



**CITY OF BURLINGTON  
DEPARTMENT OF PUBLIC WORKS**

645 Pine Street, Suite A  
Post Office Box 849  
Burlington, VT 05402-0849  
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[www.burlingtonvt.gov/dpw](http://www.burlingtonvt.gov/dpw)

**Chapin Spencer**  
*DIRECTOR OF PUBLIC WORKS*

## **M E M O R A N D U M**

To: Tenzin Chokden, Clerks Office  
From: Chapin Spencer, Director  
Date: June 14, 2018  
Re: Public Works Commission Agenda

Please find information below regarding the next Commission Meeting.

Date: **June 20, 2018**  
Time: 6:30 – 9:00 p.m.  
Place: **645 Pine St – Main Conference Room**

## **A G E N D A**

### ITEM

- 1 Call to Order – Welcome – Chair Comments
- 2 5 Min Agenda
- 3 10 Min Public Forum (3 minute per person time limit)
- 4 5 Min Consent Agenda
  - A Traffic Status Report
  - B Electric Vehicle Charging Station Main St.
  - C Proposed Changes to Accessible Parking in the Downtown Core
  - D Removal of an Accessible Space on Summer St.

### Non-Discrimination

The City of Burlington will not tolerate unlawful harassment or discrimination on the basis of political or religious affiliation, race, color, national origin, place of birth, ancestry, age, sex, sexual orientation, gender identity, marital status, veteran status, disability, HIV positive status or genetic information. The City is also committed to providing proper access to services, facilities, and employment opportunities. For accessibility information or alternative formats, please contact Human Resources Department at 865-7145.

- 5 15 Min Mid-block Crossing Design  
A Communication, P. Peterson  
B Commissioner Discussion  
C Public Comment  
D Action Requested – Vote
- 6 10 Min VTrans Bike Bed Grant  
1. Scoping for Intersection Improvements at Colchester/East Ave and a Protected Bike Lane on Colchester Ave.  
2. Small Construction for a Raised Intersection at North Ave/Berry St/Washington St  
3. Additional Funding for the Colchester Ave Side Path Reconstruction.  
A Communication, N. Losch  
B Commissioner Discussion  
C Public Comment  
D Action Requested – None
- 7 10 Min Annual Report to Council (Supplements to follow prior to meeting)  
A Communication, C. Spencer  
B Commissioner Discussion  
C Public Comment  
D Action Requested – Vote
- 8 15 Min Draft FY'19 Key Initiatives  
A Communication, C. Spencer  
B Commissioner Discussion  
C Public Comment  
D Action Requested – Vote
- 9 5 Min Approval of Draft Minutes of 4-18-18 & 5-16-18
- 10 10 Min Director's Report
- 11 10 Min Commissioner Communications
- 12 **Adjournment & Next Meeting Date – July 18, 2018**



MEMORANDUM

June 14, 2018

**TO:** Public Works Commission  
**FROM:** Phillip Peterson, DPW Engineering Technician *PMP 6/14/18*  
**CC:** Nicole Losch PTP, Senior Transportation Planner *NL 6/14/18*  
**RE:** Traffic Request Status Report

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Number of Requests 05/08/18 = 43  
New Requests since 05/08/18 = 10  
Requests closed since 05/08/18= 3  
Number of Requests 06/14/18 = 50

**RFS BREAKDOWN BY TYPE\***

		Last Month	Change
Accessible Space:	4	2	+2
Resident Only Parking:	6	5	+1
Crosswalks:	16	14	+2
Driveway Encroachments:	2	2	
Signage:	11	9	+2
Loading Zone:	1	1	
Area/Intersection Study:	4	4	
Parking Prohibition:	1	2	-1
Bus Stop:	0	0	
Geometric Issues:	2	1	+1
Parking Meters:	3	3	
Other:	0	0	
<b>TOTAL:</b>	<b>50</b>		



June 14, 2018

**TO:** Public Works Commission

**FROM:** Phillip Peterson, DPW Engineer Technician *PMP 6/14/18*

**CC:** Nicole Losch PTP, Senior Transportation Planner *N 6/14/18*

**RE:** Consent Agenda Item: Electric Vehicle (EV) Charging Station Main Street

**Recommendation:**

Staff recommends the Commission approve:

(7) No parking areas.

No person shall park any vehicle at any time in the following locations:

**(390)** On the south side of Main Street in the first two (2) spaces east of Church Street is reserved for use by electric vehicles only.

(26) Motorcycle parking.

The following locations are designated for the parking of motorcycles only:

**(8)** On the south side of Main Street in the third (3) space east of Church Street.

**Purpose & Need:**

The purpose of this request is to increase parking opportunities for Electric Vehicles (EV) in the downtown core. The need is to provide an EV space in the correct space where they have been designed to charge. Additionally, staff recommend maintaining the need for motorcycle parking in the downtown core by moving the motorcycle parking to an adjacent space.

**Project Checklist:**

	N/A	Yes	No	Reference
Aligns with MUTCD standards and/or established City Policy?	X			
Aligns with City plans?		X		
Followed Public Engagement Plan?		X		This project falls under INVOLVE on the Spectrum of Engagement and the minimum engagement strategies were met.

**Summary and Conclusion:**

Staff received a request from Burlington Electric, requesting the City add a new Electric Vehicle (EV) space next to the existing EV space on Main Street. Staff recommends the Commission approves the installation of an additional EV Parking space adjacent to the existing EV parking space on Main Street near Church Street. Additionally, staff recommend moving the motorcycle parking that currently exists (in the same space proposed to be an EV space) one space to the east.

**Public Outreach:**

Staff received an email from a local resident asking if we can relocate the motorcycle parking to the western most parking space at the Main and Church Street location; Staff believe making this change is not a possibility because the meter is already set in place for the two first spaces on Main Street directly east of Church Street. At the time of this memos completion Staff have attempted to contact Burlington Electric Engineers to confirm this assumption, and have not had any success. Given the electric meter is already in place, Staff feel confident in our assumption that moving the Motorcycle parking to the first parking space on Main Street east of Church Street is not possible at this time.

**Attachments:**

1. Initial Request
2. Site map
3. Public Outreach Email

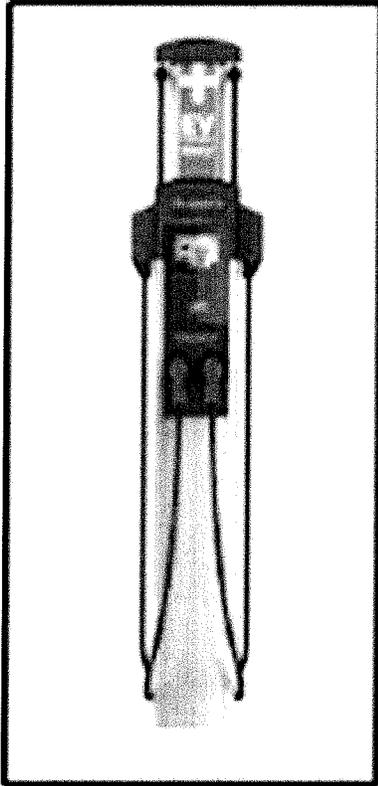
Good morning Patrick,

If helpful, I'd be glad to meet you at the Church and Main station to discuss details.

The station that we propose to install would be similar to the two that in your garage off of Cherry St. (Hotel Vermont).

It is a 'Level 2' station that would be able to charge 2 vehicles at once.

<https://www.chargepoint.com/products/commercial/ct4000/>



The CHAdeMO/SAE Combo. stations are "Level 3" (DC Fast Chargers). We don't have any immediate plans to install new Level 3 stations. However, related to the VW TDI settlement, there is money available for this purpose but, it is moving painfully slow. A colleague in our Policy & Planning Dept. is keeping us informed.

Thank you,  
Brian

Hello Patrick,

(I've cc'd. my supervisor, Chris Burns.)

During an snow storm this winter the cord from this station wasn't properly coiled/returned to the holder. (see attached photo)

It got buried/frozen in the snowbank and was damaged. We ended up replacing the damaged parts only to learn that ChargePoint (the manufacturer) will no longer be supporting this class of stations.

This model, ChargePoint CT2000 is what they call a *legacy* station. It was installed 5-years ago and was the City's first networked public EV charging station. To this date, it continues to be the most popular location in the City.

The newer ChargePoint stations belong to the CT4000 family and have many advantages over the CT2000. The biggest improvement, in my opinion, is the *cord management system* – which eliminates the chance of a cord laying on the ground (the cord automatically retracts when the plug is returned to the holster).

ChargePoint has offered BED a substantial discount on a new station if we retire the current one and purchase before July. The new stations typically have the ability to charge two vehicles at once. (Two cords, two spaces!).

My hope was to get a very general sense if the City was open to having a conversation about adding another dedicated EV charging parking space at this location. If so, I would send Management a reminder to pursue.

Most likely the conversation with your department would be initiated by our General Manager, Neale Lunderville.

Thank you,  
Brian

Dear Phillip,

My only feedback would be that the plan you sent to our office location intends to move the motorcycle parking spot one place over when really this motorcycle parking is very poorly designed. When cars are parked on either side it regularly happens that motorcycles get blocked in. Motorcycle parking could be done much more efficiently in the parallel parking spots rather than the diagonal ones. The far-Western spot in the Main/Church location would be much better suited for motorcycle parking, as there is overflow/drive out room to the West. The other two spots should be charging stations instead. So if possible I suggest swapping these around.

Regards,

Wolfgang Hokenmaier

Burlington resident and motorcyclist.



**NOTES:**  
 Staff recommends the Commission adopt:  
 (7) No-parking areas. No person shall park any vehicle at any time in the following locations:  
 (390) On the south side of Main Street in the first two (2) spaces east of Church Street is reserved for use by electric vehicles only.

**NOTES:**  
 Staff recommends the Commission adopt:  
 (26) Motorcycle parking. The following locations are designated for the parking of motorcycles only:  
 (8) On the south side of Main Street in the third (3) space east of Church Street.

NOT TO SCALE



PROPOSED  
 ELECTRIC VEHICLE (EV) PARKING  
 AND MOTORCYCLE PARKING  
 ON MAIN STREET



**BURLINGTON  
 PUBLIC WORKS  
 ENGINEERING DIV.**  
 100 STATE STREET  
 BURLINGTON, VT 05401  
 (802) 255-3000 (ext.)  
 (802) 255-3000 (fax)

DESIGNED PWP	DATE PWP	CHECKED PWP	DATE PWP
SCALE 1"=30'	DATE 08/24/18	SCALE 1"=30'	DATE 08/24/18
SHEET 1 OF 1			



June 14, 2018

**TO:** Public Works Commission

**FROM:** Phillip Peterson, DPW Engineer Technician *PMP 6/14/18*

**CC:** Nicole Losch PTP, Senior Transportation Planner *ll 6/14/18*

**RE:** • Consent Agenda Item: Proposed Changes to Accessible (ADA) Parking in the Downtown Core

Recommendation:

Staff recommends that the Commission adopt:

**7 No-parking areas.** No person shall park any vehicle at any time in the following locations:  
**(495)** On the south side of College Street in the second space west of Church Street, except for police vehicles.

