A. Introduction

Transportation takes many forms in Bernardston. Major roads such as Interstate 91, Route 5, and Route 10 connect Bernardston to surrounding towns and to the broader region. A rail line owned by the state of Massachusetts runs through the southern portion of town and offers the potential for freight transport for businesses. Trail systems for hiking, snowmobiling, and horse riding weave through the town’s forests and allow residents and visitors to explore the town’s natural beauty. The Franklin County Bikeway connects the town to a large network of bike-friendly roads and off-road bike paths that run through the county. Scenic byways surround the town and allow travelers to see the beauty of western Massachusetts. A sidewalk on one side of the road runs along South Street and Church Street.

While there are many opportunities that Bernardston’s transportation networks provide (for example, how easily accessible the town center is from I-91), feedback from multiple community meetings and two surveys revealed there is room for improvement. For example, access to public transportation, better trail maps and way-finding signage, and improved parking in Center Village are a few of the transportation-related issues identified by residents.
B. Existing Conditions

Major Roads
Interstate 91 is a major interstate highway that bisects Bernardston and runs from southern Connecticut to northern Vermont at the Canadian border. The section that runs through Bernardston was designed in the early 1960s. Bernardston is the last northbound Massachusetts exit on I-91 (exit 28) before entering Vermont.

I-91 is the most heavily traveled road in Franklin County with approximately 19,875 vehicles passing through Bernardston daily (Mass DOT Transportation Data Management System, 2010-2015 average). But while many pass through Bernardston on the highway, few stop in town. However, because Bernardston is easily accessible and located between the population centers of Greenfield and Northampton to the south, and Brattleboro to the north, there is potential to draw visitors to the town for outdoor recreation, community events, and local businesses.

Route 5 and 10 are major roads in Bernardston, entering from Greenfield to the south. Routes 5 and 10 then split in the middle of Center Village, with Route 5 continuing north into Vermont and Route 10 traveling east into Northfield and then into New Hampshire. Compared to I-91, these roads receive considerably less traffic; Route 5 has 4,060 vehicles daily (2015), with Route 10 more than twice that at 8,150 vehicles daily (Mass DOT Transportation Data Management System, 2010-2015 average). Routes 5 and 10 are state roads so while the town does not need to maintain these roads, the town’s ability to influence their layout is limited. Parking is not permitted on these roads; however, because of a general lack of parking alternatives in town, many motorists often ignore this restriction and park along Route 10. This is especially the case for those visiting or working at Town Hall, which has minimal parking.
Level of Service Study

As part of the FRCOG’s Route 5/10 Corridor Plan (2009), a LOS (Level of Service) analysis was performed on South Street and Route 10 to determine how well certain sections of those roads performed during the highest traffic volumes. It assessed how efficient the traffic flow was for a motorist, using the difference between the traffic flow under ideal conditions and the travel time actually experienced.

The section of South Street from the southern border of Bernardston to where it intersects with Church Street and the section of Route 10 west of Interstate 91 both received a B on a scale of A through F, where A is the highest quality of road service. A B rating signifies:

- The demand for passing to maintain desired speeds becomes significant, with drivers being delayed in platoons (multiple vehicles following closely) up to 50 percent of the time. (22)

The section of Route 10 east of I-91 towards Northfield received a C rating, which according to the report indicates:

- Traffic volumes are increasing, resulting in a noticeable increase in platoon formation and size. Passing opportunities begin to become infrequent although traffic flow remains stable, in that reasonable travel speed is maintained. Slow moving and turning traffic may cause congestion. Time spent following other vehicles will be likely up to 65 percent of the time. (22-23)

The Route 5/10 Corridor Plan advises that in general, roads should be maintained at an LOS grade of C or better to ensure an enjoyable route. This means that currently the Route 5/10 corridor is adequate to transport the number of vehicles using it.
Projected Impacts On the Roadway from Development at the Priority Development Sites

In the FRCOG’s Route 5/10 Corridor Plan, the LOS for a variety of uses was projected for the two sites in the Expedited Permitting District (Priority Development Sites). The scenarios were for the year 2019 and for 100% manufacturing, 100% industrial, 100% retail big box store, 100% retail smaller stores. The projected LOS for each of these land uses was assessed for Church Street and Northfield Road.

LOS - Priority Development Site (PDS) 1

The four projected land uses were estimated at three different size facilities: 30,000-square-foot (30 KSF), 50,000-square-foot (50 KSF) and 75,000-square-foot (75 KSF).

