Lee County Board Of County Commissioners
Agenda Item Summary

Blue Sheet No. 20051718

1. ACTION REQUESTED/PURPOSE: Approve Project # PB060091, the utilization (piggyback) of the Sarasota County Proposal # RFP 4785DW, which has gone through their competitive bidding process, for the purchase of an Automatic Bus Passenger Counting System, from Urban Transportation Associates, for use by Lee Tran. The total price for the automatic bus passenger counting system is $81,100. This purchase is 100% federally funded by the Federal Transit Administration.

2. WHAT ACTION ACCOMPLISHES: Board approval is required because this expenditure will exceed $50,000.

3. MANAGEMENT RECOMMENDATION: By utilizing the Sarasota County Proposal, Lee Tran will be able to have the automatic bus passenger counting system installed in a timely fashion, thus allowing Lee Tran to continue to provide high quality transit service.

4. Departmental Category:	C6D	**5. Meeting Date:**	12-13-2005

6. Agenda:		**7. Requirement/Purpose:** *(specify)*		**8. Request Initiated:**	
X	**Consent**		**Statute**	**Commissioner**	
	Administrative		**Ordinance**	**Department**	
	Appeals	X	**Admin. Code** AC-4-1	**Division**	**Lee Tran**
	Public		**Other**	**By:**	**Steve Myers**
	Walk-On				

9. Background: Section 10.1 of the Lee County Purchasing and Payment Procedures Manual allows Lee County to utilize the quotes/proposals of other governmental entities as long as the procurement has gone through their competitive quoting/bidding process. Funding will come from the individual department's budget and they will be responsible for monitoring their own expenditures.

Account String: K15440148640.506410.11

ATTACHMENTS:

(1) Department request to piggyback
(2) Sarasota County's specifications
(3) Urban Transportation Associates submitted proposal to Sarasota County
(4) Price Quote from Urban Transportation Associates
(5) Permission to piggyback from Sarasota County
(6) Permission to piggyback from Urban Transportation Associates
(7) Sarasota County Tabulation Sheet and Award Notice

10. Review for Scheduling:

Department Director	Purchasing or Contracts	Human Resources	Other	County Attorney	Budget Services				County Manager/P.W. Director
					Analyst	Risk	Grants	Mgr.	
11/30/05	11-23-05				12/1/05	12/1/05	12/1/05	12/1	12-1-05

11. Commission Action:

_____ **Approved**
_____ **Deferred**
_____ **Denied**
_____ **Other**

RECEIVED BY COUNTY ADMIN: 12-1-05 2:34
COUNTY ADMIN FORWARDED TO: 12-1-05 3:30 PM

Rec. by CoAtty Date: 12/1/05 Time: 1:40pm
Forwarded To: Admin 1:40 PM

ATTACHMENT #1

Pflaumer, Earl

From: Sheehan, Janet K.
Sent: Wednesday, November 09, 2005 12:01 PM
To: Pflaumer, Earl
Cc: Franceschini, Robert D.; Susan Riley
Subject: FW: Piggyback on Sarasota RPF #4785DW Passenger Counters
Attachments: 4785DW.doc

Earl,

Would you please process a blue sheet for Susan. If you need to contact Jessie he's in our fappo directory.

Thanks,

Janet

From: Susan Riley [mailto:RILEYSP@leegov.com]
Sent: Tuesday, November 08, 2005 5:17 PM
To: Sheehan, Janet K.
Cc: Horsting, Michael S.; Myers, Steve L.
Subject: Piggyback on Sarasota RPF #4785DW Passenger Counters

Janet -
Attached is information that we received from Jessie Mahoney at Sarasota County Purchasing Dept, phone number 941-861-5796, Email JMAHONE@scgov.net regarding a bid for Passenger Counters. LeeTran would like to piggyback off this bid. We have funds budgeted in KI5440148640.506410.11. Total project cost is $81,000. This project would be grant funded by FTA at 100%.

Please let me know if you need anything further from LeeTran to proceed.

Thank you for your assistance.

Susan Riley, Fiscal Manager
6035 Landing View Road
Ft. Myers, FL 33907
Office Phone #239-533-0331
Office Fax # 239-277-5064

ATTACHMENT #2

SARASOTA COUNTY GOVERNMENT

REQUEST FOR PROPOSAL #4785DW

FURNISH, INSTALL AND MAINTAIN AN AUTOMATIC PASSENGER COUNTING SYSTEM FOR THE SARASOTA COUNTY TRANSIT AUTHORITY

BACKGROUND

Sarasota County is soliciting proposals from qualified firms or individuals to **Furnish, Install, and Maintain an Automatic Passenger Counting System** for the Sarasota County Transit Authority ("SCTA").

The SCTA is responsible for the planning, scheduling, operation, and management of all public transportation services within the SCTA's boundaries. The area served by the transit system covers 159 square miles and includes a population of 308,043.

Number of Fixed Bus Routes:	25
Annual Rider ship:	1,718,370
Average Weekly Rider ship:	5664
Average Saturday Rider ship:	4414

SCTA's fixed route bus service network includes 18 routes and approximately 2000 bus stops Monday through Saturday.

To assess the productivity of transit services, it is important that passenger activity data and running time data be collected for each route. Detailed information about boardings, alighting, passenger loads, bus running times, bus dwell times, and schedule adherence is needed by service planners and schedulers to evaluate existing service levels and to make necessary adjustments to routings, hours of operation, running time, headways, and timetables.

SCTA currently uses manual methods to collect passenger activity and running time data. While the data processing and report generation components of these systems are well developed, the data collection methods remain expensive. Consequently, a relatively small quantity of data is collected each year. Although the data is good, the existing methods do not provide a quantity of data sufficient to monitor and evaluate all transit services that are operated.

The successful proposer shall provide all necessary personnel, materials, and equipment to provide the services described in this Request For Proposal ("RFP").

SCOPE OF SERVICES

The proposed Automatic Passenger Counting ("APC") System is to include, but not necessarily be limited to, the following components:

1) An on-board system that includes sensors to count passenger boardings and alightings at the front and rear doors, sensors that determine a bus geographical position, and a computer that controls the operation of the sensors and creates a database of information collected on the bus.

It is expected that approximately four (4) buses in the transit fleet will be outfitted with this equipment.

The types and numbers of buses to be outfitted with the APC System equipment include:

Bus Type	Bus Length	Year	Make/Model	No. of Doors	No. in Fleet	No. to be APC/AVL equipped
Gillig	35 ft.	2004	Low Floor	2	5	1
Gillig	35 ft.	2002	High Floor	2	5	3

Each of the buses in this listing is equipped with a 12/24-volt electrical system.

There are 0 steps at the front and back doors of the Low Floor Buses.

There are 2 steps at the front and back doors of the High Floor Buses.

2) A system that permits data collected on board to be downloaded to a wayside computer when a bus is serviced at the end of the day.

3) A communications system that transfers data between a wayside computer and a central computer.

4) A central computer system that includes the necessary hardware and software to support the following activities:

a) Data management (file creation, data cleaning, and editing);

b) System diagnostic reporting;

c) Matching of passenger activity and bus timing data collected on board with bus assignment, schedule, and stop databases;

d) Creation of a relational database that can be queried to generate reports of passenger activity, bus-running times, bus swell times, and bus schedule adherence.

5) The proposed APC System shall include capability to generate standard NTD reports of passenger activity, bus running time, bus dwell times, and bus schedule adherence. The report generation capability will also be required to allow for ad hoc reporting and access to the relational database referred to immediately above.

RESPONSE FORMAT

Respondents shall submit eight (8) signed copies of their submittal no later than **2:00 P.M., Friday, June 25, 2004,** to the following address:

Mr. Dennis W. Wallace
Contract Management Specialist
Sarasota County Government
1660 Ringling Boulevard
Procurement – Third Floor
Sarasota, FL 34236

The response format shall contain a letter of transmittal and the following five (5) tabs with stated information behind each tab. Where specified, the maximum number of pages in each section of the response shall consist of single-sided, 8-1/2" x 11" paper, using 12-point characters. Responses exceeding these limits may be considered non-responsive. The evaluation criteria are listed below in descending order of importance.

1. Project Approach (Maximum 25 pages)

Provide a brief description of approaches and activities similar to the services described in this RFP. Include the following with your proposal:

a) Strategy for implementing the scope of services listed herein; this shall include, but not be limited to, hardware and application software installation and acceptance testing, conversion services, user training, maintenance and warranty, support services, and database administration.

b) Description of the Firm's current techniques and use of available technology;

c) Past record of performance – include detailed descriptions of past and current, preferably public, efforts including all services provided, methodology, chronologies, budgets, expenditures, compensation, and documented results that identify efficiencies of operations;

2. Report on the Firm (Maximum 25 Pages)

Provide a brief history of the firm and number of years in business. Demonstrate the firm's capability, financial capacity, and evidence that the proposer has the experience for a minimum of three (3) years in providing the services described in this RFP.

3. Price Proposal and Project Schedule

Provide a description of the total cost associated with this scope of work and include it with your proposal. Compensation methods shall detail all direct expense costs for all anticipated services.

Proposers shall provide a Project Schedule outlining, at a minimum, specific timeframes for the installation, acceptance testing, and training of the system.

4. Customer References

Proposers shall provide a list of three (3) applicable customer references that have used or are currently using the services offered by the proposer which are considered identical or similar to the requirements of this RFP and will be able to verify the service levels and capability of the proposer to provide these services.

5. Additional Information, Optional (Maximum 10 Pages)

Provide any additional information that may assist the County in the evaluation of your proposal.

AWARD

The County will review all qualified responses. If additional information is required to properly evaluate the responses, all or some of the proposers may be requested to provide an oral presentation.

Award of this RFP shall be made to the proposer who, in the sole opinion of the County, is most qualified to perform the services required.

SARASOTA COUNTY
REQUEST FOR PROPOSAL (RFP)
GENERAL TERMS & CONDITIONS

1. QUESTIONS OR CLARIFICATIONS

Any questions or requests for clarification must be submitted in written form to Sarasota County Procurement. The County shall not be responsible for oral interpretations given by any County employee, representative, or others. The issuance of a written addendum is the only official method whereby interpretation, clarification or additional information can be given. If any addenda are issued to this Request for Proposal, the County will attempt to notify all prospective proposers who have secured same, however, it shall be the responsibility of each proposer, prior to submitting their proposal, to contact Sarasota County Procurement at 941-861-5266, to determine if addenda were issued. Any question or request must include the RFP number and title.

2. SUBMITTAL REQUIREMENTS

Proposals shall be submitted to Sarasota County Procurement, 1660 Ringling Blvd. Sarasota, Florida, 34236, before the time and date stated on the cover sheet. Any proposals received after the stated time and date may not be considered. The required number of signed proposal copies shall be submitted in one clearly marked sealed package.

3. LEGAL NAME

Proposals shall clearly indicate the legal name, address and telephone number of the proposer (company, firm, partnership, individual). The signatory shall have the authority to bind the proposer to the submitted proposal.

4. PROPOSAL EXPENSES

All proposal preparation expenses are to be borne by the proposer.

5. DISCLOSURE

Upon receipt, responses become "Public Records" and shall be subject to public disclosure consistent with Chapter 119, Florida Statutes.

6. RESERVED RIGHTS

The County reserves the right to accept or reject any and/or all proposals, to waive irregularities and technicalities, and to request resubmission. Any sole response received by the first submission date may or may not be rejected by the County, depending on available competition and timely needs of the County. The County reserves the right to award the contract to a responsible proposer submitting a responsive proposal, with a resulting negotiated agreement which is most advantageous and in the best interests of the County. The County shall be the sole judge of the proposal, and the resulting negotiated agreement that is in its best interest and its decision shall be final. Also, the County reserves the right to make such investigation, as it deems necessary to determine the ability of any proposer to perform the work or service requested. The proposer shall

provide information the County deems necessary to make this determination. Such information may include, but shall not be limited to: current financial statements prepared by an independent CPA, verification of equipment and personnel availability, and past performance records.

7. APPLICABLE LAWS

Proposer must be authorized to transact business in the State of Florida. All applicable laws and regulations of the State of Florida and ordinances and regulations of Sarasota County will apply to any resulting agreement. Any involvement with any Sarasota County procurement shall be in accordance with Sarasota County Procurement Code Ordinance #2003-084.

8. CODE OF ETHICS

With respect to this proposal, if any proposer violates or is a party to a violation of the State of Florida per Florida Statutes, Chapter 112, Part III, Code of Ethics for Public Officers and Employees, such proposer may be disqualified from performing the work described in this proposal or from furnishing the goods or services for which the proposal is submitted and shall be further disqualified from submitting any future proposals for work or for goods or services for Sarasota County.

9. COLLUSION

By offering a response to this Request for Proposal the proposer certifies that he/she has not divulged to, discussed or compared his proposal with other proposers and has not colluded with any other proposer or parties to this proposal whatsoever. Also, proposer certifies, and in the case of a joint proposal, each party thereto certifies, as to their own organization that in connection with this proposal:

a. Any prices and/or data submitted have been arrived at independently, without consultation, communication or agreement, for the purpose of restricting competition, as to any matter relating to such prices and/or cost data, with any other proposer or with any competitor;

b. Any prices and/or cost data quoted for this proposal have not been knowingly disclosed by the proposer prior to the scheduled opening directly or indirectly to any competitor;

c. No attempt has been made or will be made by the proposer to induce any other person or firm to submit or not to submit a proposal for the purpose of restricting competition;

d. The only person or persons interested in this proposal as principal or principals is/are named therein and that no person other than therein mentioned has any interest in this proposal; and

e. No person or agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee except bona fide employees or established commercial agencies maintained by the proposer for the purpose of doing business.

10. SUBCONTRACTING

Contractors shall obtain prior written approval from the County for any subcontractors. A subcontractor shall be considered any individual, partnership or corporation supplying materials or service for work under subcontract to the Contractor.

11. PURCHASING COOPERATIVE

Through a cooperative purchasing agreement, the cities of Longboat Key, North Port, Palmetto, Venice, Bradenton, and Sarasota, the Sarasota County School Board, Sarasota/Manatee Airport Authority, and Sarasota Memorial Hospital may procure against Sarasota County Agreements.

12. DIRECT PURCHASE

The County reserves the right, at its sole option, to issue direct purchase orders for applicable supplies and equipment related to this project.

