AUGUST 19, 2022

CITY OF SOUTH PORTLAND CASH CORNER NEIGHBORHOOD TRAFFIC CALMING REPORT

PREPARED BY:
GREATER PORTLAND COUNCIL OF GOVERNMENTS

GPCOG
GREATER PORTLAND
COUNCIL OF GOVERNMENTS

Table of Contents

GPCOG
GREATER PORTLAND
COUNCIL OF GOVERNMENTS

BACKGROUND

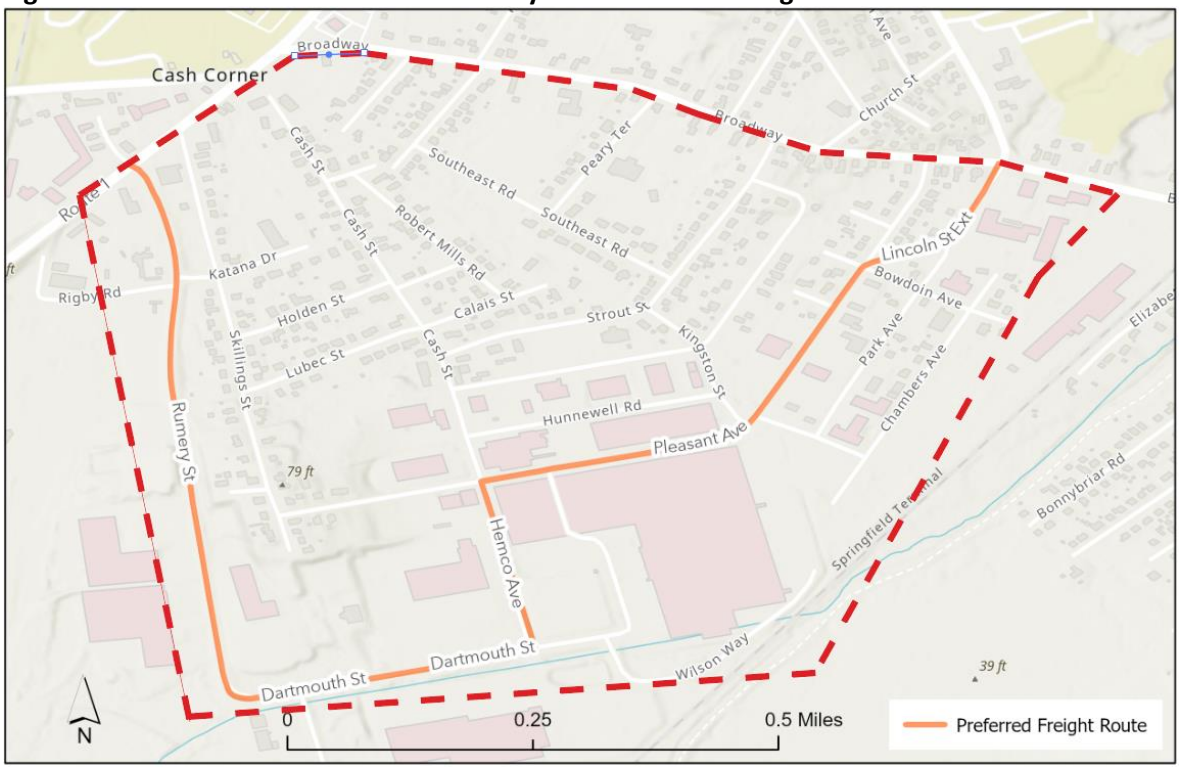
In the fall of 2020, the City of South Portland contacted Greater Portland Council of Governments (GPCOG) seeking to evaluate the Cash Corner Study Area and identify the effectiveness of traffic calming measures on the neighborhood street network.

The Cash Corner Study Area includes established single-family residential areas, a light-industrial and commercial area small and medium-sized businesses, as well as major distribution centers that generate significant freight traffic. Freight routes (shown in Figure 1) are designated in the area to minimize the impact of industrial operations on nearby residential and smaller scale non-residential uses. Despite the designated truck routes, the City receives a large volume of complaints from residents and business owners about freight traffic (small and large trucks) in undesignated areas, high speed commuter traffic using residential streets as bypasses to signalized Broadway and Main Street (Route 1), and general erratic or concerning vehicular behavior.

The City's goals are to discourage freight activity through residential neighborhoods, improve vehicle speed limit compliance, and create a safer environment that may also support additional walking and bicycling in the area. To that end, the City proposed installing temporary traffic calming implements in strategic locations and assess whether the measures promoted the goals. The City and GPCOG coordinated to perform traffic counts and door-to-door surveys before and after the installations to identify their impacts and determine whether more permanent solutions should be funded.

STUDY AREA

Figure 1 – South Portland Cash Corner Study Area Preferred Freight Route



For the purpose of this study, the Cash Corner Study Area has been defined as the area in South Portland made up by all locations south of Broadway and Main Street that exit to Broadway or Main Street using any street located between Rumery Street and Lincoln Street Extension. There are traffic signals located at the intersections of Main Street & Rumery, Main Street & Broadway, and Broadway & Lincoln Street Extension. The study area does not have a southern access point. The study did not analyze the Broadway or Main Street corridors as part of the analysis as these are major transportation routes and have been analyzed in other studies, and efforts undertaken by the City.

Figure 2 – South Portland Cash Corner Land Uses

The study area is a mixed-use neighborhood, as can be seen in Figure 2. Industrial (I and INR, light purple and dark purple) and limited business (LB, dark yellow) uses are predominantly located on the outer edges of the study area and residential (A, light yellow) properties are contained within the center of the study area. There are several dead-end streets located within the residential section of the study area. At the time this study began, there were no one-way streets in the Cash Corner Study Area.

GPCOG
GREATER PORTLAND
COUNCIL OF GOVERNMENTS

PURPOSE AND NEED

South Portland received increasingly frequent complaints of large trucks deviating from recommended routes on to smaller neighborhood side streets. Residents also reported incidents of speeding and cars using the neighborhood streets to avoid congestion along Main Street and Broadway. These reports suggested possible danger for all roadway users, regular inconvenience for residents and possible property damage from oversized vehicles using the roadways which were not designed to accommodate the wide turning radii of the trucks.

This study was intended to evaluate conditions before and after traffic calming implements were installed. Traffic data collection and public surveys were used as a means of determining implementation effectiveness. The City's goals are to discourage freight activity through residential neighborhoods, improve vehicle speed limit compliance, and create a safer environment that may also support additional walking and bicycling in the area.

ENGAGEMENT PROCESS

The City of South Portland placed significant value on public opinion throughout the study. Staff initially developed a list and map of potential problem areas, with treatments that may address the problem. The list and map were then evaluated with relevant Departments and GPCOG for technical guidance and to identify the best possible treatments to undertake, factoring in several limiting issues[1].

Staff's list of potential treatments was then vetted through residents, employees, and business owners to ensure the pilot study did not evaluate ideas that were highly unsupported by those that would be most impacted by the changes. A door-to-door public survey was preferred to encourage participation and take advantage of the opportunity for education and to learn more about local concerns on traffic issues. GPCOG and South Portland collaborated to develop 1-page surveys before (Appendix A) and after(Appendix E) the traffic calming implements were installed.

On June 24th, GPCOG and South Portland staff and volunteers distributed paper surveys and pre-stamped envelopes to all residents and businesses within the study area. Survey packets also included a link to an online version of the survey. Staff and volunteers presented residents with a summary of the study purpose, explained the survey, and asked residents to indicate support for the identified measures and to generate other ideas that should be explored. If there was no answer upon door-knocking, surveys were left in mailboxes. There were over 160 responses to the first round of surveys. Responses from the original survey were used to finalize the list of treatments that would be piloted and evaluated.

The same survey process was repeated on September 22nd, approximately 6 weeks after the traffic

[1] Limiting factors included but were not limited to: (1) the study was conducted during a non-winter period to avoid snow-removal impacts, but interventions were vetted against whether they would have viability in winter months. (2) Interventions were focused on areas where citizen complaints were registered and where staff identified a contributing factor to a complaint. (3) Maintaining emergency response and waste disposal navigability was critical. (4) Interventions needed to have minimal or no impact to business viability and residential quality of life during the study period. (5) Interventions were prioritized based on the volume of freight traffic identified through an initial traffic count of pre-intervention conditions—interventions were typically not explored on intersections or segments with minimal or no freight activity.

calming implements were installed. In this survey residents were asked to rate the effectiveness and their general support for the installations on a permanent basis. There were fewer respondents to the second round of surveys, 105 in total.