**7A Accessible spaces designated.** No person shall park any vehicle at any time in the following locations, except automobiles displaying special handicapped license plates issued pursuant to 18 V.S.A. § 1325, or any amendment or renumbering thereof:

- (3)** The third space west of Church Street on the south side of College Street.
- (42)** On the east side of Pine Street, in the first space north of College Street.
- (44)** On the north side of Cherry Street in the first space east of St. Paul Street (van accessible).
- (82)** On the south side of Main Street in the second space west of Church Street.
- (100)** On the south side of Bank Street in the first space east of Church Street.
- (167)** On the north side of Cherry Street in the sixth space east of St. Paul Street.

Purpose & Need:

The purpose is to provide accessible parking on street as recommended by the Public Rights-of-Way Accessibility Guidelines (PROWAG). The need is to be ensure ADA spaces in the downtown core are in compliance with ADA standards.

Project Checklist:

	N/A	Yes	No	Reference
Aligns with MUTCD standards and/or established City Policy?		X		PROWAG

Aligns with City plans?		X		
Followed Public Engagement Plan?		X		This project falls under INVOLVE on the Spectrum of Engagement and the minimum engagement strategies were met.

Summary and Conclusion:

Staff received a request from the Vermont Center for Independent Living to investigate several Accessible (ADA) Parking spaces in the downtown core. The concern is physical barriers adjacent to the ADA parking spaces in the downtown Burlington area. Staff conducted an investigation and found several spaces which need to be relocated or physical adjustments need to be made. Staff recommend the Commission approve the relocation of these spaces.

Public Outreach:

Public outreach was conducted in accordance with the DPW Public Engagement Plan. DPW Staff had meetings with Flynn Center for the Performing Arts Executive Director John Killacky and Director of Facilities Jack Galt and Kountry Kart Deli Manager Mike Williams. Flynn Staff are supportive of the change, they want to make sure the new ADA space will still allow for drop off and pick up at the front of the theatre. Mr. Williams is also supportive of the change, however he is concerned DPW will remove the loading zone in front of Kountry Kart Deli; DPW Staff are recommending the relocation of the loading zone and not the removal.

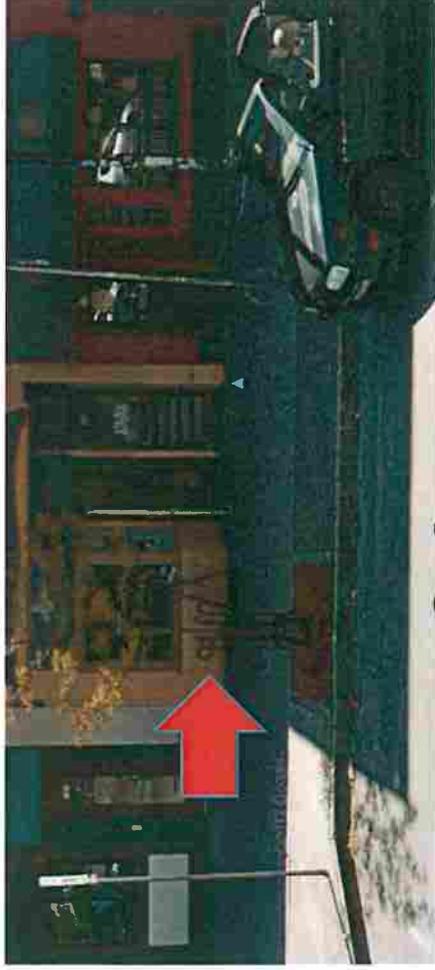
Attachments:

1. Initial request
2. Site map
3. Public Outreach

# Obstacles at Accessible Parking Spaces in Downtown Burlington

Burlington Advisory Committee On Accessibility

# Accessible Spot on Main Street



- Tree Blocking Access for People in Passenger Seat
- Accessible Parking Sign Bent

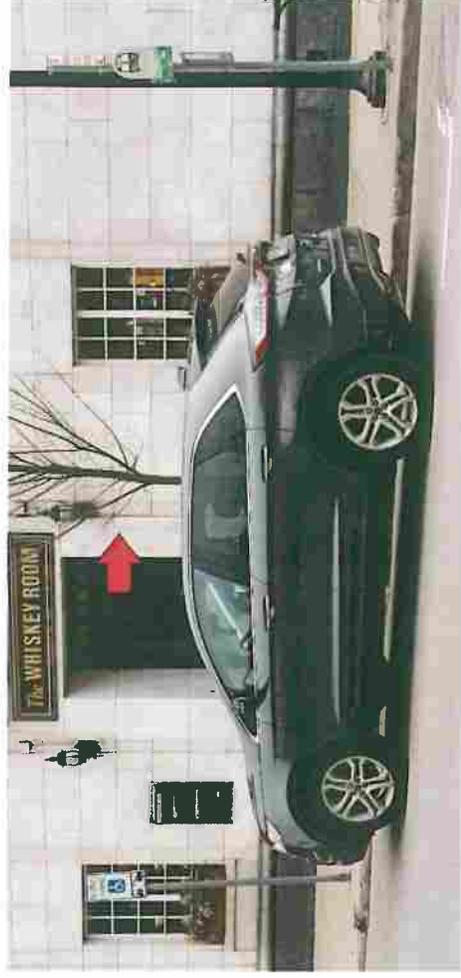
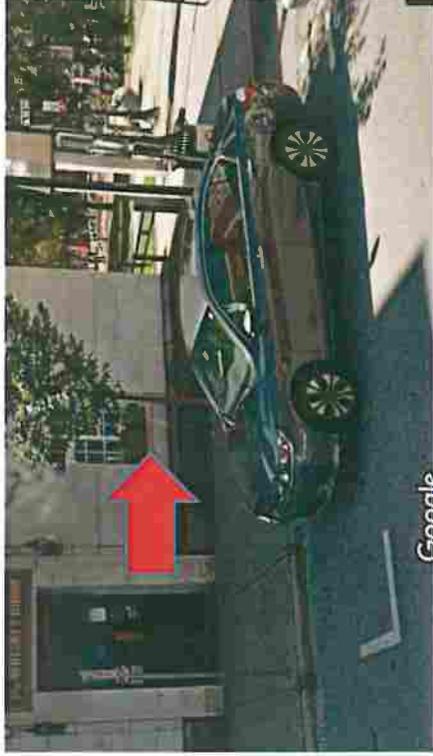


# Accessible Spot on Pine Street Across from People's United Bank



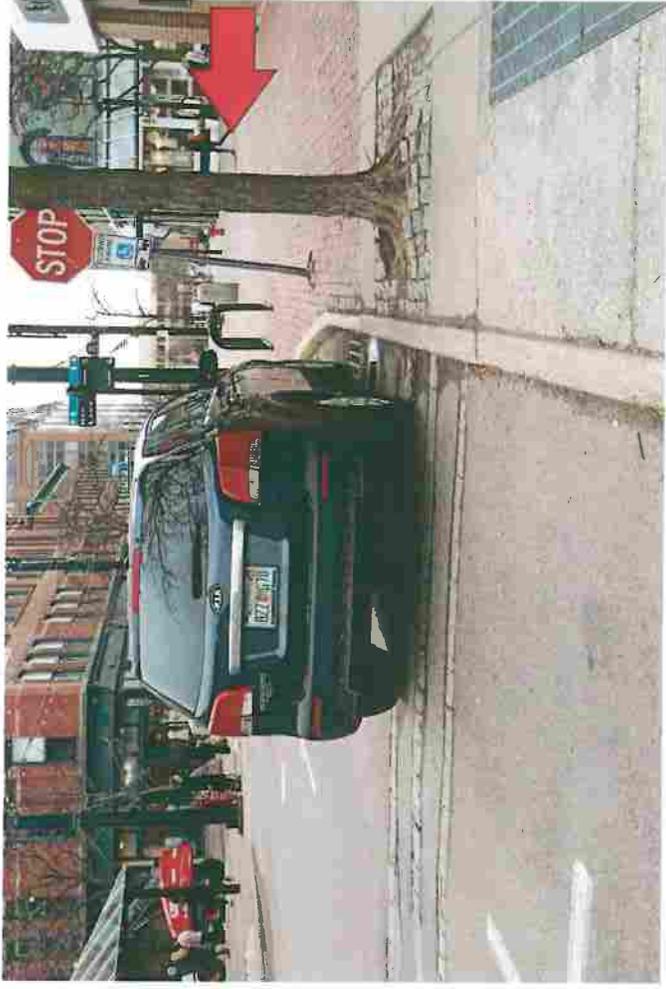
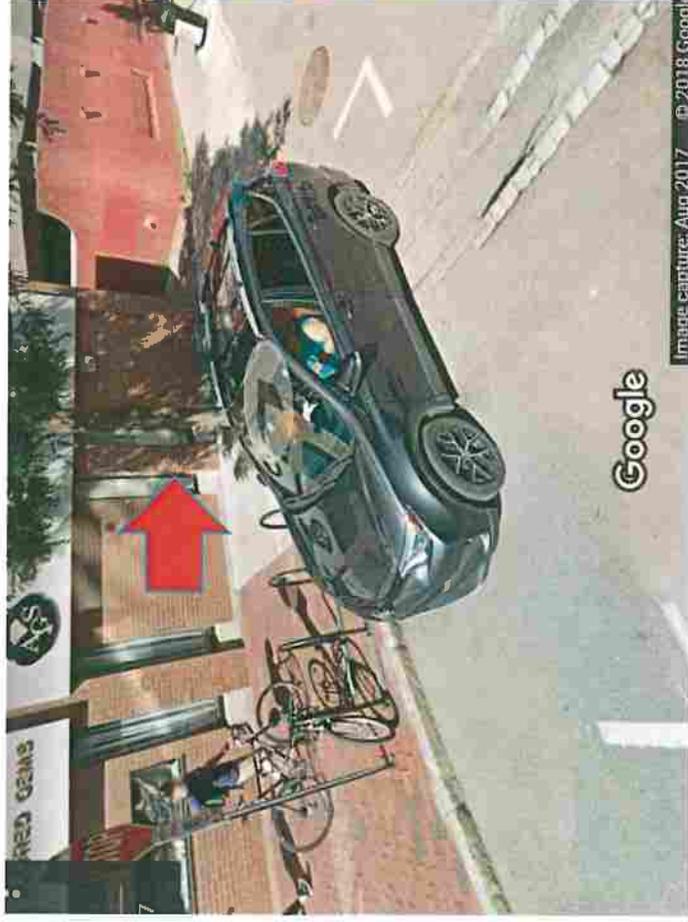
Empty Tree Plot Interferes with Passenger Door and/or  
Wheelchair Ramp/Lift

# Accessible Parking Space In Front of Whiskey Room



Tree Interferes with Passenger Door and/or Wheelchair Ramp/Lift

# Accessible Parking Spot on Bank Street



Tree Interferes with Passenger Door

# Accessible parking slot on Cherry Street



Tree Plot Interferes with Passenger Door





Church Street

College Street

EXISTING POLICE VEHICLES ONLY SPACE RECOMMENDED FOR REMOVAL

EXISTING ADA SPACE RECOMMENDED FOR REMOVAL

PROPOSED ADA SPACE



R7-8

NOT TO SCALE



PROPOSED CHANGES TO ACCESSIBLE PARKING SPACES IN THE DOWNTOWN CORE



**BURLINGTON PUBLIC WORKS ENGINEERING DIV.**  
 100 STATE STREET  
 BURLINGTON, VT 05401  
 (802) 255-3000 (ext. 240)

ISSUE NO.	DATE
1-1	1/15/15
REVISION	DATE
1-1	1/15/15
2-1	1/15/15
3-1	1/15/15
4-1	1/15/15
5-1	1/15/15
6-1	1/15/15
7-1	1/15/15
8-1	1/15/15
9-1	1/15/15
10-1	1/15/15



