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Transportation, Energy and Utilities Committee of the City Council
Tuesday, June 22, 2021 5:00 PM

To attend the meeting in person*: 645 Pine St, Burlington, VT 05482
To join or watch the meeting remotely, including to submit public comment, Join via Zoom:
https://us02web.zoom.us/j/84603122855
Call in for audio-only – Phone number: 312-626-6799 and Webinar ID: 846 0312 2855

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2. If signed in via Zoom, please use the "Raise Your Hand" feature. This will alert DPW staff that you wish to speak and will automatically add you to the queue. When it's your turn to speak, your name will be called and you will be unmuted.
3. If you are calling in, please press *9 which will alert DPW staff that you wish to speak. When it's your turn to speak, your phone # will be called out and you will be unmuted.
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*During the Governor's emergency order, in-person meetings had been suspended. This order has recently been lifted so we will offer an in person location to view and participate in this meeting. Most of this meeting will still function remotely via Zoom, however. Please check https://www.burlingtonvt.gov/CityCouncil/TEUC for future meetings.

–DRAFT AGENDA–

1. **Agenda**
2. **Minutes of 4/27/2021**
3. **Public Forum**
4. **Colchester Avenue/East Ave Scoping (See Attachment)**
   - Nicole Losch, DPW
   - 30 Minute Durration
   - Action
5. **FY22 Proposed Fleet Replacement (See Attachment)**
   - Lee Perry, DPW
   - 20 Minute Durration
   - Action
6. **Consolidated Collection (See Attachment)**
   - Lee Perry, DPW
   - 60 Minute Duration
   - Action
7. **Director's Report**
8. **Councilors' Update**
9. **Next Meeting**
10. **Adjourn**

SCOPING STUDY

Colchester Avenue: Bikeways, Parking, and Intersection Safety Study

Burlington, VT

PREPARED FOR

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Executive Summary

The Colchester Avenue: Bikeways, Parking, and Intersection Safety Study was conducted in coordination with the Chittenden County Regional Planning Commission, City of Burlington, and an Advisory Committee consisting of community stakeholders. Public meetings and targeted outreach were also conducted to gather input from residents, property owners, and business owners along the corridor.

The goal of this study was to identify transformational, long-term improvements along the Colchester Avenue corridor and at the intersection of Colchester Avenue and East Avenue that re-envisions the multimodal gateway corridor following years of incremental change outlined in previous planning and design efforts. The study focused on consistent, multimodal improvements for the one-mile long corridor from the connection with Pearl Street at the intersection of North and South Prospect Streets, east to the Greenmount Cemetery, then north to Barrett Street and the Winooski River crossing. In addition, the study pursued safety improvements for the intersection of Colchester Avenue and East Avenue.

Purpose and Need

The purpose of the Colchester Avenue: Bikeways, Parking, & Intersection Safety Study was to identify and prioritize improvements along the corridor which will enhance bicycle mobility and improve parking management while supporting local businesses and at the intersection of East Avenue which will improve safety for all modes of transportation. The needs identified for this project are to improve intersection safety, improve corridor safety for all users, enhance mobility for bicyclists, and manage parking while supporting local businesses, employers, and residents.

Existing Conditions

This corridor is used by up to 15,000 vehicles per day and serves as a major corridor for transit, including service for Green Mountain Transit (GMT) and UVM Campus Area Transit Service (CATS). Existing land uses along the corridor are varied and include institutional, neighborhood activity center, neighborhood mixed use, recreation and conservation areas, and low and medium-density residential. The corridor has been identified by VTrans as a priority for safety improvements with three High Crash Location (HCL) intersections and one HCL segment, representing 55 injury and 2 fatal crashes over a five-year period. A Highway Safety Improvement Program (HSIP) Location Review conducted at the Colchester Avenue and East Avenue intersection included recommendations to realign East Avenue and update signal equipment to improve safety.

Stakeholder and Public Outreach

Public outreach through a Local Concerns Meeting early in the study revealed some common themes, including desire for consistent and protected pedestrian and bicycle accommodations, improved accommodations at intersections for pedestrians and bicyclists, curbside access to transit, and neighborhood based solutions to on-street parking while supporting the high turnover parking needs of businesses.

Corridor Concepts and Intersection Alternatives

The following three focus areas were examined along the corridor: 1) the Colchester Avenue corridor west of East Avenue, 2) the Colchester Avenue corridor east of East Avenue, and 3) the intersection of Colchester Avenue and East Avenue. Based on existing conditions assessments, previous studies, and input gathered from stakeholders and the public, concepts were developed for the corridor segments. Alternatives that also considered the safety analyses were developed for the intersection. An analysis conducted for each of three focus areas evaluated to arrive at preferred corridor concepts and intersection alternative plan for Colchester Avenue from South Prospect Street to Barrett Street. Metrics of evaluation fell into the categories of cost, safety outcomes, project impacts, and community character. Relative comparisons of these metrics across the options helped guide stakeholders to arrive at a package of preferred improvements for the corridor.

Preferred Corridor Concept and Intersection

Based on findings from technical analyses and input from the public and the project Advisory Committee, conceptual plans were developed to reflect the preferred corridor concepts and intersection alternative. This consisted of a combination of raised and separated bike lanes along the corridor segments with targeted on-street short-term parking and pull-outs for transit stops, delivery vehicles, or other short-term uses as well as new equipment, striping, a crossing on the western leg of the intersection, and a dedicated bike signal for the intersection with East Avenue.

1

Introduction

The Colchester Avenue: Bikeways, Parking, and Intersection Safety Study examines the length of the Colchester Avenue corridor and the intersection with East Avenue to identify a suite of transportation recommendations that improve intersection safety, enhance mobility for bicyclists, improve safety for all users, and manage parking along the corridor. The corridor has seen incremental implementation of shorter-term improvements based on the recommendations from the 2011 Corridor Study. Building on that study and the more recent scoping for the Riverside Avenue / Barrett Street / Mill Street intersection, this study focused on re-envisioning the Colchester Avenue to make long-term, multimodal improvements to this vital gateway corridor. Significant input from the Advisory Committee, public, and business owners helped to guide the study, [input final notes after meetings with Burlington TEUC and City Council]

1.1 Project Overview

The Colchester Avenue: Bikeways, Parking, and Intersection Safety Study was conducted in coordination with the Chittenden County Regional Planning Commission (CCRPC), City of Burlington, and an Advisory Committee consisting of representatives from the Vermont Agency of Transportation (VTrans), Green Mountain Transit (GMT), University of Vermont (UVM), University of Vermont Medical Center (UVMMC), Burlington Walk Bike Council (BWBC), Burlington Wards 1 & 8 Neighborhood Planning Assembly (NPA), Burlington Community Economic Development Office (CEDO), and Burlington City Council. Public meetings and targeted outreach were also conducted to gather input from residents, property owners, and business owners along the corridor.

The goal of this study was to identify transformational, long-term improvements along the Colchester Avenue corridor and at the intersection of Colchester Avenue and East Avenue that re-envisions the multimodal gateway corridor following years of incremental change outlined in previous planning and design efforts.

Along the one mile stretch of Colchester Avenue, the study focused on consistent, multimodal improvements for the corridor from the connection with Pearl Street at the intersection of North and South Prospect Streets, east to the Greenmount Cemetery, then north to Barrett Street and the Winooski River crossing. In addition, the study pursued safety improvements for the intersection of Colchester Avenue and East Avenue.

1.2 Purpose and Need

The purpose and need for the Colchester Avenue: Bikeways, Parking, & Intersection Safety Study were developed with the Advisory Committee with input from the public. The resulting project purpose and needs are outlined below.

1.2.1 Purpose of the Project

The purpose of the Colchester Avenue: Bikeways, Parking, & Intersection Safety Study is to identify and prioritize improvements:

- along Colchester Avenue from South Prospect Street to Barrett Street which will enhance bicycle mobility and improve parking management while supporting local businesses;
- at the intersection of Colchester Avenue and East Avenue which will improve safety for all modes of transportation.

1.2.2 Needs for the Project

The needs for this project are:

- **Improve Intersection Safety:** There are four designated High Crash Locations (HCL) along the Colchester Avenue corridor, including three intersections and one section. The HCL intersections of Colchester Avenue / Prospect Street / Pearl Street and Colchester Avenue / Barrett Street / Riverside Avenue have been studied separately with recommendations to improve the safety at those intersections. However, the Colchester Avenue / East Avenue intersection, where 44 crashes occurred between 2012 and 2016, remains an HCL requiring further investigation and improvement. A Highway Safety Improvement Program Location Review identified the visibility and alignment of signal heads as problematic and recommended relocating signals with new mast arms and signal heads.
- **Improve Corridor Safety for all Users:** The section of Colchester Avenue between Mansfield Avenue and East Avenue is the most heavily utilized segment of the corridor and an HCL with 88 crashes over the period from 2012 to 2016. Access to the region's only Level I Trauma Center and one of the largest employers in the state is facilitated by the segment, as well as the movement of people by foot, bike, transit, and vehicle. This makes the corridor a critical link in the region's infrastructure as well as a complex, multimodal corridor in terms of operation. Of the 347 crashes identified for the length of Colchester Avenue from 2014 through 2018, 14 crashes involved bikes and 9 crashes involved pedestrians.
- **Enhance Mobility for Bicyclists:** The BTV Walk Bike Master Plan calls for a "more robust treatment in the long-term" to provide protected bicycling infrastructure on Colchester Avenue and the 2017 CCRPC Active Transportation Plan identified Colchester Avenue as a high priority, high feasibility corridor for improvement in the active transportation network. The existing bicycle facilities are inconsistent, changing multiple times along the one-mile corridor, and not well connected, both from segment to segment along the corridor and to other adjacent or intersecting facilities.
- **Manage Parking while Supporting Local Businesses, Employers, and Residents:** The limited right-of-way available to facilitate this heavily utilized multimodal corridor with vehicles, bicyclists, pedestrians, and transit-users has limited the on-street parking supply along the roadway. However, coordination between the City and the adjacent institutions and landowners presents an opportunity for shared parking that may address business, employer, and residential parking needs.

2

Existing Conditions

The first step of the Colchester Avenue: Bikeways, Parking, and Intersection Safety Study was to identify the existing transportation, natural resource, and land use conditions along the project corridor to identify issues and opportunities to be addressed through the study. This chapter includes an evaluation of the corridor's existing conditions, including land use characteristics, existing transportation infrastructure, historic safety data, and a review of previous studies.

2.1 Study Corridor Description

The mile-long study corridor is located along Colchester Avenue with a western terminus at South Prospect Street and an eastern terminus at Barrett Street, immediately south of the Colchester Avenue and Riverside Avenue intersection. Colchester Avenue serves as the main connection between Burlington and Winooski and provides direct access to downtown Burlington to the west and to downtown Winooski to the northeast. This corridor is used by up to 15,000 vehicles per day. Colchester Avenue is also a major corridor for Green Mountain Transit (GMT) routes: the Blue Line (Essex to Shelburne), the Purple Line (Burlington to Burlington International Airport), and six commuter routes utilize the corridor. The UVM campus buses also use Colchester Avenue from Trinity Campus to South Prospect Street.

The full project study corridor is shown in **Figure 1** on the following page.

2.2 Land Use & Zoning Characteristics

Existing land uses along the corridor are varied and include institutional, neighborhood activity center, neighborhood mixed use - Riverside, RCO-Conservation, RCO-Recreation/Greenspace, and low and medium-density residential. The immediate surrounding land use for Colchester Avenue is primarily institutional to the west and changes to low-density residential as it moves east, away from UVM.

The zoning districts along the corridor and adjacent area are shown in **Figure 2**.

Figure 1: Project Area

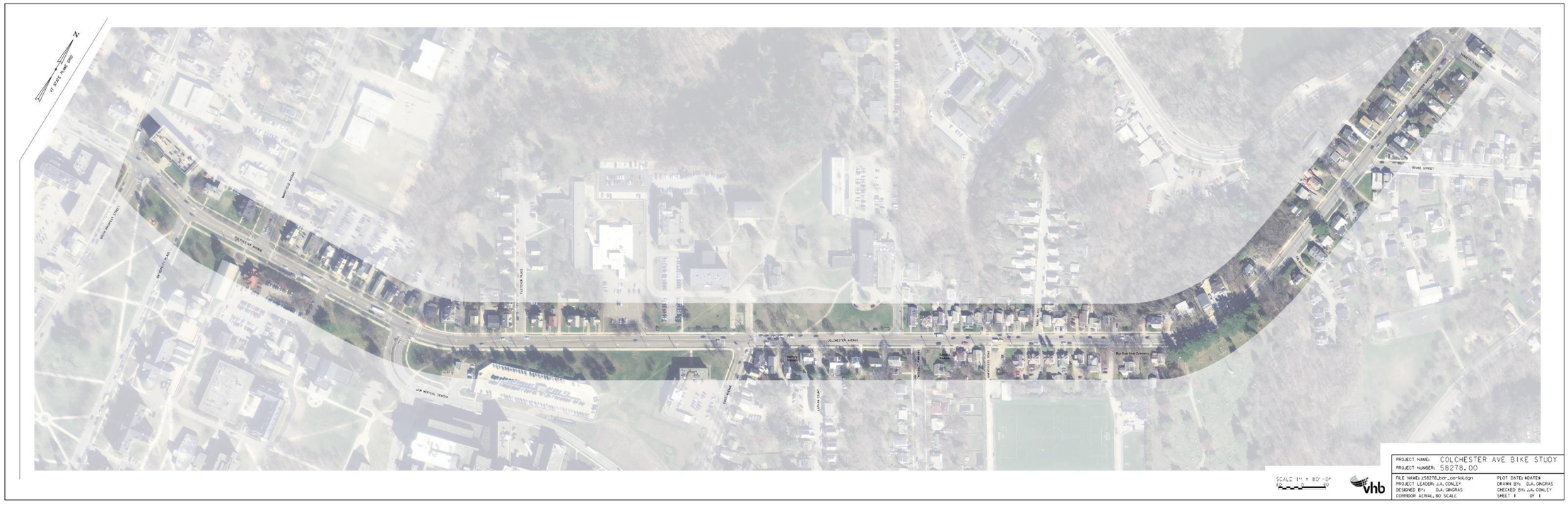
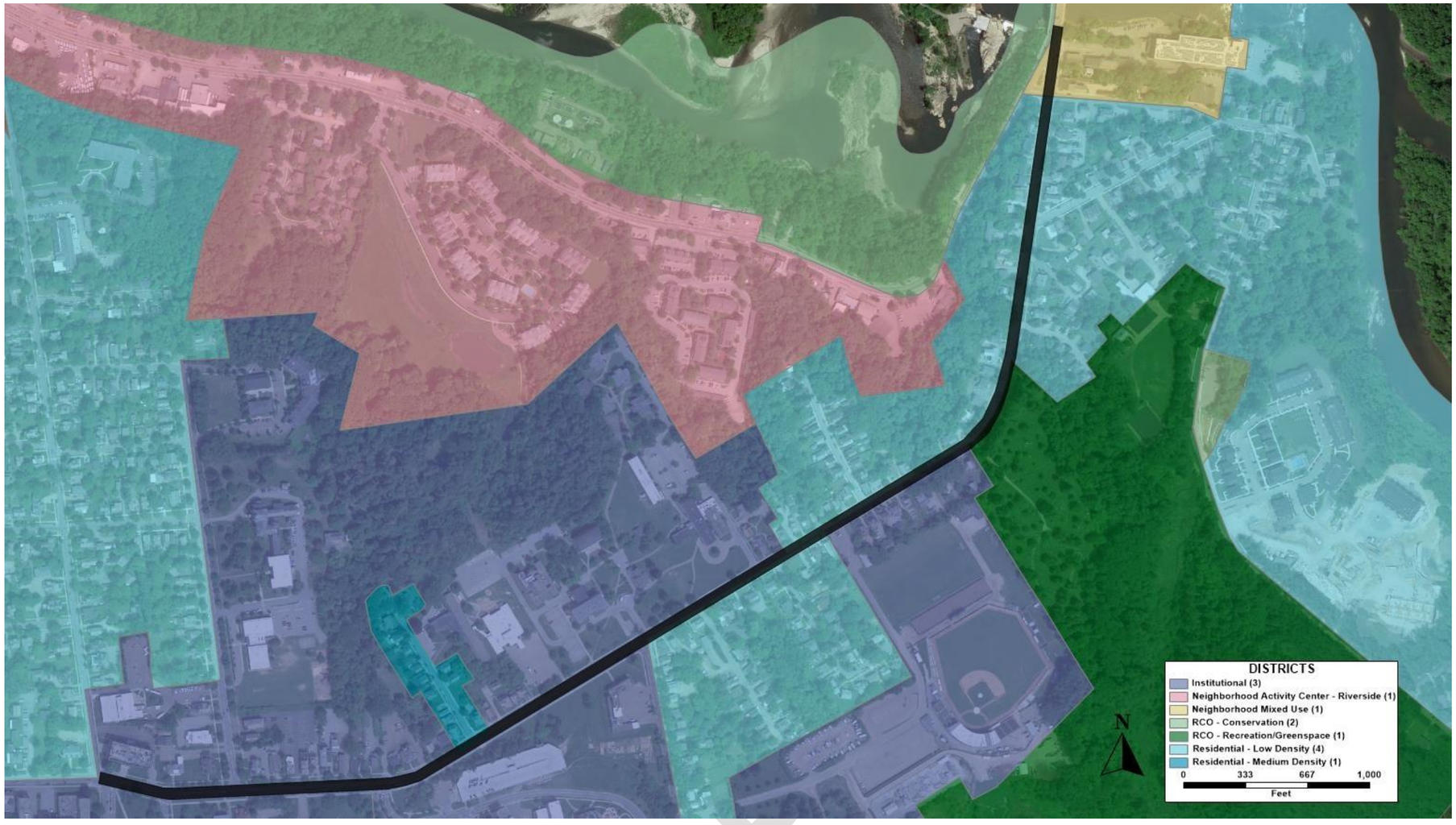


Figure 2: Project Area Zoning Map



2.3 Transportation System Characteristics

The following section summarizes the relevant transportation system characteristics of Colchester Avenue throughout the project area. Existing conditions identified as part of this study include daily traffic volumes, roadway geometry, multi-modal facilities, and other roadway elements.

Functional Classification: Minor Arterial

Right of Way (ROW): 5 rods (~80 feet)

2018 Annual Average Daily Traffic (AADT):

15,000 vehicles per day (west end of corridor)

10,000 vehicles per day (east end of corridor)

Adjacent Land Uses:

South Prospect to East Avenue

Primarily institutional with one section of medium density residential land use along Fletcher Place. The institutional land use areas include the University of Vermont, University of Vermont Medical Center, Burlington School District Offices, and several small medical practice offices (chiropractor, physical therapy, OB-GYN, dentist, etc.).

East Avenue to Greenmount Cemetery

Institutional and low density residential. The institutional land use areas include the University of Vermont's Trinity Campus and Centennial Field. The low-density residential areas are along Colchester Avenue as well as a number of no outlet side streets including Latham Court, Thibault Parkway, and Nash Place.

Greenmount Cemetery to Barrett Street

Recreation/greenspace and low density residential. The recreation/greenspace designation includes Greenmount Cemetery and Centennial Woods Natural Area. The low-density residential in the Old East End neighborhood flanks Colchester Avenue on both sides as well as along a few side streets including Calarco Court, Colchester Court, Chase Street, and Barrett Street.

Pedestrian Facilities:

- 5' sidewalks flank the full length of Colchester Avenue on both sides
- 10' Shared Use Path is available on the south side of Colchester Avenue between South Prospect Street and East Avenue
- Crosswalks are located at:
    - Barrett Street

- Chase Street (Rectangular Rapid Flashing Beacon (RRFB) to be installed)
- University Road at Centennial Field – RRFB
- East Avenue (east leg only)
- Fletcher Place – RRFB
- UVM Medical Center Entrance (east leg only)
- Mansfield Avenue
- South Prospect Street

Bicycle Facilities:

- Bike accommodations include:
  - South Prospect Street to Fletcher Place | bike lanes in both directions
  - Fletcher Place to East Avenue | westbound bike lane, eastbound sharrows with right turn lane
  - East Avenue to Calarco Court | westbound bike lane, eastbound sharrows with travel lane
  - Calarco Court to Barrett Street | buffered bike lanes in both directions
  - 10' Shared Use Path available on the south side of Colchester Avenue between South Prospect Street and East Avenue

Corridor Intersections: Colchester Avenue intersects with:

North & South Prospect Street | scoping completed and preferred alternative identified

University Place | included in current planning study for University Place

Mansfield Avenue | signalized three-way intersection

UVM Medical Center Entrance | signalized intersection

Fletcher Place | minor approach stop controlled

East Avenue | signalized intersection and focus of this scoping effort

Latham Court | minor approach stop controlled

Thibault Parkway | minor approach stop controlled

Nash Place | minor approach stop controlled

Calarco Court | private road

Colchester Court | private road

Chase Street | minor approach stop controlled

Barrett Street / Riverside Avenue | scoping completed and preferred alternative identified

Study Intersection Geometry and Operation:

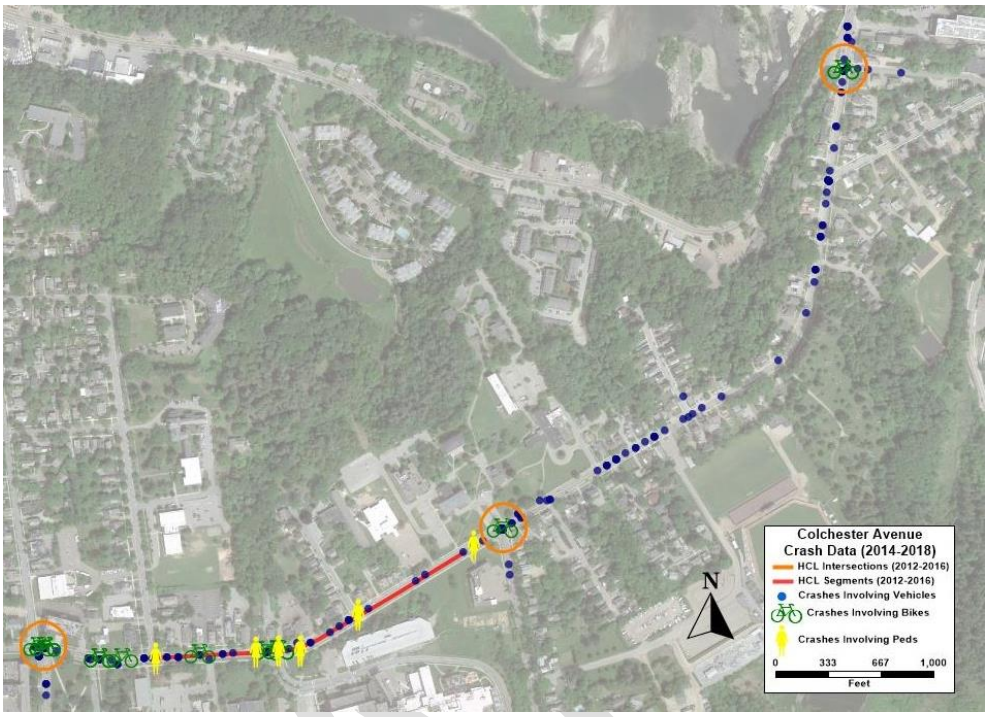
Colchester Avenue and East Avenue

The East Avenue leg of the intersection meets the signalized intersection at about a 70° skew and the Trinity Campus driveway leg is offset to the east. The lane geometry consists of one through/left lane and one right turn lane on the eastbound Colchester Avenue approach, one through/right lane and one left turn lane on the westbound Colchester Avenue approach, one through/left lane and one right turn lane on the East Avenue approach, and one lane on the UVM Trinity Campus driveway approach. There are signalized pedestrian crossings on the north, south, and east legs. There are bicycle accommodations in the form of sharrows in the eastbound direction through the intersection and a bike lane in the westbound direction through the intersection. The current operation at the intersection is a split phase signal timing to serve each of the minor legs individually due in part to the offset between the two approaches.

2.4 Safety Assessment

A review of reported crashes along the study corridor was conducted for the most recent five-year time period that data was available (2014 – 2018). During this time period, there were 347 reported crashes, with 47 of these crashes resulting in injury. Of the reported crashes, 14 of the crashes were with bicycles and 9 of the crashes were with pedestrians. The distribution of reported crashes along the corridor is shown in **Figure 3** below. Complete crash data can be found in the Appendices.

Figure 3: Reported Crash Locations (2014-2018) and High Crash Locations (2012-2016)



The most recent VTrans High Crash Location (HCL) report (2012-2016) identified the following three HCL intersections along the corridor: 1) Colchester Avenue at North and South Prospect Street, 2) Colchester Avenue at East Ave, and 3) Colchester Avenue at Riverside Ave and Barrett Street. Each HCL intersection is circled in **Figure 3**. One segment of Colchester Ave from Mansfield Avenue to East Avenue, was also identified as an HCL and is also highlighted in **Figure 3**. Over the five-year period from 2012 to 2016, there were a total of 209 reported crashes within these HCLs, 55 of which resulted in an injury. Two crashes resulting in fatalities were reported during this period. A breakdown of crash data within the three HCL intersections and HCL segment is shown below in **Table 1**. High Crash Locations in Vermont are identified as those having a actual/critical ratio of greater than 1.0, where the actual rate of crashes at an intersection or on a roadway segment exceeds a threshold (i.e. critical) crash rate based on the average statewide crash rate for a given roadway functional class normalized by the exposure, or volume of traffic. The actual/critical ratio are used to rank High Crash Locations to help identify priorities for monitoring and mitigation.

Table 1: VTrans 2012-2016 High Crash Locations

Location	Statewide Rank	Crashes	Fatalities	Injuries	PDO* Crashes	Actual / Critical Ratio
Colchester Ave and Barrett St	5	34	1	7	27	2.460
Colchester Ave and East Ave	15	44	0	9	35	1.863
Colchester Ave and N./S. Prospect St	25	43	0	12	34	1.640
Colchester Ave Segment	119	88	1	27	67	2.088

* PDO: Property Damage Only

In addition to the review of the crash data and High Crash Location Report, the Highway Safety Improvement Program (HSIP) Location Review conducted at the Colchester Avenue and East Avenue intersection was reviewed. The evaluation by VTrans looked at the crash data from the same High Crash Location reporting period (2012 to 2016), identifying that rear end crashes were the predominant crash type. Issues such as signal heads misaligned with lanes, pedestal mounted signals, lack of signal head backplates, and inadequate turn lanes were identified. The report included recommendations to realign East Avenue and provide sufficient turn lane geometry, replace pedestal mounted signal heads with mast arm mounted signal heads, add backplates to signal heads, replace mast arms with sufficient length to align signal heads with lanes, and eliminate flash mode from time of day plan.