EXISTING CONDITIONS

GPCOG gathered the following data for the streets in the Cash Corner Study Area:

- Roadway classification and daily traffic estimates from MaineDOT's Public Map Viewer.
- Speed data from the South Portland Police.
- Crash data from 2015-2020 from MaineDOT's Public Crash Query Tool.
- Traffic volumes at 8 locations using Miovision cameras

Roadway Classification and Traffic Estimates

The Federal Highway Administration (FHWA) classifies roadways into four different categories – interstates, other arterials, collectors, and local roads. Interstates and other arterials have the highest mobility and the highest speeds. Collector roads have lower mobility and lower speeds. Local roads have the lowest mobility and the lowest speeds. The roads in the Cash Corner Study Area south of Broadway and Main Street are all classified as local streets except for Rumery Street and Dartmouth Street, which are major collectors. The daily traffic levels on the study area streets are shown in Table 1.

Table 1 – Annual Average Daily Traffic Estimates[2] for Cash Corner Study Area Streets

Streets	Annual Average Daily Traffic
Broadway (provided for reference; it was not part of the study analysis)	14,000 -15,000
Main Street (provided for reference; it was not part of the study analysis)	10,000-11,500
Rumery St.	3,000-5,000
Lincoln St. Ext., Dartmouth St., Pleasant Ave. (Bowdoin Ave. to Hemco Rd.)	1,500-3,000
Hemco Rd., Skillings St. (between Katana Dr. and Holden St.)	1,000-1,500
All other Cash Corner Study Area Streets	Less than 1,000

As can be seen from Table 1, the section of Broadway in this area carries more traffic than the section of Main Street. Designated truck routes see higher levels of traffic than the other study area streets.

Speed Data

The South Portland Police set up speed radar at a few points in the study area during the fall of 2020. The average speed and the 85th percentile speeds from the data that they collected are summarized in Table 2. Note an 85th percentile speed represents the speed at which 85% of the traffic is traveling less than.

[2] Annual Average Daily Traffic is estimated by MaineDOT and published on their Mapviewer https://maine.gov/mdot/mapviewer/

Table 2 – Cash Corner Study Area Speed Data

Street	Speed Limit	Average Speed (mph)	85th Percentile Speed (mph)
Pleasant Ave.	25	29.8	34.7
Skillings St.	25	22.9	26.9
Thadeus St.	25	22.9	23.8
Cash St.	25	19.0	22.0
Strout St.	25	23.7	26.4
Peary Terrace	25	21.9	23.6
Hemco Rd.	25	25.5	31.8
Holden St.	25	22.3	25.9
Rumery Rd.	35	36.8	42.1

As can be seen from Table 2, on Pleasant Ave., the average vehicle travels about 5 mph over the speed limit and 15 % of the traffic travels about 10 mph or more over the speed limit. Traffic on Skillings St., Thadeus St., Cash St., Strout St., Peary Terrace, and Holden St. are generally traveling within the speed limit. Fifteen percent of the traffic on Skillings St., Strout St., and Holden St. is traveling 1-2 mph or more over the speed limit. On Hemco Rd. and Rumery Rd., 15% of traffic travels about 7 mph over the speed limit. This shows that there is a need for traffic calming measures on Pleasant Ave, Hemco Rd., and Rumery Rd. These roads also make up the designated truck route through the study area.

Crash Data

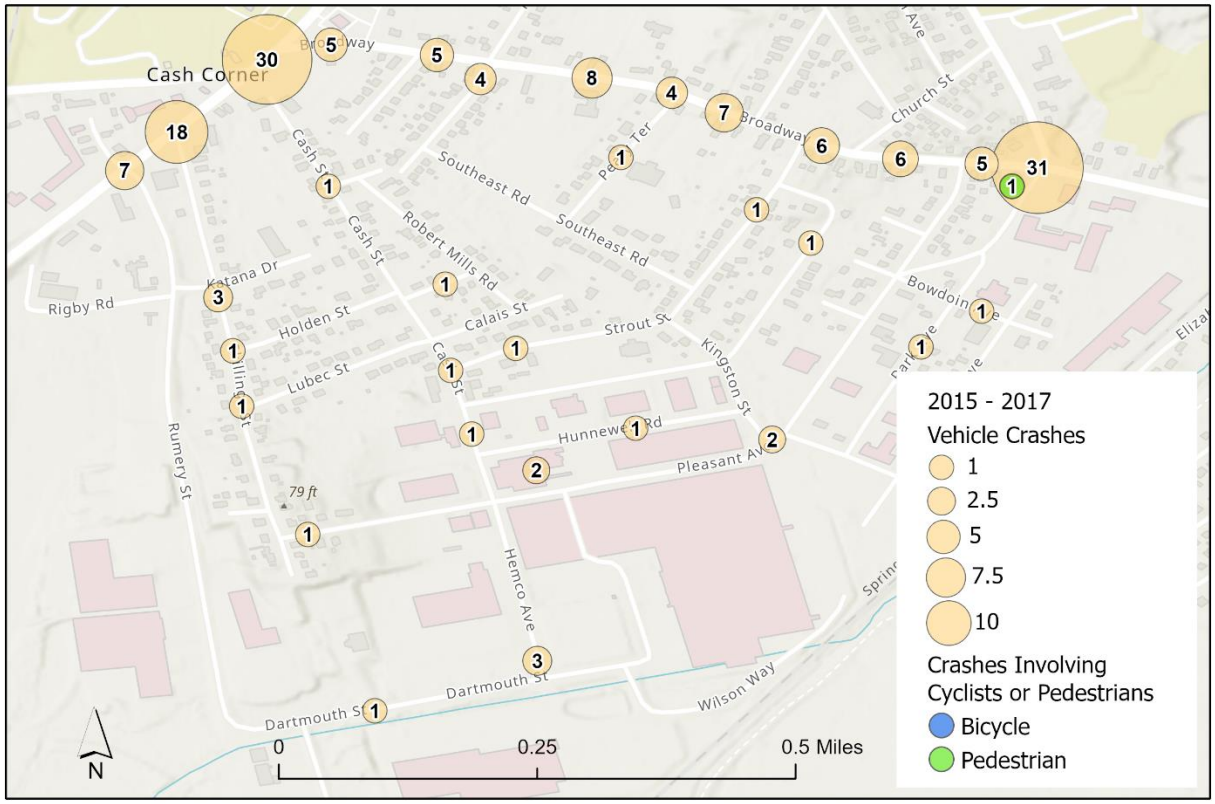
GPCOG gathered crash data from MaineDOT's Public Crash Query Tool for the study area for the years 2015-2017 and 2018-2020, which are shown in Figures 2 and 3. Crashes contained in the MaineDOT database are only crashes that resulted in at least $1,000 of damage and/or an injury is reported.

Most[3] of the crashes within the Cash Corner Study Area occurred either on the designated truck route or in the commercial/industrial areas, with the following exceptions.

- 10 crashes on Skillings Street, 5 crashes in 2015-2017 and 5 crashes in 2018-2020
- 1 crash on Pleasant Avenue west of Hemco Avenue
- 2 crashes on both Cash Street north of Thadeus Street and Strout Street
- 1 crash each on Thadeus Street, Peary Terrace, Bremen Street, and Holden Street

[3] The intersection of Broadway and Lincoln Street and the intersection of Broadway and Main Street were identified as high crash locations in 2020. The intersection of Main Street and Skillings Street was identified as a high crash location in 2017. There were no high crash locations outside of the Broadway/Main Street corridor.

