LFUCG Central Advance Traffic Management System

Scope of Work

Central ATMS Installation Test

The Team is prepared to provide the state-of-the-art ATMS software, MaxView, to meet the LFUCG's requirements. The MaxView software runs on standard Windows servers and can be accessed from any workstation running a modern web browser such as Internet Explorer or Firefox. The Team will install and integrate the ATMS hardware and software, as well as provide testing and training as outlined below. ALL configuration data in MaxView is stored in a SQL Server database making server redundancy and backup an easy, familiar process. The Team firmly believes that MaxView is the best solution for the LFUCG as our software has been built from the ground up rather than adapting legacy solutions to meet current standards. This design means MaxView comes with all the expectations of a modern solution without the weight of legacy problems.

The Team will work with LFUCG staff to determine the best standard deployment processes. Throughout the contract life, the Team's Project Manager will coordinate with the LFUCG project contact to ensure proper procurement procedures are followed and that LFUCG's objectives and goals are met.

Intelight will work with LFUCG and the agency IT department (if desired) for a smooth and safe integration into the LFUCG network. MaxView is built on industry standard components that are used by millions of users worldwide. For this reason, the system is very secure and integrates well into existing Windows based systems and networks.

Central System Installation

Once the necessary server equipment has been provided, the MaxView installation and configuration will begin.

Intelight will install and configure all MaxView software. Initial system setup (ready for controller integration) is typically completed within one day.

MaxView delivers several unique advantages during system deployment, management and upgrade cycles due to the underlying technologies on which it is based and the core system architecture. Specifically these are:

- Simple server installation and deployment – The MaxView server installation is contained in a single self-executing installer that verifies all pre-requisites and then installs the MaxView services and provisions an empty default database.
- Industry standard monitoring and deployment tools – All MaxView application and field communications services are hosted within Microsoft Internet Information Server. Microsoft IIS is a leading enterprise ready web server that securely powers hundreds of thousands of websites every day.
- No client installation requirements – As MaxView is a true thin client there is no need to install or configure any client software on the MaxView workstations. The only client requirement is a PC or Mac with a modern web browser and the Microsoft Silverlight plugin.
- Self-describing database editor metadata – When connected to a controller running

MaxTime, the MaxView service receives an XML file from MaxTime that essentially self-describes the set of database tables that it has available when it is first connected to the system. This simplifies deployment when a large number of intersections are deployed—especially when multiple firmware versions are running in the field. With this functionality intersections in the field can be upgraded without the worry of coordinating an equivalent upgrade in the central system.

MaxView supports a variety of physical hardware configurations depending on the specific agency requirements.

In any given installation the system will include field controllers, a MaxView server and MaxView clients, all of which will be deployed on the agency's network. Typically all components of the system will be deployed on an internal LAN and protected from the open Internet by a firewall. Remote clients can then gain access to the system through a VPN connection to the private LAN.

Phased Approach

Because the LFUCG currently operates approximately 400 signalized intersections and is pursuing upgrades to the traffic signal controller local software in parallel to this project, a phased approach to integrating the traffic signals and other ITS devices into the MaxView ATMS software is necessary. Following such a phased approach will allow the LFUCG to continue to operate traffic signals and ITS devices using the existing software while migrating groups of devices to the MaxView system. To affect this phased approach the Team's project manager will work with the LFUCG's project manager to identify and prioritize groups of signals and ITS devices that can be moved off the existing system and to MaxView. This prioritization process will result in a schedule showing when particular groups of devices will become operational under MaxView. Those devices that have not been migrated to MaxView will continue to be monitored and controlled through the LFUCG's existing software.

Database Conversions

Our team will do timing conversions from the existing controller databases to MaxTime controller databases. Timing databases will be programmed off-site from the existing timing sheets and will be tested in both the Windows and Linux (Local Controller) versions of MaxTime. We understand that clearance calculations may need to be verified. Our database conversions will be completed with a team of field and timing experts led by Whitney Nottage, who has overseen over 4,000 database conversions in Georgia. We will work with LFUCG to develop an efficient conversion process that meets the needs of the agency and ensures a quality project.

