Camden County Travel Management Coordination Center
Demonstration Project NJ-26-7065

CONCEPT OF OPERATIONS

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RUTGERS
Edward J. Bloustein School
of Planning and Public Policy

Alan M. Voorhees
Transportation Center

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Revision Table

Filename	Version	Author	Comments
Camden TMCC ConOps-rev002.doc	0.02	PChan	Initial draft for Internal Review.
Camden TMCC ConOps-rev002a.doc	0.02a	PChan	Added operational scenarios.
Camden TMCC ConOps-rev003.doc	0.03	PChan	Submitted Draft to Client – 05/22/08.
Camden TMCC ConOps-rev004.doc	0.04	PChan	Submitted Draft to Client – 05/28/08. Only up to and including Section 3.2.
Camden TMCC ConOps-rev004.doc	0.04a	PChan	Submitted Draft to Client – 05/28/08. Full Draft.
Camden TMCC ConOps-rev005.doc	0.05	PChan	Internal draft review – 05/30/08.
Camden TMCC ConOps-rev005-be2.doc	0.05b	BEisenhart	Internal draft review – 05/30/08.
Camden TMCC ConOps-rev006.doc	0.06	PChan	Submitted Draft to Client – 05/31/08.
Camden TMCC ConOps-v1.0Final.doc	1.0	PEO	Submitted Final to Client – 06/03/08
Camden TMCC ConOps-v1.1Final.doc	1.1	PEO	Final Cleanup – 06/03/08

1 Scope and Introduction

In March 2007, the Camden County, NJ Workforce Investment Board (CCWIB) was one of eight sites selected by the United States Department of Transportation (US DOT) for the Enhanced Human Service Transportation Models Joint Demonstration as part of the United We Ride (UWR)/Mobility Services for All Americans (MSAA) initiative (CFDA Number: 20.514 and Opportunity Number: DOT-FTA-TRI-0002). As one of the sites, a grant was awarded to CCWIB to perform Phase 1 – System Development and Design. This document satisfies one of the stated deliverables for Phase 1, a Travel Management Coordination Center (TMCC) Concept of Operations.

1.1 Purpose

This document presents the Concept of Operations (ConOps) for the proposed Camden County TMCC. This document defines the user needs that the proposed system will address. Accepted system engineering processes detail that requirements should only be developed to fulfill well-defined user needs. The first stage in this process is to identify the ways in which the proposed system will be used. For this proposed system, this entails identifying the various functions that the Camden County TMCC will perform to assist the transportation providers in the region in performing their duties.

This ConOps provides the reader with:

- A description of the scope of this system;
- An overview of the current situation and systems, including its current limitations and problems;
- A description of the proposed system; and
- Elements that serve as the foundation for system requirements and provide the justification for the desired functions.

This document is intended for:

- Transit operations managers;
- Transit operations personnel;
- Transportation engineers; and
- System integrators.

The first three categories of readers will find this document useful to understand how the proposed system will meet their operational needs and to determine their roles and responsibilities in the procured system. This document also serves as an overview on the limitations of the proposed system.

The last category of readers will find this document useful in order to gain a more thorough understanding as to why the more detailed functional requirements (as specified in other documents) exist.

1.2 Background

Located across the Delaware River from Philadelphia, Camden County is the eighth most populated county in New Jersey, with 508,932 residents in 2000 (See Figure 1-1). In 2000, Camden County's median household income was $48,097. Over 10% of the County's population lives in poverty. According to the Camden County Board of Social Services (CCBSS), in July 2005, 58,143 households were receiving public welfare. Sixteen percent of Camden County's population are individuals over the age of 60, with over 40% of the seniors (defined as over age 64) in the County having some form of disability; and more than 8% living below the poverty line. Camden County has a relatively small population with disabilities, representing only 17% of the population.

As Table 1-1 indicates, the characteristics of Camden County's population, often indicative of the need for public and human services transportation resources, are proportionally in line with the nation as a whole, with the exception of persons with disabilities and households without vehicles. In contrast, Camden County has a higher concentration of veterans (12.1%) than the state or nation.

Table 1-1: Camden County Characteristics in Comparison to the Nation*

	Camden	US
Older Adults (over 60)	82,197 (16.2%)	45,797,200 (16.3%)
Disabled	88,143 (17.3%)	99,492,496 (35.4%)
Over 64	24,547 (40.1%)	13,978,118 (41.9%)
Individuals Living in Poverty	52,121 (10.4%)	33,899,812 (12.4%)
Over 64	4,929 (8.1%)	3,287,774 (9.9%)
Median Household Income	$48,097	$41,994
Veterans	45,113(12.1%)	26,403,703 (9.4%)
Without Vehicles	23,439 (12.6%)	n/a

* *Source: 2000 Census. Percentages based on total population. If an age bracket is defined, the percentage is based on total population of that age bracket.*

To service this transportation-disadvantaged population, Camden County is served by an extensive transportation network comprised of four primary types of transportation providers: state and regional public transportation, county-based services, municipal shuttle services, and non-governmental organizations. These providers offer transportation services using the full spectrum of modalities including rail service, fixed route bus, flexible route shuttles, advance reservation van and bus service and advance reservation livery service. Human services transportation is carried out using all of these types of providers and modalities.

These transportation providers offer the transportation-disadvantaged population with access to shopping, education, employment, public services, recreation, and non-emergency medical care. However, there are many gaps in the services provided to this population, including a limited level of coordination among the transportation providers.

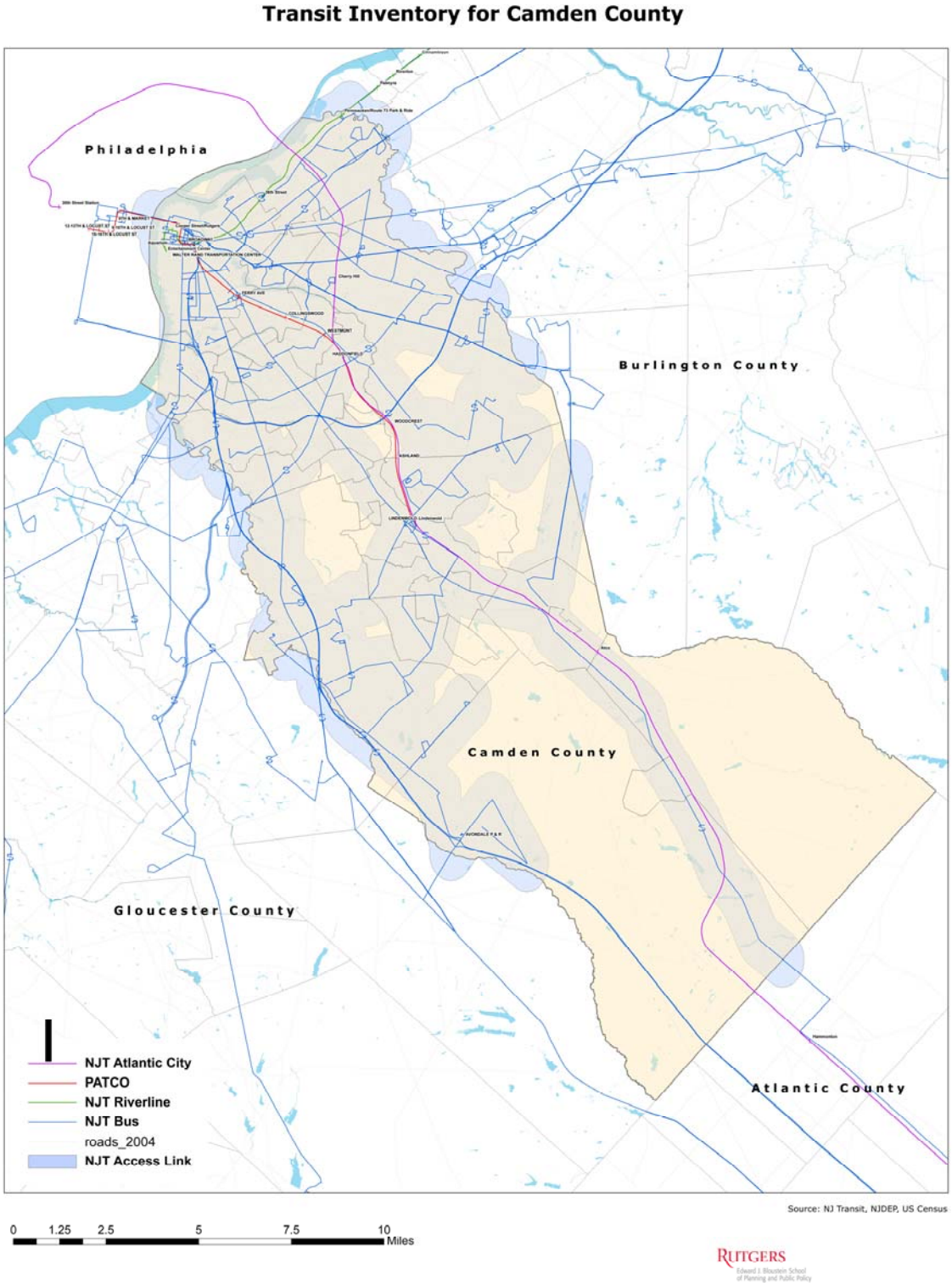

Figure 1-1: Map of Transit Inventory for Camden County

1.2.1 Proposed System

The Camden County Workforce Investment Board (WIB), with the support of its local elected officials, local and regional transportation providers, state and local human services agencies, and in conjunction with the local United We Ride planning effort, is working with Camden County and the Alan M. Voorhees Transportation Center (VTC) at Rutgers University to develop a Travel Management Coordination Center (TMCC) that coordinates community transportation services through a comprehensive, technology-driven brokerage model.

Camden County's project is designed to create access for all transportation-disadvantaged Customers to all local and regional modes of transportation across a multitude of providers and Operators including public transportation, county and municipal and faith-based organizations. This project builds upon the 2006 Camden County United We Ride Human Service Transportation Coordination Plan that identified transportation service needs, gaps and opportunities.

Unique to Camden County's TMCC design is the establishment of a Faith-Based Foundation Collaborative for Community Transportation that will provide additional transit services particularly in those areas where limited transportation exists.

The Camden County WIB is working to design a TMCC that will address the following issues, critical to the county:

- Facilitate greater coordination within the Camden County transportation provider network;
- Improve Customer access to, and ease of use of, Camden County human services and the overall transportation system; and
- Simplify operational procedures across various Camden County transportation providers.

The CCWIB will achieve this through a phased planning approach that focuses on three primary elements of this system:

- **Identify the Most Effective Brokerage Model.** The project will explore the benefits, challenges, required conditions and cost effectiveness of implementing various brokerage models including supportive technologies.
- **Increase Access to Public Transportation.** The project will determine "best fit" technologies and other options to increase access by the transportation disadvantaged. Specifically, the project will investigate how to integrate the technologies and options to facilitate greater access to and efficient use of public transportation by key populations.
- **Coordinate More Thoroughly with Non-governmental Organizations (NGOs).** The project will explore methods for using technology to integrate existing NGO transportation providers, particularly the faith-based community, into the coordinated system.

Through this planning process, the Camden County stakeholders will establish a TMCC design that is deployment-ready for the Title XIX medical transportation, and replicable and scalable to support integrating services to low-income seniors and individuals with disabilities, as well as the general public for all travel needs. As part of the deployable model, necessary regulatory policies and procedural structures, as well as interagency relationships for supporting coordinated Medicaid transportation will be developed. A model planning process will also be established which can be used to integrate other transportation services into the TMCC.

Similarly, this planning process will provide other regions with valuable information and a model process for developing brokerage-based TMCC models. The process will also identify specific state policies and issues that impede effective inclusion of human services transportation into a regional transportation system. This will potentially provide other local areas and regions in the state with a more conducive environment for developing effective local transportation systems that incorporate human services transportation.

1.3 Document Overview

This plan is divided into five (5) sections to support the various audiences for this document.

- **Section 1: Introduction.** This section, Section 1, provides introduction and background information about this document, its purpose, the audience, a document map and references.
- **Section 2: Current Conditions.** Section 2 describes the current system and services that exist today. It also describes the situation that is motivating the development of the proposed system.
- **Section 3: Proposed System.** Section 3 describes the user needs that the system will satisfy and describes the proposed system in a high-level manner, indicating the operational features that the system will provide.
- **Section 4: Operational Scenarios.** Section 4 provides several operational scenarios to describe how the proposed system should function and how it interacts with each stakeholder.
- **Section 5: Analysis of Proposed System.** Section 5 provides a qualitative summary of the benefits to be provided by the proposed system, and of the disadvantages and/or limitations of the proposed system. This section also discusses the proposed approach for implementing the proposed system.

1.4 Resources, References and Stakeholder Outreach Summaries

In developing this document, input from various stakeholder groups, and numerous coordination and transportation studies and reports were solicited and used. The reports used focused on human service coordination needs for the region.

- Camden County United We Ride Human Service Transportation Coordination Plan (2007)
- NJTRANSIT ITS Architecture Conformance Plan

To help further inform the design of the TMCC, the CCWIB facilitated more than a dozen focus groups with organizations and residents of the county. Discussions, surveys and listening sessions were held with representative stakeholders, both providers and users, to incorporate their needs into the TMCC concept. The specific list of outreach activities and resources that are incorporated into the substance of this concept are summarized in Appendix B.

2 Current Conditions

This section summarizes the transportation system as it currently exists in Camden County. This description of current conditions provides readers with an introduction to the problems faced by Camden County, and enables readers to better understand the need for the changes proposed for the system.

The section is organized as follows:

- **Current Transportation Systems.** Introduces the existing transportation system in Camden County.
- **Current System Users.** Describes how the transit Customers currently use the transportation system in Camden County.
- **Stakeholder Participation.** Summarizes some of the transportation issues currently faced by the population of Camden County.
- **Current Operational Constraints.** Summarizes the shortcoming of the current system that drive the need for improvements.

2.1 Current Transportation Systems

This section provides a profile of the major transportation providers that operate within Camden County. Since the characteristics of both providers and Customers are often a function of the mode of transportation, the section groups Camden County ***Providers*** and ***Customers*** by the following three categories of mobility:

- **Advance Reservation Demand Response.** This category includes services that may be operated on a curb-to-curb or door-to-door basis. The use of the term demand response refers, not in the purest sense to a trip scheduled in real time, but rather to vehicle runs that respond to variable trip origins and destinations that the Customer "demands".
- **Modified Fixed Route Subscription.** This category includes those services that may deviate from a set fixed route but generally provide repeat services to a base of Customers that are mostly the same from day to day.
- **Traditional Fixed Route Services.** This category includes a variety of bus and rail services that operate on a fixed route and time schedule that include local bus, interstate bus, light rail and heavy rail services.

