Washington Metropolitan Area
511 Feasibility Study

Technical Memorandum #1
Conceptual System Design

FINAL
Version 2.1

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1. Introduction

1.1 Study Overview

As part of its Statewide 511 Implementation, VDOT has tasked PBS&J to develop a Feasibility Study for 511 in the Washington, DC Metropolitan Area. A 511 Steering Committee - DC Metro Area (Committee) has direct oversight for the Study. Funding for the Study is through the FHWA's $100,000 planning grants for 511 with a local match of $25,000. The District of Columbia (DC) originally obtained the planning grant (which was subsequently transferred to VDOT) and VDOT is providing the match funds.

PBS&J has conducted similar studies for the Houston metropolitan area and the states of Florida, Illinois, Louisiana and Mississippi that have developed some "lessons learned" to apply to this Study. PBS&J looked at the experiences of other 511 deployers throughout the country, as well.

At the project kickoff meeting on June 29, 2004, the Committee decided that the Washington Metropolitan Area 511 Feasibility Study would utilize the 511 Guidelines developed by the 511 Deployment Coalition (Coalition) as a baseline. Version 2.0 of the Guidelines includes many implementation experiences from current 511 deployments. VDOT's 511 RFP looks for compliance with the Guidelines for the statewide 511 service.

The 511 Guidelines:

- Provide a "vision" for 511
- Have been reviewed by Advanced Traveler Information Systems (ATIS) experts
- Are nationally accepted

1.2 Study Activities to Date

PBS&J developed a Detailed Work Plan including a schedule for the Study, which was reviewed and approved by VDOT and the Committee.

PBS&J staff and its subcontractor, E-Squared Engineering, have discussed data sources and information availability for presentation on 511 with the stakeholders in the region. The following data sources / information types are being addressed:

a. Highway – congestion, incidents, construction, closures, etc.
b. Transit – service areas, schedules, fares, service delays, parking status, etc.
c. Weather
d. Tourism
e. Bike, pedestrian
f. Special events
g. Emergency situations

Stakeholders have been contacted via email to arrange for a time to be interviewed and asked these questions, among others:

1. What of the above list of information content is currently available from your organization?
    a. What is the source of this information content?
    b. What is the delivery mechanism for this information content right now (for example – through the telephone? Which number? A website? What URL)?
2. What specific information from your organization should be available directly through a 511 service or be connected to 511?
3. How often does this information change and are you capable and willing to provide real-time or near real-time information to 511?
4. What format(s) is this information available in?

The Study team has also reviewed the Data Source document October 7, 2004 developed by PB Farradyne, in supporting the Regional Integrated Transportation Information System (RITIS) project.

1.3 Study Next Steps

Develop Implementation Plan

After the finalization of the Conceptual System Design, PBS&J will begin development of an Implementation Plan for a 511 telephone and Internet traveler information system in the Washington, DC metropolitan area, which will include:

- Organizational Roles and Responsibilities
- Management Structure
- Estimated Implementation Costs
- Procurement Approach
- Implementation Schedule
- Marketing Strategy
- Launch
- Enhancements

The draft document will be delivered to the Committee on January 6, 2005 with a review meeting on January 14, 2005 and a final document available on January 23, 2005.

Finalize Feasibility Study

The findings of the preceding tasks will be assessed and detailed along with recommendations on how to feasibly deploy 511 in the region. The document will include options and recommendations for the Committee to consider on how to successfully deploy a 511 service to serve the travelers in the Washington, DC area while complimenting existing or planned 511 services in bordering states or regions.

The draft document will be delivered to the Committee on March 11, 2005 with a review meeting scheduled for March 16, 2005 (this meeting may be moved due to a conflict with the National 511 Working Group meeting) and a final document available on March 25, 2005.

Develop an Outreach Plan

The project team shall brief the National Capital Region Transportation Planning Board (TPB) about this work plan, co-host the outreach with the Coalition in late 2004 – early 2005 and present to the TPB the final feasibility study outcome.

1.4 Conceptual System Design Purpose

The Conceptual System Design represents the structure of the system and its related content as perceived by the ultimate user of the system – the traveler. This document is prepared to allow the region's stakeholders in a brief, concise manner to review various aspects of the proposed 511 system at a high level and ensure that the proposed direction for the 511 services best serves the region's interests. PBS&J has directly applied the Guidelines to the Washington metropolitan area in preparation of this document as agreed at the Study kickoff meeting with stakeholders on June 29, 2004.

This draft represents the initial findings of the Study by PBS&J and proposed directions and recommendations. Through an iterative process, the region's stakeholders will provide feedback on this document as it goes from draft to final versions. The final version will contain the appropriate ideas that best serve the region's interests and will serve as a jumping off point for development of the Implementation Plan and other Study deliverables.

1.5 Conceptual System Design Overview

The Conceptual System Design of 511 services in the Washington metropolitan area:

- Provides a vision for 511 services
- Examines the information content to be provided
- Looks at the telephone system and call routing

- Notes the overall business environment that the services operate in (including other N11 services like 311 and 211)
- Offers insight into 511 websites
- Uncovers issues for the Committee to discuss and resolve

2. Vision

The vision for the Washington metropolitan area 511 can be based on the national vision:

> *The Washington metropolitan area 511 is a customer-focused, multimodal traveler information service available across the region via phones, the Internet and other personal communication devices. The Washington metropolitan area 511 system will be interoperable with neighboring 511 systems resulting in a more satisfactory travel experience.*

3. Information Content

As per the 511 Guidelines, there are two main categories of information available on 511 services – basic and optional content. This Study examines the feasibility of both throughout the Washington, DC metropolitan area via the telephone and the Internet. The Committee has noted that the basic information available on 511 relate to reporting exceptions to "normal" conditions on the transportation system. The 511 Guidelines also allow optional content that is based on a region's needs and information availability. The Coalition encourages 511 implementers to consider providing optional content that will benefit callers. This Study explored the optional content that is available in the Washington, DC metropolitan area.