2.5 Natural and Cultural Resources

Natural and cultural resources surrounding the corridor were evaluated to identify areas of particular sensitivity and potential permitting requirements. A desktop review of various resources, including the Vermont Agency of Natural Resources Atlas, was conducted to assemble a natural and cultural resources map identifying resources proximate to the anticipated project limits. There are no specified natural resources within the project's extent, however adjacent to the project corridor there is a historic roadside marker for the burial place of General Ethan Allen, the former Fletcher Allen hospital (now UVMMC), the Robert Hull Fleming Museum, the former Trinity College and Ira Allen School (now UVM), and access to the historic Centennial Field.

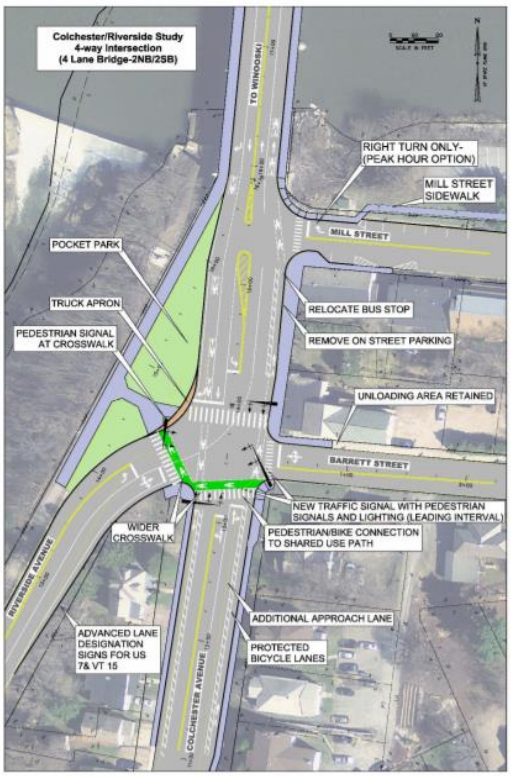
In addition, an Archaeological Resources Assessment was conducted to identify archaeologically sensitive areas that may be influenced by the project and identify the need for further investigation as the project proceeds, aligning with the Section 106 permitting process. Based on the assessment, it was recommended that if the project could be carried out entirely within the present roadway right-of-way, no further archaeological review would be necessary. However, if the project involves subsurface disturbances in areas outside of the present right-of-way, then additional review, including more focused desk review and/or hand soil cores, should be undertaken at those specific locations.

The natural and archaeological resources findings are detailed further in the Appendices.

2.6 Review of Previous Studies

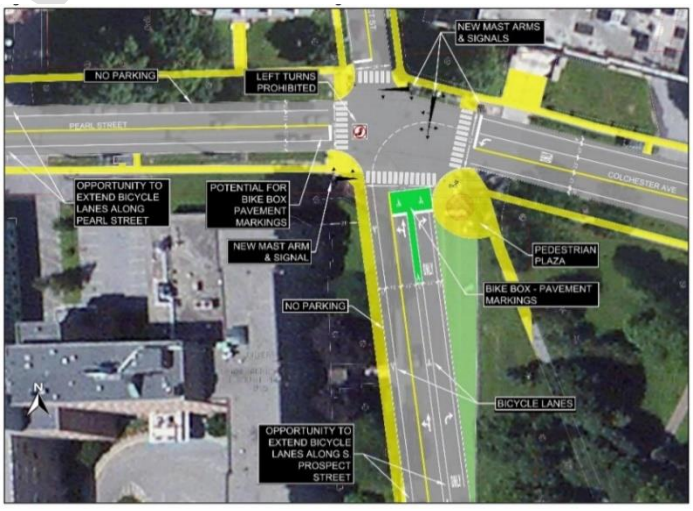
2.6.1 2019 Colchester Riverside Intersection Scoping Study

The Colchester Riverside Intersection Scoping Study identified both short-term improvements and a medium-term preferred alternative to address the needs of the intersection, including improving safety and mobility for users, simplifying the intersection, enhancing the gateway into the City, and managing traffic congestion. The preferred intersection treatment is to square up the Riverside Avenue leg of the intersection with Barrett Street to create a four-way, signalized intersection with a pocket park in place of the existing skewed alignment of the Riverside leg. Connections to this preferred alternative intersection were considered for the alternatives evaluated in this study.



2.6.2 2014 Pearl-Prospect-Colchester Intersection Scoping Study

The Pearl-Prospect-Colchester Intersection Scoping Study identified a preferred alternative for the intersection at the western end of the study area to address the needs to improve safety at this high crash location, enhance mobility for all users, and reduce traffic congestion. Connections to this preferred intersection alternative were considered for the segment of Colchester Avenue as it approaches this intersection.



2.6.3 2011 City of Burlington Transportation Plan (and Burlington Street Design Guidelines)

The City of Burlington Transportation Plan identified the need for scoping on the Colchester Avenue corridor and recognized that the Colchester Avenue Task Force recommended Colchester Avenue be reconstructed as a complete street that is a "fully integrated road designed as part of a multi-modal system accommodating transit, cycling, and walking." The Plan and its appendices outlined preliminary analyses for the conversion from a four-lane to three-lane cross-section conversion.

2.6.4 2011 Colchester Avenue Corridor Plan

The Colchester Avenue Corridor Plan identified a number of short-term and long-term recommendations for the corridor. These recommendations included a reconfiguration of the western section from a four lane to three lane cross-section between South Prospect Street and East Avenue. The three-lane configuration was initially implemented as a pilot project and was made permanent based on observations and analyses from the pilot. For the eastern section of the corridor, between East Avenue and Barrett Street, it was recommended that designation of bike lanes be prioritized to provide continuity along the corridor, but the challenges requiring tradeoffs between bike infrastructure, greenbelt and streetscape opportunities, and parking were recognized. Also recommended in the plan was a realignment of the East Avenue and the Trinity Campus entrance at the intersection of Colchester Avenue and East Avenue.

2.6.5 2017 PlanBTV Walk Bike Plan

The Colchester Avenue and East Avenue intersection was identified in the PlanBTV Walk Bike Plan as one of the top 20 intersections requiring safety improvements in the City. In the short-term, it was recommended that the shared lane markings be carried from the eastbound bike lane through to the intersection along the right turn lane, which has been implemented. Another short-term recommendation was made for a median treatment to be piloted to provide some pedestrian refuge for those crossing Colchester Avenue at the intersection. In the longer term, the plan recommended a midblock crossing west of the intersection to reduce pedestrian crossings at the intersection, which was installed with an RRFB just east of Fletcher Place. The plan also identified a roundabout as a possible treatment for the intersection as a method for speed management, with the recommendation of a scoping study for the intersection.

In addition to the recommendations for the intersection, other treatments along the corridor within the study area were identified in the Plan. This includes investment in the improved Colchester Avenue Sidepath in the short-term by reconstructing and widening the existing facility, which was completed in 2020. In the 2-5 year time frame, the Plan calls for provision of more high visibility crossings at the UVM Medical Center entrance, realignment with curb extensions and high visibility crossings at Pearl/Prospect/Colchester Avenue intersection, curb extensions and high visibility crossings at Riverside/Colchester Avenue intersection, striping bike lanes on Colchester Avenue east of East Avenue; and a "more robust treatment to come in the long-term."

2.6.6 2017 UVM Active Transportation Plan

The UVM Active Transportation Plan identified a number of projects that were integral to the improvement of biking and walking circulation both on and near campus. Intersection improvement priorities included bike boxes and west leg pedestrian crossing and signals at Colchester Avenue and East Avenue, midblock crossing of Colchester Avenue near Fletcher Place, west leg pedestrian crossing of Colchester Avenue at the Medical Center entrance, facilitating left turning bicycles from Colchester Avenue onto Mansfield Avenue, and removing the left turn lane to replace with pedestrian refuge and Colchester Avenue crossing at University Place. Bicycle and pedestrian facility priorities included dedicated bicycle infrastructure on Colchester Avenue and East Avenue, widened and extended Colchester Avenue sidepath, new Trinity Campus access road sidepaths, and formalized UVM Medical Center paths.

2.6.7 2017 CCRPC Active Transportation Plan

The CCRPC Active Transportation Plan identifies Colchester Avenue as part of a high priority, high feasibility regional network connectivity project. The prioritized project intends to connect Burlington through Essex to Richmond via Colchester Avenue, VT-15, and VT-117. It is recommended that such high priority, high feasibility regional projects be prioritized more favorably in the Bicycle-Pedestrian Program to receive funding through VTrans. As such, the Colchester Avenue Sidepath was identified as part of this effort, prioritized through the Transportation Improvement Program (TIP), supported for reconstruction from South Prospect Street to East Avenue, and completed in 2020. The plan further recommends exploring the extension of bicycle facilities from East Avenue to Winooski along Colchester Avenue.

2.7 Previous Projects: Design and Construction

The corridor has been the subject of a lot of change over the last decade, with incremental safety improvements to the corridor creating a more multimodal gateway into the City of Burlington. The following projects have been implemented along or adjacent to the corridor with the exception of the University Place Streetscape Improvements and the Mansfield Avenue Sidepath Project, which are in the planning and design phases respectively.

- **2021 University Place Streetscape Improvements (Planning) |** *Conceptual design of improvements to University Place including reconfiguration to one-way vehicle traffic and bicycle and pedestrian infrastructure.*
- **2020 Mansfield Avenue Sidepath Project (Design) |** *Development of a sidepath along Mansfield Avenue to connect with existing or proposed bike and pedestrian infrastructure on Colchester Avenue.*
- **2020 Colchester Avenue Sidepath Project |** *Extension and reconstruction of sidepath on the south side of Colchester Avenue between South Prospect Street and East Avenue.*
- **2019 Colchester Avenue Repaving, Water Relining, Bike Lanes, and Crossings |** *Coordination of water utility work with repaving and restriping. Striping following construction installed new buffered bike lanes between Barrett Street and Greenmount Cemetery and a westbound bike lane between Greenmount Cemetery and East Avenue. This configuration retained on street residential and short-term parking on the south side of Colchester Avenue between Greenmount Cemetery and East Avenue and eliminated parking on the north side. This project also included the installation of a crosswalk and RRFB across Colchester Avenue at Chase Street.*
- **2019 Green Mountain Walkway Extension |** *Improvements to the connection between Colchester Avenue Sidepath and the Green Mountain Walkway on the UVM and UVM Medical Center Campus. Formalized a steep slope goat path to make a more direct and accessible connection between heavily utilized pedestrian pathways.*
- **2018 Colchester Avenue / Riverside Avenue Pedestrian Improvements |** *Installation of updated crossings with improved landings and new pedestrian signal heads. Implementation of expanded sidewalk to better connect Riverside Sidepath to Colchester Avenue bike and pedestrian infrastructure.*
- **2016-2018 Colchester Avenue Crosswalks |** *Installation of midblock crossings of Colchester Avenue with Rectangular Rapid Flashing Beacons near University Road at Centennial Fields and at Fletcher Place.*
- **2014 Colchester Avenue Sidewalk at Greenmount Cemetery |** *Addition of missing section of sidewalk between the entrance to Greenmount Cemetery and Calarco Court.*
- **2011 Colchester Avenue Pilot Project |** *Conversion of the four-lane cross section from Pearl Street to East Avenue to three-lanes as a Pilot Project and then a permanent installation.*

3

Public Outreach

A robust public outreach process was conducted by engaging a diverse group of stakeholders on the project Advisory Committee and providing ample opportunities for public input over the course of the study's development. Two widely advertised public meetings were held for this project including an initial Local Concerns Meeting and a Draft Alternatives Presentation. Before and after bringing materials to the public, the Advisory Committee convened to weigh in on considerations, feedback, and concepts that led to compromise solutions for the corridor and intersection that fulfill the project Purpose and Needs. The Advisory Committee's recommendations were then presented to the Burlington Public Works Commission, Transportation, Energy, and Utilities Committee, and City Council.

3.1 Overview

The study falls in the Involve category on the spectrum of public participation[1] that the CCRPC and City of Burlington reference for projects, programs, and activities at varying levels of public participation. The CCRPC and City, along with the project team, worked directly with the public to "ensure that public concerns and aspirations are consistently understood and considered."[2] The characteristics of the public engagement effort included two-way communication between the project team and the public facilitated by multiple interactions over a year and a half to advance of solutions to complex problems. The Equity Impact Worksheet required for this level of public participation and other documentation regarding the public involvement are included in the Appendices.

3.2 Project Advisory Committee

The project Advisory Committee consisted of a diverse group of stakeholders including representatives from the CCRPC, City of Burlington, VTrans, GMT, UVM, UVM Medical Center, Burlington Walk Bike Council, Burlington Wards 1 & 8 NPA, and Burlington City Council. The Advisory Committee convened on January 29, 2020 following the Local Concerns Meeting and again on March 19, 2020 to prepare for the Alternatives Presentation and Public Meeting. The project was paused due to the COVID-19 pandemic, so the Advisory Committee did not reconvene again until February 28, 2021 to advance a preferred alternative following the Alternatives Presentation.

The committee served an advisory role throughout the project and was responsible for representing various constituent, community, and institution perspectives in review of project process and study findings, vetting all materials and concepts, and providing guidance to the project team. The Advisory Committee provided input and ultimately finalized the Purpose and Need statement which was used as the basis for all alternative concepts and evaluation. The Advisory Committee also identified and recommended preferred alternatives along the corridor for consideration by the TEUC and City Council, as detailed later in this report.

The meetings agendas, presentations, and minutes can be found in the Appendices.

3.3 Local Concerns Meeting

A Local Concerns Meeting was held on December 4, 2019 to solicit public input at the onset of the project. The attendees were provided an overview of the project, background on existing conditions, and planning efforts and projects to date. Based on typical cross-sections and anticipated challenges, the corridor was segmented into four sections as follows: South Prospect Street to UVM Medical Center entrance (**Figure 4**), UVM Medical Center entrance to East Avenue (**Figure 5**), East Avenue to Greenmount Cemetery (**Figure 6**), and Greenmount Cemetery to Barrett Street (**Figure 7**). The participants were then asked to

1 International Association of Public Participation, *Spectrum of Participation*, www.iap2.org.

2 CCRPC, 2014. *Public Participation Plan*.

help identify any opportunities or concerns along the Colchester Avenue corridor, as highlighted in those figures respectively. Some common themes that emerged from the discussion included:

- consistent and protected pedestrian and bicycle accommodations;
- improved accommodations at intersections for pedestrians and bicyclists, with particular focus on left turning bicyclists, crossing pedestrians, and appropriate lighting;
- curbside access to transit; and,
- neighborhood based solutions to on-street parking while supporting the high turnover parking needs of businesses.

As the study progressed, the highlighted elements were evaluated by the project team and served as the foundation for identifying many different concepts to explore for the corridor. The meeting agenda, presentation, and minutes can be found in the Appendices.

Figure 4: Opportunities and Constraints Map 1

Segment 1: South Prospect Street to UVM Medical Center

Issue: Given it's current phasing, some pedestrians do not feel safe crossing Colchester Avenue at the intersection with Mansfield Avenue.

Opportunity: Is there space to consider 10' wide Shared-Use Paths on both sides of the street?

Issue: The corridor needs infrastructure that allows for bicyclists to make left-turns along the corridor.

Opportunity: Improve bicyclist & pedestrian safety and operations at Colchester Avenue & S/N Prospect Street.

Issue: The No-Right-Turn LED Signs at UVM Medical Center has not been effective to date. This movement is putting pedestrians and bicyclists at risk.

Issue: There is some drainage infrastructure in this section that is dangerous to bicyclists.

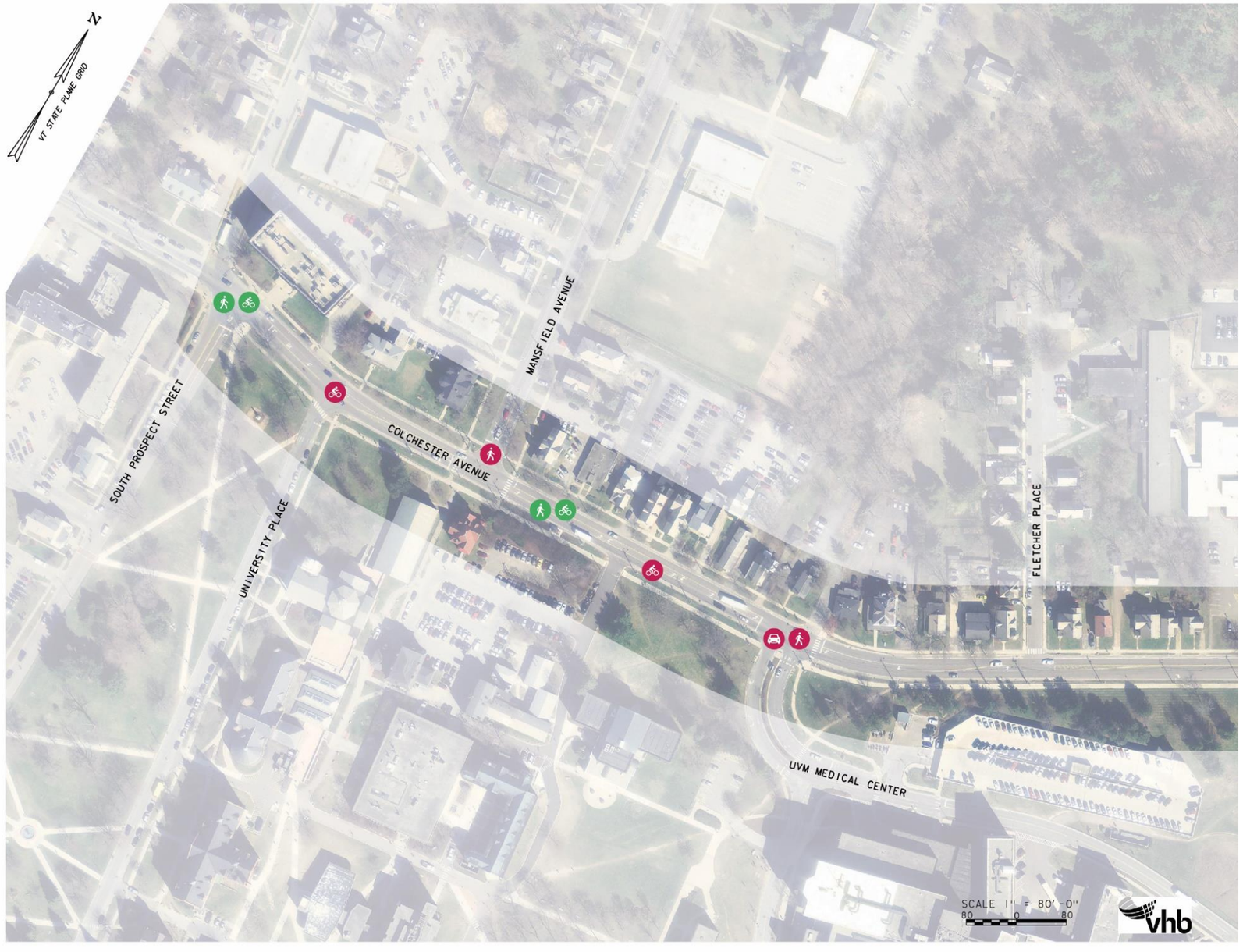


Figure 5: Opportunities and Constraints Map 2

Segment 2: UVM Medical Center to East Avenue

Issue: The lighting along the existing path is insufficient.

Issue: The existing path is hazardous for bicyclists who choose to ride along it rather than in the roadway.

Issue: The inconsistency in treatments for bicyclists makes navigating the corridor safely challenging.

Issue: The sidewalk network lacks continuity when it transitions to East Avenue.

Opportunity: Could the intersection with East Avenue be evaluated as a roundabout? Or could the intersection be evaluated to better accommodate bicyclist and pedestrian desire lines?

Note: The Colchester Avenue crosswalk at Fletcher Place has been a major improvement for pedestrian safety.

Figure 6: Opportunities and Constraints Map 3

Segment 3: East Avenue to Greenmount Cemetery

Issue: Westbound motorists will often pull into the bike lane at the intersection with East Avenue, endangering bicyclists.

Opportunity: There's an opportunity for improvements to the signal layout at East Avenue which would make conditions safer for all users.

Issue: Colchester Avenue to the east of East Avenue becomes extremely dangerous for bicyclists as it's a shared street condition, and motorists jockey for position at high speeds.

Opportunity: The perception is that congestion has improved since the removal of parking along the north side of Colchester Avenue.

Issue: Wide turning buses from Trinity campus make for unsafe conditions for bicyclists adjacent to "Kathy's Flowers" due to the presence of one parking space.

Opportunity: Is there space to consider continuing the new shared-use path along the south side of Colchester Avenue?

Note: The parking spaces for Kampus Kitchen are working well to date.

Issue: The bus stop just west of Greenmount Cemetery is challenging as the on-street parking restricts bus accessibility to the curb, making it difficult for passengers to board.

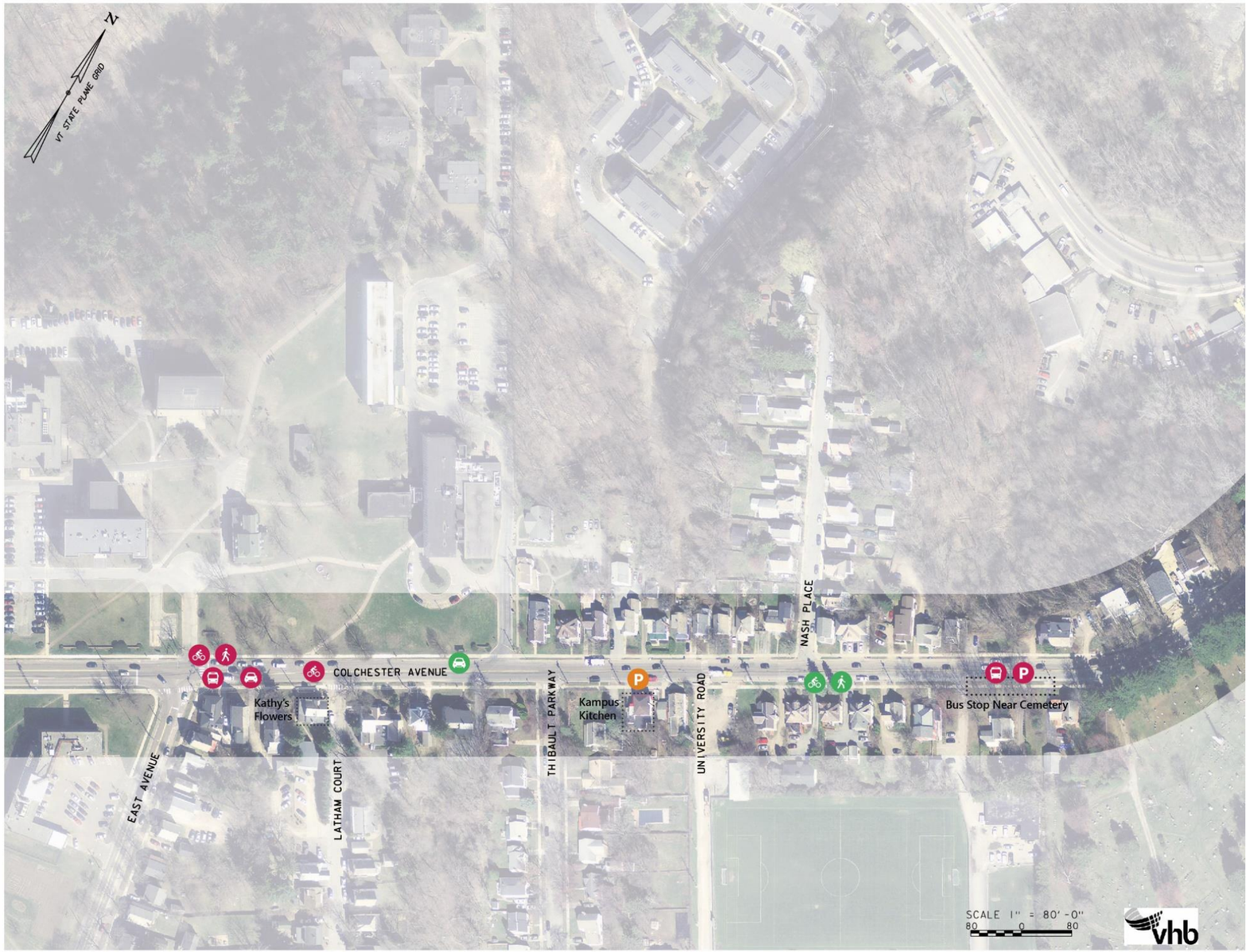


Figure 7: Opportunities and Constraints Map 4

Segment 4: Greenmount Cemetery to Barrett Street

Opportunity: The City should undertake a Parking Management Plan for this section and consider zoned parking rather than street-only parking.

Note: The City should investigate the number of permits currently distributed against the number of spots regularly utilized.

Issue: Bicyclists are concerned about safety around bus stops, and see a need to have channelized pull-offs for bus stops that maintain separation from bicyclists.

Opportunity: Can the curbs be widened to create space for separated bike lanes?

Issue: Buses generally speed through this section of the corridor.

Note: Chase Street generally gets blocked in the PM peak hour. Enhanced markings and signing should be considered.

Opportunity: Can the intersections with East Avenue and Riverside Avenue be evaluated in coordination to understand how one intersection affects the other?

3.4 Draft Alternatives Presentation

An Alternatives Presentation was scheduled prior to the COVID-19 pandemic shutting down in person activities. The pandemic put the project on pause in March of 2020. When the project was reinitiated in late fall 2020, materials for the Alternatives Presentation were prepared and posted prior to the meeting via video recording to encourage familiarity with the study and alternatives prior to the virtual Public Meeting. The project team then presented the draft alternatives on January 11, 2021. The corridor was broken down into three focal areas: corridor concepts west of East Avenue, corridor concepts east of East Avenue, and intersection alternatives for the Colchester Avenue and East Avenue intersection. The alternatives presented to the public are described in detail in Chapter 4.