13. PROPOSAL TERM

The Proposal shall remain in effect for 120 calendar days after the closing date of the Request for Proposals, unless otherwise stipulated in the Proposal.

14. LOBBYING

Proposers, their agents and associates shall not contact or solicit any County Commissioner, County employee, or official regarding this RFP during any phase of this RFP. Failure to comply with this provision may result in disqualification of the Proposer, at the option of the County. Only that individual listed as the contact person or Sarasota County Asset Management shall be contacted.

15. PUBLIC ENTITY CRIMES

In accordance with Section 287.133, Florida Statutes, a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a proposal on a contract to provide any goods or services to a public entity, may not submit a proposal on a contract with a public entity for the construction or repair of a public building or public work, may not submit proposals on leases or real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017 for Category Two for a period of 36 months from the date of being placed on the convicted vendor list.

16. EQUAL EMPLOYMENT OPPORTUNITY

Sarasota County, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 and the Regulations of the Department of Commerce (15 CFR, Part 8) issued pursuant to such Act, hereby notifies all prospective proposers that they will affirmatively ensure that in any contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to participate in response to this advertisement and will not be discriminated against on the grounds of race, color, creed, sex, age or national origin in consideration for an award.

17. AMERICANS WITH DISABILITIES ACT

The Board of County Commissioners of Sarasota County, Florida, does not discriminate upon the basis of any individual's disability status. This non-discrimination policy involves every aspect of the County's functions including one's access to, participation, employment, or treatment in its programs or activities. Anyone requiring reasonable accommodation for the public meetings specified herein (i.e. Information Conference or Proposal Opening), should contact the person named on the first page of this document at least twenty-four (24) hours in advance of the activity.

18. GIS CONSIDERATIONS

The County records all land related changes and/or activities in its corporate ESRI ArcGIS 8.x based Geographic Information System (GIS). Therefore, all GIS or Computer Aided Drafting (CAD) formatted data created or modified in support of a project will be provided to the County as a project deliverable for inclusion into the County's GIS, at no additional cost. GIS data files submitted in support of a project must adhere to Sarasota County GIS Standards, and CAD drawings submitted must adhere to Sarasota County CAD Standards. Both standards are available via the County website (www.scgov.net) or may be obtained by contacting the County's Geomatics Service Center at 941-861-6575.

ATTACHMENT # 3

(513) 961-0099
700 EAST McMILLAN, SUITE 302, CINCINNATI, OHIO 45206

Mr. Dennis W. Wallace
Contract Management Specialist
Sarasota County Government
1660 Ringling Boulevard
Sarasota, Florida 34236

Dear Mr. Wallace:

Attached to this letter is UTA's proposal in response to SCTA's Request For Proposal RFP #. 4785DW FURNISH, INSTALL AND MAINTAIN AN AUTOMATIC PASSENGER COUNTING SYSTEM FOR THE SARASOTA COUNTY TRANSIT AUTHORITY.

UTA is recognized as the pioneer in APC technology within the North American transit marketplace. UTA is most capable of providing an APC system as specified by SCTA that will provide at least ten (10) years of reliable service and generate Return-On-Investment (ROI) well in excess of the initial cost of implementation. Most importantly, UTA provides an unlimited level of user support that includes modifications/adapatations to APC-generated analyses that will meet SCTA's specific information needs. It is in both UTA's and SCTA's best interests to obtain the maximum amount of value from the investment in APC technology.

UTA has modified UTA's standard APC Proposal to fit into SCTA's requested format. It is UTA's intent to provide SCTA with a complete description of UTA's APC system. However, if there are any questions/comments relative to the proposal, UTA welcomes the opportunity to meet with SCTA staff and discuss any/all material associated with this procurement.

UTA thanks SCTA for the opportunity to provide a proposal for this project.

Yours truly

Thomas W. Kowalski
President/CEO

URBAN TRANSPORTATION ASSOCIATES

PROPOSAL FOR:

FURNISH, INSTALL AND MAINTAIN AN AUTOMATIC PASSENGER COUNTING SYSTEM FOR THE SARASOTA COUNTY TRANSIT AUTHORITY (RFP #4785DW)

PREPARED FOR:

Sarasota County Transit Authority
C/o
Sarasota County Government
1660 Ringling Boulevard
Sarasota, Florida 34236

SUBMITTED BY:

URBAN TRANSPORTATION ASSOCIATES (UTA), INC.
700 EAST MCMILLAN, SUITE 302
CINCINNATI, OHIO 45206

Section 1 Project Approach

This section will present the a description of the basic hardware and software elements that make up UTA's APC system within the twenty-five (25) page limit specified in RFP # 4785DW.

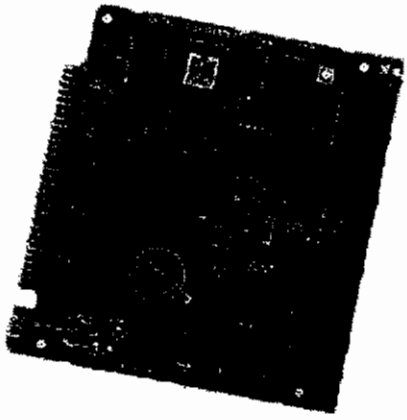
APC Hardware

UTA APC equipment represents an integration of a number of off-the-shelf components that are recognized as the best products in their respective markets. The use of off-the-shelf components allows both UTA and customers to be assured of high levels of technical capability, quality, and product availability. By utilizing components such as the micro-processor, and sensors that have been proven in extremely harsh industrial environments, UTA's APC system consistently generates reliable performance in the equally harsh transit-operating environment. (See Appendix D for product brochures/descriptions).

APC Central Processing Unit

The APC CPU is a microprocessor-based data acquisition and storage device designed by UTA for reliable operation within the harsh transit-operating environment. UTA's APC CPU is designed to be floor mounted within the transit vehicle typically under a seat directly in front of, or behind the rear door. The APC CPU houses all necessary support electronics for passenger counting, GPS location, door status monitoring, wheelchair lift activity, bicycle rack usage and SAE J-1708/J-1587 integration.

UTA utilizes industrial embedded processors manufactured by Octagon Corp. of Boulder, Colorado. Octagon is a leading manufacturer of industrial process control computers. The Octagon processor family represents the Intel 386-586 line of microprocessors and a package operating range from –40° to 85° C. The Octagon processor line provides high-current and opto-isolated I/O required for the transit-operating environment.

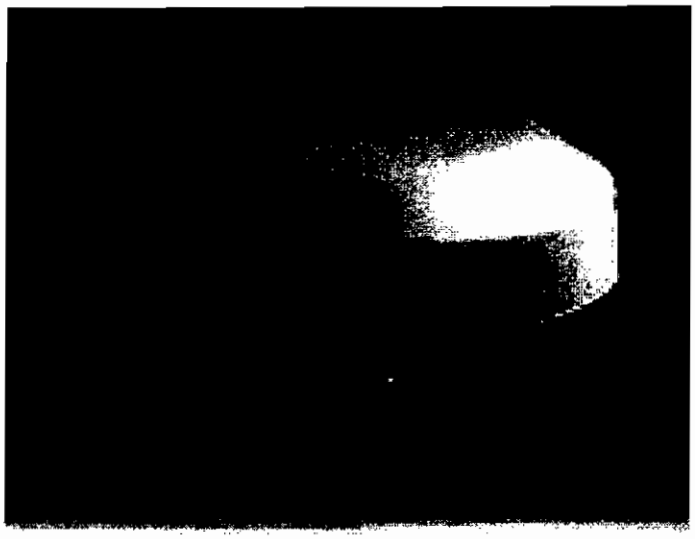


In each application, the Octagon-based APC CPU processor has performed with reliabilities in excess of 99%. In each of the aforementioned applications, the extremely high level of performance of the Octagon-based APC CPU's have prompted the transit users to place follow-on orders for additional APC units.

GPS Receiver/Antenna

As illustrated in Appendix D, UTA will utilize the standard Trimble GPS antenna mounted on the bus roof. Specific location of the antenna will be determined after UTA/SCTA determine the optimal location of the APC CPU.

GPS Receiver: GPS Antenna:



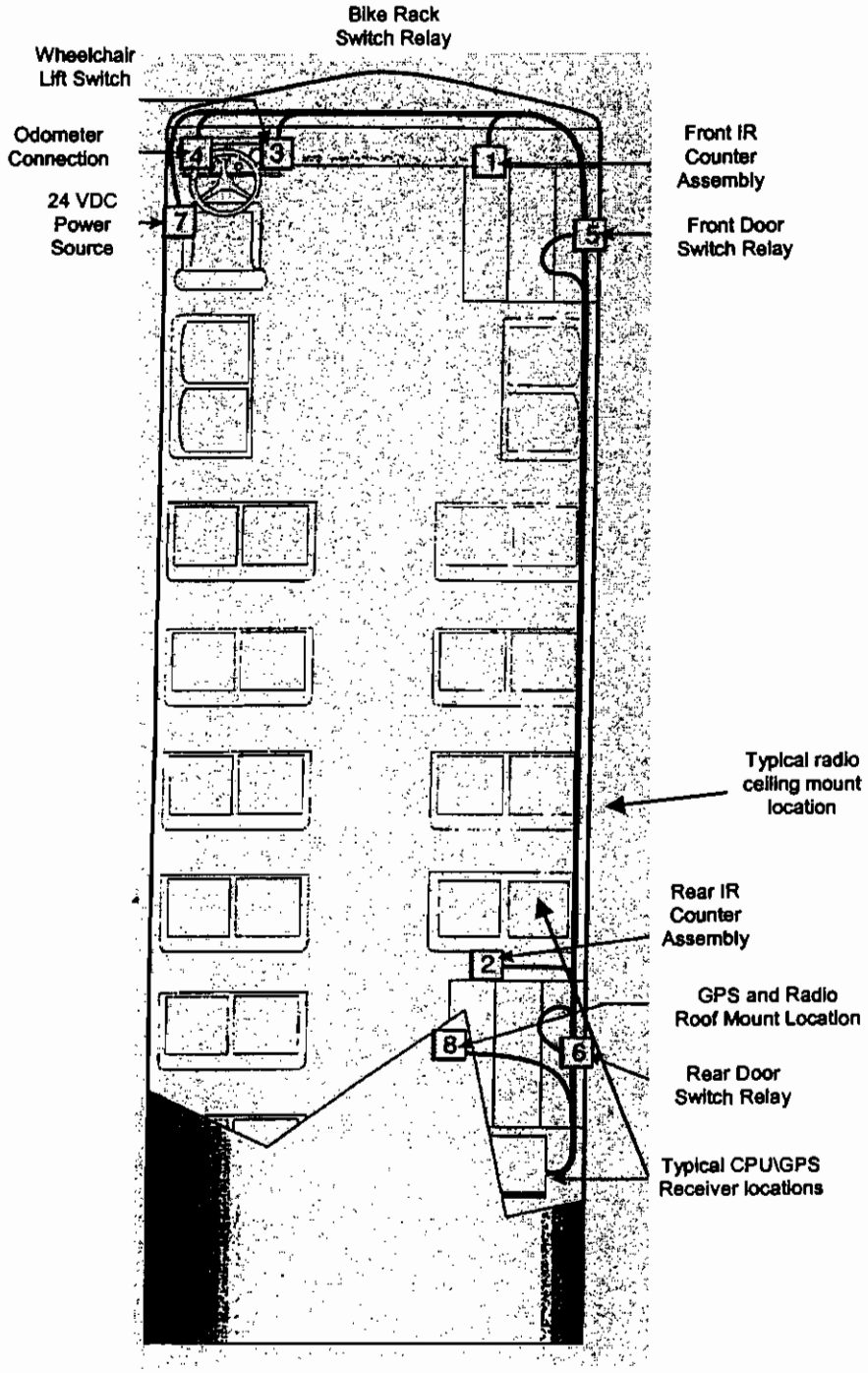
The Trimble GPS antenna has demonstrated outstanding durability in each APC/GPS application. Common conditions that impact antenna performance such as bus washers, low hanging tree branches, water infiltration, etc. have not resulted in any significant failures in UTA applications of the Trimble GPS antenna.

The GPS receiver provides accuracies of 25m for position and 0.1 m/sec for velocity and a time accuracy of 0.0001 ms. The receiver provides an update rate of 1 Hz and has operational limits of 18,000m altitude and 515 m/sec velocity.

For each APC event (door open/close, time stamp, wheelchair lift out/in, initialization), the APC CPU interrogates the GPS receiver to obtain the current latitude/longitude. The GPS receiver is configured to update position every one (1) second. For the task of identifying the specific bus stop at which passenger activity takes place, UTA has found non-differential GPS to provide the best cost/performance combination. Non-differential GPS has consistently provided location accuracy at approx +/- 150 feet. This level of location accuracy is more than adequate to identify specific bus stops. With the elimination of the GPS SA signal in May 2000, this accuracy has been improved to +/- 30ft.

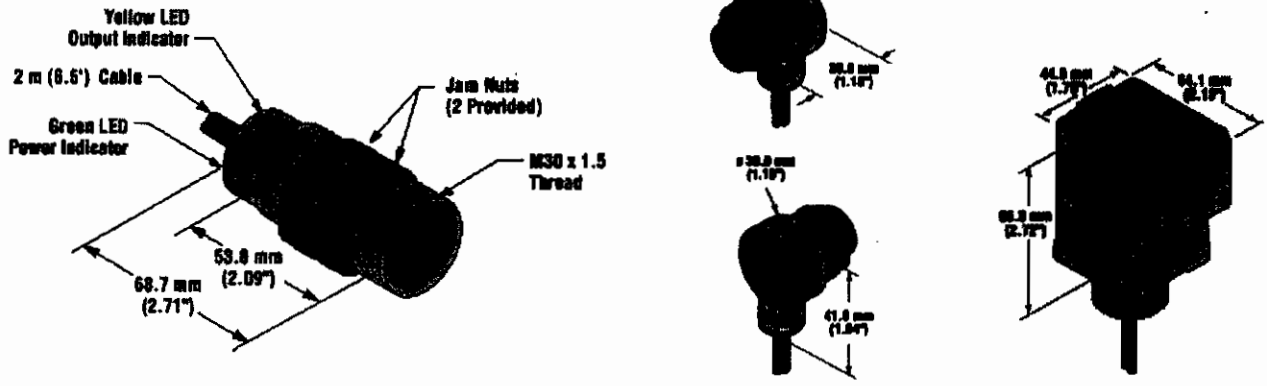
Vehicle APC Sensor Set

The vehicle sensor set is designed to measure all fundamental variables associated with estimating transit productivity.