3.1 Coverage Area

The Committee has identified the following as the geographic coverage area for the Washington, DC Metropolitan Area 511 service (as seen in Figure 3.1):

- District of Columbia
- Virginia
  - Arlington County
  - Fairfax County
  - Loudoun County
  - Prince William County
  - City of Alexandria
  - City of Fairfax
  - City of Falls Church
  - City of Manassas
  - City of Manassas Park
- Maryland
  - Montgomery County
  - Prince George's County
  - Frederick County
  - Charles County

Figure 3.1 – Washington Council of Governments Area plus Charles County, MD

3.2 Basic Content

Roadway Content

The Guidelines note that as the primary means of travel in the United States, roadways (highways and arterials) and information about major roadways should be a principal part of a 511 system. The core of many existing traveler information services is highway conditions reporting and there are five key principles associated with roadway content:

1. *Regional Overviews or Summaries* – regional overviews or summaries that allow users to get important information quickly, (i.e., incidents or service disruptions that may impact one's trip) without having to go through the entire menu system. Upon hearing the overview, the caller would be able to select the specific route or segment to obtain detailed information.
2. *Content is Route / Corridor-based* – provide information that is retrievable by route number and / or name. When a route / corridor is operated by multiple agencies, these agencies should work together to provide an integrated description of conditions.
3. *Limited Access Roadways and the National Highway System Should Be Covered by the Basic 511 Highway / Roadway-related Content* – the 160,000 mile National Highway System should be the focus of basic 511 content. Limited access roadways should also be part of the basic content.
4. *More Detail Needed in Urban Areas* – Given the increased traffic volumes and congestion levels in urban areas, even minor events could have large impacts on travel.
5. *Content is Automated* – information should be stored and automatically provided to callers. There need not be any direct contact between callers and human operators to provide basic highway content.

Proposed Roadway Content

Regional Reports – available for the District, Northern Virginia and Maryland at a minimum. More detailed, roadway specific information will also be available should the traveler wish to "drill down."

Roadway Coverage – the Freeways, Expressways, Parkways, Major Arterials, Major Interstate Connectors and Bridge facilities that 511 should have exception reporting on are noted in Appendix A.

Segments – one of the factors that make providing information via 511 an art, not a science, is the determining of logical segments of roadway to convey information to the traveler. With too many segments, the traveler does not receive the necessary information relative to decision points on their trip and too few segments can overwhelm the traveler with information. For example, the proposed segmentation of the Capital Beltway is: the Wilson Bridge to I-66; I-66 to the American Legion Bridge; the American Legion Bridge to I-95; I-95 to the Wilson Bridge. Information for these segments would be covered in two regional reports– one for Maryland and the other for Virginia. Segments are noted in Appendix B.

For each segment, specific types of content should be provided:

- *Construction / Maintenance Projects* – Current information on active projects along the route segment that may affect traffic flow and / or restrict lanes.
- *Road Closures and Delays* – Unplanned events, incidents or congestion that shut down or significantly restricts traffic for an extended period.

- *Major Special Events* – Transportation-related information associated with significant special events (festivals, sporting events, etc.).
- *Weather and Road Surface Conditions* – Weather or road surface conditions that could impact travel along the route segment.

For each of these highway content types, it is necessary to provide details that enable callers to assess travel conditions and make travel decisions associated with a route segment. Table 1 illustrates the detailed information needed for each content type.

- *Location* – The location or portion of route segment where a reported item is occurring, related to mileposts, interchange(s) and / or common landmark(s).
- *Direction of Travel* – The direction of travel where a reported item is occurring.
- *General Description and Impact* – A brief account and impact of the reported item.
- *Days / Hours and / or Duration* – The period in which the reported item is "active" and possibly affecting travel.
- *Travel Time or Delay* – The duration of traveling from point A to point B, a segment or a trip expressed in time (or delay a traveler will experience). Due to a lack of data, many 511 systems are not providing this information.
- *Detours / Restrictions / Routing Advice* – As appropriate, summaries of required detours, suggested alternate routes or modes and restrictions associated with a reported item.
- *Forecasted Weather and Road Surface Conditions* – Near-term forecasted weather and pavement conditions along the route segment that impact travel.
- *Current Observed Weather and Road Surface Conditions* – Conditions known to be in existence that impact travel along the route segment.

Content Type	Content Detail							
	Location	Direction of travel	General description and Impact	Days / Hours and / or duration	Travel time or delay1	Detours / Restrictions / Routing advice	Forecasted weather and road surface conditions	Current observed weather and road surface conditions
Construction / Maintenance	✓	✓	✓	✓	✓	✓		
Road Closures / Major Delays	✓	✓	✓	✓	✓	✓		✓
Major Special Events	✓			✓	✓	✓		
Weather and Road Conditions	✓		✓				✓	✓
Incidents / Accidents (Minor)*	✓	✓	✓					
Congestion Information*	✓	✓	✓		✓			

* Major congestion information and incident / accidents are considered part of the "Road Closures / Major Delays" content type
1 – Desirable if the deployer has the capabilities to include this information as part of the service

Table 3.2 – Basic Content Detail Needed for Each Highway Content Type

Based on PBS&J's interviews with stakeholders regarding data available for 511, there is sufficient data to provide actionable information to travelers in the region. The data sources and their availability on 511 will be further detailed in the Implementation Plan.

Implementation Issues

Decisions are needed from the Committee relating to the applicability of:

- Travel time / speed / congestion data
- Observed weather conditions

Public Transportation Content

The Guidelines note that public transportation operators already have established methods of communicating to the public about their services, including websites and customer service centers accessible by telephone. If properly utilized and coordinated with these existing communications methods, 511 can assist public transportation operators in better serving their customers and possibly even attract new customers.

Information access via telephone has proven to be extremely important in transit customer service. 511 should assist in providing travelers with general agency and service information

and communicating service disruptions and changes. Travelers should be transferred to the agency or directed to where they can obtain more detailed information and trip planning.

There are four basic principles related to public transportation agency information provision on 511:

1. *Information on All Transit Agencies in the Area Should Be Available* – public transportation operators should be accessible via 511 by identifying specific agencies.
2. *511 Works in Conjunction with Transit Customer Service Centers* – 511 is not intended to replace these operations, but to provide compatible and supplemental information, usually in the form of recorded scripts. Travelers would have direct access to these customer service centers via a call transfer.
3. *511 Should Minimize Additional Customer Service Center Overload Via Automated Messages* – 511 access could increase the number of callers seeking public transportation information. The Washington metropolitan area 511 system will provide automated messages that will answer many callers' questions prior to seeking assistance from customer service center operators.
4. *Each Agency Responsible for Their Information* – To ensure information quality and agency autonomy, any information provided via 511 for a particular public transportation operator must be provided or quality-checked by that agency.