NOT TO SCALE



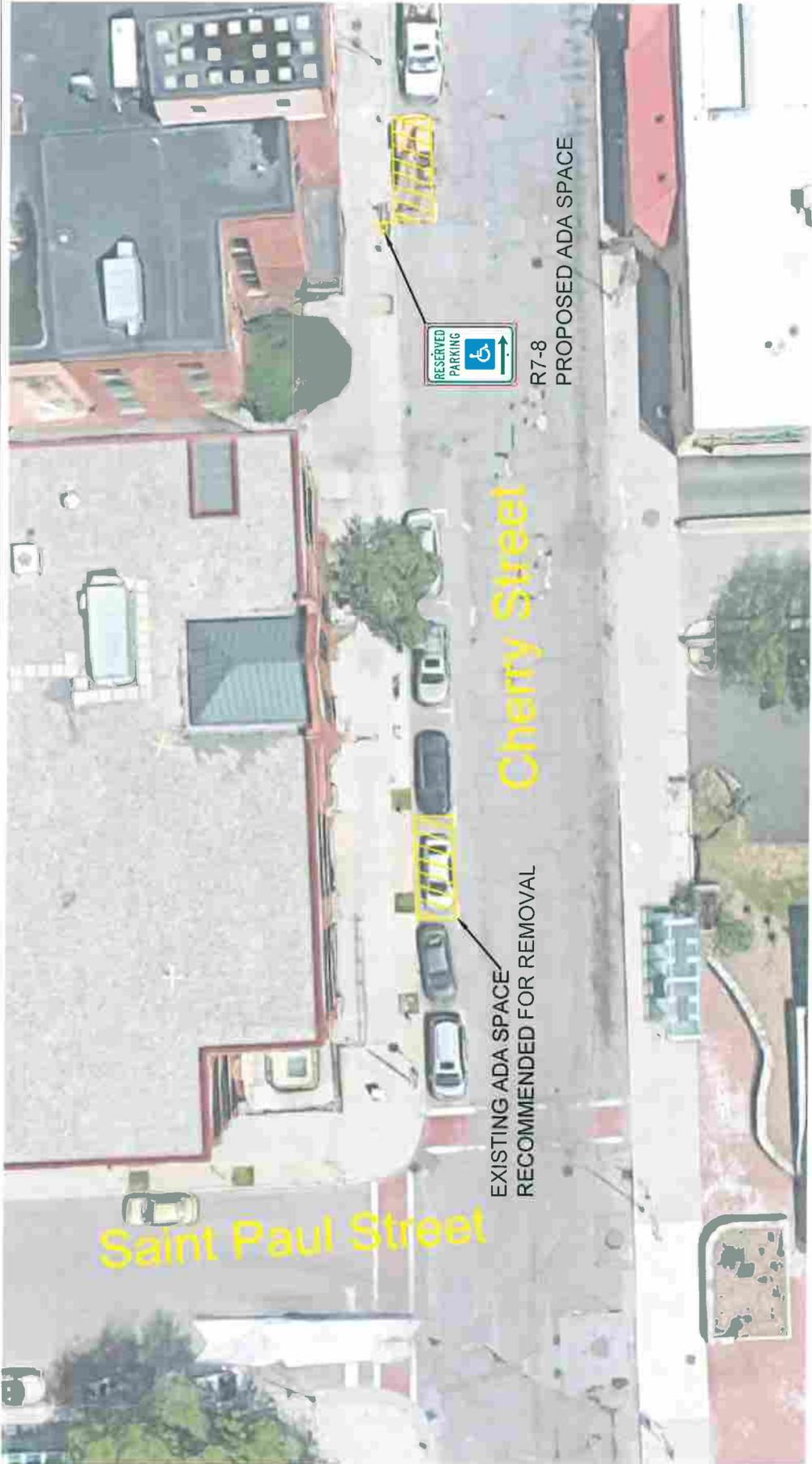
PROPOSED CHANGES TO ACCESSIBLE PARKING SPACES IN THE DOWNTOWN CORE



**BURLINGTON PUBLIC WORKS ENGINEERING DIV.**  
 440 FINE STREET  
 BURLINGTON, VT 05401  
 (802) 255-3000 (ext.)  
 (802) 255-3006 (fax)

DATE	BY	SCALE	SHEET NO.
ISSUED	DATE	DATE	OF
REVISION	DATE	BY	NO.

SHEET 1 OF 3



NOT TO SCALE

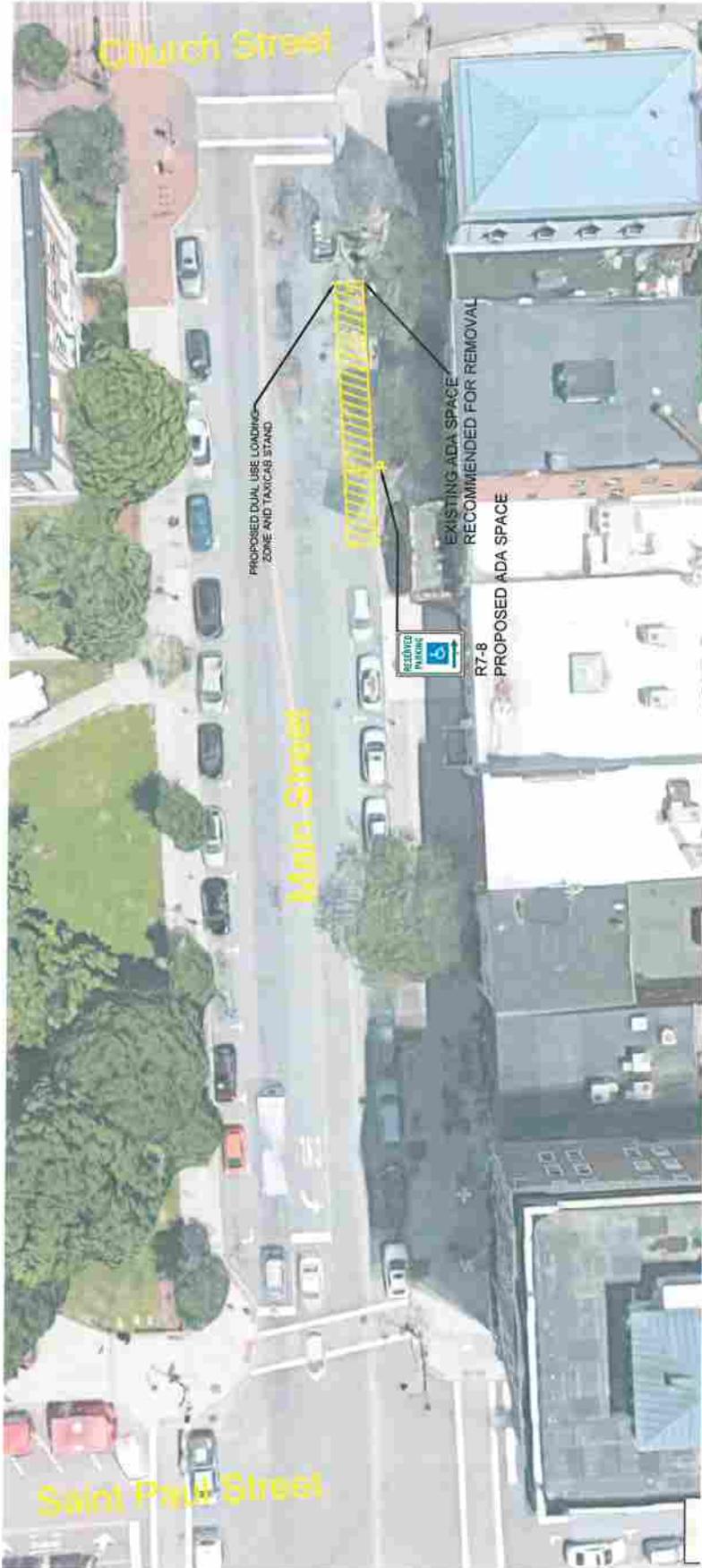


PROPOSED CHANGES TO  
ACCESSIBLE PARKING SPACES  
IN THE DOWNTOWN CORE



**BURLINGTON  
PUBLIC WORKS  
ENGINEERING DIV.**  
440 PINE STREET  
BURLINGTON, VT 05401  
(802) 255-3000 Fax

DESIGNED	DATE	BY	SCALE	SHEET NO.
CHECKED	DATE	BY	1"=50'	2 OF 8
DATE	DATE	DATE	DATE	DATE
02/20/18	02/20/18	02/20/18	02/20/18	02/20/18



NOT TO SCALE



PROPOSED CHANGES TO  
ACCESSIBLE PARKING SPACES  
IN THE DOWNTOWN CORE



**BURLINGTON, VT  
PUBLIC WORKS  
ENGINEERING DIV.**

ALL WORK SUBJECT TO  
CITY OF BURLINGTON  
DESIGN SPECIFICATIONS

DATE	BY	SCALE	SHEET NO.
10/20/15	ML	1"=40'	3 OF 3
PROJECT	DATE	SCALE	SHEET NO.
10/20/15	ML	1"=40'	3 OF 3



EXISTING ADA SPACE  
RECOMMENDED FOR REMOVAL

PROPOSED ADA SPACE

Finn Street

College Street

RESERVED  
PARKING



PROPOSED CHANGES TO  
ACCESSIBLE PARKING SPACES  
IN THE DOWNTOWN CORE



**BURLINGTON, VT  
PUBLIC WORKS  
ENGINEERING DIV.**

100 N. STATE STREET  
BURLINGTON, VT 05401  
(802) 255-3000 (Fax)

DATE	10/15/16
SCALE	1"=100'
PROJECT	PROPOSED ADA SPACE
DATE	10/15/16
SHEET 4 OF 8	

NOT TO SCALE

Hey Phillip,

We got the note left at our door step earlier today and we feel as though relocating the ADA spot in our area would be a great suggestion. Thank you for seeking out our input.

-Brendan

**The Sticky Brand**

**Stickers // Promotional Goods**

**Marketing & Consulting**

161 Main St

Burlington, VT 05401

1-844-6STICKY

**[orders@thestickybrand.com](mailto:orders@thestickybrand.com)**

**[www.facebook.com/thestickybrand](https://www.facebook.com/thestickybrand)**

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June 14, 2018

**TO:** Public Works Commission

**FROM:** Phillip Peterson, DPW Engineer Technician *PP 6/14/18*

**CC:** Nicole Losch PTP, Senior Transportation Planner *N 6/14/18*

**RE:** Consent Agenda Item: Removal of an Accessible (ADA) Parking Space on Summer Street

Recommendation:

Staff recommends that the Commission remove:

**7A Accessible spaces designated.** No person shall park any vehicle at any time in the following locations, except automobiles displaying special handicapped license plates issued pursuant to 18 V.S.A. § 1325, or any amendment or renumbering thereof:

**(160)** On the south side of Summer Street starting one hundred thirty-five (135) feet east of Front Street.

Purpose & Need:

The purpose of the ADA space was to provide a resident reasonable access to their home, and this is no longer needed. The need is to provide public parking on Summer Street.

Project Checklist:

	N/A	Yes	No	Reference
Aligns with MUTCD standards and/or established City Policy?		X		PROWAG
Aligns with City plans?		X		
Followed Public Engagement Plan?		X		This project falls under INVOLVE on the Spectrum of Engagement and the minimum engagement strategies were met.