Figures 2 & 3 – Total crashes in the Cash Corner Study Area



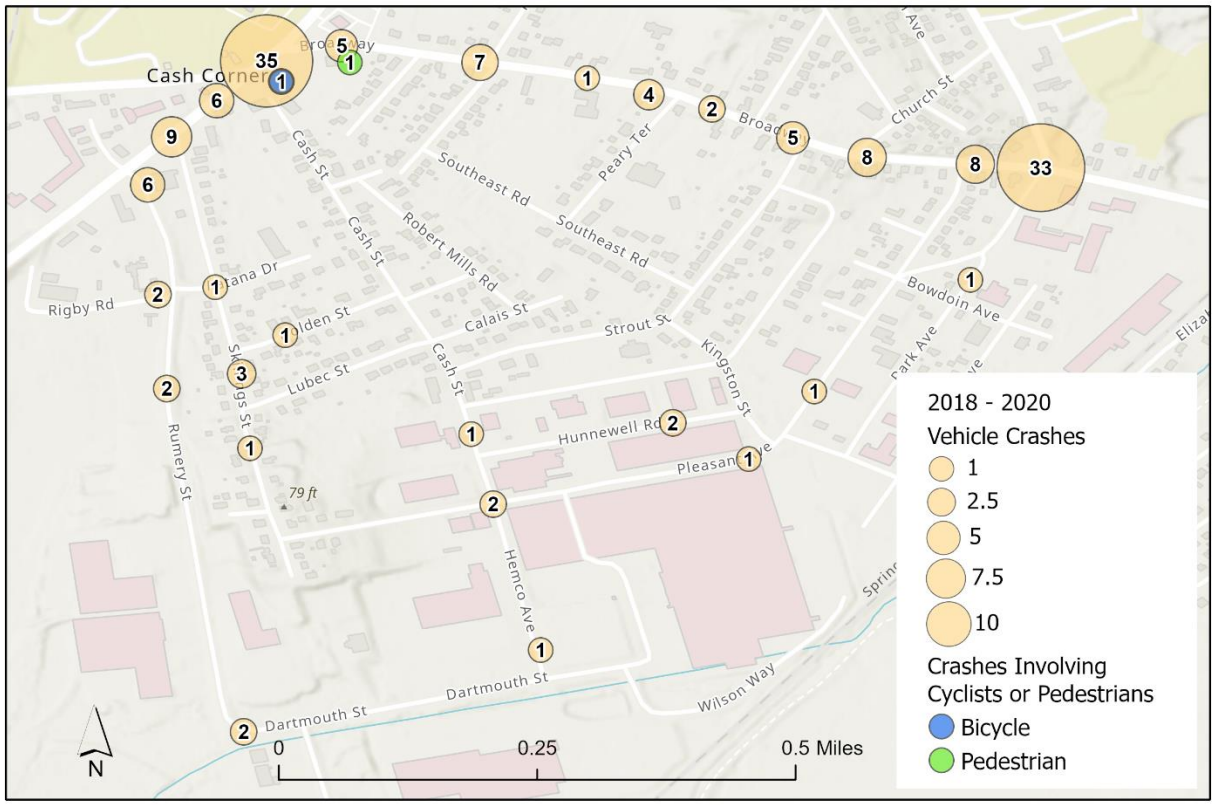


Table 3 shows the total number of crashes from 2015 through 2020. As can be seen in Table 3, the total number of crashes have not changed much from 2015 through 2019. However, there was a significant decrease in crashes in 2020 which was likely due to a decrease in overall traffic volume as a result of the COVID-19 pandemic.

Table 3 – Crashes by Year in the Cash Corner Study Area

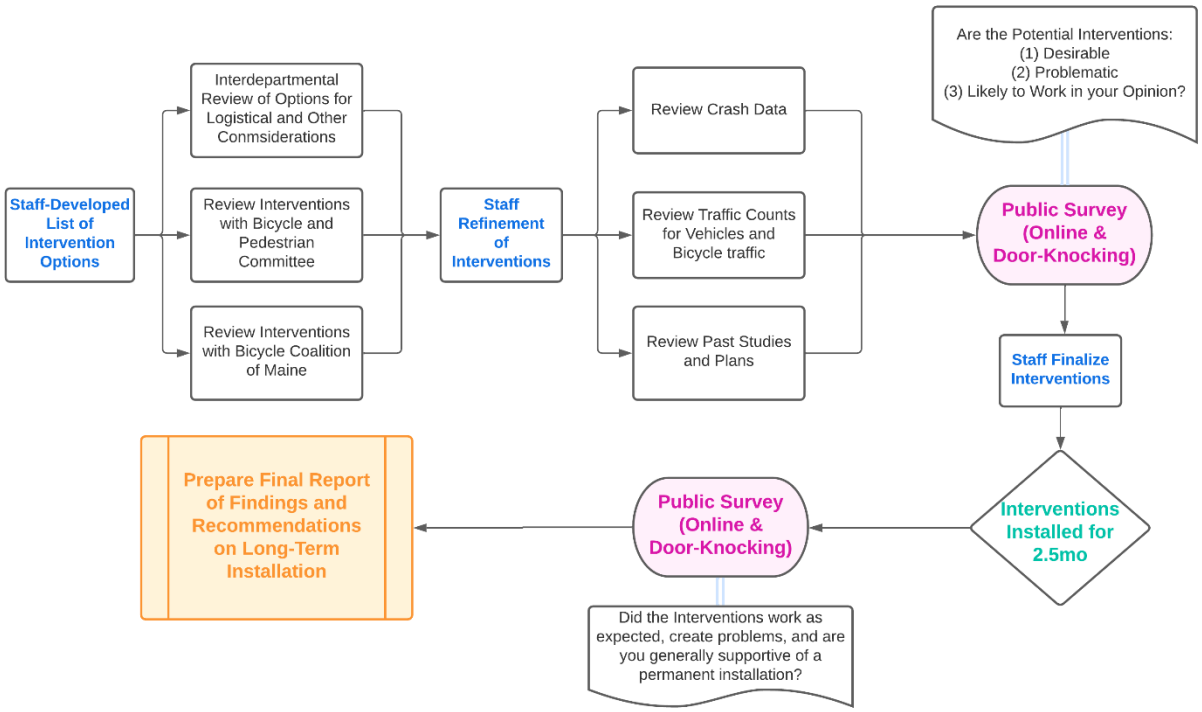
	2015	2016	2017	2018	2019	2020
Route 1	18	23	13	16	21	18
Broadway	29	29	24	32	29	11
Study Area	8	8	10	11	7	7
Total	55	60	47	59	57	36

The crash data also revealed that 3 crashes across the six-year period were reported to have involved pedestrians or bicyclists. Only one of those crashes, in 2016, resulted in a reported possible injury.

TREATMENTS EXPLORED

South Portland staff initially developed a list of potential treatments that could address known deficiencies or traffic issues "hotspots" in the study area. Each treatment was proposed as a potential solution to meet the study's goals, most notably to reduce large truck traffic on neighborhood streets. The list was intended for discussion purposes and to generate a more refined set of possible pilot treatments for the study. An initial list of options was then reviewed by an inter-departmental staff panel, as well as the South Portland Bicycle and Pedestrian Advisory Committee (which comprised representation from the Bicycle Coalition of Maine). Ultimately, 13 traffic calming treatments were identified, and this list was included in a targeted survey that was distributed to all study-area businesses, employees, and residents. This process is shown in Figure 4.

Figure 4 – Cash Corner Pilot Study Process



The 13 recommendations included:

- **Curb Extensions**. Using bollards to demarcate a more prominent curb, close turning radius for trucks and reduce crossing distance for pedestrians, curb extensions were proposed at the intersections of Skillings/Main Street, Pleasant/Broadway, and Pleasant/Rosedale; and on Cash Street north of Thadeus Street. Curb extensions also slow turning vehicles and thus improve pedestrian safety.

- **One-Way Routing**. Designating select streets for one-way traffic was considered as another alternative to control large truck traffic: Skillings Street, Katana Drive, Holden Street, and Pleasant Ave were considered because they were (a) strategically located with the potential to curb inappropriate freight travel; (b) prominent bisects for freight traffic that was avoiding designated truck routes, and/or (c) road segments with considerable public complaints regarding freight traffic.

- **Road Closure**. Using temporary A-frame barriers, a road closure to block all vehicular traffic, including large trucks, was considered at the intersections of Kingston/Thadeus Street and Pleasant/Broadway because these were at critical connections between the residential and non-residential areas, and/or contributed to problematic freight behavior because they generated "shortest" or "quickest route" options for freight vehicles using wayfinding software.

- **Traffic Calming.** Stop signs were considered to slow traffic and increase safety on Rosedale/Pleasant Ave and at Pleasant/Hemco Road.

- **Wayfinding**. Additional and/or more prominent signage along Broadway and Main Street was identified to clarify preferred routes for freight drivers that are unfamiliar with the area. The signage would direct truck drivers to the Rumery or Lincoln Street Extension designated truck routes and eliminate the ambiguity/misleading direction provided by existing signage.

STUDY AREA SURVEY PRE-INSTALLATION

The City sought input from residents, business owners, and employees in the Cash Corner Study Area regarding the traffic calming measures under consideration. Surveys were developed for about 270 residential units and 70 businesses. Paper copies of the residential and business surveys were distributed on June 24, 2021. Online versions of the survey were also posted on the City's website for 3 weeks. The City used its common social media channels to further engage those in Cash Corner, including the City Facebook page and the One Climate Future newsletter. Copies of the pre-installation surveys are in Appendix A. Tables 4, 5, and 6 provide highlighted results from the surveys.

