



# Feasibility Study

Community Meeting #2

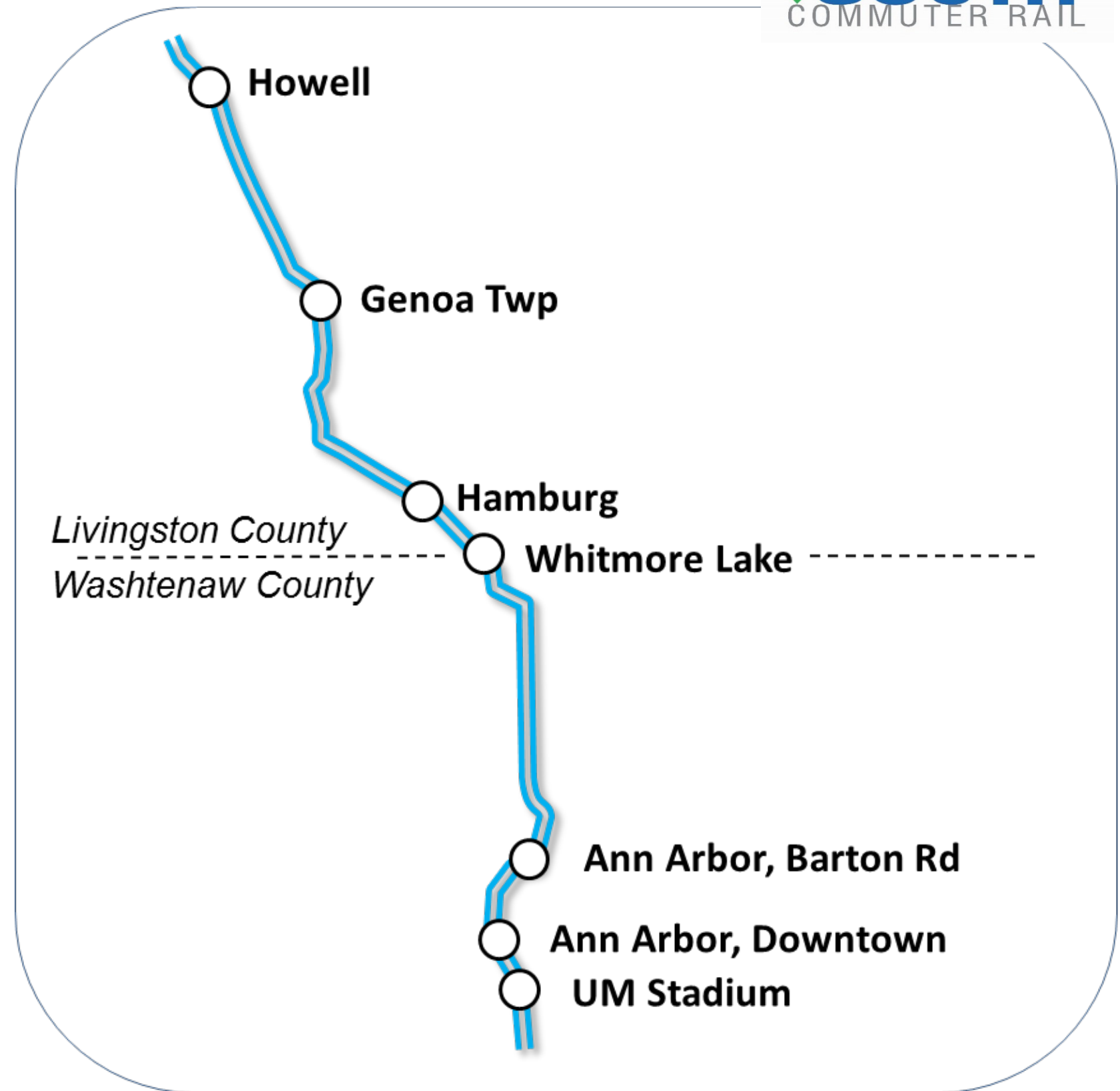
November, 2016

North-South Commuter Rail Feasibility Study

# EXECUTIVE SUMMARY

# History & Background

- Passenger service on an existing State-owned freight line
- Past efforts
  - US-23 Widening Proposal
  - WATS / Wally Coalition
  - RL Banks Study
  - N-S Ann Arbor Station Location Study
- Today's Feasibility Study
  - Deeper dive into cost, ridership, governance and funding
  - Determine and document eligibility for federal funding