APC Passenger Counter Sensors

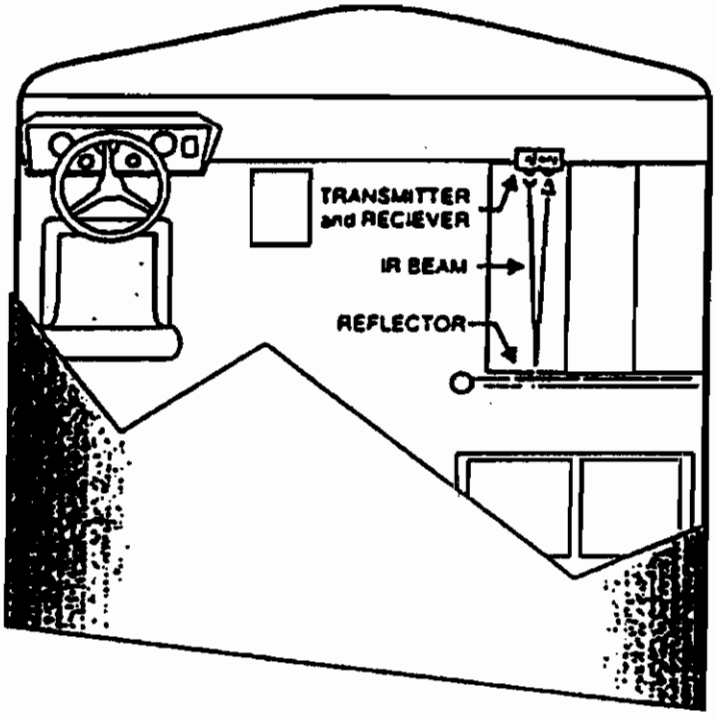
UTA has utilized horizontally mounted Infra-Red light beams since the early 1980's. These sensors are manufactured by a number of firms (Omron, Banner, Honeywell, et al) for remote sensing industrial applications. The combination of accuracy, reliability, cost, availability of spare parts, and product upgrades/ technical improvements have led UTA to select a number of 'off-the-shelf' sensors to include in UTA's APC system.



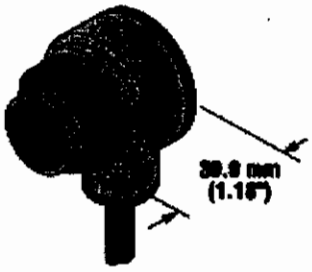
UTA is continually testing/evaluating new and different sensors in order to determine the optimal product for each type of vehicle. The close working relationship between UTA and UTA's sensor suppliers allows UTA to learn of product improvements in a prompt manner.

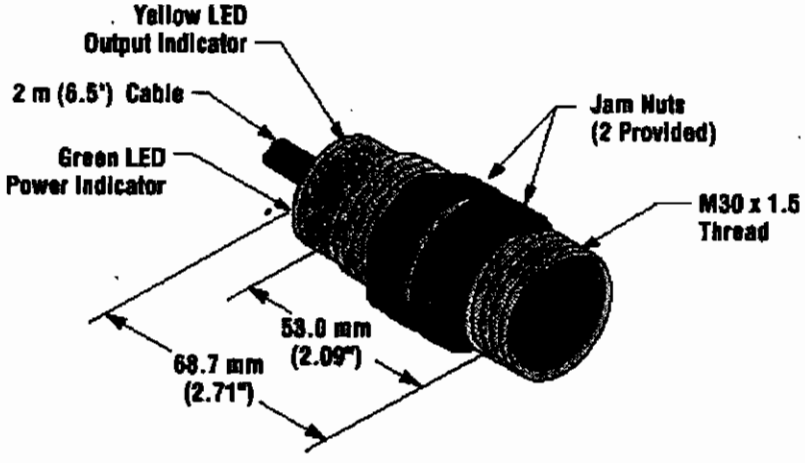
Another condition that has impacted a number of North American transit agencies has been the selection of a non-North American APC supplier that possessed an attractive sensor technology only to have that non-North American supplier leave the North American transit marketplace and leave the transit APC user without any support for the APC system.

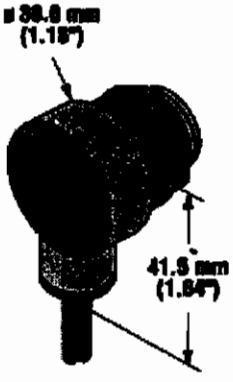
Reflective Beam Sensors



Front Infra-Red
Passenger Counting
Assembly







Door Switch/Relay Sensors

Depending upon the door configuration, UTA will utilize either micro switches and/or relays to determine door open/close events. The micro switches are standard Honeywell products currently in use in transit applications. Experience has shown that the micro switches are extremely reliable and withstand the normal demands of revenue transit service.

Particular attention will be given to the APC door open/close sensors during training. The most common cause of APC door switch failure occurs when routine door maintenance procedures prompt a disconnection of the APC door switch.

Wheelchair Lift Switches/Relays

Similar to the APC door switches/relays, the wheelchair lift sensor detects the movement of the wheelchair lift mechanism and sends a discrete open/close signal to the APC CPU.

Bicycle Rack Sensors

On each APC-equipped bus, a sensor will be mounted on the bicycle rack assembly that will generate APC records for each mounting/dismounting cycle that takes place.

Cabling/Connectors/Clamps/Brackets

All APC-related cabling, connectors, clamps, brackets, and auxiliary hardware will be standard APC components that have been utilized in numerous other APC applications. UTA uses military grade connectors that have withstood the extremely hostile operating environment on a transit vehicle.

Prior to APC installation, detailed briefings will be provided to maintenance staff relative to the specific cables/connectors/clamps that will be used in the APC application.

UTA APC Installation by Bus Type

The table presented below represents a summary of the bus types on which UTA's APC

Manufacturer	APC's Installed
Flxible	129
New Flyer	139
Gillig	162
Orion	81
GMC	73
Neoplan	60
NABI	52
TMC	46
Nova	42
Ikarus	40
Grumman	20
Chance	13
MCI	10
Trolley Works	10
Eldorado	4
AM General	2
Articulated	6
Blue Bird	2
Ford	2
Volvo	2
AVS	1
Champion	1
Dennis	1
Man	1
Total	899

Manufacturer	Bus Type
AM General	40' Standard
Blue Bird	40' standard
Eldorado	30' National
Flxible	Newlook
Ikirus	Ikirus
MCI	GM newlook
Neoplan	35' Standard
New Flyer	60' Articulated
Nova	40' New Look RTS
Orion	40' IV
Volvo	60' Articulated
Ford	Paratransit Van
Neoplan	40' CNG
Flxible	Metro
New Flyer	40' Low Floor
Grumman	Flexibles
Gillig	40' Phantom

Manufacturer	Bus Type
Articulated	MAN
Champion	Paratransit Bus
Flxible	35' Metro
Flxible	pre '75 GM type
Man	Articulated
MCI	Highway Cruiser
Neoplan	60' Articulated
New Flyer	New Flyer
Orion	40' III
Trolley Works	Trolley
Chance	Chance
GMC	35' RTS
Orion	Orion iv
Nova	40' RTS
New Flyer	40' Standard
Flxible	40' Metro
GMC	GMC

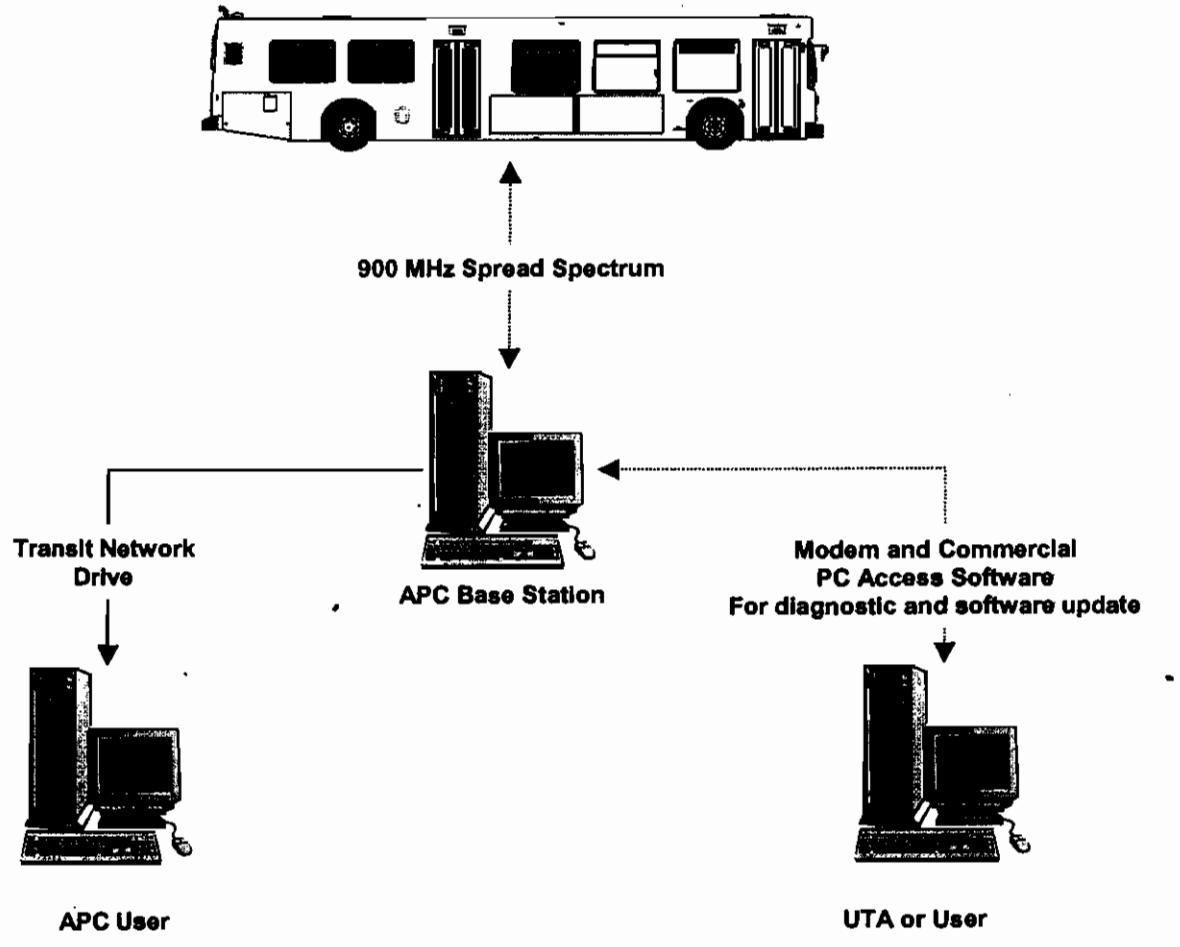
Manufacturer	Bus Type
AVS	40' Electric Prototype
Dennis	Flaxton
Flxible	Flxible
Gillig	35' Phantom
MCI	40' Classic
NABI	40' Low Floor
Neoplan	Neoplan
Nova	40' Low Floor
Orion	40' Low Floor
Trolley Works	Trolley Trailer
Chance	Trolley
GMC	RTS
TMC	40' RTS
Gillig	40' Low Floor
GMC	40' RTS
Neoplan	40' Standard
NABI	40' Low Floor

Automated Data Download

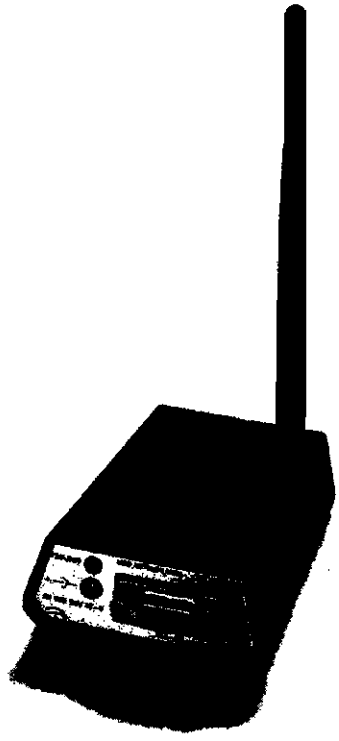
UTA utilizes a Spread-Spectrum Radio (SSR) data download subsystem to automatically download the APC data from each APC-equipped vehicle at the garage.

A small 900 MHz SSR radio, mounted near the APC CPU is placed on each APC-equipped bus. An additional radio is placed in a secure location at each transit center where APC-equipped buses are housed.

The base station PC continuously polls APC equipped buses to transmit their recorded data. When a bus within range of the radio link receives a message from the base station PC, it initializes UTA's proprietary data transfer protocol and begins to transfer APC data for that day. Data is transferred from each bus daily over the radio system with the exception of any buses which may be in maintenance with battery power removed.



APC Radio Housing



Because of the range provided with this technology, this approach does not require a fixed location for data transfer. The fixed download location required by other systems becomes a limitation when a bus fails to pass the download location on a daily basis. This can occur when the bus is in maintenance for an extended period of time. As long as battery power is available, the APC radio will continue to provide daily information to the base station when a bus is in extended maintenance. This continuation of information prevents false "no report" alarms that would be present with an IR or other fixed location-based system. The continuation of APC information while the bus is in maintenance provides the user and APC maintenance personnel with daily information of the location and status of the APC. If this information were not available, the APC maintenance personnel would be needlessly tasked to determine the reason for the apparent APC "no report" failure.

The APC base station radiobroadcasts interrogation messages throughout the day. Each APC within radio range responds back with its current location and the status of the GPS subsystem.

When specific request criteria are met, a second message 'OK to transfer' will be sent from the base station to the APC-equipped bus and the APC data (approx 45-75Kbytes) will be transferred to the base radio/computer. The host computer (standard desktop PC) will store the APC data in daily directories with files created for each bus. This data will then be sent to Planning & Scheduling over the internal network for routine daily processing.