Some providers operate services that fall into more than one of the mobility categories detailed above.

2.1.1 Advance Reservation Demand Response Providers

This section describes the three major Advance Reservation Demand Response Providers that serve Camden County: NJ Transit Access Link, Sen-Han Transit, and private livery companies. These Providers serve Customers that are unable to utilize fixed route

service; each service requires a reservation prior to service. Table 2-1 summarizes the differences between the Providers.

Table 2-1: Advance Reservations Demand Response Providers

	NJ Transit Access Link	Sen-Han Transit	Private Livery Companies
Customers	Certified Disabled	Senior citizens, persons with disabilities, veterans	Certified Medicaid recipients, persons with disabilities
Pickup Locations	Curb-to-curb. Within .75 miles of fixed route services.	Door-to-door.	Curb-to-curb.
Destinations	Within .75 miles of fixed route service	Medical facilities, employment sites, educational centers, nutrition sites, sheltered workshops, and personal	Ambulatory care.
Times of Operation	Dependent on local fixed route service	Monday-Saturdays, 4:30 AM to 1:00 AM	24 hours.
Reservations	7 days in advance. By pick-up time.	2-14 days in advance. By arrival time.	1-3 days in advance.
Reservation Portal	Statewide call center or web portal.	Telephone.	Telephone.
Funding Programs	None.	Title III Older Americans Act, FTA Section 5310 and 5311, and NJ Senior Citizens and Disabled Resident Transportation Act (Casino Funds).	Medicaid.

2.1.1.1 NJ Transit Access Link

NJ Transit provides ADA complementary paratransit service to serve individuals who by the nature of their disability are unable on a temporary or continuous basis to effectively use the accessible local bus or light rail services operated by NJ Transit. NJ Transit provides paratransit service to individuals, certified as unable to use fixed route service, and whose trip origin and destination are within three quarters (¾) mile of an NJ Transit fixed route local bus or light rail service. Paratransit fares are set equal to the price that fixed route service would charge for the same trip.

The service operates on a 7-day advance reservation basis and NJ Transit policy requires passenger pickup within 20 minutes before or after the Customer requested time of pickup. The NJ Transit Access Link staff provides trip reservations, first assignment of passenger trip scheduling, cancellations and Customer services. The contracted private Providers that operate the five Access Link regions make final (vehicle) Operator schedule assignments and changes; conduct Operator management, vehicle maintenance, and Operator dispatching. Dispatching includes the tracking of pickup and drop-off times. Mobile data computer (MDC) systems and an Automatic Vehicle Locator (AVL) system now facilitate this process.

2.1.1.2 Sen-Han Transit

Sen-Han Transit is the designated provider of County paratransit service in Camden County under the Senior Citizen and Disabled Resident Transportation Assistance Act Program (SCDRTAP), which is funded through the Casino Revenue tax. The service operates on a 48-hour advance reservation door-to-door basis and requires passenger pick-up not more than 60 minutes before the scheduled appointment and not more than 30 minutes after the scheduled return trip.

The Sen-Han transit staff provides Customer registration, Customer trip requests, vehicle scheduling and dispatching. Dispatching includes Operator contact through Nextel direct connect communications and an AVL (Comet Tracker) system that enables the Dispatcher to identify the location of the fleet vehicles in real time. Sen-Han provides the majority of service in an Advance Reservation Demand Response mode; however, a significant portion of the service is a Modified Fixed Route Subscription Mode, including subscription trips for supported employment and medical shuttles to Philadelphia and for intra-county medical trips.

2.1.1.3 Private Livery Companies

Sixteen livery companies provide ambulatory transportation services through the Medicaid Title XIX program administered by the Camden County Board of Social Services (CCBSS). The service operates on a 24 to 72 hour advance reservation basis for individuals certified as eligible by the CCBSS Medical Transportation unit. A rotation determines the trip assignment among Providers with contracts for specific sub-regional areas of Camden County and for performance of service to out of County and out of state destinations. The majority of the fleet operated by these companies is composed of non-accessible minivans and sedans designed to serve the Medicaid eligible ambulatory population. The larger companies maintain a 24-hour dispatch and are able to provide accessible transportation with wheelchair accessible vans and buses. At least one company, To-and-Fro Transportation, has both computer assisted scheduling and AVL capabilities.

2.1.2 Modified Fixed Route Subscription Providers

This section describes the major service providers in Camden County that offer services similar to fixed-route service, however with a number of varying differences to the traditional fixed-route service. These differences may include features such as operation on fewer days, provision of some door-to-door or curb-to-curb service, limited hours of service, or volunteer Operators. Table 2-2 summarizes the differences between these Providers.

Table 2-2: Modified Fixed Route Subscription Providers

	SJTA	Municipal Services	Faith Based Services
Customers	Employers, employees.	Varies by municipality. Most includes elderly and persons with disabilities, but may include general public.	Religious services, registered Customers
Pickup Locations	Employers, Transit stops or stations.	Some door-to-door.	-
Destinations	Employers, Transit stops or stations.	Shopping. May include medical, special events and nutrition locations.	Places of worship.
Times of Operation	-	Varies, but most are Mondays to Friday, 8:00 AM – later afternoon.	Sundays, and some weekdays.
Reservations	None. Generally scheduled.	Varies. Some are 24 hours, some are scheduled.	Telephone.
Reservation Portal	-	-	-
Funding Programs	No fares. Subsidized by employers, JARC grants, Transit Plus grants and CMAQ grants.	Various resources including municipal, County and CDBG funds	-

2.1.2.1 South Jersey Transportation Authority (SJTA)

SJTA is the designated provider of employment passenger transportation services for a regional area including Camden, Burlington, Atlantic, Gloucester, Cumberland, and Salem Counties. While most of its services operate on fixed routes, SJTA provides some door-to-door service on its evening trips and is constantly modifying routes based on changes in the passenger residential origins and employer destinations. SJTA also operates door-to-door service to the Veterans Hospital in Wilmington, Delaware.

SJTA provides service using vehicles ranging between 15-passenger to 35-passenger buses and employment routes are operated on a fixed route with a set time schedule. SJTA designed their routes to provide for transfers to and from stations on the NJ Transit River Line Light Rail service and key NJ Transit local bus routes. SJTA uses AVL to record bus stops, passenger miles, and vehicle condition.

2.1.2.2 Municipal Services

Twelve municipalities in Camden County operate passenger transportation services for transportation dependent persons. Most of these are limited to older persons, however some extend eligibility for persons with disabilities. The following are some common characteristics of these provider services:

- All operate from Monday through Friday between 8:00 AM and 5:00 PM with some operating 2-3 days per week;
- Most transport for general merchandise and food shopping trip purposes and tend to transport on a subscription trip basis and curb-to-curb service, with a limited number providing door-to-door service;
- All of the Providers limit their service to destinations within their municipal boundaries with limited shopping destinations in contiguous municipalities;
- All of the services operate four or fewer vehicles and most operate less than 4,000 annual vehicle hours;
- Virtually all of the municipal Providers use shared positions to cover reservations and their limited scheduling needs; and
- None of the Providers have two-way radio contact between the base office and vehicle Operators.

2.1.2.3 Faith Based Services

Faith Based service providers are predominately religious houses of worship with two not-for-profit religious organizations (Jewish Federation and Catholic Charities) that use their vehicles to provide transportation for their registered Customers.

The religious houses of worship predominately operate 1-2 vans, which they use on Sundays and generally 1-2 evenings per week for a few hours. Bethany Baptist Church has the largest fleet of vehicles including six (6) 15-passenger vans and three minivans. Two of the organizations, Jewish Federation and Bernard Dubin House, own larger

capacity 20-21 passenger minibuses that could prove to be useful in performing other forms of group ride transport since the major providers, including Sen-Han Transit and SJTA, have a limited number of larger vehicles.

2.1.2.4 Other Services

There are also a number of other transportation providers in Camden County. These providers can be summarized into three groups: nursing homes/assisted living facilities, human services organizations, and private Operators.

Nursing home/assisted living facilities generally provide transportation services only for their clients. The clients are generally elderly persons. The trips may be access to health/medical facilities, shopping, or personal business.

Human services organizations are generally private, non-profit organizations that provide services to disadvantaged populations. The transportation services are only for their clients and are usually to health/medical destinations.

There are also several private transportation providers in Camden County. Many provide medical transport and receive funding through the Medicaid program.

2.1.3 Traditional Fixed Route Service Providers

There are two providers of fixed-route transit in Camden County, PATCO and NJ Transit.

2.1.3.1 Port Authority Transit Corporation (PATCO)

PATCO operates a 14.2-mile rapid rail system with nine stations in New Jersey and four in Pennsylvania. It offers direct service between the Lindenwold Station in Camden County and Center City Philadelphia. The Walter Rand Transportation Center in Camden City provides connections between PATCO, 20 NJ Transit bus routes, and NJ Transit's River Line.

2.1.3.2 NJ Transit

In addition to its paratransit operations, NJ Transit operates several fixed-route transit lines in Camden County, which include the following:

- **River Line Light Rail Transit.** The River Line light rail transit system operates between Trenton, NJ and Camden, NJ. The River Line offers connections to NJ Transit's Northeast (rail) Corridor and SEPTA's R7 regional rail as well as Amtrak services at the Trenton Station.
- **Interstate Bus Routes.** NJ Transit operates 19 interstate fixed bus routes in Camden County to Philadelphia.
- **Intrastate Bus Routes.** NJ Transit operates 11 intrastate fixed bus routes in Camden County, 6 of which operate locally in Camden County and 5 that operate regionally predominately in South Jersey counties.
- **Atlantic City Rail Line.** The Atlantic City Rail Line provides service between Atlantic City and Philadelphia with Camden County stations in Atco,

Lindenwold, and Cherry Hill. Connections to PATCO service are also available at Lindenwold.

2.2 Current System Users

This section describes the relationship between system users, including Customers, vehicle Operators, Dispatchers and operations management. This section organizes the system users within mobility category and by the individual provider category.

2.2.1 Advance Reservation Demand Response

This section describes the system users of the three major Advance Reservation Demand Response Providers that serve Camden County. These Providers serve users that are unable to utilize fixed route service; each service requires a reservation prior to service. These Providers are NJ Transit Access Link, Sen-Han Transit, and private livery companies.

2.2.1.1 ADA Complementary Paratransit (NJ Transit Access Link)

This section describes the responsibilities of the primary stakeholders that use or operate the ADA Complementary Paratransit (NJ Transit Access Link). These stakeholders are the paratransit Customer, the paratransit vehicle Operator, and the paratransit Dispatcher. These sections illustrate how the roles of various stakeholders differ and correlate to one another.

2.2.1.1.1 ADA Complementary Paratransit Customer

The certified Access Link Customer must contact the Access Link Customer Service office at least 7 days prior to the time of desired trip pickup. The Customer has the following responsibilities:

- Call the statewide reservation number and make a reservation;
- Pay the exact cash fare that is required based on the NJ Transit zones determined by the Customer reservations person in the fare collection device when boarding the vehicle;
- Wait at the agreed upon pickup point at the curb at least 20 minutes before the scheduled time of pickup and be prepared to wait up to 20 minutes after the scheduled time of pickup;
- Indicate the need for any assistance from the curb into the vehicle and from the vehicle to the curb including any required assistance with the wheelchair tie-down mechanism; and
- Register any trip complaints through the Access Link Customer Service office.

2.2.1.1.2 ADA Complementary Paratransit Vehicle Operator

The Access Link Region Contractor Vehicle Operator is responsible for the operation of a wheelchair accessible vehicle and assisting passengers in a curb-to-curb service mode of operation. The Operator will receive their trip manifest through a download on the mobile data computer on the vehicle. The electronic manifest will instruct the Operator

on the location and time of each passenger pickup and any special trip instructions related to the physical pickup location and/or Customer needs. The Operator responsibilities include:

- Provide any required assistance to the Customer from the curb into the vehicle including the operation of the wheelchair lift, assistance using the fare collection device, assistance with wheelchair tie-downs and/or seatbelts, and assistance out of the vehicle;
- Enter passenger data, including time of boarding and disembarking, which will enable the MDC system to record the Customer and trip data (e.g., passenger miles); and
- Safely operate the vehicle and follow any instruction provided by Dispatcher.

2.2.1.1.3 ADA Complementary Paratransit Dispatcher

The Contractor Dispatcher has the following responsibilities:

- Maintain radio contact with the Operator when necessary;
- Monitor the progress of the individual Operator runs through the AVL system screen to determine that vehicle runs are proceeding within required pickup window tolerances;
- Provide any assistance, including run adjustments based on extreme traffic conditions or other emergencies; and
- Arrange backup vehicle coverage in the event of a vehicle breakdown.

2.2.1.2 County Designated Paratransit (Sen-Han Transit)

This section describes the responsibilities of the primary stakeholders that use or operate the County Designated Paratransit (Sen-Han Transit). These stakeholders are the paratransit Customer, the paratransit vehicle Operator, and the paratransit Dispatcher. These sections illustrate how the roles of various stakeholders differ and correlate to one another.

2.2.1.2.1 County Designated Paratransit Customer

The majority of Sen-Han Customers are senior citizens, age 60 and over and persons with disabilities. Most are unable to use traditional transit due to lack of direct access however, many have the ability to use transit if they had access to a reliable feeder service. The registered Sen-Han Customer has the following responsibilities:

- Make their reservation by telephone at least two full days in advance of their time of initial trip pickup;
- Be ready at the door or curb at least 60 minutes before the scheduled initial pickup and up to 30 minutes after the scheduled return trip; and
- Follow any additional instructions of the Operator.

2.2.1.2.2 County Designated Paratransit Vehicle Operator

The Sen-Han Vehicle Operator is responsible for the operation of wheelchair accessible and non-accessible vans and minibuses in a door-to-door mode of operation. The Operator has the following responsibilities:

- Provide assistance from the front door or the curbside pickup and passenger assistance with wheelchair tie-downs and/or seatbelts on the vehicle;
- Follow the written manifest that describes the assigned pickups and drop-offs for the assigned vehicle run;
- Maintain radio contact with the Dispatcher;
- Record the time of pickup and drop-off on the written manifest including any no-show trips; and
- Safely operate the vehicle and follow any instructions provided by the Dispatcher.

2.2.1.2.3 County Designated Paratransit Dispatcher

The Sen-Han Dispatcher is responsible for assisting the Operator in maintaining their passenger pickup and drop-off schedules. The Dispatcher has the following responsibilities:

- Review Operator runs to ensure continuing on-time performance;
- Record any no-show trips reported by the Operator;
- Provide the Operator with any vehicle manifest adjustments including reassigned trips from other Operators;
- Periodically review the AVL monitor to ensure that vehicle runs are operating within on-time performance standards; and
- Arrange backup coverage in the event of a vehicle breakdown.