Table 4 – Pre-Installation Surveys returned

Type of survey	Responses received	Percent of Residential or Business Properties Reached
Residential – paper	104	38%
Residential – online	29	11%
Business – paper	25	36%
Business – online	5	7%
Total	163	48%

Table 5 – Survey Responses by Street (No-Response Streets Omitted)

Street	Residential Responses	Business Responses
Bowdoin Ave.	2	0
Bremen St.	1	0
Broadway	1	0
Calais St.	3	0
Cash St.	10	0
Chambers Ave.	3	0
Dartmouth St.	0	4
Daytona St.	6	0
Dracut Ave.	1	0
Hemco Rd.	0	9
Holden St.	7	0
Katana Dr.	2	0
Kingston St.	2	0
Lincoln St. Ext.	0	1
Lubec St.	6	0
Orlando St.	5	0
Park Ave.	1	1
Peary Ter.	5	1

Street	Residential Responses	Business Responses
Pleasant Ave.	15	0
Robert Mills Rd.	8	0
Rumery St.	0	2
Skillings St.	25	0
Southeast Rd.	3	0
Strout St.	21	0
Thadeus St.	6	6

Table 6 – Survey Responses for Potential Traffic Calming Treatments

Treatment	% Support	% Opposed	% Not Sure	Majority
More prominent designated truck routes signage to direct freight to Rumery/Lincoln	89	2	9	Supported
Skillings St. one-way	21	56	23	Opposed
Katana Dr. one-way	18	49	33	Opposed
Holden St. one-way	18	45	37	Opposed
Pleasant Ave. one-way	13	56	31	Opposed
Prevent trucks, allow cars onto Cash north of Thadeus	64	7	29	Supported
Prevent trucks, allow cars onto Pleasant from Broadway	61	17	22	Supported
Prevent trucks, allow cars onto Skillings from Main St.	74	9	17	Supported
Four-way stop at Pleasant Ave. and Hemco Rd.	56	14	30	Supported
Diagonal road closure at Kingston–Thadeus	18	33	49	Not sure
Prevent trucks, allow cars onto Pleasant from Rosedale	49	11	40	Supported
Stop sign on Rosedale Ave. at Pleasant Ave.	50	16	34	Supported
Close access to Broadway from Pleasant Ave.	19	51	30	Opposed

Table 4 shows a survey response rate of 43% from business/employee respondents and 49% from residents. Highlighted rows in Table 5 indicate streets where more than half of the business and residential properties responded. Table 6 shows that the respondents did not support one-way street options and closing access to Broadway from Pleasant Ave. was also not supported. Specifically, several comments opposed making Skillings and Katana one-way as it would funnel traffic to one intersection at Rumery and Main Street. The diagonal road closure at Kingston/Thadeus had most of "Not Sure" responses. All other measures were supported by most respondents. The surveys also collected free-form comments, which are summarized in Table 7.

Table 7 – Top Comments Received from Pre-Installation Surveys

Comment	No. of residential responses	No. of business responses
Vehicles parked on roads, particularly trucks	8	5
Requests for speed bumps	9	0
Designated truck route and prohibition signage needs to be more visible	6	3
Too many speeding vehicles	6	0
Need to work with GPS routes	4	2
Need more stop signs	5	0

Comment	No. of residential responses	No. of business responses
Need more police presence/enforcement	5	0
Difficult to turn onto Broadway from neighborhood streets	5	0
Sight distance issues turning onto Pleasant from side streets	4	1
Too many trucks on Strout	4	0
Vehicles are not stopping at stop signs	4	0
Poor street lighting/ requests for more streetlights	4	0
Complaint re.: intersection control at Broadway/Lincoln St.	4	0
Widen Dartmouth for truck parking	0	3

As can be seen from Table 7, the top comments fall into the following categories:

- complaints about vehicles parking on the roads, including trucks
- requests for speed bumps and complaints about speeding vehicles
- Improve designated truck routes/prohibition signage including working with GPS routing for trucks.

The City took the following actions to address the issues listed above:

- The issue of vehicles parking on the road, including trucks, was communicated to the Public Works Department and Police Department for consideration of action in the parking schedule and enforcement provisions.
- Speed bumps were deemed beyond the scope of the pilot study as there are winter operations challenges, therefore further analysis is needed.
- Google was notified about routing issues and responded that they would update their routing protocols.

TRAFFIC CALMING MEASURES

As a result of the survey, the city decided to implement the following traffic calming measures, which are also shown in Figure 5, in addition to a speed radar unit located on Pleasant Ave. The South Portland Planning Department met with the City Public Works Department, Police Department, and Fire Department, as well as the Bicycle Coalition of Maine to solicit input. The Planning Department reviewed successful treatments in other cities and used the Tactical Urbanism Toolkit from Street Plans. Treatment selection was guided using pre-treatment vehicle count data as well as the majority opinion of the community. The City prioritized a few high-problem areas, as funds were limited. The South Portland Public Works Department installed the treatments, which were paid for by the Planning Department and Public Works Department. Bollards and adhesives for curb extensions were purchased from the Bicycle Coalition of Maine. A “WHAT’S GOING ON HERE” poster describing the treatments was posted at every curb extension and diagonal road closure—this poster can be found in Appendix B. Pictures of the traffic calming measures can be found in Appendix D:

- Curb extension at the intersection of Pleasant Ave., Cash St., and Hemco Rd.
- Curb extension at the intersection of Pleasant Ave. and Rosedale Ave.
- Curb extension at the intersection of Strout St. and Broadway
- Enhanced signage along Broadway
- Enhanced signage along Main St.

- Diagonal road closure at the intersection of Kingston St. and Thadeus St.
- Four-way stop at the intersection of Pleasant Ave., Cash St., and Hemco Rd.
- Marking a designated sharrow route

These measures were installed temporarily during August through September 2021 to determine their effectiveness.

Figure 5 – Traffic Calming Measures and Locations

GPCOG
GREATER PORTLAND
COUNCIL OF GOVERNMENTS

STUDY AREA SURVEY POST-INSTALLATION

The City sought additional input from locals in the study area after they experienced the treatments during the pilot period during the summer of 2021. Surveys were developed and distributed on September 22, 2021. Online versions of the survey were also posted on the City's website for 3 weeks. Throughout the installation process, GPCOG posted Facebook outreach providing updates to residents and soliciting input (Appendix C). A copy of the post-installation survey is in Appendix D. Tables 8 and 9 show the survey results. Table 8 shows fewer responses were received during the post-installation survey overall, but the participation rate was still strong.

Table 8 – Post-Installation Surveys Returned

Type of survey	Responses received
Paper	79
Online	26
Total	105

Table 9 – Survey Responses by Street (Non-response Streets are Omitted)

Street	Responses
Bowdoin Ave.	1
Bremen St.	1
Broadway	4
Calais St.	3
Cash St.	6
Chambers Ave.	3
Daytona St.	4
Hemco Rd.	1
Holden St.	3
Katana Dr.	2
Kingston St.	1
Lubec St.	4
Orlando St.	4
Park Ave.	2
Peary Ter.	3
Pleasant Ave.	8
Rainbow Ave.	1
Robert Mills Rd.	1
Rumery St.	1
Skillings St.	11
Southeast Rd.	3
Strout St.	16
Thadeus St.	8
Outside of Study Area	12

As can be seen from Table 9, 12 responses came from outside of the study area (likely employees), which represents more than 10% of the responses received. The majority of the responses that we received from those outside of the study area, were no response. The highlighted streets in Table 9 represent those streets that had interventions.

The results of the survey from those within the study area are shown in Table 10. The survey asked respondents to rate the impact on traffic in the study area, with "1" meaning the traffic calming measure made traffic worse, and "5" meaning it made traffic better. An additional question was asked if a permanent version should be considered.

Table 10 – Post-Installation Survey Responses within the Study Area

Treatment	Average	% Supported	% Opposed	% No Response	Majority
Curb Extensions					
Overall	3.41	40.9	23.6	35.5	Supported
Pleasant/Cash/Hemco	3.27	32.3	21.5	46.2	No Response
Pleasant/Rosedale	3.18	30.1	16.1	53.8	No Response
Strout/Broadway	3.45	41.9	18.3	39.8	Supported
Enhanced Signage					
Overall	3.97	48.4	4.3	47.3	Supported
Along Broadway	3.89	50.5	4.3	45.2	Supported
Along Main St.	3.86	47.3	3.2	49.5	No Response
Diagonal Road Closure					
Kingston/Thadeus	2.78	22.6	32.2	45.2	No Response
4-way Stop					
Pleasant/Cash/Hemco	4.32	64.5	6.5	29.0	Supported
Designated Sharrow Route	3.44	34.4	11.8	53.8	No Response

As can be seen from Table 10, survey responses from within the study area indicate support for:

- The curb extension at Strout and Broadway
- The enhanced freight signage on Broadway
- The four-way stop at the intersection of Pleasant, Cash, and Hemco

Table 11 shows a list of common open-ended comments given on the post-installation survey.

Table 11 – Top Five Responses to Questions 10-12 on the Post-Installation Survey

	Responses
Question 10. With the treatments, what would you have done differently	**50**
Wanted more visible signs for designated truck routes/ truck prohibitions	9
The curb extensions caused traffic to use an opposing lane	8
The sharrow felt unnecessary	7
Complaint about the diagonal road closure	6
Wanted more police presence/enforcement	5
Question 11. What wasn't implemented but should be?	**58**
Want speed bumps/speed tables	11
Want more stop signs on neighborhood streets	8
Want curb extensions at more locations	8
Cut shrubs/trees that are blocking signs and/or sight distance	5
Have businesses reach out to truckers and GPS companies	4
Stop trucks from traveling on Skillings	4
Make Skillings one-way from Katana to Main St.	4
Question 12. How could we improve our outreach and engagement process?	**31**
Appreciation for efforts	8
More neighborhood meetings	6
Email to residents	2
Partner with local businesses	2
Canvas the neighborhood	2

From the results in Table 11, it appears that stop signs and curb extensions were well received and the respondents want more of them. However, there were requests that the curb extensions be less sharp. Several respondents noted that a right turner needed to use the opposing lane to navigate them.