APC Accuracy

The accuracy of UTA's APC system is considered to exceed that of a single (1) checker on-board a bus and comparable to that obtained by two (2) checkers, one (1) stationed at each door. APC users in the transit systems that have utilized UTA's APC system consistently express satisfaction with the accuracy of UTA's APC system. In the following, the overall concurrence value represents the total number of boardings and alightings counted by the APC system compared to the total number of boardings and alightings counted by experienced manual checkers. The Manual-APC Deviation Range +/- 1 represents the percentage of time the manual and APC observations were within one (1) of each other. In short, the tables below provide evidence that UTA's APC system counts boardings/alightings extremely accurately and, if there ever is an error, it is almost always within one (1) of the manual count.

The following list of APC Accuracy evaluations represent those tests in which UTA participated with the same basic APC system configuration as that being proposed:

Southwestern Ohio Transportation Authority (SORTA) Date: 2003

Results:	Overall Concurrence	Manual-APC Deviation Range +/- 1
Boardings	98%	95%
Deboardings	96%	96%

Los Angeles County Metropolitan Transportation Authority (LACMTA) Date: 2002

Results:	Overall Concurrence	Manual-APC Deviation Range +/- 1
Boardings	99%	88%
Deboardings	99%	92%

Note: Tests conducted on Wilshire Blvd Rapid Bus line 720- High Passenger Volumes.

Capital Metropolitan Transportation Authority (CMTA) Date: 2002

Results:	Overall Concurrence	Manual-APC Deviation Range +/- 1
Boardings	98%	95%
Deboardings	95%	95%

Note: Approximately 1000 observations on Flxible Buses.

Omnitrans (San Bernardino) Date: 2001

Results: Manual-APC

Overall	Deviation Concurrence	Range +/- 1
Boardings 99.5%	97.1%	
Deboardings 99.5%	97.1%	

Note: Approximately 4000 observations on TMC and Gillig Buses

---

Southeastern Pennsylvania Transportation Authority (SEPTA) Date: 2001

Results: Manual-APC

Overall	Deviation Concurrence	Range +/- 1
Boardings 99%	96%	
Deboardings 102%	93%	

Note: Neoplan and NABI Buses - Driver and checker not included in manual counts.

British Columbia Transit (BC Transit) Date: 2000

Results: Manual-APC

Overall	Deviation Concurrence	Range +/- 1
Boardings 102%	97%	
Deboardings 103%	96%	

Note: Dual-stream rear doors - Driver and checker not included in manual counts.

Dallas Area Rapid Transit (DART) Date: 1998

Results: Manual-APC

Overall	Deviation Concurrence	Range +/- 1
Boardings 99%	92%	
Deboardings 99%	94%	

Note: Standard 40' Two (2) Door Buses.

Alameda-Contra Costa Transit District (AC Transit) Date: 1997

Results: Manual-APC

Overall	Deviation Concurrence	Range +/- 1
Boardings 99%	95%	
Deboardings 98%	98%	

Note: Articulated buses included in accuracy evaluation.

APC Software

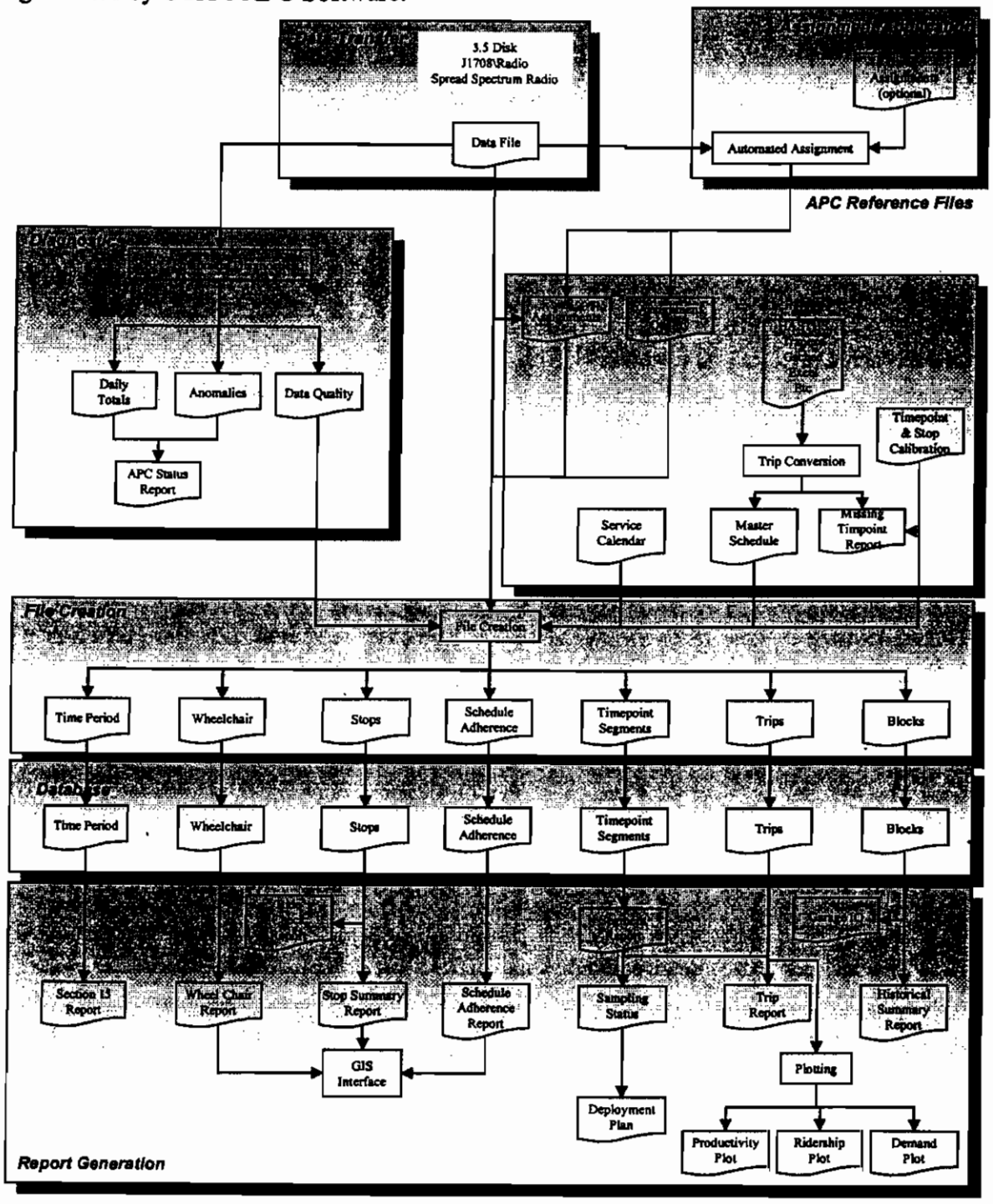
APC technology has proven its ability to collect large amounts of extremely detailed data in an accurate and efficient manner. It is the function of the APC Software to provide the APC user with the ability to extract all possible information from the vast amounts of APC data collected. Historically, transit professionals have not had the variety, quality and quantity of information available to support a wide variety of transit analyses. UTA's APC Software system has been developed over the past decade to be an easy-to-use system that has the capability to produce both the routine and non-routine reports that transit users require. This section will present both the philosophy that has guided the development of this software and the specific components of this system as they are configured for SCTA.

The APC reports that have been specified by SCTA are reports that UTA has been providing to North American transit users. In addition to this strength of experience around analytic report production, UTA has developed a considerable amount of support software that increases the efficiency with which the entire APC system operates by applying quality control checks at those points in the APC data processing cycle that are critical to the performance of the entire APC Software system. The addition of the administrative control software to the other software components insures not only the ability to produce the desired reports, but also allows the APC Software system to operate efficiently over the long term.

High levels of accessibility, flexibility, and data integrity are represented by a series of user-defined APC data bases from which user-specified reports can be generated utilizing standard statistical report generation packages on departmental microcomputers. The APC Software system that UTA is proposing to install at SCTA is quite similar to the systems that have been operational at UTA's offices and have been installed at all UTA user sites.

1.1.1. Overview

UTA's APC Software package consists of a number of definable subsystems, each of which performs a unique function. The following figure illustrates the basic sequence of the APC Software process. Please refer to Appendix A for examples of the reports generated by UTA's APC Software.



Data Transfer Software

Embedded in each APC CPU will be a solid state memory that will store APC data for periods of between five (5) and fifteen (15) days.

The data transfer software will read the APC data, unpack the data record, and transfer the data into a cumulative data batch file (DMPDXXXX.DAT) that will allow the subsequent APC processing to take place.

Diagnostic Software

From the unedited and unmatched raw APC data file, a series of diagnostic routines review the data for logical consistency and APC hardware subsystem performance. A series of diagnostic reports and historical performance files are created which identifies any APC maintenance requirements.

UTA's APC Diagnostic software consists of a number of modules that will be linked together to operate automatically after the data has been downloaded from the APC system The APC Diagnostic software will review the data that has been transferred and will produce the desired diagnostic information in the specified medium (screen, hard copy, data file) that will await the review of SCTA APC staff. This task will be performed automatically overnight. The two (2) output reports are as follows:

Automated Assignment Algorithm

UTA has developed an algorithm that reviews the APC data against the geo-coded timepoint file and the master schedule file and determines the block from the APC data was generated.

The Automated Assignment Algorithm has been in use for the last five (5) years and is successfully being utilized in APC projects in Los Angeles, Vancouver, Buffalo, San Bernardino, Orlando, Providence, Philadelphia, Victoria, Tempe, and Austin.

File Creation Software

This subsystem consists of a program that applies a variety of algorithms to the data and aggregates the data to various levels of spatial and temporal resolution. The reference files provide supplemental information to the aggregated APC data record that can then be utilized in the final report generation.

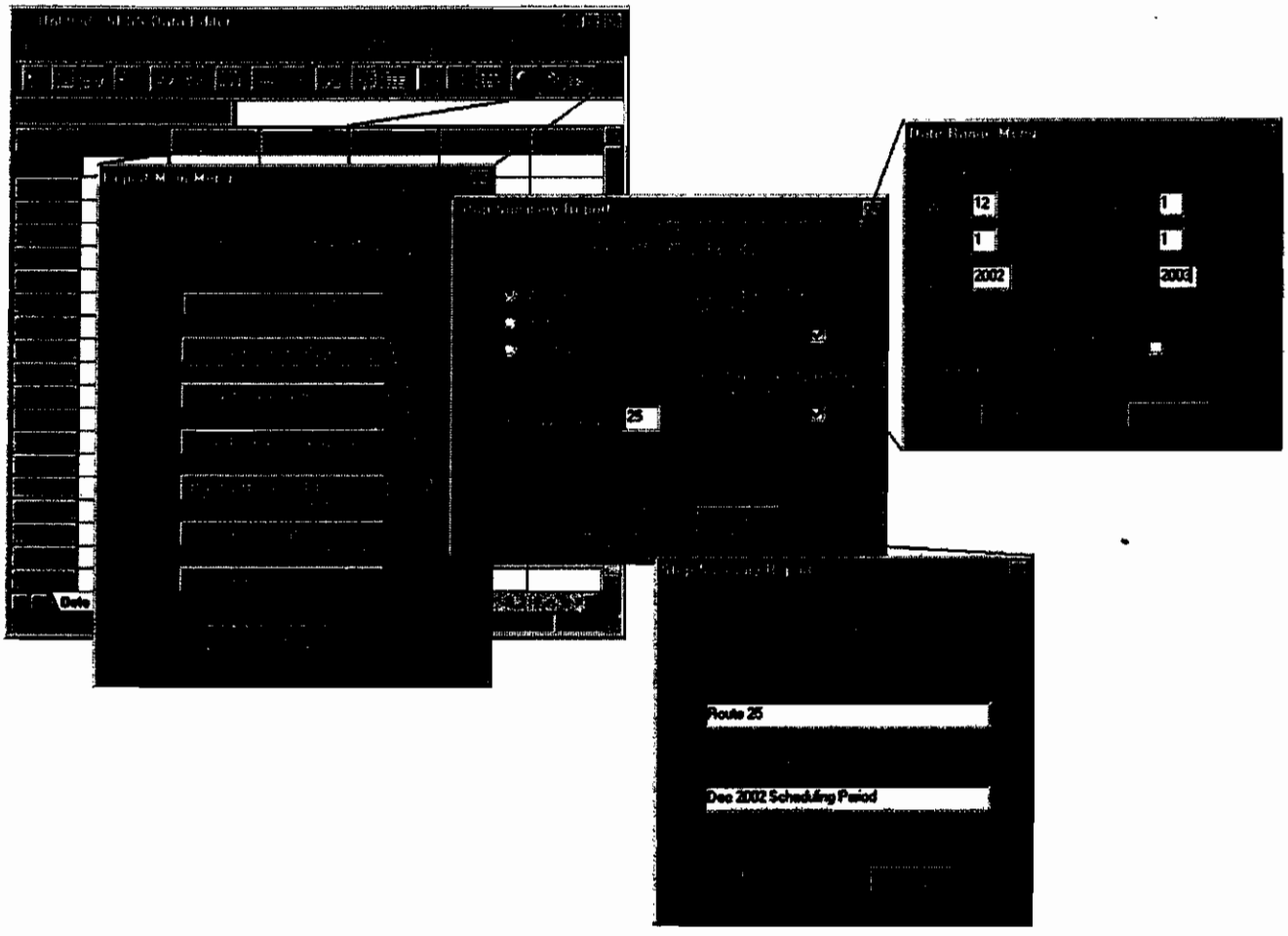
Transit Variables		Spatial Resolution		Temporal Resolution
On \Off		Bus Stop		Event
Front\Rear Door Cycles		Zone		15 Minute
Time\Date		Time Point Segment		30 Minute
Odometer		Trip		Trip
Latitude,\Longitude		Leg		Hourly
Vehicle I.D.		Direction		Time Period
Route\Block		Routes		Weekday
Wheelchair – Out\In		Corridor		Saturday
Bicycle Rack – Out\In		Political Jurisdiction		Sunday
Passenger Miles		System-wide		Quarterly
Scheduled Run Time		Other		Annually
Trip Length-Distance				Other
Trip Length-Time				
Passenger Hours				
Distance-Cumulative				
Time-Cumulative				
Passenger Load				
Passengers Per Mile				
Passengers Per Hour				
No. of Stops				
Overcrowding Time				
Load Factor				
Velocity				
Avg\max\Min Load				
Schedule Deviation				
Dwell Times				

Filter/Edit Software

In the practical day-to-day operation of a transit system, deviations from normal operating procedures sometimes occur. Given a degree of transit operational anomalies and APC system anomalies, the Filter/Edit subsystem serves a critical role by filtering out and/or editing anomalous data. The algorithms present in this subsystem are a result of years of reviewing APC data and determining the optimal set of criteria for minimizing the rejection of acceptable data while maximizing the rejection of anomalous data.