2.2.1.3 Private Livery Companies

This section describes the responsibilities of the primary stakeholders that use or operate the private livery companies. These stakeholders are the private livery Customer, the private livery vehicle Operator, and the private livery Dispatcher. These sections illustrate how the roles of various stakeholders differ and correlate to one another.

2.2.1.3.1 Private Livery Customer

The average Customer served by the private livery companies in Camden County are Medicaid-eligible individuals with limited incomes. Those registered for Medicaid ambulatory transportation are more often without direct access to public transportation, as the County has been distributing NJ Transit bus passes and tickets to those who can use traditional public transit to reach their medical destinations. The Livery Company Customers have the following responsibilities:

- Reserve a trip on an advance reservation basis of 24 to 72 hours if they are a Medicaid ambulatory transportation eligible Customer;

- Cancel a reservation if they are not going on their trip since private livery companies are not reimbursed for no-show trips under the Medicaid ambulatory program; and
- Be ready at the pickup point in advance of the scheduled time of pickup.

2.2.1.3.2 Private Livery Vehicle Operator

Livery Company Vehicle Operators are generally Operators with little or no passenger assistance training. The Operators generally have the following responsibilities:

- Follow a written manifest that describes the pickup times for passengers;
- Provide limited assistance into the vehicles for passengers that are ambulatory but require some assistance getting in and out of the vehicle; and
- Operate the vehicle in a safe manner and follow Dispatcher instructions where there is cellular phone or radio contact with a dispatch office.

2.2.1.3.3 Private Livery Dispatcher

The Private Livery Dispatcher may provide real time scheduling of trip assignments to Operators by radio or cellular phone on the day of service. The Dispatcher responsibilities may include the following:

- Provide instruction to Operators on trip cancellations received on the day of service;
- Monitor Operator locations (for companies with an AVL system); and
- Take Customer reservations and cancellations.

2.2.2 Modified Fixed Route Subscription

This section describes the system stakeholders involved in the use and operations of the Modified Fixed Route Subscription providers that services Camden County. These stakeholders are the modified fixed route Customer, the modified fixed route vehicle Operator, and the modified fixed route Dispatcher. These sections illustrate how the roles of various stakeholders differ and correlate to one another.

2.2.2.1 Modified Fixed Route Customer

The SJTA employment transportation Customers register through the Camden County Workforce Investment Board (WIB) and receive the appropriate route schedule for service. The Customer has the following responsibilities:

- Be at the designated bus stop or pickup location prior to the arrival of the bus; and
- Follow the instructions of the Operator when riding on the bus.

There is no responsibility for registering for daily trips or for notification by the Customer to SJTA that they will not be using the service on a given day. Most municipal

Customers, also utilizing modified fixed route service, are generally repeat riders who contact the municipal Provider by telephone or have automatically scheduled pickups on set days and times.

2.2.2.2 Modified Fixed Route Vehicle Operator

The SJTA Vehicle Operator is responsible for the safe operation of vehicles ranging from a 15-passenger van to a 35-passenger bus. The Operator has the following responsibilities:

- Ensure that that they are not running ahead of schedule at the scheduled pickup points;
- Record the passengers transported and vehicle mileage on their written log sheet;
- Require Veteran Hospital transportation Customers to sign log sheet on bus;
- Provide notices to Customers on changes in route start times and pickup points; and
- Use Nextel Direct Connect to provide communication on route or to address Customer issues to Dispatch.

2.2.2.3 Modified Fixed Route Dispatcher

The SJTA Dispatcher is responsible for monitoring the AVL system and ensuring that Operators complete runs within the specified time frames. Dispatcher responsibilities include the following:

- Maintain radio communication with the Operators;
- Monitor the AVL system to ensure the Operators complete runs within the specified time frames; and
- Arrange backup vehicle coverage in the event of a vehicle breakdown.

2.2.3 Traditional Fixed Route Service

This section describes the stakeholders involved in the use and operations of the Traditional Fixed Route Service Providers that serve Camden County. These Providers offer fixed bus and rail service, operated by NJ Transit and PATCO. These stakeholders include the traditional fixed route Customer and the traditional fixed route vehicle Operator. These sections illustrate how the roles of various stakeholders differ and correlate to one another.

2.2.3.1 Traditional Fixed Route Customer

While the demographics of traditional transit users may vary between the sub modes of rail, local bus, and interstate bus, the way in which Customers access information and use the services does have some similarities relative to the other mobility categories. Traditional transit users obtain information regarding route and schedule information in three general ways for each of the transit sub-modes, including:

- Hard copy timetables;

- Telephone Information Center;
- Website; and
- Community word-of-mouth networks.

Traditional Transit Customers in general have the following responsibilities:

- Wait for the train or bus before the scheduled arrival at the stop or station;
- Pay the fare by either monthly pass, ticket or cash fare; and
- Understand the availability of accessibility features for their particular mode of service and follow the system rules for advance notification of accessibility features if required.

2.2.3.2 Traditional Fixed Route Vehicle Operator

The role of the vehicle Operator varies between bus, rail, and light rail primarily due to the mode of fare collection. On buses, the Operator is responsible for front line Customer service and fare collection. On heavy rail, the conductor is responsible for front line Customer service and fare collection. On PATCO and the River Line, the fare collection is through advance ticket purchase and on the River Line, Operators conduct random spot-checks to ensure fare payment receipt.

On NJ Transit buses and light rail services, the Operator has two-way radio communications with the NJ Transit dispatch centers. AVL systems enable vehicle location identification in real time. Only rail services currently provide any form of notification regarding arriving trains or delays, but NJ Transit is exploring the use of technology to enable passengers at key bus stops to identify the time of upcoming bus arrivals in real time.

2.3 Customer Participation

To better understand Customer needs, experiences and expectations related to transportation, several discussion and focus group meetings were developed and held with Customers. Seven focus/discussion groups were held from September 12, 2007 to January 19, 2008. Focus group participants included current paratransit riders, Medicaid transport riders, non-governmental organization riders, Access Link riders, and other Customers eligible for human services transportation.

In addition, the Cross County Connection, the TMA for southern New Jersey counties, previously conducted a thorough study of the user needs for improving human service transportation services as well as the coordination of those services in Camden County. This study was conducted from January through June 2007, following a mandated process that included reaching out to stakeholders for a self-assessment exercise, along with a comprehensive survey of transportation providers, and was coordinated with regional United We Ride planning efforts.

This section aims to deliver a sampling of the highlights of these findings as they pertain to current operational conditions for transportation in Camden County. The full findings are attached within Appendix B.

2.3.1 Mobilizing for Action Through Planning and Partnership (MAPP) Coalition

The Mobilizing for Action Through Planning and Partnership (MAPP) Coalition is a cooperative effort by local public health system agencies and organizations – including academic institutions, community nonprofits, foundations, health care institutions and Providers, schools and other stakeholders - to conduct community health assessments and develop a community health improvement plan. Discussions were held with this group for their comments on the County's transportation services.

Some of the transportation issues that were mentioned from this focus group included:

- **Need smaller pickup window or information if transportation is late.** For persons with disabilities at group homes, they need assistance from workers to escort them to the door or curb, or may need to arrange for a caregiver. Late transportation also has health consequences for persons with disabilities or special needs, such as anxiety.
- **Better information about their trips.** Need better confirmation about a trip. Misunderstandings have resulted in unintended cancelled trips. A phone line to check on the status of a trip (e.g., if the transportation is late) is helpful.
- **Better information about transportation resources.** Participants asked for a manual listing on transportation resources or for an educational class on access.

2.3.2 Camden County Board of Social Services

The Camden County Board of Social Services (CCBSS) administers the State Title XIX medical transportation services (non-invalid coach), general assistance recipient medical transportation and some New Jersey Department of Family Development transportation programs for Camden County. The CCBSS provides a single brokerage service for Customers through these programs and contracts with 16 Providers for demand-response services.

Focus groups consisted of Medical Transportation Unit (MTU) staff and also Workforce New Jersey caseworkers. CCBSS arranges for curb-to-curb service for those Customers without special needs. Those Customers with special needs are referred to a Provider and have to arrange for their own rides. Not all medical services are available in Camden County, so CCBSS will arrange for transportation to other New Jersey counties or Philadelphia.

Issues that have been voiced by their Medicaid Customers include difficulties in arranging pickups at a location other than home, and that weekend medical appointments are difficult because only 3 of the Providers offer service on weekends. Also, Medicaid transportation is only required to get patients within a half mile of their medical

appointment. Another issue is that the phone system at CCBSS is inadequate and unreliable.

2.3.3 Non-Governmental Organizations

Several focus groups were held with non-governmental organizations (NGOs), including a youth program, a pre-school program, a group of citizens from a township, and a senior's club.

Transportation issues that were mentioned from this focus group included:

- Limited schedules and service hours;
- Long waits for connection service;
- Some walking is needed for connections (some areas do not have sidewalks);
- Have to call up to two weeks in advance for a reservation;
- Lack of security on the vehicles and at transfer points; and
- Need for smaller pickup windows.

Senior citizens also mentioned that although transportation services are provided for their basic needs, additional transportation service would improve their quality of life. Some citizens mentioned that transportation service in their area was limited but if they were able to reach the next town, borough or county, the number of transportation options available increased significantly.

The group was asked how they found out about transportation options in their area. A number of respondents mentioned by word of mouth or when they called the borough by telephone seeking services. Most respondents do not have access to a computer or the internet.

Finally, the group was asked what transportation services or information would be helpful to them. Answers included bus schedules, customized itineraries, a trip counselor, a workshop on transportation services, and trip planning information.

2.4 Description of Current Operational Constraints

This section describes some of the shortcomings of the current system or situation that are motivating the development of the new system or modifications to existing systems. These constraints are obtained in an analysis of the current operations, and confirmed through the Customer outreach efforts.

2.4.1 Suppressed Demand

As shown throughout this document, Camden County has a very diverse population and thus, diverse set of challenges for its transportation network. This is particularly true of providing human services transportation in the region.

From the focus groups, it was clear that there is unmet demand for human service transportation in Camden County, particularly in the rural areas of the county, and

outside of specific trip purposes such as Medicaid and employment-related trips. The cause of this unmet demand can be categorized into areas: lack of information and limited service.

2.4.1.1 Transportation Provider Information

Customers believe there is a lack of information about the transportation services available in the county. This was attributed to the following reasons:

- **Customers do not know where to find information about the transportation services available.** Organizations, through the outreach process, indicate that many of their Customers only learn of transportation information by word of mouth. The diversity of the population and that each transportation provider offers a different service in only certain geographic locations makes finding a match more difficult. Many Customers do not have internet access, and thus finding this information via other means is difficult.
- **A Provider may not have complete information about services provided by another Provider.** A Customer may need to use service from more than one Provider to reach his destination. However, it is difficult for the Customer to get information about other services from a given Provider. Thus, the Customer is unable to get the complete information necessary, such as fare payment or schedule, to complete the trip without contacting each Provider individually.

2.4.1.2 Limited Service Area and Hours

Area traditional and human service transportation providers typically offer limited evening and weekend service, which limits the ability of Customers to access employment or meet basic needs (such as shopping and social trips). Also, some geographic areas of Camden County are not served by Providers, other than for Medicaid recipients, senior citizens, or persons with disabilities, and even then only for basic services (shopping, medical reasons).

For example, senior citizens in Pine Hill Borough have borough-provided transportation to shopping and the bank on Mondays, Wednesdays and Fridays. They have transportation options that help them remain independent, but access to quality of life and cultural activities, such as high school plays and church sponsored dinners, held in the evening and on weekends that are free or discounted for seniors are out of reach to this population on a fixed income, due to lack of transportation.

Some citizens indicated that transportation to reach centers where other public transportation is available would be most helpful. Once residents reach these centers, many more options are available to them.

Ideally, expansion of existing transportation services would help mitigate this problem, but Sen-Han already has extensive and increasing wait lists for medical transportation services and SJTA, which provides employment trips and acts as a feeder to rail lines, cannot meet demand with its current financial constraints.

2.4.2 Customer Trip Information

Information about a specific trip was another issue for Customers, particularly for Customers with disabilities or special needs. Customers have mentioned that easier access to information about their specific trip would ease anxieties and help them better plan their trips and arrangements. Such access would allow Customers to verify their trip reservations, including pickup and drop-off times, and check the status of their transport (including connections), such as if a vehicle was late.

Such information is especially helpful in the cases of persons with disabilities and special needs and their caregivers. This population have extra concerns because they need additional time and assistance to prepare, and may need an escort to wait for their transport at the door or curb. Anxiety caused by late vehicles or inability to confirm a trip also may have medical and health consequences for this population.

2.4.3 Traveler Security

Traveler security was a concern for some Customers. Often, there is also a long wait for Customers at connection or transfer points, in addition to some transfers that occur late in night (e.g., second or third shift employees).

2.4.4 Administrative Costs

Financial constraints are limiting the service that each Provider can offer. The limits may be geographic area, service hours (number of days of week, or hours per day), or the type of service offered. Part of the financial costs that each Provider faces are administrative in nature. For example, there are 16 Providers in the County that offer Medicaid transport. Each of the 16 Providers must dedicate resources to file for Medicaid reimbursements. Similarly, each Provider also must dedicate resources to dispatch vehicles, and to handle calls from Customers to provide information about their services and to make reservations.

The Customer outreach indicated that there are many other human service transportation Providers in the county. However, the high administrative costs to handle administrative functions such as payment reimbursement, servicing calls, and dispatching, limits the amount of service that the Provider can offer. Several of these Providers indicated a willingness to expand their services if they received assistance with the administrative functions and costs.

2.4.5 Service Coordination

Limited coordination currently exists among Camden County's human service transportation Providers. There is also limited use of human service transportation to provide feeder service to traditional transit at key transfer points and transit stations. Currently, CCBSS has a list of 16 Providers. When a Customer qualifies for Medicaid transportation dollars and they have four or more medical appointments a month they are issued a transit pass for the month provided their trips can be completed by fixed route transit service; otherwise, their case manager simply calls the next human service transportation Provider on the list, who in turn schedules a vehicle for curb to curb

service. Linkage to existing transport service is not considered, and, often, these Medicaid trips run parallel to existing fixed route service.

Opportunities exist to eliminate duplicative service and to extend service hours and geographic coverage through the coordination of public, non-profit, and faith-based organizations.

