point, MTC has made no decisions about their long-term role in leading the maintenance of transit information on the 511 phone system and, for the time being, plan to make no significant changes. When asked how their concern about data maintenance costs could impact transit agencies that provide a great deal of information via 511—especially AC Transit, which relies on 511 as their primary contact number—MTC made it clear that they have made a commitment to such agencies and would honor it.

**Real-time arrival time.** MTC views the Muni arrival times demonstration as one of the major, if not the greatest, transit-related successes for the 511 telephone system to date. The relatively high volume of calls, 4,000 or more for a typical

month, for just a handful of Muni lines suggests to MTC that this feature could be a "killer application" for telephone 511. When asked what they think the success of the demonstration means for transit information on 511 overall, they indicate that it is "a focus issue." That is, that customers' interest in transit 511 information varies, and that arrival times seem to be of far greater interest than much of the basic schedule and fare information.

MTC is currently leading efforts to expand the arrival times feature to other transit agencies. They have stated that in order for an agency to receive a share of the \$20 million of the Bay Bridge funding set aside for transit information, the agency has to make arrival time estimates available to 511, if they have such information. One of the major challenges currently being considered concerns stop IDs. A regional database of stop IDs is necessary, since arrival time information is offered according to route/line, direction, and stop. Developing a regional system, adding IDs to signs at all stops, and updating the stop ID system (in light of constant service changes) is a major challenge.

Other challenges associated with the arrival time expansion include converting individual agencies' arrival time data into a format that can be input to 511, and inputting (initially, and then updating periodically) agencies' route and schedule information into 511. The Muni demonstration entailed only Muni's arrival time data, which is in the proprietary format of their vendor, NextBus. Although that effort was critical in that an explicit format for all 511 arrival time data has been established, it will still take time and expense on the part of individual transit agencies, and to a lesser extent for MTC, to convert their specific data (a number of agencies are using vendors other than NextBus) to that common format.

In 2006, MTC completed a study that assessed the costs and other implications associated with expansion of the arrival time feature regionally. The study concluded that costs, to both MTC and to individual transit agencies, would vary based on a number of factors, including 511 call volumes related to arrival times (e.g., could necessitate system capacity investments, like additional phone and T-1 lines connecting 511 with agencies), the number of times each year that an agency updates their schedule and route information, and the size of the transit agency (impacts the magnitude of the schedule and route information updates). The study included a high-end estimate (reflecting maximum assumptions on the number of agencies participating [28 agencies], call volumes, etc.) of about \$2 million in implementation costs and about \$410 thousand in recurring, annual operations and maintenance costs. (55)

**Relationship between 511 and 311.** MTC was initially somewhat concerned that the diversion of Muni 511 calls to the new San Francisco 311 system, which is handling all

customer service calls for Muni, could reduce the 511 call volumes and thereby incrementally lessen the vitality of 511. They also were concerned about losing the hard-earned brand identity for 511; that is, people could be confused about the distinction between 311 and 511. We have examined 511 call volumes for 6 mo before and 6 mo after 311's February 2007 start date and, although average monthly 511 calls are down about 3%, it is not clear whether such fluctuation is normal or related to 311. Regardless, MTC feels that the positive focus that 311 has brought to the regional web-based Trip Planner tool (which is heavily utilized by 311 operators) outweighs any concerns about potential call siphoning. Regarding differentiation of 311 and 511, MTC feels this continues to be an issue, although not necessarily any major threat to 511. Generally, their concern is based on their own experiences in trying to establish the 511 identity and their understanding that it is very difficult to effectively educate the public about these types of services, especially when differentiating two similar-sounding services.

**Outlook.** Overall, MTC considers the transit aspects of the 511 telephone information system to have been successful; with the arrival times feature being the stand-out performer and a possible “killer application” for transit on 511. However, after several years of experience, MTC does have some concerns about transit on 511. Most significant among these concerns is the perception that many agencies simply do not care very much about 511 and do not seem willing to put much effort into effectively maintaining their agency's information on the system. MTC has made no decisions about their long-term plans for continuing to carry out and fund updating of individual agencies' transit information, but they are beginning to look carefully at the benefits and costs. They emphasize that regardless of the outcome of that consideration, they will honor their commitment to 511 in support of those agencies that rely on 511.

Even greater than any particular successes or disappointments associated with the Bay Area 511 transit activities, the over-arching perspective from MTC seems to be that exploration of the value of transit on 511—and the inevitable array of both successes and disappointments that are likely to be encountered—is the most important thing. They seem to feel that studies are useful, but at some point the only way to really learn something is through experimentation, always starting on a small scale to minimize costs and expanding/continuing only if proven to be warranted. They have embraced the role of regional 511 leader, including the transit component, feeling that since no single agency would otherwise tackle such a large effort, it is a natural part of their responsibility for promoting regional mobility.

As well as continuing to examine and possibly advance their approaches to operating and maintaining transit 511,

MTC is considering or pursuing the following 511 and 511-related enhancements, in addition to expansion of the arrival times feature:

- **My 511**—Currently in development, this system will allow transit 511 users to establish a user profile predesignating up to six specific transit trips of interest. Then, whenever the customer calls 511, their phone number will be recognized and they will immediately be presented with the option of obtaining information on any of their predefined trips.
- **Regional, staffed customer information**—This concept, discussed in the AC Transit case study, is only in the very early stages of consideration and may not be discussed any further. The idea would be to establish a regional, consolidated call taking center staffed with operators to handle customer service for multiple transit agencies. As discussed in the AC Transit case study, one possible version of the concept would be for this center to only operate during the times when individual agencies' call centers are closed.

### 3.4.2 Transit Agencies with a Presence on 511 but No Integration

#### 3.4.2.1 Manchester Transit Authority (New Hampshire)

The Manchester Transit Authority (MTA) provides public transportation service for the city of Manchester, New Hampshire. In addition, the MTA provides student transportation for the Manchester School District. MTA's service area covers 299 sq mi with a population of 846,000. The MTA system includes 13 bus routes and several specialized shuttles. In 2005, MTA carried 19.3 million one-way trips. (56)

The New Hampshire Department of Transportation (NHDOT) sponsors the statewide 511 system. Callers looking for transit information are directed to the 511 website, where they can click on the traveler information link, or to a toll-free transit customer information line (no call transfer option is provided). There is no other transit information on the 511 phone system.

**Rationale for participation.** The MTA interviewee was not at MTA when the New Hampshire 511 system was being planned and implemented (2002 to 2003). Therefore, she does not know whether MTA was provided an opportunity to consider having a call transfer from 511 or any other information or options on 511. The MTA interviewee did note that in the 4 years she has been with the agency, MTA has not been approached by the 511 system administrators about making any changes to the nature of MTA's participation in the system.

Although she could not reflect on the original MTA decision making in regard to 511 (if there was any), the MTA representative did share her perspective on the potential pros and cons of 511 participation that were included in our interview guide. She cited the following factors as supporting the notion of 511 participation:

- Want to include transit in a multimodal traveler information system—want to keep “a place at the table”; and
- Want to be a good partner with the 511 system administrator (the state DOT).

She identified the following factors as potential concerns or factors that may argue against 511 participation (“potential” because MTA has not actually experienced any of these impacts):

- Possible inconvenience to MTA callers who may call 511 only to find no information on MTA and will then need to make a separate call to MTA,
- Cost of technology investments that might be needed to support 511 participation, and
- Need to provide data to 511 in specific formats dictated by the 511 administrator.

**Impacts.** No impacts were identified for participation in the 511 system. MTA has not received any information that shows how the system is working or how callers are using the information.

**Issues.** MTA did not identify any issues associated with 511. It should be noted that when the research team tested the traveler information link on the 511 website, the link was not active.

**Outlook.** MTA believes that the 511 system may be of potential value to them and that having information about user behavior would help MTA better understand the value of the 511 system to the agency.

### 3.4.2.2 Pinellas Suncoast Transit Authority (Tampa Bay)

Pinellas Suncoast Transit Authority (PSTA), located in St. Petersburg, Florida, operates public transit services in Pinellas County. PSTA’s service area covers 226 sq mi with a population of 882,000. In 2005, the system served 10.5 million trips on 43 bus routes. (57)

The Tampa Bay 511 system includes general prerecorded information about PSTA, as well as information about major service disruptions. The 511 system provides callers seeking

additional information with PSTA’s telephone number, but a direct transfer is not available.

**Rationale for participation.** The 511 system operator did not provide PSTA the option of having a call transfer from 511 to the PSTA customer service center, or any other options beyond their current participation (listing their customer service phone number).

**Impacts.** PSTA has a fully staffed call center that is available to the public 7 days a week. The agency does not object to having 511 give out their telephone number, but they do not feel that replaces their call center.

PSTA did not identify any impacts associated with participating in the Tampa Bay 511 system. They have no objection to the system giving out the telephone number or directing callers to the agency website.

**Issues.** Currently, the 511 system has a focus on real-time traffic incident reports. PSTA currently does not have the technology in place to provide information about service disruptions to the 511 system in a timely manner. However, PSTA is installing an automatic vehicle location (AVL) system for their buses and expects to be able to offer real-time information to riders.

**Outlook.** Once PSTA’s AVL system is operational, the agency may increase their 511 involvement by providing real-time information.

### 3.4.2.3 King County Metro Transit (Seattle)

King County Metro (Metro) provides transit service throughout the Seattle metropolitan area. This multimodal agency offers bus, trackless trolley, streetcar, and paratransit services for the disabled and operates the largest publicly operated vanpool program in the county. With a service area of 2,100 sq mi, Metro provided 96.6 million unlinked trips in 2005. The agency has about 1,300 vehicles. (58)

Metro maintains two separate call centers; one provides itinerary planning and the other handles complaints. The trip planning call center is available 24 h per day, 7 days per week. The complaint center has standard weekday business hours.

The Washington State Department of Transportation sponsors the statewide 511 system. The system, which became operational in 2003, provides telephone numbers for the state’s transit agencies but does not allow a direct transfer.

**Rationale for participation.** We were unable to locate anyone at Metro who could provide any information on why or how Metro made decisions about participation in the 511 system. It is not clear whether they have intentionally restricted

their 511 participation to the call transfer feature or whether their 511 sponsor did not give them any other options.

**Impacts.** Metro did not identify any impacts from participating in 511.

Metro has no plans to replace its IVR with 511 and would need more information before doing so. First, the agency would need information about the anticipated change in call volume. Right now, they would not expect the call volume to change, except in the case of emergency. (“It’s just another avenue for people to get in touch with Metro.”)

**Issues.** Currently, the 511 system requires callers seeking transit information to hang up and dial the transit agency directly. Metro would like the system to provide a direct transfer to its call center. With a direct transfer option, however, Metro would want to upgrade its system to provide better information. For example, adding caller ID to its telephone system would allow the agency to track the source of the calls to the center.