Based on public input, there was clear preference for a consistent cross-section along the Colchester Avenue corridor. The concepts for the corridor that were supported by the community had raised bike facilities adjacent to sidewalks and separated from the vehicular travel lanes by a greenbelt. West of East Avenue, the preference for the features of a raised, separated bike facility supported a single concept. For the segment east of East Avenue, there were three variations that included the raised, separated bike facilities that all garnered support from the public.

For the intersection of Colchester Avenue and East Avenue, preference conveyed by the public was for either a realigned intersection with new traffic signal equipment and a bike signal or a roundabout above the other options. Between these two alternatives, the realigned and signalized intersection option was favored. More detailed information regarding the features of each of these alternatives was gathered to bring to the Advisory Committee for discussion and resolution.

The Advisory Committee convened to discuss the alternatives still under consideration after the public meeting and identify any adjustments that could be made to come to a compromise that could be supported by the community. The Advisory Committee affirmed the raised, separated bike facility concept for the section west of East Avenue. For the corridor segment east of East Avenue, discussion of a compromised solution that borrows features from each of the three alternatives was supported by the majority. The changes suggested by the Advisory Committee to the draft alternatives are reflected in the preferred alternative conceptual plans in Chapter 5. The adjustments include maintaining a consistent raised, separated bike facility adjacent to the sidewalk, high turnover, short-term parking in front of Kampus Kitchen, and maintaining curbside pull-outs for the purposes of high turnover, short-term parking, transit stops, and deliveries. For the intersection, following discussion of the features of a signalized realignment option and a roundabout, the preferred alternative of the signalized intersection with realignment and a bike signal emerged.

The meeting agendas, presentations, and minutes can be found in the Appendices.

3.5 Preferred Alternative Presentations

[Hold for Public Works Commission, TEUC, and City Council Outcomes. The meeting agenda, presentations, and minutes can be found in the Appendices.]

4

Corridor Concept and Intersection Alternatives Analysis

An analysis conducted for each of three focus areas evaluated the validity of various options to arrive at a preferred conceptual plan for the Colchester Avenue corridor from South Prospect Street to Barrett Street. The following three focus areas were examined along the corridor: 1) the Colchester Avenue corridor west of East Avenue, 2) the Colchester Avenue corridor east of East Avenue, and 3) the intersection of Colchester Avenue and East Avenue. Metrics of evaluation fell into the categories of cost, safety outcomes, project impacts, and community character. Relative comparisons of these metrics across the options helped guide stakeholders to arrive at a package of preferred improvements for the corridor.

4.1 Corridor Concepts – West of East Avenue

The western end of the Colchester Avenue corridor stretches from where Colchester Avenue transitions to Pearl Street at the intersection with South Prospect Street to the East Avenue intersection, see **Figure 8**.

The concepts evaluated for the western end of the corridor included a No Build concept, on-street separated bike lanes, and raised, separated bike lanes.

Figure 8: Corridor West of East Avenue

4.1.1 No Build (West)

The No Build scenario was examined as a baseline condition for the purposes of comparison.

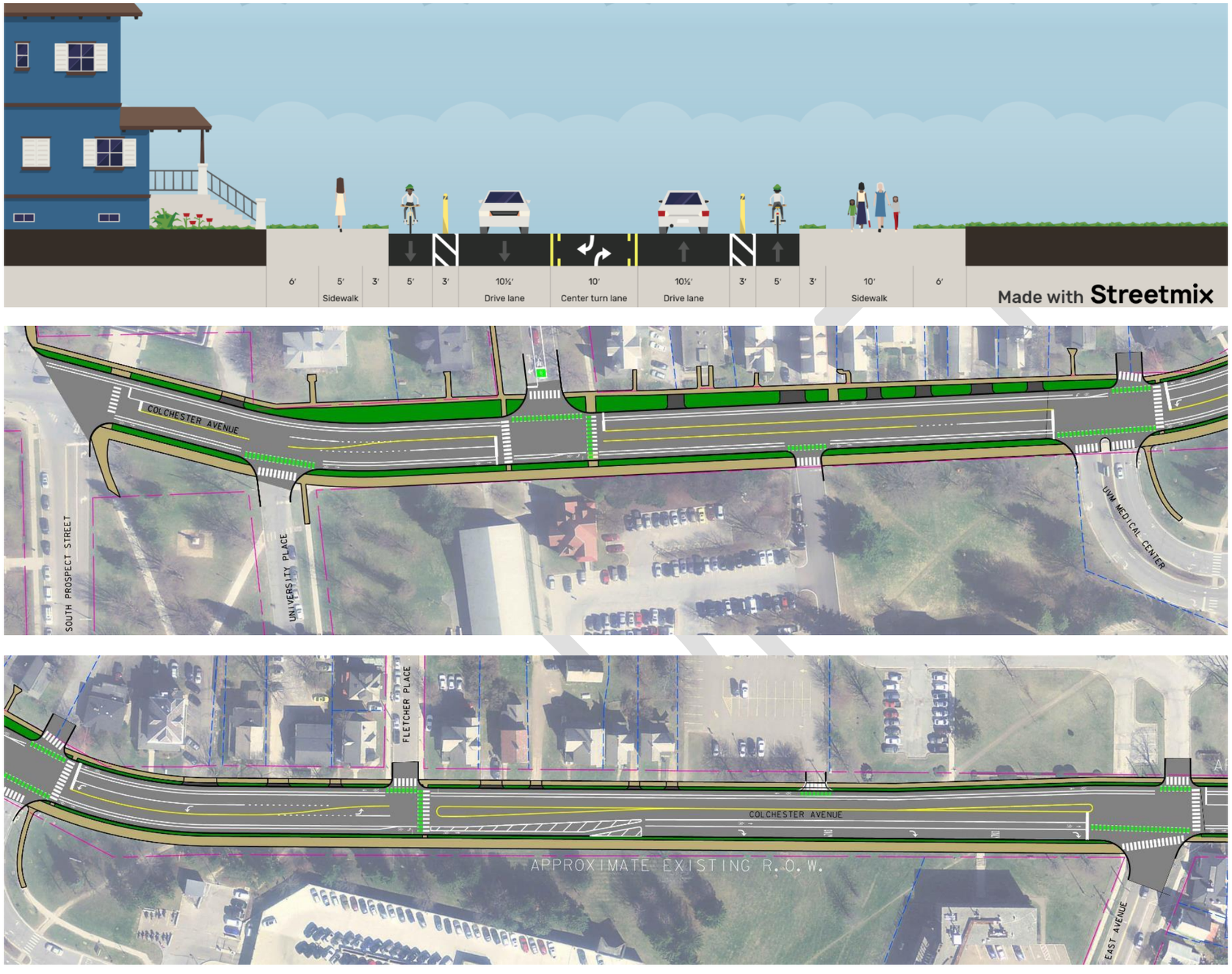
4.1.2 Concept 1 (West) – On-Street Separated Bike Lanes

Concept 1 would establish new curb lines located at a 47′ width to provide for protected bike lanes at street level. A vertical element, bollards or other approved devices, would be introduced in the 3′ buffer to further delineate the dedicated bicycle space in the cross-section. With few driveways along stretches of this segment, particularly on the south side of the corridor, the vertical element could be placed at consistent intervals without a lot of interruption. This alternative would require striping to establish the dedicated spaces within the curb. For instance, two-stage left turns for cyclists would be established with striping on the pavement at each of the side streets.

This cross-section would allow for at least 6′ of greenbelt between the bike facility and sidewalk to the north or shared use path to the south for the segment west of Medical Center. At least 3′ of greenbelt between the bike facility and sidewalk to the north or shared use path to the south would be accommodated east of Medical Center. Although shifting curb would require some disruption to the current greenbelt, there would be opportunity for tree plantings, lighting, and other greenbelt features in this scenario.

A graphic of the typical corridor cross-section and the plan view of Concept 1 both west and east of the Medical Center are included in **Figure 9**.

Figure 9: Colchester Ave Corridor Concept 1 (West): On-Street Separated Bike Lanes

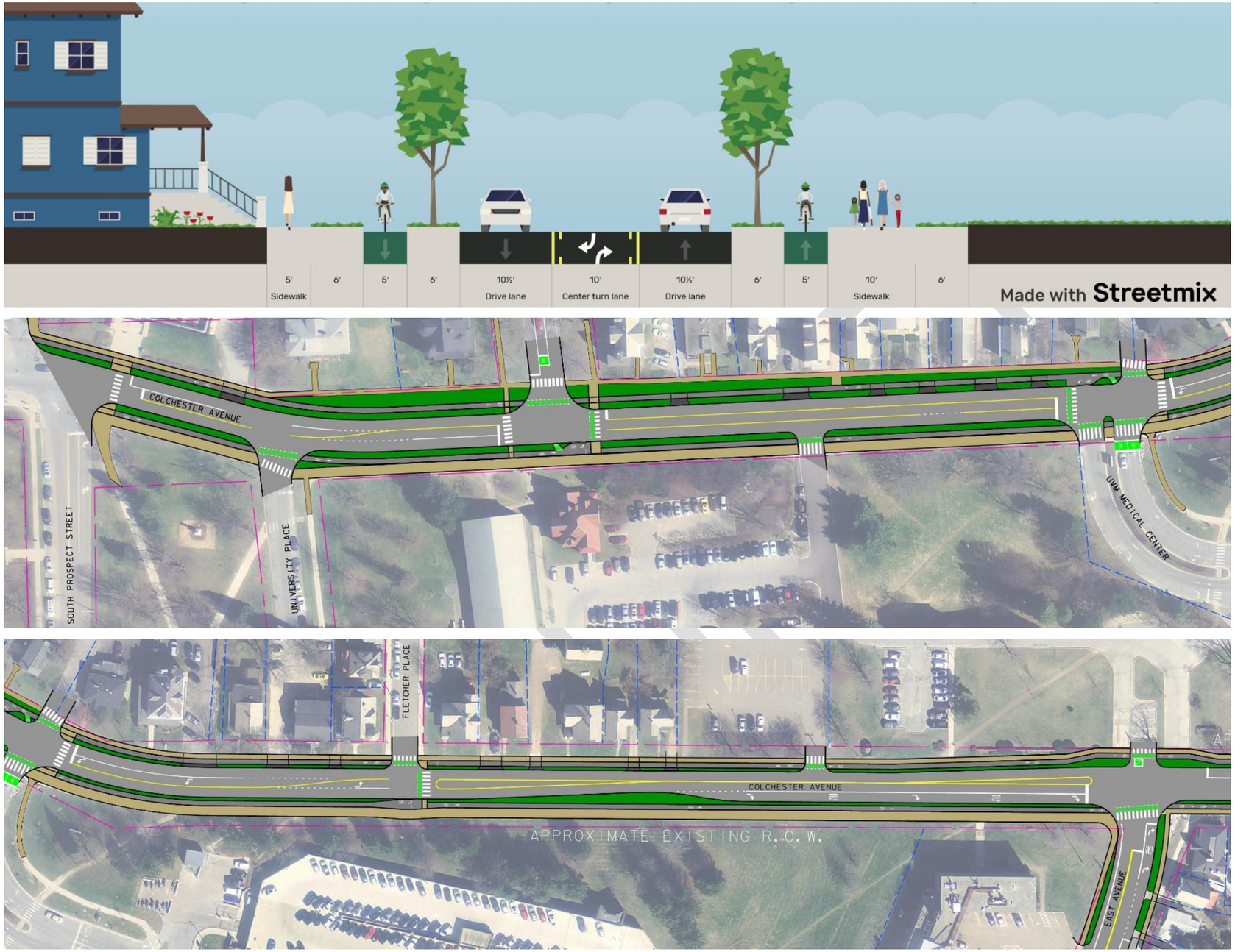


4.1.3 Concept 2 (West) – Raised, Separated Bike Lanes

Concept 2 envisions bike lanes along the corridor that are grade and greenbelt separated from the vehicle lanes. The concept draws in the curb lines to a 31′ width to provide the travel lanes and shared left turn lanes for vehicle traffic. Outside of the curb line, a greenbelt of at least 6′ west of the Medical Center and at least 3′ east of the Medical Center would be established with the bike lane beyond it. In most sections, the raised bike lane would be adjacent to the sidewalk or shared use path. The bike and pedestrian facilities would be delineated with a short, beveled curb and have different surface treatments to clearly designate the two facilities.

A graphic depicting the typical corridor cross-section and the plan view of Concept 2 both west and east of the Medical Center are included in **Figure 10**.

Figure 10: Colchester Ave Corridor Concept 2 (West): Raised, Separated Bike Lanes



4.1.4 Corridor Concepts West of East Avenue – Evaluation Matrix

An evaluation matrix of the corridor concepts presented in Section 4.1 is shown in **Table 2** below. This matrix compares the relative costs, safety, impacts to various resources, and community character implications for each concept.

Table 2: Colchester Avenue Corridor Concepts West of East Avenue - Evaluation Matrix

			Colchester Avenue Corridor Concepts (West)	
		Concept 0 No Build	**Concept 1 (West)** On-Street Separated Bike Lanes	**Concept 2 (West)** Raised and Separated Bike Lanes
Costs	**Total Cost**	**$0**	**$$**	**$$$**
	Bicycle Safety	-	**Improved** *Cyclists in separated facility*	**Improved** *Cyclists in separated facility*
	Pedestrian Safety	-	**Improved** *Pedestrians in separated facility*	**Improved** *Pedestrians in separated facility*
	Vehicle Safety	-	**Slightly Improved** *Reduce conflicts with cyclists by defining and separating spaces*	**Slightly Improved** *Reduce conflicts with cyclists by defining and separating spaces*
Impacts	Utility Impacts	-	Major Impacts	Major Impacts
	ROW Impacts	-	No Impacts	No Impacts
	Constructability	-	Major Effort	Major Effort
	Parking	-	No Change	No Change
	Trees	-	Moderate Impacts to Existing; Some Tree Belt Opportunity	Moderate Impacts to Existing; Some Tree Belt Opportunity
	Historic	-	No Impacts	No Impacts
	Archaeological	-	No Impacts	No Impacts
Community Character	Aesthetics	No Change	No Change	Improved
	Satisfies Purpose & Need	No	Yes	Yes

* unmet on-street parking need requiring alternative locations to accommodate parking

4.2 Corridor Concepts – East of East Avenue

Although the right-of-way along the Colchester Avenue corridor is 5 rods, or about 80 feet, the segment east of East Avenue is a tighter cross section than the western end due to the limited setback of structures. The curb-to-curb width is approximately 35' in the existing condition as depicted in **Figure 11**.

The concepts evaluated for the eastern end of the corridor included a No Build concept, on-street separated bike lanes, raised and separated bike lanes, raised and separated bike lanes with enhancements, raised and separated bike lanes with enhancements and a mixing zone, and a shared use path.

Figure 11: Corridor East of East Avenue

4.2.1 No Build (East)

In order to understand the impacts resulting from changes to this corridor cross-section, the existing conditions were first analyzed.

Because the updated striping in the No Build condition is relatively new for this segment of the corridor, the striping plans were included in the Appendices for reference.

4.2.2 Concept 1 (East) – On-Street Separated Bike Lanes

Concept 1 for the eastern end of the corridor is consistent with Concept 1 (West). Through this section, the bike facilities are proposed to be on street level within a newly located curb line with a 3' buffer between the vehicular through lanes in either direction. Again, it is proposed that the buffer will have a vertical element, but through this section the locations available for bollards or other vertical devices will be more limited due to the significant number of driveways. The concept envisions repurposing the existing curb-to-curb entirely to vehicular traffic and separated bike lanes, eliminating the remaining on-street parking on the south side of the road between East Avenue and Greenmount Cemetery.

A graphic depicting the typical corridor cross-section and the plan view of Concept 1 in two segments are included in **Figure 12**.

Figure 12: Colchester Ave Corridor Concept 1 (East): On-Street Separated Bike Lanes

4.2.3 Concept 2 (East) – Raised, Separated Bike Lanes

Concept 2 on the eastern end of the corridor is consistent with Concept 2 (West). Through this section, the bike facilities are proposed to be horizontally and vertically separated from the vehicular travel lanes with curb and a greenbelt. Through this section, it is again proposed that the raised, separated bike lanes would be adjacent to the sidewalk with a small, beveled curb between the two facilities and different surface treatments to distinguish the facilities. Through this section, the curb-to-curb width is adjusted to 26′ to accommodate the 11′ width travel lanes in each direction with 2′ shoulders next to the curb and no on-street parking along corridor.

A graphic of the typical corridor cross-section and the plan view of Concept 2 in two segments are included in **Figure 13**.

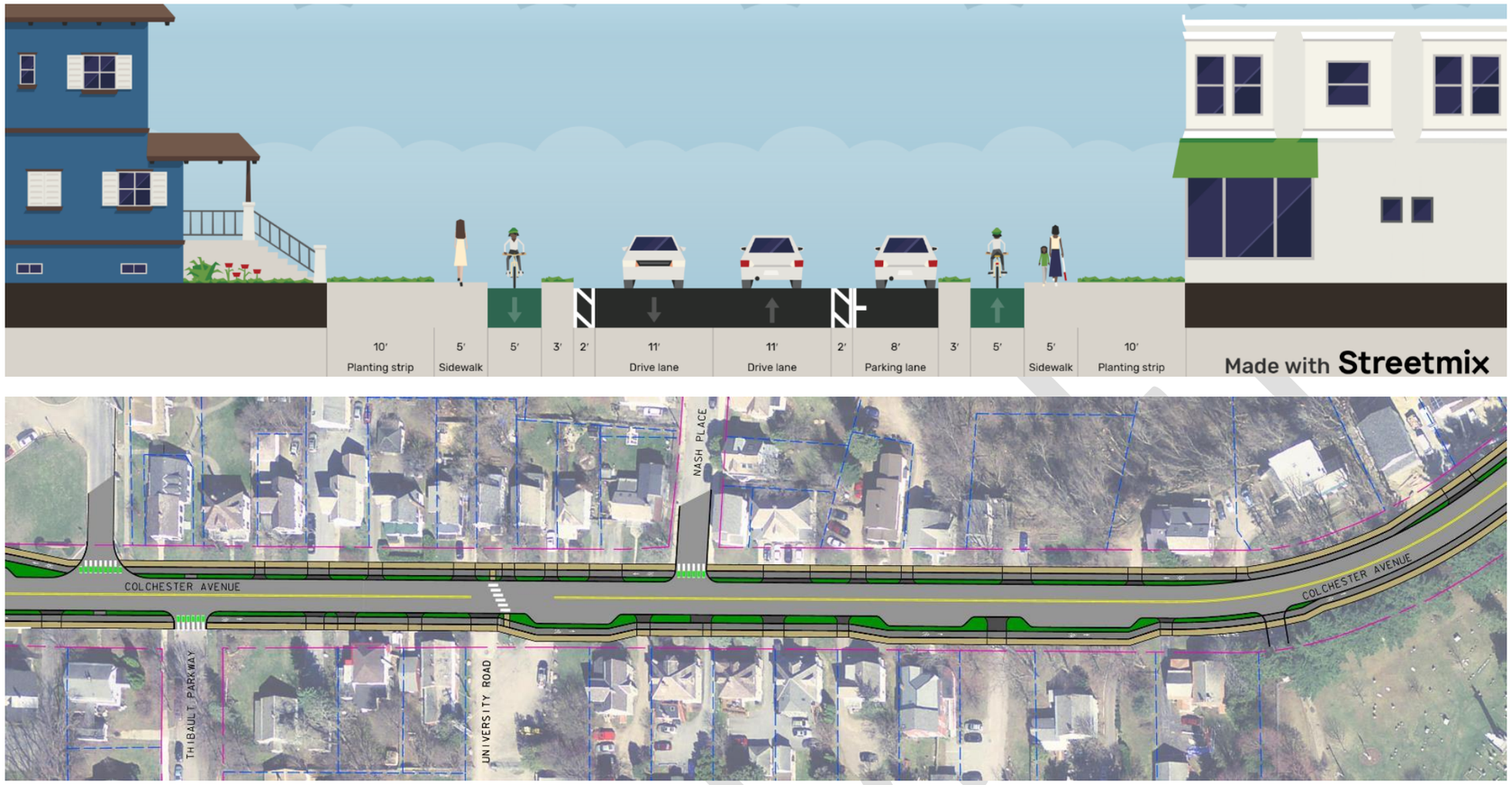
Figure 13: Colchester Ave Corridor Concept 2 (East): Raised, Separated Bike Lanes

4.2.4 Concept 3 (East) – Raised, Separated Bike Lanes with Enhancements

Concept 3 for the eastern end of the corridor borrows from Concept 2, but adds in strategic curbside pull-outs along the segment for the purposes of either parking or bus transit stops. Locations for the pull-outs were identified based on minimizing impacts beyond the existing back of sidewalk and maximizing the length available for the pull-out where driveways or side streets were spaced appropriately. These pull-outs were added in places where there are existing bus transit route stops or where there may be a need for on-street parking, like in proximity to Kampus Kitchen.

A graphic depicting the typical corridor cross-section and the plan view of Concept 3 are included in **Figure 14**. Note that Concept 3 remains the same as Concept 2 between the Greenmount Cemetery and Barrett Street.

Figure 14: Colchester Ave Corridor Concept 3 (East): Raised, Separated Bike Lanes with Enchancements



4.2.5 Concept 3A (East) – Raised, Separated Bike Lanes with Enhancements and Mixing Zones

A variation of Concept 3 (East), Concept 3A resulted from the outreach conducted to better understand the parking needs along the corridor. The demand for high-turnover parking, particularly in front of Kampus Kitchen, resulted in an exploration of tradeoffs through the tighter cross section along the eastern end of the corridor. In this concept, the block between Thibault Parkway and the Centennial Field entrance would have a mixing zone as opposed to separated bike lane and sidewalk, with the additional width reallocated to 2-3 high-turnover, 15-minute, on-street parking spaces. The mixing zone was envisioned to make bicyclists and other through users of the bike and pedestrian facilities more aware of the cross traffic through this section, particularly in anticipation of peak activity at Centennial Field or Kampus Kitchen.

A graphic depicting the typical corridor cross-section and the plan view of Concept 3A are included in **Figure 15**. Recall that Concept 3A remains the same as Concept 2 between Greenmount Cemetery and Barrett Street.

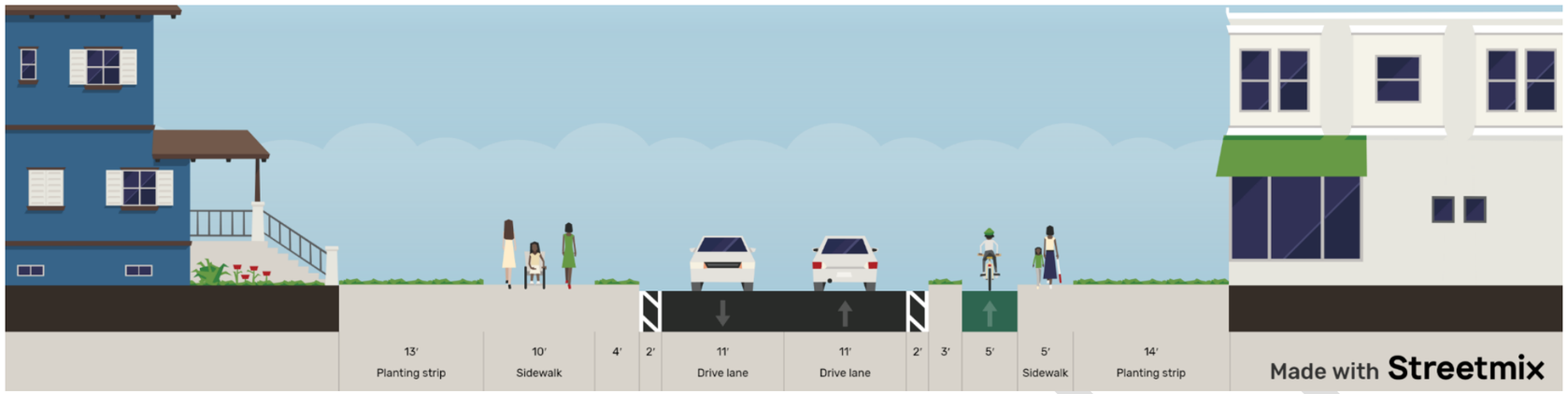
Figure 15: Colchester Ave Corridor Concept 3A (East): Raised, Separated Bike Lanes with Enchancements and Mixing Zone

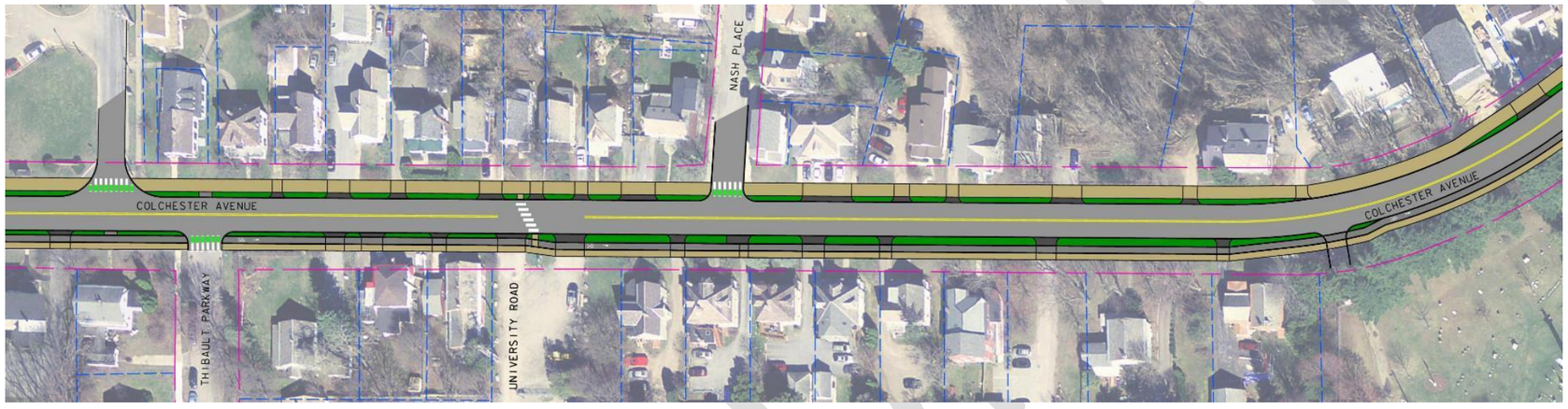
4.2.6 Concept 4 (East) – Shared Use Path

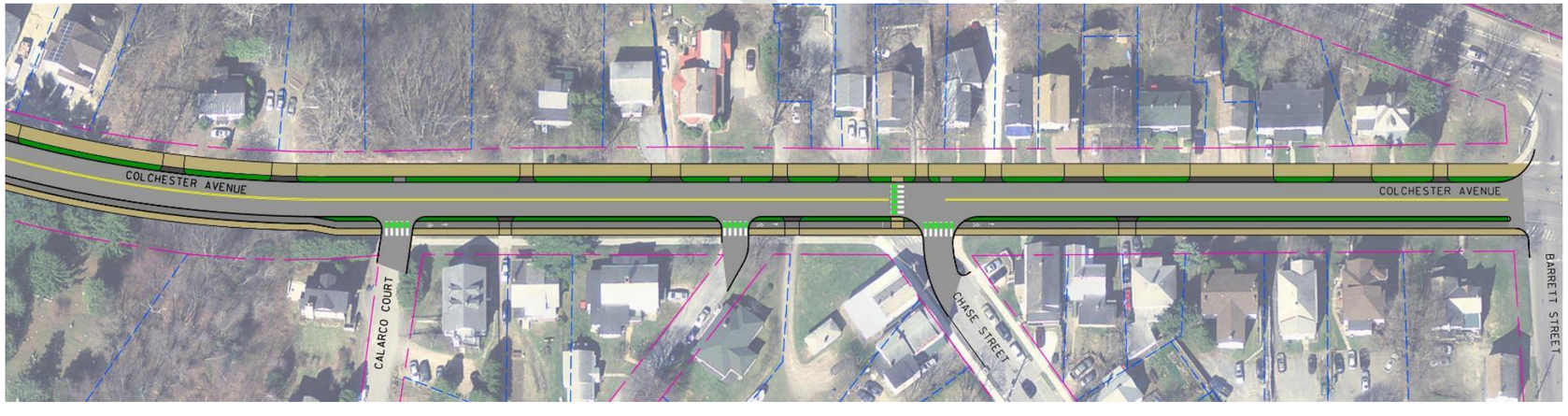
Similar in character to the shared use path that already exists along the western end of the corridor, the Concept 4 (East) alternative incorporated a shared use path on the north/west side of the corridor between East Avenue and Barrett Street. The corresponding south/east side of the corridor were assumed to have a raised, separated bike lane adjacent to the sidewalk like in Concept 2. The justification for locating the shared use path on the north/west side of the corridor through this segment was to accommodate the slower moving, uphill cyclists on the shared use path and the faster, downhill bicyclists in a dedicated bike facility. The slower moving cyclists climbing the steepest section of Colchester Avenue would mix well with pedestrians, especially from a pedestrian safety standpoint when compared to the considerably faster speeds of a downhill bicyclist. However, the shared use path would be on the opposite side of Colchester Avenue from the existing side path on the western end, requiring users to cross two legs of the East Avenue intersection in order to stay on a shared use path facility along the entire length of the corridor.