Summary and Conclusion:

Staff received a request in May 2018 from Jim Elsman, a local resident of Summer Street, to remove an on-street accessible parking space close to his home. Mr. Elsman states the space was necessary so his mother-in-law, another resident of Summer Street, would have reasonable access to her home. Unfortunately, Mr. Elsman's mother-in-law passed away just recently. Mr. Elsman states that due to her

passing, the ADA space should be removed so other residents and the public may utilize it. Staff distributed flyers to the homes on Summer Street. Staff received three (3) responses from local residents, two were over the phone and one was via email; all of the responses support the proposed removal of the ADA space.

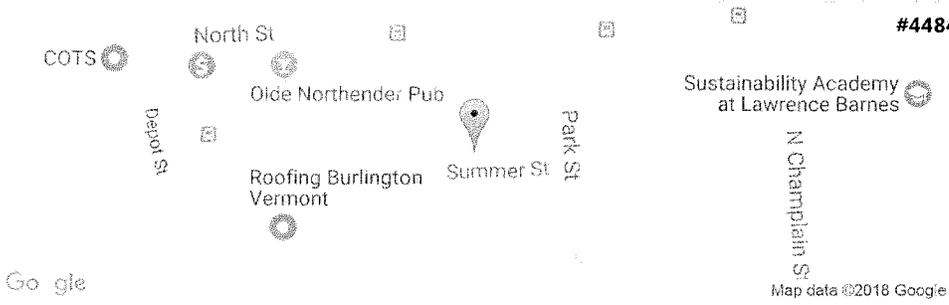
Attachments:

1. Initial request
2. Site map
3. Public Outreach Email

In Progress

Change Status

#4484831 (<https://seeclickfix.com/issues/4484831>)



44.4838378, -73.219992

**Other**

Created Date:  
05/24/2018 8:23 AM

14 Summer Street Burlington, VT

**Details**

The handicap sign that was put up a couple years ago they would like down as the woman has passed. Customer stated that they feel bad as no one is parking there and a lot of young kids live on the street and can't park there.

**Secondary Questions**

We may need your contact information to be able to follow up and ask additional questions as part of our standard operating procedure. What you include in this first box will not be made public and will only be seen by city staff. There is a second box below ('Description') where you should describe your issue. That is publicly accessible.



1 3

Category:  
**Other**

Recategorize

Assigned to:  
**You**

Assign

Due Date:  
**06/14/2018**

Change Due Date

SLA Expires at:  
**06/14/2018**

Priority:  
**Normal**

Prioritize



(<https://seeclickfix.com/accounts/297/prints/>)

**Status Log**

**Opened:**

19 days ago

**Acknowledged:**

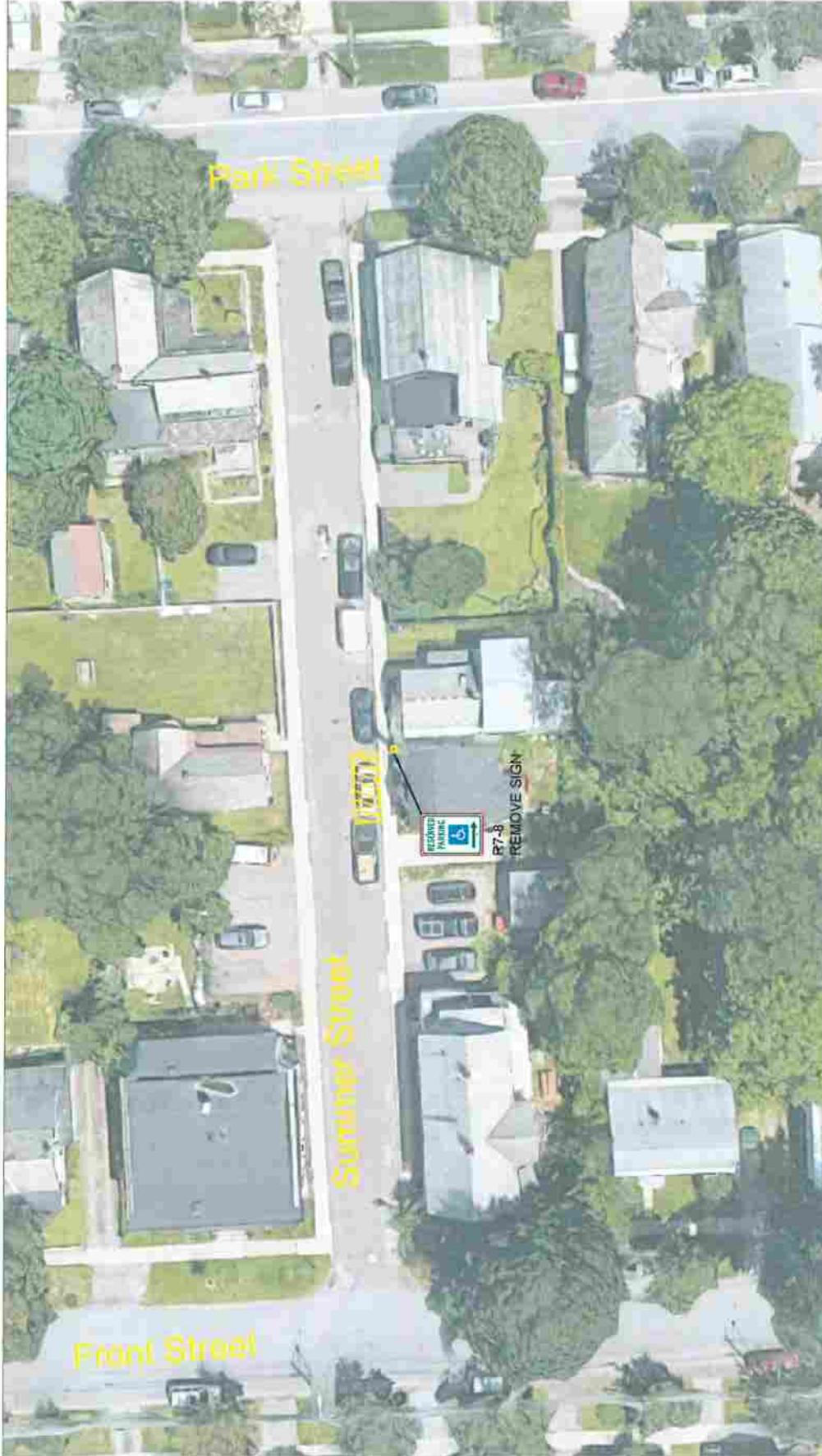
19 days ago

Report

Map

Requests

Menu



**NOTES:**

Staff recommends remove the following traffic regulation:  
 Appendix C, Rules and Regulations of the Traffic Commission  
 7A Accessible spaces designated. No person shall park any vehicle at any time in the following locations, except automobiles displaying special handicapped license plates issued pursuant to 18 V.S.A. § 1325, or any amendment or renumbering thereof: (b) On the south side of Summer Street starting one hundred thirty-five (135) feet east of Front Street.

**NOT TO SCALE**



SUMMER STREET  
 REMOVAL OF AN  
 ACCESSIBLE PARKING SPACE



**BURLINGTON  
 PUBLIC WORKS  
 ENGINEERING DIV.**  
 544 PINE STREET  
 BURLINGTON, VT 05401  
 (802) 253-3000 (Fax)

ISSUED	DATE	BY	SCALE	DRAWING NO.
DATE	BY	SCALE	DRAWING NO.	
CHECKED	DATE	BY		
DATE	BY			

Hello Phillip,

My wife and I are in support of removal of this ADA designated space. The older woman who initially lobbied to have the space install for her use has passed away as of last Thursday. We need all the parking we can get in this neighborhood, especially during the summer months.

Thank you,  
Jesse & Ashley Wilkinson  
Residents - 26 Summer Street



June 14, 2018

**TO:** Public Works Commission

**FROM:** Phillip Peterson, DPW Engineer Technician PMA 6/14/18

**CC:** Nicole Losch PTP, Senior Transportation Planner N 6/14/18

**RE:** ~~Consent~~ Agenda Item: Midblock Crossing Signals & Signs

Recommendation:

Staff recommends that the Commission remove:

**2 Traffic-control light locations.** (a) Traffic-control light signals are hereby established at the following locations:

- (67)** North Champlain Street at Lawrence Barnes School driveway.
- (71)** 230 St. Paul Street.

*\*The Pearl Street and Church Street traffic signal is not included because it is not currently in ordinance.*

Purpose & Need:

The purpose is to maintain compliance with the Manual on Uniform Traffic Control Devices (MUTCD), which is the federal standard that describes the basic principles for evaluating traffic control devices. The need is to maintain safe conditions for pedestrians by replacing traffic control lights with Rapid Rectangular Flashing Beacon (RRFB) crossing devices.

Project Checklist:

	N/A	Yes	No	Reference
Aligns with MUTCD standards and/or established City Policy?		X		MUTCD
Aligns with City plans?		X		
Followed Public Engagement Plan?		X		This project falls under INVOLVE on the Spectrum of Engagement and minimum engagement strategies were met.

#### Summary and Conclusion:

The Department of Public Works (DPW) is proposing three places where pedestrian controlled traffic signals be replaced with Rapid Rectangular Flashing Beacons (RRFB). The three traffic signals we would be replacing would be at North Champlain Street at the Sustainability Academy driveway, at 230 St. Paul Street, and at the top of Church Street and Pearl Street. Based on the Manual on Uniform Traffic Control Devices (MUTCD), traffic signal control can be useful as a safety measure if certain traffic conditions exist. Safety concerns associated with traffic control include pedestrians, bicyclists, and all road users expecting other road users to stop. However, these three locations do not meet the criteria for traffic control signals. Unwarranted Traffic Signals do not reduce accidents and may increase the potential for accidents. Due to this, Staff recommend the commission remove these traffic signals and replace with RRFB pedestrian crossing signals. RRFBs are a new tool and were not available when these signals were initially installed.

#### Public Outreach:

Public outreach was conducted in accordance with the DPW Public Engagement Plan. DPW Staff had meetings with the Principal of the Sustainability Academy, LaShawn Whitmore-Sells. The Sustainability Academy (formerly known as Lawrence Barnes School) driveway is located off the North Champlain Street traffic signal. Principal Whitmore-Sells feels changing the traffic signal to a RRFB system is good, she thinks the RRFBs will actually be more visible than the current traffic signal. Additionally, DPW Staff met with Charles Bishop, Site Manager Decker Towers; Mr. Bishop represents the Burlington Housing Authority (BHA). Decker Towers is adjacent to the 230 St. Paul Street pedestrian activated traffic control signal that DPW Staff hope to replace with a RRFB. Mr. Bishop thinks the change is good, however he is concerned about his tenant's ability to manage the RRFBs. Mr. Bishop is concerned some of his tenant's will just start walking into the streets as soon as they activate the RRFB, instead of pushing the RRFB button and waiting for pedestrian walk signal before proceeding across St. Paul Street. Mr. Bishop states that a certain population of Decker Tower tenants have significant developmental delays, and this is the basis for his concern. Staff are sensitive to Mr. Bishop's concern; however, RRFBs have been nationally accepted for vulnerable populations. Ultimately, Staff believe the traffic signal may be an unsafe condition; unwarranted signals used to control traffic may cause accidents to increase drastically. Additionally, staff will post RRFB safe operation signs at the 230 St. Paul Street and Pearl Street locations.