**Outlook.** Metro would be open to potential enhancement to their 511 participation if those enhancements would generate cost savings for them. For now, the biggest issue would be acquiring the technical ability to handle new services. Staff is “ready to go.”

### 3.4.3 Transit Agencies with No 511 Presence

#### 3.4.3.1 Anchorage People Mover (Alaska)

The municipality of Anchorage, AK, operates the People Mover public transportation service. People Mover provides fixed-route bus and contracted demand-response service in a 77-sq-mi area encompassing greater Anchorage with a population of about 218,000. People Mover maintains a fleet of 55 buses serving 15 fixed routes.

People Mover noted they were not approached or invited by the 511 sponsors and cites this as the main reason that they are not participating in the Alaska statewide 511 system, which is operated by the Alaska Department of Transportation. They are quick to note, however, that the main reason they have not pursued possible 511 participation is that they have not had the time, being very busy with a new technology deployment (IVR, AVL, and mobile data computers). They feel that 511 is “a good concept,” but has stayed on their “back burner” because of the competing demands on their time and attention.

When asked to speculate about the possible pros and cons of 511 participation, People Mover indicated that they would not expect any significant impacts from 511. People Mover stated, “I do not think 511 would help or hurt our operations;”

and “I do not think 511 would result in more or less calls.” They did indicate that factors that they would consider when looking further into 511 participation include the following:

- The cost of any associated technology investments needed to support 511 (including long-term operations and maintenance costs),
- Possible inconvenience to callers who called 511 only to find they need to transfer to People Mover for more information, and
- Requirements that the 511 sponsor might impose regarding the type and format of transit information for 511.

Of the numerous potential motivations for 511 participation, the only one People Mover cited as a consideration was that 511 could be an easier number for customers—especially visitors—to remember.

It does not appear that People Mover ever considered 511 as an alternative to implementing their own IVR (which they have done). When asked to consider the possibility, they expressed doubts about adequacy of cell phone coverage in portions of their area and the potentially high cell phone roaming costs that non-local 511 callers might experience.

#### 3.4.3.2 Regional Transit District (Denver)

The Regional Transit District (RTD) is a multimodal agency serving the Denver, CO, metropolitan area. RTD provides bus, light rail, and paratransit service. RTD’s service area covers 2,300 sq mi and comprises 38 municipalities with a combined population of 2.6 million. In 2005, RTD carried 86.3 million one-way trips and operated a total of 573 vehicles. (59)

RTD has an IVR system and maintains a fully staffed call center. Agents are available from 6 A.M. to 8 P.M. on weekdays and from 8 A.M. to 8 P.M. on weekends and holidays. RTD’s Talk-n-Ride Program allows callers to call RTD and receive scheduled arrival time for buses and rail via an IVR menu.

The Colorado Department of Transportation sponsors the statewide 511 phone system. No transit information is provided on 511.

**Rationale for participation.** The Colorado 511 system includes no transit agencies. The RTD representative interviewed for this study, the customer service manager, was not involved in any 511 deliberations, and he was not able to find anyone who was involved at RTD. It may be the case that RTD was never provided the opportunity to participate in the Colorado 511 system. Regardless, they have not given 511 serious consideration.

**Impacts.** Because RTD is not currently included in 511, no impacts were identified. However, RTD believes that par-



ticipating in 511 would strain the capacity of its call center because they think that 511 could increase the total number of calls they receive.

**Outlook.** RTD may look for opportunities to participate in 511. They feel 511 could be a benefit to the agency, especially if other transit agencies were included and that made available funds to support RTD 511 participation. This suggests that they think participating in 511 could involve costs to RTD.

### 3.4.3.3 Iowa 511

The Iowa statewide 511 system is operated by the Iowa Department of Transportation. The system became operational in November 2002. The Iowa 511 system contains only traffic and road-weather information (i.e., icy roads, high winds, etc.). No information on transit is included on the system.

**Des Moines Area Transit Authority.** The Des Moines Area Transit Authority (DART) provides fixed and flexible routes, paratransit service, and vanpools in the Des Moines, IA, metropolitan area. DART covers a service area of 141 sq mi with a population of 369,000. In 2005, DART provided 4.2 million one-way trips. (60)

DART staffs a call center 7 days a week. DART also distributes information to its customers through its website, e-mail, and area employers.

**Rationale for participation.** The Iowa 511 system does not include information from any transit agencies. Based on our conversation with DART, it seems likely that DART was not given the opportunity to participate in 511, and therefore they have not really given it any formal consideration.

**Outlook.** DART has focused on providing information to its customers through its website, call center, and relationships with area businesses. They do not see participation in 511 as critically important to their operation and believe that most people who go to 511 are looking for roadway information.

**Ottumwa Transit Authority and 10-15 Regional Transit Agency.** Ottumwa's transit agency is, strictly speaking, two organizations that serve two different functions. As the 10-15 Regional Transit Agency, they provide demand-response service, which is open to the general public in the 11-county, "Region 15" area, as defined by the Iowa Department of Transportation (IDOT) Office of Public Transit. The total size of the 10-15 service area is approximately 5,470 sq mi; the total 2000 population was approximately 178,000. The Ottumwa Transit Authority provides fixed-route and demand-response bus transit service within the City of Ottumwa, IA, in a 16-sq-mi area with a population of about 25,000. (61)

Ottumwa Transit Authority and 10-15 Regional Transit Agency (Ottumwa/10-15) share the same staff and facilities, including the same general manager. The agency employs a total of five office personnel, including the director. Customer service phone calls for both transit services are routed to the same operators (office staff who have additional duties beyond customer service phone support). Ottumwa/10-15 does not operate an IVR.

Ottumwa/10-15 report that although they expressed interest to IDOT in participating in the 511 system, feeling that they had information of interest to the public, IDOT expressed no interest in including them on the system. Ottumwa explains that their motivation for wanting to be involved in 511 was general, reflecting both a desire to "come to the table" and be involved, as well as "just another way to let our customers know that we're out here." Ottumwa/10-15 had no expectations or concerns in regard to whether and how participation in 511 could impact the volume of calls to their agency. They indicated that they saw no downside associated with 511 participation.

### 3.4.3.4 Tri-Met (Portland)

The Tri-County Metropolitan Transit District of Oregon (Tri-Met) is a multimodal transit agency serving greater Portland. Tri-Met's service network includes a 44-mi light-rail system, 92 bus lines, and specialized service for seniors and people with disabilities. Tri-Met's service area encompasses 574 sq mi with a population of 1.3 million people. In 2005, Tri-Met provided more than 104 million one-way trips. Tri-Met directly operates 623 vehicles and utilizes a contractor to operate 233 demand-response vehicles. (62)

Tri-Met's customer service center provides assistance with trip planning from 7:30 A.M. to 5:30 P.M. Monday through Friday. In addition, TransitTracker™ provides schedules and real-time arrival information via telephone or web 24 h per day.

The Oregon Department of Transportation operates the state's 511 system, which has been operational since 2003. Transit information is not included.

**Rationale for participation.** The Oregon 511 system contains no transit information and Tri-Met was not invited to participate in the system when it was originally developed and implemented. However, after the 511 system was operational, Tri-Met did become aware of 511, called some of the 511 systems around the country, and read the 511 Deployment Coalition guidance. They then approached their 511 system administrator to explore the possibility of adding themselves and other transit agencies to the 511 system. It seems that the 511 system administrator was at least open to the possibility,



but those discussions have never occurred, because both Tri-Met and Oregon 511 staff became distracted with other activities.

Generally, Tri-Met did not see 511 as a core component of their customer service strategy. Rather, they liked the general concept of 511 as a consolidated, multimodal traveler information resource that would be especially useful to newcomers to the region or travelers passing through and were interested in doing their part to support that concept. They did not expect to divert any of their customer service calls to 511 because they think that most of their customers will ultimately want to speak to a Tri-Met call taker or will want the kind of complex trip planning information that is not feasible to maintain on 511. They also did not see much of an advantage of 511 as an easier-to-remember phone number for their customers. They feel that their well-marketed “238-RIDE” customer service number is about as easy to remember as 511. The only downside that Tri-Met envisioned with 511 was that, ultimately, almost all of their current customers (as opposed to new residents) calling 511 would need to transfer to Tri-Met. They did not view that possible inconvenience as a reason to avoid participation in 511, but rather just a limitation on the value of 511 and the role it would play in their customer information strategy.

Tri-Met does not view 511 as any sort of alternative to their own IVR. They do not feel comfortable relinquishing control of how they present information to their customers to any other organization, including the 511 administrator. They take great pride in their customer service and see it as one of their core functions and something over which they want to retain control. They also felt that there would be too many technical challenges associated with inputting and maintaining their large route and schedule database on 511.

**Issues.** Tri-Met cited no 511 issues per se, since they are not participating, but they are facing some challenges in regard to their own customer information services. Many of the agents in Tri-Met’s call center have seniority and are expected to retire soon. As a result, the agency is looking for technology solutions that will help offset the need to hire new staff. When TransitTracker was introduced in 2004, usage was “off the charts” and Tri-Met is continuing to improve the product’s usability. The volume of calls to customer service dropped about one third during the past year, and Tri-Met can handle the current call volume with existing staff.

**Outlook.** Tri-Met has no immediate plans to try to renew discussions with the 511 system administrator regarding participation by Tri-Met or other transit agencies. It simply is not a high priority. Their focus is on improving their traveler information systems, including TransitTracker.

### 3.5 Interviews with 511 System Administrators

The results of the 12 interviews with 511 system administrators are organized around the following four major topics discussed:

- Rationale for transit content decisions,
- Satisfaction with current content and plans for changes,
- Transit agency funding participation, and
- Transit-related 511 operating statistics.

#### 3.5.1 Rationale for Transit Content Decisions

The rationale for including transit and the specific types of transit information varied based on individual circumstances among the six agencies that have integrated transit into their systems. Generally, the decision to include transit reflected an acceptance of the national vision for 511 as a multimodal information resource, even if the transit content is limited. In many cases, limiting transit content and features to a call transfer to transit agency customer service represented an expedient way to include transit in the system and recognize that transit agencies already have telephone customer service systems.