A few other observations from the answers to the open-ended questions:

- Speed bumps/tables are still a common request and could be a subject for further study
- Several respondents noted issues with shrubs and trees blocking sight distance and/or signs. It is recommended that the City review and trim shrubs and trees to improve sight distances.
- Respondents want a treatment to stop trucks and cut-through traffic on Skillings St.

The most common response for Question 12 was appreciation for the study.

TRAFFIC VOLUMES

Traffic counts were taken in the Spring and Fall of 2021. Traffic counts were taken with Miovision cameras.[4] Since the cameras are a less reliable measuring traffic during the nighttime hours, traffic counts were only collected between 6:00 a.m. and 7:00 p.m. Traffic counts were collected at all locations shown in Table 13 for a three-day period (Tuesday through Thursday) in the spring and fall.

[4] Miovision Scout cameras are portable traffica data collection devices. The units are strapped to utility poles or signposts and video recordings are stored on weather-resistant CPUs. Staff collected the recordings following the recording period and submitted the data to Miovision for traffic volume processing.

Passenger vehicles include motorcycles, cars, and other personal two axle vehicles. Single Unit Trucks[5] (SU Trucks) includes all large vehicles on a single frame, such as delivery trucks. Articulated Trucks[6] includes all multi-unit vehicles with a tractor or power unit.

Table 13 – Three-day total traffic count data taken in the Cash Corner Study Area

	Spring 2021	Fall 2021	Change	% Change
Cash St.				
Passenger Vehicles	3015	3384	369	12.2%
Buses and SU Trucks	95	118	23	24.2%
Articulated Trucks	8	3	-5	-62.5%
Total	3118	3505	387	12.4%
Bikes	*46*	*135*	*89*	*193.5%*
Total inc. Bikes	*3164*	*3640*	*476*	*15.0%*
Katana Dr.				
Passenger Vehicles	3391	3435	44	1.3%
Buses and SU Trucks	126	150	24	19.0%
Articulated Trucks	12	9	-3	-25.0%
Total	3529	3594	65	1.8%
Bikes	*23*	*29*	*6*	*26.1%*
Total inc. Bikes	*3552*	*3623*	*71*	*2.0%*
Lincoln St. Ext.				
Passenger Vehicles	4171	4327	156	3.7%
Buses and SU Trucks	381	311	-70	-18.4%
Articulated Trucks	145	141	-4	-2.8%
Total	4697	4779	82	1.7%
Bikes	*94*	*81*	*-13*	*-13.8%*
Total inc. Bikes	*4791*	*4860*	*69*	*1.4%*
Pleasant Ave.				
Passenger Vehicles	592	590	-2	-0.3%
Buses and SU Trucks	24	30	6	25.0%
Articulated Trucks	4	1	-3	-75.0%
Total	620	621	1	0.2%
Bikes	*10*	*2*	*-8*	*-80.0%*
Total inc. Bikes	*630*	*623*	*-7*	*-1.1%*
Rumery St.				
Passenger Vehicles	3802	3903	101	2.7%

[5] Relevant FHWA Classes – 4: Buses; 5-7: Two-Axle, Six-Tire, Single Unit Trucks and Three or More Axle Single Unit Trucks Typical Vehicle Length: 20.23 - 34.44 feet

[6] Relevant FHWA Classes – 8-13: Three or More Axle Trailer or Multi Trailer Trucks Typical Vehicle Length: 31.19 - 77.59 feet

	Spring 2021	Fall 2021	Change	% Change
Buses and SU Trucks	954	995	41	4.3%
Articulated Trucks	1507	1474	-33	-2.2%
Total	6263	6372	109	1.7%
Bikes	*10*	*18*	*8*	*80.0%*
Total inc. Bikes	*6273*	*6390*	*117*	*1.9%*
Southeast Rd.				
Passenger Vehicles	252	333	81	32.1%
Buses and SU Trucks	35	17	-18	-51.4%
Articulated Trucks	3	0	-3	-100.0%
Total	290	350	60	20.7%
Bikes	*20*	*85*	*65*	*325.0%*
Total inc. Bikes	*310*	*435*	*125*	*40.3%*
Skillings St.				
Passenger Vehicles	2319	2948	629	27.1%
Buses and SU Trucks	68	79	11	16.2%
Articulated Trucks	7	4	-3	-42.9%
Total	2394	3031	637	26.6%
Bikes	*24*	*30*	*6*	*25.0%*
Total inc. Bikes	*2418*	*3061*	*643*	*26.6%*
Strout St.				
Passenger Vehicles	1050	1028	-22	-2.1%
Buses and SU Trucks	63	31	-32	-50.8%
Articulated Trucks	13	2	-11	-84.6%
Total	1126	1061	-65	-5.8%
Bikes	*5*	*9*	*4*	*80.0%*
Total inc. Bikes	*1131*	*1070*	*-61*	*-5.4%*

As can be seen from Table 13, the number of articulated trucks was lower in the Fall than the Spring for all counted roads. The streets that are part of the designated truck routes (Rumery Street and Lincoln Street Ext.) are the only streets that had more than 13 trucks counted during a three-day period. The truck traffic on both of those streets was 2.2 % less in the Fall than the Spring. The biggest drop in articulated trucks on a non-designated truck route street was on Strout Street dropping from 13 to 2. The non-designated truck route street with the highest number of articulated trucks in the fall was Katana Drive with 9 trucks counted; in the spring, it was Strout Street with 13 trucks counted.

Bicycle counts increased on every road except Lincoln Street Ext. and Pleasant Ave. However, bicycle use is highly dependent on the weather. The average high temperature for the days when bicycles were counted was 56 degrees in the Spring and 71 degrees in the Fall. The number of daylight hours with precipitation during the days counted in the Spring was 13 and, in the Fall, it was 3. So, it can be expected that there would be an increase in bicycles counted.

Southeast Road and Skillings Street saw the largest increase in overall traffic with a 20.7% and a 26.6 % increase, respectively. The only street that saw a decrease in overall traffic was Strout Street with a 5.8% decrease.

RESULTS AND RECOMMENDATIONS

The following recommendations from GPCOG have been formed based on traffic data and public survey results. Several of the recommendations entail creating permanent physical changes to the neighborhood streets, while other recommendations involve improved communication and information for drivers.

The purpose of each of these recommendations is to meet one of the following goals: 1) reduce large truck traffic on neighborhood streets, 2) reduce the frequency of cut through commuter traffic, 3) reduce overall speeds, and 4) increase the safety for all modes of transportation.

Curb Extensions

One typical purpose for installing a curb extension is to improve pedestrian safety by narrowing the roadway at the crossing location and expanding the pedestrian environment, while reducing the turning radius for vehicles and necessitating a decrease in speed. During this project, curb extensions were also used to deter large trucks from entering streets that were not designated truck routes.

The effect of curb extensions in this study was most pronounced on Strout Street, which saw declines in articulated truck traffic from 13 to 2 trucks and in single-unit trucks/buses from 63 to 31 vehicles over the 3-day data recording. This curb extension was supported by 41.9% and opposed by 18.3% of survey respondents within the Cash Corner Study Area. Study Area. The majority of Cash Corner Study Area respondents supported the permanent installation of this curb extension.

The curb extension at the intersection of Pleasant Ave, Cash St., and Hemco Rd may have also contributed to a decrease in articulated truck traffic on Cash Street, resulting in a drop from 8 to 3 over the 3-day data recording. This curb extension was supported by 32.3 % and opposed by 21.5% of survey respondents within the Cash Corner Study Area. The majority of Study Area respondents did not provide an opinion on this curb extension.

An additional curb extension was installed on the corner of Pleasant Ave and Rosedale Ave, but no traffic data was collected to gauge efficacy of this specific treatment. This curb extension was supported by 30.1% and opposed by 16.1% of survey respondents within the Cash Corner Study Area. The majority of Study Area respondents did not provide an opinion on this curb extension.

Overall, curb extensions were supported by a majority of Cash Corner Study Area respondents expressing a preference. Four survey respondents indicated that the temporary curb extensions where difficult to maneuver around. A fully engineered curb extension would be recommended for permanent installation as each location received more support than opposition from survey respondents. Any permanent curb extension should follow the design standards of the *Manual on Uniform Traffic Control Devices* and *A Policy on Geometric Design of Highways and Streets*.

Stop Signs

Introducing a stop sign requires vehicles to slow and come to a stop. According to the Manual on Uniform Traffic Control Devices (MUTCD)[7], multi-way stop control can be useful as a safety measure at intersections if certain traffic conditions exist. However, the MUTCD also recommends an engineering study before multi-way stop signs are installed and that they should not be used for speed control.

During the pre-installation public survey, 16 comments referred to a request for more stop signs. A 4-way stop sign was installed at the intersection of Pleasant Ave, Cash Street, and Hemco Road. This intersection is often a decision point for large trucks traveling north on Hemco Road and may have contributed to fewer large trucks traveling on Cash Street during the 3-day data recording period. This installation was supported by 64.5% and only opposed by 6.5% of the Study Area respondents. It was the most supported and least opposed installation from this study.