#### Attachments:

1. Site map
2. Public Outreach email
3. RRFB Operation Sign



**NOTES:**  
 Staff recommends removal of the following ordinance:  
 Appendix C: Rules and Regulations of the Traffic Commission  
 2 Traffic-control light locations. (a) Traffic-control light signals are hereby established at the following locations: (67) North Champlain Street at Lawrence Barnes School Driveway.

NOT TO SCALE



PROPOSED CROSSWALKS WITH  
 RAPID RECTANGULAR FLASHING  
 BEACONS (RRFB)



**BURLINGTON  
 PUBLIC WORKS  
 ENGINEERING DIV.**  
 100 STATE STREET  
 BURLINGTON, VT 05401  
 (802) 255-3000 (Fax)

DESIGNED PWP	DRAWN PWP	CHECKED ML	DATE 06/20/18
PROJECT NO.	SCALE 1"=30'	DRAWING NO.	SHEET 1 OF 3



NOT TO SCALE



PROPOSED CROSSWALKS WITH  
RAPID RECTANGULAR FLASHING  
BEACONS (RRFB)



**BURLINGTON  
PUBLIC WORKS  
ENGINEERING DIV.**  
100 W. BURLINGTON ST. SUITE 400  
BURLINGTON, VT 05401  
(802) 255-3000 (ext.)

DESIGNED PWP	DATE 11/14	SCALE 1"=20'	SHEET NO. 1
CHECKED PWP	DATE 11/14	DATE 11/14	SHEET 2 OF 3



**NOTES:**

Staff recommends removal of the following ordinance:

Appendix C: Rules and Regulations of the Traffic Commission

- 2. Traffic-control light locations. (a) Traffic-control light signals are hereby established at the following locations: (71) 230 St. Paul Street

NOT TO SCALE



PROPOSED CROSSWALKS WITH  
RAPID RECTANGULAR FLASHING  
BEACONS (RRFB)



**BURLINGTON  
PUBLIC WORKS  
ENGINEERING DIV.**  
100 PARK STREET  
BURLINGTON, VT 05401  
(802) 255-3000 (ext)

DESIGNED DATE	DATE	REV. NO.	REV. DATE
DRAWN DATE	DATE	SCALE	1"=50'
CHECKED DATE	DATE	DATE	DATE
DATE	DATE	DATE	DATE

Thank you for stopping in and explaining the proposed change. I would like to voice my concern over the change due to the population that lives at 230 St.Paul. Decker Towers houses both elderly and disabled individuals, some of whom have significant developmental delays. My concern is obviously for their safety, fact being that drivers are more apt to stop for a red light Vs. flashing orange lights at a crosswalk. Though i understand change can be difficult, i feel that weighing the risk of an injury or a fatality should be discussed when making decisions that affect public safety under the circumstances that i have outlined above. in conclusion i feel this proposed change could negatively effect the safety of those crossing at the 230 St.Paul cross walk.

Thank you for the opportunity to voice my concerns.



**PUSH BUTTON  
TO TURN ON  
WARNING LIGHTS**



**CHECK FOR  
TRAFFIC. LOOK  
LEFT, RIGHT AND  
LEFT AGAIN**



**CHECK THAT  
VEHICLES STOP  
BEFORE  
ENTERING  
CROSSWALK**



June 14, 2018

TO: Public Works Commission

FROM: Nicole Losch, PTP, Senior Planner

RE: 2018 VTrans Bicycle and Pedestrian Grant Program Candidates

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### Recommendations

Staff recommends the Commission host a public comment forum to discuss the City's grant candidates for the 2018 VTrans Bicycle and Pedestrian Grant Program.

### Introduction

Each year the Vermont Agency of Transportation offers funding through the Bicycle and Pedestrian Program. This year, funding is available in three categories: Scoping, Small Construction, and Design/Construction. The City may apply for one project in each category and projects must have a strong, direct benefit for bicycle and pedestrian improvements. A local match is required for each project (20% for Scoping and Design/Construction and 50% for Small Construction).

The projects were selected after discussing potential projects with the Department of Parks, Recreation, and Waterfront (DPRW) and with the Mayor's office. This year's projects include:

1. **Scoping for intersection improvements at East Avenue / Colchester Avenue and protected bike lanes on Colchester Avenue** as recommended in the *2011 Colchester Avenue Corridor Study* and *2017 planBTV Walk Bike*.
2. **Small construction of a raised intersection for pedestrian safety at the intersection of North Avenue / Berry Street / Washington Street** as recommended in the *2015 North Avenue Corridor Study*. The raised intersection will provide pedestrian safety improvements without overusing rectangular rapid flashing beacons (RRFBs), which are already planned for crosswalks north and south of this intersection. This concept has been vetted by the Burlington Fire Department and has their support.
3. **Design / Construction for additional funding to reconstruct and extend the Colchester Avenue sidepath between Prospect Street and East Avenue**. This year marks the first time additional points may be added to project applications if active grant-funded projects require additional funding. The Colchester Avenue sidepath is already grant-funded and in design, but the engineer's estimate

indicates a significant funding gap to complete construction. Utilizing additional grant funds will allow the city to leverage 80% of the project cost for other capital projects.

While the Public Works Commission is not required to endorse or approve these projects, the Commission has endorsed or adopted many of the City's Master Plans and Studies that guide our work and that have influenced the projects that were considered. In addition, Commission meetings provide an important opportunity for the community to provide feedback on the City's grant applications prior to submission. We will also be notifying Councilors in the ward and district where these projects are located.

For more information on the State's Bicycle and Pedestrian Grant Program, visit:

<http://vtrans.vermont.gov/highway/local-projects/bike-ped>

## Draft Burlington Dept. of Public Works FY'19 Key Initiatives

	DIVISION	KEY INITIATIVE	Operational Excellence	Exemplary Cust. Serv.	Culture of Innovation	EXPECTED OUTCOMES & METRICS	COMMISSION ROLE
1	DPW-wide	Stand up city-departmental asset management program to advance City's capabilities, restructure staffing as needed and procure CMMS (computerized maintenance management system)	✓	✓	✓	Complete AM Phase II for GF and make any structural changes to reporting structures in FY'20 budget. Procure CMMS tool in FY'19/20.	Provide feedback on draft plan
2	DPW-wide	Continue to close capital funding gaps across asset classes (Water, WW, Stormwater, Fleet, Streets, Sidewalks, Signals, Facilities) by developing and implementing funding strategies with stakeholders	✓			Adequate capital funding levels replace assets on schedule, increase service reliability and reduce costly emergency repairs. Metrics include annual capital expenditures vs.the total annual capital needs for each asset class..	Evaluate and recommend funding strategies
3	DPW-wide	Enhance growth opportunities within department	✓	✓	✓	Increase professional development and job shadowing to further increase productivity of workforce, staff morale and internal promotions. Metric: At least 90% of staff takes advantage of professional development opportunity yearly.	
4	DPW-wide	Increase commitment to the City's diversity and equity goals	✓	✓	✓	DPW staff, Commission, and engaged community members reflect the diversity of our city. Equity metrics included in BTV Stat presentations.	
5	DPW-wide	Strengthen safety program	✓	✓		Safety Officer hired. Actively participate in citywide risk management effort. DPW Safety Team meets at least quarterly. Host voluntary Project Worksafe audits. Metric: Reduction in recordable incidents and lost time injuries.	
6	Maintenance, CT, Parks	Decide on management structure to oversee fleet, facilities and asset management in partnership with other departments			✓	Complete consultant reports. Get DH's, Mayor and Council to support any necessary re-org and implement restructuring.	Review provide feedback on study recommendations
7	Maintenance	Transition solid waste collection system for garbage, recycling and organics to a more integrated system.		✓	✓	Complete consolidated collection study in FY'19. Get Council to approve recommendations in FY'20.	Review study and recommend approval to City Council.
8	Tech Services, Maintenance	Expand preventative maintenance program of pavement, sidewalk, guardrails, railings, fences, valves and other infrastructure that has not been traditionally funded	✓			Better maintenance of all infrastructure within the ROW. Activities are budgeted for and completed. Number of potholes, sewer plugs, main breaks decrease.	
9	Tech Services	Increase capacity in Technical Services by successfully filling open positions and increasing utilization of consultants	✓	✓		Team has resources to tackle additional capital projects identified in the City's capital plan and Mayor's high priority projects.	

## Draft Burlington Dept. of Public Works FY'19 Key Initiatives

10	Tech Services, CIO, Code, P&Z	Implement permit reform recommendations	✓	✓	✓	Improve trades permitting process with automation, streamlining process, customer service training and one-stop permitting.	
11	Tech Services, Water Res.	Develop engineering standards	✓		✓	Contract out development of City engineering standards, specifications that will efficiently direct future investments. Build off of downtown's Great Streets Standards.	Recommend adoption of standards to Council
12	Tech Services, Water Resources	Advance high priority capital projects in accordance with project schedules	✓			High priority projects (Champlain Parkway, Downtown Great Streets, PlanBTV Walk/Bike implementation) advance on schedule. Metric: Projects advance according to project schedules. Annually budgeted capital projects completed.	
13	Traffic	Implement comprehensive upgrade to garage operations including an enhanced PARCS system	✓	✓	✓	New PARCS system allows for improved garage operations. Metric: PARCS system installed, new job descriptions approved, new dynamic singage running, new validation and lease options, net revenue growing YtY.	Review and approve new lease and rate changes
14	Traffic, Water Resources, CT office, Schools	Improve cost allocations between DPW and other departments (ie. have Water credited for fire protection service, contain growth of PILOT payments, end payment for parking enforcement, transfer crossing guard program to schools)	✓			More appropriate cost allocations between departments / funds. Would enable Traffic and Water divisions to better reinvest in their aging systems.	
15	Water Resources	Secure borrowing for upcoming Wastewater capital work in 2019.	✓			After completion of capital planing, we are preparing to borrow for \$8-10M of plant upgrades and \$3-5M of pipe upgrades.	Recommend Council place bond item on March 2019 ballot.
16	Water Resources	Complete & begin implementing Integrated Water Quality Management Plan -- outlining how City will meet its various Clean Water Act regulatory obligations and its local water quality priorities.	✓		✓	Metrics: Obtain SRF funding, complete interim project milestones such as: wet weather/stormwater master plan, selection of high priority projects, completion of financial capability analysis.	Review final Integrated Plan
17	Water Resources	Project and establish sustainable rate structure for Water, Wastewater and Stormwater	✓	✓		Develop a multi-year rate structure that will balance future budgets while accomplishing the division's goals.	Review proposed rate structure, recommend to Council
18	Water Resources	Comply with TMDL (Total Maximum Daily Load) regulations -- and continue to be actively involved in statewide policy related to Clean Water.	✓		✓	Obtain reasonable WWTP discharge permits in early FY'19. Continue optimization efforts to help us maintain compliance.	Monitor policy and understand cost impact
19	Water Resources	Strengthen billing and revenue assurance programs	✓	✓		Hire consultant to recommend priority actions to simplify and strengthen our internal controls and implement recommendations. Revise billing system to have monthly base charge instead of minimum consumption charge if recommended by consultant.	Recommend Council adopt necessary ordinance changes.

Burlington Department of Public Works Commission Meeting  
Draft Minutes, 18 April 2018  
645 Pine Street

**Commissioners Present:** Robert Alberry; Tiki Archambeau (Chair); Solveig Overby; Jeff Padgett (*via phone at 6:35pm*); Justine Sears (Vice Chair). **Commissioners Absent:** Jim Barr; Chris Gillman (Clerk).