A graphic depicting the typical corridor cross-section and the plan view of Concept 4 in two segments are included in **Figure 16**.

Figure 16: Colchester Ave Corridor Concept 4 (East): Shared Use Path







4.2.7 Corridor Concepts East of East Avenue – Evaluation Matrix

An evaluation matrix of the alternatives presented in Section 4.2 is shown in **Table 3** below. This matrix compares the relative costs, safety, resource impacts, and community character implications for each alternative.

Table 3: Colchester Avenue Corridor Concepts East of East Avenue – Evaluation Matrix

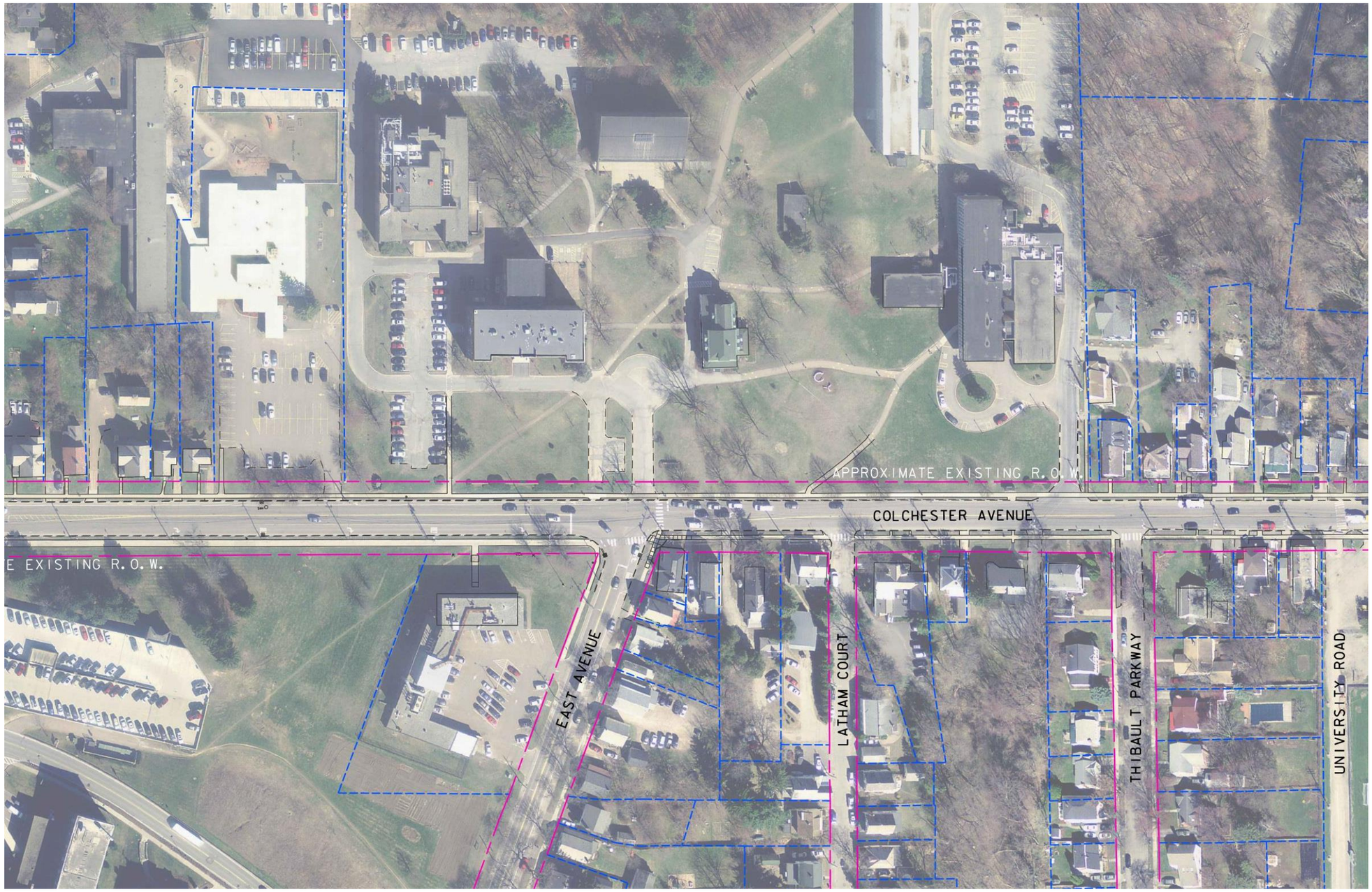
		Colchester Avenue Corridor Concepts (East)				
		Concept 1 (East) On-Street Separated Bike Lanes	**Concept 2 (East)** Raised and Separated Bike Lanes	**Concept 3 (East)** Raised and Separated Bike Lanes with Enhancements	**Concept 3A (East)** Raised and Separated Bike Lanes with Enhancements and Mixing Zone	**Concept 4 (East)** Shared Use Path and Separated Bike Lanes
Costs	**Total Cost**	**$$**	**$$$**	**$$$**	**$$$**	**$$$**
	Bicycle Safety	**Improved** *Cyclists in separated facility*	**Improved** *Cyclists in separated facility*	**Improved** *Cyclists in separated facility*	**Improved** *Cyclists in separated facility or shared use path*	**Improved** *Cyclists in separated facility or shared use path*
	Pedestrian Safety	**No Change / Slightly Improved** Fewer cyclists using sidewalk	**No Change / Slightly Improved** Fewer cyclists using sidewalk	**No Change / Slightly Improved** Fewer cyclists using sidewalk	**No Change/Slightly Worse** *Pedestrians in separated facility except for mixing zone area*	**No Change/Slightly Worse** *Cyclists and Pedestrians in shared path on North side at east end of project.*
	Vehicle Safety	**Slightly Improved** *Reduce conflicts with cyclists by defining and separating spaces*	**Slightly Improved** *Reduce conflicts with cyclists by defining and separating spaces*	**Slightly Improved** *Reduce conflicts with cyclists by defining and separating spaces*	**Slightly Improved** *Reduce conflicts with cyclists by defining and separating spaces*	**Slightly Improved** *Reduce conflicts with cyclists by defining and separating spaces*
Impacts	Utility Impacts	Major Impacts	Major Impacts	Major Impacts	Major Impacts	Major Impacts
	ROW Impacts	No Impacts	No Impacts	Minor Impacts	Minor Impacts	No Impacts
	Constructability	Major Effort	Major Effort	Major Effort	Major Effort	Major Effort
	Parking	Elimination of On-Street Parking (Colchester Ave)	Elimination of On-Street Parking (Colchester Ave)	Maintains Some On-Street Parking (Colchester Ave)	Maintains Some On-Street Parking (Colchester Ave)	Elimination of On-Street Parking (Colchester Ave)
	Trees	Moderate Impacts to Existing; Some Tree Belt Opportunity	Moderate Impacts to Existing; Some Tree Belt Opportunity	Major Impacts to Existing; Increased Tree Belt Opportunity	Major Impacts to Existing; Increased Tree Belt Opportunity	Moderate Impacts to Existing; Some Tree Belt Opportunity
	Historic	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts
	Archaeological	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts
Community Character	Aesthetics	No Change	Improved	Improved	Improved	Improved
	Satisfies Purpose & Need	No*	No*	Yes	Yes	No*

* unmet on-street parking need requiring alternative locations to accommodate parking

4.3 Intersection Alternatives – Colchester Avenue & East Avenue

The third focus area for evaluation was the intersection of Colchester Avenue and East Avenue, shown in **Figure 17**. Alternatives evaluated for the intersection included: new signal equipment and striping upgrades at existing intersection, new signal equipment and striping upgrades with realignment of the intersection and a new bike signal, new signal equipment and striping upgrades with realignment of the intersection, and a roundabout.

Figure 17: Intersection of Colchester Avenue & East Avenue



4.3.1 No Build Intersection Alternative

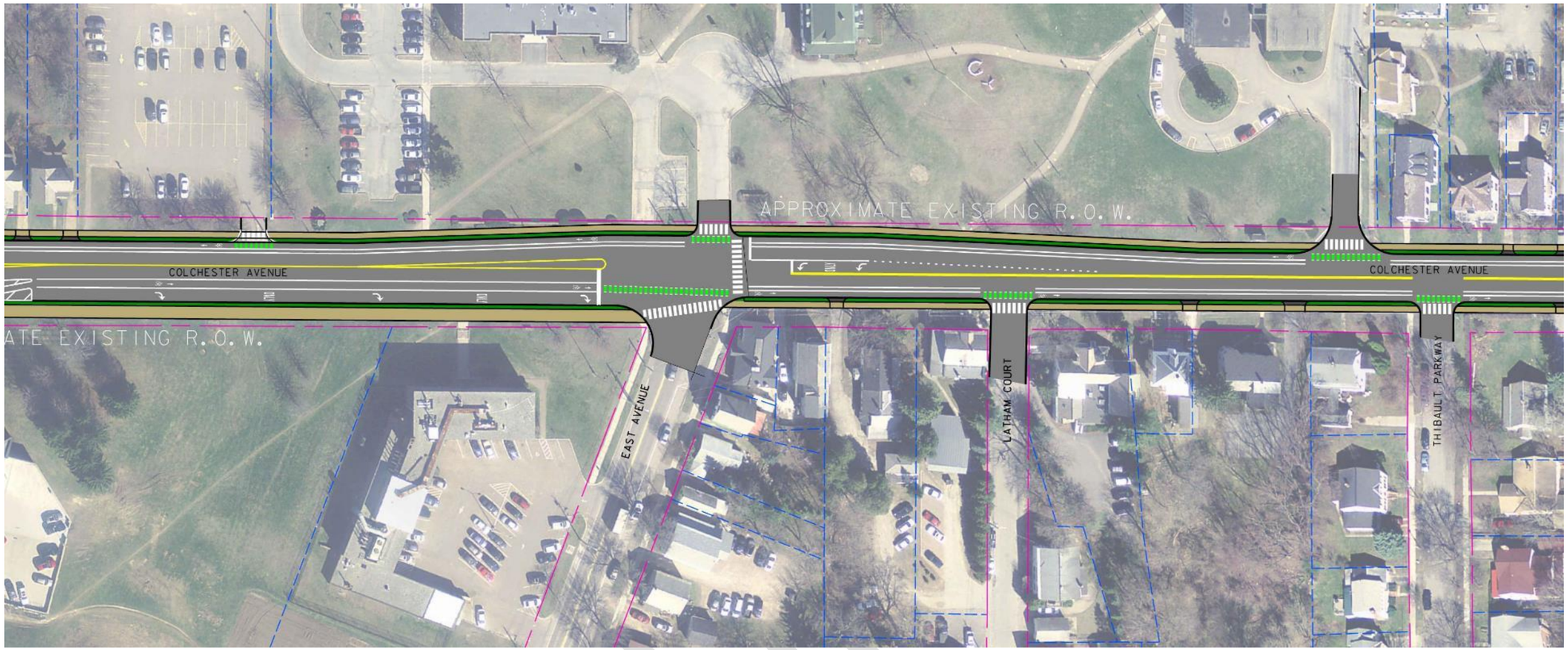
The no build alternative at this intersection would facilitate the preferred alternatives for the west and east corridor, which may involve the shifting of curbs and updated striping on either Colchester Avenue approach to the intersection. Beyond that, the no build alternative would maintain operation consistent with the current condition.

4.3.2 Intersection Alternative 1 – Equipment and Striping Upgrades at Existing Signalized Intersection

The first build alternative would not shift the curblines, but rather address many of the other first tier safety recommendations from the HSIP location review, including installation of new signal equipment mounted on new mast arms and mast arm poles with improved alignment with the lane each signal face serves. The signal head upgrades would include backplates, per the HSIP recommendations. Signal timing at the intersection may be adjusted to improve pedestrian accommodation by providing a leading pedestrian crossing phase. This means that although the pedestrians would cross the intersection concurrently with vehicle traffic, the pedestrians would get a head start in their crossing movement to make them more visible to traffic once vehicles are permitted to move. This would result in a LOS E for the future 2040 traffic condition. Otherwise the intersection will largely remain the same as the No Build in this alternative.

A graphic depicting Alternative 1 is included in **Figure 18.**

Figure 18: Colchester Ave & East Ave Intersection Alternative 1: Equipment and Striping



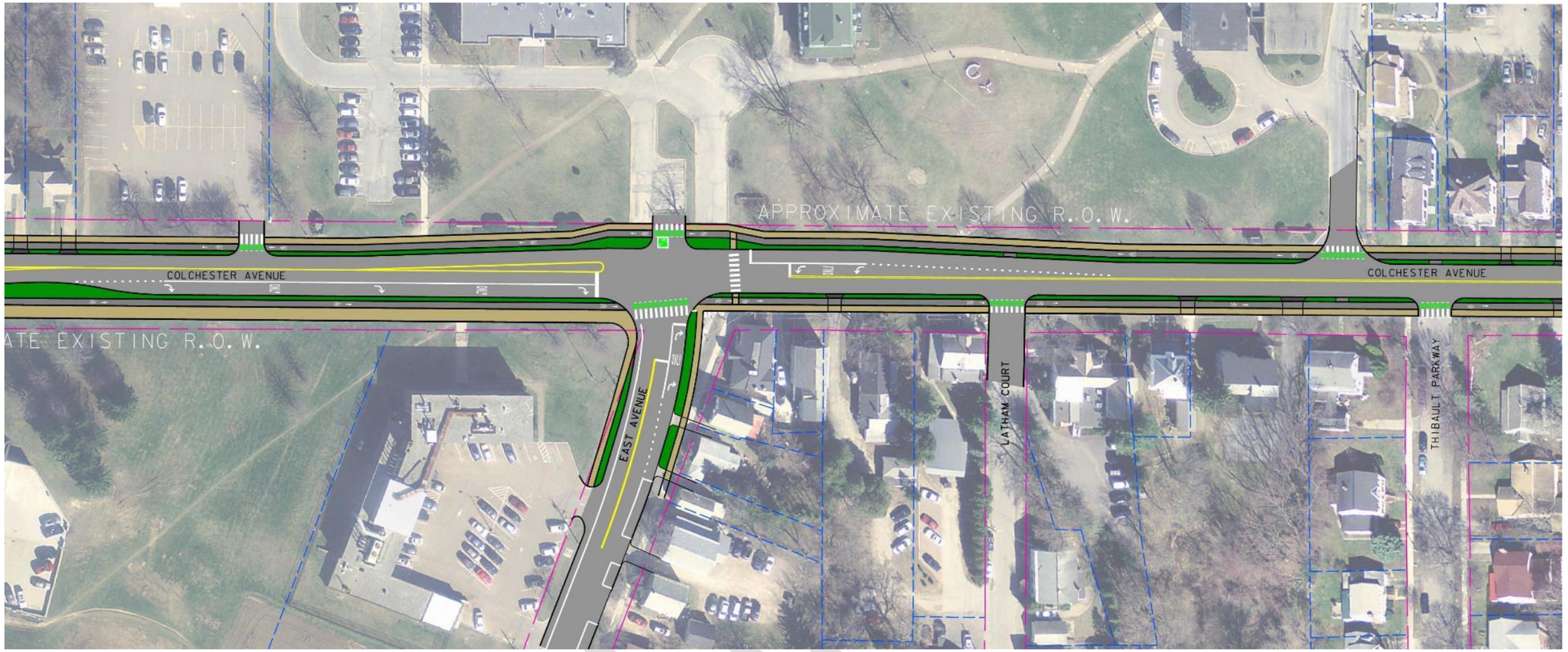
4.3.3 Intersection Alternative 2 – Equipment and Striping Upgrades with Realignment of Intersection and New Bike Signal

The second build option for the intersection of Colchester Avenue and East Avenue would take advantage of the signal upgrades outlined in Alternative 1, but will also implement the second tier recommendations from the HSIP location review to realign the intersection. The realignment will shift the East Avenue and Trinity Campus approaches to the intersection, squaring the former to be closer to a 90-degree connection to Colchester Avenue and shifting the latter to directly align with the new East Avenue approach. The realignment will allow for an extension of the dedicated right turn lane to accommodate the traffic approaching from the south more appropriately. In addition, the realignment of the offset and skewed approaches will permit concurrent phasing for the minor legs of the intersection.

In addition to the realignment and updated signal phasing at this location, a new bike signal is proposed to facilitate the eastbound through bike movement with its own phase. Having new signal equipment and a new cabinet allows for the installation of a bike signal with a dedicated phase of the cycle. Furthermore, the bike signal would allow for cyclists to remain to the right of the vehicular right turn lane when approaching the intersection, affording significantly more protection to the bicyclists than in the current condition. Although not shown, crossing on the west leg of the intersection was discussed as an option with this alternative and evaluated in the traffic analysis. The concurrent phasing coupled with the bike signal phase and exclusive pedestrian phase would result in a LOS C for the future 2040 traffic condition.

A graphic depicting the Alternative 2 intersection is included in **Figure 19.**

Figure 19: Colchester Ave & East Ave Intersection Alternative 2: Equipment and Striping Upgrades with Realignment of Intersection & New Bike Signal

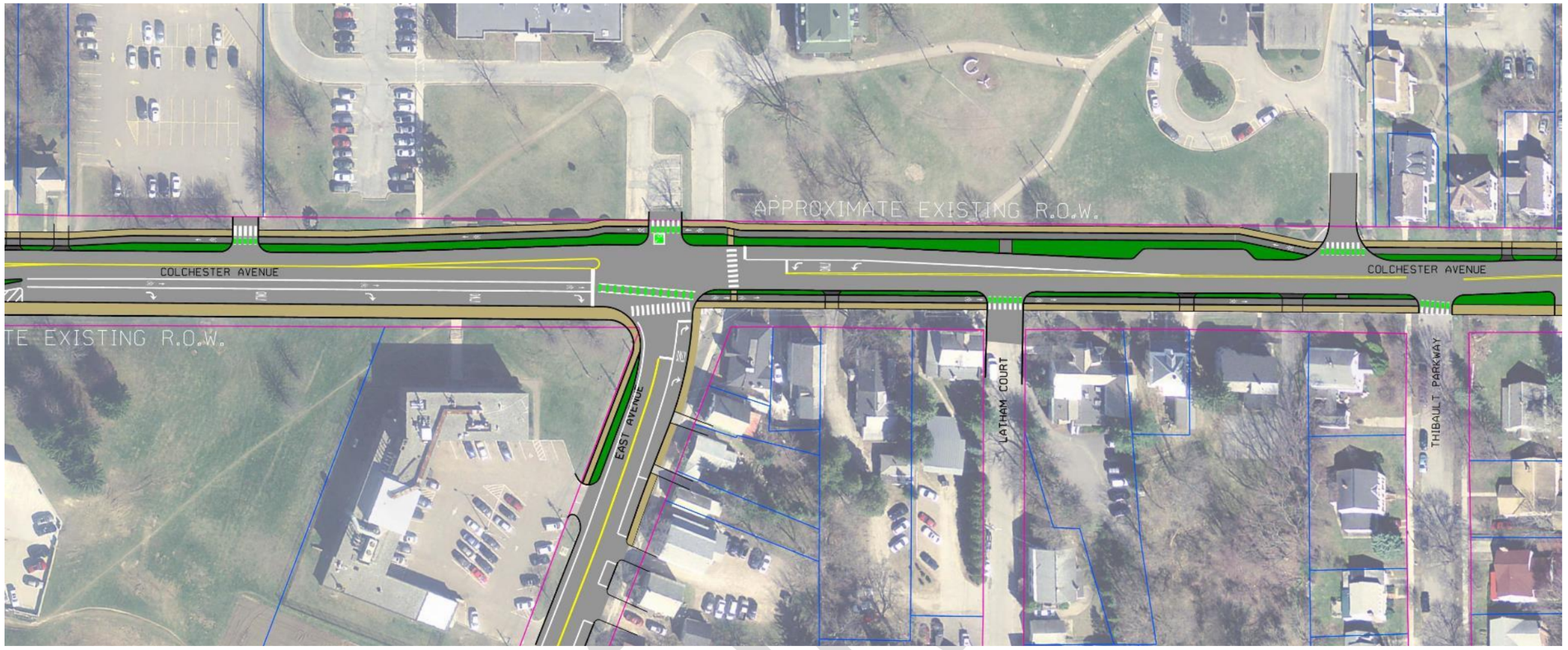


4.3.4 Intersection Alternative 3 – Equipment and Striping Upgrades with Realignment of Intersection

The third build alternative at the intersection would borrow the signal upgrades outlined for Alternative 1 and the realignment outlined for Alternative 2. In addition to these upgrades addressing the recommendations from the HSIP, this approach would bring cyclists up to the intersection on the eastbound approach with dedicated bike lane between the through and right turn vehicular lanes. The cyclists would then be served by the through movement vehicle signal at the intersection. The shifting of curbs would afford the additional width necessary to accommodate this facility. In addition, a pedestrian crossing on the west leg of the intersection was discussed as a possibility with this alternative and evaluated in the traffic analysis. The realignment would allow for concurrent signal phasing to serve the two minor legs, providing an anticipated overall LOS C in the 2040 future traffic condition.

A graphic depicting the Alternative 3 intersection is included in **Figure 20.**

Figure 20: Colchester Ave & East Ave Intersection Alternative 3: Equipment and Striping Upgrades with Realignment of Intersection



4.3.5 Intersection Alternative 4 – Roundabout

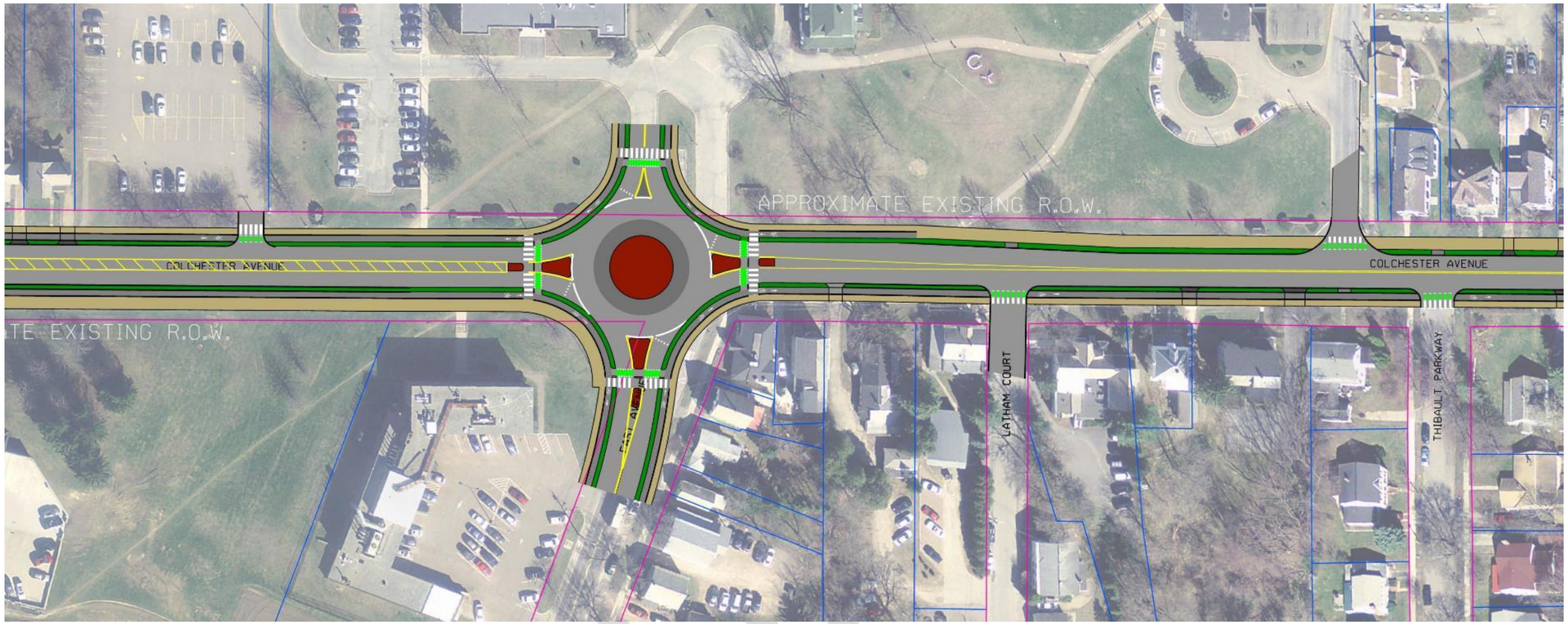
The fourth build alternative for this intersection is a modern, 120-foot inscribed diameter, single lane roundabout. A roundabout at this location would serve to realign the legs of the intersection converging at the center of the new facility. A mini-roundabout was not considered at this location based on the volumes along Colchester Avenue (approximately 15,000 vehicle per day) and high percentage of left hand turns at the intersection.

