



Traffic Signal System

Eugene's street system has more than 7,000 intersections, many of them controlled by stop signs, yield signs or traffic signals. These traffic control devices assign right of way to all street system users, including motorists, cyclists and pedestrians. Knowing who has the right of way at a particular intersection greatly increases safety for system users.

Currently Eugene has 241 signalized intersections. While these signals are primarily intended to assign right of way, they also can reduce some forms of crashes, give fire vehicles priority access in emergencies, cut congestion by adapting to traffic flows during peak travel times, and help the environment by reducing stop-and-go traffic.

Although Eugene's 241 signalized intersections are integrated into a holistic traffic system, signal types and timings vary by location.

Fixed-Time Signals

This is the simplest and oldest form of traffic signal. Fixed time works well in one-way street grids and when traffic volumes are about equal or are predictable.

Signal timing is pre-determined and runs off a timer except when preempted by an emergency vehicle. The pedestrian phase is automatically included in every cycle.

Most of the downtown grid is fixed time and designed to move traffic queues through the system efficiently.

Traffic-Actuated Signals

The majority of Eugene's traffic signals are traffic-actuated. Actuation allows for protected left turns when there is demand. Similarly, low-volume side streets and bicycle and pedestrian crossings can be served when there is demand. Otherwise, the signal on the busier street remains green.

The most common form of detection uses inductive pavement loops. These are wires sealed into the top layer of paving that detect the metal in vehicles. The city also uses video cameras at a limited number of intersections.

Both types of traffic detection are connected to controller software that adapts to changing traffic volumes.

Actuated signals can be set to run in coordination with other signals, moving a queue of traffic through the system similar to fixed time-signals. Or they can be set to run free to respond more quickly to off-hours side-street demand.

Some signals, such as rapid flashing beacons and pedestrian hybrid beacons, specifically serve only pedestrian-crossing movements.



All Traffic Signals

- Are controlled by a computer located at the intersection
- Are equipped with Opticom detection to respond to emergency vehicles
- Use energy-efficient LED light fixtures for the red/yellow/green indications
- Display pedestrian crossing indications
- Use a yellow clearance time equal to or greater than required minimums

Red Light, Green Light

As the roadway system becomes more complicated with irregularly spaced signals, high-volume mid-block driveways, high-volume turning movements, time-of-day variations in traffic volume and the time needed for pedestrians to safely cross wide streets, coordinating the green phase to move platoons of traffic becomes increasingly challenging.



Most traffic signals have real-time communication with the traffic maintenance shop on Roosevelt Boulevard. During business hours the system can be monitored for some forms of malfunction. Staff is on call 24/7 to respond to outages, and other malfunctions. Traffic operations maintains a stock of spare and replacement parts, and most problems are repaired within hours, including knocked-down signal poles and controller cabinets destroyed in crashes.

The annual budget for traffic signal maintenance and operation at the City of Eugene is about \$747,000.

As funding becomes available, traffic signals are retrofitted with audible pedestrian signals, allowing the visually impaired to find and request the "Walk" indication. Pedestrian-countdown displays are also being added as funding and opportunity present themselves.

For More Information

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