**Item 1 – Call to Order – Welcome – Chair Comments**

Chair Archambeau calls meeting to order at 6:33pm and makes opening comments.

**Item 2 – Agenda**

Commissioner Alberry makes motion to accept agenda and is seconded by Vice Chair Sears.

Action taken: motion approved;

“Ayes” are unanimous.

*\*\*Commissioner Padgett phones in\*\**

**Item 3 – Public Forum (3 minute per person time limit)**

Jason Van Driesche, Ward 5, speaks on leaving Local Motion in May 2018 and Agenda Item 5.

Erin Malone, Ward 2 businessperson, speaks on Consent Agenda Items E and F.

Hans van Wees, Ward 3 businessperson, speaks on Agenda Item 5.

Caryn Long, Ward 1, speaks on street parking, speed limit enforcement, and Agenda Item 5.

**Item 4 – Consent Agenda**

A. Traffic Status Report

B. Taxicab Stand/Loading Zone Dual Use & Proposed Parking Meter Zone

C. Accessible Space Johnson Street

D. Meters on Lower Church St & King St

E. 15-Minute Parking on North Willard St

F. Truck Loading on North Street

G. No Right Turn on Red on North Union Street at Pearl St

Commissioner Alberry makes motion to accept Consent Agenda and is seconded by Vice Chair Sears.

Action taken: motion approved.

“Ayes” are unanimous.

**Item 5 – Conceptual Plans for Bank Street & Cherry Street**

A) Communication by DPW Engineer Laura Wheelock and CEDO Senior Projects and Policy Specialist Kirsten Merriman Shapiro who speak on the Bank St & Cherry St conceptual plans.

B) Commission Questions

Chair Archambeau, Vice Chair Sears, and Commissioner Overby ask questions on Item 5 with DPW Director Chapin Spencer, Engineer Wheelock, and Specialist Merriman Shapiro answering.

C) Public Comment

Caryn Long, Ward 1, speaks on Item 5 with DPW Senior Transportation Planner Nicole Losch and Specialist Merriman Shapiro answering.

Hans van Wees, Ward 3 businessperson, speaks on Item 5.

D) Commissioner Discussion

Commissioner Overby engaged in a discussion over Item 5.

E) Action Requested – None.

**Item 6 – Water Billing Update**

A) Communication by Director Spencer and Assistant DPW Director – Water Resources Megan Moir who speak on the water billing anomaly follow-up.

B) Commission Questions

Chair Archambeau and Commissioner Overby ask questions on Item 6 with Director Spencer and Assistant Director Moir answering.

C) Public Comment

D) Commissioner Discussion

E) Action Requested – None.

**Item 7 – Approval of Draft Minutes of 3-21-18**

Commissioner Alberry makes motion to accept draft minutes of 3-21-18 and is seconded by Commissioner Overby.

*\*\*Chair Archambeau, Commissioner Overby, and Director Spencer engaged in a discussion over Item 7\*\**

Action take: motion approved;

“Ayes” are unanimous.

**Item 8 – Director’s Report**

Director Spencer reports on the Champlain Parkway right-of-way process, the Public Engagement Plan update, the new revenue control system in the garages, and the Monday (16 April) release at the Waste Water Treatment Plant of 7 million gallons of partially disinfected effluent. Chair Archambeau and Commissioner Overby ask questions on the effluent release with Assistant Director Moir answering. Commissioner Overby asks questions on the Champlain Parkway and the new garage revenue control system with Director Spencer answering.

**Item 9 – Commissioner Communications**

Vice Chair Sears comments on how Public Works takes comments/suggestions with Director Spencer responding and on the traffic calming process for Ward St. Commissioner Overby comments on the street parking comment brought up in Public Comments with Director Spencer responding. Chair Archambeau comments on German Street parking, in connection to the narrow/yield streets plan, with Director Spencer responding.

**Item 10 – Adjournment & Next Meeting Date – May 16, 2018**

Motion to adjourn made by Commissioner Alberry and seconded by Vice Chair Sears.

Action taken: motion approved;

“Ayes” are unanimous.

Meeting adjourned at 8:34pm.

Burlington Department of Public Works Commission Meeting  
Draft Minutes, May 16, 2018  
645 Pine Street

**Commissioners Present:** Robert Alberry; Tiki Archambeau (Chair); Jim Barr; Chris Gillman; Solveig Overby; Jeff Padgett (*via phone at 6:35pm*). **Commissioners Absent:** Justine Sears (Vice Chair)

**Item 1 – Call to Order – Welcome – Chair Comments**

Chair Archambeau calls meeting to order at 6:30 pm and makes opening comments.

**Item 2 – Agenda**

Commissioner Alberry makes motion to accept agenda and is seconded by Commissioner Gillman.

Action taken: motion approved;

“Ayes” are unanimous. Jeff Padgett via phone

**Item 3 – Public Forum (3 minute per person time limit)**

Steve Norman speaks about adding signage in French language throughout city

Marianne Ward speaks about parking on Summit Street

Matt Vaugh speaks on the Bank Street and Cherry Street redesign

**Item 4 – Consent Agenda**

A. Traffic Status Report

B. Lake Street Meter Changes

C. Lake Street Extension Lot Kiosks

D. St. Paul Street Accessible Spaces & Loading Zones

E. Intervale Avenue “No Parking” Zone

F. Pearl Street Motorcycle Parking Zone

Commissioner Barr makes motion to accept Consent Agenda and is seconded by Commissioner Padgett.

Action taken: motion approved.

“Ayes” are unanimous.

**Item 5 – Great Streets Bank Street & Cherry Street Concept**

A) Communication by DPW Engineer Laura Wheelock and CEDO Senior Projects and Policy Specialist Kirsten Merriman Shapiro who speak on the Bank St & Cherry St conceptual plans.

B) Commission Questions

Chair Archambeau, Commissioner Overby, Commissioner Barr and Commissioner Alberry ask questions on Item 5 with DPW Director Chapin Spencer, Engineer Wheelock and City Engineer Baldwin responding.

C) Public Comment

Matthew Vaughn, Councilor Maxwell Tracy, Hans Van Well and Kelly Devin speak on Item 5 with DPW Engineer Wheelock and Director Spencer answering questions.

Hans van Wees, Ward 3 businessperson, speaks on Item 5.

D) Commissioner Discussion

Commissioner Overby engaged in a discussion over Item 5.

E) Action Requested – Vote.

Commissioner Alberry made a motion to accept staff’s recommendation. Jim seconded the motion with a proposed amendment: “Recommend the City Council approve the conceptual designs for improvement to Bank Street (between Church and Pine Streets) and Cherry Street (between Church and Battery Streets) –

with the consideration of an eastbound bike lane on Cherry Street on the south side from Battery to Pine Streets – on May 21, 2018.

Commissioner Alberry stated he didn't want to give up parking but was okay with amendment as worded, so it was considered friendly.

VOTE: Commissioners Padgett, Alberry, Gillman and Barr yes. Commissioners Archambeau and Overby no.

**Item 6 – DPW Draft FY19 Key Initiatives**

- A) Communication by Director Spencer also stated that the yearly review of himself and City Engineer Norm Baldwin would take place tonight.
- B) Commission Questions Commissioner Overby stated that she would like to look at the document more carefully and discuss next month.
- C) Public Comment
- D) Commissioner Discussion
- E) Action Requested – To be brought back for June meeting for closer review by Commissioners.

**Item 7 – Approval of Draft Minutes of 4-18-18**

Commissioner Gillman stated that there was no quorum available to approve minutes from last month as himself and Commissioner Barr were both absent the previous month, Commissioner Overby was not there this evening and Commissioner Alberry had to leave earlier this evening. The April minutes will be voted on at the June meeting.

**Item 8 – Director's Report**

Director Spencer reports on the the Department's Budget, Sustainable Investment Plan, Champlain Parkway and review of the Residential Permit Parking program.

**Item 9 – Commissioner Communications**

Commissioner Barr thanked the Street Department for the street repairs.  
Commissioner Overby stated there was a lot of activity going on and people are happy.  
Commissioner Archambeau stated the map of sidewalk work not found on website, bike lane on North Union Street not swept and asked about all the broken bollards.

**Item 10 – Executive Session – Director and City Engineer Annual Review**

Motion to adjourn by: Jim Barr. Seconded by: Jeff Padgett. Approved by: Padgett, Gillman, Archambeau, Barr, Overby.

Meeting adjourned at 10:21 p.m.



**CITY OF BURLINGTON  
DEPARTMENT OF PUBLIC WORKS**

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To: DPW Commissioners  
Fr: Chapin Spencer, Director  
Re: **Director's Report**  
Date: June 13, 2018

**THANK YOU JEFF!**

This upcoming meeting will be the last for Commissioner Jeff Padgett as he has decided not to reapply. Thank you Jeff for your two tours of duty on the Commission – and especially those serving as Commission Chair!

**DRAFT FY'19 KEY INITIATIVES:**

The Department's proposed key initiatives for FY'19 are attached again this month for your review. These key initiatives have guided the budget development for the coming fiscal year. In some years, the Commission has voted to accept the initiatives, some years the Commission has chosen to simply provide input. We will notice possible action on this item should the Commission want to vote to accept these key initiatives for FY'19.

**FOLLOW-UP ON WASTEWATER RELEASES:**

The Commission received the information release we provided to the public on the release of treated but partially-disinfected effluent on June 2 and June 4. The releases were due to the main plant's stressed biological process combined with wet weather events. The plant's biological process has been challenged by high-strength and variable influent we are receiving likely driven in significant part due to the growth of area food and beverage producers in our main plant sewer shed. We are continuing to take important steps to address this challenge:

- ) We are working with external wastewater experts to get the plant's biological process back to health
- ) We have met with the largest breweries in the City and we are working with them to enhance sampling of their waste streams and have them develop pollution prevention plans
- ) We are continuing our long standing efforts to reduce peak stormwater surges to our main WWTP

We put together the attached memorandum to provide a comprehensive overview of our Department's commitment over multiple decades to protect public health and our waterways. Please don't hesitate to contact Assistant Director Megan Moir or me with any questions.

**CHAMPLAIN PARKWAY RIGHT-OF-WAY PROCESS**

The Champlain Parkway continues through the Right-Of-Way process. On June 4, the City Council accepted Findings of Fact after the Necessity Hearing and determined there was necessity to acquire the remaining rights needed to construct the project. There are about 10 properties remaining where rights need to be secured. Most rights are only temporary – needed for the construction phase. None of the rights needed involve acquiring land that will impact structures. More information is on the project's website: [www.champlainparkway.com](http://www.champlainparkway.com).

### **RAILYARD ENTERPRISE PROJECT**

There was a community Steering Committee meeting for the Railyard Enterprise Project on May 30. The committee reviewed the three variants of Alternative 1B for a potential local/state funded project. The presentation and additional information can be found on this website:

<https://www.ccrpcvt.org/our-work/transportation/current-projects/scoping/railyard-enterprise-project/>

### **AMTRAK STORAGE & SERVICING STUDY**

At the City's request, the CCRPC is conducting a study to evaluate locations to store and service the Amtrak train overnight when passenger rail service is restored to Burlington in 2021 or 2022. There was a public meeting on June 6 for the consultants to update the community on the work to date and to get input from the public. The presentation and other information can be found on the following website: <https://www.ccrpcvt.org/our-work/transportation/current-projects/scoping/burlington-amtrak-overnight-storage-study/>. The consultant's study suggests Union Station is the most appropriate location. Public input at the meeting was strongly behind the railyard location. The study's findings and public input will be shared with VTtrans who ultimately will be reviewing the information and determining the best location.

