Feasibility Study for Fixed Route Transit Service in East County

Prepared by the Franklin Regional Council of Governments

September 2016
East County Transit Study

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Introduction
The objective of this study is to examine the feasibility of establishing a fixed route bus service to the East County region of Franklin County. A primary motivation for this study came out of the recent public outreach process that was conducted for the Franklin Regional Transit Authority’s 2015 Regional Transit Plan and the update to the Franklin Regional Council of Government’s 2016 Franklin County Regional Transportation Plan. The outreach showed that the expansion of public transit in the region is a major desire by many residents. In particular, county residents expressed a need for additional routes, higher frequency of bus runs, and service in the evenings and on the weekends. In light of this demand for additional public transit and specific requests from town boards and residents, the Franklin Regional Council of Governments (FRCOG), in partnership with the Franklin Regional Transit Authority (FRTA), has focused on the possibility of expanding transit service to the eastern portion of Franklin County. In particular, this study examines the feasibility of initiating a fixed bus route that would connect the towns of Leverett, New Salem, Shutesbury, and Wendell with Greenfield and/or Amherst. A fixed route bus system is characterized by a designated travel route with set schedules and stops where passengers can board and deboard.

The FRCOG examined demographic and socioeconomic data for the study area and conducted a mailed survey of all households in these towns in order to assess potential ridership. The FRCOG then analyzed the data collected and applied this information to the evaluation process outlined for “New Service Warrants” in the 2015 Regional Transit Plan. This evaluation lays out specific factors and service thresholds that should be considered when analyzing the feasibility of new service requests.

The results of the analysis show that a bus route originating from Greenfield to the eastern portion of the county would be a benefit to residents. However, the service would have high operating costs that make the financial feasibility of this route difficult to sustain unless there is an infusion of additional transit funding into the region.

Current Conditions
The area examined for this study comprises four towns located in the south-eastern portion of Franklin County. They are Leverett, New Salem, Shutesbury, and Wendell. These towns are predominantly rural in nature with large areas of protected state forests. A major north-south route through the region is Rt. 202, which traverses the town of New Salem. Another major road, Rt. 2, runs east-west along the northern
boundary of the study area. Because of the area’s location, the region’s natural orientations are divided between Greenfield, Amherst/Hadley, and Orange/Athol. Particularly, the towns of Leverett and Shutesbury are most inclined to travel to the Amherst/Hadley area for shopping, medical, and employment. The residents of New Salem and, to a slightly lesser extent, Wendell are more apt to travel to the Orange/Athol area. The town of Wendell also has a strong pull towards Greenfield.

There is currently no fixed bus service in any of the four study area towns. Until just recently, the FRTA Bus Route 23 passed through the town of Leverett on Rt. 63 on its way to UMass Amherst. There were no official stops along the Leverett portion of Route 23, although residents could “flag” the bus along the route and if the bus driver determined the conditions were safe, the bus could stop to pick up riders within Leverett. However, based on recommendations from the 2015 Regional Transit Plan, this fixed route was modified in August 2016 to shift the route to follow Rt. 47 into Sunderland instead. This shift eliminated the flag stop service to Leverett.

The town of Leverett is unique among the other three towns in the study area in that it is the only one that is not a member of the Franklin Regional Transit Authority (FRTA). Rather, it is currently a member of the Pioneer Valley Transit Authority (PVTA), which primarily serves Hampshire and Hampden Counties. At this time, Leverett receives only demand response transit service from the PVTA. Leverett would like to be able to be a member of both regional transit authorities; however, current state legislation prohibits dual membership. At the time of this report, State Representative Stephen Kulik has filed a bill to amend MGL c.161B to allow a municipality to be a member of more than one regional transit authority.
Current Transit Services

Fixed Route Services
The Towns of New Salem, Shutesbury, and Wendell have never been served by fixed route transit. As mentioned previously, there had been a fixed bus route operated by the FRTA on Rt. 63 through Leverett as it traveled between Greenfield and UMass Amherst. Route 23 operated Monday through Friday and had just two round trips per day – one in the morning and one in the afternoon. This route has been relocated and no longer travels through Leverett.