The post-installation public survey yielded 15 suggestions for increasing the number of stop signs in the study area and 3 suggestions for increasing the visibility of existing stop signs.

Given the support, the City may wish to consider conducting an engineering study to determine the most appropriate locations to install additional stop signs throughout the study area to provide effective traffic control.

Enhanced Designated Truck Routes Signage

In addition to stop signs, designated truck route signage helps guide unfamiliar truck drivers along designated truck routes study area. The MUTCD gives guidance on sign dimensions, messaging, and placement. It is important to have effective signing. Too many signs can lead to signs being overlooked or ignored, reducing their effectiveness.

Enhanced designated truck routes signs were developed with input from area businesses and residents and placed along Broadway and Main Street (pictures are included in the Appendix). There were fewer large trucks traveling on the study area streets, although the difference was more pronounced on the streets that were counted on the Broadway side of the study area - Strout Street, Pleasant Avenue, and Southeast Road. The signage that was placed along Broadway was supported by 50.5% of the respondents from the study area and opposed by 4.3%. In addition, the post-installation public survey yielded 9 responses that wanted more visible signs for designated truck routes and truck prohibitions.

It is recommended that the City review permanent truck prohibition signs placed at the non-designated truck route streets that intersect with Broadway and Main Street and also at Katana Drive where it intersects with Rumery Street for visibility. In addition, regulatory and guide signs for designated truck routes should be strategically placed to guide trucks to the designated truck route roads. To improve visibility of the signs either flashing lights or orange flags/paddles could supplement the signs. The MUTCD provides recommendations on size, placement, and messaging for signs that can improve effectiveness.

[7] United States Department of Transportation, Federal Highway Administration, *Manual on Uniform Traffic Control Devices.* 2009 Edition

Diagonal Road Closure

Some conditions demand full road closures to elicit the desired traffic patterns. The City installed a diagonal road closure at the intersection of Thadeus Street and Kingston Street to direct neighborhood traffic away from the intersection of Pleasant Ave and Kingston Street, which has a limited line of sight for those exiting Kingston, as well as deterring truck traffic from non-designated truck routes. The road closure treatment consisted of several temporary barricades placed diagonally across the intersection of Thadeus Street and Kingston Street.

Overall, the diagonal road closure at Thadeus and Kingston was supported by 22.6% of the respondents and had the lowest average score. Resident comments noted that some vehicles were bypassing the barriers during the early morning.

GPCOG recommends the City study this location in further detail, establishing traffic volume pre-treatment and installing a more robust barrier to redirect traffic away from the Pleasant Ave and Kingston Street intersection. It is possible the road closure could be an effective treatment for deterring truck traffic; however, the City should consider the low favorability of this treatment among residents.

Sharrow Network

City staff installed a Designated Sharrow Route along Strout Street, Cash Street, Lubec Street, Skillings Street, Southeast Road, and Orlando Street. The Sharrow Route featured shared lane markings painted along the roadway to guide bicyclists through the neighborhood, avoiding the busy intersection of Main Street and Broadway. The City intended to bring more attention to vehicle drivers that bicycles travel through the study area.

The post-installation survey results indicated that respondents were not sure whether they supported the installation of the Designated Sharrow Route[8] as a permanent feature. In total, 94 study area residents responded to the Designated Sharrow Route question – 34.4% (32 residents) were in favor, 11.8% (11 residents) were opposed, 53.8% (50 residents) were not sure. There would likely be support for permanent installation of a marked sharrow route through the Cash Corner Study Area.

If the City decides to make the Designated Sharrow Route permanent, GPCOG recommends additional signage outside the neighborhood to guide bicyclists. GPCOG recommends using permanent sharrows on local streets where there have been safety issues.

Miscellaneous

Visibility

Road sign visibility can affect ease of navigation. If a road user is not familiar with the road network, they will often rely on a combination of road signs and navigation technology to find their way. For that reason, it is important for the municipality to ensure that road signs remain clear and unobstructed. Trees, parked cars, and even other signs can obstruct the view and distract drivers leading to navigation errors.

During the first study area survey, 9 respondents identified the need for improved placement and

[8] Referred to as the Neighborhood Bike Route in the post-installation survey.

visibility for designated truck route signs. The second study area survey yielded 9 answers indicating the need to improve the visibility of truck signs and 5 answers referencing the need to trim shrubs/trees blocking signs or sight distance.

The City may wish to schedule an annual review of strategic road signs, particularly those which affect freight traffic navigation. Additionally, the City may wish to review parking designations, to ensure that vehicles do not obstruct visibility, and City sign regulations. Eight residents and eight businesses commented about street parking issues.

Vertical Displacement

The use of vertical displacement, such as speed bumps and speed humps, can be an effective method for slowing vehicles on low volume roads. The dimensions of speed bumps are usually 2-4 inches tall and 6 to 24 inches wide. Due to their height-width ratio, they are considered an aggressive traffic calming device. Speed bumps are generally suitable for tight spaces shared by vehicles and pedestrians, such as parking lots, and are rarely used on public roads. Speed humps are usually 2-4 inches tall, like speed bumps, and 3 feet to 20 feet wide, considerably longer than speed bumps. For mid-block crosswalks, it may be appropriate to raise the speed hump to the height of the adjacent curb. If there is no existing curb, steps should be taken to prevent circumnavigation. Whether speed bump or speed hump, adequate signage and marking should be provided to guide drivers to take appropriate action.

The pre-installation survey resulted in 9 comments requesting speed bump installation. In the post-installation survey, there were 4 comments referring to speeding as an ongoing issue. The speed data provided by the South Portland Police Department did not demonstrate excessive speeding on any of the roads not designated as a truck route as the 50th percentile speed was below the posted speed limit and 85th percentile speed fell within 1-2 mph of the posted speed limit.

GPCOG does not recommend installing any vertical displacement within the study area at this time. If the City chooses to install a vertical displacement, GPCOG would suggest using speed humps on roads that are not along the designated truck route. GPCOG recommends further study, which may include temporary speed hump installations.

Cut-through Traffic

During the pre-installation public survey, 7 comments referred to speeding vehicles cutting through the neighborhood. It is possible that “cut through traffic” could be avoiding congestion from the signalized intersection on Route 1 and Broadway. Implementing some of the traffic calming measures could help to reduce some of the potential cut-through traffic.

GPCOG
GREATER PORTLAND
COUNCIL OF GOVERNMENTS

APPENDICES

GPCOG
GREATER PORTLAND
COUNCIL OF GOVERNMENTS

Appendix A - Study Area Survey Pre-Installation

Residential Survey

Cash Corner Traffic Calming Survey

The City of South Portland has received numerous requests to improve traffic safety within the Cash Corner neighborhood. As a result, the City is undertaking a study to investigate traffic conflicts in the Cash Corner neighborhood and ways the City can improve the situation. As part of this study we are asking for your input. Please fill out this survey and drop it in the mail. Or if you prefer, you can go online and fill out the survey at https://www.surveymonkey.com/r/CashCorner

1. What street do you reside on? _____

2. How long have you been in Cash Corner? _____

3. What is your gender (optional)? _____

4. What is your age (optional)? _____

5. When you're traveling to and from your home, how do you usually travel? Select all that apply.

☐ Drive ☐ Bus ☐ Bike ☐ Walk ☐ Motorcycle/Motorized Scooter

6. What do you think are the biggest traffic issues in your neighborhood? Select all that apply.

☐ Too much large truck traffic on neighborhood streets

☐ Cut-through traffic using neighborhood streets

☐ Difficult to get through the neighborhood

☐ Poor visibility, signage, and other guidance

☐ Speeding vehicles

☐ High traffic congestion

☐ Limited/non-existent bike/pedestrian accommodations (e.g. sidewalks, bike lanes, signage, etc.)