Our team has extensive experience with database conversions. Two different software platforms frequently require very different programming to achieve the same operation. We understand that when converting from one software to another the key is understanding the existing operation. The main goal of our team will be to duplicate the existing operation during the conversions. Throughout the process we will provide input and feedback on features and functions that may be used to optimize an intersection, if desired. Anticipated steps within the conversion process are:

- Review of existing database and submission of questions to the agency about the existing operation (if any)
- Initial database conversion by team
- QAQC of database in Windows emulator
- Review of database conversion by a PE/PTOE
- Submission of database to LFUCG for review
- Address agency comments

- Bench test final database on a Linux controller

We support the major project goals which include, but are not limited to, the following:

- Forming a long-term support partnership with Agency's staff
- Providing the Agency with true, open architecture NTCIP and ATC compliant products. We offer the Agency full, unrestricted access to our NTCIP MIBS, ATC APIs, and other relevant tools needed to interface with our software and hardware. This would enable the Agency to easily install third-party software on Intelight controllers in the future, if so desired
- Providing the Agency with a reliable, innovative product that we will continue to back with first class support
- Providing future product innovation and adaptation to current industry (IT Industry) technologies
- Continuing to provide customer driven development and configuration of products for ease of use, maintenance, cost-effective solutions, and enhanced functionality
- Providing quick response, effective local and remote customer support driven by service oriented business model

Local Controller Software and Rack-mounted CPU Modules

The Team is prepared to provide at least 425 Intelight 1C CPU modules running the latest version of MaxTime at a rate of fifty (50) per month.

MaxTime is a Linux-based local software that meets the current ATC standard, version 5.2b. We understand LFUCG's desire to keep up with emerging technologies, so it is important to note that MaxTime is also compliant with the ATC's latest draft standard, version 6. MaxTime is compatible with the proposed ATMS in this response, MaxView.

We propose updating the LFUCG's (and partner Agencies') 2070 traffic signal controllers with Intelight 2070-1C modules with MaxTime local software. Intelight can also install our MaxTime local controller software on other vendor's 1C modules if the following conditions are met:

- Third-party vendor 2070-1C carrier and engine boards are ATC 6.10 (Draft) compliant with a minimum of 32 MB Flash Memory (common)
- Per the ATC 6.10 (Draft) specification, the third-party vendor will provide Intelight the platform's board support package

Intelight's ATC 2070-1C modules have been successfully used in multiple vendors 2070 controller chassis with various 2070 modules installed.

If LFUCG has custom cabinet standards, Intelight will also add a standard I/O Module for LFUCG 33X cabinets to facilitate faster controller change outs and database conversions. Once selected, the default individual I/O pin functions can be user configured from the Web UI or front panel for special cabinet configurations.

Training

Intelight will provide training for both the local controller software, MaxTime, and the central ATMS software, MaxView. Our team will work with LFUCG to schedule training at a time that is acceptable to the agency.

Development of Training Materials

Our team will develop the appropriate training materials for the desired training sessions. A draft version of the training materials will be provided to the agency for review and comment. The Team will finalize these materials based on the comments received.

Conduct Training

Training will be performed at the LFUCG designated facilities and will be presented in English. Intelight will cater training to be delivered utilizing the equipment provided by the LFUCG (projectors, screens, etc.), and will request the equipment from the LFUCG with ample time to prepare. If additional non-standard equipment is required, we will provide said equipment. The Team will also provide the required training materials.

The training courses will be designed to be interactive and hands on. The training will utilize the MaxView user interface and MaxTime windows application on trainee's workstations or laptops, as well as local controllers running the MaxTime software. The necessary software for training will be provided by the Team.

MaxView Training

For the central ATMS system, the Team will facilitate the three training courses below during the system integration and installation phases of the project. We will work with the agency to schedule these training courses.

- System Operations – This class will train LFUCG staff on the use of the MaxView ATMS software. Training will provide users with sufficient expertise to use and manipulate all of the key features and applications within the ATMS.
- System Administration – This class will train LFUCG staff on all administrative features of the ATMS.
- System Maintenance – This class will train LFUCG staff with the maintenance of the ATMS. Training will provide users with sufficient expertise to utilize diagnostic and maintenance utilities and to diagnose, maintain and repair all supplied ATMS elements.

MaxTime Training

For the local controller software, the Team will facilitate the three training courses below during the database conversion phase of the project. We will work with the agency to schedule these training courses.