Table 1 below shows the Route 23 performance statistics or “measures” between the fiscal years 2012-2014 as compared to the FRTA system-wide average.
### Table 1. Performance Measures for Route 23 between FY2012-2014

<table>
<thead>
<tr>
<th>Performance Measures</th>
<th>Route 23</th>
<th>FRTA System Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily Weekday Ridership</td>
<td>11</td>
<td>78</td>
</tr>
<tr>
<td>Weekday Passengers/Hour</td>
<td>2.7</td>
<td>8.5</td>
</tr>
<tr>
<td>Farebox Recovery</td>
<td>9.2%</td>
<td>7.6%</td>
</tr>
<tr>
<td>Weekday Subsidy per Passenger</td>
<td>$18.16</td>
<td>$10.93</td>
</tr>
</tbody>
</table>

Table 1 shows that the performance of Route 23 fell well below the average of the rest of the FRTA’s fixed routes. In fact, Route 23 was the weakest performing route of the entire system. During recent public outreach, residents felt that its poor performance was due to the fact that it ran very infrequently and was the most expensive route in the system. At the time, the one-way fare for Route 23 was $3.00 between 2012-2014 compared to other routes’ fares of either $1.25 or $1.00.

Based on these performance measures, the recent FRTA’s 2015 Regional Transit Plan recommended that this Route 23 be modified to reduce mileage and costs and potentially reach a larger population market. This recommendation proposed that the service follow Rt. 63 through Montague Center, but then take Rt. 47 to Sunderland where it can transfer with the PVTA buses that run every 15 minutes to UMass Amherst. This routing reduces mileage and costs. This cost savings in turn allows two additional trips during commuting hours. This recommendation eliminated any service to the town of Leverett, which is not a FRTA member. The FRTA Advisory Board voted to approve this change to be effective August 1, 2016.

Funding for fixed route services comes from a variety of sources. The three main sources of funding are the federal government (44%), state government (38%), and local government (17%).\(^1\) To a much lesser extent, funding also comes from farebox and advertising revenues. The municipalities pay an assessed amount based on the number of route miles served in each town.

**Paratransit Services**

The FRTA operates two types of paratransit services, ADA and Demand Response. ADA transportation, under the Americans with Disabilities Act (ADA), requires transit providers to provide complementary transportation services to people with disabilities that are unable to take fixed route transportation to origins and destinations within three-quarters of a mile of a fixed route.\(^2\) This form of transportation typically occurs on vans or small buses and is a curb-to-curb service. Demand response transportation service

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\(^1\) FRTA FY2015 Final Net Cost of Service Calculations.

\(^2\) Code of Federal Regulations Ch. 49, Subtitle A, §37.131
is available for residents that are 60 years and older, LifePath (formerly Franklin County Home Care Corporation) consumers, veterans with a disability rating of 70% or greater, and nursing home residents.

Currently New Salem and Wendell have access to demand response services through the FRTA, but no access to ADA transportation because fixed route bus service is not available in these communities. The PVTA contracts with the Amherst Council on Aging to provide demand response services to the Town of Leverett. Shutesbury participates only in the MedRide demand response service program, which is a volunteer driver based program for seniors that are ambulatory that need transportation to medical appointments outside of Franklin County.

Towns contribute to the demand response costs through the regional transit assessments that are issued to municipalities by the Commonwealth. Typically, subsidies from the state and federal governments defray most of the van service expenses, and the local share of the cost comprises approximately 17% of the total. The assessment for each town is based on the net cost of service for rides provided to town residents and incorporates factors including the number of rides and the distance of the trips provided.

Population Characteristics

This section summarizes demographic, economic, and vehicle ownership statistics for the East County region that relate to potential transportation needs. An examination of the area’s population trends is important for assessing current transportation services and for predicting future transportation demand and potential issues.