Each approach would have a pedestrian crossing, rounding out the pedestrian access at the intersection by providing crossings on all four legs. The pedestrian crossings on the Colchester Avenue and East avenue approaches would include protected pedestrian refuge mid-crossing with a curbed splitter island, allowing for pedestrians to cross a single lane with one direction of traffic at a time. Bike crossings at each approach are similarly proposed.

With yield conditions on each approach and appropriate deflection, the roundabout would likely work to slow traffic through the intersection, but maintain steady flow of traffic without the queueing from cycle loss time that is experienced in the current signalized condition. Overall, the roundabout is anticipated to operate at a LOS C in the future 2040 traffic condition.

A graphic depicting the Alternative 4 intersection is included in **Figure 21**.

Figure 21: Colchester Ave & East Ave Intersection Alternative 4: Roundabout



4.3.6 Intersection Evaluation Matrix

An evaluation matrix of the alternatives presented in Section 4.3 above is shown in the table below. This matrix compares the relative costs, safety, resource impacts, and community character implications for each alternative.

Table 4: Colchester Avenue & East Avenue Intersection Alternatives Evaluation Matrix

			Colchester Avenue / East Avenue Intersection Alternatives				
		Concept 0 No Build	**Alternative 0** No Build	**Alternative 1** Equipment and Striping Upgrade	**Alternative 2** Equipment and Striping Upgrades with Realignment of Intersection & New Bike Signal	**Alternative 3** Bike Lane Through Intersection	**Alternative 4** Roundabout
Costs	**Total Cost**	**$0**	**$0**	**$350,000**	**$980,000**	**$950,000**	**$3,500,000**
Safety	Benefit Cost Analysis (B/C ratio)			**3.03**	**1.12**	**1.16**	**0.40**
	Bicycle Safety	-	-	**Slightly Improved** *Bike Lanes provided westbound through signal*	**Improved** *Bikes provided protected lane and phase - no turn conflicts*	**Slightly Improved** *Cyclists have to travel between thru and right turn lanes, but protected*	**Slightly Improved** *Bikes only conflict with single movement at time, but not fully protected; fewer conflict points*
	Pedestrian Safety	-	-	**Improved** *Protected Crossings with less delay with vehicular phasing*	**Improved** *Protected Crossings with less delay with vehicular phasing*	**Improved** *Protected Crossings with less delay with vehicular phasing*	**Slightly Improved** Allow additional cross locations, but unsignalized; shorter crossings with lower speed vehicles; fewer conflict points
	Vehicle Safety	-	-	**Slightly Improved** *by separating users, proper equipment*	**Improved** *by fully separating users, proper equipment*	**Slightly Improved** *by separating users, proper equipment*	**Significantly Improved** *Lower vehicle speeds and fewer conflict points*
Operations	Overall Level of Service (2040)	-	-	**LOS D**	**LOS C**	**LOS C**	**LOS C**
Impacts	Utility Impacts	-	-	Major Impacts	Major Impacts	Major Impacts	Major Impacts
	ROW Impacts	-	-	Minor Impacts	Minor Impacts	Minor Impacts	Moderate Impacts
	Constructability	-	-	Minor Effort	Major Effort	Major Effort	Major Effort
	Parking	-	-	Existing Parking Maintained (East Ave)	Slight Reduction (East Ave)	Slight Reduction (East Ave)	Slight Reduction (East Ave)
	Trees			No Impacts	Minor Impacts To Existing	Minor Impacts to Existing	Minor Impacts to Existing
	Historic	-	-	No Impacts	No Impacts	No Impacts	No Impacts
	Archaeological	-	-	No Impacts	Additional Review Recommended	Additional Review Recommended	Additional Review Recommended
Community Character	Aesthetics	No Change	No Change	No Change	Improved	No Change	Significantly Improved
	Satisfies Purpose & Need	No	No	Yes	Yes	Yes	Yes

5

Preferred Corridor Concept & Intersection Alternative Plan

Based on findings from technical analyses and input from the public and project Advisory Committee, conceptual plans were developed to reflect the preferred corridor concepts and intersection alternative. This consisted of a combination of Corridor Concept 2 (West) with raised and separated bike lanes; a modified Corridor Concept 3A (East) with raised and separated bike lanes with targeted on-street short-term parking and pull-outs for transit stops, delivery vehicles, or other short-term uses; and Intersection Alternative 2 with new equipment, striping, a crossing on the western leg of the intersection, and a dedicated bike signal for the intersection with East Avenue.

5.1 Overview

The preferred corridor concepts and intersection alternative selected through the public process and stakeholder decision making include:

- a consistent cross section for the length of Colchester Avenue that provides raised, separated bike facilities in addition to updated, curbed travel lanes and sidewalk improvements;
- enhancements between East Avenue and Greenmount Cemetery to provide targeted, short-term, high turnover parking in support of businesses and pull-outs for transit stops, loading or delivery, and other short-term uses; and,
- improvements to the intersection with East Avenue that provides new signal equipment with a dedicated bike signal and updated lane geometries with realignment of East Avenue and the UVM Trinity Campus entrance.

This chapter enumerates the design features of these improvements and recommendations for the corridor.

5.1.1 Colchester Avenue Preferred Corridor Concepts

For the segments of the Colchester Avenue west and east of the intersection with East Avenue, the preferred corridor concepts and intersection alternatives will provide a consistent cross section that includes raised and separated bike lanes in both directions. Through most of the corridor, the bike lanes will be separated from vehicular travel lanes by curb and a planting strip or greenbelt. Greenbelt separation is advantageous in recovering the grade differential between the road and bike lane, providing adequate snow storage, and accommodating signage, lighting, and other curbside features. Where width is available, this planting strip will be greater than 5' in width to accommodate street tree plantings, bus shelters, utilities, lighting, and other curbside amenities where appropriate. Along approximately 60% of the corridor, where the bike lane is separated from vehicular traffic by less than 5' of greenbelt, primarily to limit impact beyond the back of sidewalk, the width will not support tree plantings but will still benefit from other curbside features.

The raised bike lanes will be adjacent to existing or relocated sidewalks through much of the corridor. Where the pedestrian facilities are adjacent to the updated bike lanes, the two facilities will be delineated by a beveled curb and different surface treatments, making clear distinctions of where pedestrians and bicyclists are expected to walk and bike. It is noted that where sidewalks are not relocated, and therefore not necessarily rebuilt, assessment of the existing sidewalk should be conducted and sidewalks not meeting current standards or in disrepair should be reconstructed through much of the corridor.

The preferred corridor concept on the east end of the corridor, particularly between East Avenue and Greenmount Cemetery, incorporated some modifications to enhancements presented in the corridor concepts along this segment. Those enhancements include 2-3 high turnover, on-street parking spaces in front of Kampus Kitchen and strategically located curbside pull-outs to accommodate either transit bus stops or short-term uses like delivery vehicles or short-term, high turnover parking.

At the Draft Alternatives Presentation, the public weighed in on the various corridor concepts with clear support for Concept 2 (West) and the desire for a consistent treatment on the segment east of East Avenue, narrowing the choices to Concept 2, 3, or 3A. Hearing this, the Advisory Committee similarly supported the raised, separated bike lanes in Concept 2 (West) and, through much deliberation, generally supported Concept 3A (East) with modifications, falling just one vote shy of consensus. Through the discussion, it was clear that the Advisory Committee and the entities that they represent support consistent bike infrastructure separated from vehicular traffic, improved curbside access for transit, support of local businesses through provision of some high turnover parking spots, and support of other short-term, curbside neighborhood activities like deliveries.

The figures below depict the improvements for the corridor along the length from west () to east ().

5.1.2 Colchester Avenue and East Avenue Preferred Intersection Alternative

The Colchester Avenue and East Avenue preferred intersection alternative will include major upgrades to the signal equipment at the existing intersection, realignment of the minor legs of the intersection, and an additional pedestrian crossing on the west leg of the intersection.

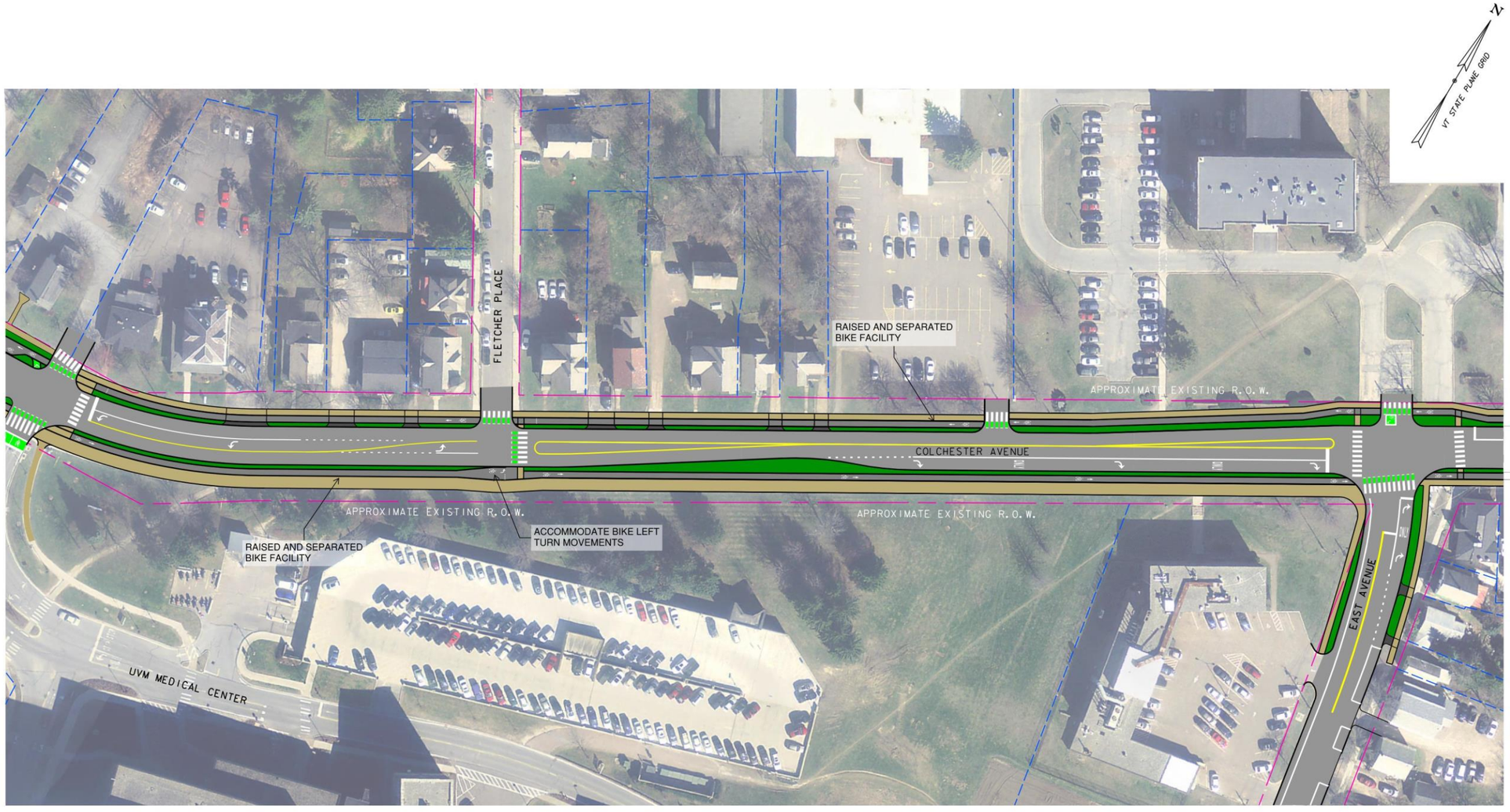
The intersection realignment will consist of shifting the UVM Trinity Campus driveway to the west approximately 35' to bring it into alignment with the new horizontal alignment of the East Avenue intersection leg. The East Avenue approach to the intersection will be reconstructed to intersect Colchester Avenue at close to perpendicular, effectively shifting the intersection leg west by approximately 20' feet. This will entail full depth construction of new roadway areas, particularly on the southwest corner of the intersection, and reclamation of the areas decommissioned, particularly on the southeast corner of the intersection.

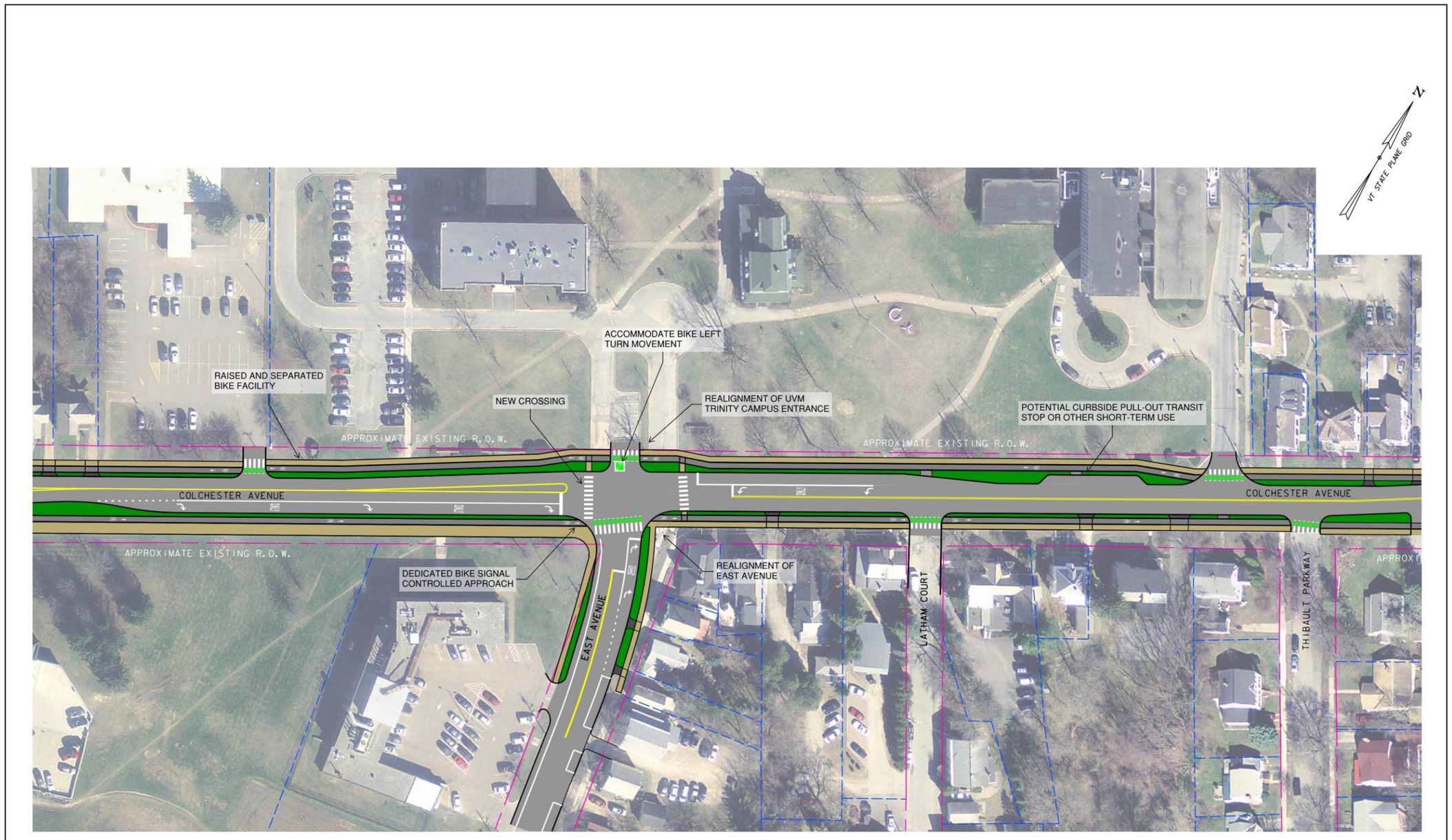
The signal upgrades will entail removal of existing mast arm poles, mast arms, pedestals, signal heads, and signal cabinet. This equipment will be replaced with new mast arm poles, mast arm mounted signal heads with backplates, and signal cabinet. In addition to the updated signal equipment a dedicated bike signal face will be installed for the eastbound cyclists. The dedicated bike signal allows for the bike infrastructure to remain outside of the vehicular right turn lane and serves the through movement cyclist once they approach the intersection.

The realignment will allow for updated timing and phasing. Aligning the East Avenue leg and the UVM Trinity Campus driveway will allow for concurrent phasing, providing a portion of the cycle for dedicated bike and pedestrian phases. The crossing on the western leg of the intersection will be added. The heavy conflicting northbound left and eastbound right movements at the intersection make concurrent pedestrian phasing challenging, and therefore an exclusive pedestrian phase to serve all of the crosswalks should be considered.

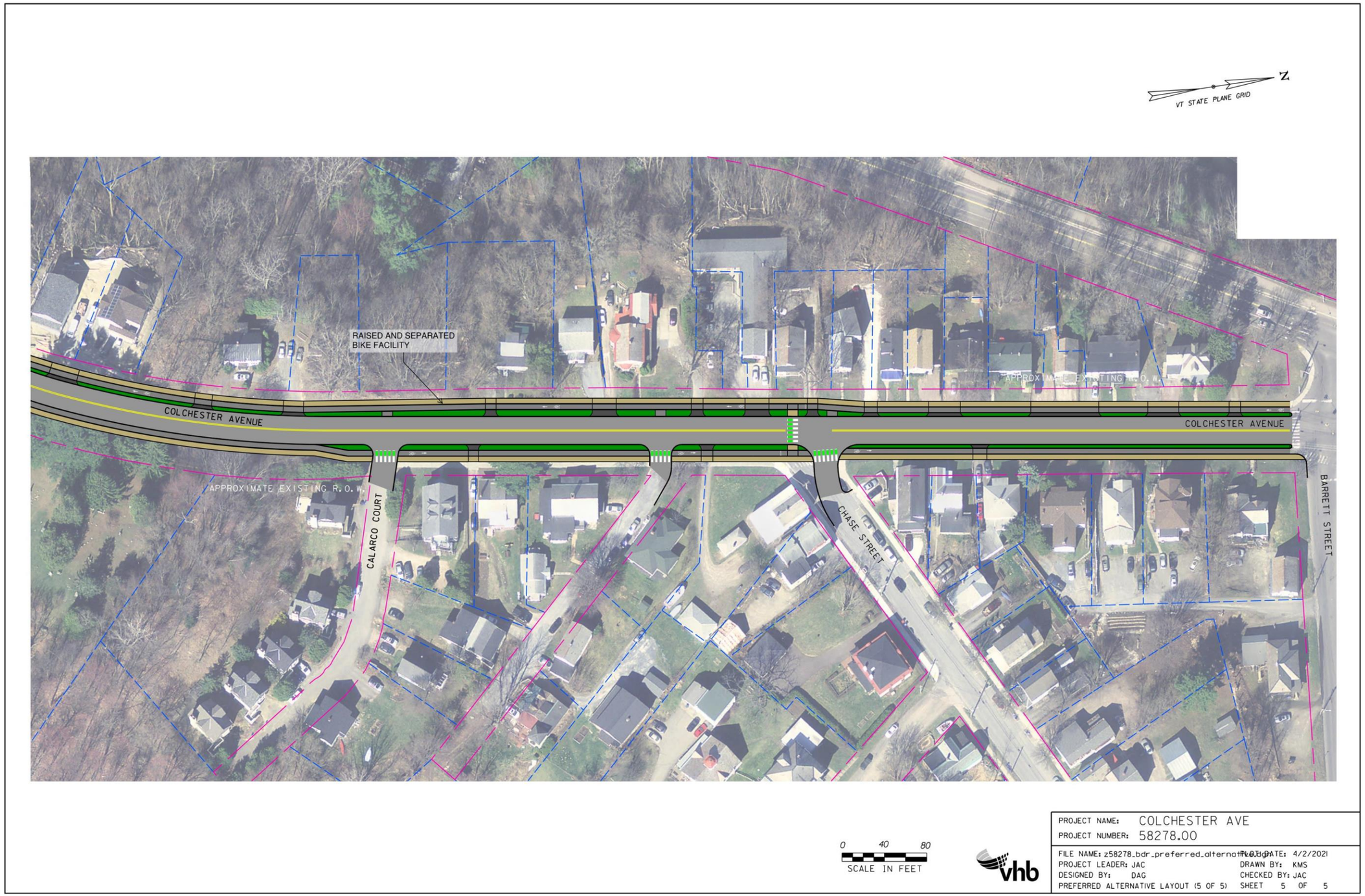
The figure below, , depicts the preferred improvements being proposed for the Colchester Avenue and East Avenue intersection.


N
VT STATE PLANE GRID
MANSFIELD AVENUE
ACCOMMODATE BIKE LEFT TURN MOVEMENTS
APPROXIMATE EXISTING R.O.W.
COLCHESTER AVENUE
APPROXIMATE EXISTING R.O.W.
ACCOMMODATE BIKE LEFT TURN MOVEMENTS
RAISED AND SEPARATED BIKE FACILITY
SOUTH PROSPECT STREET
UNIVERSITY PLACE
UVM MEDICAL CENTER
0 40 80
SCALE IN FEET
vhb
PROJECT NAME: COLCHESTER AVE
PROJECT NUMBER: 58278.00
FILE NAME: z58278_bdr_preferred_alternative.dgn PLOT DATE: 4/2/2021
PROJECT LEADER: JAC DRAWN BY: KMS
DESIGNED BY: DAG CHECKED BY: JAC
PREFERRED ALTERNATIVE LAYOUT (1 OF 5) SHEET 1 OF 5


N
VT STATE PLANE GRID
FLETCHER PLACE
RAISED AND SEPARATED
BIKE FACILITY
APPROXIMATE EXISTING R.O.W.
COLCHESTER AVENUE
APPROXIMATE EXISTING R.O.W.
APPROXIMATE EXISTING R.O.W.
RAISED AND SEPARATED
BIKE FACILITY
ACCOMMODATE BIKE LEFT
TURN MOVEMENTS
UVM MEDICAL CENTER
EAST AVENUE
0 40 80
SCALE IN FEET
vhb
PROJECT NAME: COLCHESTER AVE
PROJECT NUMBER: 58278.00
FILE NAME: z58278_bdr_preferred_alternative.dgn
PLOT DATE: 4/2/2021
PROJECT LEADER: JAC
DRAWN BY: KMS
DESIGNED BY: DAG
CHECKED BY: JAC
PREFERRED ALTERNATIVE LAYOUT (2 OF 5)
SHEET 2 OF 5


N
VT STATE PLANE GRID
RAISED AND SEPARATED BIKE FACILITY
NEW CROSSING
ACCOMMODATE BIKE LEFT TURN MOVEMENT
REALIGNMENT OF UVM TRINITY CAMPUS ENTRANCE
POTENTIAL CURBSIDE PULL-OUT TRANSIT STOP OR OTHER SHORT-TERM USE
APPROXIMATE EXISTING R.O.W.
APPROXIMATE EXISTING R.O.W.
COLCHESTER AVENUE
COLCHESTER AVENUE
APPROXIMATE EXISTING R.O.W.
DEDICATED BIKE SIGNAL CONTROLLED APPROACH
REALIGNMENT OF EAST AVENUE
EAST AVENUE
LATHAM COURT
THIBAULT PARKWAY
0 40 80
SCALE IN FEET
vhb
PROJECT NAME: COLCHESTER AVE
PROJECT NUMBER: 58278.00
FILE NAME: z58278_bdr_preferred_alternative.dgn PLOT DATE: 4/2/2021
PROJECT LEADER: JAC DRAWN BY: KMS
DESIGNED BY: DAG CHECKED BY: JAC
PREFERRED ALTERNATIVE LAYOUT (3 OF 5) SHEET 3 OF 5


N
VT STATE PLANE GRID
NASH PLACE
RAISED AND SEPARATED
BIKE FACILITY
SHORT-TERM PARKING
APPROXIMATE EXISTING ROW
COLCHESTER AVENUE
COLCHESTER AVENUE
APPROXIMATE EXISTING ROW
THIBAULT PARKWAY
UNIVERSITY ROAD
POTENTIAL SHORT-TERM USE
LOADING / UNLOADING OR PARKING
POTENTIAL CURBSIDE PULL-OUT TRANSIT
STOP OR OTHER SHORT-TERM USE
0 40 80
SCALE IN FEET
vhb
PROJECT NAME: COLCHESTER AVE
PROJECT NUMBER: 58278.00
FILE NAME: z58278_bdr_preferred_alternative.dgn
PLOT DATE: 4/2/2021
PROJECT LEADER: JAC
DRAWN BY: KMS
DESIGNED BY: DAG
CHECKED BY: JAC
PREFERRED ALTERNATIVE LAYOUT (4 OF 5)
SHEET 4 OF 5


N
VT STATE PLANE GRID
RAISED AND SEPARATED
BIKE FACILITY
COLCHESTER AVENUE
COLCHESTER AVENUE
APPROXIMATE EXISTING R.O.W.
CALARCO COURT
CHASE STREET
BARRETT STREET
0 40 80
SCALE IN FEET
vhb
PROJECT NAME: COLCHESTER AVE
PROJECT NUMBER: 58278.00
FILE NAME: z58278_bdr_preferred_alternative.dgn
PLOT DATE: 4/2/2021
PROJECT LEADER: JAC
DRAWN BY: KMS
DESIGNED BY: DAG
CHECKED BY: JAC
PREFERRED ALTERNATIVE LAYOUT (5 OF 5)
SHEET 5 OF 5

5.1.3 Recommendations and Other Considerations

As indicated in the preferred corridor concepts and intersection alternatives for Colchester Avenue, changes to the existing curb line are a significant undertaking, but also provide an opportunity to adopt and implement the desired character of the corridor. Not only does Colchester Avenue provide critical access from a transportation standpoint, but it also serves as a corridor for many utilities. Careful coordination in planning and design with utility providers on any necessary relocation and new utilities will be necessary. This also presents an opportunity to consider pedestrian scale lighting as well as transit shelters and street furniture as appropriate.

