

**“Although no one can go back and make a brand new start,
anyone can start from now and make a brand new ending”**

- *Carl Bard*

1.0 INTRODUCTION

The City of Lincoln strives to provide a transportation system that has superior operational and safety characteristics for our citizens and visitors to the Capitol City. Our transportation network has several components that must work together to provide this desired level of service, thus the continued planning, design, construction, and maintenance of these assets is vital. One such primary asset often at the forefront of public scrutiny is the City’s traffic signal system. While this system has many parts that are visible to the daily commuters (poles, mast arms, red-yellow-green signals, etc.), there are several items that are not as visible. These include the complex system of central software, controller hardware, cabinets with electronic components, vehicle sensors, pedestrian detectors, cameras, and a maze of underground conduit for fiber optic communications. These crucial parts work together in an effort to:

- Safely assign vehicle right of way through a busy intersection
- Efficiently progress all traffic through a series of intersections to minimize congestion
- Allow pedestrians and bicyclists to safely traverse busy streets
- Improve the flow of commercial traffic and emergency response vehicles

In the City of Lincoln, the Traffic Engineering team within the Public Works Department is responsible for the planning, design, operation, and maintenance of the City’s over 430 traffic signals. In addition, a network of over 60 CCTV cameras, 50 portable and permanent dynamic message signs, and over 150 miles of signal/communications conduit infrastructure is operated on a daily basis.

Due to the current age, condition, and capabilities of this system in a constantly changing environment, this Traffic Management Master Plan has been developed to:

- Provide a baseline of current conditions and existing system operations
- Evaluate and summarize opportunities to improve the system and service to the public
- Prioritize the system needs and develop a phased implementation strategy

The goal of this Traffic Management Master Plan is to document the improvements necessary to deploy a modern system that provides value, sustainability, and improved quality of life, for the Citizens of Lincoln.

The City of Lincoln currently operates a traffic signal system that utilizes controllers and management software that was largely developed in the 1980s and early 90s. The system communicates via a network of underground and overhead copper, multi-mode and single mode fiber media, and wireless radios. Major expansions in the fiber communications infrastructure have fortunately helped this costly component of the overall system keep pace in terms of communications. There are however, on-going communications issues to critical field locations that mandate continued maintenance and after-hours service call outs. Other components of the system have become, or are becoming obsolete, increasingly difficult to obtain, and functionally outdated in terms of their operation, user access, and notification.

In addition, the central software installed on computers at the Municipal Service Center (MSC) is no longer supported by the manufacturer or by the software vendor. This is also the case with local controller software running in the field at all signal locations throughout the City. An additional complication is that this current software will not operate on a platform newer than Windows XP operating system. The City has recently upgraded all computers and servers away from this operating system, as Microsoft no longer supports WindowsXP. In short, the system is functionally obsolete for many of the traffic management needs of a large and growing metropolitan area.

The Traffic Engineering team has been documenting many of these needed system improvements through self-assessment work over the last several months. This master plan will address major system components including traffic signal system hardware and software, operations center capabilities, continued communications infrastructure improvements, and the ability to phase upgrades in systems and staffing that are manageable. This plan will also address the relevant intelligent transportation systems (ITS) field devices including cameras, traffic sensors, and arterial dynamic message signs (DMS), data sharing among key stakeholders, and providing key information to the traveling public. The system will also need to be scalable and expandable to meet future system needs. The goal of this project is to document the improvements necessary to deploy a modern system that provides value, sustainability, and improved quality of life for the Citizens of Lincoln.

The remaining sections in this master plan address the Existing System Evaluation, Needs Assessment, Future System Improvement Strategies, and Implementation.