### **COMMISSION'S FY'18 ANNUAL REPORT TO COUNCIL**

Chair Archambeau and I are working on a draft report to the City Council on the Commission's work over the past fiscal year. We will provide the document to the Commission for your review in advance of the meeting and then will have a hard copy at the meeting. We will seek the Commission's approval of the report at the June Commission meeting.

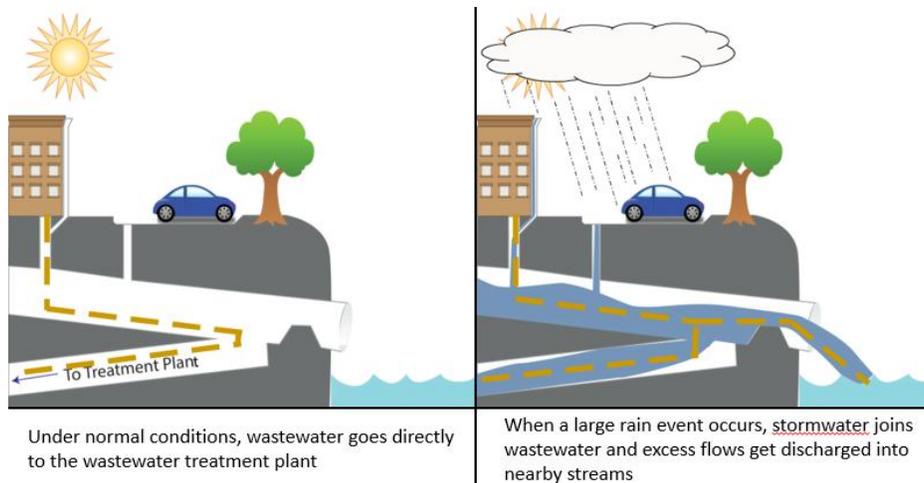
Feel free to reach out with any questions prior to Wednesday's Commission meeting. Thank you.

Burlington's Water Quality Journey  
(Written by M.Moir, 6/11/18)

Our Water Quality Past:

Despite the fact that sewage treatment in Burlington was discussed as early as 1905, the first large scale sewage treatment plant (Main Wastewater Treatment Plant) was not built until 1953, with North Plant and Riverside Plants built in 1961 and 1963 respectively. Main Plant was reportedly the first large scale sewage treatment plant built in Vermont. Before this time, Burlington was discharging the raw waste from its inhabitants and industries directly into Burlington Bay, Englesby Brook and the Winooski River. Until the 1920s, when gas chlorination was added to the drinking water filtration plants, waterborne illness was a common issue for Burlington's citizens cited in the City's Annual Reports. (See Water Resources History <https://www.burlingtonvt.gov/DPW/History;>)

The Wastewater Treatment Plants (WWTPs) were all upgraded for additional flow capacity and treatment improvements in the 1970s. Meanwhile, all throughout this time and even after the 1970s upgrade, the City had a number of "sewer relief points" which we now call combined sewer overflows (CSOs). As was typical of older cities, much of Burlington had only one pipe to carry both sanitary waste and stormwater flow away from the buildings and streets. Anytime the volume in the combined sewer system exceed the capacity of the wastewater treatment plant (or in some cases the local pipe network) a mixture of stormwater and untreated sewage would discharge to waterbodies around Burlington (see below). This was to protect the WWTPs and also prevent discharges from the water backing up until people's homes, but obviously had water quality impacts. To this day, there are nearly 860 communities across the United States that still have combined sewer systems (<http://bit.ly/EPACsos>).



Up until the 1990s, as Burlington grew there were on-shore sewage discharges whenever it rained to the Lake and frequent beach closures (<http://bit.ly/BacT1990>). Burlington voted for a \$52 Million Bond<sup>1</sup> to upgrade the WWTPs to improve phosphorus removal, and most importantly to greatly reduce the frequency and volume of untreated CSOs. Based on measurements of what our wet weather system treats now, it is estimated that an average of 170 million gallons of untreated, undisinfected combined

<sup>1</sup> The \$52 Million covered 3 plant upgrades, re-piping to capture existing CSOs and convey them to Main Plant and sewer separation where sewer separation was possible. Approximately \$30M was spent on the Plant upgrades, with \$22M spent on Main Plant upgrades alone. The remainder was spent on sewer separation.

sewer overflows were discharging to the Lake, the Winooski River and Englesby Brook on an annual basis until the upgrade in 1994.<sup>2</sup>

Untreated CSOs eliminated as part of upgrade:

- Bottom of Maple Street
- Marble Avenue
- Howard Street
- Bottom of College Street
- Main WWTP CSO (on-shore with no treatment or disinfection)
- Englesby Brook (various)\*

Untreated CSOs still remaining after upgrade (see “Recent Improvements” for additional information on these CSOs)

- Gazo Avenue (frequency reduced due to sewer separation)
- Manhattan at Park Street
- Manhattan at North Champlain
- Colchester Avenue (discovered in 2010 during field visits of stormwater outfalls)
- Pine Street (discovered un 2015 due to mapping updates)

The strategy in the 1990s design for CSO abatement (either elimination or reduction of frequency) was two-fold. Sewer separation and CSO treatment. In areas where it was feasible, a separate storm sewer was installed so that the stormwater flow would not commingle with the sewage.



In other areas where this was more challenging, combined sewer flow was intercepted and conveyed to Burlington’s Main Wastewater Treatment Plant where it could be treated (solids removal) and disinfected to mitigate its water quality impacts (the New England region’s first Vortex treatment and disinfection system – see <http://bit.ly/2JsaCao>). Main Plant’s overall average daily dry weather capacity

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<sup>2</sup> This estimate is based on the amount of Combined Sewer Wet Weather Flow that the current Main WWTP treats in its Vortex screening and wet weather disinfection system. 2001 – 2017 time period, average gallons treated = 170 MG, with 315 MG and 270 MG treated in 2011 (Hurricane Irene Year) and 2013 (frequent intense rain storms).

was increased to 5.3 million gallons per day (MGD), and it was also designed to be able to handle and provide the full range of treatment processes (primary clarification/settling, biological treatment, secondary clarification/settling and disinfection) for smaller storm events and for the slug of waste concentrated by the Wet Weather Vortex solids separator, up to 13 million gallons. This is substantially more treatment than typical separated stormwater receives. The CSOs that remain are all related to downstream pipe capacity.

Table 1: Volume of Combined Sewer Wet Weather Flow Treated and Disinfected in the Vortex System (Does not include volume treated by WWTP)

Year	Millions of Gallons	Notes
2001	58	drought year
2002	146	
2003	140	
2004	154	
2005	170	
2006	272	
2007	124	
2008	167	
2009	161	
2010	194	
2011	315	Hurricane Irene
2012	128	
2013	270	Intense Summer Rains
2014	163	
2015	176	
2016	98	very dry
2017	167	
Average	170.7647	
Median	163	
Max	315	
Min	58	

While the storm events that are conveyed to Main Plant can present additional operational challenges, this design does greatly reduce the water quality impacts presented by our combined sewer design and keeps a great deal of untreated combined sewer volume out of our waterbodies. Sewer separation is not without its water quality impacts since we now know stormwater also contains many pollutants (including bacteria from wildlife and pet waste) and discharging stormwater to water bodies over the long term can cause chronic pollution due to nutrients, sedimentation and other pollutants (see: <http://bit.ly/BacT1990>). Again, without the installation of the Vortex, Burlington would either still be having massive volumes of untreated combined sewer overflows or would have had to borrow millions more to fully separate. Rough estimates for complete sewer separation (putting in a new storm pipe on streets where only combined sewers exist) would likely be well over \$100 million, and that would not include the installation of stormwater treatment necessary to manage long term stormwater pollution.

Burlington does continue to pursue sewer separation where it makes sense, such as when we determine that a roof drain is connected to the combined sewer system (as roof water adds volume but is not as

dirty as pavement surfaces), but overall, recently we have been focusing on managing the stormwater in the combined sewer system at its source – that is, either reducing the inputs through allowing the stormwater to infiltrate into the ground (reconnecting it to its natural hydrologic cycle) or storing the stormwater and releasing it slowly to the system in a flow rate that the WWTP can fully treat in its full treatment train. Where possible, Burlington prefers implementation of green wet-weather infrastructure to maximize benefits to the community, since green infrastructure not only manages stormwater runoff, but also adds more green space, shading, pedestrian/biking, and property value improvements than typical “grey” infrastructure (storage tanks).

### *Managing untreated CSOs -- Recent History*

As mentioned above, Burlington does still have a few remaining untreated CSOs, including two discovered as part of the City’s outfall inspection and mapping efforts in 2010 and 2015.

- Gazo Avenue
- Manhattan at Park Street
- Manhattan at North Champlain
- Colchester Avenue (discovered in 2010 during field visits of stormwater outfalls)
- Pine Street (discovered un 2015 due to mapping updates)

Map of WWTP and CSO locations (<http://bit.ly/CSOloc>).

Monitoring of these untreated CSOs has advanced over the years, from the early monitoring with a “fish bobber” on a string that would have to be checked after each large storm event, to the CSO alarm technology installed around 2008 (to our knowledge well before any other CSO communities) which sends out emails and text messages letting staff know that the CSO has activated and when the CSO has ended. In 2018 we have purchased and are in the process of installing permanent flow meters in these locations so that we can quantify the amount of combined sewer overflow that occurs in each event. Currently, we have to estimate the volume based on pipe size and duration of event.

### *Untreated CSO and Sewage Release Reporting*

CSO reporting and public notification has also advanced over the years. In accordance with policies at the time, prior to approximately 2013, untreated CSO events were only reported directly to the Department of Environmental Conservation on our monthly Wastewater Discharge reports. Between 2013 and 2016, only untreated CSOs that were considered non-compliant (i.e. occurred during a storm event that did not meet the criteria of the 2.5”, 24-hour storm) were reported for publishing in the ANR public database. With the advent of the Act 86 public notification law(<http://bit.ly/2t3tW30>), all untreated CSOs since 2016 (regardless of the size/nature of the storm event which caused them) are reported to the ANR public notification database.

All volumes and measurements for Burlington’s treated combined sewer flows are and have been reported monthly on the Wastewater Discharge report. Per Burlington Main Plant’s permit, upsets of any portion of the disinfection system (whether the daily disinfection system or the wet weather) were required to be publically noticed within 12 hours via notification to “two radio stations and one print media” entities as well as to nearby towns, the DEC, Burlington Water and Champlain Water. More recently Act 86 added the public alert/notification system and also required the posting of beaches within 1 mile. These later requirements also apply to any situations such as a sewer back up (in the

sewer system, not the WWTP) that causes a discharge of sewage to nearby waters (usually nearby separate stormwater systems where those exist)

Managing CSOs -- Continued Implementation

As shown in the tables above, while the overall volume was greatly reduced, CSOs were still occurring. Though it was recognized that Burlington had made significant gains in CSO reduction and had greatly reduced the overall volume of discharge, there were still CSOs occurring.