Among the six agencies interviewed that include no transit information on their 511 systems, the rationale for the decision also varied significantly. Alaska included only information about ferry services because they view 511 as a resource only for transportation systems operated statewide, and only ferry services are statewide (other public transportation services vary and are operated independently in specific locations). Several 511 administrators said that transit agencies were invited to participate but were not interested. Washington State said that they wanted to include transit but the transit agencies did not want to lose any control in how they provide information to their customers. Colorado based its decision to not include transit on a survey of travelers that indicated little interest in transit information on 511. Both Colorado and Oregon indicated that the fact that transit agencies provide their own information via telephone and websites was part of their decision not to include transit on 511. The Kentucky Transportation Cabinet said that transit agencies were primarily interested in having a presence on the 511 website rather than the statewide 511 telephone system (transit agencies are included in the regional Cincinnati/Northern Kentucky 511 system operated by Ohio).

None of the 511 administrators cited the absence of any technological capabilities on the part of transit agencies as playing a role in their fundamental decision to include or not include transit information.

Almost all of the 511 administrators who were interviewed were well aware of the 511 Deployment Coalition's guidance on transit content when they made their transit decisions (several interviewees indicated that the decisions were made prior to the guidance and that no system changes have been made since). Although some administrators followed the recommendations, others did not and do not seem concerned about it (that is, did not view the exclusion of transit or providing less than the minimum recommended content as compromising the concept of 511 as a multimodal resource.)

### 3.5.2 Satisfaction with Current Content and Plans for Changes

Most of the agencies without transit information are generally not concerned with the fact that their 511 system is not multimodal and they do not have plans for changes. One exception is the Washington State Department of Transportation, which hopes to add a call-transfer option. Other states anticipated improvements in information for other travel markets, including tourism (Georgia) and freight (Iowa), but have no plans to change their approach to transit.

Several of the systems with transit information have plans for improvement. The Arizona system recently added four rural transit agencies to its 511 system and would consider adding more. The Boston area system wants to use marketing activities to attract more transit users to its site. Boston and San Diego would like to utilize global positioning system technology to add location-sensitive transit information. Alaska expects to include transit information on their updated 511 website and may consider a call-transfer option in the future.

Some agencies would like to add additional transit information or features but have not done so due to funding constraints. San Diego would like to provide travelers with real-time alerts to vehicle delays when funding permits. Utah would like to incorporate real-time travel transit information (vehicle arrival/departure times) into their 511 system when funding is available.

### 3.5.3 Transit Agency Funding Participation

None of the twelve 511 systems receive any funding from transit agencies. The only system to cite the lack of transit-related funding as playing any role in their fundamental decision to include transit was the Oregon Department of Transportation, which explained that their 511 program is funded with highway-based (gas tax) revenues that cannot be used for transit.

### 3.5.4 Transit-Related 511 Operating Statistics

All of the 511 systems with transit content track transit-related use of their systems but most do not share that information with transit agencies because the transit agencies have never asked for the information. Two exceptions are San Diego, where the administrator of the SANDAG 511 system shares quarterly statistics with a steering committee that includes transit agencies, and Georgia, where statistics are shared with all 511 participating agencies on a weekly and as-needed basis. Some 511 system administrators suspect that the lack of interest in transit-related statistics is due to the fact that transit constitutes such a very low proportion of 511 use (Arizona estimates that fewer than 1% of their calls include a transit-related menu selection).

### 3.6 Transit Rider Focus Group

The focus group was held on January 7, 2009, and included six participants—five men and one woman. All were experienced transit riders, and the majority had been UTA riders for quite some time (e.g., one participant had been riding since 1985). Several of the participants do not drive or have automobiles, and one had experience with the Utah 511 system. All participants use UTA fixed-route bus services, and the majority had used the UTA light rail system.

After the welcome by UTA, the study team described the purpose of the focus group and offered ground rules for participants to observe while providing input. The results of the focus group are divided into two subsections describing participants' experience with transit information and reactions to an automated transit information system, and experience and reactions to the Utah 511 system.

Focus group results are organized into two main sections, the first pertaining to the participants' perceptions with automated transit telephone information in general and the second pertaining to their perceptions with the Utah 511 system, including the transit component. These two sets of findings relate, respectively, to the two objectives of the focus group, which are as follows:

- To investigate transit users' perceptions regarding the types of transit information that are believed to be of most value to travelers (schedules, fares, disruptions, arrival/departure times) and that can be handled effectively by an IVR (i.e., without an operator), regardless of whether that system is operated by an individual transit agency or is a 511 system; and
- To investigate the fundamental rationale for providing transit information on 511.

### 3.6.1 Automated Telephone Information about Transit

In terms of the participants' information needs, the information most requested is about schedules and trip planning. Specifically, information is requested regarding finding a route, finding services near a particular address, how to reach a certain destination, bus/train status, and bus/train schedules. Participants used two sources to obtain this information: the Internet (the UTA website) and the UTA customer service telephone line. However, a few participants mentioned that they obtain better information by calling customer service rather than trying to obtain the information via the UTA website.

None of the participants had experience with a transit IVR. The two concerns raised about IVR systems in general were that voice recognition can be a problem and it is sometimes hard to reach an operator with whom to speak.

The study team demonstrated a transit IVR—the Portland, OR, Tri-Met IVR, which provides a variety of rider information and customer service (503-238-7433). The study team played each menu selection on the Tri-Met IVR, which is as follows:

1. TransitTracker (this is the Tri-Met real-time information system) arrival times for buses and trains;
2. Latest service alerts;
3. Live trip planning assistance;
4. Comments/suggestions, security concerns, or problems with a ticket vending machine;
5. Lost/found;
6. Fare information; and
7. Administrative offices.

After running through all of the menu items, the arrival times menu item (No. 1) was demonstrated. After this demonstration, the study team ran through the menu items one more time.

Participants were supportive of a transit IVR, although several people commented that “everything works okay now.” This statement was interpreted to mean that the participants were satisfied with calling customer service to obtain information they needed. An interest was expressed in real-time information, with a caveat that it “has to be accurate.” Generally, participants liked the Tri-Met IVR, especially the menu and availability of real-time information. However, a few participants commented that this IVR did not mention how to reach an operator.

Overall, participants are willing to use an IVR rather than ask their question of an operator as long as the IVR information is accurate and comprehensive. However, the participants do feel that the option to transfer to an operator if needed

should always be provided. Even though participants are satisfied with UTA information provided by customer service, they would like access to information (i.e., recorded information) in off-hours.

### 3.6.2 Transit Information on 511

Hardly any of the focus group participants drive. This is significant in terms of interpreting the participants' comments about, and reactions to, the Utah 511 system. Two of the six participants had heard of Utah 511—one person had used it once and the other person is a frequent user. They heard about 511 on a commercial radio advertisement and saw it in the telephone book. Participants felt that 511 has very low visibility in their area, and a newcomer would be unlikely to learn about it. This response is critical in understanding if 511 is indeed easier to remember and market (two of the original rationales for providing transit on 511 systems).

Of the two Utah 511 users, neither is very satisfied with the system. Their criticisms of the system included that the voice recognition does not work well, the transit information provided is not accurate, the menu is not friendly, and the traffic information is out of date when compared to traffic information provided over the radio. One of the participants familiar with 511 questioned how 511 obtains traffic information.

The study team demonstrated Utah's 511 system, which provides information on traffic and transit (866-511-8824). The study team played each menu selection on Utah's 511 system, which is as follows:

1. Traffic,
2. Public transit,
3. Road conditions,
4. Ferries, and
5. Surrounding states.

The study team played all of the public transit menu selections, which are as follows:

1. Buses,
2. TRAX light rail,
3. Flextrans, and
4. Rideshare.

Each public transit menu selection on 511 had pre-recorded general information about each of these services. From anywhere in the public transit menu, a 511 user can say “connect me” to effect a call transfer to UTA's customer service line.

When asked how the current 511 system could be improved, the participants offered that the information on the 511 system should be more up to date and accurate, and the voice

recognition should be more sophisticated (including sensitivity to background noise). Further, a concern was expressed regarding the lack of a live operator and the fact that a customer cannot obtain schedule or trip planning information directly from 511.

Participants felt that the ability to transfer to UTA from the 511 system is critical. Another comment regarding the transit aspect of the 511 system is that any 511 system should have transit information. These comments support several of the original rationales for providing transit on 511. However, participants did not feel that 511 is more visible or easy to remember than the UTA phone number, which is “RIDE-UTA.” This phone number was thought to be memorable and very visible (there is a sign at each stop that has the RIDE-UTA phone number). These comments do not support the two original rationales that 511 is indeed easier to remember and market.

Even though participants did not do a lot of driving, they were positive about the idea of integrated transit and traffic available in one place, or having both traffic and transit infor-

mation on both the UTA customer service line and 511. Further, participants said that providing access to 511 from the UTA customer service line, and vice versa, would be a good feature. Overall, most participants would transfer to UTA from 511, and some would support using traffic and transit information for general trip planning. There was a consensus on the theoretical value of linking and merging traffic and transit information (theoretical because few of the participants drive), because some UTA services operate on roads that are monitored by 511. This clearly supports the last rationale for providing transit on 511—consolidating transit and traffic information on a single phone system.

Although generally supportive of the concept of transit information on 511, the participants noted that there was no real incentive for them to call 511 at this point—they would prefer to continue calling UTA directly since 511 does not offer anything of value to them (this excludes traffic information since most of the participants do not drive) that UTA does not already provide.

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## CHAPTER 4

# Conclusions and Recommendations

This chapter summarizes the major findings and conclusions of the study and presents recommendations. Conclusions are organized into four categories, the first three of which focus on the primary study objectives related to the national experiences with, and implications of, transit agency participation in 511 telephone information systems. The fourth category of conclusions pertains to the implications that call center technologies and practices used outside the transit industry hold for transit agencies.

Recommendations are organized into three categories. The first category provides guidance that will assist transit agencies and 511 system administrators in determining their approaches to transit information content and features on 511. The second category provides transit agencies guidance on advanced call center strategies overall. The third category of recommendations, which are addressed to TCRP, identify a plan for implementing study findings.

### 4.1 Conclusions

Study conclusions are summarized in the sections that follow.

#### 4.1.1 Transit Agency Participation in 511 Systems

The most fundamental objective of this study was to research transit agency experience with 511 telephone information systems and, based on that research, summarize the opportunities, costs, benefits, and risks associated with 511 participation. The overall conclusion is that for the vast majority of transit agencies, participation in a 511 system will impose no significant costs or risks. Participation in a 511 system is very unlikely to increase the total number of calls to a transit customer service center and in almost every case no special transit agency technologies or capabilities are needed to enable participation. However, it was also found that typ-

ical participation in a 511 system is unlikely to provide any significant direct benefits to most transit customers or to the transit agency.

Participation in a 511 system demonstrates support for the concept of 511 as a multimodal resource, strengthens partnering relationships with the 511 system administrator, and may provide useful information to the relatively few transit users who find their way to a 511 system. However, because 511 systems are very seldom effectively marketed to transit users and typically contain, at best, a subset of the information and resources available via the normally well-publicized transit agency customer service line, 511 systems will not represent a key component of many transit agencies' customer service strategies.