3 Proposed Concept of Operations

The purpose of this section is to describe the proposed system that results from the desired changes specified in Section 2.4 of this document. The section begins with a discussion of the goals and objectives of the project followed by a discussion of the user needs that the proposed system will address. Finally, the section describes the proposed system in a high-level manner, indicating the operational features that will be provided without specifying design details.

3.1 Motivation

From the Customer outreach program conducted, it is clear that there are many human service transportation Providers that service Camden County. However, due to limited resources, each Provider must focus on a particular segment of the population, whether by age, abilities, employment, faith, geographic area or time of service.

The proposed system hopes to improve the transportation services provided to the population of Camden County by removing some of the barriers that are preventing transportation Providers from expanding their services. These services may include adding to the population or the geographic area that is being served and increasing the hours of service.

Some of the barriers the proposed system hopes to remove include:

- **Reducing administrative costs.** This can be accomplished by taking advantage of the commonality of some of these administrative costs between Providers. Examples include sharing the costs of a billing system, sharing call center costs, or sharing dispatching costs. This will free up more resources for each Provider and allows them to provide more services.
- **Increasing capacity.** This can be accomplished by sharing the transportation Provider's scarce resources efficiently. For example, it is not uncommon for multiple transportation Providers to service the same geographic area, with similar destinations, such as a transit center. By sharing resources, one transit Provider may pick up passengers in the same geographic area or along a route and bring them to the common destination. This will reduce duplication in services and free up resources to provide service in other areas. However, there are some limitations to the resource sharing. For example, a Customer with disabilities or special needs may require a properly equipped vehicle and an Operator who is able to provide the special need. Additional capacity may be achieved by integrating services offered by Faith-based or NGO Providers. These Providers may fill key gaps in the delivery of service.

The overarching vision of the proposed system is to design for Camden County the most effective transportation service delivery model by employing appropriate and current technologies focused on Customer needs and the most efficient use of transportation and community resources. The Goals and Objectives of the system are as follows:

- **Goal 1:** Develop a Travel Management Coordination Center (TMCC) for Camden County that creates opportunities for better and increased transportation service throughout the County.
    - **Objective:** Investigate and utilize ITS technologies as a tool to facilitate transportation coordination in Camden County.
    - **Objective:** Work collaboratively with Camden County public, private, non-profit, and faith-based organizations as partners in the development of the TMCC.

- **Goal 2:** Increase access to existing human service and traditional public transportation for Camden County Customers.
    - **Objective:** Develop improved marketing strategies targeted to Customers seeking human services transportation designed to create awareness for existing public transit and human service transportation.
    - **Objective:** Examine the feasibility of reorienting human service transportation as feeder service to traditional transit services, as one means to improve the efficiency of the overall passenger transportation network in the County.

The proposed system will need to address the following issues for the system to be successful: 1) Facilitate greater coordination within the Camden County Provider network; 2) Improve Customer access to, and ease of use of, Camden County human services and the overall transportation system; and 3) Simplify operational procedures across various Camden County transportation providers.

3.2 Description of User Needs

To begin, user needs are defined to guide the development of the proposed system. These user needs identify and describe the various business processes that users may want the components of the TMCC system to perform. These user needs are derived from the operational constraints identified in the current system but are refined and organized into a more manageable structure (See Table 3-1).

Table 3-1: Relationship of Operational Constraints to User Needs

Operational Constraint	User Need
2.4.1 Suppressed Demand	User Need 1: Provide an One Stop Call Center
2.4.2 Customer Trip Information	User Need 2: Provide Trip Information
2.4.3 Traveler Security	User Need 3: Provide Rider Security
2.4.4 Administrative Costs	User Need 4: Operate a Seamless Fare/Billing System
2.4.5 Service Coordination	User Need 5: Coordinate Provider Trip Functions

3.2.1 User Need 1: Provide an One Stop Call Center

The System needs to improve the dissemination of information on transportation services within Camden County to Customers.

One of the limitations in the current system is that there is no single source for Customers to access information about the transportation services for which the Customer is eligible. Eligibility may be determined by several factors, including age, ability, purpose of the trip, date and time of the trip, and the origin and final destination of the trip.

To address this limitation, a change is needed so that each Provider serving Camden County is knowledgeable of and provides information about all the transportation services in the County to Customers, including those offered by other Providers. This will provide the Customers with complete information and assist Customers with their trips.

This overall need to improve transportation service information to the Customers may be categorized into two focused areas:

- **User Need 1.1:** Need for Transportation Services Information
- **User Need 1.2:** Need to Link to the New Jersey 211 and 511 Systems

These needs satisfy Goal #2, to increase access to existing human service and traditional public transportation for Camden County Customers.

3.2.1.1 User Need 1.1: Need for Transportation Services Information

Customers need information about the transportation services available to them from a single source. The transportation services available to a traveler will vary depending on the purpose of the trip (health care, employment, religious, personal, etc.), their qualifications (age, disability, veteran, etc.), and the day and time of the trip.

Currently, a Customer may need to check with each Provider on the Customer's eligibility for services, and availability of services by the Provider. The wide range of services and geographic coverage drives the need for a single access point that consolidates general and specific information on all available services for all Providers in the County. This change relies heavily on exchanging eligibility and service information among Providers so that all Customer service information may be shared and disseminated by any other Provider.

3.2.1.1.1 User Need 1.1.1: Need for Transportation Services Information via Telephone

Customers need information about the transportation services available to them via a telephony device. An important consideration is to ensure that the access to information does not discriminate or perceive to discriminate against users based on physical or mental abilities, as specified by ADA guidelines, or socio-economic factors. Telephony technologies may include Interactive Voice Response (IVR) menus and TTY/TDD for hearing impaired individuals.

3.2.1.1.2 User Need 1.1.2: Need for Transportation Services Information via a Web Portal

Customers need information about the transportation services available to them via a web portal. Web portals can provide much of the information needed by Customers to complete a vehicle trip. Web portals should be available at information kiosks and should be enabled to provide standard personal computer and mobile web formatted versions. The web portal should be compatible with and employ the use of e-mail and Short Messaging Service (SMS) messages to mobile devices.

3.2.1.2 User Need 1.2: Need to Link to the New Jersey 211 and 511 Systems

Providers need to link to and from the New Jersey 211 and 511 systems. The State of New Jersey currently maintains a 511 telephone number for traveler information within the State, and a 211 telephone number dedicated to non-emergency health, human services, and community services. If the caller needs information pertinent to transportation services in Camden County, Providers should be able to accept telephone calls initiated through the 511 or 211 systems.

Conversely, Providers should be able to route telephone calls to the 511 or 211 system as appropriate so callers do not have to redial a telephone number. Providers may wish to route callers to 511 if the caller is looking for traveler information outside of Camden County, or to route callers to 211 to establish their eligibility for transportation services (e.g., Medicaid) or to access the statewide human social services network.

The State of New Jersey also manages a website, www.njfindaride.com, which serves to bring transportation Provider information together in one centralized location (a website) that is readily available for users with and without disabilities. The web portal on transportation services in Camden County (User Need 1.1.2) should minimally have a link to this website, and vice versa.

3.2.2 User Need 2: Provide Customer Trip Information

The System needs to provide real-time information to Customers about their trip and trip routes that have already been scheduled.

Currently, Customers do not have access to updated information about their individual trips, such as the current status of scheduled trips or the current estimated time of arrival (ETA) of the vehicles or connections. Information such as ETAs reduces anxiety for Customers and makes for a much more pleasant experience.

To address this limitation, Customers require pre-trip and en-route access to real time updates of pickup or travel time estimates specific to their vehicle trip. Examples of real-time information distribution mechanisms include variable message signs or audible message announcements at transit stops, stations or pickup locations, web portals at kiosks or published to mobile devices or the Internet, automated or non-automated telephone systems, or to the vehicle the Customer is currently traveling on.

This overall need to improve real-time information for Customers may be categorized into three focused areas:

- **User Need 2.1:** Need for Trip Information
- **User Need 2.2:** Need for Connection Information
- **User Need 2.3:** Need for Automated Alerts and Reminders

These needs satisfy the Goal #2, increase access to existing human service and traditional public transportation for Camden County Customers, by making the transportation services more appealing and less stressful.

3.2.2.1 User Need 2.1: Need for Trip Information

Customers need access to information about their individual trips. After making a trip reservation, a Customer may need to access information about their trip, such as updated estimated departure time from the origin and the estimated arrival times at the destination. Access to such information may be via telephone calls or web portals.

3.2.2.2 User Need 2.2: Need for Connection Information

Customers need information about connecting routes or service at transfer stops or stations. To complete their vehicle trip, the Customer may need to make a connection with another transportation service, such as a fixed route transit route or a demand-response vehicle. A Customer may need information about connections, such as information about the route, schedules, costs, and updated estimated time of arrivals of the connecting vehicle. Access to such information may be provided via electronic signs or audible messages at transfer stations or stops.

3.2.2.3 User Need 2.3: Need for Automated Alerts and Reminders

Customers need automated alerts and reminders. Customers need to be informed if there are unexpected changes to their vehicle trip. Such unexpected delays may include delays in service due to traffic congestion, incidents, cancelled service, or other unforeseen events. Some Customers may need a reminder about a trip reservation, including information about the time and location for their pickup and drop-off. Information can be sent to Customers via telephone, e-mail messages, or SMS messages to mobile devices.

3.2.3 User Need 3: Provide Customer Security

The System needs to provide for the physical security of Customers during their trip on transit vehicles and at transit stations, stops and pickup/dropoff locations.

Security systems provide faster access for passengers to any necessary emergency services, including medical assistance. Providing security for passengers during their journey provides peace of mind to Customers.

Examples of on-board security systems include video surveillance cameras, audio systems, and event recorder systems. Vehicles may also have vehicle Operator activated

alarms. At transit stations, public areas may also be monitored with similar surveillance equipment and may have Customer activated alarms.

This overall need to improve real-time information for Customers may be categorized into two focused areas:

- **User Need 3.1:** Need for Security on Vehicles
- **User Need 3.2:** Need for Safety and Security at Pickup and Dropoff Locations

These needs satisfy Goal #2, increase access to existing human service and traditional public transportation for Camden County Customers, by making the transportation services a more safer and viable option.

3.2.3.1 User Need 3.1: Need for Security on Vehicles

Operators and Customers need security in the vehicles. Customers and the vehicle Operators may need access to emergency services in the event of an incident. Such incidents may include medical attention, accidents, or crimes. Security on vehicles may be provided by cameras, recording systems, or alarms.

3.2.3.2 User Need 3.2: Need for Safety and Security at Pickup and Dropoff Locations

Customers need safety and security at pickup and dropoff locations. Customers may need access to emergency services in the event of an incident. Such incidents may include medical attention, accidents, crimes, or weather evacuations. Security at pickup / dropoff locations, transit stops and stations may be provided by alarms or cameras.

3.2.4 User Need 4: Seamless Fare Payment/Billing System

The System needs to provide for a seamless fare payment and billing system for Customers and Providers.

From a Customer's perspective, this is a level of coordination that results in the ability of the Customer to be able to pay or co-pay their share of the trip using a single method, regardless of which Provider or Providers they use. This coordination gives the Customers the appearance of a single, unified transportation system, and also makes using the transportation system and paying for those services simpler for the Customers.

From a Provider's perspective, *billing is currently a major barrier to coordination* among Providers, as each funding source is fiscally constrained to serve specific user needs. There are a variety of funding agencies that fund transportation service within Camden County. These sources often provide funding for very specific purposes or specific users, which have led to the compartmentalization of transportation services in Camden County (See Figure 3-1), despite the overlaps in destination, user, and trip purpose that many services may have in common.

Figure 3-1: Current Funding Sources

Although the simplest way to ensure compliance with funding requirements is to provide separate services, the most effective way to deliver transportation is to share services across Providers. By centralizing and organizing an account system for transportation users and Providers, all of the current funds and fares that feed the transportation system could continue to go to the appropriate Providers, while allowing for service sharing as appropriate (see Figure 3-2).

Figure 3-2: Single Billing System

This seamless fare payment/billing system involves three inter-related categories:

- **User Need 4.1:** Need for a Single Method of Payment for Customers
- **User Need 4.2:** Need to Assign Shared Costs
- **User Need 4.3:** Need to Share Reimbursements

3.2.4.1 User Need 4.1: Need for a Single Method of Payment for Customers

Customers need a single method of payment for each vehicle trip, regardless of the number of Providers that are used to complete the trip.

Customers may become confused if different forms of payment are needed for each Provider. This is particularly true if a vehicle trip requires transfers between multiple Providers, or if a vehicle trip is for multiple purposes, one (or more) of which is reimbursable by a funding agency.

An example of a single payment system is an electronic fare payment system, such as a smart card. Some funding agencies supply its eligible Customers with an electronic fare payment card or account to pay for transit services. Providers would need to support these electronic fare payment forms to properly debit the cost for the transit service provided by the electronic fare payment card or account.

This need satisfies Goal #2, increase access to existing human service and traditional public transportation for Camden County Customers, by making the transportation services more appealing and easier to use for Customers.

3.2.4.2 User Need 4.2: Need to Assign Shared Costs

Providers need to assign shared costs among funding agencies that pay for Customers on the same vehicle trip. Each vehicle trip has a cost associated with it. That cost is paid for by the fare paid by the Customer, and by one or more funding agencies. However, if a Customer uses multiple Providers to complete a trip, that cost is to be shared between the Providers. This is important so that each Provider is properly reimbursed by the funding agencies. Each Provider that supplied the service should be reimbursed proportional to some pre-determined metric, such as passenger-hour or miles.

Multiple funding agencies may be involved with the reimbursement of a vehicle trip. A Customer may complete a vehicle trip for multiple purposes, and each purpose may be reimbursable by a different funding agency, such as Medicaid. Each funding agency should reimburse the Providers proportional to some pre-determined metric, such as passenger-hours or miles for each purpose.

This need satisfies Goal #1, develop a TMCC for Camden County that creates opportunities for better and increased transportation service throughout the County, by decreasing administrative costs and enabling service coordination (by sharing costs) between the Providers.

3.2.4.3 User Need 4.3: Need to Assign Reimbursements

Providers need to identify reimbursable service costs by funding agency. For example, one funding agency may reimburse Customers for all fare costs, while another funding agency may reimburse Customers based on equivalent fixed route fare. Providers may provide vehicle trips to Customers that may be fully reimbursable by multiple funding agencies, or is only partially reimbursable. For these vehicle trips, the Provider needs to have its cost reimbursed by the various agencies proportional to some pre-determined metric, such as passenger-hour or miles.

