



Bow Mar Traffic Study Town Meeting

JULY 11, 2019



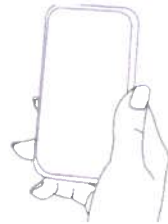
Confirmation of Cut-Through Traffic

StreetLight Data

Provides a platform that uses “Big Data” resources to analyze real-world travel behavior

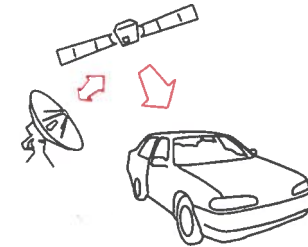
Data Sources

StreetLight Data processes geospatial records that represent about 23% of travel activity in the US. The data sources:



Location-Based Services Data

- Via phone apps that track location
- To describe basic activities and basic travel patterns



Navigation-GPS Data

- Via devices that help navigate: connected vehicles, guidance apps, commercial fleet management systems
- Used to describe trips and routes with high spatial precision



StreetLight Outputs and Options

Metrics that describe travel behaviour:

- Origin-destination patterns
- Average O-D travel times
- Personal and commercial vehicles

Analysis Inputs/Options:

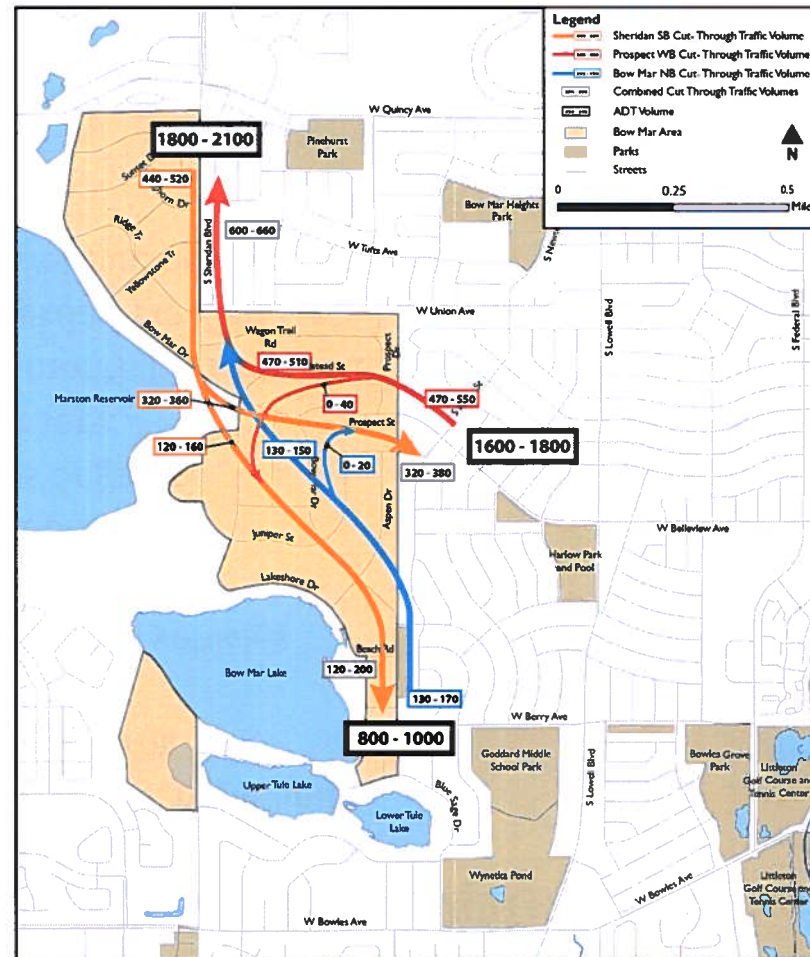
- User defined zones or gates
- Customizable data sets:
 - Data periods by month (2014 to 2019)
 - Type of day (weekday, weekend, etc.)
 - Time of day (peak hour, period, daily, etc.)