The remainder of this section summarizes the major findings and elaborates on the conclusions related to transit agency participation in 511 systems. Conclusions are presented in five subsections. The first provides an overview of the number of 511 systems that include transit information and the kind of transit information included. The second subsection describes the lack of correlation between transit agency size and sophistication and 511 participation. The remaining three sections explore various facets of transit agency experience with 511 gleaned from the 29 transit agency case studies that were completed. These facets include agencies' rationale for 511 participation or non-participation, impacts of participation, and future 511-related plans.

##### 4.1.1.1 National Overview of 511 Systems and Transit Participation

Seven years after the FCC designation of 511 as the national telephone number for traveler information, many 511 systems have been deployed but numerous areas of the country still lack 511 systems. Forty-two 511 systems are operational in the United States; 30 of them are statewide systems and 12 cover only specific regions. Fifteen states have no 511 systems at all.



Several major metropolitan areas, including Los Angeles, Chicago, Houston, and Dallas, do not have 511 systems.

Many 511 systems are not new telephone information systems, but rather are 10-digit telephone information systems (usually toll-free) that existed for many years prior to the designation of 511. In these cases, “implementation of 511” has meant merely working with the telephone companies to convert switches so that, in addition to continued viability of the traditional 10-digit number, callers can now also access the systems by dialing 511. Many of these traditional phone systems that have been converted to 511 were, and still are, operated or financially supported by state departments of transportation. These systems either only provide highway information or are traditionally and primarily focused on, and known for, highway information. It is likely that these factors significantly influenced some transit agency experiences with 511.

Nationally, transit agency participation in 511 systems is quite variable and limited overall. The 511 Deployment Coalition’s guidelines recommend that at the very least, transit agency participation on every 511 system should include basic information on the service provided by each and every transit agency in the 511 coverage area (e.g., transit agency service area, schedules, fares, service disruptions) and an option to transfer from the 511 system directly to each transit agency’s customer service line.

Current reality falls far short of this minimum recommendation. Just over half (22) of the 42 total 511 systems in operation in the United States have no transit presence or content. Of the 20 systems that do have some transit presence, only 9 meet the minimum requirements recommended by the 511 Deployment Coalition.

For most transit agencies participating in 511, their regional 511 system includes very limited information and options for their agency. Typically, transit agencies can provide a message (recorded themselves or recorded for them by the 511 system operator) describing any service disruptions. However, few transit agencies make any significant use of this feature. Further, the telephone number of the transit agency is listed and/or an option to transfer to the transit agency is provided. Exceptions are rare, such as the San Francisco Bay Area 511 system, which has many transit agencies that include sub-menus with several categories of prerecorded information in addition to the call transfer option.

#### *4.1.1.2 Influence of Transit Agency Size, Call Center Sophistication, and Participation in Other Traveler Information Systems*

Transit agency size was found to be closely correlated with the complexity or sophistication of call center operations, including the use of technologies, performance metrics, and

quality monitoring. Not surprisingly, medium and large agencies were found to utilize more advanced approaches than small agencies.

No clear relationship was found, however, between call center sophistication and 511 participation. Agencies with more robust 511 participation, that is, those that are integrated with 511 (having the ability to transfer directly from the 511 system to the transit agency customer service line) were not any more advanced in their call center practices than agencies with less advanced call centers. In fact, many of the various advanced call center practices were more common among transit agencies not integrated with 511 systems.

A correlation was observed between transit agency integration with 511 telephone systems and their participation in other broader traveler information systems (e.g., 511 websites, highway DMS, etc.). This simply suggests that the types of agencies that are willing to get involved in 511 are the same types of agencies interested in other non-transit traveler information outlets. It does not suggest that any particular capabilities are required for transit agencies to benefit from 511.

Based on these comparisons and corroborating findings from the 29 transit agency case studies (including that 511 participation does not seem to increase the total calls to transit), it does not appear that participation or integration with 511 requires any special transit agency capabilities (e.g., technology, staffing, hours of operation, etc.). Any transit agency with a phone number that can field a call transferred from 511 possesses the minimum requirements for integrating with 511 and potentially will benefit from 511.

#### *4.1.1.3 Transit Rationale for Participation/ Non-Participation in 511*

The 29 case studies included in this study indicated that transit agency decisions to participate or not participate in 511 are primarily a function of whether they were offered the opportunity by the 511 system sponsor. Almost every agency that was offered the opportunity to participate is participating. For most of the transit agencies that are not participating in 511, it is simply because there is no 511 system in their region or the 511 system sponsor has not included any transit information.

The decision to participate in 511 was not complicated or difficult for most transit agencies. They did not expect any significant, direct benefits to their customer service operations as a result of 511 participation. Rather, they wanted to demonstrate their support for regional, multimodal traveler information. Practically none of the transit agencies were asked to make any resource contribution to 511 other than participating in planning meetings. So, although they did not necessarily expect any big pay-off from 511, they saw no real reason not to participate. Most agencies view 511 not as

a replacement for their own customer information activities, but simply as one more way to potentially reach their customers. Although some transit agencies are fairly cynical about the value of 511 and its importance to their customers, some feel that 511 may help them reach potential transit customers who are not familiar with the direct phone number to the transit agency, including tourists and new residents. Overall, the prevailing view of 511 participation among the case study transit agencies is characterized as “Why not? It can not hurt and it’s just another way to try to reach and serve our customers.”

Very few transit agencies have made any attempt to shift calls from their traditional customer service line to 511 and almost all of the marketing on the part of 511 system sponsors is targeted to travelers in general. For most transit agencies, the extent of 511 promotion is limited to including the 511 logo on their printed materials. A rare exception is Alameda County Transit in Oakland, CA. They have embraced 511 as their primary customer service number and market it as such to their customers. More precisely, they embraced the regional traveler information number that was the precursor to 511 in the region, but have continued this approach since conversion of that traditional 10-digit number to 511.

#### 4.1.1.4 Impacts of 511 Participation on Transit Agencies

Major findings and conclusions related to the following types of 511 participation impacts on transit agencies are discussed in the sections that follow:

- Costs, technology, and staffing;
- Positive impacts (benefits);
- Statistical evidence of 511 impacts (e.g., call transfers from 511 to a transit call center);
- Using 511 as a potential alternative to a transit agency IVR; and
- Other issues encountered.

**Costs, technology, and staffing.** Most transit agencies report no discernable negative impacts of 511 participation. None feel that the total number of calls to their call center has increased to any noticeable degree, or have experienced any associated adverse impacts on their call center operations (wait times, staffing, hours of operation, etc.). Most transit agencies participating in 511 hear nothing about 511, pro or con, from their customers. For almost all of the transit agencies, there has been no direct cost to participate in 511. Investments have been limited to staff participation in 511-related meetings, which varies from a very minor, to a fairly significant, time investment. None of the transit agencies studied has to pay for the cost of the call transfer from 511 to their customer information line.

The few exceptions in regard to cost impacts are the several transit agencies who, at the time of the interview (mid-2007), participated in the South Florida 511 system. In the only example of cost-sharing found, these South Florida transit agencies shared the very large annual operations and maintenance cost (about \$2.5 million per year) of the transit component of the regional 511 phone system and website. These arrangements have changed since the time of the interview.

Hardly any of the transit agencies we studied spend any significant time or effort on maintaining information on 511 because hardly any of them have any real information on 511. In the few cases where transit agencies do provide considerable information on 511, there can be significant effort associated with maintaining it. Many 511 systems that include transit give transit agencies the ability to provide floodgate messages regarding service disruptions at the top of the transit menu or, less commonly, at the top of the overall 511 menu. However, most transit agencies do not take much advantage of this capability because they do not have many disruptions, because by the time they get the information on 511 the disruption is over, or because they do not want to take the time to do it.

Few transit agencies have extensive prerecorded information or real-time vehicle arrival/departure information on 511. Agencies in San Francisco and San Diego are two exceptions. Transit agencies with that sort of information on 511 can spend considerable time setting up 511 menu structures, establishing formats for transferring their route, schedule, and other data to 511, and periodically updating their 511 information. Most transit agencies do not have much information on 511 systems and spend very little time setting it up or maintaining it.

**Positive impacts (benefits).** There are a number of positive impacts or benefits for transit agencies participating in 511. Most transit agencies feel that participation in 511 helps maintain their place at the regional transportation table and strengthen their relationship with other agencies. Some theorize that 511 may be helping them reach tourists and newcomers to their region who may know about 511 from their experiences elsewhere and who may not know how to reach the transit agency directly.

There is one *theoretical* 511-related economic benefit associated with non-local toll-free calls, although none of the agencies interviewed cited it for their agency. Many transit agencies make long distance calls to their customer service center free to their customers. In regions where a single transit agency service area includes several area codes, this can be a sizable expense. Most 511 calls are likewise toll-free. Since most 511 systems that transfer calls to transit agencies do so at no expense to the transit agencies, long distance transit calls routed through 511 rather than going directly to the transit agency save the transit agency money.

None of the transit agencies studied identified this as a motivation for their participation in 511, or cited such cost savings. However, one agency did indicate that this had been a strong motivation for another transit agency in the region, which adopted the regional information number that preceded 511 as that agency's primary customer service number. This other agency had reportedly saved considerable money as a result. Interestingly, the agency that shared this story felt that, for their own agency, this cost savings did not offset what they perceived as the downside to routing their own calls through 511.

**Statistical evidence of 511 impacts on transit.** None of the transit agencies reported any discernable increase in call volumes to their customer information line as a result of their 511 participation. In all but one case, those observations are purely subjective. The transit agencies do not have access to any statistics quantifying call transfers from 511, 511 menu selections related to their agency, or any other transit-related 511 operating statistics. Although most agencies do not view such information as critical, feeling that if there was an impact they would be aware of it already, a number of them did express interest in such data and indicated that they would follow up with their 511 system operator.

In this study, the data collection focus is the transit agencies, and since only one had any 511 statistics, a comprehensive assessment of transit-related 511 statistics nationwide has not been performed. However, in the course of our research, and based on past 511 projects, the study team was able to collect a sampling of transit-related 511 statistics from some 511 system operators who had these data available. The published 511 Deployment Coalition statistics related to transit are limited to the percentage of all 511 calls nationwide that involve a transit request. Overall, the transit-related statistics we collected were quite variable from one 511 system to another. Very few 511 systems (namely MTC in the San Francisco Bay Area) track more than transit call transfers and/or high-level transit menu selections. Based on the limited data, transit-related menu selections or calls are a relatively small proportion of 511 activity, ranging from 2% to about 24%. The highest percentages are observed in the Bay Area, where transit has been a major component of regional traveler information phone service. The volume of calls transferred from 511 to Bay Area transit agencies ranges from several hundred per month to several thousand per month.