This need satisfies Goal #1, develop a TMCC for Camden County that creates opportunities for better and increased transportation service throughout the County, by decreasing administrative costs and enabling coordination (by sharing reimbursements) between the Providers.

3.2.5 User Need 5: Coordination of Provider Trip Functions

The System needs to share trip information among Providers to reduce duplication in service.

Currently in Camden County most Providers operate independent of one another. This lack of coordination results in duplication of services, such as vehicles from different Providers but offering service along similar routes.

Service coordination presents an opportunity to eliminate duplication and increase the efficiency and range of services available to the Customer. Service coordination will reduce inefficient trips and overall operational costs by reducing the cost per passenger mile. Simultaneously, coordination will leverage the network of services to balance the demand and extend the supply of services across the geographic region.

The coordination divides naturally into two categories:

- **Service Collaboration.** Service collaboration involves building efficiencies across the Provider community by creating a connected network of Providers whose aggregated services meet the travel demands across the region and effectively leverage available "federated" resources. Among the collaboration activities, Providers may realign routes based on demand to reduce redundancy and fill service gaps exposed by existing fixed route and advance reservation services. Finally, the collaboration allows more costly services to determine when an existing fixed route will reduce subsidy on a marginal basis for passengers added without generating additional operating cost.
- **Operational Coordination.** Operational coordination provides operations support in scheduling and deploying services for all Providers. During the scheduling process, instead of optimizing schedules across a single Provider, Operator schedules may be optimized across the region, thus, gaining efficiencies and reducing overall costs. For example, when a Customer reserves a trip, if a fixed route vehicle can take the Customer most of the way, it may be inefficient to send an advance reservation vehicle to run the entire trip. Mainstreaming Customers while linking the trip with advance reservation services avoid two services covering the same area, thus increasing efficiency. Of course, the type of operational coordination depends on the needed services and abilities of the Customer in scheduling and deploying services to the Customer.

This overall need to improve coordination of trips by the Providers may be categorized into three focused areas:

- **User Need 5.1:** Need to Coordinate Call Center Functions
- **User Need 5.2:** Need to Share Vehicle Locations
- **User Need 5.3:** Need to Share Information with Operators

These needs satisfy Goal #1, develop a TMCC for Camden County that creates opportunities for better and increased transportation service throughout the County, by enabling coordination between the Providers and reducing costs.

These needs also satisfies Goal #2, increase access to existing human service and traditional public transportation for Camden County Customers, by making the transportation services more appealing and easier to use for Customers.

3.2.5.1 User Need 5.1: Need to Coordinate Call Center Functions

Providers need to share trip reservation, scheduling and dispatching services. Providing coordinated trip reservation, scheduling and dispatching functions involves the exchange of core service information among Providers, including Provider operational parameters (geographic area, times of service, special services offered), Customer eligibility requirements, planned schedules, and reciprocity of service among other Providers (whether certification on one carrier is recognized by another).

The coordination of services allows a call-taker, when a Customer calls to make a trip reservation, to perform all the trip reservation functions required to provide a vehicle trip to the Customer from origin to destination, regardless of which Provider or Providers ultimately provides the vehicle service or performs the administrative functions. The scheduling services will use the Customer and Provider information, such as Customer eligibility, scheduled vehicle runs, and cost information, to determine the most cost efficient vehicle trip to provide to the Customer based on that Customer's needs.

3.2.5.2 User Need 5.2: Need to Share Vehicle Locations

Providers need to share their vehicle locations with other Providers. This is an enabling service that supports another user need for this system, User Need 2 - Provide Customer Trip Information. Without this basic need, Providers are unable to provide real-time information about a Customer's vehicle trip, such as the status of the trip pickup or drop-off time (e.g., on time or delayed), as well as connection information.

Providers may also use this real time information to coordinate Customers' connections; by knowing the estimated time of arrival of a delayed trip, the overall performance of the linked trips will be improved.

3.2.5.3 User Need 5.3: Need to Share Information with Operators

Providers and Operators need to share operational data. In addition to sharing vehicle trip information among Providers, the operational data may be channeled to the vehicle Operators on their MDCs. This capability will allow Providers to update an Operator's trip manifest, providing Dispatchers with the flexibility to adjust vehicle runs due to unexpected travel delays or missed connections.

In return, the Operators send the Providers vehicle operations information via the MDCs. This type of information includes vehicle assignments based on passenger manifests as well as, non-Hippa related passenger logistic data such as pickup/drop-off times and locations. This is an enabling need that supports two other user needs for this System, User Need 4.2 - Need to Share Assigned Costs; and User Need 4.3 - Need to Share Reimbursements. By sharing the actual schedule performance data by passenger trip, Providers may determine their share of the costs and reimbursement for each trip.

3.3 Description of Proposed TMCC System

Camden County proposes to meet the user needs described in the previous section through the development of a TMCC. The TMCC System seeks to improve Customer transportation services in Camden County with minimal additional expense. Ideally, collaborative efforts may ultimately lead to either a reduction in total transportation costs or greater coverage for the investment. In general, the TMCC has the opportunity to reduce the cost per passenger mile through increased ridership and reduced duplication of service. The proposed system elements to accomplish the project goals include:

- Establishing a 'one-stop transportation communications center' 'call' function for services that will allow users to access all transportation services through one action, making Customer trip information more available to riders;
- Coordinating service provider trip functions;
- Implementing a seamless fare/billing system for all transportation services in camden county;
- Enhancing Customer security and communications; and
- Establishing a faith-based foundation collaborative for community transportation.

Camden County TMCC Function and System User Diagram: Final Phase

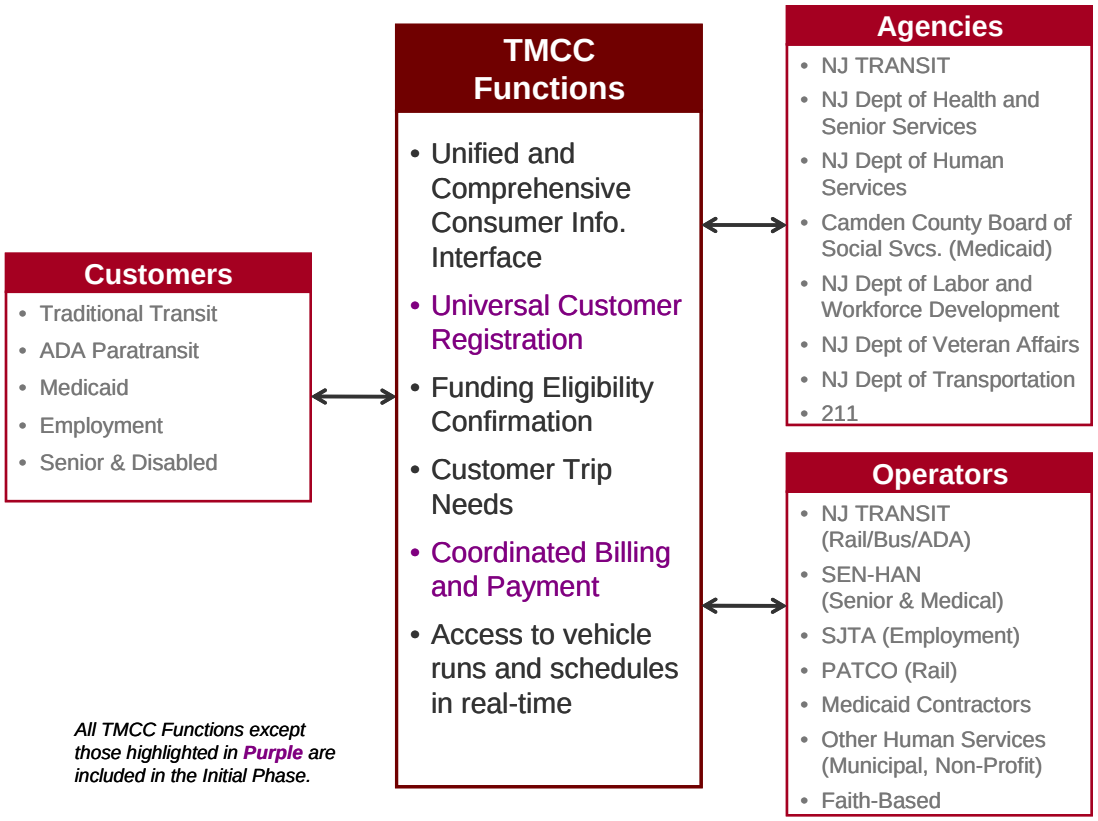

Figure 3-3: TMCC Context Diagram

The TMCC Context Diagram in Figure 3-3 displays a unified vision for the Camden County TMCC. It emphasizes the TMCC being the intermediary among Customers, Operators, and Funding Agencies.

The TMCC is composed of several major subsystems, as well as processes to acquire, store, archive and access (publish) information. The key subsystems may be categorized into three areas. The three categories and their appropriate subsystems include:

- TMCC One-Stop Call Center Subsystems
    - Customer Functions (through the "Customer Information Interface")
    - Customer Real Time Functions
    - Vehicle Arrival Information Display
    - Fare Media Distribution and Payment
- TMCC Provider Subsystems
    - Acquire and Process Provider Information
    - Acquire and Store Real Time Information
    - TMCC Reservations, Scheduling and Dispatch (RSD)
    - Financial Clearinghouse (Billing and Invoicing)
- TMCC Provider Operating Subsystems
    - Provider (call taker) Web Services
    - TMCC Transit Vehicle Subsystem
    - Transit Provider Remote RSD

As shown in Figure 3-4, the TMCC will be developed to ensure scalability; it will be built so that it may automatically acquire information from existing and future agency data sources such as NJ TRANSIT PASS, Human Services 211 data stores through an automated, scalable, standard-based interface, and will support less technical organizations through manual forms. The TMCC will serve as a central information repository with key processes to access, view and integrate multi-agency information on services including registration and eligibility using web-based services.

Furthermore, the TMCC will be the central Reservations, Scheduling and Dispatch (RSD) engine for Transit Providers who opt-in to the TMCC network. Initially only new (FBO and Medicaid Providers who do not currently operate their own RSD software) will use the RSD services through web-enabled services. Additional information on the project phasing is described in Section 5.4. Although most of the subsystems will be deployed in Phase 1, the full functionality will be implemented in phases. The limitations and constraints of the system business processes are described below in Sections 3.3.1 to 3.3.3. In Figure 3-4, the Dark and Light Blue and Yellow Boxes are TMCC subsystems, processes and functions (including field, TMCC Center, Remote Center and Transit Vehicle Subsystems), Green Boxes indicate external systems including the statewide 511 system and other Providers who will use their own RSD software or who have not yet opted-in to the RSD functionality; Purple Boxes indicate subsystems, processes and functions related to fare media that *will be implemented in subsequent phases*.

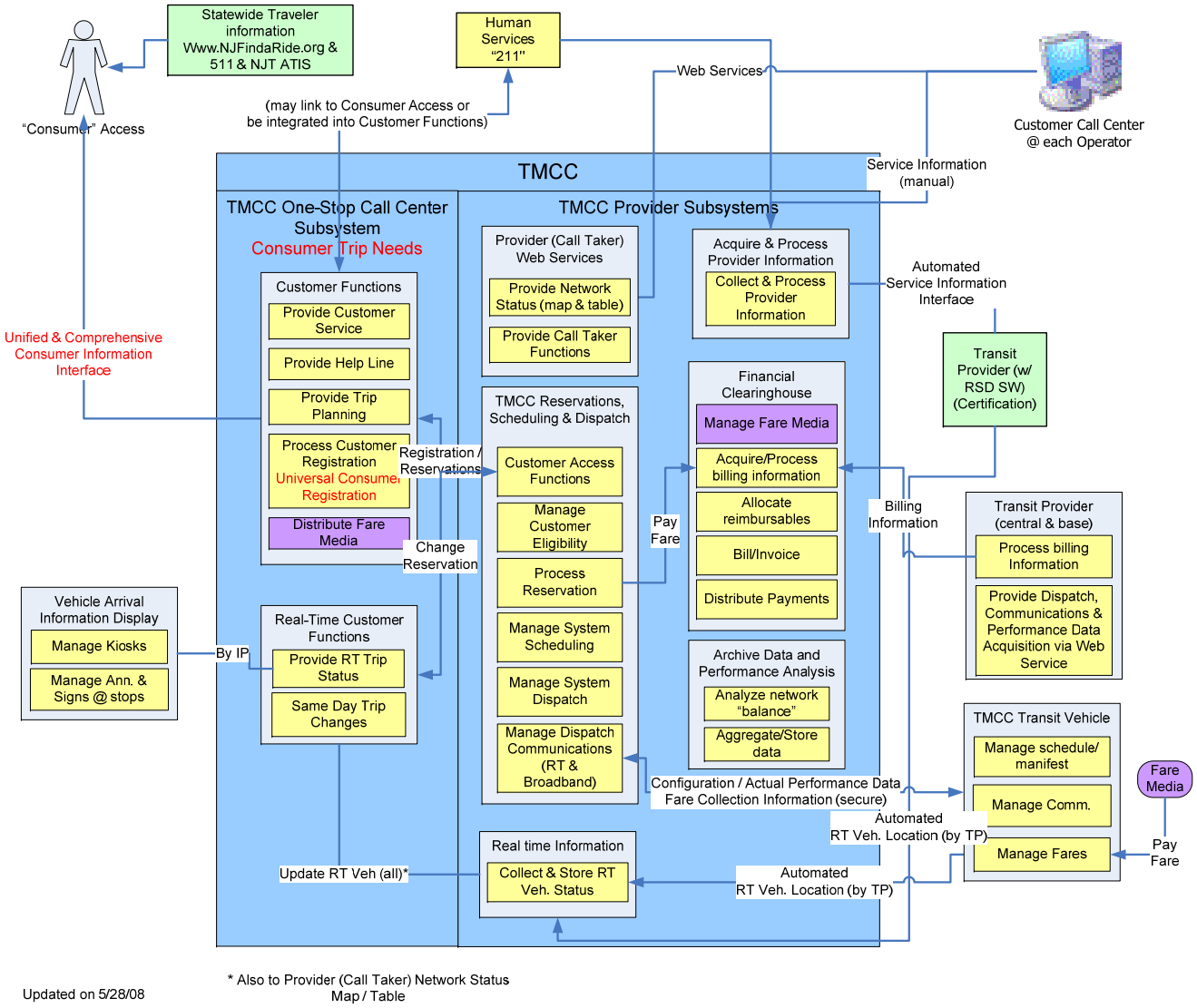

Figure 3-4: TMCC System Description, High Level View

Note that the TMCC will initially be separate from the Human Services "211" services, however, in subsequent phases, the TMCC may serve as the "211" transportation service.

