UPDATE OF THE SIGNAL TIMING MANUAL

PRELIMINARY DRAFT
FINAL REPORT

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CHAPTER 2
SIGNAL TIMING PROGRAM

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CHAPTER 2. SIGNAL TIMING PROGRAM

Signal timing is the process of selecting appropriate values for timing parameters implemented in traffic signal controllers and associated system software. Effective signal timing programs assure that signal timing parameters are appropriate over the life of the traffic signal system, by monitoring all aspects of traffic signal implementation, operations, and maintenance consistent with community needs. A successful program requires agency staffing and maintenance funding that is consistent with the level of service planned.

2.1 ELEMENTS OF SUCCESSFUL SIGNAL TIMING PROGRAMS

Each operating agency has common traits (described in detail throughout this section) that can increase the likelihood of a signal timing program receiving support from decision-makers. In general, effective signal timing programs tend to have:

- **Effective intra-agency and inter-agency cooperation**, which fosters knowledge-sharing, access to resources, and a higher level of customer service.
- **Internal champions and support** from leadership within the program.
- **External support** from elected leaders and stakeholders.
- **Agency goals and desired outcomes** for the signal system.
- **Structured programs** for tasks such as signal timing, performance measurement, maintenance, training, and outreach.

2.1.1 Leadership

It has been well documented that leadership is the most important factor for a successful program. Leadership often starts with a champion at one or more organizations and, possibly, at one or more levels of an organization. There are many different leadership approaches that can result in a successful program, especially given different organizational structures.

2.1.2 Self-Assessment and Evaluation

Self-assessment can help agencies understand what works, what could be improved, and what keeps the agency operating. If this is done collaboratively throughout a region, it will be easier to develop a shared vision. Resources for self-assessment include (but are not limited to) the Traffic Signal Self-Assessment (www.ite.org/selfassessment/TSOSelfAssessment11.pdf), the Traffic Signal Audit Guide (1), Federal Highway Administration (FHWA) peer review assistance, and a multitude of other FHWA documents that support successful signal timing programs.

2.1.3 Funding Mechanisms

Funding is an essential part of a signal timing program, and is often available through a variety of sources such as direct agency funding, state-local arrangements, public-private partnerships, and federal funding. In order to be successful, a program must acquire enough funding to serve its system users (2). Identifying and documenting...
agency needs for funding organizations, like a Metropolitan Planning Organization (MPO), or local policymakers is part of sustaining a traffic signal timing program.

One funding opportunity is increasing the focus on management and operations (M&O) in a Metropolitan Transportation Plan (MTP) (3). For example, an MTP can include a congestion management process (like that shown in Exhibit 2-1), which is a potential source of funding. This objectives-driven approach is consistent with the outcome based process introduced in Chapter 1.

![Exhibit 2-1 Congestion Management Process](image)

Source: Adapted from Advancing Metropolitan Planning for Operations: An Objectives-Driven, Performance-Based Approach: A Guidebook (3).

### 2.1.4 Training Programs

Training is an ongoing need because staff (at all levels) need to understand the goals and objectives of a signal timing program, as well as acquire the skills necessary to accomplish their assignments. Training of various kinds is available from equipment vendors, software providers, universities, states, the United States Department of Transportation, and the National Highway Institute. Traffic Signal Operations and Maintenance Staffing Guidelines (4) provides a comprehensive overview of staffing for signal operations, with additional material available in Chapter 8.

### 2.1.5 Public Involvement and Outreach

Good communication is necessary in acquiring public and political support for a sustainable signal timing program. The means of communication should be appropriate for the agency. It could be as simple as providing a phone number on the side of a traffic signal cabinet, or it could be as detailed as posting an explanation of how signals are being timed on the agency website. As performance measures are collected, they can also be used to indicate progress or gather support for improvements.
2.2 BENEFITS OF REGIONAL SIGNAL TIMING PROGRAMS

By bringing a diverse set of strengths together, a regional signal timing program can provide added value to roadway users. Regional programs produce more-efficient and consistent operations than individual programs working alone, which can lead to improved mobility and safety across a region. Specifically, some benefits of a regional program may include (5):

- **Advancement of projects** that are too large for a single agency to undertake but are manageable as regional or state transportation improvements.
- **Increased access to funding** through joint applications.
- **Availability of a central point of contact**, which simplifies information processing and sharing of feedback from stakeholders and users.
- **Leveraging resources and experience** (through shared training, office space, equipment purchases, technician support, and Information Technology (IT)/Information Systems (IS) staff), which often results in a more collaborative working environment.
- **Consistent signal operations**, resulting from practitioners having the same training or certification, and using the same guidance on signal timing parameters.
- **Improved signal operations**, resulting from better cross-agency coordination, timing practices, and shared knowledge.
- **Smother traffic management during special conditions**, through shared resources and better communication when shifting traffic from one agency’s facilities to another.


2.3 REFERENCES