**Using 511 as an alternative to a transit agency IVR system.** None of the transit agencies interviewed view participation in a 511 system as an alternative to investing in their own IVR (many transit agencies indicated that they had no need for an IVR at all). The agencies cited concerns about loss of control over the format and quality of their information,

and a number of them indicated that they did not think the 511 system operator would be willing or able to provide the desired IVR functionality. Although feeling that 511 was not an IVR substitute for them, a few transit agencies did suggest that 511 might be able to provide at least some of the IVR-type functionality for those transit agencies that cannot afford to implement their own IVR system.

**Other issues encountered.** Overall, very few of the transit agencies studied identified any particular issues in regard to their 511 participation. For most agencies, their involvement in 511 is very limited (typically just a call transfer option), so there is little opportunity for issues. Some transit agencies noted concerns about the quality of the voice recognition on their region's 511 system, especially when it was first implemented.

The two major exceptions—areas where there are some significant 511 issues—are in the San Francisco Bay Area and in South Florida (thus the decision to include site visits to these areas as part of the case study data collection activities). In the Bay Area after several years of significant transit involvement in 511, one of the larger developing issues is that the 511 system sponsor is finding it costly to maintain all of the transit information on the system. They had originally assumed responsibility for maintaining and updating the transit agencies' 511 content (including use of professional voice talent to record messages) because they were concerned that if they did not do so, transit agencies would not participate. Now, realizing how much time and effort goes into these activities, and finding it a challenge to retrieve this information from transit agencies who do not necessarily demonstrate an interest in 511, MTC is reassessing their approach.

Another significant issue in the Bay Area has to do with expanding the 511 vehicle arrival time feature from a single-agency demonstration to include many other transit agencies throughout the region. The expansion poses many technical challenges, including a possible regional transit stop identification system and conversion of different agencies' various schedule, route, and vehicle status databases into a common format for use by the 511 system. It is also not yet clear how much it will cost to implement and operate a much expanded version of the arrival time feature. Another less significant issue surfaced in the Bay Area research concerns the relationship between 511 systems and municipal 311 staffed telephone information systems—namely, how to differentiate the systems clearly to the public.

There are three issues associated with transit agencies' experiences with the South Florida 511 system. The first issue is the cost sharing relationship wherein the transit agencies were paying (arrangements have since changed) approximately \$2.5 million annually to support the cost of the transit component of the 511 telephone service and website. The agencies, understandably, found this to be a tremendous burden.

The second issue, at least for Broward County Transit, concerns the trip planner feature. Plans to implement a telephone version were never realized (not all of the transit agencies wanted it) and, to varying degrees, the transit agencies feel the web version has fallen short of their expectations. This is closely related to the cost sharing arrangement because much of the complexity and associated cost of the transit portion of the 511 system is directly related to the trip planner function. This complex function is not included in any other 511 systems, although some transit agencies do provide this feature on their own phone systems.

The third issue is one that also was cited by a few other agencies and pertains to the challenges experienced in converting transit agencies' schedule and route database into a format that can be accommodated in the 511 system. As reported by other agencies, the effort to work out the initial conversion protocol can be substantial, and subsequent periodic data transfers can still require a fair amount of manual validation.

#### 4.1.1.5 Transit Agencies' 511 Plans

Most transit agencies are passively involved in 511 and they experience no significant impacts, issues, or complications associated with 511. Therefore, they perceive 511 in a vaguely positive way, or are, at worst, ambivalent about it. Either way, their 511 situation is stable; they neither plan to enhance or decrease their 511 involvement. There are only two notable exceptions. The first is, again, the Bay Area, where a number of agencies are considering adding their real-time vehicle arrival/departure time information to 511 and where the 511 system sponsor is implementing a type of "my 511" that personalizes features for transit on the 511 phone system. Also, the sponsor is considering to what extent they may continue to update some of the transit agencies' information on their 511 system. The second exception is South Florida, where, because of the high cost of transit 511 operations and maintenance, as well as concerns about 511 trip planner performance, the transit agencies are not sure that they will continue to participate in 511. Also, an overarching statewide 511 system has emerged in Florida (part of the statewide SunGuide family of ITS services). Associated with that, the South Florida 511 system sponsor, FDOT District VI, is changing their approach to the regional 511 system in ways that would require transit agencies to administer their own 511 vendor support contract if they want to be included in the 511 system.

The only other outlook-related findings pertain to various types of interest on the part of transit agencies that seem to have been spurred by our contact with them for this study. For example, after we asked agencies about transit-related 511

statistics (in some cases telling them that such statistics were available from the 511 system operator in their region), a few agencies indicated that they intended to follow up with their 511 system sponsor. Also, several transit agencies we interviewed were unaware of 511 and/or of the existence of 511 in their area and indicated that they would look into 511.

### 4.1.2 Perspectives of 511 System Administrators on Transit Participation

Conclusions related to 511 system administration are based on interviews with 12 system administrators representing 511 systems throughout the United States. Three main conclusions are presented.

#### 4.1.2.1 Buy-In on 511 as a Multimodal Resource

The results of the 12 interviews indicate that some 511 system administrators were aware of the 511 Deployment Coalition's recommendations for minimum transit content and features and faced no significant barriers to including at least some transit, but decided to not include any transit content. This suggests that despite *multimodal* being a defining attribute of the U.S. DOT 511 concept, some agencies may have never truly embraced 511 as a multimodal traveler information resource. Perspectives contributing to these decisions seem to include the opinion that the vast majority of 511 callers will be looking for highway information anyway (sometimes cited as a consequence of the fact that 511 is just a new name for a highway information-only telephone traveler information system in operation for many years), and that transit information is available directly from transit agencies.

The extent to which some 511 administrators have not bought in to the concept of 511 as a multimodal resource suggests that they have either not considered, or do not agree with, the basic rationale underlying the inclusion of multimodal information. They may not understand or agree that in their region consolidating traffic and transit information can help facilitate mode choice decisions, that consolidating information on multiple transit agencies will eliminate the need to make multiple calls, or that 511 will be an easier number to find and remember than transit agency customer service numbers. Of course, they may be correct that the transit-511 rationale is not valid in their area. This possibility is supported by the fact that many of the 511 systems lacking any transit information serve states that have few, if any, very large urban areas served by multiple transit providers, and where variable and severe traffic congestion results in a large number of daily mode choice decisions.



The role of these issues in determining a transit 511 strategy is explored in Section 4.2.1.

#### 4.1.2.2 *Coordination between 511 and Transit*

In several cases, the current state of the 511 system in regard to transit content was identified as something that was considered some time ago, when the system was initially designed, but has not been reconsidered. It also appears that if transit considerations at that time included a dialogue between the 511 administrator and the transit agency, that dialogue was fairly limited and, once completed, the resulting decision has not been reconsidered. Finally, in several cases, the recollections of the 511 system administrator are inconsistent with those of the transit agency—at least the specific individuals that were interviewed. Specifically, there are several cases where the administrator says that transit was invited to participate but declined and the transit agency representative says that they do not remember ever being given the opportunity to participate. These discrepancies may be the result of imprecise memory or staff turnover. Regardless, they underscore how inter-agency communication and coordination that may have occurred long ago, and which may or may not remain valid or even remembered by the participants, continues to fundamentally shape current 511 operations.

#### 4.1.2.3 *Transit 511 Website Participation*

A few of the 511 administrators interviewed indicated that the fact that transit information is included in the web version of their 511 system played some role in their decision (and/or the decision of the transit agencies) not to include transit, or not to include much transit, in their 511 telephone system. For example, Oregon cited this as a consideration and Alaska has made adding transit to their website a higher priority than adding it to their telephone system. This suggests that one set of recommendations or criteria pertaining to transit and 511 may not be appropriate to cover both the web and telephone versions of 511.

### 4.1.3 **Transit Customer Perspectives on 511**

Study conclusions related to transit riders—both their perceptions regarding telephone transit information as well as transit information on 511—are based primarily on the focus group conducted with six Utah Transit Authority riders in Salt Lake City. Although the limited scale of the research precludes definitive conclusions, a number of informative preliminary conclusions can be identified, then organized into those pertaining to transit information on IVR systems in general and those pertaining to the rationale for providing transit information on 511.

#### 4.1.3.1 *Viability of Automated Transit Telephone Information*

Although there was a minimal amount of experience with automated systems (particularly transit systems), transit riders were supportive of accessing transit information on an IVR information system. Focus group participants said they were willing to rely primarily on an automated system provided that the information was accurate and comprehensive and that an operator was available if needed. Interest in an automated system is greater when real-time (vehicle arrival/departure time) information is available.

This finding, along with the fact that many transit agencies have invested in, and have derived benefit from, IVR systems, indicates that there is nothing about transit traveler information that makes it inherently unsuitable for dissemination via IVR systems. Although automated information systems cannot address all of the information needs of every transit customer, they can be a very important part of a transit agency's overall customer service strategy. Further, this suggests that providing transit information through a 511 system (which, by definition is automated) is fundamentally viable. It also validates the 511 Deployment Coalition guidance stating that call transfers to transit agency customer service should be provided from 511, since focus group participants expressed belief that access to an operator is important.

#### 4.1.3.2 *Transit Information on 511*

As noted previously, the focus group and the successful experiences of transit agencies indicate that providing transit information through an IVR is viable. Further, the option of a call transfer to a transit call taker is vital. However, the focus group findings (as well as the limited 511 system usage statistics for transit that are available) suggest that other parts of the rationale for transit on 511 will not always be valid.

Specifically, the focus group results do not support the notion that having transit information on 511 is always beneficial because seekers of transit information might find it easier to find or remember 511 rather than the phone number of specific transit agencies. Despite many years of 511 marketing in the Salt Lake region, focus group participants did not feel that 511 was very visible and found it unlikely that a newcomer or visitor to the region would learn about the local 511 system earlier than they would learn about the heavily-marketed and easily remembered UTA customer service number (RIDE-UTA) or find it easier than the UTA phone number. The focus groups also indicated that in many communities around the country like Salt Lake City in which all or almost all public transportation is provided by a single



agency, there is no value in 511 as a consolidated source—a one-stop shop—of transit information for multiple transit providers.

The rationale that providing transit information on 511 offers a consolidated, convenient source of transit and traffic information and, therefore, can facilitate mode choice decisions, was not conclusively addressed in the focus groups. However, there were some promising indications. First, the participants felt strongly that, in principle, if 511 is intended as a multimodal resource, transit information certainly should be included, even if it is available only via a call transfer out of 511. Second, although the findings are limited by the fact that most of the focus group participants did not drive, they did think that, in theory, it would be useful to have access to both traffic and transit information in one call.

