

# 8

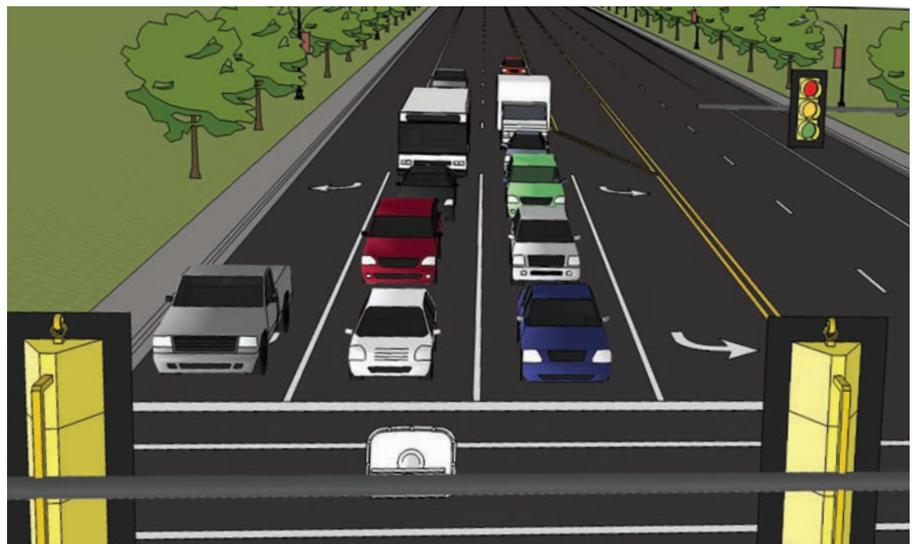
STEPS TO

## Queue Reduction Using the SmartSensor Advance

SmartSensor Advance improves the efficiency of an intersection by detecting queues and allowing vehicles to move through the intersection until the queue dissipates. These eight steps will help you understand how to use SmartSensor Advance to reduce queues at your intersection.

### 1 Understand advance detection

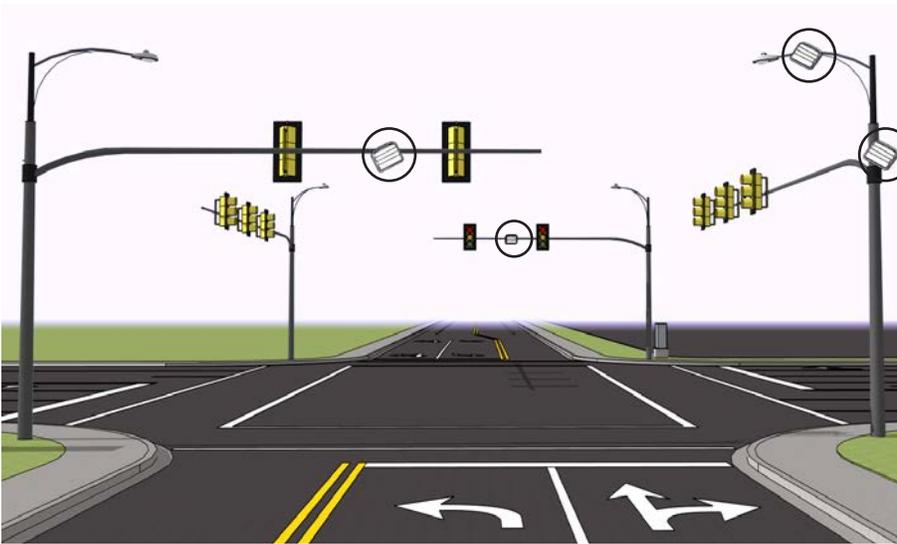
Advance intersection detection is important because it reduces the number of abrupt stops and rear-end and right-angle collisions. SmartSensor Advance is a long-range radar traffic detector that continuously monitors the progression of moving vehicles as they approach a signalized intersection. It calculates a vehicle's estimated time of arrival at the stop bar based on that vehicle's speed and range from the sensor. SmartSensor Advance's accurate speed detection makes it uniquely suited for queue reduction because it can let the traffic controller know as soon as traffic has returned to free-flowing conditions.