The findings showed that the only scenarios that would have a significant negative impact on the traffic conditions were a 75 KSF retail big box store or a 75 KSF retail set of smaller stores. These scenarios were projected to result in an LOS rating of D for the section of Route 10 from the I-91 Interchange to Northfield, given the current roadway and geometry. A D signifies:

Traffic flow is unstable and the opposing flows begin to operate separately as passing opportunities become very limited. Passing demand is high, but passing capacity approaches zero. Turning vehicles and roadside distractions cause major interruptions in the traffic stream. Platoon size increases to between 5 and 10 vehicles up to 85% of the time.

LOS - Priority Development Site 2

The LOS for the four previously mentioned land uses were assessed at PDS 2, at three different sizes: 100 KSF, 200 KSF, and 300 KSF. Scenarios for mixed-use development of 250 KSF and 300 KSF were also assessed.

Priority Development Sites

The two Priority Development Sites are located to the east and west of I-91.
As with PDS 1, a land use of 100% industrial or 100% manufacturing up to 300 KSF was not found to have significant negative impacts on the roads or traffic conditions. Only a few uses were found that would significantly negatively affect service for the Route 5/10 Corridor, and all of them were only shown to affect Northfield Road.

All of these uses received a D:

- 100% retail in the form of a big box store at 200 to 300 KSF (100 KSF would not have a significant impact)
- 100% retail - smaller stores - all sizes (100 to 300 KSF)
- Mixed use at 250 KSF

Essentially, those land uses that received a D should not be permitted without an assessment of how Northfield Road could be reconfigured to accommodate larger traffic volumes. (32-33)

Preventative Maintenance

Proper maintenance of roads is essential for safe transportation; however, the relationship between pavement conditions and cost of repair is not linear. As road conditions deteriorate, the cost to bring the pavement back to excellent condition increases significantly (FRCOG, 2013). Preventative maintenance on all roadways therefore is a much more cost effective approach and considerable savings could be realized if money is invested ahead of time to prevent roads from reaching a poor condition. According to the Town of Bernardston Community Development Plan (2009), it is estimated that for every dollar spent on preventative maintenance, two dollars is saved in future repair costs (FRCOG, 2009). Allocating money earlier on will keep the roads in better shape and reduce costs of repair and reconstruction later on.

The Community Development Plan recommended developing a Pavement Management System in Bernardston, which would provide guidelines and a standardized approach that improve upon the highway department’s road maintenance practices. With limited transportation funding, a Pavement Management System may help the highway department make best use of the available resources, and also provide information that can be used to levy funding from state or federal sources.

The pavement management studies include a "visual assessment of the pavement conditions; a quantitative analysis of the condition; and a projection of future conditions based on varying levels of investment in repairs and maintenance" (2-8).

The towns of Ashfield, Buckland, Colrain, Conway, Heath, Gill, Orange, Shelburne, Shutesbury, Whately, and Montague have all worked with the FRCOG to complete pavement management studies.
Bridges
All the bridges in the Commonwealth that meet National Bridge Inventory (NBI) criteria are logged by the Massachusetts Department of Transportation. These are publicly owned highway bridges longer than twenty feet, excluding pedestrian bridges, rail bridges, and bridges that have been closed for more than ten years. Bridges that do not meet these criteria are not eligible for federal bridge replacement funding.

Fifteen bridges in Bernardston meet this criteria, twelve of which are functional and three of which were identified as being structurally deficient in FRCOG’s 2016 Regional Transportation Plan. Bridges are currently monitored every two years using the American Association of State Highway and Transportation Officials (AASHTO) rating system.

According to the 2009 Town of Bernardston Community Development Plan, for a bridge to be eligible for reconstruction it must have an AASHTO rating of less than 75 and for a bridge to be eligible for replacement, it must have an AASHTO rating of less than 50.

There are four bridges with AASHTO ratings under 75, one of which is under 50:

1. Route 5 over Shattuck Brook was rated a 15.8 and was rated structurally deficient.

2. Hoe Shop Road over Water Falls River was rated 63.4.

3. Route 10 over I-91 was rated 66.49 and was rated structurally deficient.

4. Route 10 over the railroad track was rated 74.

Routes 5 and 10 are state roads so maintaining them is the responsibility of the state. The bridge over the Falls River is owned by the town and so this bridge should be monitored and repaired as needed.