- Local Software Signal Timings – This class will train LFUCG staff on programming the basic timing parameters into the WebUI. Functions covered will include, but not be limited to, administration, database management, phase timings, detector configuration, coordination, normal overlaps, flashing yellow arrow overlaps, and preemption.
- Local Software Field Troubleshooting – This class will train LFUCG staff on field programming and troubleshooting from the front panel interface. Topics covered will include, but not be limited to, database management, flash troubleshooting, timings troubleshooting, cabinet troubleshooting capabilities in the controller, and detection troubleshooting.
- Local Software Advanced Training – This class will train LFUCG staff on advanced features within the MaxTime local controller software. This will include, but not be limited to, advanced phase options, advanced coordination functions, advanced overlap types and options, advanced preemption options, and advanced administration functions.

System Acceptance Testing

The Team will work with the LFUCG to implement a robust testing process to meet the contract requirements and prevent defects. We will work with the LFUCG to produce and adhere to testing plans that will provide proof of performance. We are prepared to provide all materials, equipment, and staff required to complete the testing and will coordinate with the LFUCG's project manager to ensure LFUCG staff is available to observe the tests at an agency-approved location.

Development of System Acceptance Test Plan

The Team will develop the System Acceptance Test Plan (SATP) that provides details on the testing to be performed and relates each test to specific requirements. A draft version of the SATP will be provided to the agency for review and comment. The Team will finalize the test plan and procedures based on the comments received.

System Acceptance Test Plan Execution

After installation and integration of the MaxView system and the establishment of communications to the initially deployed controllers, execution of the SATP will be coordinated with the Agency. At the agreed upon time, the test procedures will be performed and results will be noted in the SATP document.

System Variances

Should any portions of the test lack performance or fail to meet the stated system requirements, such variables will be recorded as a System Variance. The Team project manager will be prepared to provide a proposed solution to resolve the deficiency within seven days of receiving the system variance documentation. We will work closely with the LFUCG project manager to propose, resolve, and test any solutions to System Variances.

LFUCG MaxView ATMS Schedule

TCP and Intelight understand the LFUCG's scheduling expectations and proposes a draft schedule as shown below. Upon NTP, Intelight will work with the LFUCG to refine this schedule. The schedule below is based upon the following assumption that the NTP is provided 9/6/17.

Proposed tasks and schedule are:

(Activity ID # - See associated schedule)

- (10) 9/6/17 – Assumed Notice to Proceed & Kick-off meeting (1 day)
- SCHEDULE
    - (20) 9/7/17 – 9/15/17 – Schedule Development (7 days)
    - (30) 9/18/17 – 9/22/17 – LFUCG review/approval of schedule (7 days)
- TRAINING
    - (40) 9/11/17 – 9/25/17 – City-specific Training development (14 days)
    - (50) 9/25/17 – 10/6/17 – City of Lexington-Fayette Urban County Government review/approval of training documents (14 days)
    - (60) 10/6/17 – 10/13/17 – Intelight finalize training documents (7 days)
    - (70) 10/13/17– 10/20/17 – Initial training sessions
- ACCEPTANCE TESTING DOCUMENTS
    - (80) 9/11/17 – 9/22/17 – Acceptance testing development (14 days)
    - (90) 9/22/17 – 10/6/17 – City of Lexington-Fayette Urban County Government review/approval of Acceptance testing (14 days)
    - (95) 10/6/17 – 10/20/17 – Intelight finalize Acceptance testing procedures (14 days)
- MaxView ATMS Installation and Deployment
    - (100) 9/25/17 – 9/29/17 – LFUCG IT department coordinates with Intelight/ TCP to provide server access. (5 days)
    - (110) 10/2/17 – 10/06/17 – MaxView installation and setup (7 days)
    - MaxView graphics configuration
        - (140) 10/9/17 – 10/13/17 Part 1 configuration (intersections 1-100)
        - (150) 10/16/17 – 12/15/17 Part 2 configuration (intersections 101-200)
        - (160) 12/18/17 – 2/16/18 Part 3 configuration (intersections 201-300)
        - (170) 2/19/18 – 4/20/18 Part 4 configuration (intersections 301-402)
    - (120) 10/09/17 – 10/013/17 – Intial depolyment of 1C modules brought on-line (7 days)
    - (130) 11/3/17 – Appectance of ATMS
- Conducting System Acceptance testing
    - (125) 10/20/17 – 11/2/17 – Conducting approved acceptance testing procedures (7 days)
- 1C CPU Module Delivery Schedule