Each of the three categories and their appropriate subsystems are described in more detail in the following sections.

3.3.1 TMCC One-Stop Call Center Subsystems

The TMCC One-Stop Call Center Subsystems include four major subsystems. Several subsystems include more detailed processes (e.g., Customer Functions via the Universal and Comprehensive Consumer Information Interface). Descriptions of the four subsystems identified in this section include:

- Customer Functions;
- Customer Real Time Functions;
- Vehicle Arrival Information Display; and
- Fare Media.

3.3.1.1 Customer Functions

Customer Functions will be offered through the Universal and Comprehensive Consumer Information Interface. The information may be offered through various channels to meet the needs of different constituencies. Specifically, the information will be provided to the TMCC Call-Taker, Transit Provider Call-Taker, the IVR system, and the Internet (for the computer and web-enabled devices). Human factors considerations will drive the format and amount of information that will be displayed and the interaction between the user and system. In addition, the statewide 511 services and other transportation programs will include a mechanism to direct calls and links to the TMCC One-Stop Call Center, while the Human Services 211 will have a more direct link to the TMCC Customer Access Subsystems. Provider related information for these processes will be submitted through the "Acquire and Process Provider Information" (see Section 3.3.2.1).

Table 3-2 provides a short description of the Customer functions.

Table 3-2: Customer Function Descriptions

Customer Functions	Description
Provide Customer Service	***Provide Customer Service*** includes assistance for Customer to lodge complaints and to offer commendations for services. The Customer Service will also provide help with Lost and Found.
Provide Help Line (General Information)	***Provide Help Line*** offers general help to Customers on services offered by Providers, the requirements associated with the services (e.g., registration and eligibility restrictions), hours of service, and other general information.

Customer Functions	Description
Provide Trip & Reservations Planning	***Provide Trip & Reservations Planning*** includes assistance in understanding the options available for planning a trip. For all except the new Providers, Phase 1 only addresses providing information about alternative options while Providers retain their current Reservation systems. In subsequent phases and for new Providers, this function will direct the Customer to the Reservation functions (see Section 3.3.2.3), providing the most optimal reservation based on the Customer's needs and eligibility, irrespective of Provider.
Process Customer Registration (Universal Consumer Registration)	***Process Customer Registration*** assists Customers in understanding the registration (or certification) requirements of each regional Transit Provider. The subsystem stores the Provider registration information, so that the TMCC can provide Customers information on their eligibility for their Trip and Reservations Planning. Each Provider will submit information on their Registered or Certified consumers. The information will be submitted through the "Acquire and Process Provider Information" (see Section 3.3.2.1) and stored in the Universal Consumer Registration data store. In later phases, the Customer Functions will register Customers for those Providers who opt-in to the service.
Distribute Fare Media	***Distribute Fare Media*** is a process supporting the distribution of identification and fare media to Customers eligible for the TMCC Fare Payment media. This process is envisioned for later phases.

3.3.1.2 Real Time Customer Functions

Real Time Customer Functions include two processes. These processes publish, distribute and channel requested or subscriber information to specific recipients or devices. The functions include:

- Provide Real Time Status
- Same Day Trip Change / Cancellation Services

The ***Provide Real Time Status*** services provide information about current trips on a daily basis. Trip plan confirmation, expected transit vehicle arrival time, and other pertinent trip information will be distributed to each Customer based on his/her profile and request for information. The information will be distributed through various channels including (but not exclusively) via SMS and phone messages, emails and automated telephone calls. This service may be expanded to include real time messaging to livery, paratransit and fixed-route vehicle Operators who are responsible for transferring Customers between modes (e.g., fixed route to paratransit to doctor's office).

In addition, the Provide Real Time Status services distribute real time status of fixed and subscription route information to active signs and other field equipment at transit pickup/dropoff locations and stops. The Vehicle Arrival Information Display, a field located subsystem, receives and processes this information.

The ***Same Day Trip Change and Cancellation Services*** allows a Customer to update his/her reservation via one of the three access methods: call-taker, the IVR system or the Internet. The services include changing trip characteristics or canceling a reservation. The service will be provided only for reservations made through the TMCC RSD.

3.3.1.3 Vehicle Arrival Information Display

The Vehicle Arrival Information Display (VAID) is a remote subsystem located in the field, at a pickup/dropoff location (for flexible, subscription services), transit stop or transit station, or any other Customer information venue. The VAID may be operated by an organization other than the TMCC. The VAID includes active bus stop signs, variable message signs, or kiosks that display specific transit information relevant to that location. (In the case of a kiosk, the user should be able to pull up information related to other transit related places.)

3.3.1.4 Fare Media (Fare Payment Method)

Building on the experience with the PATCO smart card, the TMCC will work in the region to expand the use of the card or work to develop an alternative to support a universal fare payment method that supports Customers and human services clients. Alternative fare media and payment methods are currently being explored and this feature is not envisioned for Phase 1 deployment.

3.3.2 TMCC Provider Subsystems

The TMCC Provider Subsystem includes five subsystems that serve the needs of Providers. The TMCC Provider subsystem includes subsystems to acquire, process and store general service information and real time vehicle operations information. It includes billing and invoicing capabilities for all funding sources, although Phase 1 will implement centralized billing for Medicaid only. Also, in Phase 1, as a federated system the TMCC will provide access to a repository on Provider services to share among all participating Providers. Finally, the TMCC will provide RSD functionality. The scheduling and dispatch capability will differ from a single Operator implemented system in that the scheduling system will leverage the Provider network to mitigate resource and regional service gaps, and to facilitate more flexibility into the Customer's experience with the Provider network. Descriptions of the five subsystems identified in this section include:

- Acquire and Process Provider Information;
- Acquire and Store Real Time Information;
- TMCC Reservations, Scheduling and Dispatch (RSD);
- Financial Clearinghouse (Billing and Invoicing); and
- Archive Data and Performance Analysis.

3.3.2.1 Acquire and Process Provider Information

The TMCC will acquire service information related to Provider characteristics including registration process, eligibility requirements, reciprocity agreements with other Providers, hours of operations, reservations restrictions, and other constraints imposed by vehicle

type and capacity. The information will be captured, quality checked and made available to other processes offered by the TMCC.

3.3.2.2 Acquire and Store Real Time Information

The TMCC will acquire, through an automated interface, real time vehicle status and incident data from Provider transit management centers and transit vehicles. Prior to storing, the real time information will be checked for data quality including latency, lineage and timeliness, and will be updated as needed. This function will be implemented for both new Providers who use the TMCC Transit Vehicle Subsystem AVL/MDC/Communications equipment as well as those who can provide real time information. The information will be forwarded to the "Provide Network Status" Process (see Section 3.3.3.1).

3.3.2.3 TMCC Reservations, Scheduling and Dispatch (RSD)

The TMCC RSD functions are similar to those implemented by paratransit systems such as NJ TRANSIT Access Link. The subsystem includes the following processes:

- Customer Access to Reservations Planning and Itinerary Status;
- Customer Eligibility Checking;
- Reservations and Billing;
- System Scheduling (including assigning Customer trip plans across the Provider network); and
- System Dispatch and Performance Monitoring.

The key features of this subsystem include:

- Customer access to the RSD through the Unified and Comprehensive Consumer Information Interface (using the various channels available – call-taker, IVR and web).
- The system may be invoked at the central Call Center or remotely by individual Providers.
- The system functions may be filtered so that a Provider only sees one set of data.
- Providers may limit access to the data that they own, particularly during an incident or event.
- Billing information acquired during the reservations process will automatically be sent to the Financial Clearinghouse subsystem for centralized billing and allocation. Phase 1 will manually process billing through the Financial Clearinghouse through Medicaid only.
- The system will optimize schedules across Providers to meet Customer eligibility requirements while balancing service across the region to minimize resource and regional gaps.

3.3.2.4 Financial Clearinghouse (Billing and Invoicing)

The Financial Clearinghouse is a unified billing system to automatically manage costs, fares and reimbursements. This unified billing system allows other transportation service Providers to offer more services by reducing their administrative costs. Specifically, the Financial Clearinghouse subsystem will provide the following functions:

- Manage fare media generation and distribution to Providers (implemented in later phases);
- Acquire, verify, and process billing information (a) as part of the RSD process; (b) directly from fare collection vending and transactions systems (e.g., from on-board fixed-route transit, paratransit and livery vehicles); and (c) from Transit Providers who wish to invoice through the TMCC;
- Allocate billing information to the appropriate Provider and invoice the appropriate funding source on their behalf; and
- Distribute payments to organizations as appropriate.

Phase 1 will investigate some of the Financial Clearinghouse functions, but will reserve the deployment of automated processes until later phases when institutional issues, risk and cost/benefits are analyzed and better understood.

3.3.2.5 Archive Data and Performance Analysis

The Archive Data and Performance Analysis Subsystem consists of storing critical performance metrics related to the Transit Provider network, TMCC operations, and Customer interaction with the system. The subsystem contains two major functions:

- Aggregate and store data
- Performance Analysis with respect to Provider network balance

The Aggregate and store data function will store all relevant data to the planning, operations and performance of the TMCC related to stakeholder interactions, transactions and uses as well as TMCC system performance. This information will be available for access by authorized users through one or more methods including reports and reporting writing functionality.

Continuous improvement practices drive the need to analyze how well the TMCC meets Customer needs for services as defined by the TMCC critical success factor. Phase 1 performance will drive the requirements and build-out of subsequent phases. The initial performance analysis function for Phase 1 will also determine the success (reducing cost, increasing efficiencies, lowering barriers of entry, and filling gaps) of balancing needs across a broader network of Providers.

3.3.3 TMCC Provider Operating Subsystems

Although some Transit Providers currently support their own Call Centers, RSD and Dispatch Centers, and On-board Vehicle Subsystems (e.g., AVL, wide area

communications, and mobile data terminals), the TMCC will provide these tools to Providers without the capabilities or those Providers that opt in. The Transit Vehicle subsystem applies to all types of revenue Provider vehicles, including fixed-route, paratransit and livery vehicles. These Provider operating systems will lower the barriers to entry into the Provider network, increase the scalability of the system and ensure replicability across Providers, specifically focused on allowing FBO/NGO Providers into the TMCC Network. The major subsystems include:

- Provider (call taker) Web Services;
- TMCC Transit Vehicle Subsystem; and
- Transit Provider Remote RSD.

3.3.3.1 Provider (Call-Taker) Web Services

These are remote services distributed to Provider call centers, so those call-takers at these remote call centers may access the TMCC service characteristics and offerings. These services provide access to all the Customer and RSD Functions, as well as additional services reserved for remote call-takers, such as current Provider operations/dispatch information (vehicle location and ETA), traffic conditions and Customer profile information.

3.3.3.2 TMCC Transit Vehicle Subsystem

The TMCC Transit Vehicle Subsystem includes equipment to communicate current schedule/manifest status. It also includes critical functions to improve system security, service reliability and Customer satisfaction. The Transit Vehicle subsystem will manage:

- Voice and data communications;
- Operator logon and logoff;
- Operator Display and Audio (to display messages from the dispatch center, find locations and view manifest information related to Customers);
- Security devices (e.g., silent alarm, CCTV);
- Fare Collection (from fare media);
- Performance and transaction processing data collection;
- Schedule / manifest adherence and event reporting (AVL); and
- Loading / unloading configuration and performance data including fare collection data in a secure environment.

Each participating Provider will be offered replicable equipment, designed and implemented in a portable, reusable manner in order to work with the variety of vehicles and fleets used by each Operator.

3.3.3.3 Transit Provider Remote RSD

The Remote RSD provides remote access to the full complement of functionality offered by the central TMCC RSD. Using the remote features of the RSD, a Provider currently

without reservation, scheduling or dispatching capabilities will be able to perform or have access to these functions. Providers will be able to dispatch and communicate (via voice and data) with their vehicle Operators while limiting access to others and filtering the view of unnecessary features. Major functions also supported include the acquisition, processing and distribution of configuration data (e.g., manifest / schedules / system configuration information) and performance data (e.g., actual passenger travel times and events and fare collection information).

The Phase 1 deployment will prototype the RSD by implementing the processes for new Providers and other Providers who opt in. Because the system is complex, the full range of functionality will be available, although it may not be used.

3.4 Roles and Responsibilities

Key stakeholders participate in the development, operations and maintenance of the TMCC in different ways. The roles and responsibilities for the stakeholders are listed in Table 3-3.

Table 3-3: Roles and Responsibilities

Stakeholder	Roles/Responsibilities
CCWIB	• Lead agency for convening stakeholders on planning, development, operating and managing the TMCC • Support the stakeholder group and the project steering committee • Function as the convener of the faith-based community's participation in the TMCC • Function as the Fiscal Agent for the TMCC including all related grants
NJTRANSIT	• Provides fixed-route and demand-responsive transportation services for the State of New Jersey • Coordinate and administer paratransit services for New Jersey • Administers and provides NJTRANSIT passes. • Operate the statewide IVR and website for demand responsive trip reservations • Share information with the TMCC including Customers list, vehicle run information, vehicle locations, and passenger trip data • Share information with the TMCC about fixed routes and fixed route schedules
Sen-Han (SCUCS)	• Coordinate and administer specialized human services transportation programs for Camden County • Administer and provide transportation services under FTA Sections 5310 & 5311, Title III Older Americans Act, Title XIX Medicaid, NJ Department of Veterans funds, New Jersey State disability funds (DDD/DVR), Senior Citizen and Disabled Resident Transportation Assistance program, NJDHS, County General Revenue funds, and municipal community development block grants (CDBG) • Provide fixed-route, flexible-route and demand-response transportation services for seniors, children, veterans and Customers with handicaps • Share information with the TMCC including Customers list, vehicle run information, vehicle locations, and passenger trip data

Stakeholder	Roles/Responsibilities
SJTA	• Administers, plans, and coordinates transportation services for TANF recipients • Integrates JARC funds, NJDHS block grant funds, NJ CMAQ funds, NJ TransPlus fund and private employer funds • Provide fixed-route, flexible route, and demand responsive transportation services • Share information with the TMCC including Customers list, vehicle run information, vehicle locations, and passenger trip data
Municipal Human Service Transportation	• Provide fixed-route, flexible route and demand responsive transportation services for seniors and persons with disabilities • Share information with the TMCC including Customers list, vehicle run information, vehicle locations, and passenger trip data
Cross County Connection TMA	• Provide vanpools and ride-matching services • Operates the NJFindARide.com web portal for southern New Jersey • Deploys traveler information kiosks. The kiosks includes a web portal to the TMCC • Share information with the TMCC and provide an interface with the TMA portal
Private Livery Companies	• Provide Medicaid ambulatory transportation services • Share information with the TMCC including Customers list, vehicle run information, vehicle locations, and passenger trip data
PATCO	• Administers the Freedom smart card and the New Jersey Human Services Smart Card • Share information with the TMCC including fixed route schedules
Faith-Based Collaborative	• Provide community transportation services • Identify and support each of the participating Faith-Based Organizations (FBOs) • Function as the Fiscal Agent for all grants and foundation funds to the FBOs • Provide written reports to the TMCC operating structure (not yet defined) on a monthly or quarterly basis as needed
CCBSS	• Administers state Title XIX medical transportation services, general assistance recipient medical transportation and some NJ DFD transportation programs • Provide reimbursements to Providers for Medicaid eligible services • Maintain, distribute and confirm Medicaid eligibility list • Contracts with Providers for demand-response services • Issues bus passes capable of using existing fixed-route NJTRANSIT services
NJ Department of Human Services	• Make available eligibilities and register clients • Coordinate with the TMCC with any statewide broker contract • Maintain statewide web portal www.NJFindARide.com
NJ Department of Labor	• Maintain, distribute and confirm employment status of workers for work programs
NJ Department of Veteran Affairs	• Maintain, distribute and confirm veterans eligibility list

Stakeholder	Roles/Responsibilities
NJ Department of Health and Senior Services	• Make available eligibilities and register clients
NJDOT 511	• Operate and maintain traveler information system for the State of New Jersey • Forward telephone calls to the TMCC • Receive transferred telephone call from the TMCC
NJ211	• Provide information about human services programs to the general public • Determine social services eligibility • Register Customers for social services • Forward telephone calls related to transportation to the TMCC • Receive transferred telephone call from the TMCC
State, County and Municipal Law Enforcement Agencies	• Provide public safety and security • Respond to emergencies
TMCC	• Specific duties related to TMCC Operations, Billing, Cost Allocation, Back Office, Equipment Maintenance and Technical Support is defined in the *TMCC Operations and Business Plan* • CCBSS 's livery call center for Title XIX services • FBO's call center • Exchange information with NJ211

4 Operational Scenarios

This section provides several typical scenarios to clarify the operational details of the proposed TMCC and how stakeholders will interact with the proposed system.