Data Periods			Day Types	Day Parts
All	None	Default		
<input type="checkbox"/> Jan'14	<input type="checkbox"/> Jan'15	<input type="checkbox"/> Jan'16	<input checked="" type="checkbox"/> Jan'17	
<input type="checkbox"/> Feb'14	<input type="checkbox"/> Feb'15	<input type="checkbox"/> Feb'16	<input checked="" type="checkbox"/> Feb'17	
<input type="checkbox"/> Mar'14	<input type="checkbox"/> Mar'15	<input type="checkbox"/> Mar'16	<input checked="" type="checkbox"/> Mar'17	
<input type="checkbox"/> Apr'14	<input type="checkbox"/> Apr'15	<input type="checkbox"/> Apr'16	<input checked="" type="checkbox"/> Apr'17	
<input type="checkbox"/> May'14	<input type="checkbox"/> May'15	<input type="checkbox"/> May'16	<input checked="" type="checkbox"/> May'17	
<input type="checkbox"/> Jun'14	<input type="checkbox"/> Jun'15	<input type="checkbox"/> Jun'16	<input checked="" type="checkbox"/> Jun'17	
<input type="checkbox"/> Jul'14	<input type="checkbox"/> Jul'15	<input checked="" type="checkbox"/> Jul'16	<input type="checkbox"/> Jul'17	
<input type="checkbox"/> Aug'14	<input type="checkbox"/> Aug'15	<input checked="" type="checkbox"/> Aug'16	<input type="checkbox"/> Aug'17	
<input type="checkbox"/> Sep'14	<input type="checkbox"/> Sep'15	<input checked="" type="checkbox"/> Sep'16		
<input type="checkbox"/> Oct'14	<input type="checkbox"/> Oct'15	<input checked="" type="checkbox"/> Oct'16		
<input type="checkbox"/> Nov'14	<input type="checkbox"/> Nov'15	<input checked="" type="checkbox"/> Nov'16		
<input type="checkbox"/> Dec'14	<input type="checkbox"/> Dec'15	<input checked="" type="checkbox"/> Dec'16		

NOTE: StreetLight Data outputs are an **INDEX** of vehicular travel patterns. Traffic counts data can be utilized to calibrate travel patterns.



Cut-through Traffic Results





Option 1 | *Gate on Bow Mar Dr.*

This single gate option would provide a gate on Bow Mar Dr. just east of Sheridan Blvd. Other elements of this option include:

- Closing Wagon Trail Rd. or restricting to exiting traffic only at Sheridan Blvd.
- Two-way controlled gate
 - Entrance and exit controlled

OPTION 1

Impacted Area





Option 1 | *Gate on Bow Mar Dr.*

Advantages

- Single gate minimizes gate construction and maintenance costs
- Only a single turnaround needed
- Minimizes out of direction travel for emergency responders and most residents

Disadvantages

- Driveway impacts for resident on Sheridan Blvd.
- Out of direction travel for residents living on Wagon Trail Rd.
- Cut through traffic would travel through the Town before reaching turnaround locations
- Some turnaround traffic would use Bow Mar Dr. west of Sheridan Blvd.



Option 1 | *Gate on Bow Mar Dr.*

Maintenance Costs/Issues: \$1k-\$1.5k

- Gate/maintenance company needed for gate operating issues and repairs

Legal or policy issues

- Would require local agency coordination to close Bow Mar Dr.

Initial Costs: \$255k-\$300k

- Gates, power service, bollards, curb and gutter, landscaping, turn around construction, signage and permit/design fees