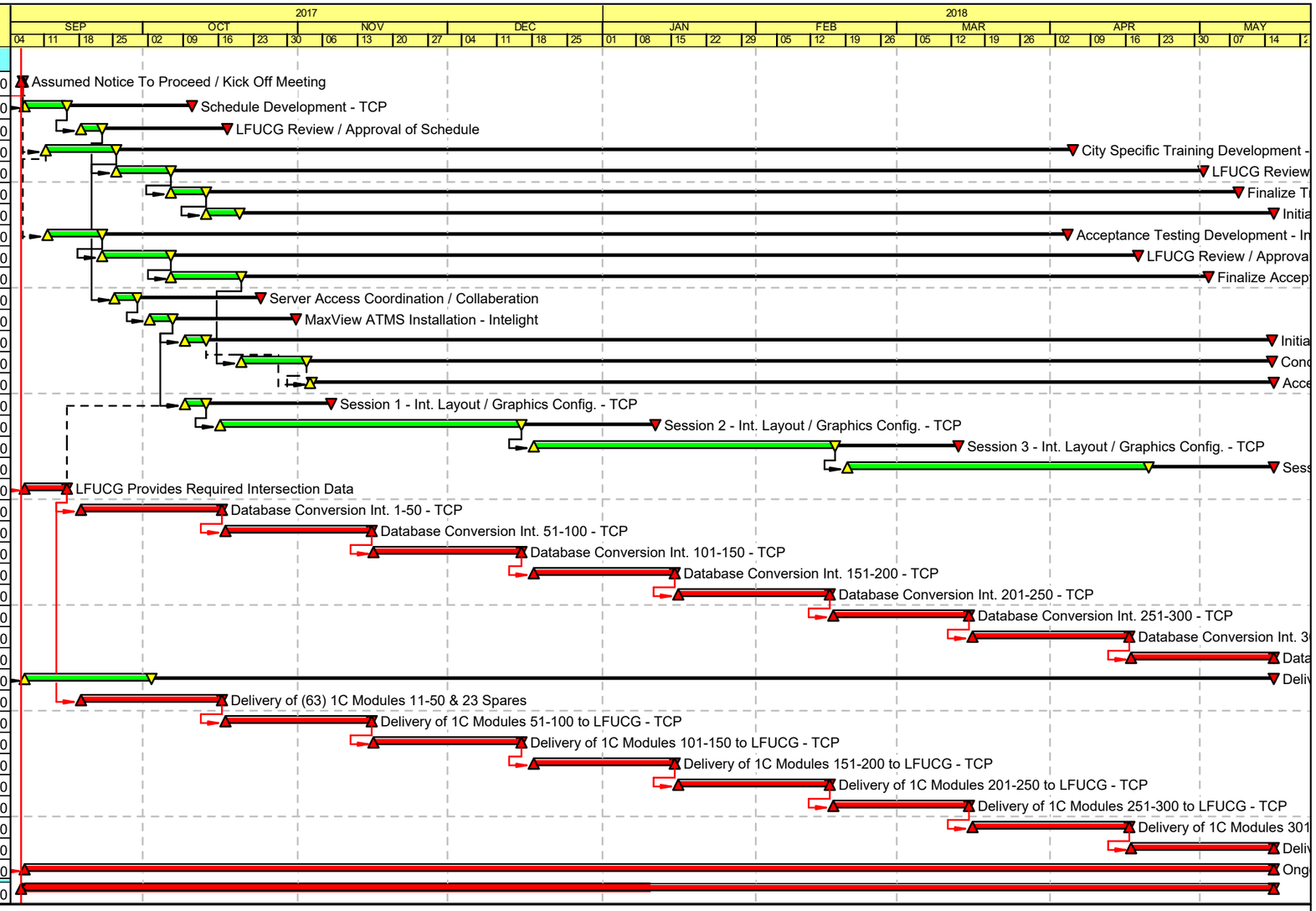
- (300) 10/2/17 – (10) 1C CPU modules delivered to LFUCG (First 10 for deployment) (1-10)
- (310) 10/16/17 – (63) 1C CPU modules delivered to LFUCG (First 40 plus 23 spare units) (11-50)
- (320) 11/15/17 – (50) 1 C CPU Modules Delivered to LFUCG (51-100)
- (330) 12/15/17 – (50) 1 C CPU Modules Delivered to LFUCG (101-150)
- (340) 1/15/18 – (50) 1 C CPU Modules Delivered to LFUCG (151-200)
- (350) 2/15/18 – (50) 1 C CPU Modules Delivered to LFUCG (201-250)
- (360) 3/15/18 – (50) 1 C CPU Modules Delivered to LFUCG (251-300)
- (370) 4/16/18 – (50) 1 C CPU Modules Delivered to LFUCG (301-350)
- (380) 5/15/18 – (52) 1 C CPU Modules Delivered to LFUCG (351-402)