Report Generation Software

It has been UTA's APC Software philosophy to create a unique database(s) from which flexible report generators can be easily adapted to create unique formats and summary statistics for the various APC users. APC report generators will be operated on the APC microcomputer system. Included in this proposal is installation of the Statistical Package for Social Science (SPSS) and SCTA staff training in the area of APC Report Generation.



This section will outline the specific reports/plots that will be provided as part of UTA's standard APC Software package. Examples of each report are presented in Appendix A.

Route/Historical Summary

Presentation of all APC variables for each block and each route sampled.

Route Demand Plot

Route Ridership illustrated for each revenue hour.

Route Productivity Plot

Route productivity for each block for each hour of the day.

Trip Report/Summary

Presentation of all variables for each trip in each direction of a given route.

Trip Ridership/Max Load Plot

The graphical presentation of the average trip Ridership and average trip max load for all trips per route per direction.

Segment Report/Summary

Presentation of all APC variables for each timepoint to timepoint segment on a given route. Particularly applicable for scheduling purposes.

Schedule Adherence Report

The presentation of a nufnber of summaries displaying the frequency of early/-on-time/late observations for a given route(s) and/or location(s).

Bus Stop Listing/Summary

The presentation of each observation of boardings/alightings at each stop along a trip. Summarization of Bus Stop data can take any relevant spatial or temporal dimension (by trip, route section, over numerous days, etc)
Route Productivity Ranking

The overall ranking of route performance by Weekday/Saturday/Sunday.

APC/Farebox Report

The presentation of APC Ridership statistics along with Farebox revenue and Ridership counts.

Wheelchair Lift Report

The presentation of the time and location of all wheelchair lift activity.

Bicycle Rack Usage Report

The presentation of the time and location of all bicycle rack activity.

Garage Schedule Adherence Report

Presents the difference between scheduled garage departure/arrival for each block annualized the cost impact of late departures and early arrivals.

Route Maps with Ridership

For each route sampled, as part of the standard package of reports/plots, UTA will provide a detailed/colored route map with the total daily Ridership observed at each bus stop in each direction for Weekday service. If required, UTA will produce Saturday and Sunday plots.

NTD Quarterly/Annual Reports

Using APC-generated data for the randomly selected SCTA trips, periodic (quarterly/annual) production of NTD Reports will meet SCTA's FTA reporting requirements. Also, APC-generated data can be utilized in meeting FDOT's reporting requirements.

In summary, UTA's APC system has the capability of routinely generating both the standard reports defined above and/or the non-routine ad-hoc reports that are often required by transit staff.

The philosophy of creating aggregated data bases containing all possible APC-generated transit variables will support the production of the aforementioned reports. Given the format of these aggregated APC data files in flat ASCII format, these files are also easily SCTA routed to other analytic platforms and packages (Access, Excel, Fox Pro, etc.)

In the more than two (2) decades UTA has been providing APC capability to the transit industry, UTA has not encountered a user request for APC-generated reports/data that could not be met with the APC data processing capabilities described in this section. UTA's proposed APC system will have the capability of meeting all APC-related data

requests. During the initial APC installation and training, SCTA staff is encouraged to bring forth all analytic requirements that might be addressed by the APC system.

Routine APC Data Processing Tasks

This section will provide a description of the tasks that will be accomplished as part of the routine APC data processing.

APC Data Transfer. (automatically executed overnight)

APC Diagnostics. (automatically executed overnight)

APC Automated Assignment Determination. (automatically executed overnight)

APC File Creation. (automatically executed overnight)

APC Reference File Update. (each scheduling period)

Periodically (every scheduling pick period), the APC system master schedule file will require updating. From the SCTA scheduling system, the APC-formatted master schedule file will be generated and transferred into the APC processing computer. A reformatting procedure will be executed on the APC processing computer to generate the specific file format required for APC processing. Total time required will be approx one (1) hour every three (3) to four (4) months.

APC Status Assessment.

After completing the routine APC data batch processing, the APC analyst should review the status of near-term APC objectives. The degree to which sampling objectives (NTD, Route Analyses, etc) are being achieved is a critical task to assure the APC system is generating the most applicable data. Associated with the status assessment is the creation of n ear-term (2-4 week) sampling plans for APC deployment. Depending upon the degree of formality required (formal written sampling plans vs telephone call to the garage foreman), the overall APC status assessment should take approx 1 - 2 hours per weekly/biweekly period.

APC Report Generation.

Once the APC-equipped buses have been deployed on the desired routes and the routine data batch processing has been performed, the production of analytic reports/plots will require approx two (2) to four (4) hours per data batch period depending upon the type and number of reports to be generated. With the APC system, routine monthly/quarterly performance reporting will take place as well as spontaneous ad-hoc reporting to respond to specific questions that may arise.

APC Reference Files

The table presents a summary of the principal reference files that are required. Also presented in this table are the SCTA data sources from which the APC Reference files would be produced and the principal functions that are served by each reference file.

APC Reference File	Data Source	***APC Function***
Master Schedule	SCTA-Trapeze	Serves as System Model
Pull Out/In	SCTA-Trapeze	Sampling Status/Assessment
Bus Stop Calibration	Stop Inventory	Bus Stop Identification
Calendar	User Input	Determine Day of Week type
APC BUS	User Input	Relates Bus No. to APC S/N
Route Exception	User input	Override stop matching

Master Schedule Reference File.

This file serves as the overall system model that describes the manner in which the transit service is designed to operate. Algorithms are present in the APC Software system that determine the specific trip from which the APC data was generated. By determining the specific trip within the master schedule file, additional information (direction, trip configuration, scheduled times at timepoints) can be obtained and ultimately reported in APC Reports.

Typically, this master schedule file is produced for each scheduling period and downloaded (network or diskette) to the APC processing computer. UTA's APC system has successfully utilized master schedule files from the scheduling systems currently on the market. In the fifty (50) transit systems in which UTA has implemented APC systems, UTA has received a wide variety of Master Schedule files.

For the SCTA application, UTA will interface with the Trapeze scheduling system. UTA regularly works with Trapeze exports in cities such as Dallas (DART), Columbus (COTA), and Atlanta, (MARTA).

Depending upon scheduling system present installed, the primary export contains the following.

Block
Route

Pull-Out and Pull-In
Day of Week
Direction

Name of each timing point
School Day – School Holiday (if applicable)
Run (if applicable)
Division (if applicable)
Line (if applicable)

Time at each timing point Pattern (if applicable)

Obtaining this information for each trip in each scheduling period will allow the APC data to be processed to the greatest level of information content.

Bus Stop Reference File.

Central to the production of the APC Bus Stop Report is ability to accurately identify the specific SCTA bus stop at which the APC system records an event. This task can only be accomplished with the aid of a bus stop reference file that contains the location (latitude, longitude) for each bus stop on a particular route. Of all the APC Reference files, the Bus Stop files will require the most effort in order to maintain in a totally accurate manner. UTA's experience in generating APC Bus Stop level data will serve to benefit SCTA by providing both the software and administrative procedures that are required to maintain these files. The general format of the Bus Stop Reference File is as follows:

Field	Variable	Columns
1	Route	1-1
2	Direction	5-5
3	Pattern	7-7
4	Sequential Stop No.	9-11
5	Latitude	13-21
6	Longitude	23-31
7	Unique Stop No.	33-40
8	Stop Location (Name)	41-73

The inclusion of all bus stop/time point geo-coding in the APC proposal is quite unique in the APC supplier marketplace. Typically, other APC suppliers require the host transit agency to assume 100% responsibility for the geo-coding of bus stops/time points. The cost of a bus stop geo-coding effort is quite substantial.

APC Administrative Control Software

For long-term successful operation of an APC system, an administrative control system should provide feedback on all areas of APC system operation. Without this capability the task of managing an APC system becomes extremely difficult and time consuming.

This section will present those elements present in UTA's APC Administrative Control Software system:

APC Sampling Status.

Periodically, (weekly/bi-weekly) the APC Sampling Status Report will be generated that illustrates the percentage of trips sampled/non-sampled for each route. This information provides an update on the degree of sampling that has taken place during the most recent schedule period. The report can be adapted to whatever definition of 'sampled' (1-3 samples) employed by SCTA.

Also produced with the APC Sampling Status Report is a list of those blocks that operate the greatest number of trips that have not yet been sampled. This listing can provide feedback into the degree to which sampling objectives are being achieved.

Trip Convert.

This module takes an export from the scheduling system (Trapeze, HASTUS, GSched, etc) and generates the master schedule file in a format compatible with the APC Analytic Software. Also produced from this process is a file containing all the timepoints that do not have geo-coded coordinates available (timepnts.unk). The system administrator can use this file as an update to assure that all recent route changes are incorporated into the Bus Stop and Timepoint reference files.

With this capability, mid-pick route changes can be setup quickly and incorporated into the APC processing routine. The APC system can accommodate mid-pick route changes, however, many users consider mid-pick route changes to be too minor to incorporate into the APC Reference files. For example, a slight routing change at an EOL at a shopping mall that does not involve and change in running time and/or layover times may not have any analytic significance.

Log Files.

Each APC data processing step creates a .log file that provides the user with a summary of the processing that has taken place. Messages in the .log files provide a diagnostic tool to identify the causes of any problems.

Also, explanatory screen displays provide messages that allow the user to identify any problems with the processing. As with the APC Analytic Software, the APC Administrative Control Software can/will be adapted to SCTA's specific preferences and operating environment.

Adaptability of UTA's APC Analytic Software Package

Attached to this proposal (Appendix A) is a comprehensive set of reports and plots that are routinely generated from UTA's APC Analytic Software. However, UTA's APC

Analytic Software package possesses the demonstrated capability to create any type of transit-related analysis that can be created from APC-generated data.

As transit planners/schedulers/managers are aware, there is continual request for non-routine information from a wide range of sources both internal and external to the transit organization. UTA can assure SCTA staff that UTA will support any/all (within reason) unusual requests for APC-generated information. It is UTA's practice/policy to encourage UTA APC users to express non-routine analyses of APC data. This has allowed UTA to exercise UTA's APC Analytic Software system in an extremely wide range of applications that is often required in other UTA APC user sites.

NEVER IN UTA'S HISTORY HAS AN APC-RELATED INFORMATION REQUEST NOT BEEN MET WITH UTA'S APC ANALYTIC SOFTWARE PACKAGE

In substantiation of this statement, the following list of non-routine analyses is presented as an illustration of some recent requests made of UTA's APC Analytic Software package from UTA APC users:

Present the Productivity Ranking (Ridership and Pass/Hr) per Route Per Time Period
Generate a Trip Report and Trip Summary Report Using Only the Four (4) Greatest Observations of Maximum Load
Generate an Overall Route Productivity and Service Quality (On-Time Perf) By Time Period
Produce a Round Trip Bus Stop Summary for Each Route Including the Relative Variation of Ridership, Velocity, and Schedule Adherence
Generate a Schedule Adherence Analysis Based on an On-Time Definition Independent of Arrival or Departure Times: A Bus Is Considered On-Time If It Is Present At The Time Point Within Zero (0) to Five (5) Minutes of the Published Time
Base the Route Demand Plot on Trip Departure Times/ Base the Route Demand Plot on the Actual Time of Boardings/Deboardings
For NTD (Section 15) Substantiation, Present the Incremental Passenger Miles from Stop to Stop
Base Schedule Adherence on Arrival Times/ Base Schedule Adherence on Depart Times or Both
Present the Amount of Time A Bus Is Waiting for a Left-Hand Turn Signal At a Major Intersection
Present Starting Times and Locations for Standing Loads, Overcrowded Loads, and Crush Loads
Present the Timepoints Where Schedule Deviation Varies the Most
Productivity Ranking of Bi-Directional Timepoint Segments
Generate Headways Based on Passenger Loads at Specified Route Build Points
Incorporate the Unique HASTUS Trip No. Into the APC Data Record
Present Revenue Miles, Hours, Ridership and Passenger Miles For a Political Jurisdiction(s)

With an APC system, transit users are provided with more and better data/information than has ever been available on the local transit system. Traditional transit methodologies that have been developed over the years with minimum amounts of data can now be expanded (or discarded) with the wealth of information that APC Technology provides. UTA is quite familiar with this type of organizational methodological modification and is most capable of successfully participating in this process.

UTA always welcomes user questions that start with ' I have always wondered .....' or 'Is it possible to .....'. It is this type of open/uninhibited professional dialogue that allows the APC system to 'fit' into an organization, which then results in the organization obtaining maximum value from the APC-generated information.

UTA fully expects and encourages SCTA staff to generate new/different requests for APC-generated analyses. Given the flexibility within UTA's APC Analytic Software Package (ASCII.TXT files, SPSS statistical capability, multiple resolutions of APC data aggregation, inclusion of the maximum number of transit variables, etc) SCTA staff can be assured that the proven ability to extract all possible information from the APC-generated data is present with UTA's APC Analytic Software.

Section 2 Report On The Firm

This section will present a brief background of UTA, recent Financial Statements, a description of the APC marketplace, and a description of UTA personnel that will be involved with the SCTA APC implementation.

UTA, Inc. Background/History

UTA has been in existence since 1981 when it was formed by two (2) individuals (R.K. Armstrong, T.W. Kowalski) who had formerly served as research engineers with General Motors - Transportation System Division. During their tenure with GM-TSD from 1976 - 1981, an operational Automatic Vehicle Location (AVL) system was developed that included an Automatic Passenger Counting (APC) sub-system. The AVL/APC system was deployed in Cincinnati, Ohio as part of GM-TSD's Urban Transportation Laboratory. Real-time dispatcher displays, real-time passenger information displays, and off-line Ridership data were routinely generated from this system. While operational, detailed cost/benefit analyses were performed along with technical evaluations of the AVL/APC system. When General Motors disbanded the Transportation Systems Division in 1981, and decided not to participate in the transit AVL/APC marketplace, General Motors sold the product rights to the APC sub-system to the newly formed UTA.