Overall, although ultimately inconclusive, the focus group results suggest that there can be some value in having transit information on 511 but all of the rationale for doing so is not universally applicable. Guidance to transit agencies and 511 system administrators in deciding whether, and how, to include transit on 511, given their particular circumstances, is addressed in Section 4.2.1.

The focus group results also indicate that even when there is some value in providing transit information via 511, any benefits of doing so are conditioned on the 511 system being fundamentally sound. Specifically, if voice recognition is used it should work well and any information on the system—traffic and transit—should be accurate and current.

#### **4.1.4 Transit Agency Call Center Strategies**

A secondary objective of this study was to compare transit agency telephone customer service strategies with those employed by other types of organizations and to identify any technologies and practices that should be given increased consideration by transit agencies. The overall conclusion is that although many transit agencies use some of the same advanced technologies and techniques employed by non-transit organizations, most transit agencies generally do not use as many of those methods as do non-transit organizations serving a comparable number of customer calls. Therefore, transit agencies are encouraged to give increased consideration to state-of-the-practice call center tools and techniques. Even small agencies that will not require sophisticated methods may find useful ways to improve quality and efficiency. The largest agencies may find that some of the most sophisticated technologies that they are not using currently may provide additional benefits to their operation.

The remainder of this section summarizes the major findings and elaborates on conclusions related to transit agency call center strategies.

##### **4.1.4.1 The Role of the Telephone in Transit Customer Information**

The transit agencies interviewed report that trip planning information is the most important type of data for their customers. Specifically, most customers are interested mainly in pretrip planning, schedules, and on-time status information. Most transit customers need schedule and route information when they are making an unfamiliar trip. Transit agencies' overall customer information strategies are aligned closely with these needs. Pretrip planning information is a major focus for them, and vehicle arrival/departure time and service delay information are an increasing area of customer expectation and transit agency focus.

Transit agencies use a variety of mechanisms and media to provide information to their customers. However, they focus on printed material, websites, and telephone information. Most of the transit agencies interviewed in this study feel that many of their customer telephone inquiries need to be addressed by a live customer service call taker, either because the callers simply prefer it, or because the complexity of the question demands it. Transit agency interviewees were asked what specific role, need, or type of customer or customer information request they target with their phone systems. Their most common response was that they see the phone as catering to those customers who simply prefer to speak to a "real person." Other factors noted by a number of agencies included customers' lack of access to, or difficulty with, the Internet, and some senior or disabled riders' particular need and preference for speaking with a live operator. Transit agencies are increasingly using IVR systems and sophisticated menus on their customer service lines to answer or direct customer questions. However, most agencies see live call takers as a core component of their customer information approach and a key way to establish and maintain customer relationships.

These findings have important implications for transit agencies and the role of 511. First, because the telephone is a core, critical aspect of transit agencies' overall strategy for communicating with their customers, changes to that approach—such as participating in 511 to varying degrees—are major decisions. Agencies are protective of their customers and very concerned that customer needs and preferences are well met. Second, many transit agencies feel that a high percentage of their customers' telephone inquiries will require interaction with a call taker well versed in the details of the agency's specific transit services. Since few 511 systems have live operators, most transit agencies will not consider 511 as a mechanism for providing live operator customer service. Finally, many 511 systems do not provide robust IVR functionality of the sort necessary for transit trip planning. Even if they did, many transit agencies would not entrust this responsibility to another agency. Together, these factors mean that, at best, most transit agen-

cies are likely to consider 511 as a marginal component of their customer information strategy.

#### 4.1.4.2 Implications of Telephone Information Strategies of Non-Transit Organizations

Not unexpectedly, it was found that, as in the transit industry, the complexity and sophistication of the telephone information strategies of non-transit organizations varies significantly according to the size of the organization and their call volume. Large organizations with high call volumes generally use more technology and make greater utilization of a wider range of performance measures in managing their operations.

Also somewhat expectedly, it was found that overall (especially for large organizations), non-transit organizations generally take greater advantage of a larger number of advanced technologies than do transit agencies. That is partly because, in comparison to transit organizations, some companies have

- More resources to spend on customer information,
- Greater senior management support for technology investments,
- Greater awareness of the latest call center technology and practices, and
- More experience with successfully adopting new technologies.

Indeed, the recently completed TCRP Project J-09 Task 12 provides ample evidence of the lagging technology adoption and success of many transit agencies compared to their private-sector counterparts. (63)

The differences between transit and non-transit call center sophistication may also reflect, to some extent, differences in how organizations view customers and the use of technology to assist them. Overall, although both transit and non-transit organizations are increasingly turning to technology to try to automate as many customer information requests as possible, transit agencies seem to use technology somewhat less intensively. This may be related to the previous factors (funding, agency support, etc.), or it may be that transit agencies are even more concerned about customer satisfaction, and potential adverse customer reactions to being denied easy access to a live operator than are non-transit organizations.

Overall, findings in this area hold no real implication on transit 511 activities per se. That is because, as described earlier in this chapter, technology and other aspects of call center sophistication are not a requirement for 511 success or correlated with individual transit agencies' 511 decisions. However, these findings suggest that many transit agencies may benefit from greater utilization of technologies and more sophisticated performance metrics in their telephone customer service operations.

## 4.2 Recommendations

Recommendations are included in three main categories. The first category presents the 511 decision-making guidance for transit agencies that is the primary product of this study. The second category of recommendations pertains to transit agencies' telephone customer information strategies overall, focusing on the use of advanced technologies and techniques. The third category presents recommendations for implementing the results of the study.

### 4.2.1 Guidance for Determining a Specific 511 Strategy

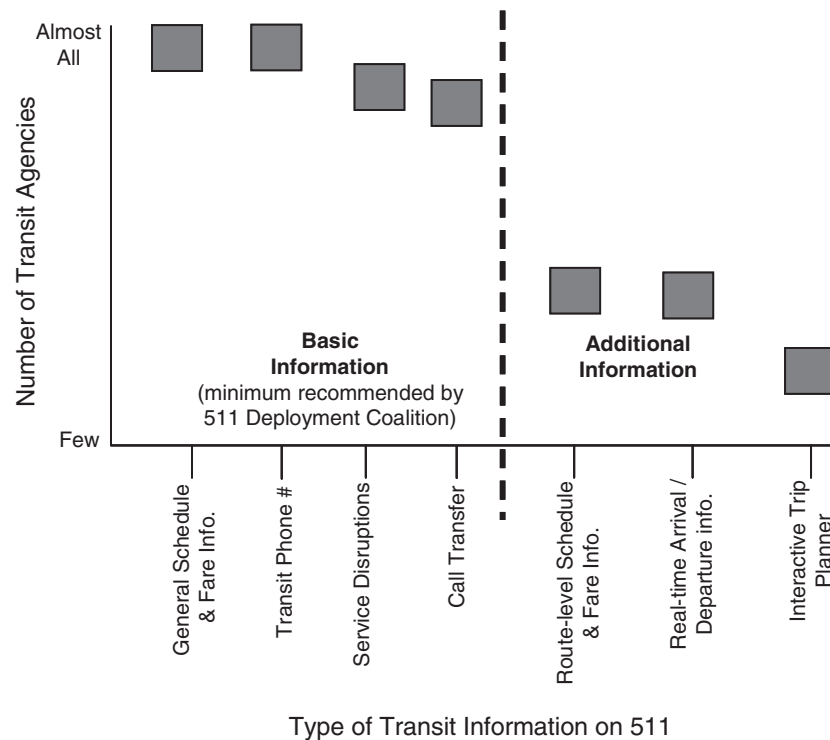
Overall, the decision of whether, and to what extent, a transit agency will participate in their region's 511 telephone information system is not one that can, or should, be made by the transit agency alone. As elaborated in the discussion that follows, the ultimate decision will take into account a number of factors pertaining both to the transit system and the 511 system. Therefore, the most fundamental recommendation is that transit agency consideration of 511 should be conducted within the context of a dialog with the 511 system administrator. Specific issues and considerations to be included within that dialogue are noted in the discussion that follows.

The guidance presented in this section all pertains only to decisions regarding 511 telephone systems. Although this study did not focus on 511 websites, our research suggests that 511 administrators and transit agencies have approached website decisions and telephone decisions very differently. This guidance also assumes that the 511 system in question does not have a live operator. Full automation—that is, no live operator—was one of the original defining attributes of the 511 concept. Only 2 of the 42 operational 511 systems in the United States have operators.

In their guidance, the 511 Deployment Coalition identifies the two potential categories of transit participation in 511 as (1) minimum information (referred to in the remainder of this discussion as *basic information*) and (2) additional information. The results of this study indicate that the considerations and options related to transit 511 participation do align closely with these two distinct categories and, therefore, the guidance that follows is organized around them.

#### 4.2.1.1 General Recommendations on the Applicability of Basic and Additional Transit Information on 511

According to the results of this study, as summarized in Figure 10 and consistent with the 511 Deployment Coalition perspective reflected in their guidance, most transit agencies will probably derive sufficient benefit to warrant



**Figure 10. General recommendations for transit agency 511 information.**

basic information participation in 511. However, the level of additional information participation is probably appropriate for far fewer agencies. In regard to the basic information portion of Figure 10, service disruptions and call transfers are shown as slightly less widely applicable and cost-effective because, unlike general information and listing of a transit phone number, these features have an on-going cost and/or maintenance component. Likewise, due to the even greater costs and challenges associated with the various types of additional information, in many cases, this information and these features will not be highly cost-effective on 511. Detailed guidance on the decisions related to both basic and additional transit information on 511 is presented in the subsections that follow.

#### 4.2.1.2 Basic Transit Information

The basic information identified by the 511 Deployment Coalition is the logical place to start with any transit 511 decision. The Deployment Coalition recommends including the following for each transit agency within the 511 service area:

- A description of the agency's service area,
- Schedule and fare information,
- Information about service disruptions, and
- A connection (call transfer out of 511) to the transit agency's customer service center.

The results of this study generally support the 511 Deployment Coalition's recommendation that every 511 system include this basic information for each transit agency. In many cases, transit agencies will not derive significant direct benefits from participation because 511 systems are often not effectively promoted to transit users and most transit users will find calling a transit agency just as easy and more effective (since the 511 system will probably not have all of the answers to their questions). However, assuming the 511 administrator embraces 511 as a multimodal resource and that—as is almost always the case—transit is not expected to help pay for 511, even the minor benefit of 511 participation makes it a good idea for most transit agencies. Those benefits are twofold, as follows:

1. Participation in 511 demonstrates commitment and support to the concept of multimodal coordination, and
2. There are probably some callers to 511 (e.g., newcomers or visitors to the area who may know about, or learn of, 511 before they find the local transit agency phone number) who will find the basic transit information, especially the call transfer option, convenient.