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Chapin Spencer
DIRECTOR OF PUBLIC WORKS

Lee Perry
DIVISION DIRECTOR .
DPW MIANTENANCE .

MEMORANDUM

To: Transportation Energy and Utilities Committee

From: Chapin Spencer, Director
Lee Perry, Division Director DPW Maintenance

Date: June 22, 2021

Re: Consolidated Collection -- Staff Recommendation and Next Steps

Executive Summary:
Current collection of residential trash, recycling and compost in the City of Burlington is fragmented, inefficient and costly. A fully consolidated collection system will improve convenience, reduce environmental and community impacts, and save residents money. We suggest the Transportation Energy and Utilities Committee move to recommend the City Council approve a resolution that:

1. Advances implementation of a fully consolidated collection system for at least 1 to 4 unit residential properties in Burlington; and
2. Proposes implementation of a hybrid consolidated collection model where the City continues to collect recycling and franchised private haulers collect trash and organics; and
3. Requests City staff initiate a resident engagement process to determine the specific service levels and options that will be initially offered, and return to the City Council by March 2022 with the service level recommendations and an updated timeline.

Background:
There are many ways communities coordinate the collection of trash, recyclables and food scraps. In Burlington, the system is fragmented. For trash, individual residential property owners subscribe with a private hauler for solid waste services or they choose to bring their trash to one of the County's Drop-Off Centers (DOCs). For organics, residents choose one of three options – subscribing with a private hauler to pick up organics, bringing organics to the County's DOCs or composting in their backyards. Recycling services are consolidated through a municipally operated system that was established in the 1990's.

Problems with the current system include:

- Confusing pick-up schedules with households managing pick-ups of the various waste streams two or three different days of the week.

- More truck traffic, emissions and road damage from multiple haulers servicing the same streets. There are currently four main trash haulers and several additional compost haulers servicing City residential properties.
- More costly service due to multiple trash and compost haulers servicing the same streets.
- Current City Recycling Program is under resourced which has put burden on existing Recycling staff and the overall Street Maintenance team.

A large majority of communities nationwide have fully consolidated collection systems. According to the City's consolidated collection consultant GBB, their survey of 461 communities nationwide indicated that this subscription arrangement occurs only in approximately 11% of communities. Consolidated collection, on the other hand, is the much more common approach with 83% of communities having the municipality either collecting waste streams itself or contracting with private haulers. Of those communities with consolidated collection, our consultant reports that approximately 58% contract with private haulers, 40% have a municipal operation and 2% have some hybrid approach.

Consolidated collection has been explored in our region for decades.

- 2000-2001: The City Council in October 2000 passed a resolution directing Public Works explore consolidated collection for trash (see Appendix). DPW reported back to the Council in 2001 and no additional action was taken.
- 2009-2015: The Chittenden Solid Waste District in 2009 launched a countywide analysis of consolidated collection that ran until 2015. That effort petered out due to strong opposition from local haulers and the heavy lift to get all Chittenden County communities behind the proposal. The report is available here: https://cswd.net/forms-publications/
- 2018-2021: In April of 2018, the City Council passed another resolution requesting the Department of Public Works to undertake a citywide consolidated collection feasibility study – this time with the City of South Burlington and Chittenden Solid Waste District. The report evaluated a franchised model with private haulers and the findings were presented to the Council's Transportation Energy & Utilities Committee (TEUC) in June and July 2020. At the August 2020 TEUC meeting, the Committee requested DPW staff do an in-house financial analysis of a municipally run consolidated collection system. The findings were presented to the TEUC at their March 23, 2021 meeting. The report is available here: https://www.burlingtonvt.gov/CityCouncil/TEUC

Multiple studies have identified significant consolidated collection benefits. The City's 2000 study, the CSWD evaluation in the 2010's and the recent City's study have all identified expected benefits of consolidated collection including:

- Reduced costs to residents and haulers through more efficient collection routes – the 2020 GBB study estimated a projected savings to Burlington customers of $1.6M - $3.6M per year for a weekly consolidated collection system
- Reduced environmental costs of excess truck traffic – the 2020 GBB study estimated a two-thirds reduction in vehicle miles traveled and emissions with a full consolidated collection system
- Reduced infrastructure impacts of excess truck traffic
- Reduced litter using wheeled carts by all residents
- Reduced noise in neighborhoods
- Better compliance with State and local mandates

Based on our review of the data, the TEUC's motion at its March 23, 2021 meeting supporting consolidated collection, and our conversations with other municipalities (see appendix), DPW

staff strongly recommends implementing a fully consolidated collection system for Burlington residents. Which consolidated collection model should be utilized is then the next question to address.

There are four major consolidated collection options for consideration:

1. **Franchise Model** – Franchised consolidated collection is where a municipality contracts with one or more private haulers to collect curbside trash, recycling, and compost. This model was studied by consultant GBB for Burlington and South Burlington in 2019 and 2020. The Vermont communities that have consolidated collection (Westford, Brattleboro, etc.) utilize this model. See the GBB study for a more detailed analysis of this model.
2. **Franchise Model with City Bid** – This model is similar to the franchised model, except the municipality retains the right to bid on districts against private haulers to collect trash, recycling and compost. After contracting with a private hauler to collect recycling during the early days of Burlington's recycling program, the City put the contract out to bid again and the City this time submitted a bid. The City bid was selected and the City has been operating the recycling program ever since. This model is not as common as the other two Options 1 and 3 but has been done more in Western states. The City of Phoenix operated this way for many years before moving to municipal operation.
3. **Municipal Operation Model** – This model is where the municipality itself, provides all aspects of trash, recycling, and compost collection, including oversight, customer service, scheduling, and billing. This operation would look similar to the City's current recycling program, but larger and more complex. See the staff memo provided to the Council's TEUC on March 23, 2021 for a more detailed analysis of this model.
4. **Hybrid Municipal / Franchise Model** – Under this scenario, the collection of different waste streams would be consolidated separately. For Burlington, this option would have recycling remain a municipally-collected service and trash and compost services would be franchised to private haulers. This model was fleshed out after discussing options with Cambridge, MA where the City collects trash, and food scraps and franchised haulers collect recycling.

More information on our consolidated collection evaluation can be found on the City's website: https://www.burlingtonvt.gov/dpw/Maintenance/CC. Under any of the scenarios above, private haulers would still serve large residential and commercial customers in the City.

Consolidated Collection Achieves Better Economy of Scale:
In their 2019/2020 study, GBB reported haulers were charging at that time between $28 and $49 per month for weekly collection of two streams (trash and recycling). Based on a City review of weekly organics collection by separate organics collection companies, prices appear to be around $15 per month. With the efficiencies gained by consolidated collection, GBB and the City project that residents could receive weekly collection of three streams (trash, recycling and organics for between $34 and $41 per month depending on the model and the number of residents opting out of service. GBB reported that Burlington residents could save somewhere between $1.6M and $3.6M by implementing a weekly consolidated collection model compared to a residents having a weekly subscription model.

Municipal and Franchising Models Similar in Cost, Depends on What is Included in Model:
Understanding the Council's and Commission's interest in comparing the franchised and municipal models, we worked with GBB and other City departments to develop financial estimates for both models under 0%, 15% and 25% opt out scenarios. "Opting out" is a term for allowing residents to decline some or all of the curbside trash, recycling and compost pick up services. As part of the proposed community engagement period, DPW would be seeking resident input on whether they'd prefer a consolidated collection system with opt outs (higher cost per household but more choice)

or without opt outs (lowest cost per household but less choice) and other options. Here is a summary of the total costs for both municipal and franchise models for weekly collection at different opt out levels.

Options	Municipal Model Flynn Ave 0% Opt Out	Municipal Model 339 Pine St 15% Opt Out	Municipal Model 339 Pine St 25% Opt Out	Franchise Model 0% Opt Out	Franchise Model 15% Opt Out	Franchise Model 25% Opt Out
Households Served Weekly	13,005	11,054	9,754	13,005	11,054	9,754
Resident Annual Cost	$413.63	$456.46	$494.01	$410.03	$422.98	$465.55
Resident Monthly Cost	$34.47	$38.04	$41.17	$34.17	$35.25	$38.80

These are estimated costs. Staff and the consultant have worked diligently to provide the best numbers we can at this time and they have been updated to reflect current tip fees. Both models include debt service for initial capital costs. The municipal model includes costs related to operating the program as an Enterprise Fund (direct and indirect contributions to City overhead, payment in lieu of taxes).

The cost differences between City projections and GBB's projections under a franchise model might be due to certain additional costs incurred by the City that a private contractor may not have to incur or may have already incurred:

- New Facility: The City would have to build a new facility to house staff, vehicles, and equipment for the enterprise because we do not have existing space to accommodate the operations at 645 Pine St. Private haulers may be able to accommodate this operation within their existing facilities.
- Billing: Unlike private haulers who already have billing systems tailored to curbside collection, the City will be incurring billing costs due to the added staff and software.
- Labor: The City took a conservative approach when projecting labor needs so that we are able to operate an efficient program with reasonable back-up support that minimizes the need to pull from other work groups.

Additionally, GBB's Franchise model estimate does not include additional City costs for overseeing the performance of the private haulers or replacing the overhead currently contributed by the Recycling Program's Solid Waste Generation Tax for the pro-rata share of the General Fund's administrative expenses. The City estimates that these costs, if recouped from the franchised haulers through the Solid Waste Generation Tax or other some financial mechanism, would add an estimated $0.66 to $4.24/month to the franchise model per residential dwelling unit depending on the assumed costs to be recouped. Factoring in these costs, the financial differential been the two models narrows.

Comparison Matrix:
To summarize the difference between the different models, and to score the various attributes, we put together the following matrix. The criterion in this comparison are not weighted and we did not try to score the 'Franchise with City Bid' model as the scoring for many categories would depend on whether a private hauler or municipal bid was selected for each district. The points were assigned as follows:

- 3 points – provides high benefit or lower risk to City and/or residents [DARK GREEN]
- 2 points – provides some benefit or moderate risk to City and/or residents [LT. GREEN]
- 1 point – provides low benefit or higher risk to City and/or residents [YELLOW]

Criterion	**OPTION 1: Franchise** (City runs bidding process and selects one hauler for each district)	**OPTION 2: Franchise with City Bid** (City runs bidding process, submits own bid, and selects one hauler for each district)	**OPTION 3: Municipal Operation** (City operates its own collection service for trash, recycling and organics citywide)	**OPTION 4: Hybrid Operation** (City operates recycling collection and franchises trash and organics collection)
Customer Choice	City-selected haulers or CSWD DOC. Some choice but less than subscription service. (2)	City-selected haulers or CSWD DOC. Some choice but less than subscription service.	City service or CSWD DOC. Some choice but less than subscription service. (2)	City/haulers service or CSWD DOC. Some choice but less than subscription service. (2)
Customer Cost	Prices set through bidding process. Haulers gain efficiency through consolidation. Service projected to be cheaper than subscription service. (3)	Prices set through bidding process including the City as a bidder. Service projected to be cheaper than subscription service.	City gains economy of scale through consolidation. Service projected to be cheaper than subscription service. (3)	Prices set through bidding process and City recycling budget. Service projected to be cheaper than subscription service. (3)
Customer Convenience	High. Residential customers would have one hauler efficiently picking up all waste streams on same day. (3)	High. Residential customers would have one hauler efficiently picking up all waste streams on same day.	High. Residential customers would have one hauler efficiently picking up all waste streams on same day. (3)	High. Residential customers would have one hauler efficiently picking up trash and compost, while the City continues picking up recycling. Pickups can be coordinated to be on same day. (3)
Environmental Benefits	High. Consolidated collection would reduce miles traveled by an estimated two-thirds. (3)	High. Consolidated collection would reduce miles traveled by an estimated two-thirds.	High. Consolidated collection would reduce miles traveled by an estimated two-thirds. (3)	High. Consolidated collection would reduce miles traveled by an estimated two-thirds. (3)
Truck Traffic / Road Impact Benefits	High. Reduction of trucks from 3 or 4 haulers to 1 hauler on many residential streets. (3)	High. Reduction of trucks from 3 or 4 haulers to 1 hauler on many residential streets.	High. Reduction of trucks from 3 or 4 haulers to 1 hauler on many residential streets. (3)	High. Reduction of trucks from 3 or 4 haulers to one hauler and City on many residential streets. (3)
Ability for City to Control Service and Quality	More City control than current subscription. Contract language with private haulers would include performance criteria. Any substantive changes mid-contract would need to be negotiated. Additional City staffer needed for oversight of contractor. (1)	Depends on which option wins the bid. (not scored)	Most City control. City could choose to adjust service levels and product offerings when it deemed such changes were warranted. Offers more direct operational oversight as employees and services are managed directly by City. (3)	More City control than current subscription. City maintains direct oversight of recycling program. Contract language with private haulers would include performance criteria. Any substantive changes mid-contract would need to be negotiated. Additional City staffer needed for

				oversight of contractor. (2)
Union Labor & Pay/Benefits	No change in Union positions. City would plan to redeploy 3 current Recycling positions as Street Maintenance Workers though at additional cost to City. Franchisee contract would require livable wages and could require more. (1)	Depends whether private haulers or the City wins the bid. (not scored)	Projected increase in Unionized City positions by an estimated 9-12 staffers. (3)	Projected increase in Unionized City positions by an estimated 3 staffers. Solid Waste Generation Tax would be increased to fund these positions. Franchisee contract would require livable wages and could require more. (2)
Overall City Effort to Launch	Medium. Carefully structuring bid requirements and bid processes essential to ensuring desired level of service and performance thresholds. (2)	High. Have to develop bid process, have City develop its own bid, and if City bid successful, go through all the steps listed under municipal operation.	High. Need to stand up a new enterprise, get voter approval for Charter Change and for borrowing, construct building, hire up to 14 staffers. Significant utilization of DPW innovation capacity over the next 2-3 years. (1)	Medium. Carefully structuring bid requirements and bid processes essential to ensuring desired level of service and performance thresholds. Recycling program already exists though would require hiring of 3-4 additional staffers. (2)
Upfront Capital Costs	Low. Bid requirements would require haulers to supply trucks and any backend facilities. City could decide to provide carts - up to $1.2M. (3)	Depends whether private haulers or the City wins the bid. (not scored)	High. City would need to construct new building, buy additional vehicles and acquire carts - up to $6.7M. (1)	Low. City has recycling vehicles. Would only have to provide carts to recycling customers who don't yet have them. City could decide to provide carts for other streams - up to $1.2M. (3)
Require VT Legislative approval?	No. (3)	Depends. Yes, if City wins bid and City seeks Charter Change to establish enterprise fund.	Yes for Charter Change to establish enterprise fund. (1)	No. (3)
Risk to City Government	Medium. Non-performance of private haulers. Potential legal challenges from haulers. (2)	Largely depends on which option wins the bid. Additional risk if City only won some of the districts and therefore had to set up the collection infrastructure for significantly fewer customers.	High. Additional complexity to manage $5M/year enterprise fund. Managing costs to design, permit, construct new building. Voters could not support Charter Change or revenue bond. Potential legal challenges from haulers. (1)	Medium. Non-performance of private haulers. Potential legal challenges from haulers. (2)
Timeline to Launch	Estimated 2-3 years. (3)	Estimated 2-5 years. Depends on which bids (private haulers or City) are selected.	Estimated 3-5 years. (2)	Estimated 2-3 years. (3)

Future Flexibility	Can rebid near end of each contract term or bring in-house. (3)	Depends on which bids (private haulers or City) are selected. If haulers, can rebid near end of each contract term or bring in-house.	Once initiated, municipal operation can be tweaked, but it will be politically challenging to fundamentally revisit. (2)	Can rebid near end of each contract term or bring in-house. (3)
Impact to City Billing & Customer Service Staff	Haulers or City bills. City recommends haulers bill and provide customer service under this scenario as it is the simplest to have one entity coordinating service options and associated billing costs. (not scored)	Hauler bills if private haulers selected. City bills if City selected. (not scored)	City bills. If no opt outs, billing could be included in property taxes for every residential property with 4 or fewer units. If opt outs, DPW or other department would bill properties. (not scored)	Haulers bill. Limited City customer service impacts above what already exists with recycling. Additional role for requests, and complaints for follow up on franchised portion of model. (not scored)
Dependent on voter approval?	No. City Attorney indicates franchise operation could be established with only revisions to Ordinance. (not scored)	Potentially. City Attorney indicates if City wins the bid it would need two votes: 1) to approve a Charter Change to establish an enterprise fund and 2) to secure a revenue bond. (not scored)	Yes. City Attorney indicates it would need two votes: 1) to approve a Charter Change to establish an enterprise fund and 2) to secure a revenue bond. (not scored)	No. City Attorney indicates hybrid operation could be established with only revisions to Ordinance. (not scored)
Total	**32**	**N/A**	**28**	**34**

Overall Model Analysis:

Based on our comparison of the different models and our conversations with other municipalities, DPW staff recommends implementing Option 4 (a hybrid consolidated collection model) for the following reasons that it:

- Achieves the goals of a fully consolidated collection system with a more limited upfront resource investment (both financial and human capital).
- Builds off the structure and capacity the City has already built for the Recycling Program.
- Doesn't expand City's heavy commercial vehicle fleet and only increases staff modestly so the operation can be accommodated at 645 Pine St and avoids constructing and then maintaining another municipal facility.
- Creates additional Union positions that can support other City maintenance needs such as additional snow fighting support for the Maintenance Division.
- Funds the addition Recycling Program positions through an adjustment to the City's Solid Waste Generation Tax rate – our projections are that this would be approximately $2.00/month increase per residential dwelling unit.
- Does not appear to require Charter Changes or voter approvals and can therefore be launched more quickly and with less risk.
- Does not require our customer service teams to establish and manage a billing system for collection services.
- Provides future flexibility to expand municipal operation of collection system should there be interest in an entirely municipally-operated model.
- Maintains a role for the private haulers while improving the efficiency and cost effectiveness of the collection system for residents.

- Gives clarity on the consolidated collection direction in the short term that may help resolve long-standing issues with Chittenden Solid Waste District regarding the Burlington Drop-Off Center at 339 Pine Street and the future of 195-201 Flynn Avenue where CSWD and the City have considered a future Drop-Off Center.

Requirement for Success:
To have the implementation of this recommendation be successful, the following items are needed:

- Public engagement on key components of consolidated collection during the coming year that will drive the development of the program including:
    - Service levels (weekly or biweekly collection for each collection stream)
    - Opt out option (ability for individual residential properties opt out of some or all of the service)
    - Eligible residential properties (initial recommendation was for 1-4 unit properties but to further expand environmental benefits in mixed use neighborhoods we would like to explore serving residential properties with a greater number of units)
    - Other service options (container sizes, back door service, seasonal service, etc.)
- Council support to utilize consulting project manager to drive program development activities during the initiation phase so staff can continue to focus on day to day operations ($50K is budgeted in the FY'22 Recycling Program budget currently)
- Council understanding of the estimated 2-3 year development period to allow for an orderly development and transition
- Council understanding of the need to set Solid Waste Generation Tax rates sufficient to safely and efficiently operate the municipally-run Recycling Program and the oversight of the private hauler franchisees into the future.

Conceptual Timeline: We estimate needing 2 to 3 years to properly launch this hybrid consolidated system.

- 6/16/21 – DPW Commission meeting – requested recommendation
- 6/22/21 – Transportation, Energy & Utilities Committee – requested recommendation
- 7/12/21 – City Council presentation and additional requested information
- 8/9/21 – City Council vote on preferred consolidated collection model
- January 2022 – Complete public engagement on service levels, residential unit cap, opt out options, district sizes, etc. and finalize model framework
- March 2022 – Complete negotiations with CSWD for recycling and organics tip fees and Casella for trash tip fee
- June 2022 – Complete bid documents for trash and organics services and issue invitations to bid
- Fall 2022 – Select vendors
- Winter 2022/2023 - Execute contracts
- January 1, 2024 – Initiate hybrid consolidated collection service

Conclusion:
The City and region have evaluated consolidated collection for decades as it has been recognized as a standard practice nationally to deliver integrated, environmentally beneficial and cost-effective collection services to residents. The studies have indicated substantial benefits switching from the existing subscription service to consolidated collection. Due to City's declaration of a climate emergency, the City commitment to waste reduction, and cost containment for residents, we recommend the City move in the direction of creating a hybrid consolidated collection operation to collect trash, recycling, and food scraps from Burlington residents in at least 1-4 unit dwellings. The recommended motion is at the top of this memo for your consideration.

Thank you for your time. Feel free to reach out to either of us directly as we know this is a major policy decision for the City. We are happy to make ourselves available. Division Director Lee Perry can be reached at lperry@burlingtonvt.gov or 802-316-7568 and Director Chapin Spencer can be reached at cspencer@burlingtonvt.gov or 802-863-9094.

Appendices:

- Appendix A: Council 2000 Resolution
- Appendix B: Public Outreach and Feedback
- Appendix C: Consolidated Collection Interviews

APPENDIX A

City Council 2000 Resolution on Consolidated Collection

Council Resolution on Consolidated Collection 10-16-00.pdf

Resolution Relating to

TRASH COLLECTION

RESOLUTION 2000-1016,
Sponsor(s) Councilors Backus, Spencer
Introduced: 10-16-00
Referred to: _____

Action: Adopted As Amended
Date: 10-16-00
Signed by Mayor: _____

CITY OF BURLINGTON

In the year Two Thousand .....
Resolved by the City Council of the City of Burlington, as follows:

That WHEREAS, Burlington has trash haulers from different companies picking up on the same streets and this redundancy creates unnecessary noise, pollution, and wear and tear on the streets; and

WHEREAS, the current arrangement is uneconomical and is no longer favored by most other cities around the country; and

WHEREAS, the Department of Public Works, in a study about the economics and practical implications of municipalization or franchising, found that there would be benefits to the community if a new system were adopted;

NOW, THEREFORE, BE IT RESOLVED that the City Council hereby requests that the Public Works Commission and Department re-examine the benefits and costs of instituting a municipal or franchised trash collection system; and with the understanding that the level of service be maintained or improved AM 10

BE IT FURTHER RESOLVED that the City Council requests that the Public Works Commission invite local haulers and the manager of the Solid Waste District to participate in this investigation; and

BE IT FURTHER RESOLVED that the City Council requests that the Public Works Commission report its findings to the City Council by the first meeting in February, 2001.

lb/kas/c: Resolutions 2000/Trash Collection – Municipal or Franchised System
10/5/00

* * * * * * * * * * * * *

DISTRIBUTION:

I hereby certify that this resolution has been sent to the following department(s) on December 8,2000

DPW

Attest: Gwenn Robinson

Gwenn Robinson
Administrative Secretary

* * * * * * * * * * * * *

ORIGINAL

RESOLUTION RELATING TO

Trash Collection

Adopted by the City Council

October 16, 2000

Clerk

Approved....., 20.....

..... Mayor

Vol. ..... Page .....

APPENDIX B

Public Engagement and Feedback

Pubic Engagement:

- 6/3-24/2020 - DPW distributed consolidated collection information regarding the study, and upcoming meetings via email, social media, press releases, and media advisories.

- 6/17/2020 - DPW provided the Public Works Commission with an update on the status of the consolidated collection feasibility study.

- 6/25/2020 - DPW held its first public meeting with our consultant presenting their findings on the franchised consolidated collection feasibility study. (Prior to this meeting local haulers were contacted via email informing them of the meeting, and chance for comment).
- 7/28/2020 - DPW held it's second public meeting as part of the agenda for the Councils Transportation, Energy, and Utilities Committee. DPW's consultant presented their findings on the study at this meeting as well. (Prior to this meeting local haulers were contacted via email informing them of the meeting, and chance for comment).
- 8/25/2020 - DPW presented initial scope of work, outlining a municipally operated consolidated collection division, and what impacts it would have on the department as a whole. (Requested by the Committee at their July 28, 2020 meeting).
- 3/23/2021 - DPW presented its municipally operated consolidated collection conceptual budget to the Transportation, Energy and Utilities Committee as requested by the Committee, at their 8/25/2020 meeting.
- 4/27/2021 - DPW presented a second version of their municipally operated consolidated collection conceptual budget to the Transportation, Energy, and Utilities Committee, outlining additional cost scenarios.
- 4/21/2021 - DPW presented both franchised, municipally operated, and municipal hybrid options of consolidated collection to the Public Works Commission.

Feedback:

- GBB conducted a phone survey in 2019 and reached 261 residents. Respondents were asked their support for a franchised consolidated collection system:
  - 39% expressed support
  - 23% expressed opposition
  - 20% said they didn't have enough information
  - 18% didn't know
- Of those who responded in writing and spoke at meetings, more residents expressed support for consolidated collection (in either a franchised or municipally operated model), over the current subscription model. Proponents cite environmental, safety, noise impacts, and confidence in a municipal option.
- Residents who oppose consolidated collection cite needing flexibility in their trash pick-up schedules, and the opportunity to choose their hauler.
- Written comments are attached.

Public Comments Consolidated Collection

Once again, the city has to find solutions to problems that don't exist. Would anybody proposing this idiot idea like to be told to only shop at Hannaford because going to other stores farther away will add to traffic and pollution? I don't think so.

