

Public Interest Finding
Type 1 and Type 3 Signal Activities

Network Devices for Signals

SCDOT submits the following justification for the exclusive purchase and installation of state supplied Network equipment for Type 1 and Type 3 Signal Activities including Traffic Monitoring cameras, Wireless Broadband (WBB Radios) Radios, Ethernet switches, cell modems. Ethernet switches and cell modems will be configured by IT Services and installed with the support of the signal maintenance staff.

As of January 2017, SCDOT owns 4093 traffic signals statewide. SCDOT maintains 2768 signals and local governments maintain 1325 signals under a Signal Maintenance Agreement with SCDOT. About half of these signals are in some type of signal system, meaning communications to the traffic signal is required for optimal operation. Type 1 Signal Activities include installation of advanced technologies for traffic management. These advanced technologies require reliable communications to traffic signals. In 2010, SCDOT began the implementation of a highly secure end-to-end network architecture to optimize communication links and mobility services for traffic signal systems maintained by SCDOT. This infrastructure provides SCDOT with the necessary digital pathways to support new and emerging advanced technologies including traffic adaptive signal systems, traffic monitoring cameras, travel time detection devices, and Vehicle to Infrastructure (V2I) communications.

In an effort to provide consistent network security for traffic signal systems statewide, regional traffic operations/management and infrastructure that ensures advanced technologies can be utilized to improve traffic, SCDOT is creating a shared network infrastructure for local government partners that maintain our traffic signals (Traffic Signal Co-Location Network). This Co-Location network will provide SCDOT with a truly statewide communications network that will allow end-to-end visibility for traffic signal system within the state of SC. Other benefits to the Co-Location Network include uniform signal software updates and information storage, greater traffic operations support for local governments, and greater accessibility for SCDOT via traffic monitoring cameras on locally maintained signal systems.

SCDOT Network Services working with ATT and Cisco Systems have designed a network topology that will allow for secure multi-jurisdictional access statewide. The network provides a multipath backbone with true business continuity for the traffic engineering signals infrastructure.

It will support existing and emerging technologies such as 4G and 5G cellular, 10G backbone infrastructure, advanced firewall/security protection using next generation firewalls. This infrastructure will allow SCDOT TE to continue to expand and allow South Carolina to keep pace with the ever evolving transportation technologies of V2I, Smart City, and autonomous vehicles.

1. SCDOT is currently operating a Traffic Signal Communications Network, designed, implemented and operated by IT Services at SCDOT. This network has been designed for statewide operations.
2. SCDOT procures the following Network equipment in accordance with Statewide Procurement Contracts (see following chart):
 - a. Traffic Monitoring Cameras
 - b. Wireless Broadband (WBB) Radios
 - c. Network Equipment (Ethernet switches, routers, security)
 - d. Cellular Communications, Leased Line Circuits
3. Since these Network devices are IP addressable and being connected to the SCDOT network, SCDOT Network Services are responsible for ensuring equipment and software meets SCDOT security protocols. SCDOT maintained signals reside on SCDOT network and use of these devices has been tested and approved by SCDOT Network Services to reside on the network. Due to the ability to operate traffic signal equipment remotely, security is at the forefront of concern.

4. Each of these devices has software that currently reside on the network. SCDOT IT Services has been trained to operate and configure these devices. SCDOT has access to replacement parts and equipment repairs, therefore there is less of a learning curve for SCDOT staff to operate and install these devices.
5. SCDOT will receive savings by not having to purchase multiple replacement parts for each network device.
6. Procurement of these Network Devices includes vendor support and warranty, which makes it more beneficial for SCDOT to purchase directly from the vendor.
7. Contractors are not currently qualified to configure and integrate any Network devices. Contractors can install video detection cameras and Wireless Broadband Radios that have been configured by IT Services. Ethernet Switches and Cell modems must be installed by SCDOT staff.

With this agreement, it is SCDOT's intent to continue to procure this equipment for the foreseeable future as validated by SCDOT IT Services and SCDOT Traffic Engineering staff. Pursuant to agreement execution, SCDOT will continue to procure these products off of state procurement contracts in future projects.