Population and Age Distribution

The Study Area towns have a total population of 5,625 people or 2,373 households. The largest town is Leverett, closely followed by Shutesbury, New Salem, and Wendell, respectively (see Table 2). The populations of these towns have remained very stable over the years. Since 1990, the population has increased by a total of 580 people.

| Table 2. Estimated Population of East County Towns, 2013. |
|-----------------|-----------------|
| **Town**        | **Population in 2013** |
| Leverett        | 1,759            |
| New Salem       | 1,106            |
| Shutesbury      | 1,708            |
| Wendell         | 980              |
| Total           | 5,625            |

Source: U.S. Census Bureau, American Community Survey, 2009-2013 5-year estimates.
Projections show that the population in this region will also remain relatively stable into the future. Over the next twenty-five years, the four towns are projected to experience only a slight decrease of approximately 400 people combined, for a total population of 5,225.³

For transportation planning, it is important to know not only the size of the study population, but also the distribution of the population by age group and how that age distribution is expected to change. Figure 2 below shows that currently 60% of the total population in the study area is of working age – between 25 and 64 years old. This population segment is the most likely to be commuting daily and could potentially be significant users of a bus route in the region if it were to travel to major employment centers such as Greenfield or UMass Amherst on a commuter-friendly schedule.

**Figure 2. East County Population Age Distribution, 2013.**

![Bar chart showing age distribution of the population in East County, 2013.](image)

Source: U.S. Census Bureau, American Community Survey, 2009-2013 5-year estimates.

The population projections show that over the next 25 years, while the size of the population in the region will remain fairly constant, the composition of the population is expected to change. Specifically, the percentage of the region’s workforce is expected to decline and the number of elderly will increase. The aging of the population is a common occurrence throughout the country as the large “Baby Boomer” population

³ MassDOT, developed in coordination with FRCOG, 2015.
becomes older. This trend has important consequences for public transit as the elderly are more likely to use public transit than other populations. Studies have shown that nationally, over 40% of people age 75 years and older are non-drivers. Further, many of the people in this age category who still drive limit their driving and use their cars less than younger drivers. Two-thirds of drivers aged 75 years and above drive less than 5,000 miles annually; more than 60% avoid driving at night; and over half avoid driving during peak commute hours.\(^4\) As the elderly stop driving themselves due to physical limitations, they often turn to public transit as a means to travel to the store or their medical appointments. A future bus route in the study area should take this population into consideration in terms of timing and stops, including potential stops at major shopping centers and medical centers.

**Income**

Even though almost all East County households have a car (98%), some households have transportation access issues related to the costs of car ownership. Owning a car is expensive. Current 2015 estimates from the American Automobile Association (AAA) place the cost of car ownership at $8,698 per year. This includes maintenance, insurance, car payments, and gasoline at 44 to 70 cents per mile, depending on the size of the car, when driving 15,000 miles per year. Driving 15,000 miles annually is equivalent to approximately 300 miles per week.\(^5\) Paying the expenses related to car ownership and usage can be challenging to households with limited or fixed incomes, including elderly households.

Figure 3 below shows the distribution of income across various income categories for each of the towns in the East County study area. The chart highlights the larger proportion of residents with low incomes (below $25,000 per year) in the town of Wendell and that the town of Leverett is relatively wealthier compared to its neighboring communities. Overall, 40% of the East County region is part of the Upper Income group.


Figure 3. Income Breakdown for all East County Households

Source: U.S. Census Bureau, American Community Survey, 2009-2013 5-year estimates.

Travel Patterns
According to the U.S. Census 2009-2013 American Community Survey, the majority (80%) of residents in the study area drive alone to their jobs. Approximately 7.5% choose to carpool. Another 9.4% work from their homes and do not commute – this statistic is much higher than the Franklin County average which is only 5.8%. Interestingly, the town of Wendell has a significantly higher proportion of residents that work from home at 19.6%. This large percentage implies that there would be fewer available commuters in Wendell to utilize a potential fixed route transit service.

Most workers in the study area have relatively long commutes – an average of 31 minutes. Only 37% of the workers in these towns are commuting to places within Franklin County. Unfortunately, Census data does not provide details as to the specific destinations of workers; however, results from the household survey show that the majority of workers are commuting to places in neighboring Hampshire County such as Amherst, Hadley, and Northampton which are close to the study area but outside Franklin County. The most recent Census data shows that the majority of commuters in the study area leave for work between 8:00am and 8:30am.
Survey Results

In order to gauge potential demand for a new bus route in East County, a survey was mailed to all households in the towns of Leverett, New Salem, Shutesbury, and Wendell. The survey was mailed to households during the third week of February 2016. A copy of the survey is included in Appendix A. Each mailed survey included a return envelope to facilitate response. Recipients were asked to send back the survey by April 1, 2016. Of the 2,253 surveys mailed, 592 were returned – a very good response rate of 26%.