☐ Other (please specify)_____

Please continue the survey on the back of the page

GPCOG
GREATER PORTLAND
COUNCIL OF GOVERNMENTS

7. Do you support testing any of the following interventions for a TEMPORARY 3-MONTH PERIOD to reduce large trucks on neighborhood streets?	Yes	No	Not sure
1) Prevent heavy trucks, but allow cars entering Skillings St. from Main St. ▲			
2) Install bigger more prominent truck route signs to direct trucks to Rumery St. and Lincoln St. Ext. (2 locations) ▬			
3) Make Skillings St. one-way ⟸			
4) Make Katana Dr. one-way ⟸			
5) Make Holden St. one-way ⟸			
6) Prevent heavy trucks, but allow cars onto Cash St. north of Thadeus St. ▲			
7) Install a four-way stop at Pleasant Ave. and Hemco Rd. ⯃			
8) Diagonal road closure at the Kingston - Thadeus intersection ◢			
9) Prevent heavy trucks, but allow cars entering Pleasant Ave. from Rosedale Ave. ▲			
10) Add a stop sign on Rosedale Ave. at Pleasant Ave. ⯃			
11) Make Pleasant Ave. one-way ⟸			
12) Prevent heavy trucks, but allow cars onto Pleasant Ave. from Broadway ▲			
13) Close access to Broadway from Pleasant Ave. ✖			

GPCOG
GREATER PORTLAND
COUNCIL OF GOVERNMENTS

Business Survey

Cash Corner Traffic Calming Survey

City of South Portland

The City of South Portland has received numerous requests to improve traffic safety within the Cash Corner neighborhood. As a result, the City is undertaking a study to investigate traffic conflicts in the Cash Corner neighborhood and ways the City can improve the situation. As part of this study we are asking for your input. Please fill out this survey and drop it in the mail. Or if you prefer, you can go online and fill out the survey at https://www.southportland.org/departments/planning-and-development/current-initiatives/

1. On what street is your business located? _____

2. How do your employees commute to work? Please select all that apply.

☐ Drive ☐ Bus ☐ Bike ☐ Walk ☐ Other (please specify) _____

3. How many tractor trailer trucks go to or from your business?

◯ More than five per week ◯ Less than one per month ◯ None

◯ Less than five per week ◯ Less than one per week

4. What do you think are the biggest traffic issues in your neighborhood? Select all that apply.

☐ Too much large truck traffic on neighborhood streets

☐ Cut-through traffic using neighborhood streets

☐ Difficult to get through the neighborhood

☐ Poor visibility, signage, and other guidance

☐ Speeding vehicles

☐ High traffic congestion

☐ Limited/non-existent bike/pedestrian accommodations (e.g. sidewalks, bike lanes, signage, etc.)

☐ Other (please specify)_____

Please continue the survey on the back of the page

7. Do you support testing any of the following interventions for a TEMPORARY 3-MONTH PERIOD to reduce large trucks on neighborhood streets?	Yes	No	Not sure
1) Prevent heavy trucks, but allow cars entering Skillings St. from Main St. ▲			
2) Install bigger more prominent truck route signs to direct trucks to Rumery St. and Lincoln St. Ext. (2 locations) ▬			
3) Make Skillings St. one-way ⟸			
4) Make Katana Dr. one-way ⟸			
5) Make Holden St. one-way ⟸			
6) Prevent heavy trucks, but allow cars onto Cash St. north of Thadeus St. ▲			
7) Install a four-way stop at Pleasant Ave. and Hemco Rd. ⬢			
8) Diagonal road closure at the Kingston - Thadeus intersection ◢			
9) Prevent heavy trucks, but allow cars entering Pleasant Ave. from Rosedale Ave. ▲			
10) Add a stop sign on Rosedale Ave. at Pleasant Ave. ⬢			
11) Make Pleasant Ave. one-way ⟸			
12) Prevent heavy trucks, but allow cars onto Pleasant Ave. from Broadway ▲			
13) Close access to Broadway from Pleasant Ave. ✖			

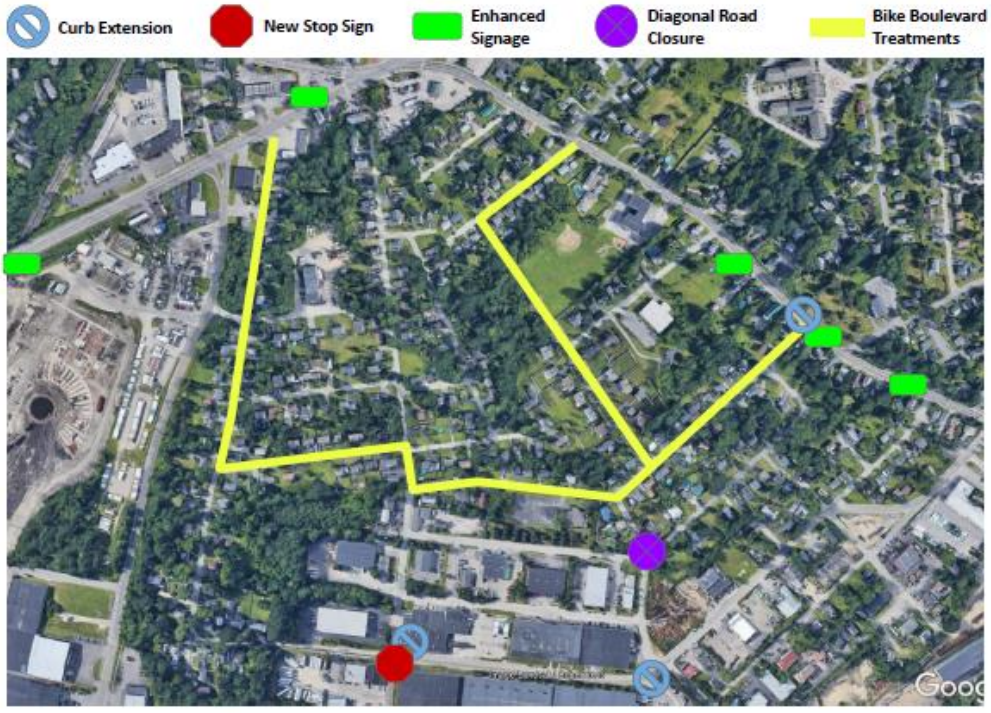
Appendix B - WHAT'S GOING ON HERE Poster

WHAT'S GOING ON HERE?

Cash Corner Traffic Calming Pilot

The City of South Portland has received numerous requests to improve traffic safety within Cash Corner. As a result, the City is undertaking this study to investigate traffic conflicts in Cash Corner and ways the City can improve the situation.

We heard you! Based on the results of a month of traffic data collection and over 150 survey responses, the City has chosen 11 interventions to help address the following traffic conflicts in Cash Corner - large trucks on neighborhood streets, speeding and cut-through traffic.



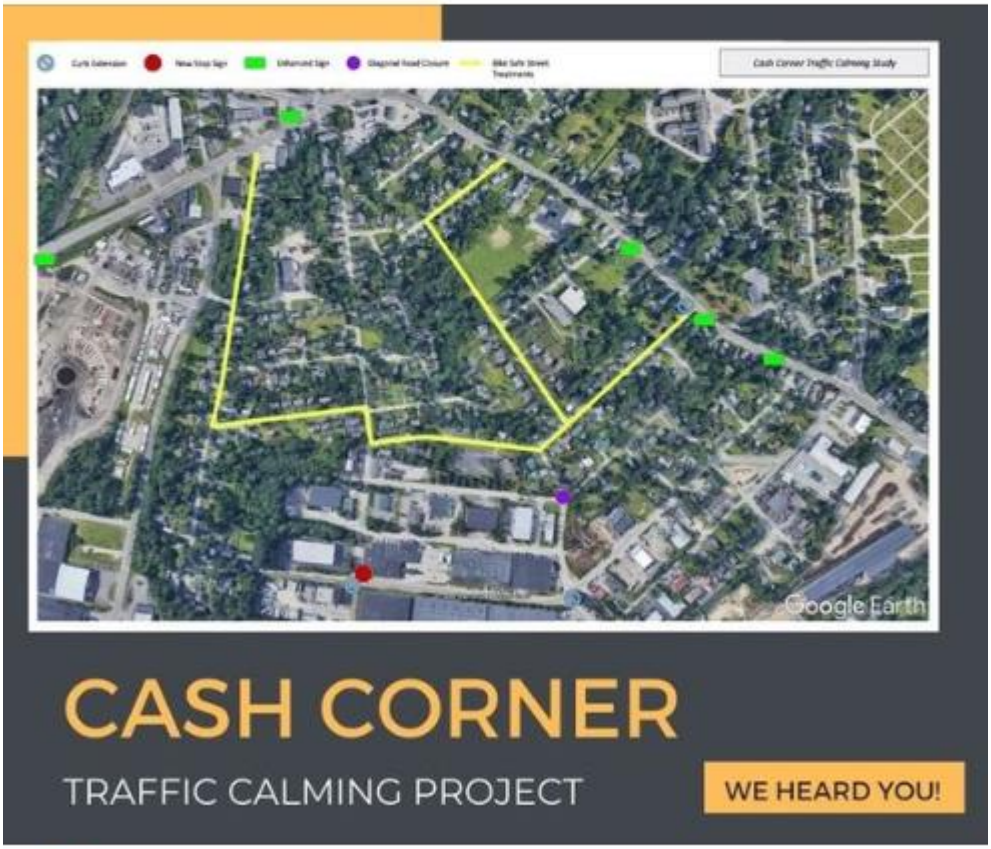
Email cstewart@southportland.org for inquiries and translation services.