Of course, in those rare cases where a 511 system is heavily and effectively marketed to transit customers, the benefits will be much more dramatic and many, rather than just a few, 511 callers will derive value. Table 15 summarizes the specific factors that will impact decisions made by a transit agency and a

**Table 15. Decision factors related to basic transit information on 511.**

Decision Factor	Implication
Local 511 embraces national 511 vision of a multimodal resource	If the 511 system administrator views the system as a highway/traffic-only resource, it is likely that a transit agency will not have any opportunity to participate in 511. If transit does participate, they are not likely to derive any significant benefit.
Transit agency required to contribute to 511 system costs	If the transit agency is required to contribute significantly toward the cost of the 511 system, the benefits to transit often will be less than the costs.
Cost of call transfers from 511 to transit agencies	If resources for 511 are extremely limited, the cost of call transfers from 511 may outweigh the relatively minor benefits of 511 participation that many transit agencies will realize. In those cases, the transit agency phone number can be listed on 511 rather than providing a call transfer capability.
Commitments to keep service disruption information accurate and up to date	The relatively minor benefit (e.g., a resource for those proportionally few travelers who may find their way to a given 511 system looking for transit information) of this information is lost if the information is not accurate and current.
Level of detail of schedule and fare information	If the schedule and fare information is very detailed and therefore likely to change often, the effort necessary to keep it accurate and current will often outweigh the value of having it on 511. It is assumed that the 511 Deployment Coalition's guidance to include schedule and fare information refers to high-level schedule and fare information, which is almost always worth listing on 511.

511 system administrator regarding basic transit information on 511.

#### 4.2.1.3 Additional Transit Information

As described in the previous section, in most cases the simple and compelling rationale for transit agencies to provide basic information on 511 amounts to a limited cost/limited return equation. Therefore, it will be easy for most transit agencies to decide to participate assuming their 511 system administrator provides the opportunity. However, the decision to provide additional information on 511—information that holds the potential to provide significantly greater value to 511 callers looking for transit information but which is much more expensive to effectively deploy and maintain—is a much more complicated decision.

Overall, far fewer transit agencies will find the value of providing additional (or advanced) transit information and features like detailed route and schedule information or real-time information worth the cost to do so. The strongest argument exists where there is significant value in providing traffic and transit information in one place (especially when information is often needed for multiple transit agencies). In many regions, this will not be the case for the following reasons:

- Few travelers need traffic *and* transit information for any given trip (that is, mode choice decisions or multimodal trips are not made frequently),
- The 511 system is well established as a traffic-only resource and there is no ability or commitment to change that identity, and/or

- The region is served by a single transit provider and it is easier to call that agency directly.

Table 16 presents a full list of factors that can guide decisions from transit agencies and 511 system administrators regarding providing advanced transit information and features on 511.

## 4.2.2 Transit Utilization of Advanced Telephone Customer Service Technologies and Practices

The two primary recommendations related to transit agencies' use of advanced technologies and practices are (1) consider greater utilization of proven, advanced technologies and techniques and (2) consider N11 systems as part of overall customer service strategy.

### 4.2.2.1 Consider Greater Utilization of Proven, Advanced Technologies and Techniques

Although transit agencies utilize many of the same advanced call center technologies and techniques as do non-transit organizations, non-transit call centers tend to use more of the advanced methods than do transit call centers with comparable call volumes. Transit agencies of varying sizes are encouraged to evaluate the potential benefits of more extensive utilization of advanced call center technologies and practices. This could include medium-sized agencies implementing IVR systems or large agencies enhancing the sophistication of their IVR systems to serve a wide range of customer inquiries.

**Table 16. Decision factors related to providing additional transit information on 511.**

Decision Factor	Implication
<b>511 System Factors</b>	
Technical and financial capability of the 511 system to support advanced transit content/features	Limitations of the 511 system in regard to the number of callers, complexity of the menu system, and ability to effectively interface with transit databases may preclude advanced transit information and features on 511. Funding limitations may prevent upgrades to the 511 system to support these features and/or the 511 system administrator may not have the staff resources needed to carry out the on-going activities associated with these more advanced transit features.
Ability and commitment to market 511 to transit users	The value of transit information on 511 is a function of the number of transit information seekers who use 511. If a 511 system is not historically viewed and used as a transit information resource, the absence of an on-going marketing campaign targeted to transit users means that the value of having advanced transit information on 511 usually will not warrant the cost.
<b>Transit Agency Factors</b>	
Technical and other resources necessary to keep information accurate and current on 511	Just as the 511 system administrator may lack the necessary resources, so might the transit agency. Unless a 511 system administrator is willing to take sole responsibility for obtaining information updates from the transit agency (and most administrators will be unable or unwilling to do so indefinitely), the absence of transit agency resources will preclude advanced information on 511.
Ability and commitment to market 511 to transit users	In order for the investment in advanced transit information on 511 to be worthwhile, either the 511 system administrator or the transit agency must be willing and able to commit to a long-term marketing strategy to establish and maintain 511 as a multimodal resource.
Transit agency has, or intends to implement, its own IVR	If a transit agency has, or is planning to implement, their own IVR, in most cases there is little benefit in making the same information and features also available directly on the 511 system. The exceptions to this include regions where 511 is effectively marketed to support multimodal planning and many travelers make mode-choice decisions frequently. If the transit agency does not have their own IVR but wants one, then the 511 system may provide an opportunity to fill that need either as a stop-gap until the transit agency can implement their own IVR, or as a long-term strategy that eliminates the need for a transit agency IVR. The suitability of 511 as a long-term replacement for a transit agency IVR will depend on effective marketing of 511 to transit users and the feasibility of maintaining accurate and up-to-date information on the 511 system.
Number of customer inquiries that could be handled all or in part via IVR	If very few transit customer inquiries can be addressed with an IVR system, the cost to provide such information on 511 probably is not justified. If many inquiries could be so addressed, the decision will depend on other factors noted in this table (e.g., marketing, ability to keep information accurate, etc.).
Current cost of long-distance charges for customer service calls	In some cases, transit agencies pay a considerable amount for local long-distance calls to their customer service center (e.g., from within their service area but from a different area code). In these cases, if calls to 511 are toll free (and they almost always are) and the 511 system administrator pays for call transfers out of 511 to the transit agency, having transit information on 511 can reduce local long-distance costs for transit.
Ability to effectively process current and anticipated transit customer service call volumes	If a transit agency lacks an IVR and is struggling to keep up with incoming demand on their customer service line, providing extensive information on 511 can help a transit agency meet customer needs. Whether it makes more sense to meet those needs via 511 versus upgrades to their own call center will depend on the other factors as noted in this table.
511 system user interface	The value of advanced transit content and features on 511 depend significantly on the ability of transit users to conveniently and reliably access that information. Impediments such as a poorly performing 511 voice recognition system or inconvenient placement of transit information in the 511 menu structure would argue against a significant investment in advanced transit information on 511. These impediments will pose a particular challenge to cell phone users and seniors.



**Table 16. (Continued).**

Decision Factor	Implication
<b>Travel Environment Factors</b>	
Number of transit trips that involve multiple transit providers	Other considerations aside, it is much more valuable to have transit information on 511 when there are multiple transit providers in a region. Further, it is more valuable when many transit trips involve multiple providers because 511 callers can get information on all providers with a single call. When there is only one transit provider in a given travel market, the “one-stop shop” rationale for transit information on 511 does not apply.
Number of travelers making mode choice decisions on a frequent basis (daily, weekly)	The value of advanced transit information on 511 is significantly enhanced when many travelers make mode-choice decisions based on daily traffic conditions. Under those conditions, having traffic and transit information available in one call to the 511 system represents a significant convenience and could greatly facilitate consideration of transit in mode-choice decisions.
Number of tourists or newcomers	In most regions, the transit customer service phone number is at least as familiar and accessible to long-term residents seeking transit information as is 511. Under those conditions—and other factors aside—it is hard to argue that the cost to provide telephone-based transit information anywhere other than through the transit agency is cost effective. However, in regions where there are many tourists and/or many new residents—especially if they come from regions where 511 includes transit—there is greater justification. Whether that justification outweighs the costs will depend on other factors.

Other examples of technologies that may benefit large agencies include call volume demand forecasting, performance monitoring, and customer satisfaction monitoring software. The following potential benefits may be realized through greater utilization of advanced technologies and techniques at transit agencies:

- Reducing the amount of manual, paper-based processes at large call centers by using workforce management technologies that track daily work logs and automate most tasks;
- Reducing the amount of time spent on repetitive information requests by implementing IVR systems and posting such information on the agency website;
- Ensuring customer service quality for agencies with large call volumes (e.g., more than 1,000 calls per day) by using quality monitoring technologies; and
- Improving customer management, particularly at those agencies that wish to provide personalized information such as service alerts, through the use of CRM and CIM software.

#### 4.2.2.2 Consider N11 Systems as Part of an Overall Customer Service Strategy

In addition to the 511 systems that were the focus of this study, there are other N11 systems operational in many communities, namely 311 (consolidated municipal services information) and 211 (social service agency referral information). Like 511, 211 and 311 systems can complement, and in the case of 311, may have major implications on transit agency customer service strategies. Therefore, transit agencies are strongly

encouraged to consider whether and how these other N11 systems, along with 511, may fit within their overall customer service strategy. Transit agencies that are entities of a municipal government are encouraged to engage with the municipality early in any 311-related discussions so that transit agency considerations are appropriately taken into account and any changes can be phased in over time.

### 4.3 Plan for Implementing the Research Findings

There are three audiences that will benefit most from the results of this report. First, individual transit agencies should find these study results useful in shaping their approaches to 511 telephone information systems and to their call centers overall. Second, 511 system administrators should also benefit from an improved understanding of the state-of-the-practice in regard to transit information and content and the factors that are appropriate to consider along with transit agencies in determining 511 approaches. Third, the study results, in particular those summarizing the state-of-the-practice and the applicability of the underlying rationale for transit information, will be of benefit to the national 511 Deployment Coalition as they consider potential modifications to their guidance.

All three of these target audiences may be reached through publication of a traditional TRB final report. As a supplement, presentations of study results at conferences and webinars will help put the study findings in the hands of the transit agency and 511 system administration personnel who can benefit most from it. Recommended APTA forums to reach

transit agency personnel include the ITS International Best Practices Workshop, Bus and Paratransit Conference, Marketing and Communications Workshop, and TransITech Conference. Recommended forums to reach 511 system administrator personnel include the ITE annual meeting, ITE technical conferences, the National Transportation Operations Coalition webinars, and the ITS America annual conference (also well attended by transit agency personnel).