The reason I choose to deal with Gauthier Trucking is for the simple reason that they offer on-call pick-up, which many of the haulers do not. I generate very little trash, and literally only call them once every three to four MONTHS when my trash container gets filled. If you think I am going to have some company come here every week to pick up almost nothing, you have another think coming.

Why don't you consolidate the insane number of construction vehicles that run rampant all over this city?

Do something constructive with your time.

Dave Parker
Burlingtonl

Dear DPW,
How might the expanded bottle bill being considered in the legislature impact your plan.
The bill is here and would expand bottles/can to be collected and proposes to increase from 5 to 10 cents the deposit on the
containers. https://legislature.vermont.gov/bill/status/2022/H.175

> Bill Status H.175
> Wednesday, February 17, 2021 Committee(s): House Committee on Natural Resources, Fish, and Wildlife 9:00 AM. H.175 - An act relating to the beverage container redemption system
> legislature.vermont.gov

Thanks,
Carol Ode

Brilliant

Sent from my iPhone

Public Comments Consolidated Collection

Dear DPW,
I am writing in support of the consolidation of waste services. I have never understood why any neighborhoods need more than one trash company picking up each week on different days plus recycling plus compost. Thank you for working on this!
Clean Green, Duffys, Gauthier's, Myers, Casella all come through our neighborhood. And each only pick up a few houses on our street. It's ridiculous!

Sincerely
Christine White
NNE, Burlington

Enough with the big government involvement!!!! The City does not have to manage everything. This is a free economic market. Competition is a great thing. Let it remain that way. Between rent control and electric heat etc.. it is too much!!! Take a break from trying to control our lives.

Jim Turnbaugh

Are you making provisions for disposing of yard waste also? Thank you, Peter Bouyea BOU9@comcast.net

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Dear DPW
I would like to make a couple of comments on the idea of consolidated trash pickup:
1. In general, I would welcome the idea. Currently, I see at least four different trucks coming on 2 or 3 separate days to pick up trash on my street. To consolidate that into a single weekly pass by a single truck would be great.

2. That said, I am completely opposed to making participation in a new pickup program mandatory, either outright through a required sign-up or indirectly through a tax increase. We (family of 3) have lived in Burlington for nearly 30 years and have NEVER had contracted trash pickup.
Between recycling and good household practices, we would never be able to fill even a small commercial trash container on a weekly or even bi-weekly basis. Currently, I take our trash to the CSWD drop-off center approximately monthly or at most every 3 weeks and even so I only bring a single medium barrel. I admit it was easier when the Pine St. site was in operation, but even going to South Burlington ~monthly is not a big deal.
This is not only a matter of expense (although I would certainly not favor a major increase in my costs) but also a matter of efficiency. Why should my family have to pay for trash removal capacity that we would never use? Or be encouraged to generate more trash to fill a container?

So please, if you do manage to set up a consolidated system, DO NOT require all residents to sign up or pay for it, as long as they can handle the material themselves.

Don Meals
84 Caroline St.
Burlinigton

Public Comments Consolidated Collection

There is nothing wrong with the current system whereby residents have an option for their trash pick up. Multiple companies providing services is healthy competition and not only assures good service (it's easy to switch to a different provider if service is lacking) but also assures competitive rates. Consolidating to one service that will probably be run by the city is just another example of socialism at its worst! Sadly, this is what Burlington is becoming - no thank you!! Let's not put our small businesses (Myers and Gauthiers) out of business or take away business from Cassella for the sake of more BIG government. What's wrong with free enterprise?

Laura Turnbaugh

Dear Sir or Ms,

I believe that consolidated curbside collection would be a big improvement over the mishmosh of services we now have, with multiple trucks covering every block in the city.

I would be perfectly happy to have the DPW take over the whole operation and pay for it with property tax or (better yet) combined with my water bill, even though I am fairly sure I would be paying more - it takes me several months to fill my 45 gallon garbage can, and several weeks to fill my blue recycling box. I have a compost heap, so my most immediate need is usually chicken bones and skin that I can't put in it.

The problem is taking away business from the haulers that have that business now. We need them for other services like commercial dumpsters and the big haul-aways like those used at construction sites. I have no love for them, but in the United States, we haven't just "nationalized" businesses.

Therefore, I'm hoping we can find a way to have them continue to do the job, maybe by assigning each one an area of a size based on their current business. They wouldn't be able to get customers in other areas, but they could increase their business by providing better service or lowering prices. And come to think of it, this would benefit me, because I have been taking my dump down to Pine Street, which saves a huge amount.

Thanks,
Tom Hyde
Deforest Road

It would be spectacular if one of the results of this was less days of garbage/recycling trucks. We have them most days near our house, including one that happens before 6am.

Public Comments Consolidated Collection

I have lived with consolidated waste collection and know that it works well.

In Eugene, Oregon, our consolidated waste collection had weekly household trash pickup available in 3 sizes (determined by small, med and large trash cans).

Recycling and yard waste were collected on alternate weeks in plastic containers the size of lidded recycling containers now in use in Burlington. Not having yard waste collection in Burlington has caused many hassles and much expense for us especially when the amounts are small. Residents without pickup trucks or carts have no way of moving smaller fallen tree limbs and prunings.

We had 3 lidded containers - a small one for household trash, one large for biweekly recycling, and one large for biweekly yard waste.

Food waste was not collected separately during the time I lived in Eugene. Even so, the consolidated waste collection was so successful that methane production in the area landfill was significantly below the amount expected.

In Burlington, large trash collection trucks from three different companies arrive on our street weekly in addition to the city recycling truck. I believe that consolidated waste collection would benefit the environment, the city, and the citizens of Burlington.

Kiva Ryan

Lee,

I won't be able to attend the in-person meeting, so I wanted to submit a comment.

Consolidating collection of trash, recycling, etc. sounds like an excellent idea! I grew up in Milwaukee, WI using consolidated city collection which worked great. And it seems like a no-brainer, since it would help reduce wear and tear on the roads, help pedestrians and cyclists avoid dodging a larger number of big trucks on sometimes narrow neighborhood streets, and help substantially reduce vehicle emissions. Reducing vehicle emissions is needed for all of us with climate change, but also particularly helps those with asthma like my husband and an increasing number of children, as well as those with reduced lung capacity like my mother and other older adults.

I am all in favor of it. I hope it happens!!!

Jenny Lauer
Burlington Ward 1

Hello,

I am writing in strong support for the idea of Consolidated Collection of garbage, recycling, and compost.

I think reducing the carbon footprint of many garbage collectors on many days (not to mention reducing the noise) justifies a more organized approach.

Public Comments Consolidated Collection

Thanks for working on this,
Rebecca Schwarz

Lakeside Ave
Burlington

Hi,

I was told that you are spearheading a push for collection of garbage, recycling and compost.
I am strongly in favor of this and would be interested in helping you as needed.
(I just saw an article that featured South Korea's recycling and composting program— there are many models that are already working.)

Thank you!

Sincerely,

Adam Grundt
79 Lakeside Ave
Burlington, VT 05401

So here we go with another ridiculous, "progressive" concept that pretends to take into account every customer's needs and supposedly save everybody money.

I live alone. I recycle a lot. I generate very little trash. I contract with Gauthier's because they are one of the few haulers in the area who provide on-call pickups. I literally have them stop once every three months, while most of the haulers require a weekly pickup. I would then be forced to take my own trash to the landfill.

Is this scenario going to be addressed with this proposal? Knowing the whacked-out idiots on the city council now, I doubt it.

Dave Parker
19 Arlington Court

As a Burlington homeowner and longtime resident, I write to offer comment on the study draft and state that I do not support creating a municipal monopoly provider for residential waste collection. We are pleased to have a choice, do not believe this is a problem that needs solving, and do not want our options limited - at present we believe service concerns and pricing levels are addressed more promptly because of the competitive environment.

Let residents make their own choices for their own reasons without dictating outcomes or insisting on a one- size fits all solution.

Public Comments Consolidated Collection

-Peter Young

Hi Lee,
I think it's an extraordinary opportunity to consolidate waste/recycling/compost in a citywide contract. The reduced environmental and noise impacts will be considerate, and it will make all of our lives easier. We can still have private haulers bid for the contract, if needed. And I'd be willing to even stomach a small price increase for the above benefits. Thanks for taking this proactive step to study (and hopefully implement!!) this great idea.
Sincerely,
Ali Kenney
Scarff Ave

APPENDIX C

Division Director Lee Perry conducted interviews with consolidated collection communities. His summary of his communications follows:

- **Brattleboro VT –** The City of Brattleboro has had consolidated collection of trash, and recycling since the early 90's, and compost collection since 2013. As recently as 2016 they have gone from weekly trash to EOW trash pickup, as the addition of compost collection has reduced the amount of waste put in the trash, and weekly recycling pick up. Currently they offer EOW trash, and weekly recycling and organics pick up for their 4,443 residential dwelling units. This service is being offered by use of a private hauler contracted through the municipality to pick up 1-4 unit residential dwellings. The system is set up as a pay as you throw model, where residents buy either a 15-gallon $2.00 EA, or 32-gallon $3.00 EA. yellow or purple trash bag. These are the only bags that are allowed to be used. They are purchased at local area supermarkets, hardware stored, and convenient stores. Recycling is placed in a bin that can be purchased at cost through the town, or residents are allowed to use small wastebaskets as well. Compost is put in a 13 gallon container provided by the town at a cost of $20.00, but allow residents to use a rigid container with a tight fitting lid that can be easily removed by the driver, and has to be clearly labeled compost. Funding for this $838,000/year budget is made up of revenue through the sales of refuse bags (39%), and the remaining (61%), is paid for through property taxes, and container sales. Contributions to the program vary by household, as it is based on the assessed value of the property. Contractors are chosen through a bidding process via an RFP. The RFP has performance standards built in to guarantee that the residents and city's expectations are met. Although there are performance standards, the town still fields a majority of the concerns from residents. This accounts for an average of 1-1.5 hrs. of their time daily.

- **Westford VT –** For more that 25 years, the town of Westford has offered consolidated collection to their residents via a private hauler contracted by the town. They offer weekly trash and recycling to their 868 residence's, commercial establishments, and municipal buildings. They do not collect food scraps at this time. Residents either backyard compost, or self-haul to a facility. Trash and recycling are picked up in 64 gallon containers supplied by the contractor. Any amount over the 64 gallons, is billed directly by the hauler to the resident for an additional fee of $1.50/32 gallons. There is no bulky item pick up. One dumpster is provided for commercial establishments, if requested, and vary in size. If they require more than once a week pick up, or more than one dumpster, the contractor will bill the establishment accordingly. The contractor provides a 30 yd dumpster free of charge for Green Up Day. They also provide a 30 yd. dumpster twice a year at the town garage on an agreed upon date for residents to dispose of bulky items. The costs associated with this program are paid for through the residents property taxes. Contracts with a private hauler are 2 year contracts that specify collection standards as described above, as well as other instances such as inclement weather provisions, as some locations are on rural roads, and travel may be limited. The cost to the 868 residents for this service is $23.25/month, which is paid through their property taxes. In 2009 the Town of Westford Select Board formed a Committee of four Town residents, to investigate the feasibility of the Town creating its own waste hauling company to reduce the cost to the residents. The goal was to research the feasibility of the town creating its own hauling company using current and/or new hire Roads Department personnel with a purchased or leased trash hauling truck. It was hoped that the current cost to the towns residents could be reduced. In conclusion the Committee did not recommend the town create its own refuse and

recycling hauling company. Their research showed that even with the elimination of any truck purchase, the cost to the town would be above what the current contract that was negotiated with the private hauler.

- **Phoenix AZ –** The City of Phoenix Sanitation Department has been collecting solid waste for their residents since 1979. It was initially a "managed competition" system, where the City of Phoenix would bid on districts against private haulers for contracts to collect solid waste. The City's procurement department would send out an RFP outlining services, and performance standards, and have contractors, and the City submit bids on districts. This process continued until 2013, and with the City's new "Reimagine Phoenix" initiative, (which is to increase waste diversion rates from landfills 40% by the year 2020, and zero waste by 2050), this practice was ended. The City took over collection of trash, and recycling for the 405,000 single family living units located within the boundaries of the City, utilizing 204 fully automated side-loader trucks to service the 169 total routes. From 2009-2019 the City was able to provide services without a rate increase. Currently the fee to residents is $32.25/month. This service includes weekly 96 gallon trash, and 96 gallon recycling collection for all residents. There is currently no food scrap services offered. There are ~8500 residents that subscribe to the curbside collection of yard debris, but that is limited as most residents have landscape companies that provide that service. Also included in this service is a quarterly curbside bulky waste pick up where each resident is allowed to dispose of ~20 cubic yards each quarter, and residents can also take up to 1,000 lbs. of material to the City owned transfer station each month. Residents receive their monthly billing via a utility bill that also has their monthly water bill. Although the bills come together, they are not combined and verified by their respective departments. In addition to collection services, the City of Phoenix also owns their own landfills, transfer stations, and material recovery facilities, which enables them to keep cost to residents affordable, by not having to pay tipping fees.

- **Nashua New Hampshire –** The City of Nashua NH, Department of Public works, have always been collecting trash, recycling, and seasonal soft yard waste, for their residents. There are approximately 23,000 residents living in 1-6 unit residential dwellings that benefit from this service. Trash is collected weekly, while recycling is every other week. They do not currently collect food scraps, as there are no local composting companies, or solid waste districts in the area that collect the material for compost. Nashua operates it's own landfill, and the Nashua Recycling Center. Bulky waste collection is completed by appointment only. Residents call the landfill to schedule a pick-up of their large items. Trash collection is completed using 5 fully automated refuse trucks, as well as 3 semi-automated trucks to service parts of the city that automated trucks cannot. Every other week recycling is completed with 3 recycling trucks. Half of the city's recycling is picked up one week, while the other half is picked up the following week. The cost for this service is included in residents annual property tax payments. Residents can choose to self haul, but they will still contribute to the solid waste program through their property taxes, even though they do not use the service. The $13M Solid Waste budget, that includes the collection service, and landfill operations is paid for the City's General Fund. I was not provided a cost break down for collection, or disposal costs incurred by the city.

- **Cambridge Massachusetts –** The City of Cambridge Ma, Department of Public works, have always been collecting trash, recycling, compost, and yard waste for their residents. The city operates on a hybrid model in which the city collects trash and food scraps, and they contract with a private hauler to collect recycling, and yard waste. The

city services ~32,000 households for trash, and food scraps, and the contractor services ~45,000 households for recycling and yard waste on a weekly basis. Other services provided to residents are electronics' pick-up, as well as mattress recycling which is also through a private contractor. The city utilizes 8 rear load semi-automated refuse trucks for trash collection, and 3 refuse trucks for food scrap collection. Recycling is accomplished utilizing 5- 25 yard rear load trucks, and 1-10 yard load truck for smaller streets. Residents are allowed to purchase 50 gallon refuse containers from stores for trash collection, but soon will need to purchase carts from the city for use with the semi-automated trucks. Food scraps are collected in 12 gallon carts supplied by the city, and recycling containers are offered in 35 and 65 gallon options. The $15.6M budget is paid for through residents' annual property tax payment. This includes all operational costs. Contracts for recycling and yard waste collection are re-bid every 5 years to keep the costs to residents competitive. The city of Cambridge provides contractor oversight, and fields all complaints, and requests for services though their department. The contractor is paid on a monthly basis, and includes driver performance bonus incentives to do well. Residents are allowed to opt out, but would be disadvantageous as they are already paying the cost in their property tax payment. The city is exploring electrification of their refuse fleet, but does not see this happening for a couple years. When it does happen, they will replace one vehicle at a time until the whole fleet is electric. For now they are replacing 3 refuse diesel powered trucks with 3 new hybrid diesel powered refuse trucks.

- **Watertown New York –** The City of Watertown NY, has been providing curbside trash collection for their residents for ~50+ years. They currently offer weekly trash removal services. Residents can either rent a 32 gallon, 64 gallon, or 96 gallon cart for trash from the City, which is paid for on a quarterly basis, or purchase blue "City of Watertown" trash stickers at $3.25 each. The sticker must be placed on the trash bag, and the size of the bag can be no larger than 50 gallons. For each additional bag of trash that cannot fit in the cart, or each bag placed at the curb, there has to be a blue sticker attached, or it will not be picked up. The City collects ~3000 tons of trash annually from the 3500 residential units, and City buildings. Trash collection is completed utilizing two side load semi-automated refuse trucks, and one employee per truck. The fee without cart rental charged to residents is ~$169.00 annually at one bag per week. This fee includes recycling. The cost of the program is funded by revenue generated from cart rental fees, and trash sticker sales, totaling ~$900K annually. The City of Watertown will not pick up residents recycling unless the resident subscribes to the trash collection services, otherwise the resident may contract with a private hauler for trash and recycling collection. The City collects recycling utilizing 1 side load recycling truck with one employee. The recycling system is not single stream, so the drivers physically sort the recycling as they load it in the truck. The city generates ~550 tons of recycling annually. Residents are billed on a quarterly basis through a utility bill, similar to a water bill. Other services provided include curbside yard waste and brush collection. Yard waste must be placed curbside, in a paper bag, and brush bundled. This will be collected the same day as trash and recycling. City will often work with department's code enforcement on clean up complaints of properties on average 40+ times a year.

- **New London Connecticut –** The City of New London CT, has been collecting trash for their residents for ~ 50 years. They collect trash, and recycling 5 days a week from 1-4 residential unit properties, for ~ 10,000 residential units. They also collect from small commercial businesses in their downtown district, twice a week, as well as area schools. Trash is collected utilizing three side load semi-automated refuse trucks, with 2 employees per truck. Residents use 96-gallon carts supplied by the City. Recycling is collected utilizing 2-side load recycling trucks, with one employee per truck. Residents use blue bins for recycling supplied by the City. The City does not currently offer food scrap pick-up. The City belongs to the Southeastern Connecticut Regional Resource Recovery Authority (SCRRRA), along with 11 other cities and towns in the region. The City has negotiated fees, and annual tonnage quantities hauled to SCRRRA's "Waste-to-Energy Facility". All of New London's trash picked up by the municipality is hauled to their 700+ ton per day, mass burn facility that combines stringent environmental safeguards to produce 18 megawatts of electrical power while safely disposing of the regions trash. The City of New London, can also tap into other resources provided by SCRRRA, such as household hazardous waste collections, electronics recycling, and brush grinding. All costs associated with collection, hauling, and disposal are paid through property taxes, and a portion is allocated through their General Fund budget. Current cost to resident figures were not provided to me at this time.

City of Burlington
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Chapin Spencer
DIRECTOR OF PUBLIC WORKS
Martha Q. Keenan
Capital & Asset Mgmt. Program Manager
Lee Perry
DPW Division Director Maintenance Division

Date: June 22, 2021

To: Transportation, Energy, and Utilities Committee

From: Fleet Committee – Chapin Spencer, Martha Keenan, Lee Perry, Katherine Schad, Dave Hammond, Cindi Wight, Deryk Roach

Subject: FY22 Fleet Replacement Schedule

BACKGROUND:

The Fleet Committee, with DPW staff support, coordinates fleet purchases for the General Fund and several enterprise / special revenue funds in order to realize cost savings and provide management oversight. The Department of Public Works Fleet Maintenance Manager has identified (35) pieces of equipment which are to be replaced on the FY22 Fleet replacement schedule. We are able to defer replacement of eight pieces of equipment to maintain fiscal responsibility without compromising the services we provide. The list of the replacement vehicles is in Attachment A. Wherever possible, we are replacing gas and diesel vehicles/equipment with hybrid or electric power.

As per the City of Burlington, fleet policy, the Fleet Maintenance Manager and the Division Director of Maintenance Division, met with each Department Head to review the recommended replacements and receive input. With that information, the Fleet Maintenance Manager researched electric and hybrid options for each item, calculated the carbon pricing on fossil fuel options, and made his recommendations to the Fleet Committee. Department representatives and BED subsequently reviewed these recommendations. BED provided further recommendations and available incentives resulting in further refinement of the recommendations before you. The proposed equipment was reviewed by the Fleet Committee, Departments, BED, and the Administration, for approval and the basis for each equipment recommendation.

The Fleet Manager provided written specifications and requested bids from at least three vendors for each vehicle, and piece of equipment. The Fleet Committee is recommending the best option's available to move the City toward our Net Zero goals and provide reliability for the work designated for each piece of equipment. On some EV purchases, the cost comparison between conventional fossil fuel with added carbon cost, and electric options were not feasible, as in the case of the two Ford F150 Lightning pickups. With a purchase price ~$60K for the fully electric F150, compared to the purchase price of $30,200 for a conventional F150 with the cost of carbon factored in, we are paying ~49% more for the electric truck. Taking this into consideration, the Fleet Committee, still decided to go with

the fully electric option. The Committee feels this will enable us to get an early start on understanding operational considerations as we look to substantially increase EV's in the future. Given this approach, and with more viable electric options each year, we have been able to substantially increase the percentage of EVs in our annual purchasing recommendation over the past 3 years. See chart below.

Other factors that need to be considered when assessing electrification of the fleet, are the additional cost of electric over conventional/hybrid vehicles, Should the committee set a threshold amount in the Fleet Purchasing Policy, that justifies the purchase of the EV over conventional/hybrid vehicle (10%-20%, above cost of conventional/hybrid)? We are finding that the additional costs of some electric options do not outweigh the benefits, and are going to challenge our finances, and this will need to be addressed for FY23 purchases.

Fiscal Year	Hybrid	Electric	Total Equipment Purchased	%Hybrid	%Electric
19	5	0	13	38	0
20	3	1	16	19	6
21	4	6	28	14	21
*22	5	9	24	21	38

*Proposed FY22 Fleet Replacement.

FY22 EV Cost with chargers: ~$615,200
FY22 Hybrid Cost: ~$396,200
FY22 Premium paid for EV over conventional: ~$295,464

The current percentage of EV/hybrid vehicles within our fleet of 271 powered vehicles is 4.43% hybrid, and 3.30% EV. This includes Water Resources, and Traffic Departments, and does not include trailers, bicycles, or other non-powered equipment.

As we move forward with our initiative to move our fleet toward electrification, it is key to develop the infrastructure required to maintain the fleet and allow the users to feel confident the vehicle will be available and usable when required. The Fleet Committee is working with BED to determine the best locations for chargers and looking to fund this infrastructure through monies available from the State of Vermont for Climate Change and future Capital Bonding. To create this infrastructure will take time and we do not wish to purchase vehicles that we cannot use because we have not created the means to charge them. The Committee is working with the various departments, such as Police, to determine need and with BED where the best locations are within their power matrix. Once the upgrades are completed, and infrastructure are in place, then the Fleet Committee can have discussions on broadening our EV fleet to include the possibility of EV patrol cars, or other fleet type vehicles that necessitate a shorter re-charging period.

The Clerk/Treasurer's Office will seek competitive pricing from financial institutions to ensure the most advantageous lease terms are obtained for these vehicles with a rate not to exceed 4% for both lease terms of 5 years for some equipment and 7 years for the longer-term equipment, dependent on the expected life of the equipment, and what availability, or technology in regard to electric vehicles may improve before the end of the lease term. Members of the Fleet Committee, and our partners at Burlington Electric have had conversations with other communities of similar size to discuss the electrification of their fleet. See Appendix B for details.

FUNDING:

The payment of the lease is from the approved FY22 Fleet Budget, which is part of the Capital Budget. This is within the newly created Fleet Reserve Fund, which was created through collaboration by merging Department vehicle line items approved as part of the FY20 budget.

ATTACHMENTS:

- FY22 FLEET CAPITAL SUMMARY

MOTIONS:

Transportation Energy and Utilities Committee:

1. "To approve and recommend that the Board of Finance, and City Council authorize the Director of Public Works, to purchase 35 pieces of equipment for a total value of $2,620,314 with lease financing determined by the Clerk/Treasurer's Office at a rate not to exceed 4% for terms of 5 or 7 years, subject to review and approval by the City Attorney."

Attachment A - FY22 FLEET CAPITAL SUMMARY

Department	Division	Vehicle ID	Vehicle	Recommendation	Lease Duration Years	Vehicle Units	Cost of Carbon		Total Cost		
							Fossil Fuel	Hybrid	Fossil Fuel	Hybrid/CNG(after rebates)	Electric
Fire		FC1	FC1 Mustang Mach E	Electric	7	1	$3,395	$2,403	$57,132	$42,132	$54,200
Police		P048	P048-Car	Electric	7	1	$300		$30,000		$45,000
Police		P1606	P1606-Car	Electric	7	1	$2,500		$20,000		$36,000
Parks	Rec/Waterfront	PR77 PR78	PR77,78Car	Electric	7	2	$6,000		$44,000		$72,000
Parks	Rec/Waterfront	PR79 - PR87	PR79-87Bicycles	Electric	5	8					$36,000
Parks	Cemetery	PRScagg	Walk Behind Mower	Electric	7	1	NA		$13,500		$25,000
Parks	Leddy	PR30	PR30-Zamboni	Electric	7	1	NA		$100,000		$152,000
DPW	Streets	501	F150 Pick Up	Electric	7	1	$2,440	$1,320	$27,810	$42,200	$60,000
Police		P1502-P1602	Line Cruiser/Supervisor	Hybrid	5	5	$21,510	$15,415	$371,200	$396,200	
Fire		FA5	Ambulance	Fossil Fuel	7	1	$15,830		$318,000		
Parks	Cemetery	Mower	Walk Behind Mower	Fossil Fuel	5	1			$6,500		
Parks	Cemetery	C30	Backhoe	Fossil Fuel	7	1			$70,000		
DPW	Streets	S35	Sweeper	Fossil Fuel	7	1	$10,999		$286,500		
DPW	Streets	S38	Sidewalk Tractor	Fossil Fuel	7	1	$5,097		$159,835		
DPW	Streets	S69	Small Dump Truck	Fossil Fuel	7	1	$7,477		$58,750		
DPW	Streets	S74	Plow Truck	Fossil Fuel	7	1	$7,089		$175,429		
DPW	Recycling	G01	Recycling Truck	Fossil Fuel	7	1	$36,491	$34,453	$235,000	$347,110	
Parks	Rec/Waterfront	PR54	Trailer	N/A	5	1	NA		$9,600		
DPW	Streets	S51	Trailer	N/A	5	1	NA		$9,600		
Traffic	Traffic	T02	Service truck	Fossil Fuel	7	1	$6,600		$73,200		
Water	Water Distribution	Z18	F150 Pick Up	Electric	7	1	$2,440	$1,320	$27,810	$42,200	$60,000
Waste Water	Water Distribution	W21	Waste Water Tanker	Fossil Fuel	7	1	$14,179		$201,500		
Chargers				Electric	5	1					$75,000
Total				$2,620,314		35	$142,348	$54,926	$2,275,368	$869,842	$615,200

Lease	FY22 Lease Budget	Value	Number of Leases
5-Year	$92,580	$452,900	17
7-Year	$308,202	$2,167,414.00	18
Total Lease Payments	$400,782	$2,620,314	35

Deferred Equipment				
Department	**Division**	**Year**	**Vehicle**	**Cost To Replace**
Police		2001	Trailer	$7,500
Police		2015	Taurus	$41,200
Police		2016	Taurus	$41,500
Parks	Rec	1980	Tractor	$25,000
Parks	Rec	2014	Chipper	$57,414
Parks	Rec	2000	Flail Mower	$36,000
DPW	Streets	2009	Soil Screen	$48,960
DPW	Streets	1997	Trailer	$9,888
			Total	$257,574

If you have any questions, please contact me at lperry@burlingtonvt.gov or 802-316-7568.