- Data Conversion
  - (200) 9/7/17 – 9/15/17 LFUCG provides TCP the required intersection documents
  - (210) 9/18/17 – 10/16/17 TCP converts database for 50 intersections (1-50)
  - (220) 10/17/17 – 11/15/17 TCP converts database for 50 intersections (51-100)
  - (230) 11/16/17 – 12/15/17 TCP converts database for 50 intersections (101-150)
  - (240) 12/18/17 – 1/15/18 TCP converts database for 50 intersections (151-200)
  - (250) 1/16/18 – 2/15/18 TCP converts database for 50 intersections (201-250)
  - (260) 2/16/18 – 3/15/18 TCP converts database for 50 intersections (251-300)
  - (270) 3/16/18 – 4/16/18 TCP converts database for 50 intersections (301-350)
  - (280) 4/17/18 – 5/15/18 TCP converts database for 52 intersections (351-402)
- (400) SUPPORT – Ongoing through life of contract

COST PROPOSAL

	Qty	per unit	Extended
Central ATMS Installation – Vendor shall provide an ATMS system capable or running up to (500) field devices (controllers) and coordinate with TE and Information Technology (IT) staff in installing the required software on virtual servers currently at LFUCG. The system shall be supplied with an extended 3 year warranty.	500	$315	$157,500
Central ATMS Graphics Integration – Vendor program MaxView ATMS with graphic representation of each intersection. Intersection graphics to be implemented over 4 sessions with approximately 100 intersections per session.	4	$1,250	$5,000
Data Conversion – Vendor shall convert individual controller data stored in the central ATMS from OASIS to the compatible format. There are approximately (375) signalized intersection controllers, (15) lane use controllers, and (12) combination intersection/lane use controllers where three center lanes shift throughout the day.	402	$250	$100,500
Local Controller Software and Rack Mounted CPU Modules – Vendor shall provide no less than (425) 1-C CPU modules with the selected Linux based, local software pre-installed. Software and modules shall be compatible with the selected central ATMS and meet current Advanced Transportation Controller (ATC) Standards. Supplier must be able to deliver at least (50) modules per month until all are received. Vendor is not expected to upload individual intersection data or perform CPU module change-outs other than for instructional purposes.	425	$1,260	$535,500
Testing and Training – Vendor shall test and confirm that the central ATMS functions and operates in accordance with the characteristics and specifications as promised. The vendor and/or system developer shall provide on-site training and a written User's Manual for all ATMS and Local Equipment. The manual shall include system drawings, network diagrams, administrative instructions, operator instructions, and trouble shooting.	1	$8,000	$8,000
Develop Draft Systems Acceptance Test Plan and Training Material – The vendor shall develop and submit for approval a System Acceptance Test (SAT) Plan for the ATMS. The SAT shall be conducted by the Vendor and LFUCG Traffic Engineering personnel at the TMC where the ATMS is hosted as a part of the implementation in accordance with the approved delivery and test procedures.	1	$11,000	$11,000
Conduct System Acceptance Testing and Training with LFUCG Staff – The vendor shall conduct the SAT at the LFUCG TMC and provide user training for the TE personnel upon successful completion of the System Acceptance Test. deliverables: Final System Acceptance Test plan, Final Training Materials, Conduct Training Deliverables: Final System Acceptance Test plan, Final Training Materials, Conduct Training. **Deliverables:** Final System Acceptance Test plan, Final Training Materials, Conduct Training	1	$18,000	$18,000
Total			$835,500