The East County Transit Survey contained twelve questions and asked the following:

1) Which town do you live in?
2) Ages of people in the household?
3) Have you ever taken a FRTA bus?
4) If yes, how often do you take a FRTA bus?
5) If yes, which routes have you taken?
6) How many cars does your household have?
7) For each service listed, please indicate how often you would expect you or someone in your household might ride the bus if it ran in your town. [Various bus route options (timing and stops) were listed and respondents could choose how often, if ever, they may utilize that option in the future.]
8) Please briefly describe the specific needs that would lead your household to take the bus, if it were available.
9) What is the closest intersection to your home?
10) What town is your most common destination?
11) Would you support an increase in your town’s assessment to pay for new service?

The majority of the survey respondents are from the town of Leverett at 37% followed by Shutesbury at 28%. Approximately 18% of the respondents are from the towns of New Salem and Wendell, respectively.

Approximately one-third of the total respondents are 65 years and older and another third are between 45-64 years old. Figure 4 below shows the breakdown of respondents by age for each of the towns. The graph shows that Leverett has the largest share of respondents older than 65 years old, followed by Wendell. The town of New Salem has the largest share of working respondents aged 45-64 years old.

Almost all of the survey respondents have at least one vehicle per household. Only 13 respondents said that they did not have a vehicle available. This is not surprising considering the lack of transportation options and the distances that residents have to travel to amenities, such as shopping and medical appointments. Cars are often viewed as a necessity.
As might be expected for an area with no existing service, the vast majority of the survey respondents said that had never taken an FRTA bus (83%). Eleven percent said that they had taken a bus less than once a year and only 4% had taken one several times a year. Very few (a total of 5 respondents) had taken a bus more frequently. The FRTA Route 23 (Greenfield to Amherst) was by far the most commonly used route of respondents that did occasionally use the bus system. Other popular routes included ones on the PVTA system to Hadley and Northampton.

Table 3. Percentage of Survey Respondents Who May Ride the Bus at Least Monthly if Service Is Provided

<table>
<thead>
<tr>
<th>Transit Service Options</th>
<th>Monthly</th>
<th>Weekly</th>
<th>More than Weekly</th>
<th>At Least Monthly (# of respondents)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekday bus service to Greenfield</td>
<td>12%</td>
<td>10%</td>
<td>6%</td>
<td>27% (118)</td>
</tr>
<tr>
<td>Weekday bus service to Amherst</td>
<td>13%</td>
<td>17%</td>
<td>18%</td>
<td>48% (224)</td>
</tr>
<tr>
<td>Weekday bus service to Northampton</td>
<td>16%</td>
<td>9%</td>
<td>5%</td>
<td>30% (131)</td>
</tr>
<tr>
<td>Regular bus stops at Senior Centers</td>
<td>4%</td>
<td>6%</td>
<td>4%</td>
<td>13% (47)</td>
</tr>
<tr>
<td>Regular bus stops at employers or major shopping centers</td>
<td>8%</td>
<td>19%</td>
<td>11%</td>
<td>38% (156)</td>
</tr>
<tr>
<td>Other bus stops</td>
<td>4%</td>
<td>6%</td>
<td>6%</td>
<td>15% (51)</td>
</tr>
</tbody>
</table>
The results in Table 3 show that a portion of the survey respondents are interested in using a potential bus service. The highest interest was for a route that served Amherst. A total of 224 respondents said that they would use this particular service at least monthly, while 18% (83 people) said they would use it on more than a weekly basis. Potential service to Northampton is also a popular route; however interest in this route is more on a monthly/irregular basis versus a weekly/daily commuter-type route such as the Amherst route. Many survey respondents indicated that they would like to travel to Northampton for shopping, medical, or social purposes.

While the surveys indicated that a potential of 224 respondents would be willing to take the bus to Amherst at least monthly, the actual number is probably much less. Many of the open-ended comments on the surveys said that while they would take transit service to Amherst on a regular basis, there were many concerns about the timing and pick-up locations (many wanted it close to/or at their homes). Many of the comments also stated that they wanted a fixed route service that was flexible in schedule. This is difficult to accommodate since fixed route bus service, by definition, is not flexible. In addition, it was noted frequently that potential riders would like transit service to Amherst and Northampton to be available in the future as they age and can no longer drive themselves, but that it is not necessary now. This means that there may not be demand for a fixed route service now, but there could be demand in 5-10 years.