4.1 Trip Reservation (User Perspective)

The first scenario represents a case where a Customer calls the TMCC to make a trip reservation. In this scenario, the Customer is transferred to the 'one-stop' call center (TMCC) after calling the 211 or 511 telephone number.

4.1.1 User Needs Supported

- **User Need 1:** Need for Transportation Services Information
- **User Need 1.1.1:** Need for Transportation Services Information Via Telephone
- **User Need 1.2:** Need to Link to New Jersey 211 and 511 Systems
- **User Need 4.1:** Need a Single Method of Payment for Customers

4.1.2 Actors Involved

Customer, TMCC Call-Taker, One-Stop Call Center, Universal Customer Registration Database, TMCC RSD

4.1.3 Scenario

- **Call One-Stop Call Center.** The Customer calls either the 211 or 511 telephone number. The Customer is transferred to the TMCC One-Stop Call Center, where a TMCC call-taker responds.
- **Provide Trip Origin and Destination.** The Customer indicates he would like to make a trip reservation. The Customer provides the call-taker with the trip origin, the destination, and the date and time of arrival at the destination.
- **Provide Customer Information.** The Customer provides his registration information and the purpose of the trip to the call-taker. The call-taker checks the Universal Customer Registration Database and confirms the Customer information. If the Customer is not registered, the call-taker may ask to register the Customer. The call-taker may also ask questions to determine what services the Customer may be eligible for and what special needs the Customer may have.
- **Pay Fare.** If the Customer is not eligible or only partially eligible for services, the call-taker will inform the Customer of the amount of any fare. If the Customer accepts the fare amount, the Customer agrees with the call-taker on a method of payment. This may be a smart card, an account information or a credit card.
- **Receive Vehicle Trip Information.** The call-taker provides the Customer with information about the vehicle trip. This information includes route numbers and schedules for fixed-route services. If a trip reservation is needed, the call-taker provides the time and location of the pick-up by the Provider and information about any connections to be made. The Customer either accepts or declines the trip reservation.

- **Confirm Vehicle Trip Information.** The call-taker confirms the trip reservation from the TMCC RSD with the Customer. Information to be confirmed includes pickup, connection, and arrival times and locations. If the trip reservation is a recurring reservation or a subscription, this information is also confirmed by the call-taker.

4.2 Trip Reservation (Provider Perspective)

This second scenario represents the same case as the first scenario where a Customer calls the TMCC to make a trip reservation, but from the perspective of the TMCC call-taker. In this scenario, the TMCC call-taker responds to the Customer's request for a trip reservation.

4.2.1 User Needs Supported

- **User Need 1.1:** Need for Transportation Services Information
- **User Need 1.1.1:** Need for Transportation Services Information Via Telephone
- **User Need 4.1:** Need a Single Method of Payment for Customers
- **User Need 5.1:** Need to Coordinate Call Center Functions

4.2.2 Actors Involved

Customer, TMCC Call-Taker, One-Stop Call Center, Universal Customer Registration Database, TMCC RSD, Billing/Invoice System

4.2.3 Scenario

- **Receive Call.** The TMCC call-taker answers the telephone call from a Customer.
- **Determine the Trip Origin and Destination.** From the Provider Scheduling Database, the call-taker determines which Providers offers services to the geographic areas and in the time frame (time-of-day, day-of-week) that the service is desired.
- **Determine Customer Information.** The call-taker determines from the Universal Customer Registration Database if the Customer has been registered with any of the Providers and the purpose of the trip. A Customer's registration will determine what transportation services the Customer is eligible for, and if the Customer has any special needs or requirements. If a Customer is not registered, the call-taker may register the Customer and determine their eligibility if appropriate.
- **Determine Fare Payment.** The call-taker determines the fare amount and the method of payment. If the Customer is eligible for transportation services, the call-taker determines the funding source for the services and how the Providers will be reimbursed. This may require information on which Providers are eligible for reimbursement from the funding source(s). Not all transportation Providers may be eligible for reimbursements from all funding sources. If the Customer is not eligible or only partially eligible, the call-taker should provide the fare amount to the Customer and the acceptable methods of payment (smart card, cash, credit

card, etc). If applicable, the call-taker should accept fare payment from the Customer and enter the information into the Billing/Invoice System.

- **Assign Vehicle Trip.** The call-taker assigns the vehicle trip to the Provider or Providers into the TMCC RSD. This requires call-taker access to each Provider's vehicle run schedules and vehicle manifest. This may include the call-taker enabling repeated or subscription trips for the Customer. If a fixed-route service is available or part of the vehicle trip, the call-taker should provide the route information and schedule to the Customer.
- **Confirm Vehicle Trip.** The call-taker confirms the dates and times of the vehicle trip from the TMCC RSD to the Customer.

4.3 Find Trip Information

This scenario represents the case where a Customer goes to a website to find more information about his specific vehicle trip.

4.3.1 User Needs Supported

- **User Need 2:** Provide Customer Trip Information
- **User Need 2.1:** Need for Trip Information
- **User Need 2.2:** Need for Connection Information
- **User Need 2.3**: Need for Automated Alerts and Reminders

4.3.2 Actors Involved

Customer, Universal and Comprehensive Consumer Information Interface, TMCC RSD

4.3.3 Scenario

- **Connect to Trip Planning Portal.** A Customer accesses the One-Stop Call Center via the Universal and Comprehensive Consumer Information Interface on the internet.
- **Enter Customer information or vehicle trip information.** A Customer finds his vehicle trip information by entering his Customer registration information or his trip reservation confirmation number.
- **Get updated information.** The web portal provides information about the vehicle trip, including the current estimated arrival times of the vehicle at the pick-up location, at the connection point, and at the final destination. The web portal also provides the same information for all connection vehicles.
- **Signup for automated alerts.** A Customer signs up for automated alerts. Options may include an alert 5 minutes before the vehicle's arrival at the pick-up location, or if the vehicle is delayed 10 or more minutes at the pick-up location.

4.4 Dispatching Vehicles

This scenario represents the case where a Provider Dispatcher dispatches a vehicle at the beginning of the day, makes adjustments to the route, and collects the passenger loading information at the end of the day.

4.4.1 User Needs Supported

- **User Need 5.1:** Need to Coordinate Call Center Functions
- **User Need 5.2:** Need to Share Vehicle Locations
- **User Need 5.3:** Need to Share Information With Operators

4.4.2 Actors Involved

Provider Dispatcher, Operators, TMCC RSD, MDC, AVL

4.4.3 Scenario

- **Collect Vehicle Manifest.** Dispatcher to coordinate with the Operator on the Vehicle Manifest from the TMCC RSD. Transfer to the vehicle's MDC.
- **Collect AVL Information.** Operator begins his vehicle run. The vehicle location is available to the Dispatcher via the vehicle's AVL system.
- **Collect Passenger Information.** The Operator updates the passenger loading information on the vehicle's MDC as passengers are picked up and dropped off. The information is recorded to the vehicle's on-board system, transmitted to the TMCC RSD, and made available to the Dispatcher. If the passenger information is not collected during the vehicle run, collect the passenger information at the end of the day.
- **Provide instructions to the Operator.** The Dispatcher may update a vehicle manifest or provide route information to the Operator because of roadway conditions or to provide service to a passenger who missed his connection.

4.5 Assign Shared Costs and Reimbursements

This scenario represents the case where the TMCC uses the vehicle run and passenger loading information to assign shared costs and reimbursements to the agencies that provided the vehicle trip.

4.5.1 User Needs Supported

- **User Need 4.2:** Need to Assign Shared Costs
- **User Need 4.3:** Need to Assign Reimbursements
- **User Need 5.3:** Need to Share Information with Operators

4.5.2 Actors Involved

Customer, One-Stop Call Center, TMCC RSD, Billing/Invoice System

4.5.3 Scenario

- **Get Vehicle Trip Information.** Collect vehicle trip information from the TMCC RSD. Information includes Customer eligibility, Provider(s) offering the transportation service and vehicle run assignment(s).
- **Get passenger data.** Collect manifest and passenger information from the TMCC RSD. Collect passenger boarding times and location, and passenger alighting times and locations.
- **Calculate shared cost and reimbursement.** Check the Billing/Invoice System on the total fare paid by the passenger and the total reimbursement from social agencies, if applicable. Using a pre-determined metric (e.g., passenger-hours, miles), assign the proportional cost and reimbursement to each Provider that supplied service for that vehicle-trip.
- **Request reimbursement.** Provide the necessary data and request reimbursement from the appropriate financial institution (for passenger-paid fares), Customer account, and/or social agency.
- **Receive reimbursement.** Upon receiving the reimbursement from the financial institution, passenger account and/or social agency, assign the appropriate share of the reimbursement to each Provider's account.

5 Analysis of the Proposed System

This section provides an analysis of the impacts, benefits, limitations, advantages, disadvantages, and alternatives and trade-offs considered for the proposed system.

5.1 Impacts

This section describes the operational impacts of the proposed system on the Providers and Customer. It also describes the temporary impacts on the Providers and Customers during the period of time when the new system is being developed, installed, and trained on.

This information is provided in order to allow all affected organizations to prepare for the changes that will be brought about by the proposed system and to allow for planning of the impacts on the Providers and Customers during the development of, and transition to the new system.

5.1.1 Operational Impacts – Provider

The following are potential operating impacts that may affect one, multiple, or all Providers after the proposed system is built.

- **New billing system.** A main component of the proposed system is the development of a shared, common billing system for all the Providers to opt into. This requires that the Providers be involved during the procurement and development of the billing system to ensure that the new system meets their needs. After the new billing system has been installed, the Providers will need to learn the new billing system. If a Provider decides not to opt in, an interface from the new billing system to the Provider's existing billing system may need to be developed.
- **New Call-taking procedures.** A main component of proposed system is the one-stop call center. The procedures for taking Customer calls will change as new and enhanced capabilities are provided by the proposed system. These capabilities include trip reservations with other Providers, determining if Customers are eligible for other transportation services by other Providers, and optimized vehicle scheduling across the Providers.
- **Coordination with other Providers.** A major impact of the proposed system is the increased coordination with other Providers. Coordination of services for the Customer, shared operation of the one stop call center, sharing databases, and sharing administrative systems are just some areas where Providers must communicate with each other to provide transportation services for Camden County.
- **Increased data retention requirements.** One of the features of the proposed billing system is the ability to assign costs and reimbursements to Providers. Allocation of each Provider's share of the costs and reimbursements will be based on a metric to be determined. Each Provider will have to share this vehicle trip

and passenger data information with other Providers and possibly retain the information for a longer period of time until the billing is fully reconciled.

- **Changes in operational budget.** An expected impact of the proposed system is decreased administrative costs for each Provider. The proposed system includes administrative systems that can be used and shared by multiple Providers. This includes a new billing system, a new registration, scheduling and dispatching system, common databases, and interfaces with other agencies and databases. The costs of maintaining these systems and components will be shared among the participating Providers. It is hoped that by decreasing the administrative costs for a Provider, more resources will be available to provide services for Customers.

5.1.2 Operational Impacts – Customer

- **Access to services.** An impact of the proposed system (one-stop call center) is how Customers can now access information on the transportation services available in Camden County. All transportation services information for the county will be available from a single telephone number or web portal with the proposed system.
- **Availability of new services**. The proposed system offers Customers new types of access to services. This includes access to automated alerts and real-time information, including estimated times of arrival and departures, via the telephone, web portal, and electronic signs at transit stops and pickup/dropoff locations.
- **One-time registration.** The proposed system offers a universal Customer registration database for all Providers in Camden County. Thus, a Customer needs to only register once for transportation services in Camden County.

5.1.3 Organizational Impacts - Providers

- **Modification of responsibilities.** The proposed system may result in a change in responsibilities for some current employees. Each Provider currently has its own call-takers and Dispatchers who are knowledgeable about their own Provider's services and vehicles. With the proposed system, the call-takers and Dispatchers need to be more aware of other Provider's services and vehicles. The call-takers and Dispatchers also may need to learn to use some of the new systems being implemented in the proposed system, such as the Universal Customer Registration Database and the AVL system.
- **Addition or elimination of job positions.** The proposed system includes a centralized communications center, which consolidates call-taking functions for all Providers, if they wish. This may eliminate the need for some call-takers. However, it is expected that some Providers may expand the types of transportation services offered as a result of cost savings, so more Dispatchers and Operators may be needed.
- **Training or retraining users.** The proposed system adds several new capabilities and may replace some old systems, so current call-takers, Dispatchers, and Operators will need new training. New capabilities include

automated alerts, trip reservations for other Providers, one-stop Customer registration and AVL systems. Old systems that may be replaced includes trip reservation, scheduling, and dispatching system and the billing system.