Traffic Control Gate





Bollards





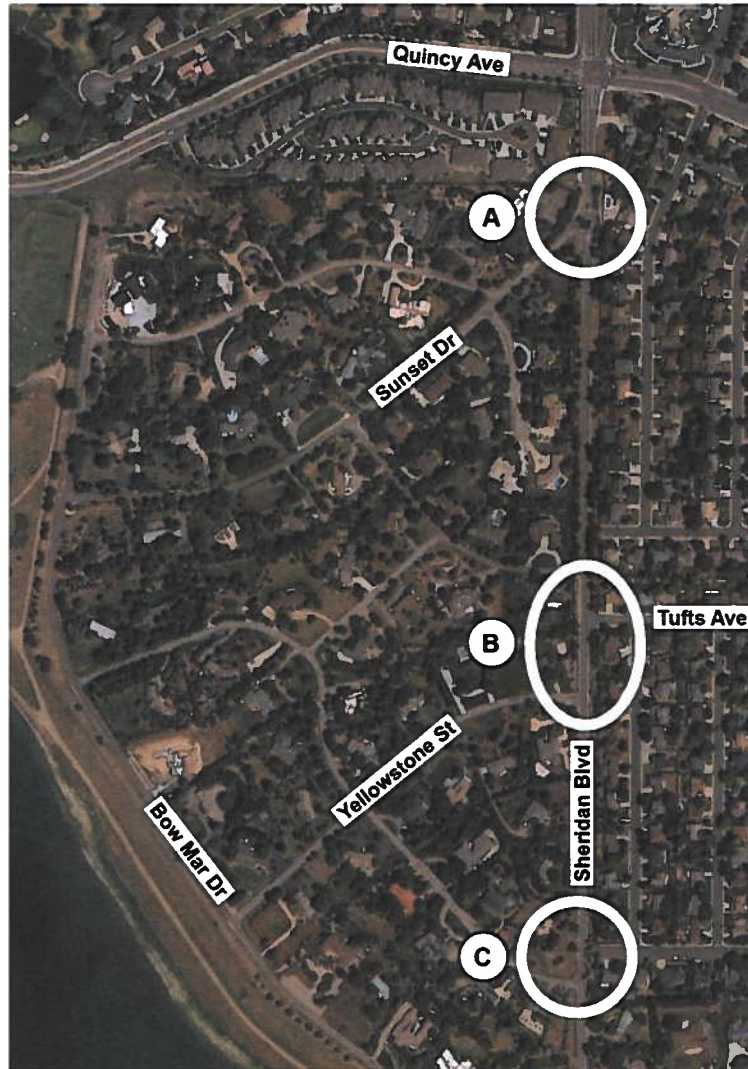
Option 2 | *Gate on Sheridan Blvd.*

This single gate option would provide a gate on Sheridan Blvd. between Tufts Ave. and Yellowstone St. Other elements of this option include:

- Restricting Sunset Blvd. to exiting traffic only at Sheridan Blvd.
- Closing, with bollards, Longhorn and Ridge Trail
- Two-way controlled gate
 - Entrance and exit controlled

OPTION 2

Impacted Areas



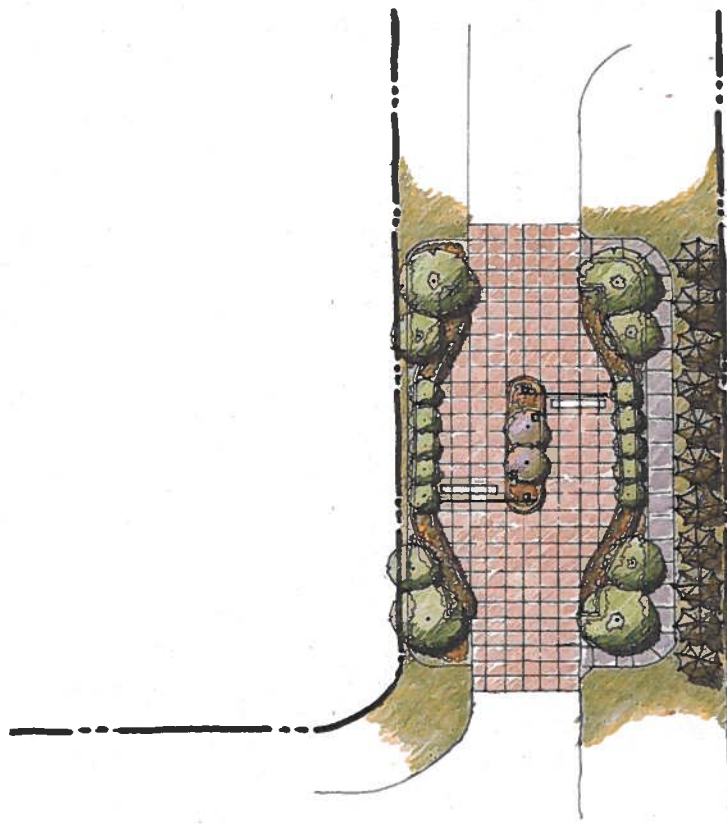
OPTION 2 | Area A – Sheridan Blvd. & Sunset Dr.



OPTION 2 | Area B – Sheridan Blvd. Gate Location



OPTION 2 | Area B – Sheridan Blvd. Gate Location



OPTION 2 | Area C – Sheridan Blvd. & Ridge Tr.