<u>Proposed Public Transportation Content</u>

- Public Transportation Agencies
  - Alexandria DASH
  - Arlington Rapid Transit
  - Fairfax Connector
  - Fairfax CUE
  - Falls Church GEORGE
  - Loudoun County Transit
  - MARC
  - Metropolitan Washington Airports Authority
  - Montgomery County Transit – Ride On
  - PRTC (serving Prince William Co.)
  - Transportation Association of Greater Springfield (TAGS)
  - TheBus (Prince George's County)
  - VRE
  - WMATA
- Service disruptions / exceptions
- Brief agency description with call transfer option

Weather Content

From the Guidelines, the overriding basic principle for providing weather information is simple: if weather will impact a person's trip, then they should be alerted to that actuality or possibility. Rain, ice, snow and even glare can have huge impacts on travelers in the Washington metropolitan area. With that being said, weather should not be a "top level" menu option on the 511 system, rather it should be presented, when applicable, as roadway content and public transportation "exception" messages.

National Weather Service warnings and advisories should be available to travelers as floodgate messages (played before the main menu and category menu script) due to their likelihood to impact the entire region. Those watches, warnings and advisories that do not affect the entire metropolitan area should be available as regional reports. Should a public transportation agency wish to report the weather impacts on their services, they should utilize a recorded exception report for their agency.

Winter road conditions may be addressed in roadway content as well – e.g., snow emergency routes are in effect in the District.

3.3 Optional Content

The 511 Guidelines allow optional content that are based on a region's needs and information availability. The Coalition encourages 511 implementers to consider providing optional content that will benefit travelers. This Study identified the following optional content provided by the Committee that is available in the Washington, DC metropolitan area that should be included in the basic service:

- Roadway Content
  - Security Measures and Closures
  - Special Events
- Public Transportation
  - Airports
  - Carpool / Vanpool
  - Major Public Transportation Delays
  - Security Measures and Closures
  - Special Events
- Emergency Alerts
  - AMBER Alerts
  - Heightened Security Alerts
  - Security Measures and Closures
- Tourist Information – handled through floodgates by the appropriate convention and visitors agency. For example, the Washington, DC Convention and Tourism Corporation

would provide an audio version of their "travel update" webpage. Tourist agencies should be responsible for the details and costs associated with maintaining their information. Much more detail would be available to website users through hyperlinks.

3.4 Content Quality and Consistency

The Guidelines note that the accuracy, timeliness and reliability of information on 511 is an important issue for 511 deployers and users as well. In an increasingly advanced information society, travelers are generally accustomed to high quality information and 511 content must be no different. ITS America, in its national consumer research on 511, determined that "those surveyed said that if they used 511 and found the information to be inaccurate in their first few uses, they would be unlikely to give the service another chance." This is a KEY reason why public relations and marketing needs to be involved from the outset – to help manage the image of this regional program.

There are five quality parameters for 511 implementers:

1. *Accuracy* – reports should contain information that matches actual conditions. If the system reports events that are not occurring or does not report a event that is occurring, travelers will come to distrust the information provided. If inaccuracies persist, travelers will discontinue their use of 511.
2. *Timeliness* – closely related to accuracy, information provided by 511 should be timely to the greatest extent possible in accordance with the dynamics of changing conditions. Information should be updated as soon as there is a known deviation from the current route segment or service report.
3. *Reliability* – travelers use highways 24 hours a day, 7 days a week. The most challenging travel conditions can be experienced during nighttime and on weekends, so methods must be developed to provide travelers with a reliable stream of information 24 / 7.
4. *Consistency of Presentation* – It is recommended that reports use the same, or similar, terminology to describe conditions. This includes development of "style guide" for terminology and guidelines that all agencies agree to adhere to.
5. *Relevancy* – The information that is provided needs to be relevant to the traveler given their location, modal choice and / or actions that they may need to take as a consequence of weather, road conditions or service disruptions.

3.5 Other Content Issues

Amber Alerts / Security – handled through floodgates, we recommend that a clear Concept of Operations be developed on when these are activated, message structure, what authorizations are required to activate, etc.

Timestamping – Maryland's CHART system (which DDOT also utilizes) and VDOT's VOIS data are available with time stamps for the information. Timestamps should be utilized to give travelers a reference as to the latency of the information.

Other Optional Services – the Committee needs to determine if the 511 system will provide the following information/ functionalities:

- Travel Time or Other Enhanced Traffic Information (e.g. Alternate Routes)
- Parking
- Personalized / Customizable Services
- Points of Interest
- Highway Advisory Radio (HAR) content
- VMS / DMS content

4. Telephone System

As per the Guidelines, key telecommunication elements of a 511 service allows the system to accept calls, interact with the users, process queries and commands and provide useful information back to the callers.

Accepting calls – The service should be capable of accepting calls from both wireless and landline phones, wireline from the desired cities and counties with "over coverage" in Maryland counties for wireless carriers based on switch geometry.

User Interface – The telephony system user interface shall be fully voice-activated and based upon state-of-the-art speech recognition technology, with touchtone backup capability and voice shortcuts to allow easy navigation for regular callers while minimizing call length.

The Washington metropolitan area 511 Traveler Information System should be a privately hosted network-based system, that is the system should not be on premise at an agency in the region. Availability for this system should be 24 / 7 / 365. The system should be scalable, easily able to manage call transfers and designed to incorporate floodgate messages at all levels of the menu structure.

A Conceptual Menu for 511 in the Washington metropolitan area is shown in Figure 4 for illustrative purposes to allow stakeholders to visualize how the menu tree could be structured.