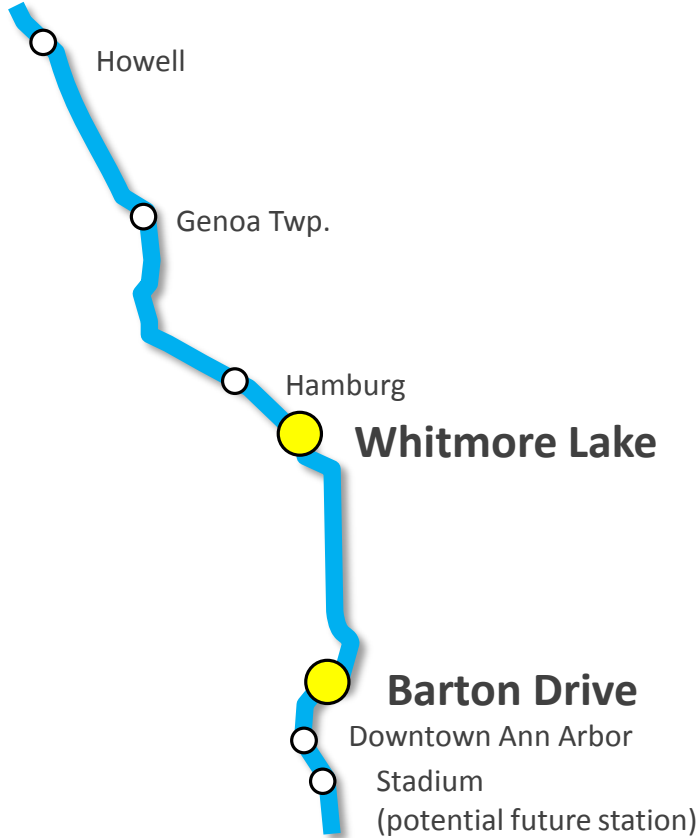
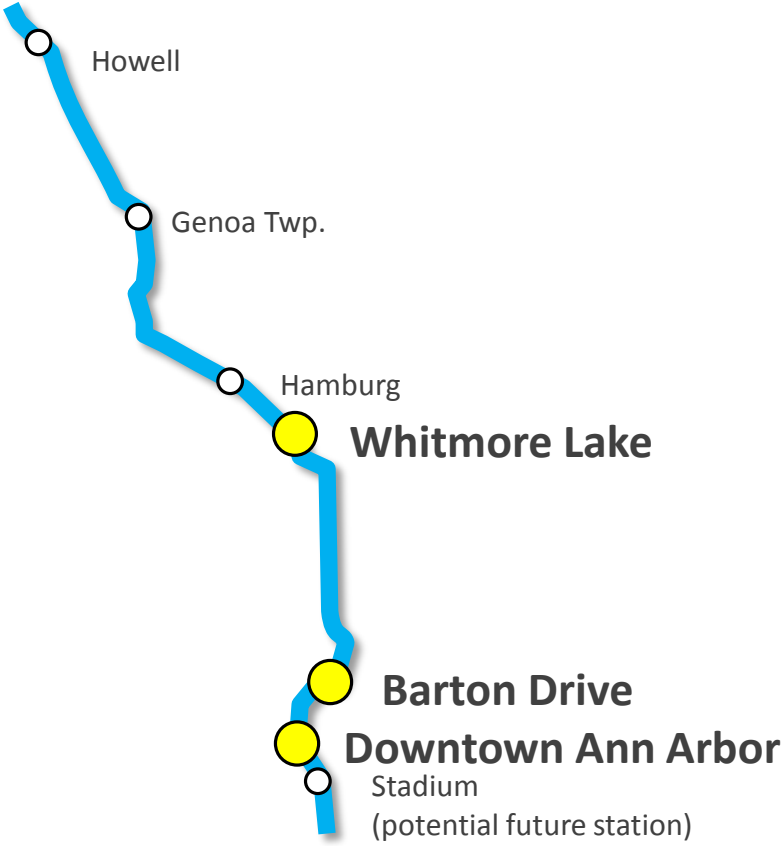
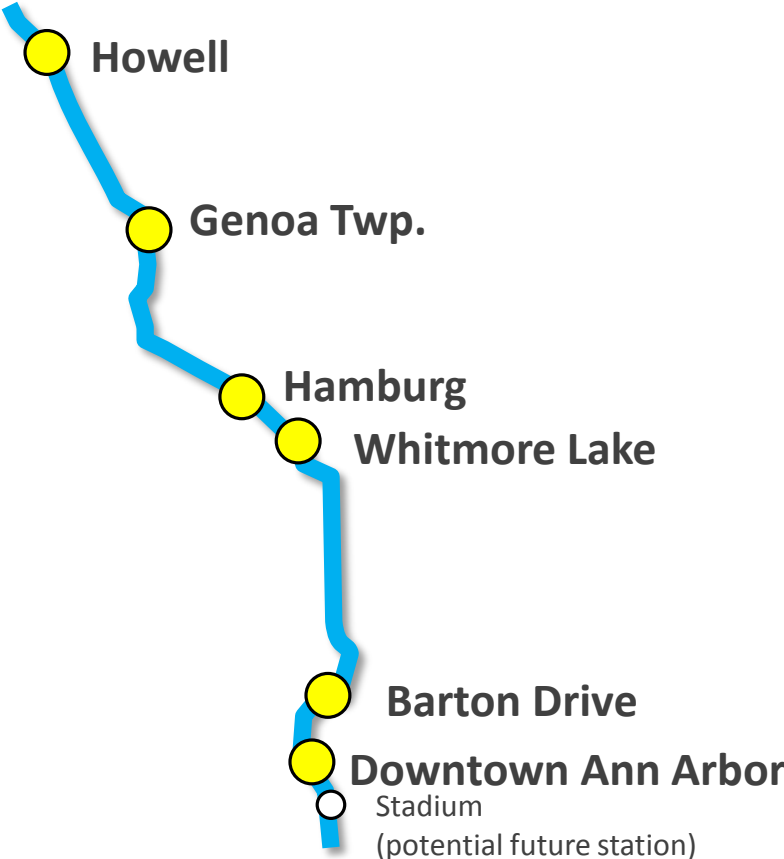
# Range of Rail Options Evaluated



“Full Service”

“Shuttle Service”

“Minimum Service”



● Proposed station locations

# Comparison of Rail Options



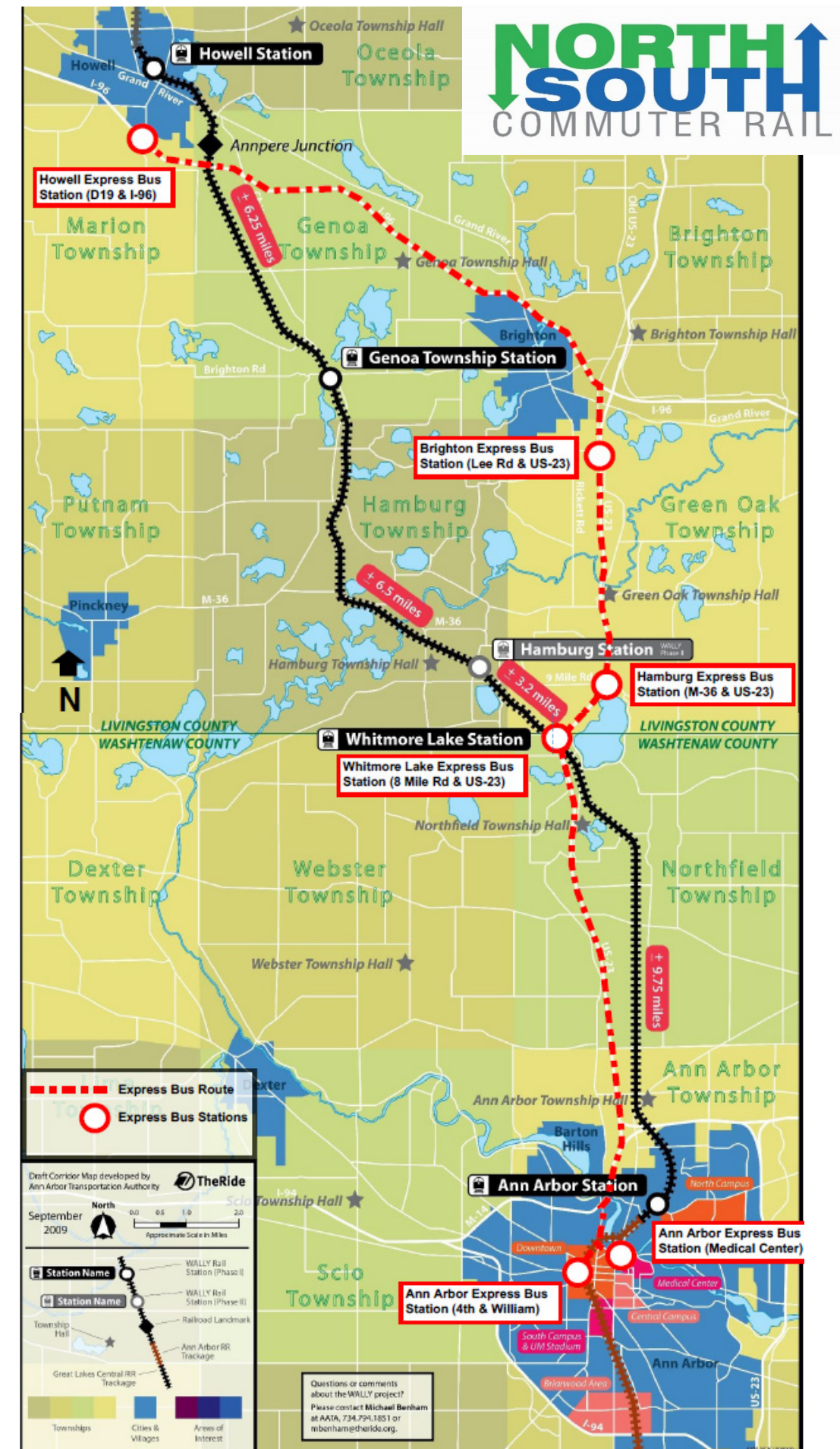
Option Name	Option Stations						Capital Expense (MM)	Operating Expenses (MM/year)	Ridership (one-way trips)		Travel Time
	Howell	Genoa	Hamburg	Whitmore Lk (WL)	Barton Drive (BD)	Ann Arbor (AA)			STOPS 2015	STOPS 2040	
Full Service	X	X	X	X	X	X	\$122.3	\$13.2	1,840	2,346	51 mins.
Shuttle Service(two train sets)				X	X	X	\$65.2	\$7.0	1,670	2,420	21 mins.
Minimum Service (w/o PTC)				X	X		\$21.9	\$5.7	800	1,100	18 mins.
									Year 1 Daily Ridership based on preference survey		
WALLY Coalition/RL Banks Study - 2008	X	X	X	X	X		\$32.4	\$7.1	2,600		36 mins.

# Other Options Evaluated

Option	Initial Capital Expense	Annual Operating Expense	Capacity	Travel Time (minutes)
No Build with Traffic System Management (TSM)	\$20.3 M	Not estimated	Maintain Existing Lanes	32 – 52
Mainline US-23 Reconstruction and Widening	\$384.5 M	Not estimated	Lane add on US-23	32 – 37
Additional High Occupancy Vehicle (HOV)		Not estimated	HOV Lane add on US-23	
ATM and HOV Combined (single lane add to median)	\$121 M	Not estimated	HOV and Peak Hour Lane add on US-23	33 – 37
Active Traffic Management (ATM)	\$91.1 M	Not estimated	Peak Hour Lane add on US-23	32 – 37
Full Capacity Express Bus* (36 buses)	\$6.9M (minimum) **	\$8.0M	2,346 trips	75 – 97
Starter Express Bus* (4 buses)	\$1.7M	\$0.7M	264 trips	60 – 81

\* Bus options are assumed to be running in regular traffic lanes, with no preferential treatment.

\*\* \$6.9 M in capital costs for the "Full Capacity Express Bus" includes only the improvements required at Eight-Mile Road. At the level of service envisioned for this option, the construction of bus stop facilities at other locations (pad, shelter, parking improvements) would be required to accommodate demand, and would add significantly to the capital costs of this option.



# What's Next?



- **Community Input**
  - What are your questions about the technical work?
  - What is your opinion of the project, considering the findings to date?
  - Do you have a preferred option from what is shown
- **The Feasibility Study**
  - Governance Options
  - Funding/Financial Analysis
  - Comparison to Other Rail Projects
- **Project Website:**  
[www.nsrailstudy.com](http://www.nsrailstudy.com)



# Feasibility Study

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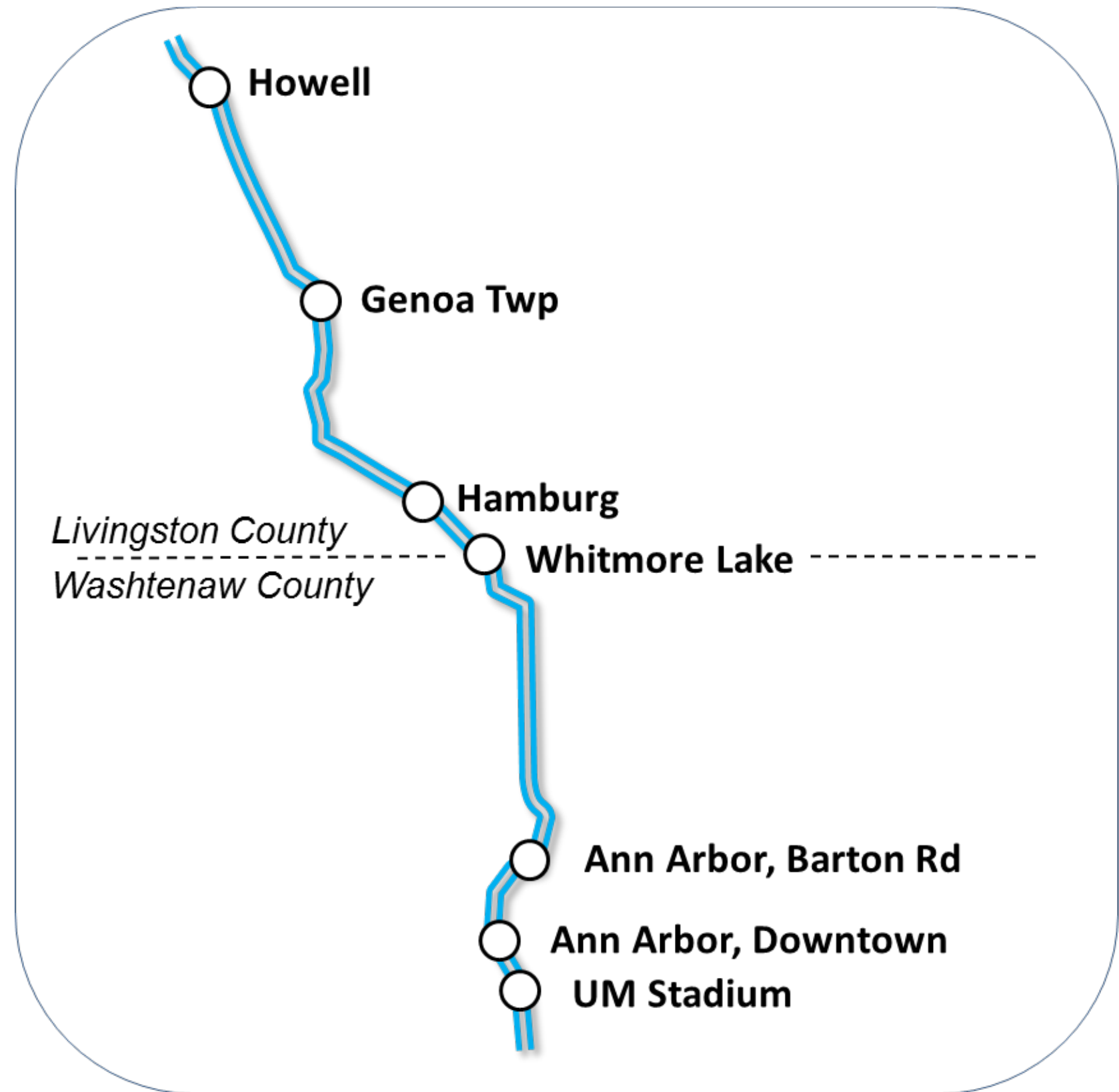


North-South Commuter Rail Feasibility Study

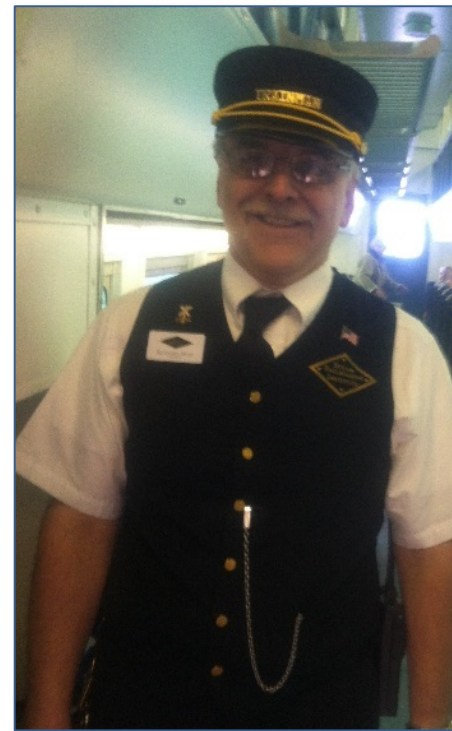
# BACKGROUND

# Introduction / History

- Passenger service on an existing State-owned freight line
- Early efforts (2006-2009)
  - US-23 Widening Project
  - WATS / Wally Coalition
  - RL Banks Study
- Stations being evaluated in Howell, Genoa Twp, Hamburg Twp, Whitmore Lake and Ann Arbor
- Initially 4 trains each direction per day
- AAATA as “Designated Authority”



# Train Service



# Stations

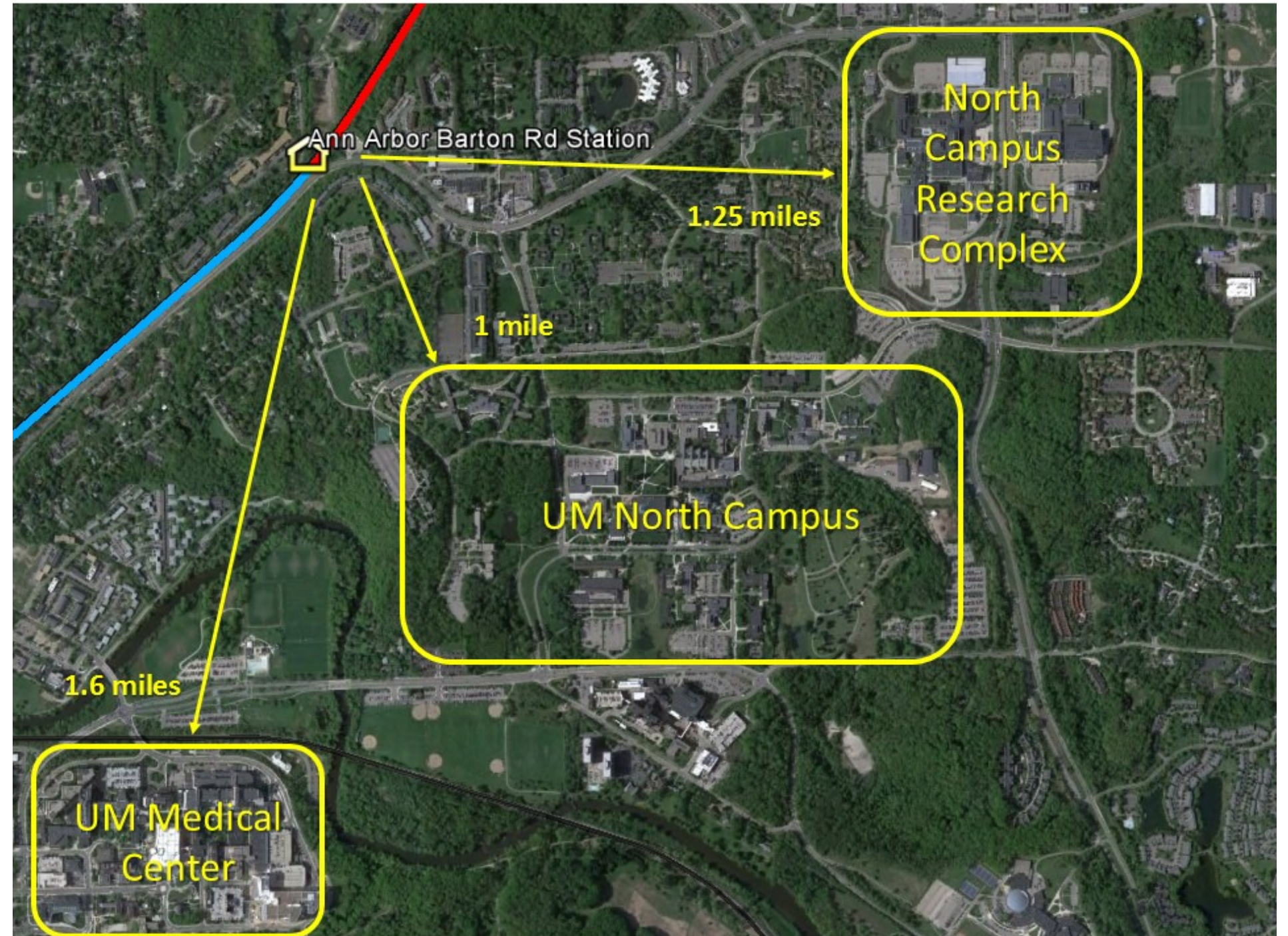
- Security / Lighting / Shelter
- Transit / Ped Access
- Auto / Bicycle Parking



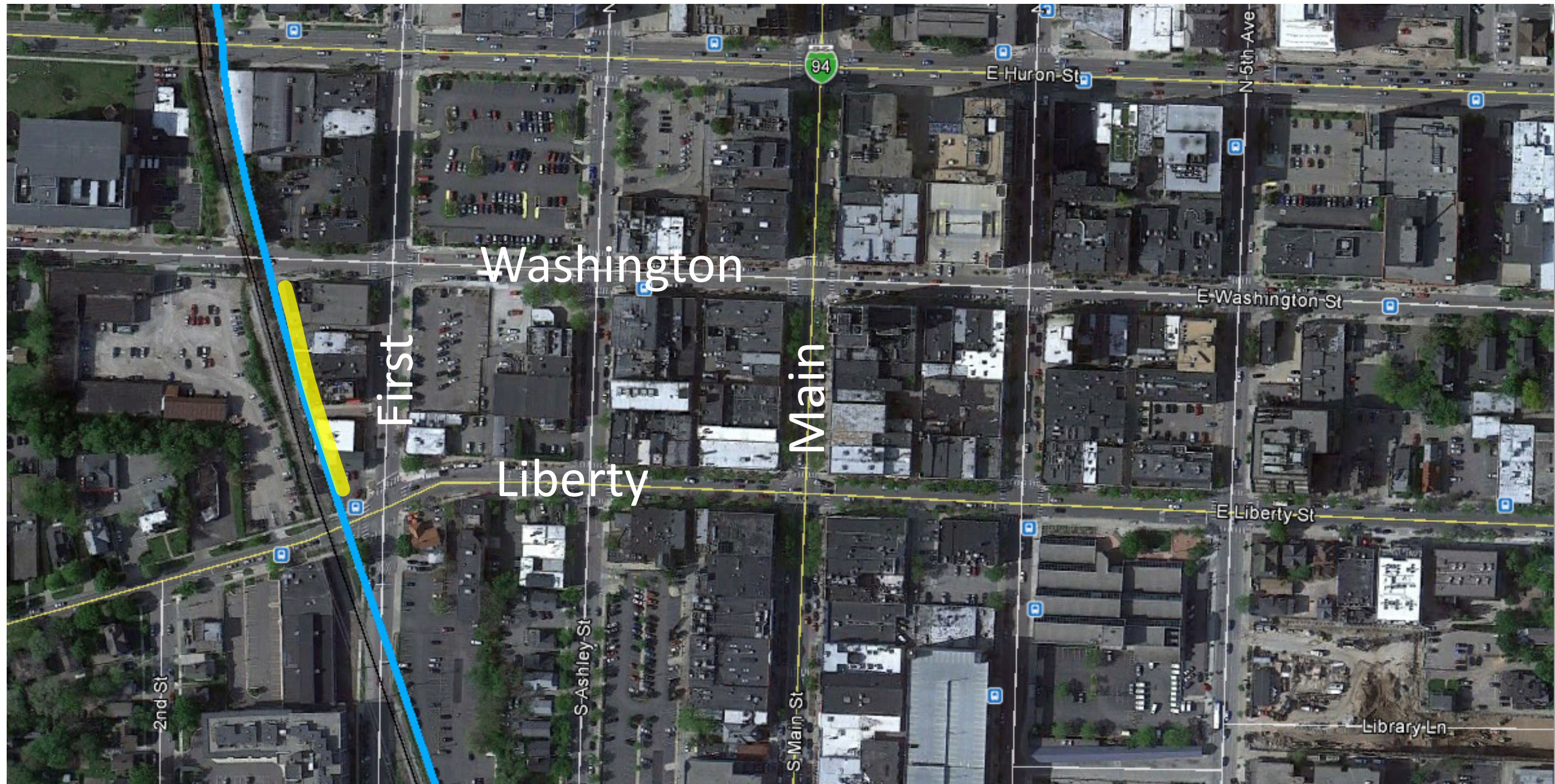
- Community Centers
- Transit Oriented Development
- Sustainable Design Techniques

# Barton Road Station

Shuttle buses from station on Plymouth near Barton Road



# Ann Arbor Downtown Station



Fits within existing railroad right-of-way, east of tracks

# Feasibility Study

- \$640,000 Federal Highway Administration
- \$160,000 local sources
- Federal Transit Administration
- Public Involvement
  - Steering Committee
  - Advisory Committee
  - Interested Citizens



North-South Commuter Rail Feasibility Study

# PROJECT STATUS



# Status of Major Work Tasks

Task	Status
Alternatives Analysis (Bus / BRT / Highway)	Complete
Service Plans	Complete
Cost Estimates	Complete
Station Locations	Candidates identified
Demand Estimates	Completed
Comparison to Other Recent Service Starts	Underway
Financial Analysis, New Starts Eligibility	Pending
Governance	Underway
Funding	Underway

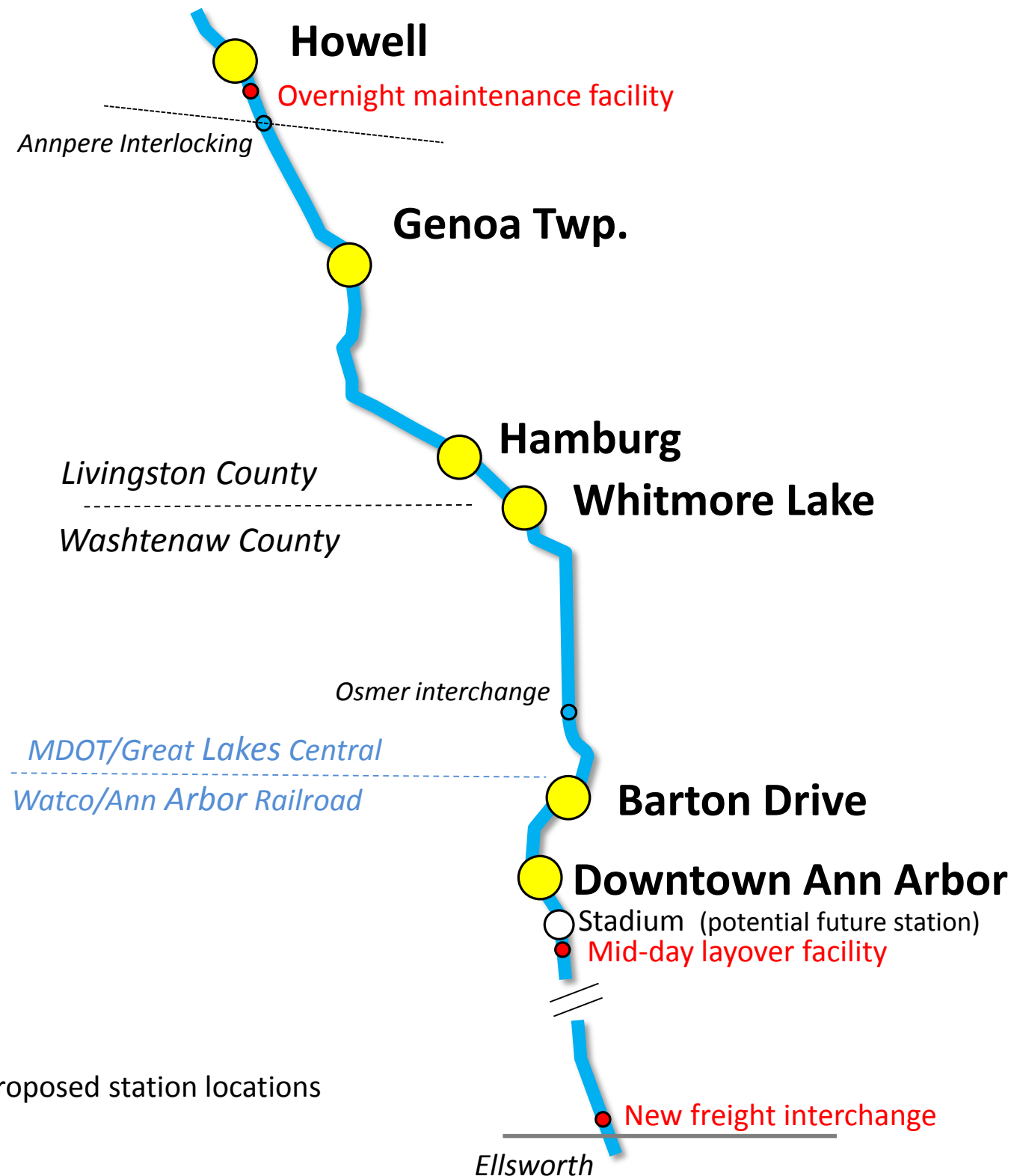
# Seven Rail Options Evaluated



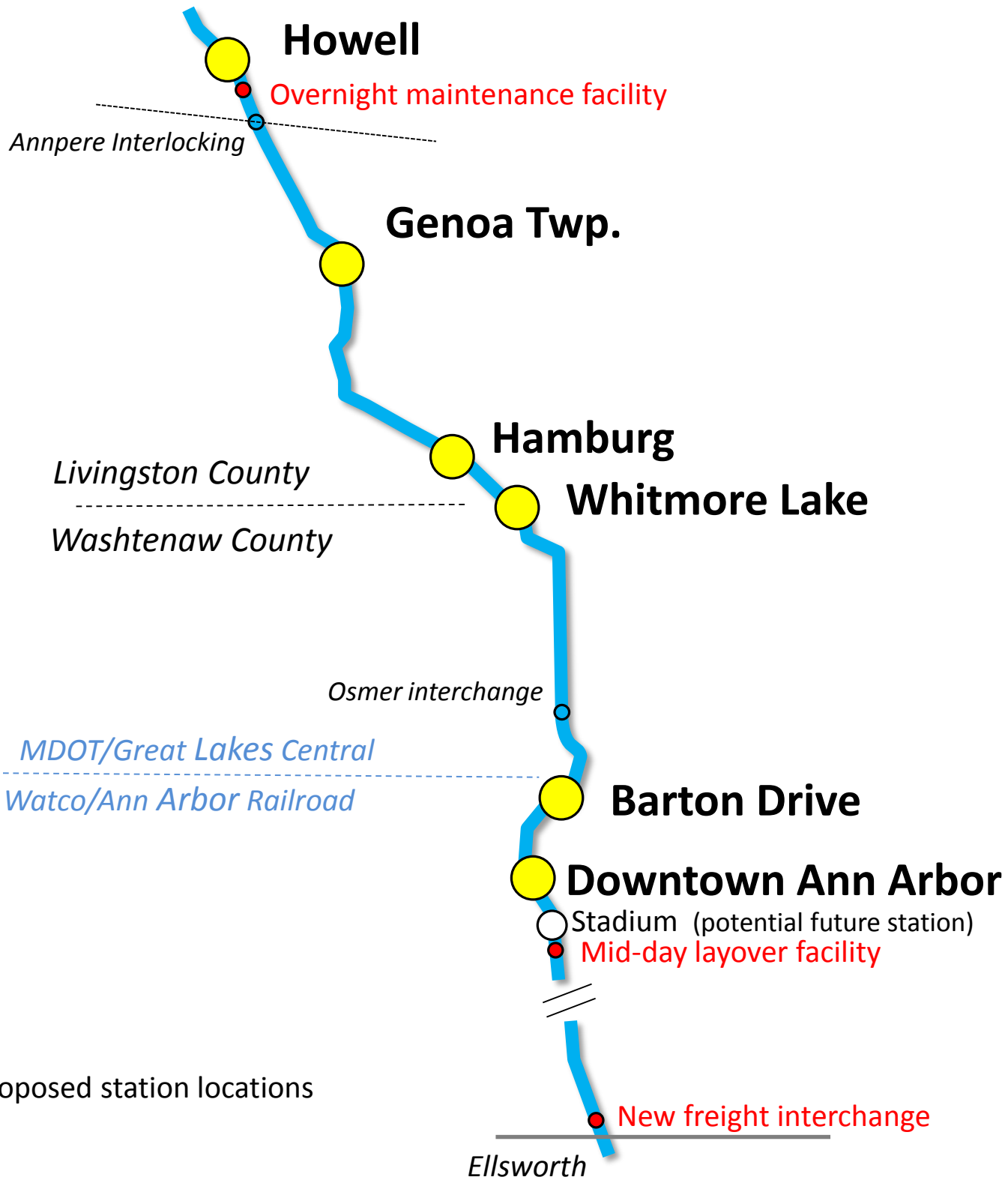
● Proposed station locations

# Option: Full Service

- Four train sets to Ann Arbor – AM /  
Four trains sets to Howell - PM
- Dedicated bus service at Barton Drive and Ann Arbor
- Mid-day layover facility in Ann Arbor  
Overnight/maintenance facility in Howell
- Requires CSX coordination at the Annpere Interlocking
- Relocated freight interchange at Ellsworth Road
- 60 mph max speed
- Gates at all public crossings
- Positive Train Control