Act ID	Activity Description	Orig Dur	Rem Dur	Early Start	Early Finish	Total Float	%
LFUCG - MaxView ATMS Schedule							
10	Assumed Notice To Proceed / Kick Off Meeting	1d	1d	06SEP17	06SEP17	0	0
20	Schedule Development - TCP	7d	7d	07SEP17	15SEP17	17d	0
30	LFUCG Review / Approval of Schedule	5d	5d	18SEP17	22SEP17	17d	0
40	City Specific Training Development - Intelight	10d	10d	11SEP17 *	25SEP17	136d	0
50	LFUCG Review / Approval of Training Docs	9d	9d	25SEP17	06OCT17	146d	0
60	Finalize Training Documents - Intelight	5d	5d	06OCT17	13OCT17	146d	0
70	Initial Training Sessions - Intelight	5d	5d	13OCT17	20OCT17	146d	0
80	Acceptance Testing Development - Intelight	9d	9d	11SEP17 *	22SEP17	136d	0
90	LFUCG Review / Approval of Acceptance Testing	10d	10d	22SEP17	06OCT17	136d	0
95	Finalize Acceptance Testing Procedures - Int.	10d	10d	06OCT17	20OCT17	136d	0
100	Server Access Coordination / Collaberation	5d	5d	25SEP17	29SEP17	17d	0
110	MaxView ATMS Installation - Intelight	5d	5d	02OCT17	06OCT17	17d	0
120	Initial Deployment - Ten 1C Modules - TCP	5d	5d	09OCT17	13OCT17	150d	0
125	Conducting System Acceptance Testing - Intelight	9d	9d	20OCT17	02NOV17	136d	0
130	Acceptance of MaxView ATMS (60 Days After NTP)	3h	3h	03NOV17 *	03NOV17	135d	0
140	Session 1 - Int. Layout / Graphics Config. - TCP	5d	5d	09OCT17	13OCT17	17d	0
150	Session 2 - Int. Layout / Graphics Config. - TCP	45d	45d *	16OCT17	15DEC17	17d	0
160	Session 3 - Int. Layout / Graphics Config. - TCP	43d	43d *	18DEC17	16FEB18	17d	0
170	Session 4 - Int. Layout / Graphics Config. - TCP	45d	45d *	19FEB18	20APR18	17d	0
200	LFUCG Provides Required Intersection Data	7d	7d	07SEP17	15SEP17	0	0
210	Database Conversion Int. 1-50 - TCP	21d	21d	18SEP17	16OCT17	0	0
220	Database Conversion Int. 51-100 - TCP	22d	22d	17OCT17	15NOV17	0	0
230	Database Conversion Int. 101-150 - TCP	22d	22d	16NOV17	15DEC17	0	0
240	Database Conversion Int. 151-200 - TCP	19d	19d	18DEC17	15JAN18	0	0
250	Database Conversion Int. 201-250 - TCP	23d	23d	16JAN18	15FEB18	0	0
260	Database Conversion Int. 251-300 - TCP	20d	20d	16FEB18	15MAR18	0	0
270	Database Conversion Int. 301-350 - TCP	22d	22d	16MAR18	16APR18	0	0
280	Database Conversion Int. 351-400 - TCP	21d	21d	17APR18	15MAY18	0	0
300	Delivery of First Ten (10) 1C Modules to LFUCG	18d	18d	07SEP17	02OCT17	159d	0
310	Delivery of (63) 1C Modules 11-50 & 23 Spares	21d	21d	18SEP17	16OCT17	0	0
320	Delivery of 1C Modules 51-100 to LFUCG - TCP	22d	22d	17OCT17	15NOV17	0	0
330	Delivery of 1C Modules 101-150 to LFUCG - TCP	22d	22d	16NOV17	15DEC17	0	0
340	Delivery of 1C Modules 151-200 to LFUCG - TCP	19d	19d	18DEC17	15JAN18	0	0
350	Delivery of 1C Modules 201-250 to LFUCG - TCP	23d	23d	16JAN18	15FEB18	0	0
360	Delivery of 1C Modules 251-300 to LFUCG - TCP	20d	20d	16FEB18	15MAR18	0	0
370	Delivery of 1C Modules 301-350 to LFUCG - TCP	22d	22d	16MAR18	16APR18	0	0
380	Delivery of 1C Modules 351-402 to LFUCG - TCP	21d	21d	17APR18	15MAY18	0	0
400	Ongoing TCP / Intelight Support	177d	177d	07SEP17	15MAY18	0	0
		178d	178d	06SEP17	15MAY18	0	0



Start date	06SEP17
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Data date	06SEP17
Run date	21JUL17
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INTELIGHT
NEVER STAND STILL

LFUCG - RFP # 18-2017
Central Advanced Traffic Management System
(Baseline 07/21/17)

- Early start point
- Early finish point
- Early bar
- Total float point
- Total float bar
- Progress bar
- Critical bar
- Summary bar
- Progress point
- Critical point
- Summary point
- Start milestone point
- Finish milestone point