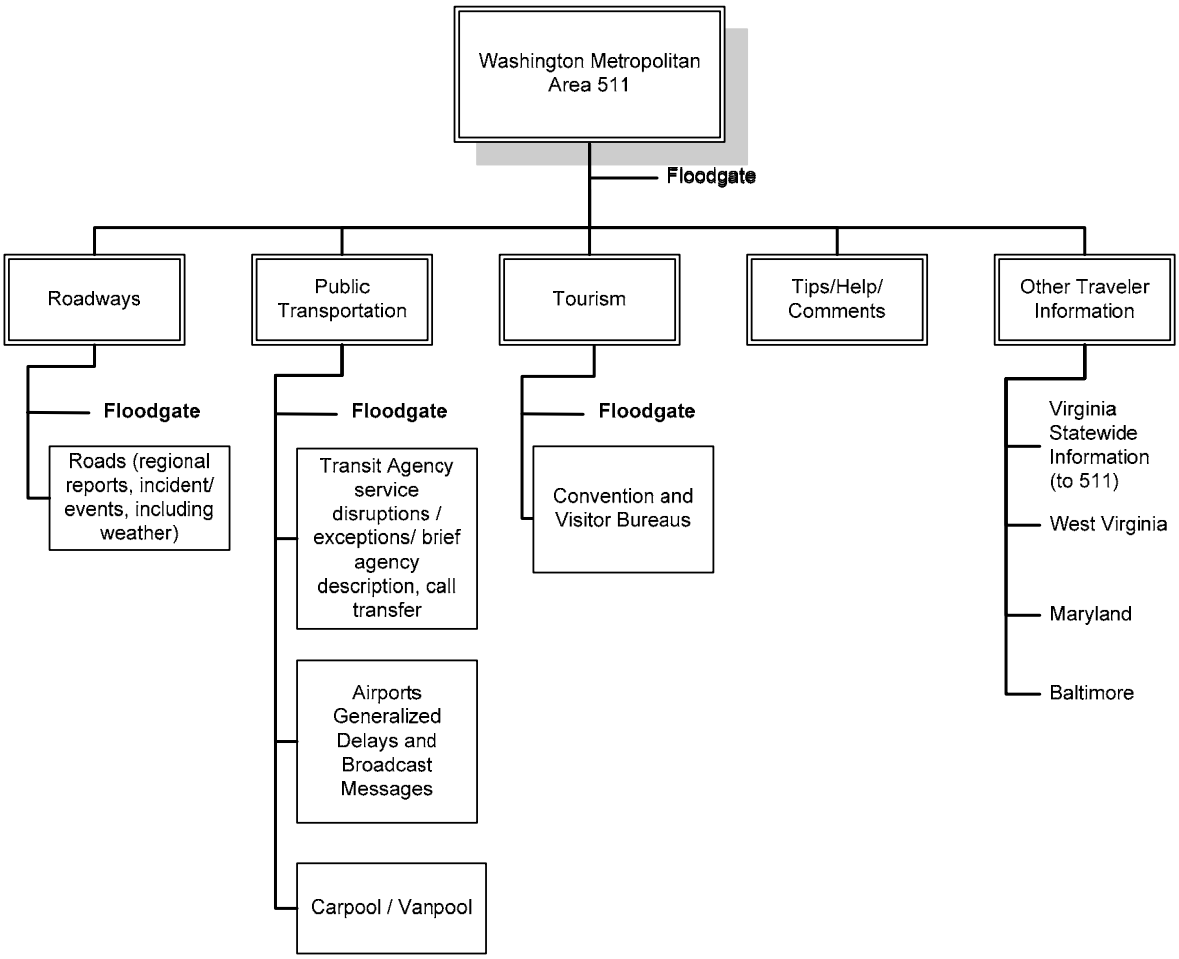


Figure 4 – 511 Conceptual Menu

5. Call Routing

From the Guidelines, a successful 511 service has seamless and reliable call routing and these should go virtually unnoticed by the user – the call goes through and the call gets answered. Call routing and carrier coordination is not a trivial matter, for both wireline and wireless carriers.

When 511 is dialed on a wireline phone, the call is received by the telephone company central office and translated into a 7 or 10-digit number, where the call is answered by an automated 511 system.

For wireless calls when 511 is dialed at the handset, the call is received by a cellular tower and carried to a switch where the 511 code is translated into a 7 or 10-digit number, where the call is answered by an automated 511 system. Each of these routings has various cost implications associated with them.

With an operational service in Virginia as of February 1, 2005, there are many telecommunications issues related to initiating 511 service in the region. The calling areas that telecommunications carriers established – Local Access and Transport Areas (LATAs), central offices and switches – do not neatly follow political boundaries and jurisdictions.

5.1 Wireless

There are five major wireless carriers (Verizon, Cingular / AT&T Wireless, Sprint PCS, Nextel and T-Mobile) and many smaller wireless carriers to coordinate routing of 511 calls with. To insure proper coverage and that the traveler contacts the system that provides desired information in the region, routing of calls at the cell tower level may be necessary. Cell tower programming has cost implications for 511 in the Washington metropolitan area. Cell tower programming costs vary by carrier and can range from under a hundred dollars per tower to thousands of dollars per tower. In order to keep 511 calls pointed to the proper number for the Washington Area (versus say a future Baltimore or Maryland statewide 511 deployment) each tower on or near the coverage area border in Maryland would have to be programmed. This could be an expensive undertaking.

5.2 Wireline

Verizon is the dominant landline provider (one of the incumbent local exchange carriers or ILECs), but there are countless other competitive local exchange carriers (CLECs), such as Starpower, Sprint, Cox and Comcast. The DC Public Service Commission regulates 11 ILECs and 189 CLECs – 41 of whom provide service. The Virginia State Corporation Commission regulates 14 ILECs and 191 CLECs throughout the state. The Maryland Public Service Commission regulates categorizes telecommunications companies somewhat differently and regulates 132 ILECs and 92 resellers of local service. This may sound daunting, but most local wireline service is provided by a few large telecommunications carriers. Most landline providers

charge for 511 call translations. The preferred fee structure for a deployer is a one-time charge with no recurring (monthly) costs. However, the costs can vary significantly by carrier.