Table 2: Estimated Annual Frequency of CSO events since 2005

Year	N. Champlain	Park	Gazo	Colchester	Pine Street	Notes
2005	3	12	1	UNK	UNK	
2006	1	11	3	UNK	UNK	
2007	3	8	2	UNK	UNK	
2008	2	13	?	UNK	UNK	
2009	4	8-9	?	UNK	UNK	
2010	0	5	?	2	UNK	Colchester Ave CSO discovered through mapping/outfall visits
2011	1	9	1	3	UNK	
2012	1	6	1	9	UNK	
2013	4	6	2	10 - 13	UNK	
2014	0	1	1	2	UNK	Colchester CSO improved through pipe cleaning downstream
2015	0	3	1	0	8	Pine Street Discovered through mapping
2016	0	1	0	0	5	
2017	0	1	1	0	8	
2018 YTD	0	0	0	0	1	Late 2017 conducted significant cleaning of downstream section

Note: Does not demonstrate decrease in duration or volume, particularly for Park and Gazo, nor adjust for the impact of wet/intense rainfall years such as 2011 and 2013.

UNK =	Previously unidentified CSO point, no data available
? =	data not easily available, still researching
Range provided when unclear or multiple events on one day	

Even though some of the events listed above in Table 2 were considered compliant with the 1990 State CSO Policy (which allowed CSOs to occur if the storm event had characteristics related to the 2.5", 24-hour storm, and did not require reporting), non-compliant CSOs were still occurring. Moreover, it was recognized that while the Vortex was treating wet-weather flow appropriately, any opportunity to remove or slow down stormwater in the combined sewer system would improve our overall Water Quality portfolio. As seen in Table 2, the efforts below have made gains in our CSO reduction journey.

- 2000 - A large storage tank was installed on South Prospect in between College and Main Street to attenuate (slow down) stormwater runoff entering the combined sewer system from the redesigned Upper Main Street.
- 2008 -0.5 acre of roof top at the Gosse Court Armory (now Robert Miller Community & Recreation Center) was separated from the combined sewer system (connected to the storm sewer system)
- There are a few examples in this time period (2000s) of development projects in the combined sewer system (which, because they discharge to the combined sewer system did not need a State stormwater permit) that were required to install storage tanks to attenuate their flow, but it appears these tanks were based on minimizing the increase in stormwater, not necessarily improving stormwater runoff situations.

- In 2009, the City of Burlington was the second (after South Burlington) community in Vermont to take the important step of creating a Stormwater Utility to ensure that there would be dedicated funding for continued investments in Water Quality improvements. As part of this creation, the Wastewater ordinance was updated to include stormwater requirements and the authority to require new development and redevelopment projects to more fully manage their stormwater, regardless of state requirements. (See “How Burlington Leverages Development to Improve Water Quality”
- The most recent significant investment in mitigating wet weather runoff to the combined sewer came in 2009-2011, when the City was awarded \$1.2 Million in American Recovery & Reinvestment Act funding (50% forgiveness). With this funding, the City implemented the following:
  - In the Manhattan Drive CSO sewersheds:
    - § Construction of 13 subsurface infiltration systems (allowing the runoff from more than 3.5 acres of impervious surface to be absorbed and never reach the combined sewer system, approximately 220,000 gallons during a 2.5” storm)
    - § Separation of a roof drain from H.O. Wheeler (0.55 acres, 36,600 gallons)
    - § Frequency of CSOs at Manhattan/North Champlain has nearly ceased (with the exception of 2013, a very wet year)
    - § Frequency and duration of CSOs at Manhattan/Park has greatly decreased.
  - In the Gazo CSO sewershed
    - § Separation of roof drain for LC Hunt (1.6 acres, 106,400 gallons)
    - § Separation of roof drain for CP Smith (0.7 acres, 46,500 gallons)
    - § Frequency of CSOs and duration has stabilized at Gazo CSO.
- Since the ARRA project, Burlington Water Resources has continued annual implementation of smaller scale combined sewer reduction projects throughout the City coordinated with other investments the City is making
  - 2013 – Infiltrating bio-retention system installed in the traffic calming bumpouts on upper North Street
  - 2014- Infiltrating bio-retention system installed in the traffic calming/road cut off project on northern Hyde Street
  - 2015 – Installation of permeable pavers (stormwater friendly sidewalk) and Silva cells to support tree canopy growth as part of redevelopment of South Winooski sidewalk (between Main and King)
  - 2016 – Installation of subsurface infiltration system at Grant Street and infiltrating bio-retention bumpout coordinated with street paving and traffic calming
  - 2017 – Installation of subsurface infiltration system at bottom of King Street.
  - 2018 (mid June completion) – Installation of subsurface infiltration system at Park & Myrtle coordinated with street paving.
- With the discovery of the untreated Colchester Ave CSO in 2010 and monitoring showing very frequent discharge, a private contractor was hired in 2013/2014 to remove significant amounts of sediment downstream of the CSO to restore pipe capacity. Adjustments were also made to the internal weir in the CSO manhole structure. Since this time, Colchester Ave CSO frequencies have been reduced to zero.

- Pine Street Untreated CSO, discovered in 2015, has shown itself to also be easily activated. Recent flow metering and camera work show that there may be some more complexity to what is going on at this location, namely that some events that have been reported as CSOs may have actually been events where the storm sewer was overflowing to the combined sewer. This is our first permanently flow metered CSO point as of 2018. Additionally, significant pipe cleaning occurred downstream of the CSO in late 2017 and staff are monitoring this CSO very closely to determine what level of intervention remains. Abating this CSO is a prime focus of the City's Integrated Water Quality Planning (see below).

### How Burlington Leverages Development to Improve Water Quality

As part of the update to the Chapter 26 Ordinance, projects that disturb more than 400 sq. ft. are reviewed for stormwater impacts. The Burlington Stormwater Program is currently working to more fully codify the below principles which have been applied to commercial and industrial projects in the combined sewer system in recent years, regardless of whether or not a State Stormwater Permit is needed:

- 100% of stormwater volume from new impervious mitigated for the 1 year, 24-hour storm (2.1")
- Mitigation of stormwater volume from redevelopment impervious (a parking lot that turns into a roof top) to the maximum extent practicable, but with a minimum management target of 50% of the existing impervious surface
- Mitigation of any increased stormwater volume from "drainage efficiency" projects (installing drainage inlets, pipes etc).

Examples of recently constructed redevelopment projects that have greatly contributed to our combined sewer runoff reduction efforts include:

- Redevelopment of ICV building at 180 Battery St (storage tanks and permeable pavers)
- Redevelopment of QTs at 237 North Winooski Ave (infiltration system and permeable pavers)
- Redevelopment of parcels at 258 North Winooski Ave (infiltration system)
- Bright Street Housing Cooperative redevelopment (infiltration system)
- Drainage efficiency project at UVM's Waterman Building (storage tanks)

Recently, as part of the on-going evolution of Burlington's approach to combined sewer reductions, projects that are significantly increasing their sanitary wastewater flows to our plant have been required to not only manage stormwater in accordance with the framework above, but also to remove additional stormwater, either from their site (if a pure redevelopment project) or through providing funding for implementation of additional runoff reduction projects. Example include:

- Cambrian Rise: 100% management of new impervious, disconnection of all runoff from the combined sewer system for the redeveloped portion of their project, financial contribution to the design and installation of subsurface infiltration that will reduce stormwater inputs from North Ave runoff to the combined sewer system.
- 85 North Ave (top of Depot St): 100% management of new and redeveloped impervious, financial contribution to the North Ave runoff reduction system
- City Place Burlington: 100% management of all existing and new impervious; disconnecting roof drains that were directly connected to the combined sewer system.

### Future Water Quality Improvement Planning

The City of Burlington, having already invested millions of dollars into water quality improvements, is still not done. There are numerous Clean Water Act regulations (Lake Champlain Phosphorus TMDL, Updated 2016 Vermont CSO Policy, Stormwater Impaired Streams TMDL) and clean water concerns (beach closures due to E. coli from stormwater or wastewater issues, beach closures due to algae blooms) that Burlington must address.

In 2014 Burlington was awarded a Technical Assistance Grant from the EPA to begin a process called Integrated Planning, which encourages communities to examine all of their obligations in one holistic planning effort vs. as individual requirements. (See: <https://www.burlingtonvt.gov/DPW/Stormwater/IMSWP>)

In 2016, the City applied for a planning loan and grant from the State to begin the official Integrated Planning Process. The primary scope items of this work include:

- Evaluating improvements at the WWTPs for enhancing phosphorus removal
- Evaluating improvements at Main WWTP for enhancing wet weather treatment
- Identifying and prioritizing combined sewer wet weather reduction strategies (throughout the City, including small scale infiltration and storage measures as well as large scale storage structures) that will 1) bring CSOs into compliance with the 2016 Vermont CSO Rule 2) reduce stormwater inputs to the Main Plant collection system and result in water quality improvements in wet weather related discharge.
- Identifying and prioritizing separate storm sewer pollution reduction strategies

While this work was originally anticipated to be completed at the end of 2018, early evaluations of our existing Hydraulic/ Hydrologic model revealed that additional model development and calibrations were necessary to fully optimize our water quality capital planning. Permanent flow meters were installed in early 2018 for the Main Plant collection system, and model calibration will be completed over the winter of 2018/2019.

Already, our Water Resources and Integrated Planning team has:

- developed a comprehensive map and analysis of stormwater and wet weather opportunities (<http://bit.ly/RunoffOpp>) to reduce stormwater pollution and reduce the frequency of combined sewer overflows and volume of stormwater reaching Main WWTP.
- developed an analysis of possible non-structural strategies for reducing runoff pollution (enhanced street sweeping, lawn waste collection programs etc.)
- evaluated our current phosphorus removal optimization efforts (indicating that we are performing excellent phosphorus removal)
- evaluated possible tertiary (enhanced) phosphorus removal technologies

The remaining work and evaluations, including prioritizing the various strategies, will occur (along with more citizen engagement) over 2018-2019, with a final deliverable anticipated in early 2020. From there, Burlington will be pursuing design work and construction funding for the first round of

implementation. Full implementation is likely to take upwards of 20 years, however the goal of Integrated Planning is to implement the projects with the greatest return on investment (most water quality improvement for the money) early on in the implementation cycle.

Meanwhile, while this planning effort is occurring, the Water Resources team continues to work with the rest of the City to coordinate implementation of wet weather improvements with other City investments, such as the street paving program (see Grant, King and Park street infiltration systems above). In particular, Burlington Water Resources has ensured that the upcoming Great Street and City Hall Park projects have significant improvements to stormwater/wet weather management: bio-retention areas that collect and allow stormwater to soak in and slow down before reaching the combined sewer system, permeable pavers that capture and infiltrate stormwater, and the construction of "enhanced soil volume systems" that will support the growth of healthy and robust tree canopies that can capture even more stormwater.

*Other Wastewater Infrastructure Needs:*

In parallel with planning Burlington's Water Quality future, there are existing systems that need near term investment.

Currently, Burlington Water Resources anticipates a need for \$8-10 Million of investment over the next 3-4 years in existing WWTP equipment to avoid future structural or mechanical issues. Additionally, approximately \$1 Million of investment is needed each year for the next 5 years in our sanitary sewer/combined sewer pipe infrastructure to ensure that those pipes can continue to safely convey sewage and combined sewer flow to the WWTPs.

Burlington Water Resources will be working in FY19 to advance these projects and plan for likely borrowing through the Clean Water State Revolving Fund Loan program.