Appendix C - Social Media Outreach

August 20th, 2021, GPCOG Facebook post – City of South Portland website

Greater Portland Council of Governments
August 20, 2021 ·

South Portland has installed traffic calming treatments in Cash Corner as part of a pilot project that aims to address traffic conflicts (including truck traffic on neighborhood streets, speeding, cut-thru traffic and lack of bike/ped accommodations). The city will conduct a post-installation survey in September and remove the treatments in October. Learn more: https://www.southportland.org/.../pla.../current-initiatives
City of South Portland



7 2 Comments 2 Shares

Like Comment Share

August 23rd, 2021 GPCOG Facebook post – Portland Press Herald story

September 29th,2021 – GPCOG Facebook post – Post installation survey

Greater Portland Council of Governments
September 29, 2021 ·

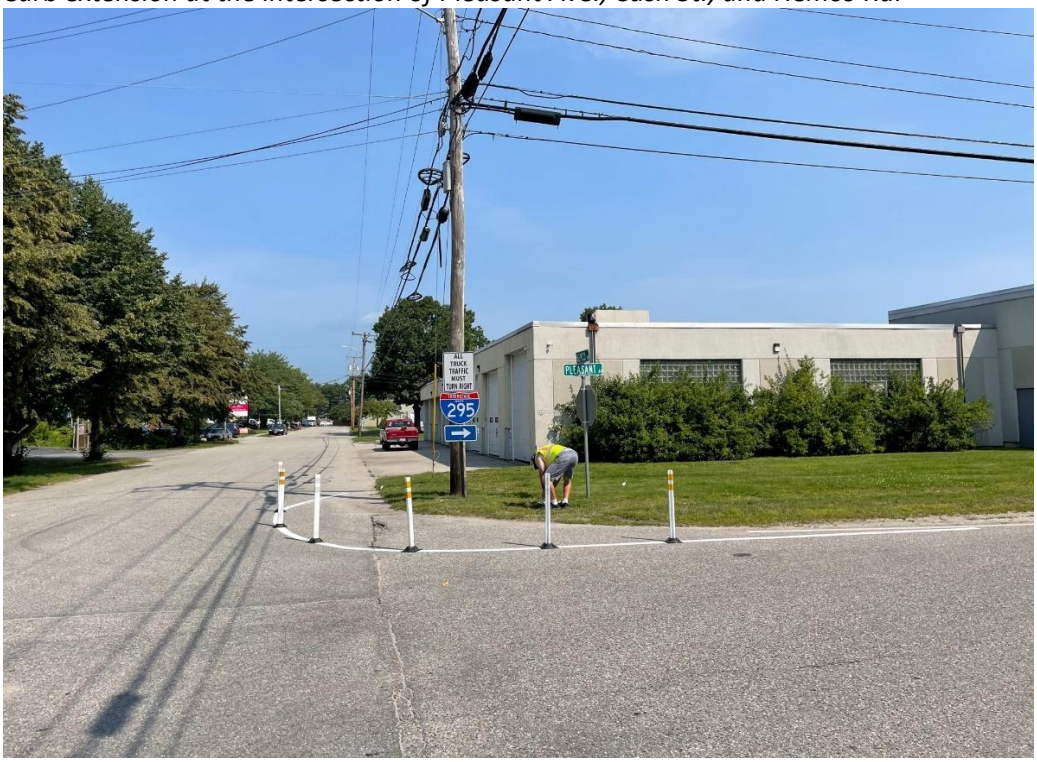
Live or work in Cash Corner in South Portland? We want your input! A number of traffic calming installations went down in Cash Corner in early August to address concerns of trucks on neighborhood streets, speeding, cut-through traffic, and lack of bicycle/pedestrian accommodations. We want feedback on the effectiveness on these installations and what else we can do in the neighborhood to help calm traffic.

Complete the survey here:
https://www.surveymonkey.com/r/7NHPZ63

Like Comment Share

Appendix D - Pictures of Traffic Calming Measures

Curb extension at the intersection of Pleasant Ave., Cash St., and Hemco Rd.



Curb extension at the intersection of Pleasant Ave. and Rosedale Ave.

Curb extension at the intersection of Strout St. and Broadway

Enhanced signage along Broadway

Enhanced signage along Main St.


TURNING TRUCKS
AT LIGHT
TURN LEFT
IRVING
TRADE MARK
NO PARKING
CAR WASH

Diagonal road closure at the intersection of Kingston St. and Thadeus St.

Four-way stop at the intersection of Pleasant Ave., Cash St., and Hemco Rd.

Designated Sharrow Route Shared Lane Markings

GPCOG
GREATER PORTLAND
COUNCIL OF GOVERNMENTS

Appendix E - Study Area Survey Post-Installation

Cash Corner Traffic Calming Survey

City of South Portland

The City of South Portland has received numerous requests to improve traffic safety within the Cash Corner neighborhood. In response to this, we would like your opinion regarding the traffic calming measures that were implemented at several locations (see map on back). Please fill out this survey and drop it in the mail. Or if you prefer, you can go online and fill out the survey at https://www.southportland.org/departments/planning-and-development/current-initiatives/

1. Are you a resident or business owner of the Cash Corner neighborhood? _____

2. What street do you reside on or is your business located on? _____

3. How long have you been in Cash Corner? _____

4.When you're traveling to and from your home, how do you usually travel? If you are a business owner, how do you and your employees usually travel? Select all that apply.

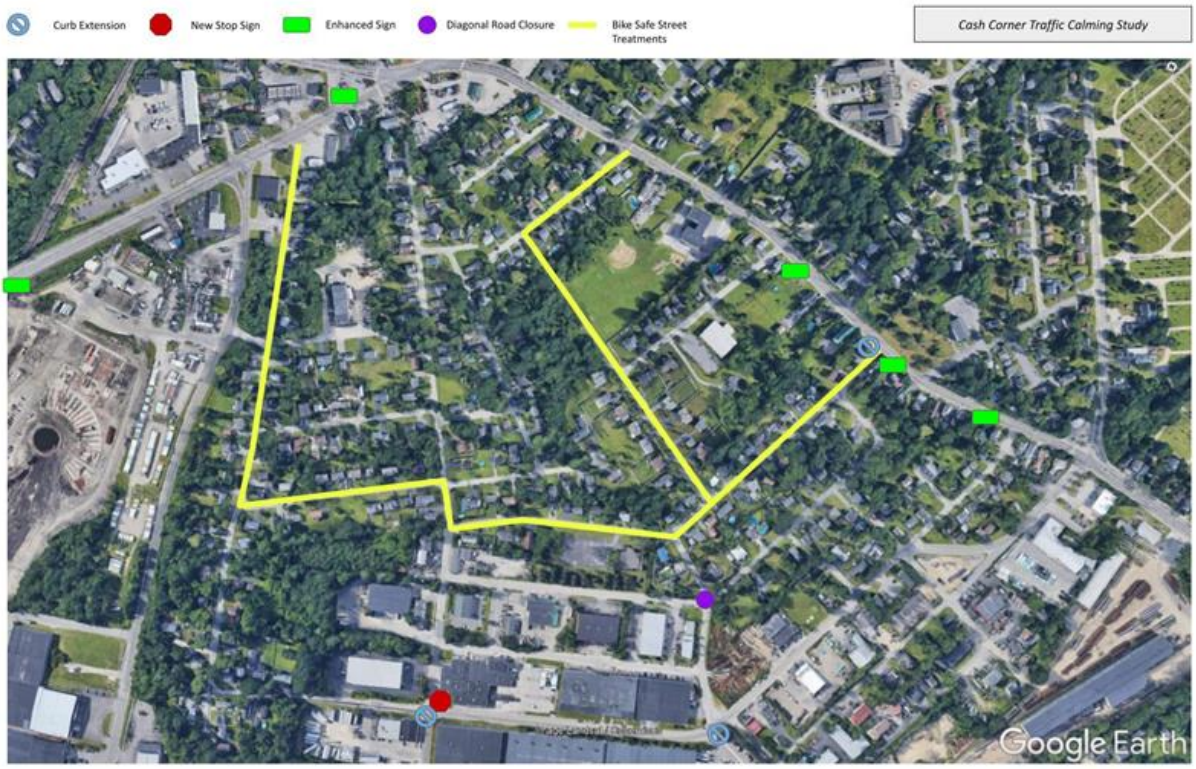
☐ Drive ☐ Bus ☐ Bike ☐ Walk ☐ Motorcycle/Motorized Scooter

Please rate what impact you felt these traffic calming measures had on traffic conditions in your neighborhood.	Made Worse		Not Sure		Made Better	Should we consider a permanent version of this?
5. Curb Extensions (overall)	1	2	3	4	5	Y N
Pleasant/Cash/Hemco	1	2	3	4	5	Y N
Pleasant/Rosedale	1	2	3	4	5	Y N
Strout/Broadway	1	2	3	4	5	Y N
6. Enhanced Signage (overall)	1	2	3	4	5	Y N
Along Broadway	1	2	3	4	5	Y N
Along Main St	1	2	3	4	5	Y N
7. Diagonal Road Closure (Kingston/Thadeus)	1	2	3	4	5	Y N
8. 4-Way Stop (Pleasant/Cash/Hemco)	1	2	3	4	5	Y N
9. Neighborhood Bike Route (overall)	1	2	3	4	5	Y N

10. With the treatments that went in, what would you have done differently?

11. What wasn't implemented but should be?

12. How could we improve our outreach and engagement process?



Curb extension

Diagonal Road Closure

4-Way Stop

Neighborhood Bike Route