5.3 Access for the Hearing Impaired

An emerging issue for 511 is the accessibility of systems and information by the hearing impaired. For example, a caller to the 711 relay service for the hearing impaired wanted information from the Tampa 511 service and the 711 operator in a facility in Miami connected the hearing impaired caller to information from the local Miami 511 service. To ensure access to the disabled community, the "back door" number to the service should be publicized to enable the hearing impaired (the caller) to access traveler information that they desire. Additionally, the relay center should also know what each of the back door phone numbers are for the states and cities they serve.

5.4 Payphone and Private Branch Exchange (PBX) Access

511 may not be accessible due to default manufacturer settings in PBX systems that companies and institutions utilize. Most would need to dial "9" before dialing 511 or may need to use the full 7 or 10-digit phone number initially. A page on the co-branded website noting the PBX access issue with instructions on making the programming changes or directing companies to contact their PBX manufacturers should be sufficient to address this issue.

The Committee may wish that payphones provide access to 511 to serve all socio-economic strata of the population. This is an especially important consideration for transit users. The number of payphone providers in a 511 service area usually outnumbers CLECs as some payphone providers may only own one payphone. Again, Verizon is the dominant payphone provider in the region. Offering payphone access also has cost implications for the service and has not been a focus of any of the 511 deployers to date.

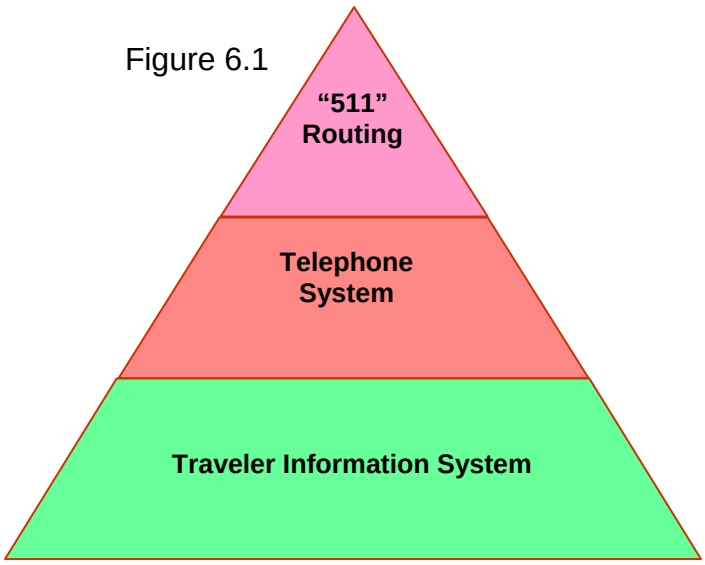
6. Business / N11 Environment

From the Guidelines, basic services should be no more than the cost of a local call and the deploying agencies should expect to fully fund the 511 service and its level of information for the foreseeable future. Advertising and sponsorship are acceptable, as long as they do not interfere with the user's primary intent for calling the service. Fee-generating premium or enhanced services are also acceptable, though a market for these services has not been established yet. As discussed in Section 6.2, currently, no 511 service has established a positive revenue stream through sponsorships or premium services, though VDOT is testing a variation of this business model with their statewide deployment.

6.1 Operations and Maintenance Costs

511 essentially is the "speed dial" for transferring calls to a traveler information system as seen in Figure 6.1. The routing of 511 calls usually involves telephone switch or central office programming to direct calls appropriately and, with some telecommunications carriers, recurring monthly or annual charges. IVR telephone systems allow access via voice recognition or keypad input to information developed from transportation network data by a traveler information system. There are costs associated with each of these steps up the 511 hierarchy.

Figure 6.1



Operations and maintenance expenditures associated with 511 services may increase over time if, as is expected, usage builds due to the network effect of having more and more 511 systems and their marketing efforts resonating with travelers.

511 deployers do not all account for their costs in a similar manner, so an "apples to apples" comparison between services and similar states and regions can be difficult. The Coalition has done some cost research which is contained in the Value of Deploying 511 document (http://www.deploy511.org/docs/511_Value.pdf). The services surveyed for that document were rural statewide services and this cost information has little applicability when considering costs for 511 services in the Washington metropolitan area.

To get a better picture of operations and maintenance costs that the Washington 511 service can expect, one must look at the existing 511 systems serving metropolitan areas:

- Sacramento
- San Francisco Bay Area
- Orlando
- Southeast Florida (Miami, Fort Lauderdale and West Palm Beach)
- Tampa
- Cincinnati

The above services were contacted about costs incurred to operate and maintain their systems and the source of these funds. Responses were received to our inquiries from most of these deployers.

The San Francisco Bay Area spends approximately $6 million per year offering 511 from Surface Transportation Program (STP) and local match funds. Orlando is in the process of upgrading its 511 service through the iFlorida Model Deployment with an additional $500,000 for system planning and design and application development and testing and $265,000 per year for operations personnel and telephone service minutes. The Southeast Florida 511 service costs FDOT, the Florida Turnpike and the Miami-Dade Expressway Authority approximately $1 million per year with funds from those agencies. FDOT is upgrading the service with a regional transit information database partially funded by transit agencies serving the region. Tampa is spending $8.2 million for ATIS and the Intelligent Transportation Infrastructure Program over 5 years with $7 million from FHWA and $1.2 million of state funds. Cincinnati recently switched the provider of its 511 service and incurred system development costs of $400,000 and expected operations and maintenance costs of $60,000 per year from Ohio and Kentucky state funds. When the Cincinnati service was launched in 2001, it utilized a combination of National Highway System (NHS) and Congestion Mitigation and Air Quality (CMAQ) funding.

The above cost information highlights the disparity of costs reported to the Coalition, but does give the Washington area stakeholders a number of data points to consider. Gathering the above information, PBS&J also realized that the above deployers did not account for all their costs, especially agency labor associated with these 511 systems, but nevertheless this data is important for consideration in the implementation of 511 for the Washington metropolitan area.

It would be safe to say that a stand-alone 511 system for the Washington area would likely cost about $1 million for O & M, whereas a shared system (with Virginia) has the potential to be measurably less expensive.

6.2 Identification of a Business Model

The Coalition's Deployment Assistance Report #1: Business Models and Cost Considerations (http://www.its.dot.gov/511/511_Costs.htm) notes that "public sector funding is likely required for near-term implementation and continued operations" of 511 services. To date, no sustainable, innovative business models for 511, and ATIS in general, have been utilized.