## HOW TO

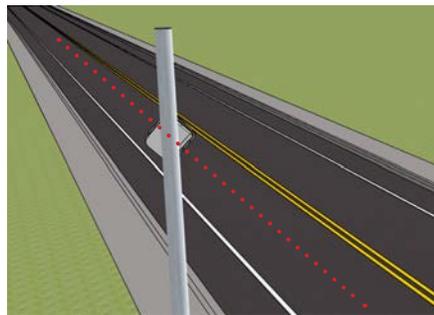
### 2 Select the mounting location

SmartSensor Advance can be mounted at any of the four locations shown below.



### 3 Mount and align the sensor

Once you have selected the location, simply mount the sensor to the pole. You will then need to align the sensor to the roadway. Use the sensor's three axes of rotation to point it to the target area. SmartSensor Advance emits an elliptical footprint; the sensor needs to be aimed so that the footprint covers the entire approach you want to detect.



### 4 Connect the sensor to the cabinet

SmartSensor Advance will need to be wired to supporting devices that provide surge protection, power, and communication. The sensor typically communicates with an intersection controller via contact closure cards in an input file rack. These devices will usually be housed in a traffic cabinet at the intersection.



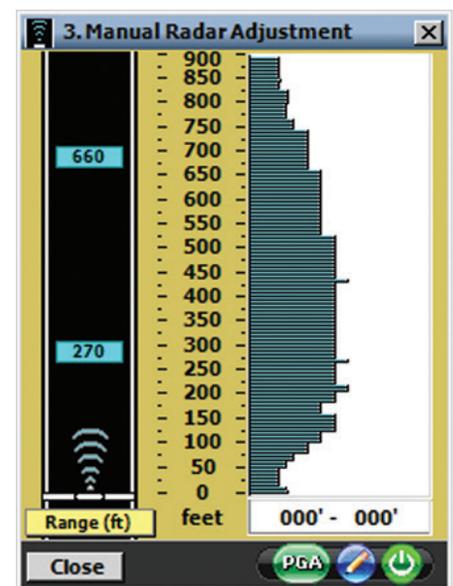
### 5 Connect to SSMA

Once the sensor is installed, you can connect to it via the SmartSensor Manager Advance software.