Based on the AVL/APC cost/benefit analyses, UTA recognized that significant value in the areas of reduced data collection costs and improved transit service quality and productivity would be gained by applying the APC technology in the transit marketplace. Using the purchased APC inventory from General Motors and a small amount of start-up capital, UTA was able to provide APC capability to small and medium-sized midwestern transit systems during the 1980's. It was from these initial APC deployments that UTA recognized that successful APC implementation resulted from not only providing a reliable set of APC technology (hardware/software) but also developing a close working relationship with the transit APC users in order to assure the APC-generated information was producing the expected benefits.

As an entrepreneurial start-up engaged in applying technology within the transit industry, and surviving/prospering after more than twenty (20) years in the ITS marketplace; UTA is most unlike the current set of firms populating the transit ITS marketplace. Firms with an abundance of technological resources but with little transit knowledge/experience are migrating into the transit marketplace from other markets (most often Department of Defense).

The only business of UTA is providing automated data collection and analysis tools to transit planning and scheduling departments. UTA has developed both Handheld Computer and APC systems that have been implemented in North American transit agencies since 1981. Urban Transportation Associates is dedicated to the transit marketplace. It is this presence in the transit marketplace that provide assurance that an

APC system provided by UTA will operate successfully over a minimum of ten (10) years. A large number of transit Intelligent Transit System (ITS) implementations over that past ten (10) - fifteen (15) years have been unsuccessful/ineffective due to the departure from the marketplace of the prime ITS contractor.

Over the past twenty (20) years, UTA has observed an exodus of ITS suppliers from the ITS marketplace approximately every five (5) to seven (7) years. Currently, the most recent shakeout of the ITS marketplace has resulted in the departure of three (3) to five (5) firms and the recent entrance of a new/different set of firms offering ITS products. In the APC marketplace, the past two (2) years have seen the departure of two (2) experienced firms and the introduction of two (2) firms using new/different APC sensor systems. Those transit agencies that had purchased APC systems from the firms that have now departed from the APC marketplace are left without any APC support. It is UTA's belief that at least a five (5) year transit ITS/APC learning curve exists before a firm can pass through the technical/experiential/and economic learning curve to be considered as a qualified ITS supplier.

UTA has just recorded a fifth (5th) successive year of record sales and profits. The current 2004-2005 business backlog exceeds record FY2003 year by 20%. In short, UTA is in the most financially healthy condition as it has been in its twenty-three (23) year history. As has been present in the transit AVL marketplace where the number of AVL suppliers exceeds the AVL demand, the APC marketplace also has a larger number of firms offering APC systems than the current level of APC demand can support. Current APC market conditions suggest that a number of North American transit agencies will procure APC systems from firms that may not be present in the APC marketplace within the next few years.

Given the use of off-the-shelf APC components, UTA's APC system offers the greatest long-term assurance that high quality APC information will be produced for at least a ten (10) year period.

From the two (2)-person start-up company in 1981 pioneering the use of APC technology in transit through the deployment of a handful of APC's in cities such as Columbus, Kalamazoo, and Grand Rapids; UTA is now recognized as the leader in the APC marketplace.

Included in this section is a plot illustrating UTA's Revenue History along with UTA's most recent Financial Statements (2002 & 2003).

APC Marketplace: Summer 2004

As transit agencies prepare to procure APC systems, it is critical for the local transit agency APC procurement process to include an up-to-date assessment of the APC marketplace. Over the past five (5) years, the North American transit marketplace has recognized APC technology as a critical management tool that has the potential to generate significant benefits in transit service quality and productivity. This section will present information applicable to the APC marketplace in Summer-2004 including updates from APTA's Fall 2003 Intermodal Operations Planning Conference and the considerable communication received by UTA from non-UTA APC sites in 2004. Currently, In North America, APC systems are being provided by the following set of suppliers:

Urban Transportation Associates (UTA)
InfoDev
Dilax
Siemens
Orbital Sciences Corp (OSC)
Clever Devices
INIT

Of these suppliers, three (3) firms (UTA, InfoDev, Dilax) specialize in providing stand-alone APC systems. The other firms (Siemens, OSC, Clever Devices, INIT) provide APC systems as a component of larger-scale Intelligent Transportation Systems (ITS) implementations such as Automatic Vehicle Location (AVL) and/or Automated Voice Annunciation (AVA).

It should be noted that only two (2) of the aforementioned firms (UTA and InfoDev) consistently attend/exhibit at APTA's Intermodal Operations Planning Conferences. It is at this annual conference that transit planners/schedulers meet to discuss approaches toward improving transit service. The lack of attendance at APTA's Intermodal Operations Planning Conference by firms supplying APC systems reflects a critical problem in the APC marketplace: elegant technology but a lack of user application/benefit.

A most significant APC project in the North American transit marketplace has recently been completed in Vancouver, B.C. In 2003, the Greater Vancouver Transportation Authority (GVTA) executed an APC Pilot Project in which GVTA selected three (3) APC suppliers (UTA, InfoDev, and Dilax) after a worldwide search that GVTA felt exhibited a level of APC competence that justified inclusion in GVTA's APC Pilot Project. Each firm installed APC equipment on six (6) GVTA buses (40' Diesel, Electric Trolley, and Articulated). After eight (8) months of rigorous evaluation including accuracy, data yields, standard reporting, and ad-hoc reporting; UTA was awarded a follow-on contract to provide twenty (20) APC systems for an intense data collection/analysis project in Fall 2003-Winter 2004. In the last five (5) years, there have

been two (2) 'head-to-head' APC evaluations (Los Angeles 1998, Vancouver 2003). In both cases, UTA was awarded follow-on APC contracts for continued APC data collection and analyses. SCTA should also be aware of a recent survey of APC suppliers published in the September 5 2003 issue of THE URBAN TRANSPORTATION MONITOR in which information relative to (6) APC suppliers is presented along with an editorial that describes the value associated with an investment in APC technology.

Over the past decade, numerous (10-20) transit systems have obtained APC sensors installed on local transit vehicles as components of large-scale ITS (AVL,AVA, Fare Collection) applications. Typically, 1-2 paragraphs are included in ITS procurement specification stating the requirement of including APC sensors as part of the ITS system. In the ITS suppliers' proposals, 1-2 paragraphs are included in the proposal stating that the supplier will provide APC equipment. As the ITS implementations proceed, the APC element of the project frequently is only partially implemented, it at all. Given the low relative priority of the APC component, APC systems typically do not receive the depth of technical attention that APC systems require. The condition of partially implemented/inactive APC systems implemented by firms that do not specialize in APC systems characterizes the APC marketplace in Spring 2004. As the table below indicates, there are numerous transit agencies that currently possess APC systems that currently can be characterized as 'inactive'.

Site	Supplier	Status
Washington D.C - WMATA	Clever Devices	Not - Active
Chicago - CTA	Clever Devices	Not - Active
Cleveland - RTA	Siemens	Not - Active
Albany - CDTA	UTA - Init	Active
Providence - RIPTA	UTA	Active
Philadelphia - SEPTA	UTA - OSC	Testing
Baltimore - MTA	UTA	Active
Baltimore - MTA	Clever Devices	Not - Active
Jacksonville - JTA	UTA	Active
Orlando - LYNX	UTA	Active
Austin - CMTA	UTA	Active
San Antonio - VIA	Siemens	Not - Active
Ann Arbor - AATA	Siemens	Active
Dallas - DART	UTA	Active
Salt Lake City - UTA	Siemens	Active
Corpus Christi - RTA	Siemens	Not - Active
Houston - METRO	Init	Installation
St. Louis - BiState	Init	Active
Denver - RTD	Init	Installation
Milwaukee - MCTS	InfoDev	Active
Buffalo - NFTA	UTA	Active
Portland - TriMet	Red Pine	Active
Seattle - KCTS	Pachena	Not - Active
Oakland - ACTransit	UTA	Active
Oakland - ACTransit	OSC	Not - Active
San Francisco - MUNI	Dilax	Not - Active
Lincoln - RTS	UTA	Active
Los Angeles - LACMTA	UTA	Active
San Bernardino - Omnitrans	UTA	Active
Tempe	UTA	Active
Minneapolis - MTC	Siemens	Not - Active
Orange County - OCTA	OSC	Not - Active
Kansas City - KCATA	UTA	Active
Kansas City - KCATA	Siemens	Not - Active
Columbus - COTA	UTA	Active
Victoria - BCTransit	UTA	Active
Chicago - Pace	Siemens	Active
New Jersey Transit - NJT	OSC	Not - Active
Cincinnati - SORTA	UTA	Active

SUMMARY			
Supplier	Active	Not - Active	Percent Active
UTA	19	2	89%
Clever Devices	0	3	0%
Init	2	2	50%
Siemens	2	4	33%
InfoDev	1	0	100%
Dilax	0	1	0%
OSC	0	3	0%

The typical reason for an APC system to be 'inactive' is the lack of appropriate APC-related software that limits both the analytic capabilities of the APC system and the ability to manage the APC system. After initial installation of the APC on-board sensors, transit users recognize the need for three (3) critical elements in the APC software: analytic flexibility, comprehensive analytic capability, and administrative control. In the last six (6) months, UTA has received numerous calls from transit agencies that are experiencing problems with APC systems that are not performing to local user expectations. Numerous calls to UTA from transit planners/schedulers frustrated with unsatisfactory APC systems provided by Siemens, INIT, Clever Devices, and OSC have been received over the past six (6) months.

Recent (2004) invitations from WMATA (Washington D.C.) and SF MUNI (San Francisco) to discuss non-operational APC systems provided by Clever Devices and Dilax allowed UTA to assess the causes of APC system ineffectiveness. In each case, UTA's approach toward APC implementation would have eliminated the causes of the various local problems.

In Summer 2004, the North American transit marketplace recognizes the value that APC-generated data/information can provide. As a result virtually all transit systems have purchased and/or are in the process of purchasing APC systems. Among the APC supplier marketplace, there appears to be a significant difference in the percentage of operational APC system sites associated with each APC supplier. Relatively new APC suppliers (and a number of transit planning/scheduling departments) are learning that successful implementation and user utilization of APC systems is a much more complicated task than originally expected. Having progressed through the APC learning curve many years ago, UTA is now strongly recommending transit that APC users specify a target Return-On-Investment (ROI) from the APC investment.

Organization/Project Team

UTA's President\CEO, **Mr. Thomas W. Kowalski,** will have overall project management responsibility for this project.

Mr. David Hatzenbuhler and **Mr. George Perkins** will have responsibility for the APC equipment installation and operation during the course of this project. Mr. David Bosshammer and Mr. Kevin Moore will have responsibility for all software related aspects of this project.

Mr. Thomas W. Kowalski - President/CEO - Mr. Kowalski will serve as the principal UTA Project Manager with overall responsibility for the APC system achieving the objectives of maximum return-on-investment by improving service quality and productivity. Mr. Kowalski has a Bachelor's degree in Industrial Engineering, a Master's degree in Business Administration, and a Master's degree in Community Planning. Mr. Kowalski is a founding member of UTA and the original developer of the APC Analytic Software package. Mr. Kowalski is a former Adjunct Instructor of Operations Planning in Public Administration at the University of Cincinnati. Mr. Kowalski has been the Project Manager in each of the approx fifty (50) UTA's APC projects.

Mr. David Bosshammer - Software Engineer - Mr. Bosshammer will have the responsibility for successful operation of all APC software, both on-board and post-processing. Mr. Bosshammer will make the necessary adaptations to standard UTA's software to efficiently operate at SCTA. Mr. Bosshammer has been working with UTA since 1995 and during that time has participated in approximately thirty (30) different APC projects. Mr. Bosshammer has developed UTA's SAEJ1708/J1587, GPS, and wireless download interfaces, along with interfaces to all major transit scheduling systems (Trapeze, GSCHED, HASTUS). Mr. Bosshammer has a Bachelor's degree in Physics, with a Master's degree in Electrical and Computer Engineering.

Mr. David Hatzenbuhler/Mr. George Perkins - APC Technicians - Mr. Hatzenbuhler and Mr. Perkins will have responsibility for successful installation and operation of all APC equipment. Mr. Hatzenbuhler and/or Mr. Perkins have personally installed APC systems on approx one-thousand (1000) different transit buses over the past fifteen (15) years. Mr. Hatzenbuhler and Mr. Perkins are experienced electronic technicians.

Mr. Sandesh Samdaria will be involved with this project by performing the routine APC data processing tasks and data quality reviews for each SCTA APC data batch. Mr. Samaria has been employed by UTA since 1999 first as a student intern and most recently as a full-time UTA employee. Mr. Samaria received a Master of Community Planning degree from the University of Cincinnati in 2000 and holds an undergraduate degree in Architecture from the BAM University in Aurangabad, Maharashtra, India.

Mr. Kevin Moore will be performing the APC Report Generation training and adaptation of standard UTA APC reports/plots to fit SCTA user requirements. Mr. Moore is a 1999 graduate of Northwestern University with a degree in Civil Engineering.

Section 4 Customer References

UTA is the most experienced provider of fully integrated APC hardware and software systems that consistently and routinely meet the analytic objectives of transit users. UTA APC users realize a significant return on the APC investment in the form of reduced costs of data collection/analysis along with improved transit service productivity and quality.

Presented below is a comprehensive list of UTA APC sites with user names/telephone numbers. In SCTA RFP #4785DW, three (3) references are requested. UTA would recommend three (3) sites that have particular application to SCTA: Jacksonville Transportation Authority (JTA), Central Florida Regional Transit Authority (LYNX), and BC Transit (Victoria, B.C.). UTA encourages SCTA to contact all sites/users referenced in this section.

UTA APC Projects

In each of these cities, specific emphasis has been placed on working with the transit user departments to develop unique APC reports that meet the user's unique analytic requirements. Along with being exposed to a variety of analytic requirements, each transit system has a unique set of terminology and operating procedures.