VDOT's travel services offering in the statewide implementation of 511 presents perhaps the best opportunity to explore an alternative business model for 511 services.

VDOT is seeking sponsors to advertise in the initial greeting and with listings under travel services on the telephone service and on banner ads on the website. A six-month trial to test the business environment and response from advertisers begins when the statewide service is launched in February 2005. The generation of advertising revenue from 511 services is hoped to defray a portion of the cost for the entire service. Primarily, the revenue must fully support the Travel Services feature of the 511 system or that feature will be removed as it is not viewed as a core service or responsibility of VDOT's. Even if VDOT's trial is successful, VDOT will continue to provide most of the resources for 511 services in Virginia.

Public relations and marketing should be involved with this process as a key partner. They should help advertisers manage the messages and to sell the space available ensuring that 511 messages are consistent throughout. Of course, with cross branding and advertising partnerships each organization risks potential damage to their image if something negative becomes associated with either 511 or the advertiser.

In the mid- to late 1990s, a business model that was in favor with the travel information industry would allow the system to generate major revenues to offset the costs to public sector agencies in offering traveler information. The Washington area has experience with this business model through Partners in Motion, as discussed in Section 6.4. Today, that model is in disfavor in the ATIS industry, because it was not supportable. The exception is the recent RFP from the San Diego Association of Governments (SANDAG) for an ATIS with 511 telephone and website services. This RFP was met with skepticism by the industry, which does not believe the business model to be financially viable in the long-term.

Implementation of 511 services in the Washington metropolitan area should anticipate public sector funding to provide these services to travelers.

6.3 Funding Strategy and Sources

PBS&J understands that it is the intent of the region to use ITS earmark funding for the 511 service that require a 50% (dollar for dollar) match including a 40% match from non-federal sources (20% of the total project costs) and 60% (30% of the total project costs) from other sources including other federal funds / projects. The entire ITS earmark program is being reviewed by U.S. DOT and may not continue, or at least continue in its current form, under reauthorization.

511 services in other metropolitan areas, have successfully utilized FHWA, STP, NHS, CMAQ and agency funding – including from transit and toll agency partners. An example of the use of CMAQ funds in the region is the $1 million per year that DDOT utilizes for the Roadway Operations Patrol – an emergency service patrol that assists motorists.

All of these funding sources merit examination for their applicability in the provision of 511 traveler information services for the Washington metropolitan area. The stakeholders in the region have an opportunity to fund the 511 services in a unique multi-agency manner across state lines and modes. Currently, the only other metro area / multi-state 511 system in the country is in Cincinnati, which has a long history of working cooperatively to share funding and operational resources.

The 511 service in Southeast Florida is supported by the local Florida DOT District, the Miami-Dade Metropolitan Planning Organization, the Miami-Dade Expressway, the Florida Turnpike and three transit agencies. These agencies made a decision years ago to support ATIS through line items in their agency budgets to better serve their customers.

6.4 N11 "Lessons Learned"

The Washington, DC metropolitan area has experience with other N11 services besides 911 and 411 that can help in its development of plans for a 511 implementation. The Washington Metropolitan Police Department (MPD) offers 311 for access to the police in non-emergency situations. The City of Baltimore offers 311 for access to the police in non-emergency situations and other city services. The previous Partners in Motion traveler information project offered access to some wireless telephone callers to its information via #211. On October 5, 2004, Mayor Anthony Williams announced that 211 was available for District residents to receive social services through the District's Department of Human Services. While each of these abbreviated dialing codes are not directly relevant to developing and supporting a 511 service, they do hold some good local experience and background for the region.

311 Experience

Washington, DC

Washington, DC's 311 service became operational in September 1999. Prior to implementing 311, the city had a 7-digit police non-emergency telephone number which the public was using for non-emergency related issues. Over the years, 311 has become highly utilized with over one million calls placed to 311.

There are still many instances in which individuals are calling 911 for non-emergency situations. Citizens are reminded to call 311 to report situations that are not serious, not life-threatening or not currently in progress. The District launched a public education campaign that encourages residents to "make the right call -- 311 for police non-emergencies." 311 was advertised with posters on Metro buses and trains, radio commercials and the city government website. Informational and promotional materials were also made available to businesses and community groups.

Fees to fund 911 access are collected by Verizon as a part of the regular billing for residential phone service. Verizon also controls the expenditure of these funds for 911 service, equipment and upgrades. Legislation that would transfer control of these fees to the District government is pending before the City Council. This legislation is a critical step in allowing the MPD to make further improvements to their 911 and 311 systems. It would be highly unlikely that this type of funding mechanism would be possible to support 511 services in the Washington, DC metropolitan area.

MPD and the Office of the Chief Technology Officer plan a merger of various call taking operations in the city into a 311 combined city services and police non-emergency system at a consolidated call center. The center has goals to improve service delivery, realize cost reductions and economies of scale, better enable employee recruitment and retention and coordination among public safety agencies with enhanced facility security and improved 911 and 311 services.

On August 3, 2004, the City awarded a contract to build the final phase of the Unified Communications Center. The $43 million contract is one of the largest construction contracts ever awarded by the District and the projected completion date for the facility will be in the fall of 2005.

Baltimore

Baltimore became the first city to have an operational, non-emergency number with support from a Community-Oriented Policing Services (COPS) Non-Emergency Telecommunications Pilot Project grant on October 1, 1996. The following year, after a request by the U.S. Department of Justice's Office of Community-Oriented Policing Services and an endorsement by President Clinton, the Federal Communications Commission designated 311 as the national 3-digit number to be used for all future call centers. The Commission stated that use of this code could improve the effectiveness of 911 emergency services by alleviating congestion on 911 circuits.

311 has been a resounding success for Baltimore. 911 call volume has been reduced and 311 has allowed the emergency phone system to operate more efficiently and effectively. The first two years of Baltimore's 311 service were paid from the COPS federal grant and with City funds since.