The historical stone arch bridge that crosses the Falls River was built in 1846 and is still in use today.
AASHTO ratings above 75
AASHTO ratings between 50 - 75
AASHTO ratings below 50
Center Village
Public Transportation

Public transportation in Bernardston is currently very limited but over 60% of residents who responded to two public surveys are interested in a bus route to serve Bernardston and the surrounding towns. A bus service was previously offered in town by the Franklin Regional Transit Authority (FRTA), partly as a way to help students at the Northfield Mt. Hermon School in Northfield access Greenfield for shopping and other activities. The bus travelled north from Greenfield, through the center of Bernardston, and east to Northfield. Schedules were fairly inconsistent, however, as they were determined by the school’s schedule and so were not very convenient for residents to use. When the school’s Northfield campus closed in 2005, a loss of funding and a loss of more than half of the passengers made it difficult for the FRTA to sustain this route and so the service was discontinued in 2009.

Funding and the relatively low density of people in Bernardston are some of the main challenges associated with the town’s ability to sustain a bus service. According to the FRCOG’s Sustainable Franklin County (2013), a minimum residential density of four units per acre is needed to support the route with enough riders. Most of Bernardston is either low-density residential (houses on half- to one-acre lots) or very-low-density residential (houses on greater than one-acre lots). The trailer park next to the Bernardston Elementary School is the only exception, where houses are on smaller than quarter-acre lots.

Through a contract with Bernardston which is managed by the Bernardston Council on Aging, the FRTA offers a demand-response paratransit van route for seniors over 60 and disabled residents in town. This frequently takes seniors to the Council on Aging office at the Powers Institute, and often takes people to Greenfield for doctor’s visits, shopping, etc. Other van service providers include the Bernardston/Northfield Council on Aging on a donation basis and F.M. Kuzmeskus Inc., which is a private bus service based out of Gill.

Though Bernardston does not currently meet the minimum density outlined by the FRCOG to warrant a public transport service, the FRCOG’s North County Transit Study (2011) found a demand for public transportation in Bernardston, Gill, and Northfield so the potential for collaboration exists. The three towns have a combined population of 6,843, 60% of which is of working age between 25 and 64 years old (FRCOG, 2011). While the population of these towns has remained fairly stable over the past few decades, as the baby boomer population of these towns ages, there will likely be an increased demand for public transit services. Studies have indicated that nationally, over 40% of those over 75 years old are non-drivers so a future bus route among these towns should take this population and their needs into consideration.

Are you interested in a bus route that serves Bernardston and surrounding towns? (Community survey, 2016)

Some Potential Funding Sources for Establishing Public Transportation

Congestion Mitigation Air Quality Program (CMAQ)
This Federal Highway Administration program provides funding for projects that improve air quality and reduce traffic congestion (FRCOG, 2011). Public transportation projects can receive three years of funding to initiate a project, as well as to fund roadway improvement and bicycle projects. All of Massachusetts does not meet air quality standards for ozone and this may be a potential source of funds towards establishing a bus route.

Job Access and Reverse Commute (JARC)
This program is designed to improve transportation mobility for low-income individuals so that they are able to access employment. In 2009 the FRTA received $100,000 for three years to expand its services into the western regions of Franklin County; however, these funds are highly competitive.

Source: https://www.massdot.state.ma.us/planning/Main/PlanningProcess/FundingConsiderations.aspx
Walkability

Based on feedback from public surveys and community meetings, residents would like to have a more walkable town. Currently, a sidewalk runs along Route 10 and 5 for all of Center Village, from Hartwell Street to Route 5 on Church Street and then along Route 5 to Hales Crossing.

Residents have also mentioned that the many cars travelling along Route 10 and Route 5 make for a less pedestrian-friendly streetscape. There are several crosswalks in Center Village but the sidewalk only runs along one side of the road. Some residents have said that they would like to see sidewalks on both sides of the street.

There are few gathering spaces for recreation and play in Center Village. While Cushman Park is centrally located, many residents have said that it is used infrequently. Pratt Field is often used for baseball games and for recreation but this is less centrally located in town and is about one-and-a-half miles from Center Village, which may be farther than some people are able to walk.

There are no streetlights in Center Village and few street trees. An overhead electric cable along Route 10 poses a challenge to planting more street trees.

The Sidewalks and Crosswalks in Center Village

Center Village shown with quarter-mile radius and half-mile radius distances.
Trail Systems
Several community meetings and public surveys found that many residents of Bernardston would like to see more trails in town. Currently there are hiking, biking, horse, and snowmobile trails through the town and its forests; however, residents have reported that many of them are not very well mapped.