Los Angeles, CA (LACMTA)
Atlanta, GA (MARTA)
Vancouver, B.C. (GVTA)
San Juan, P.R. (AMA)
British Columbia Transit (BC Transit)
San Bernardino, Ca (Omnitrans)
Rhode Island Public Transit Authority (RIPTA)
Niagara Frontier Transportation Authority (NFTA)
Austin, Tx (CMTA).
Kansas City, KA (KCATA)
Gainesville, Fl (RTD)
Orlando, FL (LYNX)
Union City, CA
Salt Lake City, UT (UTA)
Dallas, TX (DART)
Jacksonville, FL (JTA)
New Jersey Transit (NJT)

Albany, NY (CDTA)
Central Florida Regional Transit Auth (LYNX)
Oakland, CA (AC Transit)
Minneapolis, MN (MCTO)
Baltimore, MD (MTA)
Chicago, IL (Pace Suburban Bus Service)
Salem, OR (Salem Area Transit)

Toronto Airport Auth (GTAA)
City of Tempe
Cincinnati, OH (SORTA)
Columbus, OH (GVTA)
University of Minnesota
Cleveland, OH (GCRTA)
Tampa, FL (HARTLINE)
Lincoln, Nebraska (Star Tran)

Albuquerque (SUNTRAN)
St. Louis, MO (Bi-State)
Grand Rapids, MI (GRATA)
Philadelphia, PA (SEPTA)
Pittsburgh, PA (PAT)
Washington, DC (WMATA)
Denver, CO (RTD)
Milwaukee, WI (MCTS)
Santa Clara County, CA (SCCTA)
Chicago, IL (CTA)
Lexington, KY (Lextran)
South Bend, IN (TRANSPO)
Lafayette, IN (GLPTC)
Ann Arbor, MI (AATA)
Middletown, OH (MTS)
Riverside, CA (RTA)

UTA APC Project References/Descriptions

Los Angeles County Metropolitan Transportation Authority (LACMTA) **Rodger Maxwell (213) 922-6986**

After a worldwide search of APC firms in 1997-1998, LACMTA selected UTA along with two (2) other firms (INIT and Microtronix) to participate in an APC Evaluation/Demonstration Project. During the four (4) month evaluation period, passenger counting accuracy was tested along with the generation of a complete set of APC Analytic reports/plots. In late 1998, to meet both NTD (Section 15) and internal analytic needs, UTA was selected by LACMTA to provide sixty (60) APC systems under a lease program. In 1999, LACMTA extended UTA's APC lease contract for an additional two (2) years. Unprecedented in the history of the U.S. transit industry, was the successful implementation of an APC system in less than a three (3) month period in a transit agency as large and complex as LACMTA. In 2001, under sole source contract, LACMTA chose UTA to provide APC capability for the next three (3) to five (5) years while increasing the number of APC-equipped buses from sixty (60) to ninety (90).

Central Ohio Transit Authority (COTA) **Ann Geter (614) 275-5903**

In April 2004, COTA awarded UTA a contract to provide forty (40) APC systems with automated data download capability. This contract award followed a competitive APC procurement process. The forty (40) APC systems are scheduled to replace UTA APC systems that were installed in 1992-1993. In 2001-2002, COTA purchased a CAD/AVL system that was originally intended to include an APC subsystem. The forty (40) new UTA APC systems being installed at COTA are autonomous and completely independent of COTA's CAD/AVL system.

Alameda Contra-Costa (AC Transit) Transportation System **Howard Der (510) 891-7208**

In 1997, AC Transit purchased twenty (20) Stand-Alone APC systems from UTA and were deployed at a number of AC Transit operating divisions. In 1999, AC Transit purchased a CAD/AVL system that was originally intended to include an APC subsystem. In 2004, UTA was awarded a sole-source contract to provide forty (40) additional APC systems and upgrade the original twenty (20) APC systems to incorporate the automated APC data transfer subsystem.

Salem-Keizer Area Transit (SAT) **Alan Puderbaugh (503) 588-2424**

In Fall 2003, SAT installed ten (10) UTA SmartSensor APC systems integrated via J1708 interface with Digital Recorder Inc. (DRI) Annunciator system. SAT staff received the complete UTA APC Software package and APC training. Based on SAT's initial experience with UTA APC's, SAT has specified an additional increment of eight (8) UTA SmartSensor APC systems to be included in a new bus purchase scheduled for late 2004.

Greater Vancouver Transportation Transportation Authority (GVTA) **Ryan Harding (604) 953-3423**

In early 2003, after a wide APC solicitation, GVTA selected three (3) APC suppliers (UTA, InfoDev, Dilax) to conduct a concurrent APC Pilot Project on a variety of GVTA bus models and transit service. UTA provided six (6) APC systems under a six (6) month lease to GVTA. The APC configuration included UTA's most current spread-spectrum radio data transfer subsystem, overhead I-R passenger counting sensors, and processing software that executes all APC data processing steps automatically overnight. After completion of the APC Pilot Project, GVTA subsequently awarded UTA a contract to provide twenty (20) APC systems to GVTA for Fall 2003 data collection to support an intensive Vancouver Area Transportation Plan (VATP) regional planning initiative. The VATP APC project was successfully completed in early 2004.

Dallas Area Rapid Transit (DART) **Gary Hufstedler (214) 749-2820**

In 1998, DART conducted a technical evaluation of UTA's APC system with the intent of leasing twenty-five (25) APC units until DART's ITS system is fully implemented. Unlike most transit agencies, DART subcontracts the data collection task to a local engineering firm. As a result of this approach, DART has a clear knowledge of costs associated with the collection of a given number of data hours. With APC's, DART has been receiving five (5) to seven (7) times the amount of data for the same cost as with manual methods. In 2000, DART purchased the twenty five (25) APC systems. In 2004, DART is upgrading the APC system to automatically transfer data via WLAN 802.11b infrastructure.

Niagara Frontier Transportation Authority (NFTA) **Chris Cronin (716) 855-7653**

In late 2000, NFTA selected UTA over two (2) APC suppliers, (InfoDev and Clever Devices), to provide APC systems as part of a new bus procurement from Gillig Corporation. NFTA has forty (40) APC-equipped buses that are deployed over three (3) operating divisions. The UTA APC system is executing daily data transfer a spread spectrum radio system on-board each NFTA vehicle. Based on high levels of APC System performance, NFTA added an additional sixteen (16) APC systems in mid-2002 and added an additional twenty-two (22) APC systems.

Metro Atlanta Rapid Transit Authority (MARTA) **PO Johnson (404) 848-5865**

UTA, serving as the APC sub-contractor to TMS/ Raytheon, Inc., provided fifteen (15) APC units to MARTA in 1996 as part of an integrated Intelligent Transit System (ITS) that includes CAD/AVL and APC systems. UTA APC system is integrated into a Vehicle Area Network (VAN) via the SAE J-1708/J-1587 integration standard. Also provided will be UTA's analytic software to serve as an element of an integrated Ridership Performance Management Information System (RPMIS) specified by MARTA. Based on the initial performance of the APC system, MARTA procured an additional sixty (60) APC units in 1997. Since 1998, MARTA utilized the APC system

to generate service improvements resulting in $1-$2 million annual savings. In 2003, APC data was utilized to make major MARTA service changes.

Capital Metro Transportation Authority (CMTA) Barney Sifuentes (512) 369-6261

In February 2002, CMTA selected UTA over the only other bidder, INIT, to provide an APC system consisting of twenty (20) APC-equipped buses under a lease/purchase contract. CMTA leased the APC equipment and all APC support from UTA for a one (1) year period. In late 2002, CMTA purchased a total of ninety (90) APC systems for CMTA and UT Shuttle service.

Kansas City Area Transportation Authority (KCATA) Mark Swope (816) 346-0254

As part of a new bus procurement UTA will provide seventeen (17) APC systems to Gillig Corporation for inclusion on new KCATA buses. UTA provided software and all training directly to KCATA staff. In 2002, KCATA purchased a CAD/AVL/APC system from Siemens. KCATA may be the only transit system in North America to have APC systems from two (2) different APC suppliers concurrently installed on buses

Los Angeles County Metro Transportation Authority (LACMTA) **Sharazad Amiri (213) 922-7324**

In late 2001, UTA was selected over two (2) other bidders (OSC, Siemens) to provide all engineering, equipment, installation and support for a Bus Signal Prioritization (BSP) project on Line 210/310 Crenshaw Blvd Corridor. This project includes an initial set of ten (10) buses equipped with UTA's BSP configuration followed by an additional ninety-four (94) BSP-equipped buses. UTA's standard APC CPU has the capability of adding BSP capability with minor modifications. Since 2003, UTA's BSP configuration has been selected as the standard for future LACMTA Rapid Bus Corridors.

Southwestern Ohio Regional Transportation Authority (SORTA) **Ted Meyer (5001 632-7547**

In March 2003, SORTA selected UTA (as a subcontractor to TMD) to perform a system-wide data collection project. UTA installed twenty-eight (28) APC systems on SORTA buses and completed a comprehensive (2-4 samples/trip) sampling of SORTA service within a three (3) month period. UTA is the only APC firm with the experience and technical capability to undertake intense short-term data collection/analysis projects of this nature. SORTA plans to purchase an APC system in 2004.

British Columbia Transit (BCTransit) **Mike Davis (250) 995-5617**

In 1999, BCT awarded UTA (over InfoDev) a contract to provide thirty-nine (39) APC units, software and training. APC units are deployed in Victoria, Kelowna, Kamloops, Nainamo, Abbotsford and other smaller transit systems operated in British Columbia. In early 2000, BC Transit evaluated the performance of the initial six (6) APC units and installed an additional thirty three (33) systems in 2000 and 2001.

San Bernardino County (Omnitrans) **Jeff Barron (909) 379-7253**

In mid-2000, after a competitive procurement, Omnitrans awarded UTA a (five (5) year lease contract to provide twenty (20) APC systems and support. FTA NTD reporting along with detailed route analyses will be conducted during the project. In addition to on-board data storage, the APC data is transferred to Omnitrans' Planning and Scheduling staff via spread spectrum radio link from Omnitrans' two (2) operating divisions.

Central Florida Regional Transit Authority (LYNX) **Terry Jordan (407) 841-2279 x 3052**

In mid 1998, UTA was selected over two (2) other bidders (Microtronix and Init) as the supplier of a turn-key APC/GPS system for LYNX. UTA provides a stand-alone APC/GPS configuration along with UTA's APC Analytic Software package, training and documentation. Based on the performance and evaluation of the initial two (2) APC units, LYNX purchased an additional eight (8) APC units in 2000 and has an additional ten (10) units planned for 2004. The APC data is being automatically downloaded each day via spread spectrum radio systems at each of Lynx's two (2) operating divisions.

Rhode Island Public Transit Authority (RIPTA) Sheryl Cripps (401) 784-9500x221

In early 2000, RIPTA awarded UTA a contract for the implementation of an APC system consisting of ten (10) APC systems. Seven (7) APC systems were installed on RIPTA TMC coaches and three (3) were installed on Chance Trolley's. UTA was awarded this contract after a competitive procurement process at RIPTA. At RIPTA, the APC data is being downloaded daily via spread spectrum radio link. Based on the performance of the initial ten (10) APC systems, RIPTA is planning to procure an additional thirteen (13) systems in 2004.

Jacksonville Transportation Authority (JTA) **Darrell Smith (904) 630-3153**

In June 1994, JTA contracted UTA to provide eight (8) APC units and twenty (20) signpost transmitters to conduct analyses on each of JTA's four (4) service quadrants. Based on the sixteen (16) month APC lease, JTA procured seven (7) APC/GPS systems in 1996, procured an additional thirteen (13) APC/GPS units in 1998 and added ten (10) more APC/GPS units in 1999. In early 2000, JTA added radio download capability to the thirty (30) bus APC fleet. In 2002, JTA added APC's on JTA's Trolley service. In 2003, JTA added APC systems to JTA's Skyway monorail service.

Section 5 Additional Information, Optional

It is UTA's practice to prepare a specific response to each section of an APC RFP. This section presents UTA's comments and narrative descriptions for each element of SCTA APC RFP #4785DW.

BACKGROUND

UTA's experience of implementing Automatic Passenger Counting (APC) Systems in over fifty (50) large and small transit systems for more than two (2) decades provides UTA with a basis of knowledge and understanding of transit operations. This knowledge allows UTA to adapt APC technology to the specific operating conditions at each transit agency in order to maximize the informational benefits of an investment in an APC system.

SCOPE OF SERVICES

1) UTA is in agreement and compliance with this section.

   UTA's APC system has been providing the functionality described in this section since 1981. Over the years, UTA has incorporated technological improvements (Global Positioning Satellite, wireless data transfer, ruggedized CPU processor, and post-processing software) into an APC system that has proven to be extremely reliable and accurate in day-to-day transit operation with a minimum life span of at least ten (10) years.

   UTA strongly supports SCTA's approach of installing APC's on a relatively few (4) buses. By deploying the APC-equipped Gillig high-floor and low-floor buses throughout the service are each scheduling period, a comprehensive set of data will be collected that will allow significant improvements in service quality and productivity to take place. If SCTA requires additional APC systems in the future, the additional systems can be added incrementally as needs dictate. This approach has been successful in two (2) neighboring Florida transit agencies (Jacksonville-JTA and Orlando-LYNX). UTA's fixed-end APC components (wireless data transfer, APC Analytic Software) can accommodate a large number (5-200) of APC-equipped vehicles.

   See Section 1 for a table that presents the quantities of bus types on which UTA APC systems have been installed. UTA's APC systems have been installed on Gillig 35' high-floor and low-floor buses in many different transit agencies. UTA's APC system can operate on buses with both 12V and 24V electrical systems. It is UTA's preference to utilize the 24V on-bus power.

2) UTA is in agreement and compliance with this section.

For the SCTA application, UTA will include a 900 Mhz Spread-Spectrum Radio (SSR) wireless data transfer system. See Section 1 for a technical description of the radio system.

Although UTA has the capability of incorporating a WLAN method of APC data transfer, UTA is proposing the SSR method due to a wider coverage are than WLAN. In the case that an APC-equipped bus does not pass through the service area (1%-5% of the time), the SSR method still allows APC data to be transferred regardless of where the bus is parked on the property. WLAN has a limited range (in near proximity to the service area). Also, UTA's APC system creates an on-board compressed binary data file of 50Kbyte–100Kbyte that does not require the extremely large capacity (1.2 Mbps) of WLAN.

SCTA should recognize that wireless data transfer is not an absolute necessity with UTA's APC system. Incorporated within the on-board APC CPU is a 3.5" diskette drive that can store 7-21 days of APC data. In many UTA APC sites, a transit staff person (maintenance clerk, operations staff) executes a weekly/bi-weekly APC diskette change. This task is absorbed within the individual's set of duties without any additional cost to the transit agency. The costs associated with wireless data transfer in this proposal are approx. $4,500.

Whether the APC data is transferred through a wireless method or a manual method, the quantity/quality of APC-generated analyses in not impacted.