Option 2 | *Gate on Sheridan Blvd.*

Advantages

- Single gate minimizes gate construction and maintenance costs
- Turnaround traffic would utilize Tufts Ave. and Yellowstone St. – No new turnaround construction needed
- Minimizes out of direction travel for emergency responders and most residents
- Improves safety at current traffic circle on Sheridan Blvd. by restricting and better defining Sunset Dr. access at Sheridan Blvd.

Disadvantages

- Minor shifting of traffic and out of direction travel required for Town residents primarily living west of Sheridan Blvd.
- Cut through traffic would travel through the Town before reaching turnaround locations.
- Some turnaround traffic would use Yellowstone St and Bow Mar Dr.



Option 2 | *Gate on Sheridan Blvd.*

Maintenance Costs/Issues: \$1k-\$1.5K

- Gate/maintenance company needed for gate operating issues and repairs

Legal or policy issues

- Would require local agency coordination for gated restricted access approval/implementation

Initial Costs: \$265k-\$315k

- Gates, power service, bollards, curb and gutter, landscaping, signage and permit/design fees



Option 3 | *Toll at Bow Mar Dr.*

This option would implement tolling infrastructure on Bow Mar Dr just east for Sheridan Blvd. Other elements of this option include:

- Advanced signage indicating toll road and costs
- Closing Wagon Trail Rd. or restricting to exiting traffic only at Sheridan Blvd.



Option 3 | *Toll at Bow Mar Dr.*

Advantages

- Town could adjust toll rate, as needed, to reduce cut-through traffic
- Revenue generated by tolls could pay for toll infrastructure implementation and maintenance or other needed Town improvements
- Minimizes out of direction travel for emergency responders and most residents

Disadvantages

- Costs/logistics to implement and maintain toll infrastructure as well as ability to collect tolls
- Revenue generated by tolls may not be sufficient to pay for toll infrastructure implementation and/or maintenance



Option 3 | *Toll at Bow Mar Dr.*

Maintenance Costs/Issues

- Ability and logistics to collect tolls
- Back end provider needed to review license plate reader photos

Legal or policy issues

- Undetermined, no local road tolling projects have been implemented in Colorado
 - Need access to DMV records
 - Legal authority

Initial Costs:

- Freeway sized toll infrastructure ~\$300k
- E-470 Authority willing to discuss infrastructure and operating costs after legal authority has been established



Option 4 | *Regulatory/Physical Option*

Regulatory and physical measures would be used to discourage and/or restrict cut-through traffic. These measures could include:

- Reduced speed limits/traffic control signage
- Increased enforcement
- Bicycle lanes
- Neckdowns/turn prohibitors, etc.
- Restricting roadway sections to one-way only e.g. Sunset Blvd. at Sheridan Blvd., Bow Mar Dr. at Lakeshore

OPTION 4

Impacted Areas



OPTION 4 | Area A – Sheridan Blvd. & Sunset Dr.



OPTION 4 | Area B – Bow Mar Dr. & Lakeshore





Option 4 | *Regulatory/Physical Option*

Advantages

- No gates, minimizing construction and maintenance costs
- Minimizes out of direction travel for residents
- Bicycle lanes would improve safety for bicyclist
- Improves safety at current traffic circle on Sheridan Blvd. by restricting and better defining Sunset Dr. access at Sheridan Blvd.

Disadvantages

- Least successful in discouraging/restricting cut through traffic
- Reduced speed limit/additional traffic control signage could be ignored without enforcement
- Cost to provide increased enforcement may be prohibitive
- Could be most impactful to emergency responders with conflicting one-way traffic
- May inconvenience some residents



Option 4 | *Regulatory/Physical Option*

Maintenance Costs/Issues

- Maintenance of one-way neckdown landscaped median, if any
- Full time enforcement (one person) approximately \$180k per year

Legal or policy issues

- May require local agency coordination to restrict roadway sections to one-way

Initial Costs: \$85k-\$100k

- Median, curb and gutter, landscaping, signage and permit/design fees



Option 5 | *Gate at each Town Entrance*

This three-gate option would provide a gate each of the Town entrances, Sheridan Blvd., Prospect St. and Bow Mar Dr. Other elements of this option include:

- Restricting Sunset Blvd. to exiting traffic only at Sheridan Blvd.
- Closing, with bollards, Longhorn at Sheridan Blvd. and Lakeshore Dr. at Bow Mar Dr.
- One-way controlled gates
 - Entrance control, free exit

OPTION 5

Impacted Areas



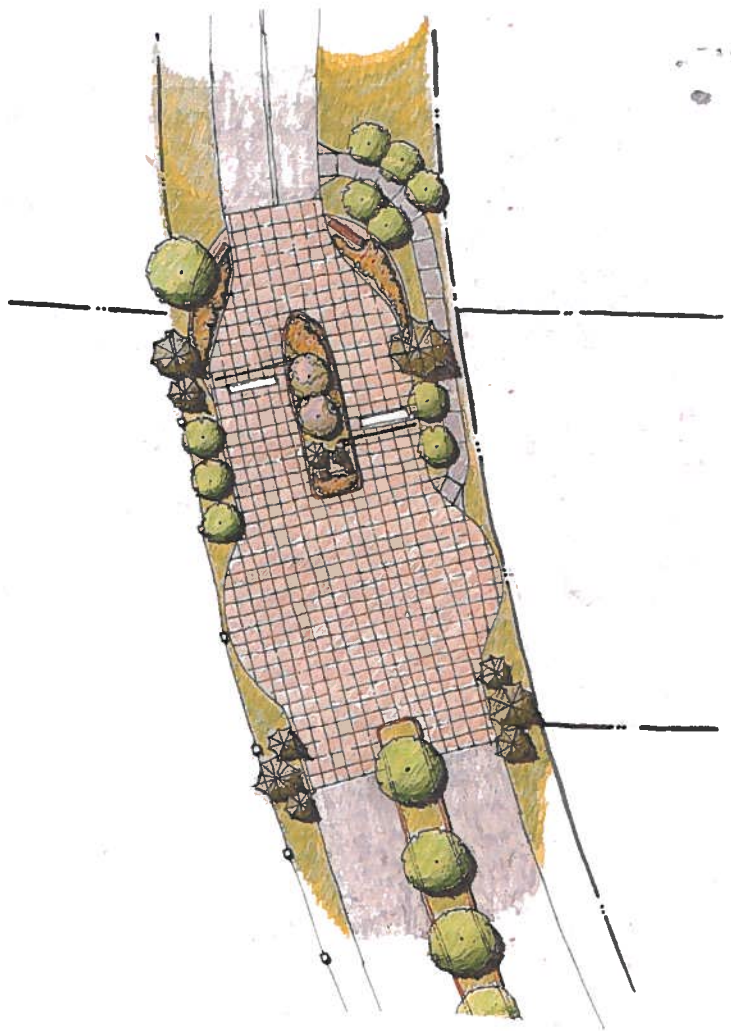
OPTION 5 | Area A – Sheridan Blvd. and Tufts Ave.



OPTION 5 | Area B – Prospect St. & Town Entrance



OPTION 5 | Area B – Prospect St. & Town Entrance



OPTION 5 | Area C – Bow Mar Dr. & Beach Rd.



OPTION 5 | Area D – Sheridan Blvd. & Sunset Dr.





Option 5 | *Gate at each Town Entrance*

Advantages

- Eliminates cut-through traffic
- Turnaround traffic on Sheridan Blvd. would utilize Tufts Ave. and Yellowstone St. – No new turnaround construction needed
- Minimizes out of direction travel for emergency responders and most residents
- Gate locations would not impact resident/non-resident driveways
- Improves safety at current traffic circle on Sheridan Blvd. by restricting and better defining Sunset Dr. access at Sheridan Blvd.

Disadvantages

- Multiple gate costs, implementation and maintenance
- Entrance codes required for visitors and service providers
- Minor shifting of traffic and out of direction travel required for Town residents primarily living west of Sheridan Blvd.
- Some turnaround traffic would use Yellowstone St. and Bow Mar Dr.



Option 5 | *Gate at each Town Entrance*

Maintenance Costs/Issues: \$3k-\$4.5K

- Gate/maintenance company needed for gate operating issues and repairs

Legal or policy issues

- Would require local agency coordination for gate approval/implementation
- Would require local agency coordination to construct turnarounds on Prospect St. and Bow Mar Dr.

Initial Costs: \$630-\$775

- Gates, power service, bollards, curb and gutter, landscaping, signage and permit/design fees