- **Changes in locations of personnel.** The proposed system includes a new TMCC. Some Providers may chose to relocate part of their operations to the new TMCC.

5.1.4 Impacts During Development - Provider

This section summarizes the anticipated impacts on the Provider during the development project for the proposed system.

- **Development support.** Providers need to provide staff and resources to participate in the development of the proposed system, including reviews, involvement with demonstrations, evaluation of proposed operating capabilities, development of databases, and training on the new systems.
- **Parallel operation of the new and existing systems.** It is expected that Providers will need to staff the existing system and the new system until the new system has been fully implemented and tested and staff has been trained on the new system.
- **Operational impacts during system testing of the proposed system.** It is expected that Providers will need additional staff during system testing. There will also be an extra burden and perhaps less efficient operations as call-takers, Dispatchers, Operators, and administrative staff learns to use the new system, and implements new procedures.

5.2 Summary of Improvements

This section provides a qualitative summary of how the proposed system addresses the goals/objectives as well as the user needs of the project.

Table 5-1 summarizes how the proposed system addresses the goals and objectives of the system.

Table 5-1: How Goals and Objectives Are Met

Goals / Objectives	Proposed System
Goal 1: Develop a Travel Management Coordination Center (TMCC) for Camden County that creates opportunities for better and increased transportation service throughout the County.	Develop a centralized communications center for Customer call-taking and share operational and administrative functions. The proposed system provides opportunities for better coordination of transportation services, provides more information to Customers, and improves cost efficiencies, allowing for expansion of transportation services.
Objective: Investigate and utilize ITS technologies as a tool to facilitate transportation coordination in Camden County.	Utilizes ITS technologies, such as AVL to improve operational efficiency and improve Customer service.

Goals / Objectives	Proposed System
Objective: Work collaboratively with Camden County public, private, non-profit, and faith-based organizations as partners in the development of the TMCC.	Develop an organizational structure that requires participation in the development, operations and maintenance of a shared TMCC. This organization structure includes a steering committee, working groups, etc.
Goal 2: Increase access to existing human service and traditional public transportation for Camden County Customers.	One of the proposed benefits of the system is to help FBOs and other human services Providers to expand their services. The proposed system provides the functions and subsystems so FBOs can provide transportation services in Camden County. The costs to develop and operate the TMCC and its systems are shared between Providers, removing a barrier to providing transportation services. This also increases the opportunities to service currently under served areas and populations.
Objective: Develop improved marketing strategies targeted to Customers seeking human services transportation designed to create awareness for existing public transit and human service transportation.	Develop a single telephone number and web portal that provides access to and information on all transportation services for Camden County.
Objective: Examine the feasibility of reorienting human service transportation as feeder service to traditional transit services, as one means to improve the efficiency of the overall passenger transportation network in the County.	Share Provider service information, such as fares, schedules, and routes to enable coordination between Providers to optimize cost efficiencies and provide service in areas that are lacking. Develop a shared trip reservation, scheduling and dispatching system.

Table 5-2 summarizes how the proposed system satisfies the user needs identified.

Table 5-2: How User Needs Are Satisfied

User Needs	System
User Need 1.1: Need for Transportation Services Information	Development of a one-stop call center, where Customers can find information about all available transportation services within Camden County. Information provided via the call center include fares and schedules. Services available to the Customer via the call center includes making trip reservations and registration for services.
User Need 1.1.1: Need for Transportation Services Information Via Telephone	Development of a one-stop call center, where Customers can find information about all available transportation services within Camden County by dialing a single telephone number.
User Need 1.1.2: Need for Transportation Services Information Via a Web Portal	Development of a one-stop call center, where Customers can find information about all available transportation services within Camden County from a single web portal.
User Need 1.2: Need to Link to the New Jersey 211 and 511 Systems	Development of a telephone system that allows transfers of phone calls between the one-stop call center and the 211 system; and between the one-stop call center and the 511 system. Also development of a web portal with links to the 211 web portal and the 511 web portal.

User Needs	System
User Need 2.1: Need for Customer Trip Information	Development of an AVL system to track vehicle location and determine estimated time of arrivals and departures. Then allow Customers to access information about their specific vehicle trips via telephone or a web portal.
User Need 2.2: Need for Connection Information	Development of an AVL system to track vehicle location and determine estimated time of arrivals and departures. Then provide that information to Customers via signs at key transit pickup and dropoff locations.
User Need 2.3: Need for Automated Alerts and Reminders	Development of a trip reservation and scheduling system that can send an alert or reminder to a Customer to a telephone number or e-mail. The trip reservation and scheduling system is tied to the AVL system so updated vehicle location also can be sent to the Customer.
User Need 3.1: Need for Security on Vehicles	Addition of security equipment, including alarms, CCTV cameras and recording systems on vehicles.
User Need 3.2: Need for Security at Transit Pickup and Dropoff locations	Addition of security equipment, including alarms and CCTV cameras at transit stops, transit stations, and pickup and dropoff locations.
User Need 4.1: Need a Single Method of Payment for Customers	Development of an electronic fare payment system, including a smart card, that is accepted by all Providers.
User Need 4.2: Need to Assign Shared Costs	Development of a billing system to assign shared costs between multiple agencies and multiple funding agencies that pay for passengers on the same vehicle trip.
User Need 4.3: Need to Assign Reimbursements	Development of a billing system to enable a Provider to be reimbursed by multiple funding agencies.
User Need 5.1: Need to Coordinate Call Center Functions	Development of a TMCC reservation, scheduling and dispatching system that can be used and accessed by any Provider.
User Need 5.2: Need to Share Vehicle Locations	Development of a TMCC system to allow any Dispatcher to access vehicle locations from any Provider.
User Need 5.1.3: Need to Share Information with Operators	Development of a TMCC system to allow sharing of operational data between vehicles and Providers. Operational data includes vehicle manifests and passenger vehicle trip data.

5.3 Challenges and Limitations

This section provides a qualitative summary of the disadvantages and/or limitations of the proposed system.

Challenges of the proposed system include the following:

- **Need to retrain personnel.** The proposed system will result in changes in operational procedures. This disadvantage can be mitigated with a structured and continuous training program.
- **New user interface.** The proposed system may result in new systems and new user interfaces that the personnel must learn. This disadvantage can be mitigated with a structured training program.

- **Single point of failure.** The TMCC may become a single point of failure. Failure of the TMCC and its systems may disable proper coordination of all transportation services in Camden County. This disadvantage can be mitigated with a disaster recovery plan and plans for a back-up system.
- **Cost and Resources.** The proposed system requires high costs and resources upfront to procure the software and hardware. This is expected to be an initial cost. This disadvantage will be mitigated by using a phased approach to implement the system and the use of open standards and an open architecture.

Limitations of the proposed system include the following:

- **Complexity of the system.** Since more capabilities are offered by the proposed system, more information is being exchanged among Providers, and between Providers and Customers. This may result in poorer response times and longer call times. This limitation can be mitigated with a structured and continuous training program.
- **Institutional Agreements.** The sharing of TMCC systems and increased coordination between the Providers will require more formal agreements between the participating Providers. Policy decisions have to be made with consensus. This limitation can be mitigated by leveraging existing systems and the formal relationship already in place.

5.4 Proposed Approach

Two of the challenges and limitations of the proposed system discussed in the previous section are the complexity of the system and the resources required to implement the full system. To mitigate these, an open architecture with open standards will be considered for this system, and the system is proposed to be implemented in three phases. A discussion of an open architecture and open standards is provided, followed by a description of the work to be performed in each phase.

5.4.1 Open Architecture and Open Standards

An open architecture using open standards will be considered for this project. An open architecture is a type of software architecture that allows for the addition, upgrade and swapping of components or subsystems. Open architectures allow users to see inside all or parts of the architecture without any proprietary constraints. Thus, as needs change or technology is upgraded, only those components or subsystems affected need to be changed, the remainder of the system does not have to be changed.

Open standards are industry-consensus, non-proprietary technology that facilitates data sharing between devices manufactured by different vendors; swapping subsystems and components; and performs functions or processes in an openly understood manner. Using open standards reduces risk and generally incurs lower costs over the life of the system because the standards are generally well known and understood. Wide support of

open standards allows a system to select among multiple vendors for deployment products.

With a closed architecture and proprietary (non-standard) systems, the owner of the system is "locked" into one or a limited number of developers who are familiar with the architecture and the proprietary equipment.

Another advantage of using the open architecture and open standards is that they support replicability and scalability. An open architecture is scalable because components and subsystems can be easily added to the system or changed without affecting the remainder of the system. Thus, as Providers are added to the system, the open architecture will allow the addition of these Providers without necessitating a change to the overall system.

Since an open architecture and open standards are proposed to be used, the architecture and standards can easily be replicated in other implementations, since there are no proprietary constraints. Also, other implementations can also use the same architecture and the same standards but can customize the components, subsystems, or even the standards to meet their own implementation's needs.

5.4.2 Phasing

The proposed system is planned to be implemented in three phases.

5.4.2.1 Phase 1 – Federated Approach

Phase 1 establishes the basic functions of the proposed system, including a one-stop call center for Customers; developing a basic trip reservation, scheduling and dispatching system; and a basic billing system.

The goal of this phase is two-fold.

First, to quickly meet the suppressed demand of the population by quickly establishing a one-stop call center to simplify the population's ability to find information on and obtain transportation services; and by establishing a basic system to allow new Providers, such as the FBOs, to begin providing transportation services in underserved areas.

Second, this phase allows Camden County to get some experience with the proposed system while limiting both the operational and institutional impacts on the quality of transportation services currently offered to the public.

The call center will provide Customers with Provider information such as schedules and services. However, only reservations, scheduling and dispatching for Medicaid and FBOs will be implemented as part of Phase 1. FBOs currently do not have an existing reservation system so implementing a new trip reservation, scheduling, and dispatching system will have little impact on their current operations. This burn-in phase of the new software will allow Camden County to acquire experience with the new system and work out any potential problems with minimal impacts on current services.

All other reservations will be transferred to the appropriate Provider. Each Provider still maintains their own trip reservation, scheduling and dispatching systems, but the reservation information will be shared with the call center so the call-taker can check a reservation.

The billing system will be limited in this phase to filing and collecting reimbursements for Title XIX medical transportation services for seniors and disabled, low-income individuals and the public for all travel needs. These functions can be used by multiple Providers and Medicaid funding is a known and well-understood process and thus poses little risk.

5.4.2.2 Phase 2 - Semi-Federated Configuration

Phase 2 continues the migration to the full proposed system by expanding on the basic capabilities offered by the TMCC in phase 1. The goal of this phase is to begin reducing administrative costs for the Providers, while increasing the capacity and the transportation services offered.

In this phase, the trip reservation, scheduling and dispatching system will be expanded beyond just FBO and Medicaid rides to support other Providers. As other Providers migrate to the TMCC system, there will be increased coordination between the Providers, and the system will support mixed rides, decreasing costs and increasing cost efficiencies.

The billing and invoicing system will also be expanded to support electronic fare payments and billing with funding agencies other than Medicaid.

The result of the phase will be decreased costs for all Providers because of the cost savings from the increased service coordination between the Providers and the shared billing and invoicing system. This will lead to more resources being available to expand the transportation service in Camden County.

5.4.2.3 Phase 3 – Centralized Configuration

Phase 3 expands the proposed system to its full capabilities. This includes expanding the trip reservation, scheduling, and dispatching system to support optimizing scheduling across Providers and providing financial clearinghouse functions.

5.4.3 Operational Scenarios – Phase 1

The remaining deliverables for the Enhanced Human Service Transportation Models Joint Demonstration, Phase 1 – System Development and Design, includes a TMCC Systems Requirement document and a TMCC Systems Design document. These documents will only focus on Phase 1 of the proposed system.

The following operational scenario is provided to better demonstrate the operational details of the proposed TMCC after completion of Phase 1.

5.4.3.1 Trip Reservation (Phase 1 Implementation)

The first scenario represents a case where a Customer calls the TMCC to make a trip reservation. In this scenario, the Customer calls the 'one-stop' call center (TMCC) looking to make a reservation.

- **Call One-Stop Call Center.** The Customer calls the TMCC One-Stop Call Center, where a TMCC call-taker responds.
- **Provide Trip Origin and Destination.** The Customer indicates he would like to make a trip reservation. The Customer provides the call-taker with the trip origin, the destination, and the date and time of arrival at the destination.
- **Provide Customer Information.** The Customer provides his registration information and the purpose of the trip to the call-taker. The call-taker asks what services the Customer is eligible for and what special needs the Customer may have. The Customer indicates he is eligible for Medicaid, has no special needs, is not disabled, and the purpose of the trip is for medical purposes.
- **Provide Service Information.** The call-taker checks the database if any Providers offers a fixed-route or modified fixed-route between the Customer's trip origin and destination during the time period. If so, the call-taker will transfer the call to the appropriate Provider if a reservation is needed. If no reservation is needed, the call-taker will provide the Customer with the route and schedule information.
- **Make Trip Reservation.** If no fixed-route or modified fixed-route is available, since this is a Medicaid trip, the call-taker will make a trip reservation for the Customer. The call-taker provides the Customer with the time and location of the pick-up by the Provider and information about any connections to be made. The Customer either accepts or declines the trip reservation.
- **Confirm Vehicle Trip Information.** The call-taker confirms the trip reservation from the Trip Reservation System with the Customer. Information to be confirmed includes pickup, connection, and arrival times and locations.

Appendix A: Abbreviations, Acronyms, and Definitions

ADA	Americans with Disabilities Act
AVL	Automated Vehicle Location
CCBSS	Camden County Board of Social Services
CCWIB	Camden County Workforce Investment Board
ConOps	Concept of Operations
DOT	Department of Transportation
DVRPC	Delaware Valley Regional Planning Commission
ETA	Estimated Time of Arrival
FTA	Federal Transit Administration
ITS	Intelligent Transportation System
IVR	Interactive Voice Response
MDC	Mobile Data Computer
NGO	Non-Government Organization
NJ Transit	New Jersey Transit – Statewide transit Provider in New Jersey
PATCO	Port Authority Corporation of Pennsylvania and New Jersey
Sen-Han Transit	Designated Provider of County paratransit service in Camden County
SJTA	South Jersey Transportation Authority
SMS	Short Messaging Service
Title XIX	Article of the Social Security Act that authorized Medicaid
TMCC	Travel Management Coordination Center
VAID	Vehicle Arrival Information Display
VTC	Alan M. Voorhees Transportation Center at Rutgers University