The Baltimore Police Department recorded the following improvements since 1996:

- Average answer time for 911 calls was reduced by 50 percent
- Percentage of 911 calls where the caller hangs up were reduced by 50 percent
- Average time between incoming 911 calls increased from 70 to 143 seconds
- Percentage of 911 calls receiving a recorded message was reduced from 18 percent to 4 percent

- Average "total position busy" time was reduced by 169 hours each month and the percentage of time operators were busy on calls was reduced from 59 percent to 41 percent
- From September 1996 to September 1999, the number of police calls dispatched to field units was reduced by 12 percent

Prior to implementing 311, the Baltimore Police Department did not have a 7-digit non-emergency telephone number for citizens to dial. If you needed the police in Baltimore, you dialed 911.

The University of Cincinnati surveyed Baltimore residents and concluded that the citizens had an overall favorable view of 311 services. The citizens generally agreed that 311 improves city services, improves police community relations, should be used for non-emergency calls only and leads to fewer non-emergency calls to 911. Over 90 percent of respondents felt that 311 call-takers were both polite and helpful and were overall satisfied with the service provided.

On March 25, 2001, Baltimore introduced the 311 One Call Center, joining existing police and fire emergency communications facility. The One Call Center was staffed with existing City call-takers, relocated from other City operations, as well as new hires. These 75 agents handle over 5,000 calls per day, 24/7/365. With the One Call Center, Baltimore also introduced a new 311 system combined with other City services beyond private safety. This new 311 system utilizes customer relationship management software and provides for both centralized and distributed call intake and work order management throughout the City.

Mayor Martin O'Malley reported in 2001 that Baltimore had received 560,574 calls to its 311 line. When Mayor O'Malley expanded 311 to include easy public access to all non-emergency government services, it was estimated that Baltimore saved $13.2 million by eliminating redundancy, overtime and extraneous expenditures.

Partners in Motion

From July 1997 to December 2002, the Washington region was served by the Partners in Motion advanced traveler information system. VDOT oversaw the project for stakeholders in the region and travelers could access information through a website and IVR telephone service. The access number was #211 for some wireless callers and (202) 863-1313, and later (301) 628-4343, for the general public. Throughout the course of the project, the Partners in Motion telephone service received over a quarter of a million calls with a peak call volume of 13,611 calls in May 2000. The calls received by the telephone service are shown in Figure 6.5 below:

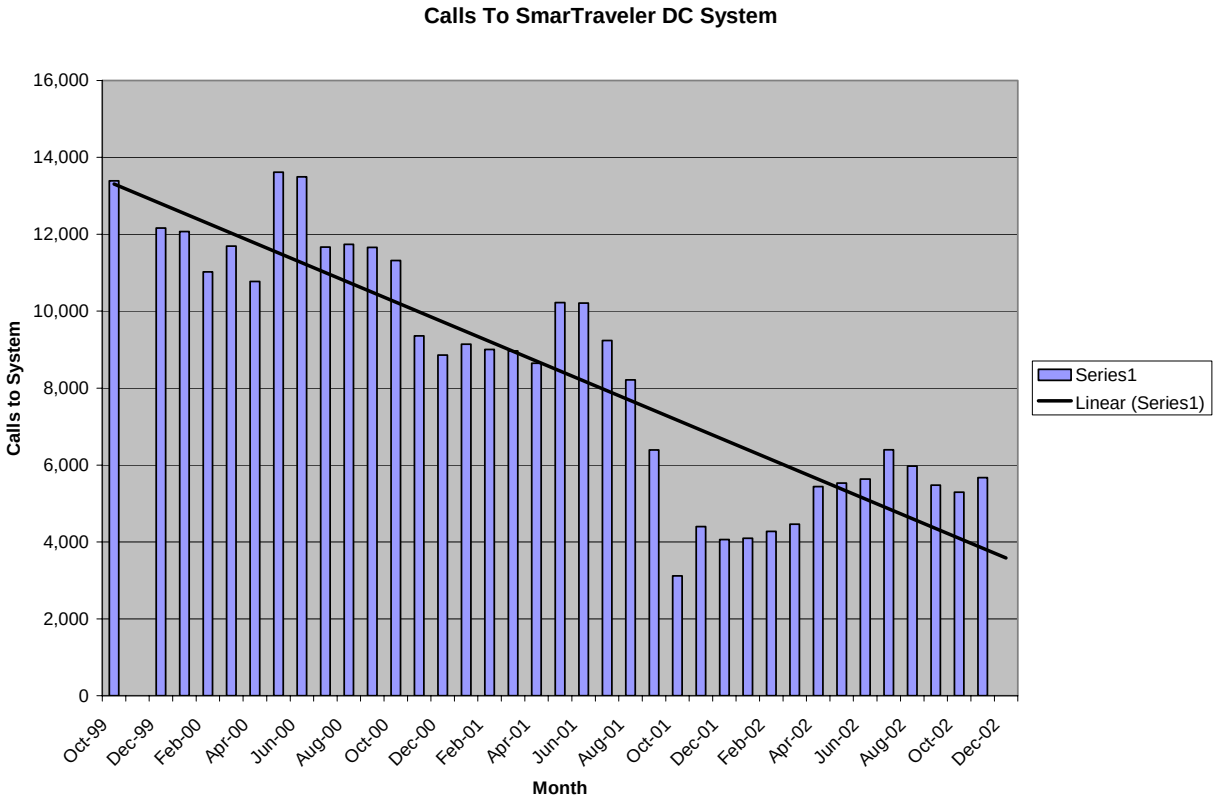


Figure 6.5 – Partners in Motion Call Volumes

Over time, calls to the service decreased and this serves as an important lesson to whoever implements 511 and its need for sustained marketing to consumers. Granted, Partners in Motion did not use the "easy to remember" N11 access code for all callers, but website usage showed a similar trend over the course of the project as well. When 511 services are implemented, deployers can see a 300 to 600 percent increase in the number of calls to their legacy systems.

Partners in Motion had a business model that was in favor when it was implemented where ATIS would generate major revenues to offset the costs to public sector agencies in offering traveler information. There are no 511 services in place today relying on this failed business model.

