

# Arterial Traffic Signal Improvements and Coordination

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# Study Objective

- Verify if signal coordination would improve traffic operations
- Develop recommendations for traffic signal coordination
- Improve traffic operations to reduce delays and enhance safety

# Traffic Signal Coordination

- Promotes efficient traffic flow along an arterial roadway
- Traffic signals located within a  $\frac{1}{4}$  mile
- Vehicles are platooned in groups and can proceed through intersections without stopping

# Benefits of Signal Coordination

- Reduce delays
- Reduce emissions
- Improve fuel economy
- Howard Stein Hudson study for City of Boston found that signal retiming and coordination has a cost/benefit ratio of 80 to 1

# Intersection Selection

- Originally selected 9 locations
- Consulted with municipalities and MassDOT, selected 4 four sets of study intersections

# Final Study Intersections

- **Braintree** – Washington Street at Common Street; at Route 3 SB off-ramp; and at Independence Avenue
- **Lexington/Bedford** – Route 4/225 at Hartwell Avenue; at Shawsheen Road; and at Great Road Shopping Center
- **Randolph** – Route 28 at Warren Street; at Memorial Parkway; and North and Union streets
- **Weymouth** – Route 53 at Mutton Lane and at Pleasant Street

# Braintree Recommendations

- Provide coordination between the Route 3 SB off-ramp and Independence Avenue intersections
- Convert existing northbound through lane to a shared through/right-turn lane
- Install mast arm mounted signal heads at the Route 3 SB off-ramp intersection
- Install optically programmed signal heads at Common Street intersection

# Lexington/Bedford Recommendations

- Provide coordination between the Shawsheen Road and Great Road Shopping Center intersections
- Provide signal retiming at Hartwell Road intersection



# Randolph Recommendations

- Provide coordination between all three intersections
- Restripe North Street approach general-purpose lane to an exclusive left-turn lane
- Provide a second exclusive left-turn lane on South Main Street approach

# Weymouth Recommendations

- Provide signal retiming at both intersections
- Signal coordination not recommended due to impact to Mutton Lane EB movement
- Restripe Pleasant Street WB general-purpose lane to a through and an exclusive left-turn lane

# Benefits of the Study

- Provide low-cost signal improvement recommendations
- Reduce delays, emissions, and fuel economy ranging between 4% and 95%
- Improve safety by eliminating hazardous conditions