Hiking Trails
Hiking trails run through many of Bernardston’s forests, but many of them are not well mapped. A recent project by resident John Lepore involved creating a land use plan for the Charity Lot property and mapping the network of trails through the forest. Beyond this, however, many of the trails through town are either unmapped or on private property. The town may want to explore ways to work with landowners to establish formal trail agreements.

Franklin County Bikeway
The varied topography of Bernardston presents both a challenge to bikers and an opportunity for more strenuous exercise. During public outreach meetings for the 2012 FRCOG Regional Transportation Plan, residents stated that Route 5/10 in Bernardston is heavily used by bikers but due to a high volume of traffic, is not wide enough to safely accommodate them (10-9).

Bernardston has access to the Franklin County Bikeway, a network of about 240 miles of bike-friendly roads and off-road bike paths, that has been developing for the past 25 years. The original 44-mile network centered on the Connecticut River Valley but has now grown to include much of Franklin County. The Franklin County-Vermont part of the network is a 18.2-mile loop that runs along Purple Meadow Road, Hucklehill Road, into Vermont, and returns back to the south through Northfield. Because of the hilly terrain, it is rated as advanced. The Greenfield Montague Loop is a 16.4-mile loop that can be accessed from Hoe Shop Road or River Street at the southern border of town. Some residents have expressed a desire for better signage on these roads to denote the bikeway network.
**Snowmobile Trails**
The Bernardston Gill Leyden Snowmobile Club uses and maintains about 60 miles of snowmobile trails that connect Bernardston, Gill and Leyden (Stafford, 2016). The trails are part of a much larger network that runs to the east into Colrain, the Berkshires and Vermont; to the south into Gill and then Greenfield; and to the east into Northfield and then New Hampshire. The BGL Snowmobile Club is affiliated with the Snowmobile Association of Massachusetts and snowmobilers must be a member of the BGL Snowmobile Club to use the trails.

**Horse Trails**
In the western section of town off of Fox Hill Road and Eden Trail, a network of horse trails connect Bernardston to Leyden.

As part of a strategy to encourage outdoor recreation and tourism, Bernardston could further develop some of these trail networks, map out existing trails, and promote these to residents and visitors, for example through its website and by collaborating with regional organizations such as the Northfield Area Tourism and Business Association (NATABA).

**The Franklin County Bikeway**

This is a network of about 240 miles of bike-friendly roads and off-road paths that run throughout Franklin County. The circle indicates a 10-mile radius of Center Village.
Rail Service

A railroad currently owned by the Commonwealth of Massachusetts runs through the southern portion of Bernardston and roughly parallels Route 10, entering from Greenfield to the south and traveling into Northfield to the east. This rail line is part of the “Knowledge Corridor” line, which runs from New Haven, Connecticut, to St. Albans, Vermont, along Interstate 91 and the Connecticut River. Amtrak stops in the region include Springfield, Holyoke, Northampton, Greenfield, and Brattleboro, once per day for each direction. At this point, there are no stops in Bernardston nor plans for a passenger stop to be built in Bernardston.

Beyond passenger travel, railways play a significant role in regional freight shipping. Shipping freight by rail rather than by trucks reduces traffic congestion,
greenhouse gases, and impacts to pavement, and can be more cost effective for some industries (FRCOG, 2013).

**Rail Sidings**

Rail sidings are essentially access points to the rail line where train cars can be removed from the main track in order to load or unload freight. There are two rail sidings in Bernardston. FRCOG’s 2013 *Rail Sidings Inventory Report for Franklin County* provided an inventory for Bernardston’s sidings.

The first is located at 31 Kringle Way, where Kringle Candle’s facility is currently located. It is not being used by Kringle and is adjacent to the Priority Development Site to the east of I-91. PDS 1, which lies just to the west of the rail siding, is currently undeveloped but if developed, an agreement to use the rail siding in the adjacent parcel could be explored (FRCOG, 2013).

The second siding is located in the southeast of town at 472 Northfield Road where the CaroVail and Feed Commodities International Inc. facilities are located. It is in working order and both companies use it for freight transport (CaroVail, 2016).