A high percentage of respondents (19%) indicated that they would be interested in using a bus service if it stopped at employers or major shopping centers. A very large portion of these respondents indicated in the comment section of the survey that they chose that option for shopping purposes. This would indicate the need for a bus schedule to operate during the daytime retail hours, as compared to commuting hours of early morning and evening hours.

Question 8 on the survey asked respondents about their most common destinations. By far, the most common travel destination is Amherst at 61% of all respondents. Figure 5 shows the most common destinations popular with survey respondents.
Another survey question asked respondents if they would support a potential increase in municipal tax assessments to help fund the establishment of a fixed route service. The results show that the majority of respondents would be willing to pay an increase in assessment in order to have transit service available in their town. Figure 6 shows the breakdown of varying levels of support for an increase in tax assessment.
A final survey question asked respondents to provide the name of the closest intersection to their house. The intent of this question was to identify approximately where respondents live while maintaining the anonymity of their survey answers. The results of this question show clear geographic concentrations of respondents within the study area. Figure 7 illustrates the locations of potential high demand for transit. These “hot spot” locations include the Leverett, Shutesbury, New Salem, and Wendell centers.
Figure 7. Locations of Survey Respondents Who Indicated an Interest in Using Transit
Potential Fixed Routes for the Study Area

As mentioned in the Introduction to this study, the FRTA recently completed its 2015 Regional Transit Plan. The Plan classifies FRTA’s fixed routes into four service categories. Each category has its own performance measures to monitor existing service and evaluate new service. These service categories are:

- **Local Routes** – These routes service densely populated areas. They typically begin and end in an urban center and stop at all locations along the way. An example is FRTA Route 21 serving the Greenfield Community.
- **Rural Routes** – these routes typically operate a few trips a day and originate in an urban area but the majority of the route is operated in rural areas. They typically exhibit higher operating speeds, longer trips, and do not run on a consistent intervals. An example is FRTA Route 41, which connects Charlemont and Greenfield.
- **Express Routes** – these routes are designed to provide faster, direct service for commuters and have limited stops. They typically operate on weekdays only during peak periods. The FRTA system does not currently have any Express Routes.
- **Service Routes** – Service routes are designed to meet the needs of a specific group. They typically have lower ridership and sporadic trip times based on the schedule of the group in question. They can be partially funded by a group. Examples may include school/college shuttles, commuter rail connections, or work shuttles. An example is the FRTA Route 23, which connects Greenfield with Sunderland (formerly Amherst) and primarily serves UMass employees and students.

A potential fixed route serving the East County study area could be classified as either: 1) a Rural Route due to the low density in the study area or 2) a Service Route due to the high demand for trips specifically to Amherst.

The Transit Plan suggests that a Rural Route is most sustainable when it runs on the weekdays with a minimum service span between 7:00am and 5:00pm. Rural Routes should also have a minimum frequency of 120 minutes between trips for the service to be viable for users.

The Transit Plan states that because a Service Route is designed to meet the needs of a specific group, its schedule may vary with the need of the specific population. A Service Route for this study area would be geared towards commuting employees and students of UMass. As a result, this particular Service Route should run also on the weekdays between 7:00am and 5:00pm, but may have trips operating more frequently than 120 minutes headways in the mornings and evenings to provide commuters with commute options. There would then be corresponding longer gaps in service during the
midday. This schedule is similar to the FRTA Route 23 to Sunderland, which has two trips clustered together in the mornings and the evenings, and no service during the mid-day.

Five possible routes serving the study area were examined and evaluated for length, trip time, service area, and the amount of potential ridership captured along the route. Three of these routes rose to the top as the most efficient and effective options. The map on the following page depicts these three – all of which originate at the John W. Olver Transit Center in Greenfield and travel to UMass Amherst. Specifically, there is one potential Rural Route that connects all four study area towns and there are two potential Service Routes that have more direct routes to UMass Amherst.

