



TOWN OF
QUEEN CREEK
ARIZONA

Traffic Signals: Warrant Studies and Traffic Signal Options

Town Council

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Traffic Signals

1. How does the Town determine when an intersection needs a traffic signal
2. Traffic signal options
3. What is the budget process for funding **warranted** traffic signals





Determination- Warrant Studies

Traffic Signals

Basis for conducting an intersection study:

- Citizen complaints
- MCSO request
- Staff observation



Traffic Signals

Preliminary Study:

- Staff conducts initial investigation
- Field observation of conditions at peak and non-peak times
- Review of reported collisions
- Determination made if a full warrant study is justified
 - Intersection is likely to meet warrants



Traffic Signals

Warrant Study:

A warrant study is an evaluation tool used to help Traffic Engineering determine if a traffic signal is necessary.



Traffic Signals

Warrant 1 – Eight-Hour Vehicular Volume

- For locations where a large volume of intersecting traffic is the principle reason to consider a signal; or
- Where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict when entering or crossing the major street.

Both parts of the warrant do not need to be met

Traffic Signals

Warrant 2 – Four-Hour Vehicular Volume

Intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a signal.





Traffic Signals

Warrant 3 – Peak Hour Warrant

Measures minor-street traffic delay when entering or crossing a major street during peak traffic hour.

Applied only in unusual cases where large numbers of vehicles are found over a short period of time.

Traffic Signals

Warrant 4 – Pedestrian Volume

Measures pedestrian delay for crossing a major street.



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Warrant 5 – School Crossing

Measures frequency and adequacy of gaps in traffic that allow students to cross (minimum of 20 students attempting to cross during the highest crossing hour).



Traffic Signals

Warrant 6 – Coordinated Signal System

Existing signals are so far apart that they do not provide vehicle platooning.



Traffic Signals

Warrant 7 – Crash Experience

Measures severity and frequency of crashes at the intersection.



Traffic Signals

Warrant 8 – Roadway Network

Measures roadway network for concentration and organization of traffic flow.



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Warrant 9 – Intersection Near a Grade Crossing

Intended for use where none of the other warrants are met, but the intersection is in close proximity to the RR controlled by a STOP or YIELD sign.





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During the study period all warrants are reviewed, with particular attention given to the volume and crash experience warrants.

Intersection meeting a warrant does not mean a traffic signal must be installed.



Traffic Signal Options

Traffic Signals

Traffic Signal Options

- Portable traffic Signals
- Single Mast Arm
- Full Improvements



Traffic Signals

Portable Traffic Signals:

- Portable signals are mobile systems capable of being relocated to meet traffic demands
- Estimated cost - \$29,000-\$36,000 each
- Intersection cost- \$97,000-\$127,000
- Direct connect to cabinet \$10,000-\$15,000
- Portable traffic signals must meet the requirements listed in the Manual on Uniform Traffic Control Devices (MUTCD)
- Microwave detectors can be installed
- Currently 5 portable units in stock





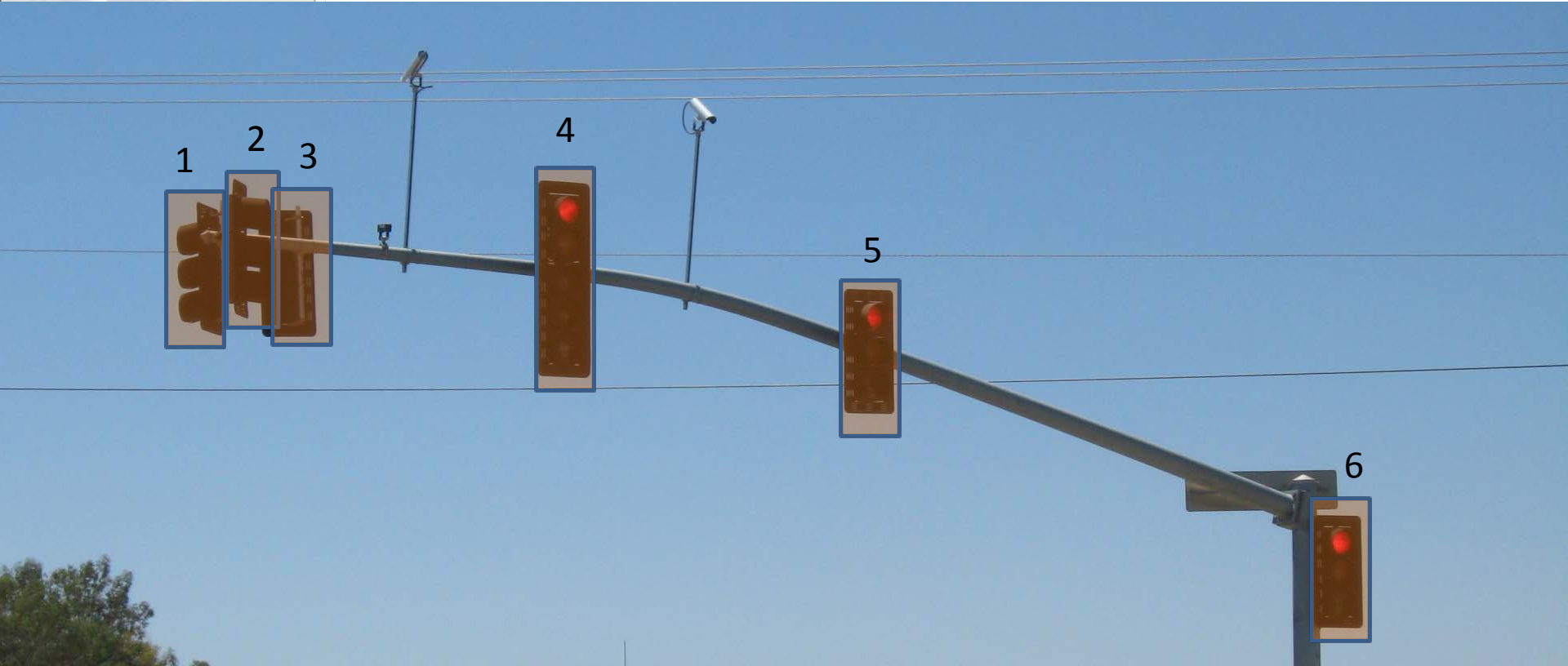
Traffic Signals

Single Mast Arms:

- One pole with traffic signals for each direction
- Can be used as a long-term solution
- Provides better visibility and reliability than portable signals
- Cost \$115,000-\$125,000 depending on power source
- Good use when ultimate ROW is not yet purchased







Traffic Signals

Full Intersection Improvements

- Used where roadway will be in ultimate condition and all ROW exist
- Cost- \$200,000-\$220,000
- Part of a bigger project
- Permanent solution





Budgeting Warranted Traffic Signals

Traffic Signals

Budgeting:

- Project savings
- Contingency
- Requested in next FY budget





Questions