### 6 Configure SSMA

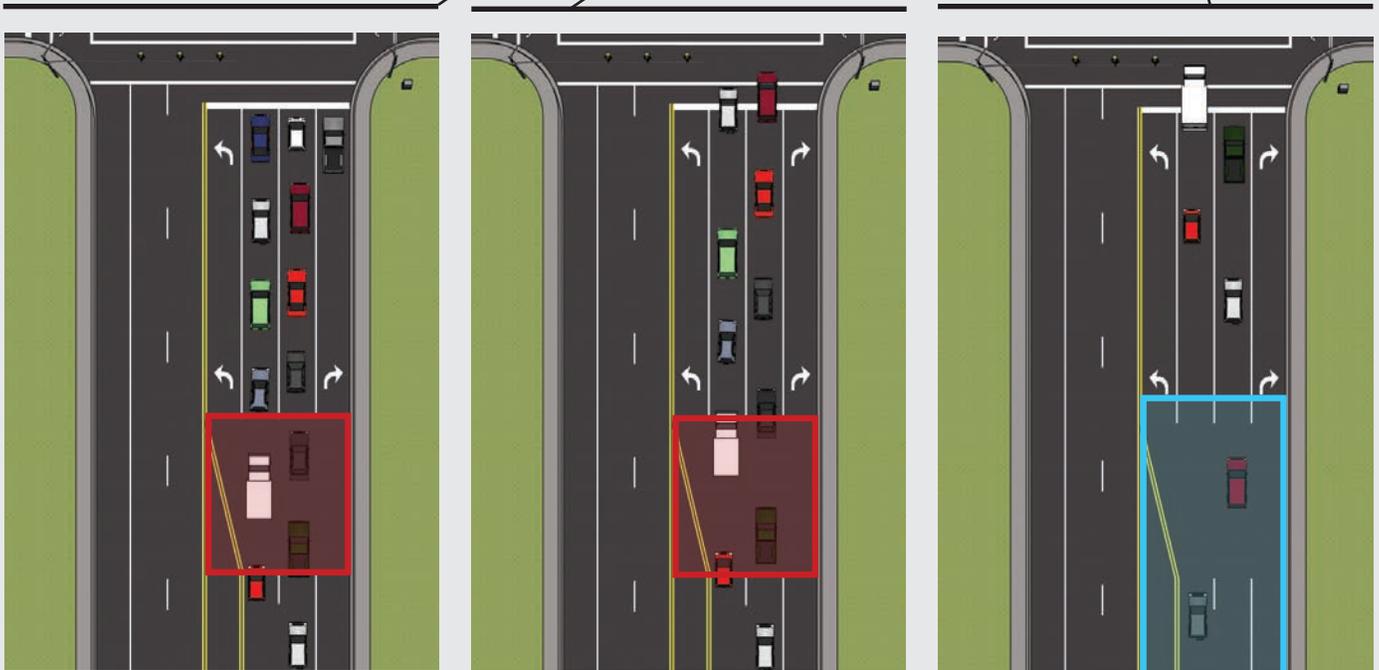
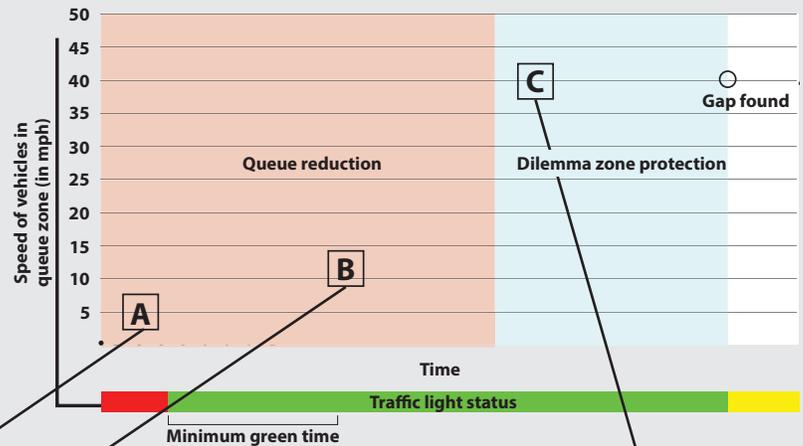
Once connected to SSMA, you will be able to see the vehicles that are being detected right away, but you will want to make sure the sensor is configured properly so you don't miss any detections. To do this, use the Automatic Radar Configuration feature, and then fine tune the sensor's sensitivity with the Manual Radar Adjustment tool.



# Queue reduction and dilemma zone protection

With SmartSensor Advance, you can set up a single sensor to do both queue reduction and dilemma zone protection.

A common way to set up these two applications in tandem is shown in the graph and images below. The graph shows the traffic speeds of vehicles as they wait at a red light and then as the queue dissipates; the images show what the traffic looks like at points A, B and C.



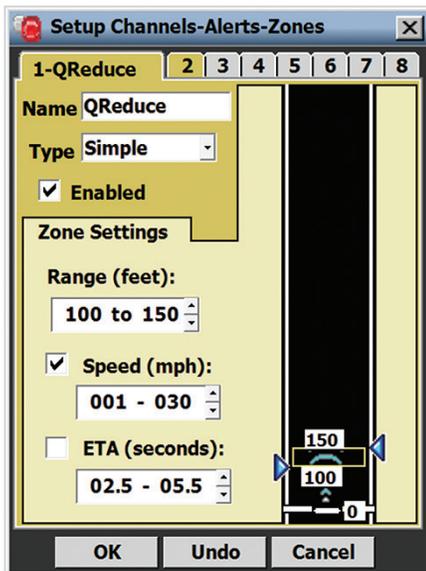
At point A the light is red and traffic is queuing behind the stop bar. The sensor has detected that vehicles in the queue reduction zone are moving at speeds slower than the user-configured threshold—in this case 30 mph—so the queue channel is activated.