The following Table 4 illustrates the breakdown of total mileage and the number of potential respondents captured by each potential route. The potential demand for each route includes all survey respondents who said they may be willing to take a bus – it does not distinguish between how frequently they said they would take it, nor does it distinguish between where they would like to travel. Actual ridership would very likely be much less than these totals.

<table>
<thead>
<tr>
<th>Route Scenarios</th>
<th>Potential Demand Captured (riders)</th>
<th>Roundtrip Length (miles)</th>
<th>Ratio of Demand/Mileage</th>
<th>Approximate Trip Time (one-way)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural Route</td>
<td>186</td>
<td>86.2</td>
<td>2.16</td>
<td>71 min</td>
</tr>
<tr>
<td>Service Route A</td>
<td>165</td>
<td>76.6</td>
<td>2.15</td>
<td>78 min</td>
</tr>
<tr>
<td>Service Route B</td>
<td>195</td>
<td>65.4</td>
<td>2.98</td>
<td>60 min</td>
</tr>
</tbody>
</table>

Table 4 shows that Service Route B has the shortest mileage and is able to capture the highest ridership potential on its route – making it the most efficient and productive scenario. This route is approximately 65 miles roundtrip and would take one hour to travel one-way from the JWO Transit Center to Haigis Mall at UMass. This trip time is comparable to the previous FRTA Route 23 bus to Amherst.

The Rural Route and Service Route A are longer routes and would not be able to capture as many potential riders. Both would take well over an hour to travel one-way from the JWO Transit Center to Haigis Mall making these routes possibly seem less desirable – particularly for a service-oriented route. There are no routes in the FRTA system that currently travel longer than one hour. However, these routes do have a larger coverage area across the East County region.
Potential Fixed Routes in East County

Legend

Demand
- 2 - 3 Respondents
- 4 - 6 Respondents
- 7 - 10 Respondents
- 11 - 14 Respondents
- 15 - 20 Respondents

Potential Routes
- Service Route A
- Service Route B
- Rural Route

East County Study Area

Franklin County
Estimated Costs of Potential Routes

This section examines the estimated costs of two potential routes: the Rural Route and the Service Route B. Service Route A is not examined as a potential route because of its very long trip time and low potential demand along its route. The FRTA provided information regarding costs for fixed route services. The main costs include transit vehicle purchases and maintenance, vehicle insurance, fuel costs, and employee salary and benefits. The cost estimates below in Table 5 use the following set of assumptions:

- Both the Rural Route and the Service Route B would start as 4 trips per day;
- The routes would operate 249 days per year (no holidays or weekends);
- Average ridership on the new routes would be 2.5% of the potential demand; and
- Farebox revenues are based on Fiscal Year 2015 average percentage breakdowns for different fare classes.

Table 5 below provides a general estimate of the costs associated with the specific service options proposed. All of the estimates assume that transit vehicles, at least one 30-passenger bus, must be purchased for an East County Route to be established. The costs presented are the operating costs per year as well as the initial upfront capital cost of vehicle purchase. In addition to the estimated operating costs for the potential routes, information is also provided for the existing FRTA Route 23 for comparison since this route serves a similar commuter population to UMass Amherst via Sunderland.

Table 5. General Cost Estimates for Possible East County Service Extensions

<table>
<thead>
<tr>
<th></th>
<th>Rural Route (4 runs)</th>
<th>Service Route B (4 runs)</th>
<th>Existing Route 23 (4 runs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Costs of purchasing a 30-foot passenger bus:</td>
<td>$473,477</td>
<td>$378,782</td>
<td>$198,691</td>
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<tr>
<td>Estimated Operating Costs:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross Cost</td>
<td>$473,477</td>
<td>$378,782</td>
<td>$198,691</td>
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<tr>
<td>Farebox Collection</td>
<td>$3,894</td>
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<td>$5,313</td>
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<tr>
<td>Net Cost</td>
<td>$469,583</td>
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<td>$193,378</td>
</tr>
<tr>
<td>Total Miles per Year</td>
<td>85,855</td>
<td>65,138</td>
<td>36,652</td>
</tr>
</tbody>
</table>