In addition to these activities, it is recommended that a short briefing be provided to the 511 Deployment Coalition leadership, including representatives of FHWA, FTA, and AASHTO. In addition to ensuring that the 511 Deployment Coalition is aware of the report, the briefing may leverage the Coalition's own communications channels and thus provide another way to reach agencies considering, or participating in, 511.

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## APPENDIX A

# Transit Agency Interview Questionnaire

### A. Information/Customer Characteristics:

1. What kind of information do you provide to your customers via telephone?
2. What other media do you use for customer service (such as website or e-mail) and what information do you provide through those other media?
3. Do you see your telephone customer service as serving a different need or type of customer than your other customer service media?
4. How do you ensure that your call center and overall customer information strategies are responsive to the needs, preferences, and capabilities of various types of customers?
  - a. How do you determine needs, preferences, and capabilities?
  - b. How do you accommodate varying needs, preferences, and capabilities?
    - i. Bilingual options?
    - ii. Seniors?
    - iii. Hearing or vision impaired?

### B. Call Center Office Setup:

5. Is your call center operation centralized or decentralized (i.e., local call centers serving each location)?

### C. Staffing:

6. What are the daily hours of operation for your call center and how many shifts do you staff?
7. Of your call center operators, how many are full-time and how many are part-time?
8. What are the key requirements or capabilities for your call center personnel?

### D. Operations and Management:

9. What techniques do you use to forecast the demand for your telephone customer service?

### E. Automation/Technology:

10. Which of the following call center technologies do you utilize, or will utilize (the project is funded and programmed), in your call center operation?
  - a. Automatic call distribution (ACD, a technology that diverts incoming calls to available agents automatically);
  - b. Interactive voice response (IVR, allows customers requesting information to provide either voice or touch-tone responses to system voice prompts) and guided speech IVR (a hybrid model in which a live agent helps a caller on the IVR system to avoid any machine error such as problems in voice recognition);
  - c. Computer telephony integration (CTI);
  - d. Customer relationship management (CRM) solutions;
  - e. Customer interaction management (CIM) solutions;
  - f. Text to speech (TTS, a technology that converts natural language text into speech);
  - g. Voicemail;
  - h. Voice recording (which records conversations among call agents and customers for quality monitoring); and/or
  - i. Speech analytics (a process of performing data mining on daily conversations among customers and call agents).
11. What prompted you to invest (or not invest) in these technologies?
  - a. Handle more calls with fewer operators?
  - b. Filter customer requests for appropriate routing to an operator?
  - c. Improve customer satisfaction?
  - d. Other?



## F. Quality Monitoring and Performance Management:

12. Which of the following call center metrics do you track?
  - a. Information requested;
  - b. Number of agents ready to take calls;
  - c. Average number of agents in wrap-up mode;
  - d. Average call duration;
  - e. Average call duration including wrap-up time;
  - f. Average number of calls in the queue;
  - g. Number and percentage of calls answered;
  - h. Number and percentage of calls abandoned;
  - i. Average time taken to pick up a phone call;
  - j. Average time until the call is abandoned;
  - k. Average delay a caller may experience while waiting in a queue;
  - l. The number of calls/inquiries per hour an agent handles;
  - m. The amount of time spent while an agent processes customer requests while not speaking to a customer (referred to as not ready time (NR), or after call work (ACW), or wrap up);
  - n. Percentage of time agents spend not ready to take calls, often referred to as idle time; and/or
  - o. Percentage of calls that completely resolve the customer's issue at the first call (if the customer does not call back about the same problem for a certain period of time).
13. Are there other metrics that are critical to your organization and not in the above list?
14. How do you monitor quality (that is, do quality assurance/quality control [QA/QC])?
15. How do you monitor customer satisfaction? Which media do you use?
  - a. Online,
  - b. E-mail, and/or
  - c. Telephone.
16. What is the average cost per customer request?

## G. 511-Specific Questions (for Transit Agencies Only):

17. Does your agency participate in a regional or statewide 511 phone system? If yes, what information of yours is available on the 511 system?
  - a. General information like hours of operation and type of service (e.g., rail, bus, fixed-route);
  - b. Service disruptions;
  - c. Your agency's customer service telephone number;
  - d. A call transfer option from 511 to your customer service center; and/or
  - e. Real-time information (e.g., bus arrival times).
18. *(Only ask if agency does participate in 511 phone system.)* What 511-related statistics do you track (e.g., number of call transfers to your call center from 511, number/percentage of all 511 menu selections that pertain to your transit agency, etc.)?
19. Is your agency's information included in any other traveler information systems, such as:
 

*For each, if there is transit information, describe what it is and how it's integrated/linked.*

  - a. Phone systems (other than 511),
  - b. 511 websites,
  - c. Other (non-511) websites,
  - d. Dynamic message signs,
  - e. Highway advisory radio, and/or
  - f. Others.
20. *(Only ask if agency does participate in 511)* How has 511 participation impacted your agency?
  - a. Changes in number of calls coming through traditional customer service line;
  - b. Trends in the number, duration, or other parameters (e.g., information requested) in 511 call transfers over time;
  - c. Any changes made in staffing;
  - d. Any technology upgrades or other changes needed to support 511 participation;
  - e. Do you pay the 511 system operator for the cost of transfers to your call center;
  - f. Have you changed how you market your customer information since 511 (e.g., do you market the availability of 511 to your customers); and/or
  - g. Does the 511 system operator target any of their 511 marketing to transit users.
21. Why did you decide to participate, or not participate, in the 511 system that covers your area? *Read each of these items to the interviewee, regardless of whether they are currently participating in 511 or not, and ask them to indicate which factors played a role in their decision.*

Pro (factors supporting participation in 511)

  - i. Wanted to include transit in a multimodal traveler information system—wanted to keep “a place at the table”;
  - ii. Wanted to be a good partner with highway agencies;
  - iii. Hoped to divert some calls from your transit call center;
  - iv. Wanted to provide your customers with an alternative, easy-to-remember phone number; and/or
  - v. Other.

Con (factors arguing against participation in 511)

  - i. Not invited to participate by the 511 developers/operators;
  - ii. Concern about an increase in overall call volumes coming into your transit center (the addition of 511

- call transfers) and the implications on staffing and number of phone lines;
- iii. Cost of any technology investments needed for 511 participation;
  - iv. Cost contributions you were asked (by the 511 system operators/partners) to make in order to support the implementation or operation of the overall 511 system;
  - v. Concern about the possible inconvenience your callers will experience if they call 511 only to find out they will be transferred to your call center;
  - vi. The 511 system operators only wanted you to participate if you would contribute certain transit information to their system in certain formats (and you were unable to do so, for either technical or cost reasons); and/or
  - vii. Other.
22. Are any changes planned in regard to your agency's participation in either 511 or other regional traveler information systems? What, and why?
  23. Do you consider participation in 511 an alternative to investing in your own interactive voice response system (e.g., handle all "automated" information requests via the 511 system and only transfer to your call center for operator assistance)? Why or why not?
  24. Is there any advice you would give to other transit agencies that would help them decide whether and how to participate in a 511 system?
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## APPENDIX B

# Transit Rider Focus Group Discussion Guide

UTA Offices (Downtown Salt Lake City)  
 Wednesday, January 7, 2009  
 6:30 to 8:00 P.M.

## Part I: Welcome and Introduction— 10 min.

- UTA representative Cindy Medford introduces the focus group facilitators (Matt Burt and Carol Schweiger);
- Request permission to record the session;
- Explain purpose of the focus group;
- Review ground rules:
  - Please be candid—no names will be used in our results report and no one will have access to our recording;
  - We’re not working for UTA in any way;
  - One speaker at a time;
  - Respect one another’s opinions; and
  - We have specific questions and a limited amount of time, so please don’t be offended if we have to move the conversation on—we will reserve time at the end for any other questions or comments from you all.
- The complimentary monthly passes will be distributed at the end of the focus group.

## Part II: Discussion Questions

### 1. Participant Background Information—10 min.

- a. How long have you been riding UTA?
- b. What UTA services (bus, LRT, paratransit) do you mostly use?

### 2. Use of Transit Customer Information Systems—25 min.

- a. What sorts of transit information do you find yourself needing, and how do you usually get that information (e.g., call UTA, consult printed material, UTA website, other)?
- b. (Facilitator briefly explains what an automated transit telephone information system is.) Have you had any

experience using an automated telephone information system to get transit information?

- i. If so, were you satisfied with it (why or why not)?
- c. (Facilitator dials up an example transit agency from the San Francisco Bay Area and demonstrates their automated telephone information system, including a real-time feature [estimated vehicle arrival/departure time]).
  - d. Would you be in favor of having an automated telephone information system at UTA? (Why or why not?)
    - i. What, if any, sorts of information do you think could be provided via an automated system?
    - ii. What, if any, information do you think you would still need to speak to an operator to obtain?
  - e. Do you ever need to call more than one transit agency to get all of the information you need?
    - i. If so, would it be easier for you if information for all of the agencies were available with one phone call?
- ### 3. Experiences and Perspectives on 511—35 min.
- a. How many of you know what the Utah 511 telephone information system is? Are you aware of any telephone traveler information systems (participants may know 511 as CommuterLink)?
    - i. How did you become aware of the Utah 511 system (anyone know about it from living in another state that had 511)?
    - ii. Given the marketing of the Utah 511 system that you have seen, do you think newcomers to the Salt Lake City area would quickly learn that 511 is a source of traveler information?
  - b. (Facilitators explain what 511 is and dial in to the Utah 511 system, 866-511-8824, to demonstrate.)
  - c. Have any of you used the Utah 511 system?
    - i. If so, how often and for what type of information (anyone use it to get transit information)?
    - ii. If so, do you find it useful?
    - iii. How could it be improved?

- d. How useful is the current Utah 511 system as a source for transit information (i.e., having only the call-transfer option)?
- Is 511 an easier number to remember than the UTA customer service number?
  - Is it useful to be able to get traffic information before your call is transferred to UTA?
- e. Would you see value in having additional, recorded transit information on the 511 system?
- What sorts of information would be most useful?
  - If that information were available on 511, do you think you would have to speak with UTA customer service operators less often?
- iii. If there were more automated transit information available right on the 511 system, would being able to access that information along with current traffic information in a single phone call change how you make your travel plans?
- 4. Other Questions or Comments? (about 511 or transit information by phone)—5 min.**

**Part III: Wrap Up—5 min.**

- Thank you.
  - Hand out the incentives (free monthly transit passes).
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*Abbreviations and acronyms used without definitions in TRB publications:*

AAAE	American Association of Airport Executives
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACI-NA	Airports Council International-North America
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	Air Transport Association
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation