
NORTH SOUTH COMMUTER RAIL FEASIBILITY STUDY

SUMMARY REPORT

JULY 2017



SMITHGROUP JJR . AECOM . BERGMANN ASSOCIATES . QUANDEL CONSULTANTS



NORTH-SOUTH COMMUTER RAIL FEASIBILITY STUDY

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APPENDICES

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- I. Steering Committee, Advisory Committee and Community Meeting Summaries

TECHNICAL MEMOS

(under separate cover)

- Task 2 – Alternative Identification
- Task 6 – Demand for Service
- Task 7 – Prospective Station Locations
- Task 8 – Service Plans for Evaluation
- Task 10 – Capital Costs
- Task 11 – Detailed Long-Term Operating Costs
- Task 12/13 – Governance & Funding
- Task 14 – Financial Analysis
- Task 15 – Performance Monitoring System
- Task 17 – Safety and Security Concepts
- Task 18 – Consistency with Regional Plan
- Task 19 – Consistency with Federal Guidelines
- Task 20 – National Commuter Rail Comparison

Executive Summary

North-South Commuter Rail service is being investigated as a way to provide a transit option for travel between Howell and Ann Arbor, Michigan to ease traffic congestion in the corridor along US-23, and to promote sound economic development and job creation in the region. This service would operate on existing state-owned railroad tracks between Howell and Ann Arbor, and privately-owned railroad tracks within Ann Arbor. Potential stations would be located in Howell, Genoa Township, Hamburg Township, and Whitmore Lake with two stations under consideration in Ann Arbor, one at Barton Drive and one in downtown Ann Arbor.

Efforts to develop passenger service on the line were undertaken as early as 2006, when a group of proponents organized the “WALLY Coalition” to investigate costs and feasibility, and prepare the project for federal funding. In 2008, the Ann Arbor Area Transportation Authority (AAATA) took on the role of the lead local authority for the project (‘designated authority’) with Michigan Department of Transportation (MDOT) serving as a liaison for the purpose of pursuing federal and state grant and funding opportunities. That earlier effort went so far as to begin the process of creating a transit authority to develop and operate the rail service. The Washtenaw County Board approved the creation of an authority in 2007 but the measure never came before the Livingston County Board.

In the meantime, many questions were raised about project costs, ridership and general feasibility. A federal grant awarded in 2012 was matched by contributions from local communities to enable funding of this feasibility study.

The focus of this feasibility study included numerous tasks which initially focused on:

- Developing Service Plans
- Identifying Prospective Station Locations
- Estimating Demand for Service
- Developing Capital and Operating Costs

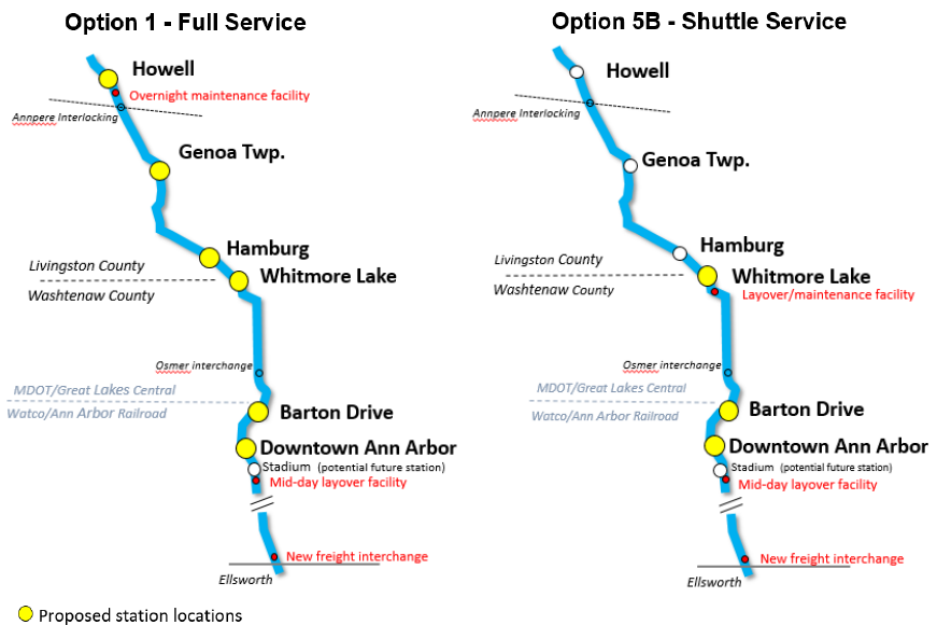
An overview of the results of those tasks can be found in the summary table below.

Option Name	Option Stations						Capital Expense (MM)	Operating Expenses (MM/year)	Daily Ridership (one-way trips)		Travel Time
	Howell	Genoa	Hamburg	Whitmore Lk (WL)	Barton Drive (BD)	Ann Arbor (AA)			STOPS 2015	STOPS 2040	
1. Full Service	X	X	X	X	X	X	\$122.3	\$13.2	1,840	2,346	51 mins.
2. Full Service w/o Barton Drive	X	X	X	X		X	\$121.0	\$13.1	1,190	1,540	48 mins.
3. "Starter Service" - Howell / WL / AA	X			X		X	\$118.4	\$12.9	1,170	1,500	44 mins.
4A. Minimum Operating Configuration w/ PTC				X	X		\$28.9	\$5.8	800	1,100	18 mins.
4B. Minimum Operating Configuration w/o PTC				X	X		\$21.9	\$5.7	800	1,100	18 mins.
5A. Shuttle Service (one train set)				X	X	X	\$61.3	\$6.6	1,350	1,960	21 mins.
5B. Shuttle Service (two train sets)				X	X	X	\$65.2	\$7.0	1,670	2,420	21 mins.

Summary of Capital/Operating Expenses and Estimated Daily Ridership

In consideration of the purpose and need for this study along with an evaluation of capital and operational costs and ridership forecasts, it was determined to advance analysis of Option 1: Full Service and Option

5B: Shuttle Service. Option 1 meets the initial intent of extending service from Howell to Ann Arbor and achieves the highest initial ridership yet also has the highest capital and operating costs. Option 5B is a much shorter route yet achieves very close to the same level of ridership for roughly half of the Option 1 capital and operating costs.



Consequently, these two options were selected for a comparison of their financial analysis (cost effectiveness), to determine eligibility for federal funding, and to identify funding and governance concepts for possible implementation of a locally-preferred service.

The financial analysis was based on standard Federal Transit Authority (FTA) methodology to compute the Cost Effectiveness Ratio and determine the resultant rating based on the FTA's published guidance. The FTA allows Small Starts sponsors to seek up to 80% Capital Investment Grant (CIG) funding, however analysis of national trends suggests projects are most competitive when they seek roughly 50% federal funding. Based on the assumption of a 50/50 split of the project capital cost between federal and local/state funding sources, as seen in comparable start-up systems nationwide, it was determined that Option 5B is anticipated to be a stronger project as measured by cost effectiveness. If the local/state funding for Option 1 were increased to 55%, calculations show it could also achieve a rating equal to Option 5B, and it may be slightly more competitive as it seeks less than 50% funding. It should be noted that at the time of this study no source of state funding has been identified.

For the purposes of the funding analysis, these two service options were each examined assuming either county-based funding support or support only from cities and townships along or adjacent to the rail right-of-way. The operating cost net of fares is a significant long-term obligation and the majority is likely to be borne by the local jurisdictions. For the initial capital investment, the analysis used the same 50/50 split as used in the financial analysis.

If a two-county tax base were chosen to provide the local share for the Full Service option, a 0.40 millage rate in Washtenaw and in Livingston Counties would fund the operating deficit and would provide for the initial capital investment over a period of three to four years before startup of operations. If a smaller geographic area is willing to fund the Full Service option, the same operation and initial investment could be provided by a 0.84 millage rate in the eleven affected jurisdictions.

Similarly, the Shuttle Service option can be funded with a 0.34 millage rate in all of Washtenaw County and with a 0.61 millage rate in a smaller geographic area covering five jurisdictions or a 0.84 millage rate for geographic areas contained within Washtenaw County.

Currently, there are discussions about a more comprehensive regional transportation system within the study area. There would be potential to incorporate such a commuter rail millage rate into a larger transportation improvement package.

Tax Base Scenario	Full Service		Shuttle Service	
	Tax Base	Millage Rate	Tax Base	Millage Rate
County Tax Base	\$25.2 B	0.40 \$50/yr*	\$15.3 B	0.34 \$42.50/yr*
Jurisdictional Tax Base (Option 1)	\$12.0 B	0.84 \$105/yr*	8.4 B	0.61 \$76.25/yr*
Jurisdictional Tax Base (Option 2)	n/a	n/a	6.1 B	0.84 \$105/yr*

Summary of Potential Millage Rates

**based on a \$250,000 property value with a \$125,000 State Equalized Value*

With respect to governance, there currently is no organization in place with the geographical coverage corresponding to the service area of the proposed commuter rail system. Michigan statutes offer a range of governance structures that could enable the funding concepts noted above. The most predictable in the long run is an Authority formed by the participating jurisdictions under Act 196 of 1986.

An alternative in the shorter-term to monitor the development of the markets for the services and to prepare for the possibility of the creation of an Authority is an interlocal agreement among a similar group of jurisdictions under Act 7 of 1967 to form an Exploratory Committee.

In summary, it appears that North-South Commuter Rail service could achieve a cost effectiveness rating that would make it eligible for federal funding. Option 5B is anticipated to be a somewhat stronger project but Option 1 could achieve a similar rating with a slightly higher local funding share. The bigger question at this time is how to put forth a group that would advance the possibility of creating an Authority that could serve to operate the proposed commuter rail system. The formation of an Exploratory Committee under Act 7 offers an opportunity to work towards creation of such an Authority.

Study Scope

The scope of work for this study was developed jointly with the Ann Arbor Area Transportation Authority (AAATA), the Michigan Department of Transportation (MDOT), the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). It included the tasks listed below. As noted, some of these topics are addressed in greater detail in separate technical memos and others are covered in this summary report.

Task 1 – Purpose and Need

The description of the Purpose and Need, including the goals, history and context of this study is found in Section 1.0 of this report.

Task 2 – Alternative Identification, Costs & Feasibility

Alternatives to commuter rail, including highway improvement and bus options, are addressed in greater detail in the Task 2 Technical Memo and summarized in Section 2.0 of this report.

Task 3 – Planning & Environmental Linkage

Planning & Environmental Linkage elements covering relevant NEPA-related topics are addressed in numerous sections of this report and specifically in Section 8.0.

Task 4 – “Green” Concepts & Operating Principles

Green concepts and operating principles related to land use planning and sustainable site development are described in Section 12.0 of this report.

Task 5 – Public and Stakeholder Involvement

A summary of the public and stakeholder involvement is included in Section 7.0 of this report.

Task 6 – Estimate Demand for Service

The methodology associated with estimating the demand for service along with the results for each service plan evaluated are found in the Task 6 Technical Memo and are summarized in Section 5.0 of this report.

Task 7 – Assess Prospective Station Locations

A summary of the site selection evaluation methodology and prospective station locations is included in the Task 7 Technical Memo and summarized in Section 4.0 of this report.

Task 8 – Draft Service Plans for Evaluation

A description of the service plans developed and evaluated for this study is included in the Task 8 Technical Memo and summarized in Section 3.0 of this report.

Task 9 – Develop Draft Concepts for Connecting Bus Service

The draft concepts for connecting bus service are included in both the Task 6 and Task 8 Technical Memos.

Task 10 – Estimate/Refine Capital Costs

Detailed documentation of capital costs for each of the service plans evaluated is found in the Task 10 Technical Memo and summarized in Section 6.0 of this report

Task 11 – Estimate/Refine Detailed Long-Term Operating Costs

Detailed documentation of long-term operating costs for each of the service plans evaluated is found in the Task 11 Technical Memo and summarized in Section 6.0 of this report.

Task 12 – Develop Governance Concepts + Task 13 – Develop Funding Concepts

Governance and funding concepts are addressed jointly in the Task 12/13 Technical Memo and summarized in Section 14.0 of this report.

Task 14 – Financial Analysis

The financial analysis evaluates the cost-effectiveness of selected service plans consistent with relevant FTA guidelines. This is addressed in the Task 14 Technical Memo and summarized in Section 9.0 of this report.

Task 15 – Performance Monitoring System

The system for measuring the operating and financial performance of commuter rail service is addressed in the Task 15 Technical Memo and summarized in Section 10.0 of this report.

Task 16 – (skipped in Work Plan)

Task 17 – Safety and Security Concepts

The safety and security elements and practices consistent with current best practices in the transit industry are addressed in the Task 17 Technical Memo and summarized in Section 11.0 of this report.

Task 18 – Consistency with Regional Plan and Planning Practices

The planning policies and assumptions of state, regional and local agencies relevant to commuter rail are addressed in the Task 18 Technical Memo and summarized in Section 13.0 of this report.

Task 19 – Consistency with Federal Guidelines

The guidelines of the FTA and the Federal Railroad Administration (FRA) relevant to commuter rail are addressed in the Task 19 Technical Memo and summarized in Section 13.0 of this report.

Task 20 – Confirm/Update National Commuter Rail Comparison

Financial and operating data from peer group commuter rail operations are presented in the Task 20 Technical Memo and summarized in Section 14.0 of this report.

1.0 Study Purpose & Need

1.1 Overview

North-South Commuter Rail service (also known as WALLY for Washtenaw and Livingston counties) is being investigated as a way to provide a transit option for travel between Howell and Ann Arbor, to ease traffic congestion in the corridor along US-23, and to promote sound economic development and job creation in the region. This service would operate on existing state-owned railroad tracks between Howell and Ann Arbor, and privately-owned railroad tracks within Ann Arbor. Potential stations would be located in Howell, Genoa Township, Hamburg Township, and Whitmore Lake with two stations under consideration in Ann Arbor, one at Barton Drive and one in downtown Ann Arbor.



Study Area

1.2 Background

The concept for proposed North-South Commuter Rail service began around 2006 when communities affected by roadway and traffic conditions between Howell and Ann Arbor learned that congestion mitigation improvements in the US-23 corridor were estimated at approximately \$500 million and required multiple years of construction to improve capacity.

In 2008, a high-level feasibility study was commissioned which determined that commuter rail service between Howell and Ann Arbor was viable. Preliminary ridership estimates, operational cost analysis and community surveys supported this conclusion. However, the focus of this earlier study was limited to proposed service only over the state-owned portion of the route, which ends just north of Barton Drive in Ann Arbor (as the former owner of the segment of the rail line leading into downtown Ann Arbor was not willing to allow passenger operations on its property).

The prior study also noted, but did not scope or estimate costs for, issues relating to train signaling systems and coordination with other railroads that would need to be resolved in order to advance commuter rail service.

As grass roots support for commuter rail service grew, representatives from several municipalities along the corridor, the Michigan Department of Transportation (MDOT), the Southeast Michigan Council of Governments (SEMCOG), the Washtenaw Area Transportation Study (WATS), the Ann Arbor Area Transportation Authority (AAATA) and the University of Michigan became involved on more detailed discussions of the proposed service, eventually forming the WALLY Coalition.

In 2008, the AAATA took on the role of the lead local authority for the project ('designated authority') with MDOT serving as a liaison for the purpose of pursuing federal and state grant and funding opportunities. AAATA and MDOT successfully collaborated on applications for federal planning and research grants including the Federal Transit Authority's (FTA) 5304 Program and the Federal Highway Administration's (FHWA) Transportation, Community, and System Preservation (TCSP) Program. The City of Howell, Washtenaw County and the Ann Arbor Downtown Development Authority (AADDA) donated additional funds to support further studies.

Phase I of this study started in 2013 with completion of the Ann Arbor Downtown Station Location Study in 2014. Phase II of what became known as the North-South Commuter Rail (WALLY) Feasibility Study, started later in 2014.

1.3 Existing Transit Services

There are numerous fixed route and on-demand transit providers in Washtenaw County including:

- The Ann Arbor Area Transportation Authority (TheRide), a not-for-profit unit of government that operates the local public transit system for the greater Ann Arbor area. In addition to fixed route buses, covering 34 bus routes in Ann Arbor, Ypsilanti, Pittsfield Township, Superior Township, Ypsilanti Township and Scio Township, TheRide offers many other services such as door-to-door accessible service, vanpools, express buses, and event services (Art Fair Shuttles and U-M Football Game Shuttles) as well as airport service connecting Ann Arbor with Detroit Metro Airport.
- The University of Michigan Parking & Transportation Services provides parking and transportation services to employees, students, departments and visitors at the University of Michigan Ann Arbor campuses. This includes campus bus service 360 days a year with roughly 60 buses serving 12 routes and is free to the general public. In addition, any member of the University community can ride TheRide using their ID as payment (AAATA is reimbursed by the University).
- The Western Washtenaw Value Express (WAVE) is a demand response service for residents in and around the cities of Chelsea and Dexter and the townships of Sylvan, Lima, Dexter and Scio. WAVE also operates the Community Connector Bus as an inter-urban express route that links Chelsea with Dexter and Ann Arbor.
- People's Express (PEX) is a low cost public transportation service for select townships and cities in Washtenaw County and the surrounding area, and can transfer riders to a number of bus stops on the AAATA bus route.

In addition, Manchester Senior Citizens, Milan Seniors for Healthy Living and Neighborhood Senior Services also provide on-demand transit for seniors within their service area.

Although there are no fixed route transit providers in Livingston County, there is one on-demand transit provider. The Livingston Essential Transportation Service (L.E.T.S.) provides dial-a-ride service for any person to any destination countywide and regional medical service to Ingham, Oakland, Genesee, and Washtenaw counties.

The Livingston County Transportation Coalition was established in 2005 to recognize gaps in public transportation and pull together providers to identify strategies to eliminate these gaps. The objectives of the Transportation Coalition are to:

- Fully serve the transit dependent who lives in and/or visits Livingston County – seniors, disabled, those without a car
- Provide regularly scheduled bus or train service between major destinations in and near Livingston County (e.g. employment, health care, education, airport, entertainment)
- Stimulate economic development and increased property values in our county.
- Increase the livability and vitality of our region through an array of transportation options, including auto, bus, train, bicycle and walking.

So while there is some very limited transit service connecting the two counties, none of these above-listed additional services or coalitions provide any regularly scheduled north-south connectivity between Livingston and Washtenaw County, nor is there existing north-south service connecting northern Washtenaw County and Ann Arbor.

1.4 Purpose & Need

The purpose of this study is to evaluate the feasibility of providing commuter rail service as a transportation option to residents and employees in the Howell to Ann Arbor corridor. This evaluation has been completed through a series of distinct phases and tasks that have been identified in conjunction with the Michigan Department of Transportation, the Federal Highway Administration and the Federal Transit Administration.

Travel in the study corridor is currently dominated by the automobile and primarily focused on US-23 from I-96 to the north to M-14 to the south. US-23 currently operates with two lanes in each direction with daily traffic levels of more than 65,000 vehicles. Approximately 11,800 Livingston County residents commute to Washtenaw County every day (SEMCOG, 2010). Approximately 6,300 of these residents work at the University of Michigan Ann Arbor Campus or within the University health system (UM, 2014).



US-23 in the afternoon rush hour

This segment of US-23 experiences heavy directional traffic volumes during the weekday peak commuting times. These times occur southbound in the morning (6:30-9:00 AM) and northbound in the afternoon (3:30-7:00 PM). A proportion of these commuters live in Livingston County and northeastern Washtenaw County and work in and around Ann Arbor.

Traffic incidents are another cause of traffic congestion on this segment of the US-23 corridor: according to crash reports available through the Michigan State Police, there were at least four-hundred fifty-nine traffic incidents recorded on this stretch of highway from January 2016 through December 31, 2016. While there were some fixed-object crashes, the majority were rear-end and sideswipe collisions, many of which were attributed to the bumper-to-bumper traffic that results from congestion.

Consequently, due to the incidents and congestion experienced on US-23, travel time in the corridor can be extremely unreliable. As an example, travel time between Howell and Ann Arbor can range from 30 minutes, under good conditions, to over two hours following a major accident.

In addition to congestion on US-23, both Livingston and Washtenaw County have economic development strategies based on residential, commercial and industrial growth. Transportation options and mass transit connecting metropolitan areas are an important part of these strategies to ensure wise land use decisions.

As a result of the existing conditions in the US-23 corridor, the coalition of local entities sponsoring this study mutually determined that it was desirable to evaluate the feasibility of providing alternative transportation options, specifically commuter rail service, for commuters in this part of Livingston and Washtenaw counties in order to:

1. Ease congestion on US-23
2. Improve commuter safety
3. Increase reliability of travel time
4. Promote economic development

1.5 Study Process

In order to evaluate the feasibility of North-South Commuter Rail service, a series of tasks were developed and completed to document an assessment of the following elements of the potential service:

- Alternatives to commuter rail
- Service plan options
- Ridership estimates
- Station location options
- Capital cost estimates
- Operating cost estimates
- Governance and funding options
- Financial analysis
- Consistency with regional and federal guidelines
- Comparison with similar commuter rail systems

The results of this evaluation, along with coordinated input from local agencies, an advisory group, and open public meetings were used to determine if the project is feasible and to prepare the project for a future federal funding request, in the event an appropriate sponsor wishes to pursue such an effort.

1.6 Agencies, Local Municipalities & Other Entities Consulted

AAATA is serving as the 'designated authority' for this project with MDOT serving as a liaison to ensure compliance with federal grant guidelines. One of the goals was to ensure the completed work could be used in support of environmental clearance through the National Environmental Policy Act should the project prove to be feasible and there was adequate local support to advance it into a FTA funding request. Consequently, a Steering Committee was formed to oversee the progress of the study and offer input. The Steering Committee members included representatives from the following federal and regional transportation agencies, local municipalities and other entities:

- Federal Highway Administration
- Federal Transit Administration
- Michigan Department of Transportation
- Livingston County
- Washtenaw County
- City of Howell
- City of Brighton
- Howell Township
- Genoa Township
- Hamburg Township

- Northfield Township
- City of Ann Arbor
- Ann Arbor Downtown Development Authority
- University of Michigan
- Southeast Michigan Council of Governments
- Washtenaw Area Transportation Study
- Ann Arbor Area Transportation Authority

1.7 Study Team

The study team was selected through a Brooks Act-compliant solicitation and selection process initiated in 2011 and included:

- SmithGroupJJR as prime consultant providing project management, environmental planning and stakeholder engagement
- Quandel Consultants providing an analysis of commuter rail service plan options, commuter rail capital and operating cost estimates, financial analysis and comparison of other commuter rail systems
- AECOM providing ridership and demand estimates and an analysis of governance and funding options
- Bergmann Associates providing traffic engineering, alternatives summary and rail bridge evaluation.

2.0 Alternatives to Commuter Rail

2.1 Alternatives to Commuter Rail

The primary focus of this task was to describe alternatives to commuter rail in the North-South Commuter Rail corridor, characterize each in terms of its schematic requirements and predicted capital and operating costs, comment on the general feasibility of each alternative and identify major opportunities or constraints associated with each alternative. This documentation of the range of alternatives to commuter rail can be considered an essential part of the Alternatives Analysis section of any future National Environmental Protection Act (NEPA) environmental clearance process.

The study team identified and defined the alternatives to commuter rail based, in part, on several prior studies completed in the US-23 corridor including:

- US-23 Feasibility Study, MDOT November 2009
- US-23 Corridor Feasibility Study, Multi-Modal Analysis Technical Report, MDOT, December 2008
- US-23 Improvements Environmental Assessment, MDOT, January 2015

The alternatives to commuter rail have been grouped into the following categories:

- No Build/Baseline
- Highway Improvement Alternatives
 - No Build with Traffic System Management (TSM)
 - Mainline US-23 Reconstruction and Widening
 - Additional High Occupancy Vehicle (HOV)
 - Active Traffic Management (ATM)
 - ATM and HOV Combined (single lane add to median)
- Bus Alternatives
 - Express Bus (without new lane), Howell to Ann Arbor
 - Bus Rapid Transit (BRT) (with new BRT lane), Howell to Ann Arbor

Several evaluation metrics were identified that represent a broad range of topics typically considered in the analysis of transportation improvement projects. They were organized into the following categories for ease of comparison:

- Traffic
- Safety
- Construction Requirements
- Right-of-Way Requirements
- Environmental Impacts
- Maintenance of Traffic (During Construction)
- Cost

A brief description of each alternative is provided in the summary matrix included in the Task 2 Technical Memo along with data relevant to each specific metric. During this study, there was also discussion about evaluation of an Express Bus Starter Service. Although not fully evaluated in the matrix, a summary of the assumptions related to such a service along with anticipated initial and operation & maintenance costs follows the summary matrix.

In all scenarios presented in the summary matrix, the intent was solely to impartially recognize and present relevant details about the various options, and not in any way to evaluate, judge, compare, or otherwise exercise any type of recommendation or selection. The study team recognizes that each option not only has its own pros and cons, but also its own supporters and detractors. The goal of this effort was to fairly represent alternatives in a context appropriate for future NEPA comparison with the results of the commuter rail analysis.

3.0 Service Plans

3.1 Service Plan Summary

The initial North-South Commuter Rail service plan was proposed to have four (4) one-way trains operate southbound from Howell in the morning and northbound from Ann Arbor in the evening over an approximately 27-mile route between Howell and Ann Arbor with intermediate stations located in Genoa Township, Hamburg and Whitmore Lake. As the study progressed, several other service plans were developed at the request of the Steering Committee, allowing the study team to explore additional cost and ridership considerations as part of the feasibility analysis. In total, seven service plans for weekday operation were developed and evaluated as part of this study. Each of these options utilized trains consisting of a standard diesel/electric locomotive, two bi-level commuter coaches and one bi-level cab car. The coaches and cab cars are available to the State for lease from Great Lakes Central through the end of 2019, while locomotives or other standard-gauge passenger equipment could be leased on the open market at any time.



Rolling stock available for lease from Great Lakes Central

Dedicated bus service in Ann Arbor was conceptually designed for the project (see Tasks 6 & 8 Technical Memos) and would provide connections to numerous destinations in the city, including downtown and the UM Medical Center. The service plans also include proposed train schedules and locations for mid-day layover and overnight/maintenance facilities. All of the options include Positive Train Control (required by the Federal Railroad Administration for passenger operations in most scenarios) with the exception of Option 4B.

In summary the options include:

Option 1: Full Service

- 6 stations: Howell, Genoa Township, Hamburg, Whitmore Lake, Barton Drive and downtown Ann Arbor
- Four trains to Ann Arbor in the AM; four trains return to Howell in the PM
- Mid-day layover facility in Ann Arbor; overnight/maintenance facility in Howell
- One-way travel time – 51 mins.

Option 2: Full service without Barton Drive Station

- 5 stations: Howell, Genoa Township, Hamburg, Whitmore Lake and downtown Ann Arbor
- Four trains to Ann Arbor in the AM; four trains return to Howell in the PM
- Mid-day layover facility in Ann Arbor; overnight/maintenance facility in Howell
- One-way travel time – 48 mins.

Option 3: Starter Service with Howell, Whitmore Lake and Ann Arbor Stations

- 3 stations: Howell, Whitmore Lake and Downtown Ann Arbor
- Four trains to Ann Arbor in the AM; four trains return to Howell in the PM
- Mid-day layover facility in Ann Arbor; overnight/maintenance facility in Howell
- One-way travel time – 44 mins.

Option 4A: Minimum Operating Configuration (MOC) with Positive Train Control (PTC)

- 2 stations: Whitmore Lake and Barton Drive
- Shuttle service with a single train making 14 one-way trips per day, including 6 reverse commutes

- Overnight, layover and maintenance facility in Whitmore Lake
- One-way travel time – 18 mins.
-

Option 4B: Minimum Operating Configuration (MOC) without Positive Train Control (PTC)

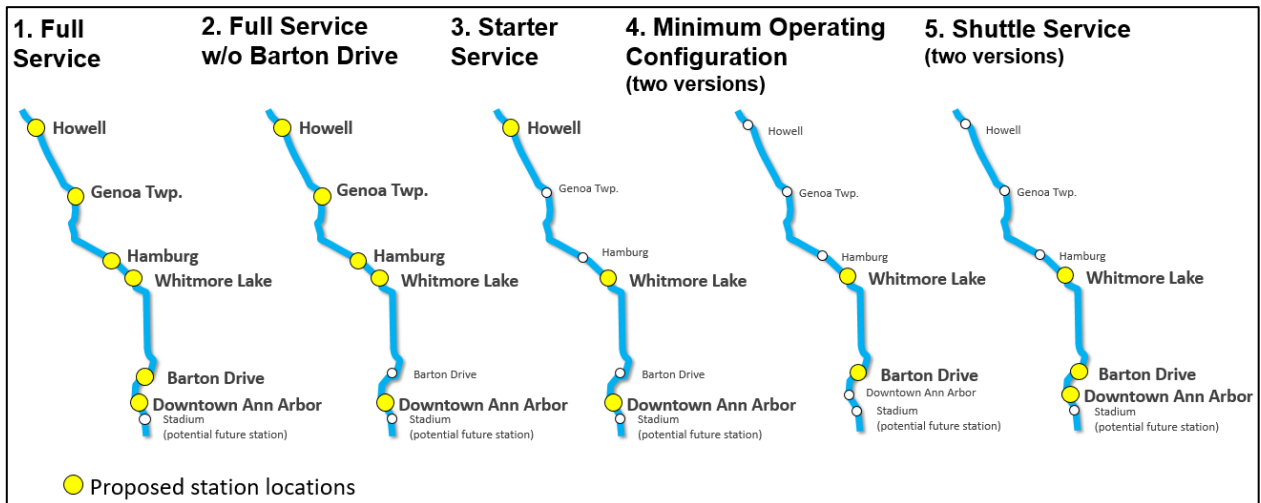
- 2 stations: Whitmore Lake and Barton Drive
- Shuttle service with a single train set making 12 one-way trips per day including 6 reverse commutes
- Overnight, layover and maintenance facility in Whitmore Lake
- One-way travel time – 18 mins.

Option 5A: Shuttle Service (one train) with Whitmore Lake, Barton Drive and Ann Arbor Stations

- 3 stations: Whitmore Lake, Barton Drive and downtown Ann Arbor
- One train, making four peak direction trips to Ann Arbor in the AM and four peak direction trips to Whitmore Lake in the PM. As with the Option 4 configurations, the accomplishment of this objective with a single train set requires three reverse commutes in the AM and three reverse commutes in the PM. However, due to the longer round trip travel time, peak direction starts occur at roughly one hour intervals, which may not be optimal for capturing commuter market share.
- Mid-day layover facility in Ann Arbor; overnight/maintenance facility in Whitmore Lake
- One-way travel time – 21 mins.

Option 5B: Shuttle Service (two trains) with Whitmore Lake, Barton Drive and Ann Arbor Stations

- 3 stations: Whitmore Lake, Barton Drive and Downtown Ann Arbor
- Two trains, making a total of four peak direction trips to Ann Arbor in the AM and four peak direction trips to Whitmore Lake in the PM. The accomplishment of this objective with two trains requires an integrated siding track for trains to pass each other during two reverse commutes in the AM and two reverse commutes in the PM. Peak direction starts are implemented at roughly 35 minute intervals.
- Mid-day layover facility in Ann Arbor; overnight/maintenance facility in Whitmore Lake
- One-way travel time – 21 mins.



Service Plans Evaluated

Finally, this task also included inspection of the rail corridor within the study area to evaluate track geometry and define feasible track speeds based on track curvature, superelevation and other

items in accordance with American Railway Engineering and Maintenance-of-Way Association (AREMA) recommended practice. Rail Traffic Controller (www.berkeleysimulation.com) software was used to establish travel times, schedules and stringline graphs for each of the service options. The schedules were then used as the basis for developing estimates of ridership for each option.

3.2 Alternative Rolling Stock

As noted, all of the identified service plans utilized trains with standard diesel/electric locomotives pulling/pushing standard-gauge passenger coaches and cab cars. However, at the request of the Steering Committee, the study team also considered alternative equipment strategies including trains made of diesel multiple units (DMUs), which consist of lighter-weight, lower-capacity passenger cars each capable of being powered by a small on-board diesel engine. The DMU option may have advantages in terms of costs and operating characteristics, but, this type of lighter-weight equipment was dismissed due to concerns about its interoperability in a mixed passenger-freight corridor. Under current regulations, a waiver would be required to operate in this condition. Although some waivers have been granted in the United States, the uncertainty of obtaining such a waiver eliminated consideration of DMUs at this time. In addition, and with particular concern for their operation in a mixed passenger-freight corridor, DMUs are currently not compliant with FRA crashworthiness requirements. However, the FRA has proposed new regulations (49 CFR 238 Appendix G) that would give DMU manufacturers a path to compliance without an extensive redesign of their basic structures. Should the proposed regulations be codified, it would be possible to reconsider the use of DMU equipment in the corridor.

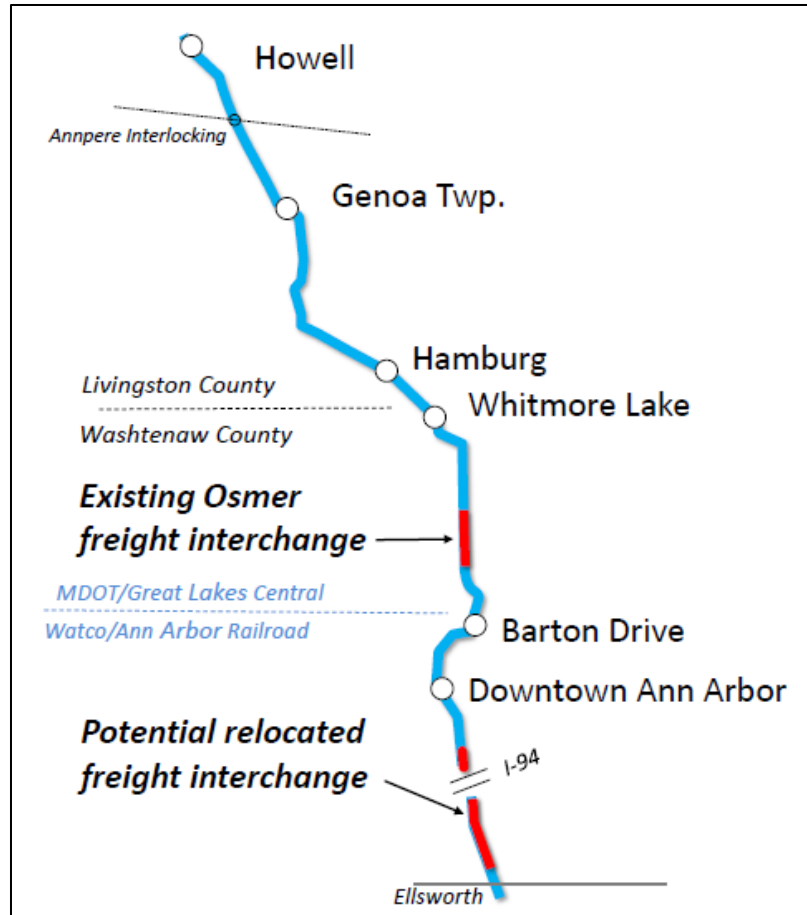
The use of DMUs has proven worthwhile for passenger service on more lightly used intercity routes that wouldn't be economical to operate using more conventional trains consisting of a locomotive and passenger coaches. Such alternative vehicles, if allowed, could also provide a transfer from the freight rail system to a light rail system should it be determined that light rail technology in Ann Arbor is feasible in the future. A train composed of DMU cars scales well, as it allows extra passenger capacity to be added at the same time as motive power.

3.3 Ellsworth Interchange

Two of the most important actions taken to optimize corridor characteristics were 1) discussions about the possibility of a lease arrangement for the southern end of the North-South rail corridor and 2) the potential for relocation of the freight interchange between Great Lakes Central Railroad (GLC) and Ann Arbor Railroad (AARR) from the existing Osmer siding north of Warren Road and west of Pontiac Trail, to a new siding near Ellsworth Road, south of the State Street crossing in Ann Arbor. A freight interchange is a location where one railroad exchanges freight cars with another, typically involving multiple tracks and time-consuming passing maneuvers.



Osmer Freight Interchange



Potential Freight Interchange Relocation

The two prospective critical changes noted above would have important positive effects for the project:

- One railroad would have complete operational control of the entire N-S commuter rail corridor. This is a critical element in train operations, efficiency, signals, communications and the installation of Positive Train Control which is mandated for the new service.
- AARR freight trains would no longer enter the North-South Commuter Rail corridor. This eliminates the risk factors associated with commuter territory for AARR. It also relocates the point where freight trains will interchange traffic, which eliminates a source of potential for delay to commuter trains. A concept plan for this new interchange is found in the Task 10 Technical Memo.

The Task 8 Technical Memo provides details associated with each of the service plans and includes travel time computations, curve parameters, schedules, stringlines, existing and proposed track schematics and annual revenue computations.

4.0 Prospective Station Locations

The study team developed a methodology to evaluate prospective station locations in the Howell, Genoa Township, Hamburg Township, Whitmore Lake and north of downtown Ann Arbor areas as part of this study. The methodology included 1) developing evaluation criteria, 2) data collection/field investigations of previously identified parcels as well as others that had not been considered and 3) engineering and environmental screening of the parcels based on the evaluation criteria.

4.1 Methodology/Evaluation Criteria

A three-tiered evaluation process was used to evaluate potential commuter rail stations locations along the entire approximately 27-mile corridor between Howell and Ann Arbor.

The Level 1 evaluation ruled out a significant number of parcels and track segments within the study corridor based on:

- Road access – parcel must have one boundary along a road to accommodate vehicle access
- Wetland - parcels with predominance of wetland and inadequate building area were ruled out due to environmental impacts
- Track curvature - no station platform where track curvature exceeds 1°40" as it complicates the platform/track relationship and passenger boarding
- 600' tangent length – required to accommodate all cars to board and de-board

The Level 2 evaluation eliminated approximately 50% of the remaining parcels within the study corridor based on:

- the assumption that those with the following existing land uses were not suitable for acquisition and/or conversion to a commuter rail train station:
 - Business/Industrial/Utility
 - Residential
 - Institutional
- Current road classification:
 - Minor arterial or Major Connector road access required
 - Dirt roads not acceptable due to primary location in rural areas or anticipated high improvement costs

The Level 3 evaluation scored the remaining parcels including:

- Howell: 3 potential sites
- Genoa: 1 potential sites
- Hamburg: 4 potential sites
- Whitmore Lake: 5 potential sites
- Ann Arbor: 2 potential sites

The scoring was based on a set of criteria that were specifically developed to screen the feasibility of each potential station site taking into consideration items related to environmental, land use & land, transportation, rail operations and site development. Each criterion was weighted and scored by the study team to assist with the feasibility analysis. Criteria with a greater impact on feasibility were given a higher weight. The end result was a weighted average score for each of the Level 3 parcels which allows for comparison of the potential station sites at each of the proposed station locations.

4.2 Prospective Station Locations

The table below provides the respective scoring of the 15 identified sites. The highest scoring site at each of the proposed station locations, shown in bold and described in more detail below,

was in line with the recommendations or considerations associated with previous commuter rail studies in this corridor.

STATION SITE	WEIGHTED SCORE	LOCATION
Howell		
O 1	2.71	West of Old Station on Wetmore St.
O 2	2.56	Northeast corner of Grand River Ave. & Catrell Dr.
O 3	2.10	South of Grand River Ave. (east of tracks)
Genoa Township		
G 1	2.05	Adjacent to Chilson Hills Baptist Church on Brighton Rd.
Hamburg Township		
H 1	2.37	M-36 & Girard Dr. (Zukey Lake area)
H 2	2.56	Featherly Dr. west of Hamburg Rd.
H 3	2.46	East of Hamburg Rd. (south of tracks)
H 4	2.34	East of Hamburg Rd. (north of tracks)
Whitmore Lake		
W 1	2.61	8 Mile Rd. (west of US-23)
W 2	2.54	Main St. (east of US-23)
W 3	2.41	Barker Rd.
W 4	1.88	7 Mile Rd.
W 5	2.00	North Territorial Rd.
Ann Arbor		
A 1	1.93	Warren Rd.
A 2	2.22	Barton Dr.

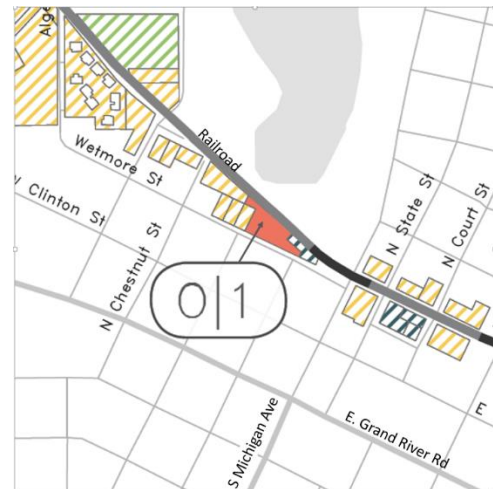
Prospective Station Site Scoring

Howell

O|1: West of Old Station on Wetmore St.
(128 Wetmore St, Howell, MI 48843)

Weighted Average Score: 2.71

This site on Wetmore Street is a vacant parcel owned by MDOT. It is west of and adjacent to the historic train station in downtown Howell and can be accessed by Center or Walnut streets. The historic train station currently houses the Howell Area Historical Society and would not be affected. This site is designated as part of the City Center in the Howell Master Plan. It is two blocks from the downtown core and a well know location that has been considered in previous studies as a future commuter rail station site. It scored high for lack of environmental issues, ownership, site access and potential for transit oriented development. The city has master plans for this area showing higher density mixed use developments.



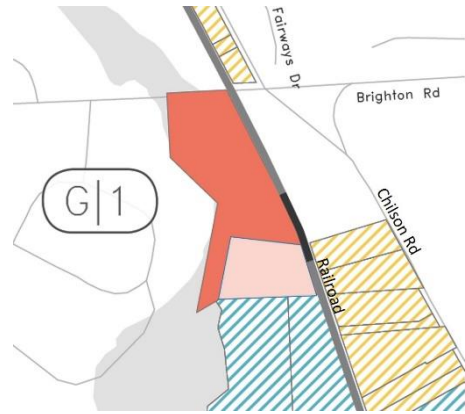
Howell Site O|1

Genoa Township

G|1: Adjacent to Chilson Hills Baptist Church on Brighton Rd. (4440 Brighton Rd., Howell, MI 48843)

Weighted Average Score: 2.05

This is the only site that passed the level 1 and 2 screening in the Genoa Township portion of the study corridor. This site is located adjacent to the Chilson Hills Baptist Church on the west side of the railroad tracks south of Brighton Road approximately 500 feet west of Chilson Road. This site was identified in previous studies as a potential Genoa Township commuter rail station. It scored well for the capacity of existing roads, access and ease of site development. This last criterion relates to the potential for shared parking between weekday commuter use and weekend church use. The church also operates a daycare. At the time of writing, the church was open to discussing the potential for shared use with a commuter rail station in more detail.



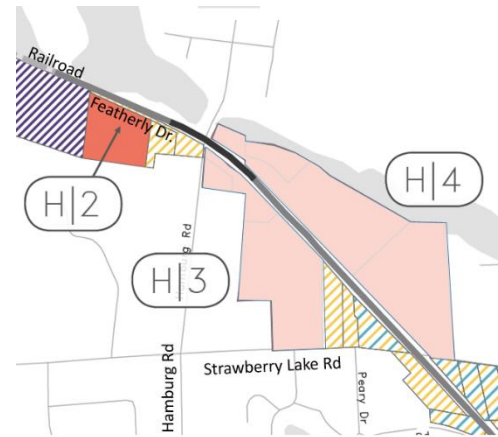
Genoa Township Site G|1

Hamburg

H|2: Featherly Dr. west of Hamburg Rd. (~10800 Featherly Dr., Hamburg, MI 48139)

Weighted Average Score: 2.56

Site H|2 is a privately-owned parcel located west of Hamburg Road, north of Featherly Drive and south of the railroad tracks approximately 0.1 miles south of downtown Hamburg. Hamburg Road is an arterial and the site is approximately 2,100 feet south of M-36, the main east-west route through Hamburg Township. This site scored well for ease of site development and the potential for Transit Oriented Development.



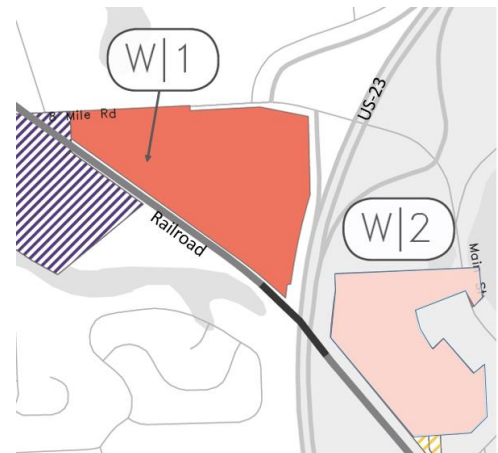
Hamburg Site H|2

Whitmore Lake

W|1: 8 Mile Rd. (west of US-23) (435 W. 8 Mile Rd., Whitmore Lake, 48189)

Weighted Average Score: 2.61

This privately-owned site is located east of the railroad tracks and west of US-23 with easy access at the 8 Mile Road interchange. It scored high for existing road capacity, motorized access, ease of site development and potential for Transit Oriented Development. It is a large single parcel identified in the Northfield Township master plan as a future “Mixed Use Village Center”. A plan known as Whitmore Station has been put forth by the property owner to develop the parcel as such but no action has taken place as of this report. This site was identified in previous studies as a location for a future commuter rail station and is being considered by MDOT as a future park & ride facility.



Whitmore Lake Site W|1

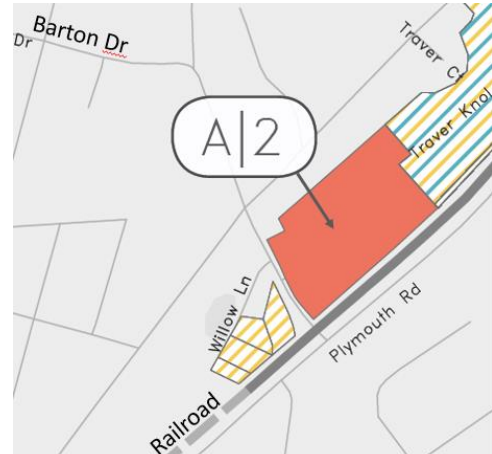
Ann Arbor

A|2: Barton Dr.

(~1611 Plymouth Rd., Ann Arbor, MI 48105)

Weighted Average Score: 2.22

Site A|2 is a privately-owned parcel located west of Plymouth Road, north of Barton Drive. The station is proposed within the rail right-of-way on the west side of the tracks. This site scored high for ease of access and parcel ownership, as no property is required. It has been considered in previous studies as a location for a future Ann Arbor commuter rail station.



Ann Arbor Site A|2

Under a prior study (*Summary Report for Evaluation of Downtown Ann Arbor North-South Commuter Rail (WALLY) Station Sites, 2014*) SmithGroupJJR evaluated prospective station locations in downtown Ann Arbor resulting in the selection of a site within the rail right-of-way on the east side of the tracks between Washington Street and Liberty Street.

The study team also documented our understanding of current rail and passenger station operations and potential issues related to construction of a passenger rail station, or transfer point, at the location where the North-South (Ann Arbor Railroad) route crosses over the MDOT-owned East-West (Amtrak) route, which is planned for future east-west commuter rail service. An ability to connect or transfer at such a location has been suggested by some to improve the interconnectivity between the two proposed commuter lines and intercity service on the Amtrak route. Supporters of such a connection cite the desire of Livingston County residents to more easily get to Detroit Metropolitan Airport or downtown Detroit, for example. This feasibility study examined issues related to a connection at this location, as documented in the Task 7 Technical Memo, and concluded that such a connection presents a number of issues including:

- Track conditions – Curved track is found on both rail lines in this location. A station on a curved track can create a safety issue due to a potential unacceptable gap between the platform and the rigid rail car. Superelevation can also create problems with boarding.
- Engineering – An estimate of engineering costs is beyond the scope of this memo but could vary wildly depending on the complexity of the proposed project. At a minimum, the engineering of a multi-level station located on two curved tracks will be a very expensive proposition. If additional bridge and/or track work is required, cost could rise exponentially.
- Land acquisition – Development of a commuter rail station in this location would require acquisition of private property currently in an office use. No estimate of acquisition cost is made but this would add to the overall project cost.
- Railroad operations – Both north-south and east-west rail lines currently run freight traffic. The east-west line also serves Amtrak intercity passenger service and is identified as a



high speed rail corridor. Coordination among these stakeholders to implement a new station in this location would be a time-consuming task requiring a dedicated team. If additional bridge and/or track work is required, consideration of alternative, temporary routing could add considerably to the cost of implementation.

- Jurisdictional approvals – There has been no discussion with the City of Ann Arbor or MDOT regarding consideration of a passenger rail station in this location. Existing site dimensional constraints along with high peak hour traffic volumes on North Main Street (BR23) would require serious evaluation from both entities.
- Environmental – The subject site contains portions of the Allen Creek floodway and floodplain. Floodways have greater restrictions than floodplains but both are regulated under state law. The City of Ann Arbor is not allowing new construction in the floodway and discouraging floodplain construction.
- Community acceptance – At first glance, the concept of a passenger rail station in this location makes sense with respect to improving commuter rail interconnectivity and access to intercity rail. However, a through cost/benefit analysis will be required to ensure the expenditure would be in the community's best interest.

The concept of a connection at this point is appealing as a way to improve rail connectivity. Considering the issues cited above, however, the concept was not incorporated as a feature at this time. A station in this location would require much more investigation by the involved parties, including Watco Companies, who owns the Ann Arbor Railroad, MDOT, the City of Ann Arbor and Amtrak among others.

4.3 Summary

The 15 identified station sites all meet the 3-stage evaluation screening and have been scored for suitability. Additional analysis will be required at the time this project advances into environmental clearance to review site availability and preferences of local authorities. The Task 7 Technical Memo provides more detail on the results from each tier of analysis and the 15 identified sites.

5.0 Ridership Forecasts

5.1 Overview

The study team used FTA's Simplified Trips on Project Software (STOPS) software package, a nationally calibrated model, to prepare the ridership forecasts for each of the evaluated options. FTA developed STOPS to provide a forecasting tool to potential project sponsors of Capital Investment Grant (CIG) applications. STOPS relied upon the following input data to forecast ridership:

- Census Transportation Planning Package (CTPP) Journey-to-Work data to describe travel patterns in project areas. CTPP Journey-to-Work data depicts home-to-work flows in an area (i.e., not all types of trips, such as non-home based trips), and STOPS factors these flows to represent both home-based work trips and home-based non-work trips. STOPS characterizes non-home-based travel based upon ratios of home based travel.
- Zone-to-zone highway travel times and distances (typically from regional travel models) to represent the local highway network.
- Transit service plans in General Transit Feed Specification (GTFS) format to represent the local transit network.
- Regional population and employment forecasts from the Southeast Michigan Council of Governments (SEMCOG) to represent demographic growth in a geographical area. STOPS uses the demographic forecasts to scale the year 2000 CTPP data to predicted future-year travel flows.

The use of standardized data sources such as CTPP worker flows and the GTFS transit descriptions, means that STOPS has consistent information across all metro areas regarding travel patterns and transit services.

5.2 Agency Coordination

At study initiation, the study team met with representatives from MDOT, AAATA, SEMCOG, the Metropolitan Planning Organization for this region, and the Washtenaw Area Transportation Study (WATS) to discuss demand estimation models focusing, primarily, on use of STOPS or SEMCOG's Regional Model. It was agreed that STOPS was the appropriate model to use for this study. SEMCOG has reviewed the results of the STOPS model and it is their opinion that the data generated is adequate for a feasibility study. In addition, SEMCOG provided technical assistance by completing a market-based analysis to provide a preliminary reference for ridership projections.

5.3 Ridership Forecasts for Options Evaluated

The service options examined include full service, full service with the removal of Barton Drive Station, "Starter" service with Howell, Whitmore Lake and Ann Arbor stations, the Minimum Operating Configuration and the Shuttle Service. Since the options evolved over time and in some cases different input assumptions were used at the time each STOPS run was completed an attempt was made to range the forecasts using a consistent "umbrella" set of assumptions. Ranges of forecasts that take differing inputs into account are considered "good practice" by the FTA during Project Development and so an initial look at such a range is beneficial. For the purposes of evaluating options, the upper bound value for 2015 and "midpoint" for the 2040 ranges are shown in the following table.

Option	Project Trips	2015 Mode Share (AM and PM peak)	Mode Share (Avg. Weekday)	Project Trips	2040 Mode Share (AM and PM peak)	Mode Share (Avg. Weekday)
1 Full Service	1,840	8%	3%	2,346	10%	4%
2 Full Service without Barton Drive	1,190	7%	3%	1,540	8%	3%
3 Starter Service	1,170	6%	3%	1,500	8%	3%
4 MOC	800	4%	2%	1,100	6%	3%
5A Shuttle Service (one train set)	1,346	8%	3%	1,956	10%	4%
5B Shuttle Service (two train sets)	1,674	8%	3%	2,419	10%	4%

Ridership Forecasts by Option: Years 2015 and 2040

It is important to note that ridership forecasting is not an exact science and is limited by the available input data. Since there is no commuter rail in the project area, or in Michigan for that matter, the model could not be calibrated against an existing similar use. Existing commuter rail data of this nature would provide information on commuter rail user characteristics that would allow the model to reflect such patterns. In addition, it is possible that future modeling efforts (e.g. SEMCOG's Regional Model) could provide forecasts different, and potentially higher than, those generated by the STOPS model. The Task 6 Technical Memo provides greater detail on the ridership forecasting methodology along with results for each of the evaluated service plans.

6.0 Capital & Operating Costs

6.1 Overview

Based on the service plan requirements, capital cost estimates were developed for each option, addressing trackwork, signal, grade crossing warning systems, right of way, stations and parking, vehicles, maintenance and layover facilities, special elements, contingency and professional services. Specific improvements were illustrated in track schematics depicting existing and proposed conditions. Annual operating and maintenance costs were developed using a detailed methodology considering operations, equipment maintenance, infrastructure maintenance and administration.

6.2 Capital and Operating Costs for Options Evaluated

Based on the requirements of the respective service plans, the study team identified the necessary infrastructure improvements and prepared an estimate of the capital costs for the development and construction of each option and estimates of the operating and maintenance costs for the initial year of operation for each option. The estimates (2015 dollars) for each option are as follows:

Option Name	Capital Expense (MM)	Operating Expense (MM/Year)
1. Full Service	\$122.30	\$12.30
2. Full Service w/o Barton Drive	\$121.00	\$12.10
3. "Starter Service" - Howell/WL/AA	\$118.40	\$12.90
4A. Minimum Operating Configuration w/PTC	\$28.90	\$5.80
4B. Minimum Operating Configuration w/o PTC	\$21.90	\$5.70
5A. Shuttle Service (one train set)	\$61.30	\$6.60
5B. Shuttle Service (two train sets)	\$65.20	\$7.00

Capital and Operating Costs for Options Evaluated

The capital cost estimate values presented above are based on a set of infrastructure improvements defined as necessary to provide safe and reliable commuter service, recognizing the condition of the existing track and signal infrastructure, the age and condition of the proposed commuter rail coaches and locomotives, local weather/climate conditions, the present regulatory environment and the public's expectations. It may prove possible to reduce the initial capital cost by reducing the scope and extent of the proposed infrastructure improvements for items such as the scale of the maintenance facility or grade crossing improvements. This cost also includes Positive Train Control (PTC) in all options, except 4B. PTC is required by the FRA but there is a process to petition for an exemption to the regulations that would, if granted, result in a lower capital cost.

Over time the annual operating and maintenance cost is anticipated to increase with inflation. In response, five-year and twenty-year estimates were also developed.

Capital cost estimates for each option are presented in the Task 10 Technical Memo, while operating and maintenance costs are presented in the Task 11 Technical Memo. These memos include spreadsheets that provide detailed quantities and unit costs and summarize the costs by categories normally employed by railroads in developing their annual budgets. Details are provided for the costs of bus operations, commuter rail coach lease, locomotive lease and insurance.

7.0 Public & Stakeholder Involvement

7.1 Steering Committee

A Steering Committee was formed to meet at key points in the study and to provide strategic recommendations and policy level input to help guide the process and execute the community outreach plan. The Steering Committee members included representatives from federal and regional transportation agencies, local municipalities and other entities. The federal and regional transportation agencies could potentially have an interest in project oversight, approval and funding. The local municipalities and other entities were selected based on their proximity to the existing rail corridor and could potentially be involved in some type of operational authority.

Representatives included:

- Federal Highway Administration
- Federal Transit Administration
- Michigan Department of Transportation
- Livingston County
- Washtenaw County
- City of Howell
- City of Brighton
- Howell Township
- Genoa Township
- Hamburg Township
- Northfield Township
- City of Ann Arbor
- Ann Arbor Downtown Development Authority
- University of Michigan
- Southeast Michigan Council of Governments
- Washtenaw Area Transportation Study
- Ann Arbor Area Transportation Authority

The Steering Committee met on five occasions throughout the study process starting in February, 2015 and ending in February, 2017. A Steering Committee meeting always preceded Advisory Committee and community meetings to provide a review of presentation material. The Steering Committee meetings were facilitated to encourage discussion among the interested parties that could have a bearing on determining the feasibility of this project. Topics of the meetings occurred in the order of tasks completed and included:

1. Study Overview & Scope/Public Engagement Process
2. Service Plan Options /Capital & Operating Costs/Ridership
3. Additional Service Plan Options/Capital & Operating Costs/Ridership
4. Governance & Funding
5. Financial Analysis/Commuter Rail Comparison/Governance & Funding

7.2 Advisory Committee

The Advisory Committee was a large group of agencies and organizations that could potentially have an interest in developing commuter rail service in the corridor. Organizations that were part of this group included business associations, local elected officials, social service agencies, real estate developers, large employers, newspapers, merchant associations, environmental advocates, related rail companies and the Friends of Wally, a grass-roots citizen organization formed to educate the communities of Livingston and Washtenaw County about proposed commuter rail service. Over 240 individuals were on the invitation list.

The Advisory Committee met on three occasions throughout the study process starting in March, 2015 and ending in February, 2017. The Advisory Committee meetings preceded the community meetings for advance viewing of the presentation material. Topics of the meetings included:

1. Study Overview & Scope/Public Engagement Process
2. All Service Plan Options /Capital & Operating Costs/Ridership
3. Financial Analysis/Commuter Rail Comparison/Governance & Funding

7.3 Public Engagement

Public engagement included three rounds of community meetings. Each round had three meetings held in three separate locations to provide geographic distribution throughout the project corridor. This included meeting sites in Ann Arbor and Howell along with intermediate sites in either Northfield Township or Brighton. Topics and schedule of the meetings were the same as with the Advisory Committee. Meeting notices were provided on the project website, by distribution to over 70 local news, radio and media organizations and through email to a continually maintained list of interested citizens.

In addition to the community meetings, the study included a continuous web-based service to post materials, provide study updates and obtain input. Participation in the web-site was less than anticipated but, to date, there are over 6,400 unique visitors and 15,300 page views. Approximately 42% of the respondents registered resided in the Howell zip code.

Meeting minutes for the Steering, Advisory and Community meetings can be found in an appendix under separate cover.

8.0 Planning & Environmental Linkage

8.1 Overview

The Federal Highway Administration's (FHWA) Planning and Environmental Linkage (PEL) process is being followed to ensure planning and environmental factors are considered throughout the study to carry forward into a National Environmental Policy Act (NEPA) analysis, if deemed necessary (<https://www.environment.fhwa.dot.gov/index.asp>). The PEL process also promotes a partnership with the key stakeholders within the study area leading to an improved and balanced planning and decision-making process.

In addition to documenting the numerous tasks that were completed, this summary report also documents the required elements of a typical PEL study including:

- Purpose and Need, Designated Authority and Affected Environment – Section 1.0
- Alternatives to Commuter Rail: Section 2.0
- Alternative Service Plans: Sections 3.0, 5.0 and 6.0
- Alternative Station Locations: Section 4.0
- Public and Stakeholder Involvement: Section 7.0

8.2 Environmental Summary

This section of the report provides a summary of the environmental conditions that would typically be evaluated in the NEPA process. The primary analysis focuses on the prospective station locations as that will be all new construction. The proposed service will be operated on existing tracks with no capacity improvements. There are proposed improvements outside of the track footprint in specific locations, such as at grade crossings, that will be taken into consideration.

The environmental analysis of the corridor utilized state and county GIS data for numerous attributes along with aerial imagery and site observations from public rights-of-way. If the project were to advance into the Project Development phase, additional on-site observations would be required.

Natural Environment

- Agricultural – No impact. Much of the agricultural land along the corridor is too remote to support a commuter rail station. The only site considered is A|1 in Ann Arbor.
- NPDES – No significant impact. A majority of the construction sites are less than 1 acre in size. The Whitmore Lake W|1 site is approximately 12 acres. If an alternative with that site should advance, a Notice of Coverage form would need to be submitted to the Michigan Department of Environmental Quality.
- Coastal Zone – No involvement.
- Wetlands – No impact. Wetlands were excluded from the prospective station site analysis. This analysis utilized GIS data and any future selected sites will need on-site verification of the presence of wetlands.
- Streams/Lakes/Drains – No impact. The existing tracks do cross over several streams/drains along with the Huron River but there is no construction proposed in these locations that would impact them.
- Floodplains – No impact. The proposed activities will not impact 100-year floodplain areas or waterbodies with greater than 2 square miles of drainage area.
- Migratory Birds – No involvement.
- Air Quality – No impact. According to the Michigan Department of Environmental Quality, Air Quality Division, all of the state is in attainment for ozone, carbon monoxide, nitrogen dioxide, coarse particulate matter and annual and 24-hour fine particulate matter. However, an air quality conformity analysis would be required for the project to be placed on SEMCOG's Transportation Improvement Plan.

- Endangered Species – No impact. Although a survey for endangered species was not completed, all of the sites considered contain either mowed grass or hedgerows. No endangered species habitat was observed.
- Contamination – An Environmental Site Assessment was not completed as part of the scope of work. This analysis would be required as part of any future work. In conversations with the City of Howell, there was some reference to potential contamination in the vicinity of the overnight maintenance and storage facility proposed south of Howell in options 1, 2 and 3. This information was not verified.
- Water Quality – No impact. There is no work proposed in any streams, lakes or drains. It would be anticipated that stormwater management at the proposed station sites would be in compliance with Washtenaw or Livingston county stormwater regulations.

Cultural Impacts

- Historic – An investigation of historic resources was not included as part of the scope of work. Earlier, the Washtenaw County Office of Strategic Planning prepared the *Wally Above-Ground Cultural Resource Survey Final Report (2009)* which documented the following:
 - The Howell H|1 station site is adjacent to the Howell Depot, the historic train station that currently houses the Howell Area Historical Society. The Howell Depot is listed on the State and National registers.
 - The downtown Ann Arbor station site is proximate to the Michigan Milling Company buildings, a collection of buildings on First Street that are potentially eligible for the National Register.
 - The Ann Arbor Railroad Huron River Bridge is potentially eligible for the National Register. No other sites contain historical resources.

An above-ground cultural resource report would be required on the final station site(s) selected to make a determination of effect on existing or potential historic resources.
- Archaeological – Archaeological investigations were not included as part of the scope of work for the current study. As part of an earlier WALLY Coalition effort, Andrews Cultural Resources completed a *Phase I Archaeological Site Location Survey Report of a Proposed Hamburg Station (2009)* which documented a historic mill in the vicinity of the Hamburg H|2 site but recommended no further archaeological work be performed. An archaeological investigation would be required on the final station site(s) selected to make a determination of effect on archaeological resources.
- Section 4(f) and 6(f) – No impact. Section 4(f) and 6(f) properties were excluded from the prospective station site analysis. The existing tracks run through the Brighton Recreation Area and are adjacent to Bennett Park in Hamburg, Olson Park in Ann Arbor and run through Leslie Park Golf Course in Ann Arbor but no new construction is proposed in any of these areas.

Community Impacts

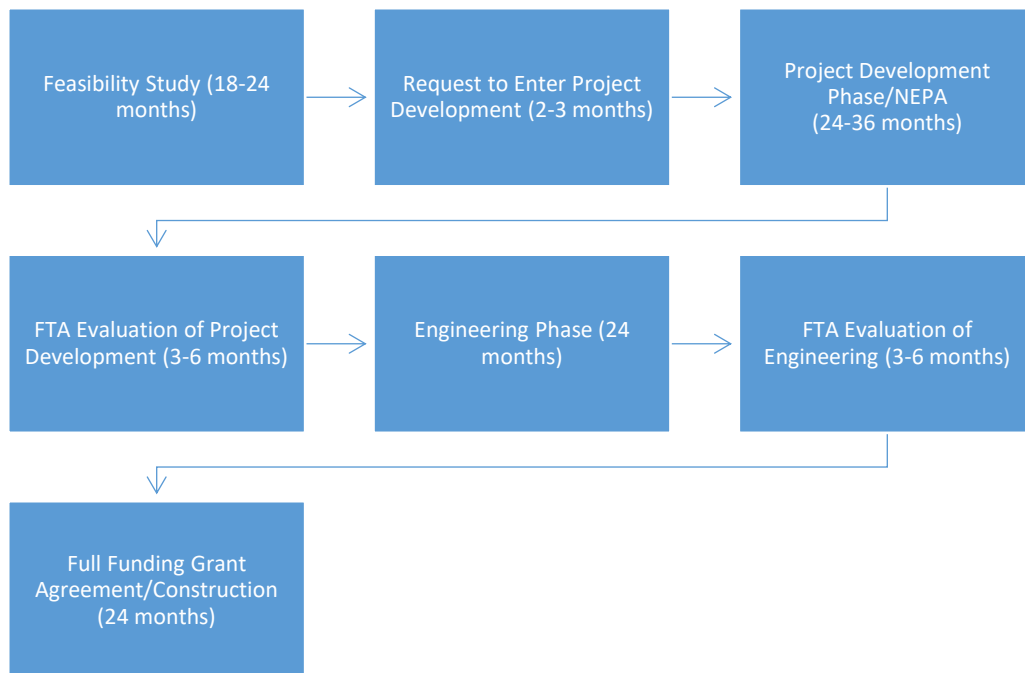
- Social – No impact. With the exception of the proposed Whitmore Lake W|1 site, all of the other sites considered have very small footprints. There is no relocation required on any of the proposed sites.
- Noise – No significant impact. The project does propose running more trains at higher speeds than occurs presently. While a majority of the corridor is rural and even remote, there have been comments about train whistles from the public. This will be a topic requiring some sensitivity.
- Indirect/Cumulative – No impact. While it is likely that the station sites could spur surrounding development, this has been anticipated by at least three of the sites. The proposed station site in Hamburg has been zoned for such development. The proposed station sites in Howell and Whitmore Lake have had TOD plans prepared for them. If any of these sites were to advance, it is anticipated that the overall cumulative impact would be positive to the surrounding communities. Due to environmental conditions and adjacent land use, neither of the proposed station sites in Genoa Township or Ann Arbor

could accommodate any additional development. However, land directly adjacent to the Ann Arbor downtown station site could be considered for TOD.

- Environmental Justice – No impact. There are no minority or low-income populations that would be disproportionately affected by this project.

8.3 Project Timeline

The construction timeline of the project depends almost entirely on the amount of time it will take for work to be completed to meet FTA requirements for the Project Development (PD)/NEPA, Engineering and Full Funding Grant Agreement phases. The process is described in detail in the FTA's *Final Interim Policy Guidance, Federal Transit Administration, Capital Investment Grant (CIG) Program (June, 2016)*. A general timeline and brief summary of the individual phases are defined below.



Conceptual Project Timeline

Request to Enter Project Development

This phase is initiated by the project sponsor submitting an application to the FTA with the following:

- A brief description and clear map of the corridor being studied including its length and key activity centers
- Brief description of the transportation problem in the corridor or a statement of purpose and need
- Identification of a proposed project if one is known and alternatives to that project if any are being considered
- A brief description of current levels of transit service in the corridor today
- Identification of a cost estimate for the project, if available
- The anticipated cost of Project Development, not including the cost of any work done prior to officially entering the PD phase
- Identification of the non-CIG funding available and committed to conduct the Project Development work
- An anticipated draft timeline for completing the following activities:

- compliance with NEPA and related environmental laws;
- selection of a locally preferred alternative;
- adoption of the locally preferred alternative in the fiscally constrained long range transportation plan;
- completion of the activities required to obtain a project rating under the evaluation criteria outlined in the law
- anticipated receipt of a construction grant agreement from FTA
- anticipated start of revenue service

Project Development Phase/NEPA

In accordance with the requirements, during the PD phase, the project sponsor is responsible for:

- Selecting the locally preferred alternative (LPA)
- Getting the LPA adopted in the fiscally constrained metropolitan transportation plan which, in this case, would be SEMCOG's Transportation Improvement Plan
- Completing the NEPA process with a Categorical Exclusion, Finding of No Significant Impact or Record of Decision
- Developing sufficient information for the FTA to develop a project rating.
- Complete at least 30% design and engineering.

FTA Evaluation of Project Development

As a project progresses through PD, the project sponsors submit documentation to the FTA, which enables the agency to evaluate the project for inclusion in the FTA's Annual Report on Funding Recommendations (to Congress). FTA's project justification rating criteria including:

- Mobility improvements
- Environmental benefits
- Congestion relief
- Economic development
- Land use
- Cost effectiveness

The project justification criteria and local financial commitment, prepared in accordance with FTA guidelines and submitted by the project sponsor, are weighted equally and both must be at least medium to obtain a medium or better overall rating, a requirement to qualify for FTA's funding recommendation to Congress.

Engineering Phase

During this phase, the project sponsor must demonstrate sufficient progress to remain in the program. The FTA requires that project sponsors

- Gain at least 50% commitments on all non-CIG funding.
- Demonstrate continuing progress toward engineering and design
- Complete the engineering and design to develop a firm and reliable cost, scope and schedule for the project
- Meet FTA readiness requirements related to technical capacity, staffing and oversight to be eligible for a construction grant agreement.

FTA Evaluation of Engineering

- The FTA decides whether to include a project as a funding recommendation based on:
- The evaluation and rating of the project
- The availability of CIG program funds
- Considerations related to project readiness including
 - An advanced level of engineering and design
 - Generally, at least 50% non-CIG funds committed.

Full Funding Grant Agreement/Construction

At this point, the FTA and the project sponsor enter into a full funding grant agreement and construction can commence.

9.0 Financial Analysis

9.1 Overview

The Federal Transit Administration (FTA) provides capital grants to state and local governments to fund the development and construction of fixed guideway transit systems throughout the United States under the FTA's Capital Investment Grants (CIG) program defined in 49 USC 5309.

The FTA's CIG program provides three categories of eligible projects: New Starts, Core Capacity and Small Starts. Small Starts projects are those whose sponsors request less than \$100 million. Based on the cost estimates, the North-South project would fit within the Small Starts category.

As noted in the Section 8.3, the project sponsors submit documentation to the FTA during the PD phase which enables the agency to evaluate the project for inclusion in the FTA's Annual Report on Funding Recommendations (to Congress).

The project justification criteria and local financial commitment are weighted equally and both must be at least medium to obtain a medium or better overall rating, a requirement to qualify for FTA's funding recommendation to Congress.

9.2 Financial Analysis for Options Evaluated

In consideration of the purpose and need for this study along with the capital and operational costs and ridership forecasts, it was determined to advance analysis of Option 1: Full Service (four trains providing four one-way trips in each peak period) and Option 5B: Shuttle Service (two trains providing 14 one-way trips, including reverse commutes). Option 1 meets the initial intent of extending service from Howell to Ann Arbor and achieves the highest initial ridership yet also has the highest capital and operating costs. Option 5B is a much shorter route yet achieves very close to the same level of ridership for roughly half of the Option 1 capital and operating costs. Consequently, these two options were selected for a comparison of their financial analysis.

The primary objective of this task is to compute the Cost Effectiveness Ratio and determine the resultant rating based on the FTA's published guidance (See Section 8.3). The Cost Effectiveness Ratio is computed simply as the Annualized Federal Share of Project Capital Cost (expressed in current year dollars) divided by the Annualized Linked Trips on the Project and is expressed in \$/trip. The FTA assigns ratings as follows:

- High: <\$1.00
- Medium-High: \$1.01-\$1.99
- Medium: \$2.00-\$3.99
- Medium-Low: \$4.00-\$5.00
- Low: >\$5.00

As shown in the following Financial Analysis Summary, the Cost Effectiveness value for Option 1 is \$4.55 per trip, which qualifies the project for a Medium-Low rating. In contrast, the Cost Effectiveness value for Option 5B is \$2.68, which qualifies the project for a Medium rating.

	Option 1: Full Service	Option 5B: Shuttle Service (Two Train Sets)
Original Estimate Capital Cost	\$122.25 million	\$65.22 million
Adjustments to conform to FTA SCC* Worksheet		
-Eliminate Bus Cost	(\$3.90 million)	
-Assign Special Services to PD**		
-Reduction in Contingency	(\$0.89 million)	(\$0.89 million)
-Reduction in Prof Services and Environ	(\$1.29 million)	(\$1.29 million)
SCC Capital Cost	\$115.59 million	\$58.56 million
Annualized Federal Share	\$2,195,000	\$1,177,000
Annual Linked Trips 2015	482,080	439,112
Cost Effectiveness Value***	\$4.55	\$2.68
Cost Effectiveness Rating	Medium-Low	Medium
* Standard Cost Categories		
** This adjustment serves to eliminate the allowances for contingency and soft costs applied to this service element.		
*** Current year 2015		
All costs are in 2015 dollars		

Financial Analysis Summary

The FTA allows Small Starts sponsors to seek up to 80% CIG funding although projects seeking smaller shares of federal funding are generally given a higher rating, all other things being equal. The cost effectiveness analysis above has been based on the assumption of a 50/50 split of the project capital cost between federal and local/state funding sources (see Section 14 for a basis of this assumption). Under that funding split, Option 5B is anticipated to be a stronger project as measured by cost effectiveness, qualifying for the medium rating required by the FTA guidelines to be considered for funding. If the local/state funding for Option 1 were increased to 55%, calculations show it too could achieve a medium rating. The Task 14 Technical Memo provides greater detail including simplifying assumptions and the FTA Ratings Estimate spreadsheets for these two options.

10.0 Performance Monitoring

10.1 Overview

Existing commuter rail service providers, most with larger networks, have elaborate monitoring systems commensurate with the size of their operations. These systems are intended to monitor and control large asset and employee bases, often including hundreds or thousands of employees working on several lines in complex service areas. They can produce many types of reports, and in both written and electronic formats. Reports typically include data on all four of the principal areas of railroad activities: operations, equipment maintenance, infrastructure maintenance and administration.

It is anticipated that since the North-South Commuter Rail service would be a start-up, it may begin with the implementation of limited service in a smaller operating envelope, such as between Whitmore Lake and downtown Ann Arbor as shown in Option 5B. The objective of a smaller start-up segment would be to begin basic peak hour commuter rail service as soon as possible with minimum operating and maintenance expense and minimum overhead and administrative support. Once the service has begun operating and ridership levels indicate strengthening demand, the service can be expanded as needed.

10.2 Performance Monitoring System Recommendations

Two monitoring system options, both using modern information technology at differing levels, are presented for consideration.

Option 1: Minimum Reporting System

The Minimum Reporting System option is designed for the start-up level of commuter rail train operations where only a relatively few personnel are involved in providing the service and where there is a high degree of hands-on knowledge of daily operations and occurrences by management. It is the recommended option for the start-up and early years of the North-South commuter rail service.

The Minimum Reporting System is designed to provide timely and accurate monitoring information to the Agency management team. It also provides historical documentation of certain critical activities. In a smaller start-up system, a careful review of the reports described above, plus daily communications at all levels, is expected to be sufficient to manage the service. The Agency may amend its reporting system as necessary to achieve the desired balance of access to information against the cost of obtaining it.

There are many other types of information and many other specific reports, some of which may be sensitive or confidential, and some of which may be required by state and/or federal agencies, which would need to be gathered, stored, prepared and /or submitted as required.

Option 2: Full Management System

If the North-South Commuter Rail service expanded to a much larger size than presently being planned in any of its current service options, then a Full Management System option might be required.

However, if the North-South Commuter Rail service were eventually integrated into other systems now being planned in Michigan, such as the East-West Commuter Rail, then it is possible that the performance monitoring system(s) used by those services might be used instead.

A Full Management System option would employ all or most of the reports described above in the Minimum Reporting System. It might also include the more detailed reports by department.

Details of the recommended performance monitoring systems including reports organized by operations, equipment maintenance, infrastructure maintenance and administration can be found in the Task 15 Technical Memo.

11.0 Safety & Security

11.1 Overview

Safety and security are two separate but closely related disciplines which must be addressed by commuter railroads. Safety is defined as the freedom from accidental injury or damage. Security is defined as the freedom from intentional injury or damage. Commuter railroad safety is primarily under the jurisdiction of the Federal Railroad Administration (FRA). Commuter railroad security is primarily under the jurisdiction of the Transportation Security Administration (TSA).

11.2 Safety Concepts and Recommendations

The Rail Safety Improvement Act of 2008 mandated a safety risk reduction program for most railroads. Accordingly, the rail and transit industry began to change its focus on safety. Most railroads, commuter railroads and transit agencies are now adopting the Safety Management System (SMS) approach. The SMS approach, as defined by the American Public Transportation Association (APTA), has four essential components which are:

- Safety Management Policy
- Safety Risk Management
- Safety Assurance
- Safety Promotion

In recent years, most commuter railroads have voluntarily adopted a System Safety Program Plan (SSPP) that follows the guidelines established by APTA. APTA's Manual for the Development of System Safety Program Plans for Commuter Railroads, contains 21 elements which generally follow the SMS approach.

Safety recommendations for the North-South Commuter Rail include:

- The North-South Commuter Rail system would conduct its operations over the track dispatched and maintained by GLC, the host railroad. Accordingly, GLC's operating rules, amended as necessary to accommodate the new commuter system, would apply to North-South train operations. Careful coordination and cooperation with GLC will be required to meet all of the applicable safety requirements and develop an SSPP.
- This feasibility study recommends the creation of a governance organization to further develop the North-South Commuter Rail concept. Among its many early activities, it is recommended that the new governing organization begin the development of the SSPP at its earliest opportunity. This is important because the SSPP must first be approved by FRA
- Depending on the service plan selected, major capital improvements are required to enable it to begin operations. These infrastructure and system improvements would be integral parts of the SSPP. Differing combinations of improvements have been incorporated in the capital and operating plans for each of the specific service plan options

11.3 Security Concepts and Recommendations

Prior to the events of 9/11, many commuter rail security plans followed the Transit System Security Program Planning Guide issued by the Federal Transit Administration in January 1994 and updated in 1997. FTA's requirement for a System Security Plan (49 CFR §659.21) does not apply to commuter railroads. Instead, under the Department of Homeland Security, the Transportation Security Administration (TSA) has jurisdiction over most security aspects of commuter rail operations (49 CFR Part 1580 Subpart C). To assist transit agencies and commuter railroads, APTA published its Recommended Practice entitled "Security Planning for Public Transit" (APTA SS-SIS-RP-011-13 March 26, 2013). This document is used by commuter railroads to develop their Security Emergency Preparedness Plans (SEPP).

It is recommended that the governing organization responsible for developing North-South Commuter Rail Service follow a four-part approach to accomplish system security:

- Consult with TSA and comply with the appropriate TSA security regulations contained in 49 CFR Parts 1520 and 1580 discussed above.
- Prepare a System Security Program Plan appropriate to the size of the proposed operation using the format contained in APTA's Recommended Practice "Security Planning for Public Transit" discussed above.
- Construct the limited capital investments prescribed for each option to meet the security needs for the start-up operation. These improvements include security fencing, gates and lighting for maintenance and layover facilities as well as warning signs posting the right-of-way and specific areas such as maintenance and layover facilities and stations as railroad or agency property.
- Coordinate with and utilize local law enforcement agencies to provide first responder security capability for the project.

Future system designers may reassess the security threat based on conditions at the time to recommend the installation of security elements such as CCTV systems, emergency call boxes, public address systems, security fencing and enhanced lighting, particularly in passenger station facilities.

The capital and operating costs to meet safety and security requirements for each of the specific service plan options have been included in the capital and operating cost estimates for each option (See Task 10 and 11 Technical Memos). The Task 18 Technical Memo provides more detail related to elements of commuter rail safety and security options and recommendations along with source documents and references for each.

12.0 Green Concepts & Operating Principles

12.1 Overview

Designing and operating sustainable commuter rail requires a holistic approach. Improving performance and integrating with community development is more vital to sustainability than simply reducing the environmental footprint of facilities. Commuter rail should be an agent for stimulating the economy, preserving environmental quality, and enhancing social equality.

It is important to understand that sustainability applies to every stage of decision-making: planning, design, implementation, infrastructure and procurement, as well as day-to-day operations and maintenance. Applying the concepts of sustainability through establishment of performance measurement goals can help transportation agencies to embrace general sustainability principles and provides a tool to measure progress. Typical goals could include a focus on topics such as:

- Water usage
- Criteria air pollutant emissions
- Greenhouse gas emissions
- Greenhouse gas savings
- Recycling
- Energy Use
- Passenger trips

The Federal Transit Administration and the American Public Transportation Association both support sustainability and offer assistance and resources for local transit agencies to integrate sustainability into their projects. The FTA is committed to the study of global climate change and promoting livable and sustainable communities through Transit Oriented Development. They offer a host of sustainability research papers, tools and resources and a clearinghouse of sustainability practices.

The APTA Sustainability Commitment recognizes members who commit to becoming more sustainable in their operations and practices. Through a series of core sustainability principles, the Commitment provides both agency and business members with a common framework that helps define, initiate, and advance sustainability in the public transportation industry. These principles include:

1. Making sustainability a part of your organization's strategic objectives
2. Identifying a sustainability champion within the organization coupled with the proper human and/or financial resources and mandates
3. Establishing an employee outreach program that engages staff on:
 - how they can help realize the organization's sustainability goals
 - the organization's progress in meeting those goals
4. Undertaking a sustainability inventory of your organization
5. Provide the transit industry with products and services that contribute to sustainability

12.2 Sustainable Equipment & Operations

Commuter rail can significantly improve air quality and reduce greenhouse gasses through their equipment and operations. It can help the metropolitan area meet national air quality standards by reducing overall vehicle emissions and the pollutants that create smog.

Transportation accounts for 29 percent of greenhouse gas emissions in the United States. By moving more people with fewer vehicles, commuter rail can reduce greenhouse gas emissions. National averages demonstrate that public transportation produces significantly lower greenhouse gas emissions per passenger mile than private vehicles. Heavy rail transit such as subways and metros produce on average 76% lower greenhouse gas emissions per passenger mile than an

average single-occupancy vehicle (SOV). Moreover, by reducing congestion, transit reduces emissions from cars stuck in traffic. Finally, transit can minimize its own greenhouse gas emissions by using efficient vehicles.

Diesel locomotives are the most important piece of commuter rail equipment with respect to sustainability. Tier 4 compliant locomotive engines significantly reduce emissions of particulate matter (PM) and oxides of nitrogen (NOx) to near zero levels. Relative to previous emissions standards, Tier 4 compliant engines reduce emissions by over 95 percent for most agricultural and construction equipment and just over 86 percent from previous versions of locomotive engines. Currently, Tier 4 is the strictest EPA emissions requirement for off-highway diesel engines. Several states in the Midwest, including Michigan, are in the process of testing and putting into service the Siemens Charger, a Tier 4 compliant locomotive designed for the North American market.

In addition to the selection of commuter rail equipment, operation and maintenance of the equipment and all of the facilities should be addressed as well. This would include environmentally-friendly cleaning and purchasing practices and an emphasis on reducing material use, reusing materials and recycling to the greatest extent possible.

12.3 Sustainable Site Planning

The Leadership for Environmental and Energy Design (LEED) Rating System provides design standards that focus on energy and water conservation, use of recycled and sustainable materials and other elements resulting in new facilities that not only have a smaller environmental footprint, but also often cost less to operate because they consume less water & energy. Although this study is not currently proposing buildings at the station sites, many of LEED's credits could apply. Certainly the maintenance and layover facilities could be designed in accordance with LEED standards.

In a manner similar to LEED, The Sustainable Sites Initiative (SITES) provides guidance and incentives that can transform land development and management practices toward regenerative design. It is based on the concept of ecosystem services, an understanding of natural processes and best practices in landscape architecture, ecological restoration and related fields. One major difference from LEED is that SITES projects do not need to have a building as part of the program. This rating system provides greater emphasis on site design with respect to water, soil & vegetation, materials selection and human health wellbeing in addition to construction, operations and maintenance. This would make SITES an ideal standard for development of the station sites. LEED and SITES both offer third party project certification through Green Business Certification Inc. (www.gbci.org).

With respect to site planning, the station site selection process, described in Section 4, included several criteria that discouraged sprawl such as adjacent land use, Transit Oriented Development (TOD) potential, zoning and distance to population centers. It would be expected that each station site would embrace practices such as stormwater infiltration, integration of solar power and minimizing light pollution.

12.4 Sustainable Land Use

Public transportation can support higher density land development, which reduces the distance and time people need to travel to reach their destinations, meaning fewer emissions from transportation. Compact development also leaves more land in the region for parks, wildlife preserves, forests and other uses such as agriculture. Finally, it reduces the need for pavement, meaning less run-off that degrades the water supply.

The idea of planning for a future commuter rail station is not new for several communities along the study corridor. Howell, Hamburg and Whitmore Lake have all considered the benefits that could be realized from Transit Oriented Development (TOD) in their communities. TOD is

typically defined as more compact development within easy walking distance of transit stations that contains of mix of uses such as housing, jobs and commercial facilities. The City of Howell has developed TOD master plan concepts for the several blocks between Grand River and the historic train station that included a future commuter rail station as one of the core elements. Options for high-density and low-density redevelopment have been explored. A TOD concept known as Victoria Station was put forth by a developer for a parcel in this area. Although this study did not advance, the City stated a commitment to a public/private partnership on the site.

Hamburg has established a Village Center District to provide for community-wide retail uses while creating a pedestrian connection to neighboring residential streets. They have identified a TOD within the Village Core/Village Gateway districts to take advantage of the potential for a future train station and identified the most beneficial location for such a station would be on Hamburg Road south of the historic village area. Because the exact location of the station is not known at this time, the TOD District will be treated as a floating zone. Once the location of the station is determined, the land uses, design characteristics, and other standards associated with the TOD District will be applied as an overlay within approximately ¼ mile of the station. This type of proactive planning is essential to capture the greatest benefits from commuter rail.

Development concepts and a strategic plan have been developed for the 24-acre parcel south of Eight Mile Road west of US-23 known as Whitmore Station. Whitmore Station is a proposed mixed-use development which builds upon TOD planning principles to create an environment to live, work, shop, and commute. It was planned to ensure it fits contextually within Northfield Townships growth policies, goals and objectives of future land use improvements.

13.0 Consistency with Regional/Federal Guidelines

13.1 Consistency with Regional Agencies

The North-South Commuter Rail Feasibility Study took into account planning policies and assumptions developed by the Michigan Department of Transportation, the Southeast Michigan Council of Governments, the Regional Transit Authority of Southeast Michigan, the Washtenaw Area Transportation Study and the planning departments for Livingston County and Washtenaw County to document consistency with regional plans and planning practices. Many of these regional planning agencies acknowledged the benefit of commuter rail in southeast Michigan and specifically the need for the North-South Commuter Rail project. One critical element of note is that, should this project obtain funding, it will need to be placed on SEMCOG's Transportation Improvement Plan in order to become eligible to use the funds. This can be achieved through an amendment to the TIP by one of SEMCOG's Federal-Aid Committees within their regularly scheduled amendment cycle. As part of this amendment, the project sponsor must document compliance with the required demonstration of financial constraint and complete an air quality conformity analysis. An overview of each of these agencies is provided below along with documentation relevant to the study in the Task 18 Technical Memo.

13.2 Consistency with Federal Guidelines

The study team has worked in cooperation with the funding and regulatory agencies, FTA and FRA, respectively to understand the applicable funding and regulatory guidance and ensure compliance throughout the course of the study. Such efforts should facilitate agency review, should the project sponsors seek to advance the program.

The FTA provides capital grants to state and local governments to fund the development and construction of fixed guideway transit systems under the Capital Investment Grants (CIG) program. FTA's CIG program provides three categories of eligible projects: New Starts, Core Capacity and Small Starts. The proposed North-South Commuter Rail System could qualify for federal capital funding under the FTA's Small Starts program.

While not specifically intending to prepare an FTA Small Starts Application, the North-South study team developed a series of technical memos that address most of the information requirements defined by the FTA for submittal with an application for funding. These memos will enable the project sponsor to assemble an application at minimal cost, were the project sponsor to succeed in obtaining a regional commitment of funds for Project Development work. Applying for an amendment to include this project in SEMCOG's Transportation Improvement Plan can be complete prior to or in concurrence with the federal grant application.

The FRA regulates the safety of railroads in the United States. This entails performing inspections, providing training and developing and enforcing safety rules. The rules are codified in the Code of Federal Regulations Title 49: Transportation. The service plans were all designed to comply with FRA's safety regulations. In addition, the study team consulted with the FRA regarding Signal and Train Control Systems, specifically the details associated with currently mandated Positive Train Control, and Passenger Equipment Safety Standards regarding the use of Diesel Multiple Units. Additional guidance and details related to consistency with federal guidelines is found in the Task 19 Technical Memo.

14.0 Governance & Funding

14.1 Overview

While earlier elements of this study emphasized the physical and engineering feasibility of commuter rail service in the corridor, overall feasibility of the project depends also upon: 1) the existence of an organization to build and operate the service, and 2) the ability of that organization to raise funds to undertake the project. Typically, the governance and funding of projects such as this reflect the geography of the service area. The boundaries of the area include those who would benefit from the service and those who would bear the costs.

Governance and funding options for the North-South Commuter Rail project need to be coordinated to ensure that partners funding the project are provided a role in decision-making on the service as it evolves. The issue of stable ongoing operations funding over the long term is a major consideration in the viability of a service, even though the initial capital investment is often what is most focused-upon.

State of Michigan laws offer a number of options allowing local municipalities, transit agencies, and others the ability to establish multi-jurisdictional authorities that could be used for advancing the project. To date, these options have not been leveraged to fund or operate commuter rail service in Michigan.

As noted in the Financial Analysis section, it was determined that the Full Service and Shuttle Service options would be advanced for evaluation governance and funding strategies.

14.2 Governance Options

This section summarizes options for project governance, the potential for establishing a new transit agency to oversee the new service, and local experience with intergovernmental coordination.

New Authority (Act 196) in All or Part of Livingston and Washtenaw Counties

Act 196 of 1986 is the Michigan law intended specifically to support the creation of a new transit authority. Under Act 196, any local unit of government may combine with other local units of government to create the new organization, which then has the powers and obligations typical of a transit provider. Powers include the ability to levy a millage which, for rail projects, may remain in place for 25 years. Any millage proposed by an Act 196 Authority would require a ballot referendum to approve the levy.

It appears Act 196 is the law that is most appropriate to support formation of a North-South Commuter Rail Authority. The law allows for the formation of a public authority through the adoption of articles of incorporation by an affirmative vote of the members elected to and serving on the legislative bodies of each political subdivision. Under Act 196, a municipality, a group of municipalities, a county, or a portion of a county or municipality may form a new transit authority. The articles of incorporation would spell out the purpose and structure of the new organization, including describing the representation formula for the member communities.

In 2007, the Washtenaw County Board of Commissioners adopted a resolution approving the creation of the Washtenaw and Livingston Line (WALLY) Regional Transportation Authority pursuant to Act 196 as described above. Details of the resolution, the Articles of Incorporation, draft By-Laws and a proposed fact sheet are included in Appendix I of the Task 12/13 Technical Memo. Although the creation of the Authority was not advanced, this document provides a good example of how such an entity could be organized.

Interlocal Agreement (Public Act 7)

In Michigan, Public Act 7 of 1967, the Urban Cooperation Act, authorizes two or more local units of government to enter into an interlocal agreement for any purpose (in this case, for the purpose of providing transit services.) However, an entity created under Act 7 may not directly levy taxes. Each local unit of government that is a member of the authority may allocate some of its own funding to the authority. However, in the case of a rail transit project such as North-South Commuter Rail, funding commitments need to be in place for the life of the project, typically 25 years, to assure the federal funding agencies that there will be a stable source of operations and financing for the service. These may be difficult commitments to obtain under an Act 7 agreement.

An Act 7 Agreement might best be used as an interim measure until an Act 196 authority is actually designed and agreed upon. There would be plenty of work involved in just establishing the Act 196 authority and its funding mechanism, and an Act 7 agreement could establish the participants and the ground rules for having that discussion, even providing a small funding source for planning and organizational work. Such an organization, established with a mission to advance the improvement of transit service in the corridor and convened at recurring intervals, could be a vehicle to continue progress toward the project implementation.

The organization could also be utilized to fund or even operate the piloting of corridor transit services (e.g., commuter bus service) that could test the demand for daily service and potentially supplement an eventual rail service in the future. Act 7 is utilized for public transportation purposes in many locations in the state, frequently to operate multi-jurisdictional bus services in areas including Port Huron, Marquette and Cadillac.

If it is decided, based on continued development of the project, to support exploring one of the longer-range governance and funding options, the cross-jurisdictional nature of the North-South Commuter Rail service and material long-run financial requirements require cooperation and concerted action. An interlocal structure, such as an Act 7 exploratory committee, could be important in preparing for development of those options as well as coordinating with other transit, transportation, and land use plans in the region.

Southeast Michigan Regional Transit Authority

The Southeastern Michigan Regional Transit Authority (RTA) was created by Public Law 909 of 2012, which parallels Act 196 of 1986 with specific provisions for the RTA. The RTA, currently established in Wayne, Oakland, Macomb, and Washtenaw counties, could play a role in the project either through a Joint Powers Agreement with Livingston County or similar voluntary arrangement, or by approving a Livingston County request to join the authority.

As of this writing, the RTA is still attempting to establish a funding source for its Master Plan. RTA's 1.2 mil levy lost by a slim margin in November, 2016, and may be presented to the voters again soon. The Master Plan made reference to the North-South Commuter Rail project, but contained no funding. Given more basic priorities, RTA is not expected to play a major role in this project any time soon.

14.3 Potential Sources of Funding

For the purposes of the funding analysis, the two service options were each examined assuming either county-based funding support or support only from those jurisdictions immediately adjacent to the rail line. The operating cost net of fares is a significant long-term obligation and the majority is likely to be borne by the local jurisdictions. For the initial capital investment, the study team established the assumption for planning purposes that 50 percent of the capital cost will be provided from Capital Investment Grant ("Small Starts") funds, 25 percent from other state or federal funds, and 25 percent from the local tax base. The basis of this assumption is described in following sections.

14.3.1 Capital

This section summarizes the capital funding options that should be considered for the North-South Commuter Rail service.

Potential Capital Costs Funding Scenario

Total capital costs for the Full Service option are projected to be \$122.3 million; capital costs for the Shuttle Service option are projected to be \$65.2 million. Based on the analysis of peer systems and current trends in FTA funding, non-local funding should be expected to cover more than 75 percent of total project capital costs. The table below summarizes a scenario of projected sources of capital funds for the two project options.

Source of Funds	Full Service		Shuttle Service	
	Capital Funds	%	Capital Funds	%
Federal (5309 Grants)	\$ 61.2	50.0%	\$ 32.6	50.0%
Federal/ State	30.6	25.0%	16.3	25.0%
Local	30.6	25.0%	16.3	25.0%
Total	122.3	100.0%	65.2	100.0%

Potential Capital Costs Funding Scenario

Section 5309 Capital Investment Grant Program

A general practice is to propose that 50 percent of the total project capital cost be provided by Section 5309 Capital Investment Grant (CIG) funds. CIG is a discretionary, competitive program that serves as the primary capital grant program of the FTA. As the project advances, discussions with the FTA will be helpful in establishing an acceptable financial planning assumption. A key consideration will be the “competitiveness” of the project for funding under Section 5309 CIG program. As a study with a total cost of less than \$300 million, the potential North-South Commuter Rail would best line up with the Small Starts funding program portion of CIG.

Other Federal and State Funding

Federal funds other than Section 5309 CIG program may be used to make up other non-local or state capital funds. Surface Transportation Program (STP) funds and Congestion Management Air Quality (CMAQ) funds are among the more common sources of Federal funds in this role. State discretionary grants for transit capital projects may be used, or funds dedicated through legislation including specifically the North-South Commuter Rail project may be appropriated. Michigan’s Comprehensive Transportation Fund (CTF) Capital Assistance Program provides matching funds for transit projects receiving federal funds. Although the CTF transit funding has been used primarily applied to the state’s bus services, it appears that commuter rail service could be eligible for CTF funding. However, the CTF is fixed and any new request for CTF transit funds could reduce its availability elsewhere in the state. There is presently no commitment or expectation of any State participation at the time of this report.

Remaining Local Capital Requirement

Approximately 25 percent of the capital cost would remain to be funded from local sources. Based on the local funding options, this amount would be funded by a new property tax in some combinations of the counties or jurisdictions being provided service. There has been some discussion of alternative funding sources, such as a tax increment financing or a public-private partnership. While tax increment financing has been used to create transit facilities in the United States, the districts are generally focused on specific locations such as stations or urban centers. The FTA issued a circular in 2014 (FTA C 7050.1) encouraging all forms of value capture that

may “contribute to the operation, maintenance or expansion of public transportation service.” In addition, the Denver Regional Transportation District opened the nation’s first public-private partnership (P3) for commuter rail, known as the Eagle P3, in 2016. The P3 financing and delivery approach was used for transit line design, construction and operation. While these alternative funding sources may be applicable to this project, determination of their use should be made when the decision to proceed with the project is imminent. As such, neither was considered in this funding analysis.

14.3.2 Operating

This section summarizes the funding options for ongoing annual operations costs that should be considered for the North-South Commuter Rail service.

Potential Operating Costs Funding Scenario

Annual operating costs for the Full Service option are projected to be \$13.2 million; annual operating costs for the Shuttle Service option are projected to be \$7.0 million. Based on projected fare revenue for the services, the analysis of peer systems, and current trends in FTA and state capital funding, the local share of operating costs should be expected to cover 77 percent and 74 percent of total costs for the Full Service and the Shuttle Service alternatives, respectively. The table below summarizes a scenario of projected sources of annual operating funds for the two project options.

Source of Funds	Full Service		Shuttle Service	
	Annual Op. Funds	%	Annual Op. Funds	%
Fare Revenue	\$ 1.1	8.3%	\$ 0.8	11.4%
Federal	0.7	5.0%	0.4	5.0%
State	1.3	10.0%	0.7	10.0%
Local	10.1	76.7%	5.2	73.6%
Total	13.2	100.0%	7.0	100.0%

Potential Operating Costs Funding Scenario

Federal Operating Funds

The primary source of federal operating assistance comes from Section 5307 Urbanized Area Formula Grants program, a formula-based program that offers transit capital and operations assistance to service providers in urbanized areas. Note that any new service would not be eligible for existing Section 5307 funds (these currently fund AAATA operations); any eligible funds would be allocated to North-South Commuter Rail based on the incremental service improvements to the urbanized area.

Based on peer agency analysis and current trends in funding, North-South Commuter Rail should not anticipate more than five percent of total annual operating costs be provided by federal funds.

State Operating Funds

Michigan’s CTF provides funding for transit operations and are apportioned to service providers in the state’s annual transportation budget. Currently, the primary source of funds is the Local Bus Operating (LBO) Assistance Program. It should be noted that proceeds from the Capital Assistance Program have historically also been used to cover operating cost shortfalls. There is presently no commitment or expectation of any State participation at the time of this report.

Remaining Local Operating Requirement

Approximately 75 percent of the operating costs would remain to be funded from local sources. Based on the local funding options, this amount would be funded by a new property tax in some combinations of the counties or jurisdictions being provided service.

14.3.3 Millage Rate Analysis

This section provides a summary of the various projected local property tax millage rates required to fund both the project capital costs and the ongoing annual operating costs of the two North-South Commuter Rail service options being considered. For the new service, only one millage rate is calculated to fund both the initial project capital costs and the ongoing annual operations costs. Over time, due to the relatively short anticipated construction schedule, operating costs will total more than capital costs. Any single millage rate introduced to fund the local share of total project costs needs to be sufficient to fund the ongoing annual operating costs. Thus, the millage rates presented in this section are based on projected annual operating costs with the assumption that the local share of total capital costs could be accumulated over a 3-4 year period. The projected local shares of project capital costs and annual operating costs for the two options is shown below.

Local Share	Full Service	Shuttle Service
Capital Cost	\$30.6	\$16.3
Annual Operating Cost	\$10.1	\$5.2

Summary of Local Capital and Operating Costs

Any estimate such as these millage rates depends entirely on the assumptions made and cannot be assured. Fluctuations in property values could change the millage rate required to generate the needed funds. The geographic areas comprising the authority are, here, intended as illustrative and do not represent a collective agreement on the final jurisdiction.

This analysis considers two tax base scenarios:

- **Two- or One-County tax base:** This scenario assumes a broad tax base that includes all of Washtenaw County and Livingston County for the Full Service option and all of Washtenaw County for the Shuttle Service option. This scenario would have the largest tax base from which to draw funds and would require the lowest new millage rate.
- **Jurisdictional tax base:** This scenario assumes a narrower tax base that includes only cities and townships along or adjacent to the proposed right of way for both options. This scenario would have a smaller tax base from which to draw funds and would require a higher new millage rate for the Full Service option. For the Shuttle Service option, two options were considered for the jurisdictional tax base. Option 1 included municipalities along the corridor in Washtenaw County as well as three in Livingston County that are proximate to the northern station. Option 2 is limited to municipalities in Washtenaw County only.

The following table summarizes the potential tax base scenarios for the two options.

Tax Base Scenario	Full Service	Shuttle Service
County Tax Base	-Washtenaw County -Livingston County -Tax Base = \$25.2 B	-Washtenaw County -Tax Base = \$15.3 B
Jurisdictional Tax Base (Option 1)	-City of Ann Arbor -Ann Arbor Township -Northfield Township -Green Oak Township -Hamburg Township -City of Brighton -Genoa Township -Marion Township -Howell Township -City of Howell -Oceola Township -Tax Base = \$12.0 B	-City of Ann Arbor -Ann Arbor Township -Northfield Township -Green Oak Township -Hamburg Township -Tax Base = \$8.4 B
Jurisdictional Tax Base (Option 2)	n/a	-City of Ann Arbor -Ann Arbor Township -Northfield Township -Tax Base = \$6.1 B

Summary of Potential Tax Base Scenarios

The following table summarizes the potential millage rates for the different tax base scenarios for the two options.

Tax Base Scenario	Full Service		Shuttle Service	
	Tax Base	Millage Rate	Tax Base	Millage Rate
County Tax Base	\$25.2 B	0.40 \$50/yr*	\$15.3 B	0.34 \$42.50/yr*
Jurisdictional Tax Base (Option 1)	\$12.0 B	0.84 \$105/yr*	8.4 B	0.61 \$76.25/yr*
Jurisdictional Tax Base (Option 2)	n/a	n/a	6.1 B	0.84 \$105/yr*

Summary of Potential Millage Rates

**based on a \$250,000 property value with a \$125,000 State Equalized Value*

The planning and financial analysis of this North-South Commuter Rail study suggests that an initial investment in the Shuttle Service option is a likely predecessor to a project approaching the Full Service implementation. If the overall institutional framework of transportation in the region remains unchanged, an exploratory committee can confirm the developing feasibility of such an investment in the jurisdictions benefitting and offer the possibility of creating an Act 196 authority in those jurisdictions with governance by the participating entities. This analysis was not conclusive regarding whether that will be on a countywide or more limited geographical boundary basis, and the exploratory committee should continue to consider the alternatives. The Task 12/13 Technical Memo provides more detail regarding peer agency comparison, service requirements, and governance and funding options associated with the Full Service and Shuttle Service service plans.

15.0 National Commuter Rail Comparison

15.1 Overview

Commuter rail systems in the United States generally fall in two categories, those that have been in operation for roughly a century in our major cities and those that are more recent startups. The historic systems tend to have well established fleets, significant operations, extensive ridership and relatively high fare box recovery, where the annual fare revenues approach or exceed 50% of the operating cost. There is little value in seeking to compare a start-up service, such as the North-South Commuter Rail system to such entities. However, over the last two decades, at least 7 new commuter systems have been started. Four systems offer characteristics and parameters similar to those of the proposed system and may be suitable for comparison including:

- Nashville, TN: Music City Star
- Minneapolis, MN: Northstar
- Orlando, FL: SunRail
- San Diego, CA: Coaster

Similarly, new hybrid rail systems can be employed as comparable systems as they have comparable fleet size, route miles, ridership, operating costs and revenues. This service typically operates light rail-type vehicles as diesel multiple unit trains (DMU). Currently, these trains do not meet FRA standards for operation in freight rail territory, and so must operate with temporal separation from freight rail traffic. As noted in Section 3.1, there is a potential for DMU's to be considered for such service in the future. Hybrid systems selected for comparison include:

- Denton County, TX: A-Train
- Austin, TX: Red Line

15.2 Methodology

Transit agencies are required to report a host of data to the FTA's National Transit Database (NTD). A subset of this data was selected to generate metrics that can be used to evaluate the efficiency of the proposed North-South system in comparison to similar systems in operation in the United States. The data enables the NTD to generate metrics which are commonly used to assess the performance of the transit system including:

- Operating Expense per Train Revenue Mile
- Operating Expense per Train Revenue Hour
- Operating Expense per Vehicle Revenue Mile
- Operating Expense per Vehicle Revenue Hour
- Operating Expense per Passenger Mile
- Unlinked Passenger Trips per Vehicle Revenue Mile

15.3 Commuter Rail Comparison

Most of the North-South performance metrics are less favorable than those of the selected comparable systems. However, the service effectiveness as measured by Unlinked Trips per Vehicle Revenue Mile of both North South Options is relatively strong. The comparative results are shown in the following summary table:

Performance Metric	System								
	North-South Option 1	North-South Option 5B	Music City Star	Northstar	SunRail (2015)**	Coaster	Red Line	A-Train	Average Value
OpEx per Train Revenue Mile	\$186.48	\$149.73	\$51.45	\$104.47	\$120.48	\$69.71	\$56.51	\$39.62	\$73.71
OpEx per Train Revenue Hour	\$5,455.14	\$3,441.22	\$1,491.85	\$3,440.70	\$3,827.64	\$2,753.59	\$1,361.41	\$1,015.38	\$2,315.09
OpEx per Vehicle Revenue Mile	\$46.62	\$49.91	\$21.68	\$28.82	\$52.93	\$13.84	\$56.51	\$19.87	\$32.28
OpEx per Vehicle Revenue Hour	\$1,363.79	\$1,147.07	\$658.61	\$947.87	\$1,630.57	\$546.69	\$1,361.41	\$507.27	\$942.07
OpEx per Passenger Mile	\$1.84	\$1.53	\$1.15	\$0.83		\$0.41	\$1.32	\$1.49	\$1.04
Unlinked Trips per Veh-Rev-Mi	2.02	3.89	1.22	1.36		1.20	2.73	0.91	1.48
*North-South Operating Costs are adjusted to eliminate the the costs of operating connecting bus service and the cost of leasing locomotives and coaches									
**SunRail started service in mid year 2014; Limited 2015 data is available.									

Performance Metrics Comparison Table

Based on the predicted ridership, the system could provide a high level of service effectiveness as measured by unlinked trips per vehicle revenue mile. This is particularly true of Option 5B: Shuttle Service (two train sets), which yields a value of 3.89, which is almost twice that of the peer group average.

This study evaluated a stand-alone commuter rail system operating independently of any existing transit agency. The possibility exists that the system can be made to operate more efficiently in combination with another commuter route, such as the proposed East-West line between Ann Arbor and Detroit. Such a combination might allow some efficiencies of scale and wider allocation of the relatively inelastic overhead costs. Similarly, operating the service under an existing multi-modal transit agency can achieve similar effects.

Much greater detail regarding the reporting requirements, financial comparison and profiles of the various systems can be found in the Task 20 Technical Memo.

16.0 Conclusion

There are two proposed options that are feasible for implementing a North-South Commuter Rail service that would benefit Livingston and Washtenaw County residents, but there will be considerable expense and organizational work to make either option a reality. This study demonstrates that both the estimated \$60 million capital costs for the Shuttle Option and the estimated \$112 million capital costs for the Full Service Option would qualify for partial funding by the federal Small Starts grant program. While the Small Starts program typically provides roughly 50% of the capital funding of a project, the study also shows that Act 196 of 1986 – and perhaps other federal, state, or local funding sources – may be able to provide a funding mechanism for remaining capital and on-going operating costs. Act 196 also offers a straightforward process for communities to organize themselves into an Authority that could make application for these funds and govern the construction and future operation of service.

However, the next step toward making North-South Commuter Rail possible would be for a local agency to select a preferred option and make the appropriate application to the Small Starts Program. This would require that the local agency be appropriately organized, funded, and recognized as the entity with authority to make such application. Typically this also requires a demonstration of a sufficient long-term commitment to the project, including documentation of appropriate financial resources to quantify the local matching participation.

With respect for the current lack of such a local organization or finances, and to avoid an immediate full commitment of local resources, an advantageous approach could be for the affected communities to create an exploratory committee consisting of representatives from the cities, townships and counties along the corridor. This group could then continue to develop and refine service concepts, explore funding possibilities, monitor the commuting and congestion experience in the corridor, and continue to evaluate prospective ridership demand. Such a committee could be formed either relatively informally by the interested jurisdictions, or in the form of an Act 7 of 1967 Interlocal Agreement.

Because many issues remain with respect to the proposed service, Act 7 could be considered as an early option for communities to pursue those issues without making a full commitment to the service and the associated financial and organizational obligations. Under Act 7, a collection of communities could continue the planning work needed to bring the project forward for federal funding. Specific objectives that could be furthered by such an organization could include:

- Service planning and refinement
- Station site acquisition or concept design
- Governance structure
- Project funding agreements (local and non-local)
- Environmental clearance

Over the course of this feasibility study, participants expressed considerable recognition of the benefits of transit service generally—and of the North-South Commuter Rail service specifically—in relieving congestion, reducing parking demand and providing transportation options in the commute between Howell and Ann Arbor. There is also widespread belief that commuter rail investment can facilitate economically productive and environmentally-friendly land development, both around the commuter rail stations and in the broader service area. Although there was general agreement about the overall community benefits of such a service, there was also specific concern about the cost of the proposed service and whether such an investment represents the best use of public dollars. It has been the intent of this study to compile complete and accurate data about the entirety of the commuter rail concept, so that future discussion of the project can be as informed as possible; and if any local authority chooses to move forward with an application for Small Starts funding, significant portions of the information required for that effort will be readily available for their use.