Based on the general calculations summarized in Table 5, it is estimated that extending bus service to East County using the Service Route B scenario would cost approximately $378,782 per year for four runs per day. The Rural Route would cost approximately $469,583 per year to operate for four runs a day. This is in addition to the one-time upfront cost of $430,000 for purchasing a 30-foot passenger bus.
One important consideration when evaluating the cost of these scenarios is the amount of mileage that the routes travel through in the towns of Leverett and Amherst. These towns are not currently members of the FRTA. This means that the expenses incurred on these portions of the route would have to be carried by the other communities through which the potential route passes, including Greenfield, Montague, Wendell, Shutesbury, and/or New Salem. The Rural Route travels approximately 10.9 miles in these towns and Service Route B travels slightly more at 12.9 miles. This cost is approximately $13,000 in yearly operating costs.

Evaluating Potential Routes Using New Service Warrants

The FRTR’s 2015 Regional Transit Plan established guidelines for a performance monitoring program along with evaluation factors that can be used to objectively examine the feasibility of new fixed route service. This section will apply those factors (also called New Service Warrants) to the Rural Route and Service Route B scenarios to determine if new service is warranted based on the thresholds outlined in the Regional Transit Plan.

The Regional Transit Plan outlines the following factors to be evaluated for “New Service Warrants:”

- **Area coverage** – when service is proposed, the new route should be evaluated for its ability to connect to other routes, meet service thresholds, and operate cost effectively. Routes that extend the service area may have a demand but the increased miles/hours may cause the subsidy to be greater than the recommended performance measures.

- **Transit dependent populations** – the presence of transit dependent populations should be considered when evaluating new service proposals. If there is a high but remote transit dependent population, alternative service types may be warranted.

- **Special markets** – new service is often proposed for special markets such as a new shopping center, university campus, or employment center. These markets often produce demand but the cost to service them can be high and ridership potential undetermined. FRTR should work with these destinations to secure some dedicated funding, which can help bring down the cost of the route.

**Area Coverage**

**Ability to Connect:** the Rural Route and Service Route B do connect to all other FRTR routes at the JWO Transit Center and with several other PVTA routes. Thus, there is good area coverage due to the high number of potential connections.
Meet Service Thresholds: Neither the Rural Route nor Service Route B meet service thresholds as set in the Regional Transit Plan, which are:

Table 6. Service Thresholds from the 2015 Regional Transit Plan

<table>
<thead>
<tr>
<th>Jobs &amp; Population per Square Mile</th>
<th>Fixed Route Headway</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 2,000</td>
<td>No Service</td>
</tr>
<tr>
<td>2,000-3,000</td>
<td>120 minutes or peak service only</td>
</tr>
<tr>
<td>3,001-6,500</td>
<td>60 minutes</td>
</tr>
<tr>
<td>6,501-16,000</td>
<td>30 minutes</td>
</tr>
</tbody>
</table>

The population densities in the study area range from 76 people/square mile in Leverett to 30 people/square mile in Wendell, which fall well under the densities recommended in Table 6 for optimal cost effectiveness. It should also be noted that the Regional Transit Plan conducted a transit market analysis for all of Franklin County in order to determine if there were any unserved areas in the region that should have transit service based on a number of factors including: population/employment density, households without vehicles, disabled households, age of population, income and other factors. Based on this analysis, the Plan did not find that the East County region had sufficient demand for fixed route service.

Operate Cost Effectively: The yearly net operating cost for four runs per day for the Rural Route is $469,583. The yearly net operating cost for four runs per day for the Service Route B is $374,676. Both of these estimates are far higher than the existing FRTA Route 23 to Sunderland which costs approximately $193,378 at four runs per day and serves a population with similar commuting needs in the approximate same geographic area. The considerably higher costs can be attributed to the much longer mileage of these proposed routes with fewer potential riders along the routes. This combination means that the proposed routes will most likely struggle to perform cost-effectively as compared to the other FRTA fixed routes.

Transit Dependent Populations
The Study Area does not have significant transit dependent populations. In fact, the East County study area has very high vehicle ownership rates and the elderly (typically the most transit dependent age group) make up 16% of the area’s population, which is average for the study area. In addition, as seen in Figure 3 earlier, the East County region is relatively wealthy with an average of 42% of its households falling in the Upper Income category. Households with high incomes are much less dependent on transit.
**Special Markets**
The Study Area does contain the special market of UMass Amherst – the largest employer of residents in Franklin County. However, previous efforts between FRTA and UMass to help fund transit services to the campus have been unsuccessful. Because of the long mileage and trip times, subsidies to decrease the costs of a potential route would be critical to the success of its operation.

**Recommendations**
A potential fixed transit route for the East County study area is not feasible at this time. While the surveys show that there is demand for a potential service, the operating costs of such a route would be too expensive to currently justify service. In the future, if a substantial amount of additional funding for transit service becomes available for Franklin County, or if UMass Amherst contributes funding to help defray service costs, a fixed route service to the area could be reexamined.

Because of the large geographic area, its low density, and an interested senior population (when they can no longer drive) a fixed route system may not be the most optimal model for the region. Rather, a more flexible demand response model could be explored as a possibility. This “Mobility on Demand” transit model is starting to be researched as a transit option at the federal level and pilot projects are beginning to occur around the country. As more information becomes available about a demand response system that could cost-effectively operate in a rural area for a ridership of all ages, the FRCOG will explore applying it to locations such as the East County region.
Appendix A – East County Transit Survey
Dear Resident,

The Franklin Regional Council of Governments (FRCOG) and the Franklin Regional Transit Authority (FRTA) are currently researching the feasibility of establishing fixed route bus service in the eastern part of Franklin County. Specifically, it is examining the potential for fixed route bus service in the towns of Leverett, New Salem, Shutesbury, and Wendell. This survey is designed to help evaluate residents’ interest in and need for bus services. The results of the survey will be used to consider establishing future bus service.

Resident participation in this survey is very important and we ask that you please complete and return the survey by Friday, April 1, 2016. Surveys can be returned in the enclosed pre-paid envelope.

If you have any questions or comments about the survey, please contact Megan Rhodes, FRCOG Senior Transportation and Land Use Planner at the contact information listed below. Thank you for your participation in this important project.

Sincerely,

Megan Rhodes

Senior Land Use & Transportation Planner
Franklin Regional Council of Governments
mrhodes@frcog.org
(413)774-3167 ext. 132
EAST COUNTY PUBLIC TRANSIT SURVEY
The Franklin Regional Council of Governments (FRCOG) and the Franklin Regional Transit Authority (FRTA) are currently researching the feasibility of starting bus services in eastern Franklin County. Input from residents on this topic is very important.

1. Which town do you live in?
   - Leverett
   - New Salem
   - Shutesbury
   - Wendell
   - Other ____________________________

2. What are the ages of the people in your household? (Check all that apply)
   - 17 years and younger
   - 45 – 64 years old
   - 18 – 24 years old
   - 65 years and older
   - 25 – 44 years old

3. How many cars does your household have?
   - None
   - 2
   - 1
   - 3 or more

4. Have you ever taken a FRTA bus? If yes, how often do you take a FRTA bus?
   - Daily
   - Several times a year
   - Weekly
   - Less than once a year
   - Monthly
   - Never

5. If yes, which routes have you taken?
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

6. What is the closest intersection to your home?
   __________________________________________________________

Please return survey to the FRCOG by Friday, April 1, 2016.
7. For each service listed, please indicate (check the box) how often you or someone in your household might realistically ride the bus if it ran in your town.

<table>
<thead>
<tr>
<th>Service</th>
<th>Would not take the bus</th>
<th>A few times per year</th>
<th>Monthly</th>
<th>Weekly</th>
<th>More than weekly</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Weekday bus service to Greenfield</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Weekday bus service to Amherst</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Weekday bus service to Northampton</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Regular bus stops at Senior Centers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Regular bus stops at employers or shopping centers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. Other bus stops</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

8. What town is your most common destination? (For example, where do you work or do your shopping?)

___________________________________________________________________

9. Establishing fixed route bus service in East County would mean that the towns would have to pay for a portion of that service. How willing are you for your town’s assessment to increase for more bus service?

☐ Not supportive at all ☐ Very supportive

☐ Somewhat supportive

10. Please briefly describe the specific needs that would lead your household to take the bus, if it were available. (For example, what hours of bus service; which stops; bus routes to which areas, etc.)

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

Please return survey to the FRCOG by Friday, April 1, 2016.