6.5 Applicability to 511

When 511 services are offered in the Washington metropolitan area, educating consumers on the types of information available through 511 is paramount. The other N11 services and the kinds of information / assistance available should be documented on the website where system usability is demonstrated. This will help to alleviate potential confusion as to what is available from 211 and 311 on the part of consumers and help "brand" the 511 information offering.

7. Website

Version 2.0 of the Guidelines states that there is a good opportunity for co-branding with websites, but does not have Guidelines addressing websites per se. Future versions of the Guidelines will probably cover this topic in more detail, so we look to apply lessons learned from other urban areas. The integrated website should be easy to navigate and accessible using a standard Internet browser. More detailed information may be available on the website do to its graphical, rather than aural, interface. The information on the Washington metropolitan area website should be consistent with information available on the 511 telephone service. The interface should be designed to minimize load times and the number of "mouse clicks" necessary to view the desired information. All links and icons should provide context help in the form of "mouse-overs" that describes the function and/or purpose of the corresponding link or icon. The overall visual design of the interface should be easy to read, using brief, non-technical language that is readily understandable by the average user, and easy to use for a user with basic computer skills.

8. Issues to Complete the Implementation Plan

The Committee has a major issue to decide about offering 511 services in the Washington metropolitan area before development of the Implementation Plan. That issue is should the region's 511 service be an extension of the 511 Virginia service or a separate, entirely independent system.

A regional system that is an extension of the 511 Virginia system will have significantly reduced costs compared to a "built from scratch" system. It is easier to add data, content, telephone ports and website capacity than to invest development costs to create these systems.

There will need to be modifications to the existing 511 Virginia system's menu structure and wireless and landline call routing to route calls to a Washington metropolitan area 511 greeting.

An independent system, while more costly, can be designed to address the specific needs of travelers in the region. There may also be "control" and access issues that could be alleviated with an independent system. The independent system should be able to connect to the 511 Virginia system via call transfer and web hyperlinks and / or utilize much of the data used to populate the Northern Virginia region database supporting the statewide system.

9. Appendix A – Washington Metropolitan Area 511 Facility List

DISTRICT OF COLUMBIA
Interstates

I-295
I-395

Major Interstate Connectors

Canal Road
Connecticut Avenue
Constitution Avenue
East Capitol Street
Georgia Avenue
Independence Avenue
Massachusetts Avenue
New Hampshire Avenue
New York Avenue (US 50)
Pennsylvania Avenue
Rhode Island Avenue
South Capitol Street
Suitland Parkway
Wisconsin Avenue
DC 295

Bridges
South Capitol Street Bridge (Frederick Douglass Bridge)
Sousa Bridge
(See Maryland/Virginia)

VIRGINIA
Interstates

I-66
I-95
I-395
I-495

Major Interstate Connectors

Dulles Greenway

Route 7
Route 28 (Centreville Road)
Route 123 (Ox/Chain Bridge Road)
Route 193 (Georgetown Pike)
Route 234
Route 236 (Little River Turnpike)
Route 243 (Nutley Street)
Route 244 (Columbia Pike)
Route 267 (Dulles Toll Road)
Route 400 (George Washington Memorial Parkway)
Route 620 (Braddock Road)
Route 645 (Stringfellow)
Route 3000 (Prince William Parkway)
Route 7100 (Fairfax County Parkway)
Route 7900 (Franconia/Springfield Parkway)
US 1
US 29 (Lee Highway)
US 50

Bridges

Virginia

Occoquan River (Woodbridge)

Virginia / DC Bridges

Key Bridge
Chain Bridge
Theodore Roosevelt Memorial Bridge
Arlington Memorial Bridge
14th Street Bridge

- George Mason Bridge
- Rochambeau Bridge
- Arland D. Williams Bridge

Virginia / Maryland Bridges

Woodrow Wilson Bridge
US 15 Bridge at Point of Rocks
Whites Ferry
American Legion Memorial Bridge

MARYLAND
Interstates

I-70
I-95
I-270
I-295
I-370
I-495

Major Interstate Connectors

Baltimore-Washington Parkway
Clara Barton Parkway
Georgia Avenue
Germantown Road
Great Seneca Highway
Massachusetts Avenue
New York Avenue/ John Hansen Highway
Route 4 (Pennsylvania Avenue)
Route 5 (Branch Avenue/Leonardtown Road)
Route 6 (Port Tobacco Road/Charles Street)
Route 17
Route 27 (Ridge Road)
Route 28 (Darnestown Road)
Route 40/70
Route 97 (Georgia Avenue/Roxbury Mills)
Route 185 (Connecticut Avenue)
Route 210 (Indian Head Highway)
Route 214 (Central Avenue)
Route 225 (Hawthorne Road)
Route 228
Route 229 (Bensville Road)
Route 231 (Prince Frederick Road)
Route 340
Route 355 (Rockville Pike)
Route 586 (Viers Mill Road)
Route 650 (New Hampshire Avenue)
Suitland Parkway
University Boulevard
US 1 (Rhode Island Avenue)
Major Interstate Connectors (continued)

US 15
US 29 (Colesville Road)
US 301 (Crain Highway)
Wisconsin Avenue

Bridges

Bay Bridge

10. Appendix B – Route Segments

Interstates

I-66

DC Line to Fairfax Drive
Fairfax Drive to I-495
I-495 to Route 50
Route 50 to Route 234

I-70

Frederick East to Baltimore
Frederick West to Pennsylvania State Line

I-95

Beltway to Baltimore
Capital Beltway to US-50
US-50 to the Wilson Bridge
Wilson Bridge to the Mixing Bowl
Mixing Bowl to Lorton
Lorton to Dale Boulevard or PW Parkway (exit to Potomac Mill)
Dale Boulevard or PW Parkway (exit to Potomac Mill) to Route 234

I-270

Beltway to I-370
I-370 to Frederick

I-295 / DC-295

Pennsylvania Avenue North to US-50
US-50 North to Beltway
Pennsylvania Avenue South to Beltway

I-370

I-395

Southeast / Southwest Freeway
14th Street Bridge to Beltway

I-495

The Wilson Bridge to the Mixing Bowl
The Mixing Bowl to I-66
I-66 to the American Legion Bridge
The American Legion Bridge to I-95
I-95 to the Wilson Bridge.

Other Routes

Inside / Outside the Beltway