Appendix B – Community Conversations

- **Freemont, Ca.** -Members of the Fleet Committee, and our partners at Burlington Electric, have had conversations with members of the Freemont, Ca. Police Department, to discuss their two year pilot program with the Tesla model S patrol cars. This was very helpful as they were able to discuss how the implementation went, and how it suits the departments needs. The tesla is used once per 11 hr shift, or 60-70 miles, and then charges during the next scheduled shift. Freemont has 60-70 PD vehicles in their fleet. 15-20 are hybrid, 2 electric, and the rest are internal combustion engines.

- **Boulder, Co.** -Boulder Colorado has given us some information on their fleet for comparison. Their electrification work on their fleet of ~430 on road vehicles, included excluding some certain police vehicles and pick up trucks for which there have not been suitable electric models available. This included ~235 trucks, and ~90 police vehicles of various types (e.g. Ford 150-350, Chevy Colorado, Ford Interceptor). Once these vehicles were excluded from the total amount of fleet vehicles, they

were left with ~100 vehicles on which they did a detailed electrification analysis. So of the ~100 vehicles, 30 are EV. They consist of Nissan LEAF, Chevy Bolt, Toyota Prius PHEV and Mitsubishi Outlander PHEV. They will also be exploring options for electric pickups with the addition of the soon to be available Ford F150, and Rivian

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Memo

Date: *June 17, 2021*

To: *Transportation, Energy, and Utilities Committee*

From: *Nicole Losch, PTP, Sr. Planner*

Subject: *Colchester Avenue: Bikeways, Parking, and East Ave Intersection Safety Scoping Study*

Recommendation

We respectfully request that the Transportation, Energy, and Utilities Committee approve the following motion:

- To accept the Colchester Avenue Bikeways, Parking and East Ave Intersection Safety Scoping Study;
- To endorse the Advisory Committee's recommendation as the preferred alternative to advance for funding and construction: raised and separated bike lanes on Colchester Avenue west of East Avenue; raised and separated bike lanes with short-term parking in targeted locations east of East Avenue; and an upgraded, realigned signalized intersection at East Avenue; and
- To recommend that the City Council accept and endorse the same through Resolution.

Introduction

This Scoping Study continues the incremental changes to Colchester Avenue outlined in previous planning studies and recent design efforts. The City requested assistance from the CCRPC to complete a scoping process that will assist the City in selecting a preferred alternative for improvements to the Colchester Avenue corridor and East Avenue intersection.

The Executive Summary provides an abridged review of the purpose and need, existing conditions, public outreach, concepts, and preferred alternatives. The full Scoping Study is also available for additional detail.

The Advisory Committee considered public input and technical analysis to vet the concepts and vote for the alternatives they recommend the City select: raised and separated bike lanes along Colchester Avenue, pockets of on-street parking for short-term uses, and an upgraded signalized intersection at East Avenue.

The decisions were difficult for the Committee and unanimous decisions were not reached for either the corridor or intersection. While the corridor recommendations have been viewed favorably since the Committee meeting, the intersection recommendation continues to be a point of debate. The Advisory Committee's feedback on the roundabout: greater benefit to vehicles than pedestrians or bicyclists, not preferred by emergency services over signalized option, improved safety, aesthetics, and climate benefits. Safety considerations were heavily influenced by VTrans' High Crash Location (HCL) Preliminary Benefit-Cost Analysis. This indicates a crash reduction factor of 30% for the upgraded signalized intersection and 38% for the roundabout; a 20-year construction cost amortized at an annual rate of $66k for the upgraded signalized intersection and $235k for the roundabout; and a benefit/cost ratio of 1.12 for the upgraded signal and 0.40 for the roundabout.

At the June 16, 2021, Public Works Commission meeting, discussions focused on the added safety benefits of the roundabout, the less desirable and indirect path for people walking and biking through the roundabout, cost considerations, and community input in favor of the signalized intersection (without having a local roundabout as a point of reference). The Public Works Commission voted (5 to 1) in favor of supporting the Advisory Committee's recommendations.

Next Steps

City and CCRPC staff will present to the TEUC a summary and outcomes of this Scoping Study. Following the TEUC's consideration and approval, this will be presented to City Council at an upcoming meeting suggested by the TEUC. City staff will work with any TEUC or area Councilors interested in sponsoring the Resolution for City Council consideration.

As mentioned in the Scoping Study, the preferred alternatives are long-term recommendations for which funding has not yet been allocated to design or construct. These are recognized as important projects and will be reviewed against other capital funding requests for major transportation enhancements.

Scoping Study

Executive Summary and Scoping Study – Available online:

https://www.ccrpcvt.org/our-work/transportation/current-projects/scoping/colchester-ave-bikeways-parking-and-intersection-safety/

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Councilor Jack Hanson, Chair, *East District*
Councilor Jane Stromberg, *Ward 8*
Councilor Mark Barlow, *North District*

Inquiries:
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Transportation, Energy and Utilities Committee of the City Council
Tuesday, June 22, 2021 5:00 PM

–Minutes–

Introductions 5:02

Chair Hanson: Call to order at 5:05 PM.

1. **Agenda**

Councilor Stromberg moved to approve agenda. Seconded by Councilor Barlow.
All in favor passed unanimously.

2. **Minutes of 4/27/2021**

Councilor Stromberg moved to approve the minutes. Seconded by Councilor Barlow.
All in favor passed unanimously.

3. **Public Forum**

Jason Stuffle – Colchester Ave resident. There has been inadequate information given about Colchester Ave Scoping study. Decision to pass from Public Works Commission seemed rushed. Don't see rush to vote on this immediately. A roundabout is a hard step due to cost but it is right step for vision zero. Don't pass something that doesn't further discussion about roundabout. Consolidated collection should be municipal. Responsible employees and incentive to reduce trash and not just make profit.

Ethan Waxman – St Paul St Resident. In favor of consolidated waste collection system. Could benefit local economy, environment, and surrounding communities. Big haulers are less careful and higher cost. No need to deal with bidding and hiring out if municipal. More chance for community influence if municipal.

Martha Lang – Colchester Ave scoping: page 3 of introduction – what is shared parking, how many people on Colchester Ave will be eligible, when will it begin? Data was from 2014 and is outdated. Figures 8 and 10 – shows if bike lanes were implemented, would have bike lane within 2' of houses. Roundabout – what are dimensions? Don't see many bikes on Colchester Ave.

Tony Redington – Ward 3, St Paul St Resident. Transportation planner and policy maker. Agrees with Jason Stuffle regarding Colchester ave intersection. Transportation racism and environmental injustice need to be considered. Study in Boston Globe looked at early deaths related to automobile pollution - 22 deaths for VT. Those deaths likely occurred in older and low income neighborhoods. East Ave and Colchester is a concerning intersection for this reason. A roundabout would reduce gas used compared to traffic signal.

Sophie Aronson – UVM student living in ward 6. Lives on Colchester Ave during school year. Didn't ride bike during school year because they felt unsafe. Need to provide safe bike infrastructure to low income and students that don't have cars. This reduces emissions in transportation system. In support of consolidating waste collection.

Sarah Scioritino – Colchester Ave resident. Difficult to not afford a car with current system. Bike lanes proposed would improve feeling of safety. Have a responsibility to low income residents and students. Move away from fossil fuels. Raised bike lane supporter.

Liza Cannon – Ward 4 citizen. Went to UVM and prior ONE resident. Supports Colchester Ave bike updates. Benefit to entire City by putting fewer cars on the road.

Serril Flash – East Ave Resident. Need a culture change to focus on courteous safe driving behavior – drivers routinely stopping for pedestrians. Roundabouts are important first step towards safer ped/vehicle interactions. DPW Commissioners voted without significant data available on Colchester Ave Study. The cost differential between the two designs (roundabout vs signal) would at some point balance out when maintenance and human death costs are factored in.

David Sidelle – N Prospect resident, UVM Senior. Full support for Colchester Ave project. Traffic signal at East Ave and raised bike lane. Perception that this City is taking a strong step towards climate change but infrastructure is still car centric. Transitioning to a culture where people can sustainably and safely move to where they need to be is important. Support Consolidated Waste Collection.

George Love – Support for Colchester Ave bike lane.

Deborah Kraft – Support for Colchester Ave bike lane. Prior resident of Chase. Transportation is one of leading causes of carbon emissions in the state. We need to encourage shifting away from cars in the transportation sector. Safer to do this with bike lanes.

Nathan Greenstien – Colchester Ave resident, UVM senior. Supports Colchester Ave redesign as is. Important shift away from vehicle emissions. Supports signalized intersection at East Ave.

4. **Colchester Avenue/East Ave Scoping (See Attachment)**
   - Nicole Losch, DPW
   - 30 Minute Durration
   - Action

Nicole Losch, Senior Planner – see presentation. Tonight will focus on preferred alternatives

Jason Charest – CCRPC Project manager. Walk through of alternative.
Impacts to properties – holds the northern side of the sidewalk constant. Only moves sidewalk by a few feet on the south side with the exception of bulb outs for parking were parking would move up to 5 feet. Intersection preferred alternative – aligns East Ave at 90 degree angle. New crosswalk on western side of intersection. Adds in bike signal for cyclists. Realigns entrance at Trinity Campus. Removes a few parking spaces on East Ave. Advisory Committee feedback - parking was a concern for the bike lanes. For intersection, split between roundabout and signal - safety, aesthetics, multimodal travel and climate was main feedback.

Public comment:
Tony Redington – No info provided on delay on each leg of intersection by mode or queue length. Traffic signal has significantly more queue than roundabout would at Barrett/Colchester intersection. Safety and emissions are also factors. In the US and Canada there are ~9000 roundabouts and not 1 ped killed at a any of these marked crosswalks since 1990. Roundabouts cut serious and fatal crashes by 90%. All injuries decreased by 60%. Federal Highway calls roundabouts a safety counter measure for pedestrians. We have room here to separate peds and bikes and have no delay for either. Cars would yield to bikes and peds. We don't have the data to show performance of signal vs roundabout here.

JB Carter Neubiesser – Support for proposal as approved by advisory committee. Would hope members of the committee would defer to preference of those effected directly and reference public outreach done to residents in this area.

Zoe Kennedy - Ward 1 resident. Support for Colchester Ave as advisory committee approved. Provides vibrant street scape. Protected from automobile traffic. Not in supportive of roundabout here. Copenhagen Denmark widely considered most bike-able city stated feeling of safety is important. They use bike signals and intersections set up to have bikes move forward out of vehicles blind spots. Intersections are raised so cars must drive slowly. Jeff Spec wrote in his book that roundabouts should be used sparingly and not where pedestrians are main concern. Prioritizing ped/cyclists needed in this corridor.

Isabella Decliver – UVM sophomore – Supports raised and separated bike lanes and signalize intersection. Highly populated area. Roundabout slows vehicles but not ped friendly due to sight lines.

Danny Iutanue – Raised and separated bike lanes would encourage them to bike here as well as others. Supports signalized intersection - benefits bikes/peds.

Ryan Thortan – Ward 2 resident. He/him pronouns. Works on Colchester Ave. Early education center there should be considered. Raised and separated bike lanes could help this demographic. Consider efforts to slow vehicles at signal.

Jason Stuffle - Avid biker on this corridor. Signals seem to encourage drivers to speed to get the light or start from a full stop quickly. No physical barriers to slow people with proposed signal intersection. No waiting for anyone walking or biking is important, this happens with roundabouts. Human toll is considerable and injuries have long term effects on community members. Roundabouts are safer based on data and science. Budget limitations should not stop this design.

Solveig Overby - If the TEUC is endorsing the signalized intersection as their preference, then that's their preferences. If the availability of a funding opportunity for a roundabout design would make their decision different, then the funding appears to be the sticking point, not the choice of an intersection design.

Councilor Stromberg – appreciative of public comments. Likes roundabouts as a driver. Great to have input for each side. Helps inform decision.

Councilor Barlow – Thanks for coming. How will we pay for improvements?

Nicole Losch- We don’t have identified funding yet. We put together a prioritized five year work plan list and look to fund them. Cost to Burlington – corridor would be City expense. Intersection could be VTrans since it is high crash location. They completed analysis to see benefit of intersection vs roundabout and recommended intersection so they likely would be more inclined to fund this option. Can a roundabout be accomplished later? Yes, various ways. Council could direct or as we are prioritizing projects and looking for funding could move towards this option.

Chair Hanson – Supportive, best bike infrastructure in Burlington on a road. Most of debate is around intersection. Happy that previously there was controversy on removing parking for bike lanes but now there is more support. More supportive of signalized intersection to move towards complete bike system. We need this type of shift to simplify cyclist route, especially with bike signal. Signal provides best user experience for bikes. That is weighed against overall safety of roundabout. Funding lacking– means we will have to wait and live with current conditions. Tough decision but more inclined to go with signalized. Interested in Councilor Barlow’s point about looking to future and leaving door open and utilizing funding

when it's available for a roundabout later. Goal to move forward as is and get into the queue with recommendation as is and then look into roundabout as we wait and see what funding changes.

Councilor Barlow – Agrees door being open to a roundabout while moving project forward is preferred.

Councilor Stromberg – Agrees. High crash location. Lived there previously and it is not a friendly corridor. A lot of people walking to campus and hospital. More inclined to push project forward as is. Want to implement this to see data to then be able to implement in other locations as applicable if successful.

Chair Hanson – Can we get this in queue as recommended but still maintain flexibility to consider a roundabout in the future?

Director Chapin Spencer – That direction is acceptable. To advance with this understanding gives us enough to move forward and seek funding. There is a list far beyond our capacity to fund to meet future Capital needs.

Nicole Losch – Agrees. We are open to amending this to leave some flexibility to work on either design. We can work language however you like to consider future options with funding as available.

Councilor Stromberg – Motions to accept the Colchester Avenue Bikeways, Parking and East Ave Intersection Safety Scoping Study; To endorse the Advisory Committee's recommendation as the preferred alternative to advance for funding and construction: raised and separated bike lanes on Colchester Avenue west of East Avenue; raised and separated bike lanes with short-term parking in targeted locations east of East Avenue; and an upgraded, realigned signalized intersection at East Avenue; and To recommend that the City Council accept and endorse the same through Resolution; and to indicate that we want to further explore the potential to peruse the development of a roundabout for this intersection.

Mark Barlow – Seconds motion.

Director Spencer – To clarify, as DPW seeks funds, if funding presents itself to secure the extra funds, then the Council could authorize approval to move forward with this design process for roundabout. This could come from federal grants etc. The resolution gives us clear guidance to move ahead but look for additional opportunities.

Martha Keenan – State has funding and has not yet allocated or made these funds available. We can look in this area as one potential opportunity in July/August.

Councilor Stromberg– Is timeline important to mention in amended bullet?

Director Spencer – Funding is available whenever it comes up. Don't think there is an end date to your amendment so we will continue to look until we can't when construction is critical and we will need to make a decision on intersection.

Chair Hanson – That's why I support the signal - don't want to miss the opportunity if we can make corridor changes happen soon. Would we be applying for both corridor and intersection?

Nicole – Not knowing what the grant program would be it is hard to answer. If it is a large project and big grant application then we would apply for both. Since it is high crash location, we could work with VTrans just for the intersection improvements.

Jason Charest – Cost was not the only factor at play in this decision. Even if cost is solved there will still be people on both sides of intersection options.

Unanimously passed – 6:48

Nicole – Will work on resolution and the language to make sure this is accurate and send to Chair Hanson.

5. **FY22 Proposed Fleet Replacement (See Attachment)**
   - Lee Perry, DPW
   - 20 Minute Duration
   - Action

Lee Perry – See memo. Chart showing types of cars to be replaced.
Paying a premium for F150 but this is opportunity to see what operational issues we could have going forward. Need to see cost effective replacements. F150 is downsize and electric option for its replacement for DPW. Replacement of vehicles across departments.

Martha Keenan– This is the first time we are increasing overall fleet vehicles but we are adding electric vehicles for additions. New replacements across depts.. meet needs of depts.. and are electric/hybrid where possible. Chargers needed are tier 3 but we are getting tier 2. We need infrastructure ahead of vehicles so they can be used. Meeting with BED to see where we can easily and most effectively put chargers and options for best location to get cost offset from public users. Looking at other funding opportunities to get these. Electric and hybrid vehicles have higher cost. We are looking at other ways such as capital bonding to make this work. We need to balance that and move towards electrification and shorten lease cycle and get infrastructure in. Leases that we are holding expire in 2024 and then we will have more money from this expired leases.

Councilor Stromberg– Chargers proposed all the same?

Martha Keenan– Yes, all tier 2, $75,000 total.

Councilor Stromberg – Are we on a waitlist for F150?

Lee Perry – Not available yet, we are constantly checking.

Councilor Barlow – Cost differential between chargers?

Martha - 20k vs 80k for Tier 2 vs 3. Will need tier 3 chargers, fenced in parking to secure them and electrical changes for building in certain locations. Chargers increase electrical usage so that is to be considered.

Councilor Barlow – Electric bucket truck for BED and tier 3 charger just purchased. Is there plans to share this throughout the city?

Martha Keenan– Yes but BED has fenced-in lot which we don't have access to, although maybe during the day, but it wouldn't be available 24/7. We have talked about putting tier 3 in each part of the City so there are three locations that are central for different parts of the City and available to the public. BED working on matrix of best locations. Through the state there is funding and we will work with BED to try to get take advantage of the funding opportunity..

Chair Hanson – What about unspent ARPA funding? I know it's limiting but my understanding is we could displace funds from that.

Martha Keenan– This doesn't qualify. We received 9.4 million in June. I believe this has been allocated so moving it around for this purpose I don't think is possible.

Chair Hanson – Improvement since last year is amazing. Dedication is clear. Market enables us to be more aggressive with this effort. Is lease related to expected life span?

Lee Perry – Last few years we shortened leases in anticipation of advancements in electric vehicle tech.

Chair Hanson – With deadlines for net zero it is important to get off fossil fuels.

Lee Perry - Collaboration amongst depts.. in the effort. BED is influential and provides insight.

Councilor Barlow – For fossil fuel leases, could you sell in middle of lease?

Lee Perry - That is the plan moving forward. The value of the vehicle is greater in shorter lease.

Martha Keenan – We own vehicles upon purchase and have one master lease. We intentionally shortened lease so it would be possible to replace when electric is available. We are now coming up on leases ending and electric vehicles being available as replacements

Councilor Barlow – Motions to approve and recommend that the /board of Finance, and City Council authorize the Director of Public Works to purchase 35 pieces of equipment for a total value of $2,620,314 with lease financing determined by the Clerk/Treasurer's Office at a rate not to exceed 4% for terms 5 or 7 years, subject to review and approval by the City Attorney.

Councilor Stromberg – Seconds.

No discussion, passes unanimously.

6. **Consolidated Collection (See Attachment)**
   - Lee Perry, DPW
   - 60 Minute Duration
   - Action

See presentation

Director Spencer – Happy there is Council and community support. We want to find a solution to meet all needs.

Gene Bergman – Municipal model is most cost effective. DPW doesn't want single hauler to do whole system but that may not be possible. Problem with franchise option is monopoly. Matrix undervalues public model. If the voters reject it then there is no harm and another option can be explored. Benefit to having municipal is very high after initial period. Don't think that upfront capital costs should be rated as high risk. If we want to go with charter change to create enterprise fund then that is reasonable and low risk. We do not need to have charter change to create municipal collection system. Municipal and franchise very close scoring. Benefits will accrue greatly with municipal option.

Solveig Overby - If the City wants to "Reduce, Reuse and Recycle" its waste streams, why would it choose a franchise model that disincentiveses reduction of waste? Private haulers don't benefit from

reducing waste. Franchising reduces the options for innovation in the way Burlington handles its waste. Waste is not going away. Does the City want to take responsibility or just push it off to a private franchise system where Burlington residents must accept whatever waste options are most profitable for private haulers to offer?

Councilor Stromberg – Heavier lift to begin with to do municipal but long term benefits. More union jobs. Hybrid version is not successful compromise based on my initial thoughts.

Councilor Barlow – Presentation said we could cap opt out – How?

Director Spencer – Somewhere around 15% of residents are opting out, as we evaluated, currently. Could have been 15-25% self hauling. If we wanted to set the floor at 15% and more wanted to opt out then we would need to do something like a lottery or first come first serve. We aren't required to cap but we could explore this option. If we wanted to, we would start with high level of opt out and then could dial it in to see true interest and then make sure we have sustainable model.

Lee Perry – Opt out would be for self haul only, not private hauler.

Councilor Barlow – 2/3 reduction of emission seems to be less probable under franchise model, especially one where you maintain equity with routes by having different haulers and trucks on the same street.

Lee Perry – We wouldn't have multiple haulers on the same street at the same time. We could have split body trucks to pick up two waste streams at once.

Director Spencer – Under any model, there are three streams that need to be picked up. We don't have enough information on logistics to see how this would work operationally. Fundamentally, the entire NNE under either of these options, could be picked up by one hauler instead of many. Either option is better than today.

Councilor Stromberg – Could see how there could be more long haul trips out to Williston facility but weighing against low emissions throughout the city. One is not better than the other with emissions.

Chair Hanson – With hybrid option – it would still be one hauler doing both waste and organics.

Director Spencer – That would be proposal but contractors could propose to sub out organics.

Councilor Barlow – Could goals be achieved differently? Couldn't we require in licensing that haulers use more effective routes or time/area restrictions? Could more educational efforts help consumers? Could we incentivize haulers to electrify fleets? Were these explored?

Director Spencer – We had conversations with haulers. There are some goals that could be achieved through regulation of subscription service. We could require haulers to pick up on certain days/areas. That may add to inefficiency of system based on low volume of some small haulers. Don't think we can reduce emissions with these requirements. Same miles driven with lower emissions if electric but same impact on wearing down infrastructure. Consolidation creates efficiency

Chair Hanson – If it's a 7 year contract, is there opportunity to go with that and then use those 7 years to set up municipal option and then take over at that point?

Director Spencer – These are two different models. Some communities have shifted from bidding period to bidding period how they operate. Phoenix did this and have recently selected municipal option. Key is to have initial period to be substantial enough so that you get competitive bids so bidders can adequately depreciate investments made. Do we go into 7 year bid with idea that we will be getting out of this bid or do we wait for 4 years to see environmental impacts and community input. Would prefer to go into it with idea that we would see how it goes not with idea that we will totally switch model and redo efforts.

Martha Keenan– We need to consider funding. Echoes what Chapin said that you need to look at how it goes in 4 years and look to then go to voters to ask to borrow funding if needed. Our Capital funding will be very stressed this year with high school and infrastructure needs.

Chair Hanson – Supports municipal option. Didn't realize it was as common as it is across country. Ultimately best option, hearing concerns of financials and see if we can defer municipalization for a cycle.

Councilor Stromberg – Needs to be consolidated. Hybrid option should be the fall back but ultimately we should bring municipal option to voters to see what community really wants. Does hear concerns.

Councilor Barlow – Not on board with consolidated collection. Private haulers are business owners and providing good level of service that people appreciate. We have a system that self regulates by giving people opportunity to go to new hauler if a hauler is not working. There needs to be more outreach. There are emission savings to be had with consolidated though don't think they are as great as stated here. Concerns with small haulers ability to survive with franchise model.

Councilor Stromberg – Motion to advance implementation of a fully consolidated collection system for at least 1 to 4 unit residential properties in Burlington; and propose implementation of a municipal consolidated collection system where organics, trash and recycling will be collected by the City; and Requests City staff initiate a resident engagement process to determine the specific service levels and options that will be initially offered, and return to the City Council by March 2022 with the service level recommendations and an updated timeline.

Chair Hanson – Seconds. Supports municipalization but interested in option of franchise to municipal later option. This will be first opportunity to gauge broader Council thoughts. Would still support hybrid over what we do today if there is not Council support.

Councilor Stromberg – Recommendation is thoughtful. Hybrid model is good but wants to be as bold as possible with climate timeline. Thank you for DPWs work.

Chair Hanson – climate benefits are slightly better with municipal but either option is better than what we do now. More opportunity to accelerate electrification and further consolidate for the climate with the City but the main advantage over the hybrid is the labor and community control. Hears financial concerns and wants to address that.

Councilor Barlow – When there is a private industry it shouldn't be the role of government to replace this industry. That is concern.

Councilor Stromberg/Chair Hanson – Aye
Councilor Barlow – No
Passes 2/1 8:20 PM

7. **Director's Report**

Director Spencer- Water resources rate restructuring for affordability in progress. Paving bid issues. Delayed getting out to bid due to design work on North Ave. received one bid, not competitive, higher than engineer's estimate. Working on advised plan. Paving work occurring on North Ave, near police station, leftover from last year's contract. Some Water Resource related paving this season. Looking at fall paving bid for CY22. Shelburne St Roundabout moving forward with construction. Amtrak work moving forward with construction near waterfront. Washington/Berry intersection work is underway.

8. Councilors' Update

Chair Hanson – Followed up today about rooftop solar with Permitting and Inspection and Fire Dept to see if they are willing to explore greater flexibility on requirements and regulations on instillation**.**

9. Next Meeting

Tuesday July 27th 5:00 – to be confirmed.

10. Adjourn

Councilor Stromberg motions to adjourn. Councilor Barlow seconds.
Unanimously passes. Adjourns 8:25PM.