3) UTA is in agreement and compliance with this section.

Depending upon the location of the APC Base Station, it may not be necessary for both a wayside computer and a central computer. In many UTA APC sites, both functions (receiving APC data and complete processing of APC data) can be accomplished by a single standard desktop PC.

See Section 1 for a technical presentation of the computer system configuration. Also see Appendix D for a description of the desktop PC that will be provided with this system.

Assumed in this proposal is a single desktop PC will be installed in the SCTA offices. An attractive, small internal antenna will be mounted on a wall above the APC PC to receive the APC data. All routine processing (Diagnostics, Automated Assignment, and File Creation) will be executed automatically overnight. The interactive APC Report menu will be available for the production of any desired APC report/plot (See Appendix A).

If a separate computer is required for the APC Base Station, UTA will provide a low-end PC (less than $1000) at no extra cost to SCTA. The APC Base Station will be linked to the APC Central Computer via the internal SCTA Local Area Network (LAN).

4) UTA is in agreement and compliance with this section.

See Section 1 for a detailed description of UTA's APC Analytic Software package.

UTA's APC Analytic Software package is recognized at the most advanced APC Software package available. UTA has received numerous inquires/contracts to apply UTA's APC Analytic Software package to APC data collected by non-UTA hardware. In many North American transit agencies, APC's were included in Automatic Vehicle Location (AVL) and/or Annunciator procurements as an add-on element to the project. The suppliers of AVL and Annunciators do not have the experience to recognize the depth of analyses and support that is required with an APC system. Transit planners/schedulers/managers are typically disappointed in the lack of analytic flexibility and substantiation in the APC software that is provided by the AVL and Annunciator suppliers. It is for this reason that UTA's APC software is being utilized to process data from non-UTA on-bus hardware.

The functions listed in this section are embedded within UTA's APC Analytic Software package.

a) Data Management – UTA's APC Analytic Software contains a wide range of Data Quality Codes that will maximize the amount of information generated by the APC system. For example, an APC-equipped bus with a malfunctioning passenger counter sensor may be successfully collecting schedule adherence and running time data. The APC Data Quality codes will allow valid GPS-generated schedule adherence and running time data to be included in analyses while filtering the passenger count data.

   With UTA's experience, the Data Management process is highly automated with a minimum of effort (1-4 hours/week) required to support the APC system.

b) System Diagnostic Reporting – UTA's APC Analytic Software package contains a comprehensive set of APC Diagnostic algorithms that automatically review the raw APC data to identify any APC maintenance needs and generate an APC Diagnostic Report that will provide direction to the APC technician for repair.

c) Matching of Data To Reference Files – UTA executes the matching of raw data to local reference files (schedules/stops) automatically each night after the raw APC data is transferred from the bus to the APC Base Station. It is extremely critical for SCTA to avoid APC systems that attempt to match the raw APC data with reference files on-board the vehicle. This approach creates the requirement on SCTA staff to have 100% accurate schedules and bus stop geo-coding downloaded to the APC-equipped bus BEFORE the APC-equipped is deployed in daily revenue service. As a result, an unnecessary burden is placed on SCTA staff. A primary reason for dissatisfaction among non-UTA APC sitis the problems associated with the generation of 'perfect' schedules/geo-coding prior to APC bus deployment.

   UTA's approach of matching raw APC data to reference files in the APC Central Computer allows staff to de-bug new schedules and develop bus stop geo-coding within their normal duties. It is quite common for transit agencies to require 2-4 weeks before minor changes are resolved after each schedule revision. After these changes are made in

these schedules/geo-coding, the overnight APC Matching software automatically applies the revised reference files to the APC data. SCTA should query UTA APC users to learn the benefits of off-bus matching of reference files.

SCTA should also recognize that UTA's APC Analytic Software contains algorithms that will identify any new or missing bus stops. After a period of time (2-4 weeks), an APC module can be executed that will identify locations where riders are boarding/deboarding. From the APC data, the clusters of on/off data can be mapped to visually identify the intersection/landmark at which passenger activity is taking place. It is this approach that has been taken in Los Angeles, Austin, Atlanta, Baltimore, Cincinnati, and Vancouver. In Los Angeles, approx $750,000 was saved by utilizing UTA APC data rather than executing a costly field bus stop geo-coding survey. It is not necessary for SCTA to possess a comprehensive bus stop geo-coding file prior to the APC implementation. UTA will create and/or supplement an SCTA bus stop geo-coding file.

Functionally, UTA's GPS-based Matching algorithms have been in operation for approx ten (10) years and are extremely reliable in identifying bus stops/time points. Even for local idiosyncracies in routes, UTA can accommodate unusual behavior for accurate analytic reporting.

d) The creation of a relational database that can be queried to generate reports of passenger activity is not necessary with UTA's SPSS-based reporting package and the Graphical User Interface (GUI). For an APC system consisting of initially four (4) APC-equipped buses, the need for an expensive relational database creates both an necessarily high initial cost and creates a complexity that may not be able to be supported by SCTA staff.

See Section 1 and Appendix A for more detailed descriptions of UTA's APC Analytic Software package.

UTA's APC Database option adds approx $30,000 to an APC implementation and is applicable for large transit agencies (Los Angeles, Vancouver, Dallas, Atlanta). For SCTA, this additional cost does not result in any increased analytic utility. UTA's standard approach of creating ACSII.TXT files that are analytically processed by powerful statistical and reporting tools embedded within SPSS allows both analytically sophisticated and analytically unsophisticated local transit staff to create whatever analyses of APC data might be required.

The functional utility of a relational database is achieved must less expensively and without the technical requirements with UTA's SPSS analysis and reporting package. SPSS is an easy-to-use powerful statistical package that achieves both the routine and non-routine APC analytic requirements.

5) UTA is in agreement and compliance with this section.

UTA's APC system has been generating NTD reports for transit users for many years. NTD reporting is a low-degree-of-difficulty task that is easily accomplished by UTA's APC system.

Per SCTA's response to UTA's RFP question, UTA will not be including an NTD Sampling Plan within this proposal. At a cost of approx $4,500, UTA utilizes a statistician to create and substantiate an NTD Sampling Plan that is compliance with FTA NTD requirements.

Most likely, SCTA will continue with a random trip sampling process that selects trips to be included in an annual NTD report. As SCTA selects these trips (quarterly/schedule markup), a file of these trips will be provided to the APC system. UTA APC NTD software selects the APC data corresponding to the randomly selected SCTA trips and generates an NTD summary using only the APC data from the randomly selected trips. It is this process which has been executed in approx 10-15 transit agencies for annual NTD reporting.

SCTA will have access to 100% of the APC data 100% of the time (excluding computer downtime) for both standard and ad-hoc reporting. UTA training and documentation will allow local staff to gain a comfort and familiarity with generating both standard and ad-hoc analyses. Never has a user-request for an APC-generated analysis not been able to be accomplished with UTA's powerful and flexible analysis/reporting system.

It is UTA's objective to maximize the utility and Return-On-Investment (ROI) from SCTA's APC investment. UTA will provide any/all support for an indefinite period of time to assure SCTA's realization of maximum benefit from the APC system.

RESPONSE FORMAT

UTA will provide eight (8) copies of this proposal addressed to Mr. Dennis Wallace no later than 2:00 PM EST on Friday, June 25 2004. The proposal will be tabbed and formatted in the manner specified.

OTHER APPLICABLE INFORMATION

WARRANTY

UTA will repair or replace any APC equipment that fails during a one (1) year period starting from the date of system acceptance as a result of normal revenue service operation. APC equipment failures resulting from vandalism, negligence, accidents, or acts of nature are not included in warranty coverage.

MAINTENANCE & SUPPORT COSTS

In the title of the RFP, the term 'Maintenance' is included. However, in the body of the RFP there is not any reference to APC Maintenance. The costs presented below represent an APC Maintenance Support agreement between UTA and SCTA for support of the APC system (hardware and software).

Item	Cost
A. Spare Parts	$ 1,450
B. Equipment Maintenance	3,670
Labor: (8hrs/sitevisit)(3sitevisits/yr)($55/hr) Travel: (3rtrips)($550/rtrip) Living: (4days)($175/day)	
• Annual Total:	$ 5,120

UTA is agreeable to execute an APC Maintenance Support program on a 'not-to-exceed' basis that only invoices for services/material expended with total annual costs not to exceed $5,120. It is this approach that has been employed with numerous other transit agencies.

CONFIGURATION OPTIONS

It is UTA's assumption that SCTA wishes to purchase an autonomous APC system consisting of four (4) APC-equipped buses and all applicable APC software and support. This assumption was verified in an e-mail response from Mr. D. Wallace to Mr. T. Kowalski on 06/03/04.

For SCTA's information, there are other possible UTA APC Configuration options that are not being proposed in this proposal:

APC SmartSensor Integration w/On-Board ITS Systems

In this configuration the APC CPU is downsized in order to utilize other on-board ITS systems such as Automatic Vehicle Location (AVL) Automated Voice Announcements (AVA) and/or fare collection systems. The UTA APC SmartSensor integrates passenger counts with location (lat/long) provided by GPS, time of day, driver log on/off and wireless data transfer embedded in other on-board systems. This integrated APC configuration would reduce the cost of the APC CPU from $6,500 to $2,500 per bus. All other costs remain the same. Typically, the APC SmartSensor configuration is applicable for a large (Qty=20-2000) application of APC systems. Over the past few years, due to ineffective implementations of large-scale AVL/AVA projects, most APC procurements are specifying the 'StandAlone' APC configuration similar to that specified by SCTA.

APC Lease

Another approach which transit agencies have utilized to obtain APC capability is through an APC Lease program where the APC equipment is leased for a period of time (3-36 months) and UTA performs all APC installation, maintenance, and data processing. The transit user receives all reports/data for a fixed monthly cost. These costs range from $300/bus/mo to $1,200/bus/mo depending upon the length of lease and number of APC-equipped buses. Approx 10%-20% of APC Lease costs can be applied toward an APC purchase. In Florida, Gainesville RTS has executed APC Lease projects in the past for an intensive data collection/analysis project every 2-3 years. Based on the information provided in SCTA RFP #4785DW, the purchase of a four (4) unit APC system appears to be the best option for SCTA.

ATTACHMENT #4

Section 3 Price Proposal and Project Schedule

This section will present a detailed Cost Summary for the implementation of the APC system specified in RFP #4785DW along with a Project Schedule.

Cost Summary

Item	Total Cost
A. APC CPU w/GPS ($6,500/CPU)(4 buses)	$ 26,000
B. APC Sensors Front I-R Assembly Rear I-R Assembly GPS Antenna Bicycle Rack Switch Wheelchair Lift Relay/Switch Brackets (as required)	4,680
C. Installation Prep: (16hrs)($55/hr) On-Site: (40hrs)(2tech)($55/hr) Travel: (2rtrips)($650/rtrip) Living: (6days)(2tech)($185/day) Shipping: (4systems)($75/system)	9,325
D. APC Analytic Software (Includes Training & Documentation)	33,000
E. Project Computer Equipment Maintenance Laptop APC Processing Desktop PC	3,700
F. Wireless APC Data Transfer Base Station Radio, Antenna, Cables(Qty=1) Bus Radio, Antenna, Cables (Qty=4)	4,395
APC System Implementation Total Cost:	$ 81,100

Project Schedule

Task	Weeks ARO
A. Project Technical Review Meeting	2 – 3
B. Installation of APC On-Board Equipment	8 – 10
C. Installation of APC Wireless Data Transfer	10 – 11
D. Installation of APC Processing Computer	10 – 11
E. Installation of APC Software	10 - 11
F. APC Acceptance Testing	11 - 14
G. Training of SCTA Staff	10 – 16
H. Submission of Final APC System Documentation	14 – 16
I. UTA APC Warranty Support	14 – 66
J. UTA Technical/Analytic Support	0 – Indefinite

ATTACHMENT #5

(513) 961-0099
700 EAST McMILLAN, SUITE 302, CINCINNATI, OHIO 45206

November 18 2005

Mr. Earl Pflaumer
Lee County Division of Purchasing
1825 Hendry Street, 3rd Floor
Fort Meyers, Florida 33901

Dear Mr. Pflaumer

In response to our telephone conversation of November 18 2005, allow UTA to submit this letter relative to LEETRAN's purchase of an Automatic Passenger Counting (APC) system from Urban Transportation Associates (UTA), Inc.

UTA is in complete agreement with Lee County's proposed APC procurement as a 'piggy-back' to Sarasota County's APC procurement. In January 2005, after Sarasota County's evaluation of responses to RFP #4785 DW, UTA was awarded Purchase Order P529941 for a turn-key APC system consisting of four (4) on-bus APC systems, installation, automated data transfer system, complete APC Software package, and all associated training. It is UTA's understanding that the APC system to be installed at LEETRAN will be identical to that installed at Sarasota County Area Transit (SCAT).

UTA looks forward to providing an APC system that will ultimately generate improvements in the quality and productivity of transit service in Lee County.

Yours truly

Thomas W. Kowalski

Thomas W. Kowalski
President/CEO

05 NOV 22 AM 8:43

URBAN TRANSPORTATION ASSOCIATES

ATTACHMENT #6

Pflaumer, Earl

From: Pam Roberts [PROBERTS@scgov.net]
Sent: Tuesday, November 15, 2005 4:03 PM
To: Pflaumer, Earl
Subject: 4785DW
Attachments: 4785 Notice of Action.pdf

Hi Earl,

Attached is the information that you requested.

1. Tabulation Sheet (Award Notice)

2. You have our permission to piggyback off this proposal per Dennis Wallace (Procurement Manager). If you need additional information pertaining to this matter, please contact him at 861-7146.

3. The proposal is in a binder coming in the mail.

Thanks.
Pam Roberts
861-5264

ATTACHMENT #7

Sarasota County Government

NOTICE OF REQUEST FOR PROPOSAL ACTION

RFP Number:	4785DW
Description of Services:	**Furnish, Install, and Maintain an Automatic Passenger Counting System for the Sarasota County Transit Authority**
Date:	July 27, 2004

Ranking of Respondents:

1. Urban Transportation Associates, Inc.

Additional Firms Responding: None

Contract negotiations will begin with the first ranked firm. Upon completion of negotiations, a contract will be submitted to the Board of County Commissioners for approval.

By: _____ _____

Contract Management Specialist

General Manager, Asset Management