At point B the light has turned green and traffic is beginning to move through the intersection, but back at the location of the zone, traffic speeds have not yet reached the user-configured speed of 30 mph, so the sensor continues to indicate the presence of a queue.

At point C traffic has reached 30 mph, so the sensor has stopped sending the call for a queue. The sensor has now reached the user-configured threshold for dilemma zone protection and will continue to monitor the approach until it finds an appropriate gap in traffic, at which point it will inform the traffic controller that it's safe and efficient to end the green phase.

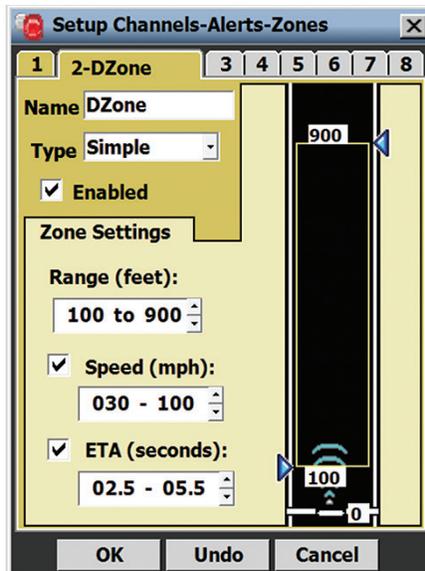
## 7 Set up channels

The channel outputs are activated once the criteria for the channel are met, and these outputs are what the sensor actually sends out to the traffic controller. With the default Simple channel, all you have to do is set the range of the zone, then determine if the zone is activated by a user-defined speed, ETA or both.



### Queue Reduction Channel

The detection range of this zone should be about 100 to 150 feet from the stop bar. The speed setting means that vehicles in that zone that are going, in this case, 30 mph and under will activate the channel outputs, telling the traffic controller that there is a queue that needs to be cleared.

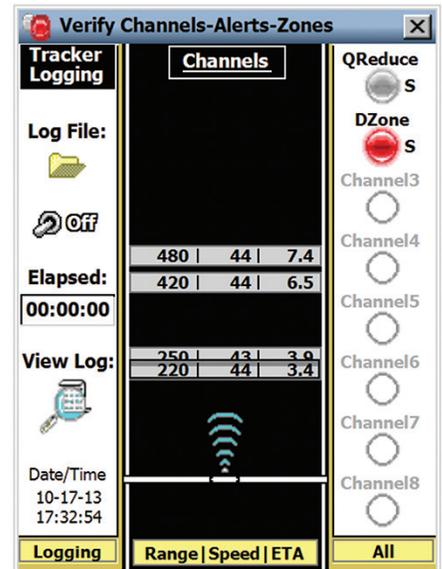


### Dilemma Zone Channel

The speed and ETA values should be such that they are activated when traffic is flowing freely, in this case, 30 mph and over. When a vehicle is in the zone and meets the specified criteria, the channel outputs will be triggered, telling the traffic controller that there is a vehicle in the dilemma zone and the green light needs to be extended for that vehicle.

## 8 Verify channels

Once the channels have been set up, you can make sure they are working as you intended by using the Verify Channels-Alerts-Zones screen. On this screen you will see the speed, range and ETA values for each approaching vehicle, and you will also be able to see when a vehicle activates one of the channels you defined. Once you have verified that the channel settings are correct, your work is done. SmartSensor Advance will immediately start detecting traffic and reducing queues, improving the safety and efficiency of your intersection.



Would you like to learn more about SmartSensor Advance applications?

Contact your dealer or visit us online at [Wavetronix.com/dealers](http://Wavetronix.com/dealers)