MassDOT estimates that the number of freight shipments will double over the next thirty years. Because of this, the ability to access the rail for freight shipping may be considered an important asset in the coming decades (FRCOG, 2016)

**Existing Rail Sidings**

<table>
<thead>
<tr>
<th>Rail Line</th>
<th>Parcel Owner (Business or description)</th>
<th>Street Address</th>
<th>Zoning</th>
<th>Acres</th>
<th>Description</th>
<th>Siding Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecticut River Main Line</td>
<td>Kringle Candle Company (distribution)</td>
<td>31 Kringle Way</td>
<td>Expedited Permitting District (EPD)</td>
<td>4.84</td>
<td>The site has a large distribution/industrial building owned by a manufacturer, located west of the rail tracks. The siding is on the eastern border of the parcel.</td>
<td>Available for use</td>
</tr>
<tr>
<td>Connecticut River Main Line</td>
<td>CaroVail</td>
<td>472 Northfield Road</td>
<td>Industrial (I)</td>
<td></td>
<td>The site has a large industrial structure located east of the rail tracks.</td>
<td>Available for use</td>
</tr>
</tbody>
</table>

**Potential Sites to Access or Develop Rail Sidings**

<table>
<thead>
<tr>
<th>Rail Line</th>
<th>Parcel Owner (Business or description)</th>
<th>Street Address</th>
<th>Zoning</th>
<th>Acres</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecticut River Main Line</td>
<td>Zitta (PDS Lot 1)</td>
<td>23 Kringle Way</td>
<td>Expedited Permitting District (EPD)</td>
<td>5.62</td>
<td>The site is undeveloped and zoned to allow industrial/commercial uses. The site is located adjacent to a developed parcel with a rail siding. If developed, the development of an agreement to access the adjacent parcel's siding could be explored.</td>
</tr>
</tbody>
</table>
C. Recommendations

Transportation Strategies
To achieve Bernardston’s three goals, the town should further develop its streetscape in Center Village, making it more pedestrian friendly and attractive for residents and visitors. Creating a more welcoming streetscape, for example by planting street trees, installing street lights, creating a Complete Street that allows for bicycle traffic, and installing benches and tables, will encourage people to spend more time in Center Village. Mapping out the existing trail systems and creating more trails in town can encourage both residents and visitors to explore Bernardston’s natural beauty and scenic qualities. Working with Gill, Northfield, and the FRCOG to explore the potential of creating a bus route among them will help residents have access to the surrounding towns without relying on cars.

Issues
- There is no public transportation system and most residents rely on cars to get around.
- There is little parking in Center Village and for Town Hall, and many people park on the street. Because Routes 5 and 10 are state roads this is technically not permitted.
- Routes 10 and 5 have a sidewalk on one side, but the streetscape in general does not encourage people to stop and spend time.
- State roads run through Center Village and residents have reported that there is heavy traffic at times. Although this presents an opportunity for the town, it also creates a car-dominated landscape.
- There are many trail systems through town, but they are not well mapped or connected, making it difficult for residents and visitors to know about them.

Considering Sustainability

Much of our society is driven by and reliant on fossil fuels for transportation. Because these are non-renewable resources, we will eventually exhaust all reserves that are practical and economically viable to extract. Over the coming decades communities that have infrastructure and services in place that reduce the demand for fossil fuels will be more resilient—for example, infrastructure that encourages biking as well as a public transit system that minimizes fossil fuel use and reduces people’s dependence on cars.
Ongoing
Continue monitoring bridges every two years using the AASHTO rating system where applicable and continue to fund the Bridge Stabilization Account.

1 to 5 years
Design a Complete Street for Route 10 from Hartwell Street to the Route 5 intersection and apply for funding from Mass DOT. Include traffic calming elements that support a safe and comfortable pedestrian environment, such as:

- Neckdowns and bulbout to narrow the roadway
- Places for people to sit, e.g., benches and tables.
- Street trees

Map out existing trails that run through town, consolidate all maps of existing trails, and promote use of these to residents. This includes trails for hiking, horses, and biking.

Work with FRCOG to install wayfinding signs near River Street or Hoe Shop for the Franklin County Bikeway.

Investigate the potential for new trail opportunities in Bernardston’s forests and explore ways to work with landowners to establish formal trail agreements.

Market Bernardston’s capacity for freight rail shipping as part of a strategy to promote the Priority Development Sites. Freight rail is ideal for commodities that are heavy and not time sensitive. A business or industry may be able to make use of the rail siding at PDS 1.

5 to 10 years
Consider developing a Pavement Management System to save costs on road repair through systematic preventative maintenance.

Conduct a parking and use inventory to determine how much parking is actually needed in town for residents, employees at the Town Hall, and visitors. Assess potential locations for town parking and determine viability of establishing a town parking lot.

10 to 20 years
Work with FRCOG, Gill, and Northfield to explore options for a future public bus route that circulates through the three towns and Greenfield.