# Full Service Schedule



## Morning Inbound Schedule

Station	Train 1	Train 2	Train 3	Train 4
Howell	6:00	6:30	7:00	7:30
Genoa	6:13	6:43	7:13	7:43
Hamburg	6:24	6:54	7:24	7:54
Whitmore Lake	6:31	7:01	7:31	8:01
Barton Drive	6:46	7:16	7:46	8:16
Ann Arbor	6:50	7:20	7:50	8:20

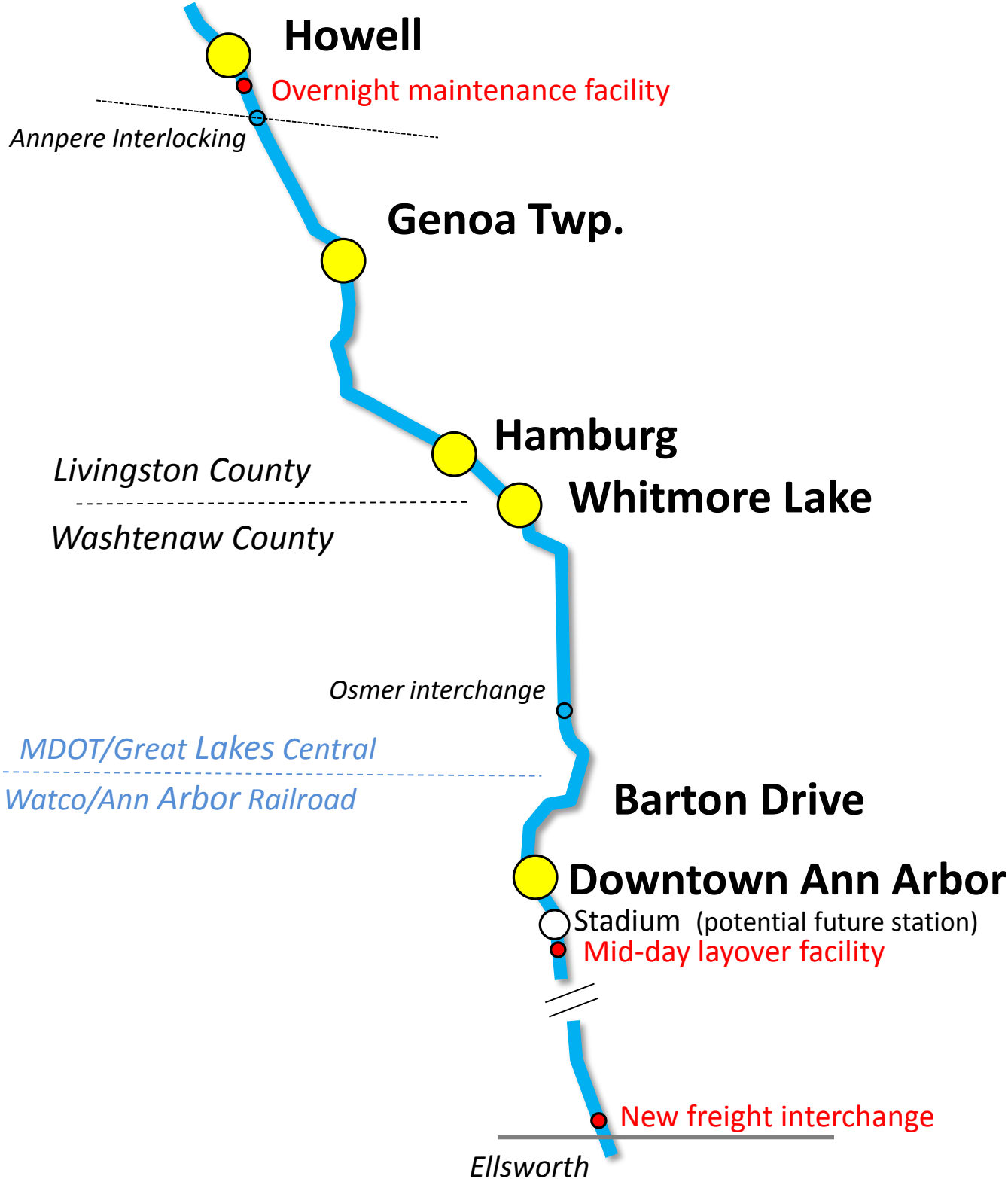
## Afternoon Outbound Schedule

Station	Train 1	Train 2	Train 3	Train 4
Ann Arbor	16:30	17:00	17:30	18:00
Barton Drive	16:37	17:07	17:37	18:07
Whitmore Lake	16:52	17:22	17:52	18:22
Hamburg	16:58	17:28	17:58	18:28
Genoa	17:09	17:39	18:09	18:39
Howell	17:21	17:51	18:21	18:51

# Option: Full Service w/o Barton Drive

Same project elements as Full Service option except:

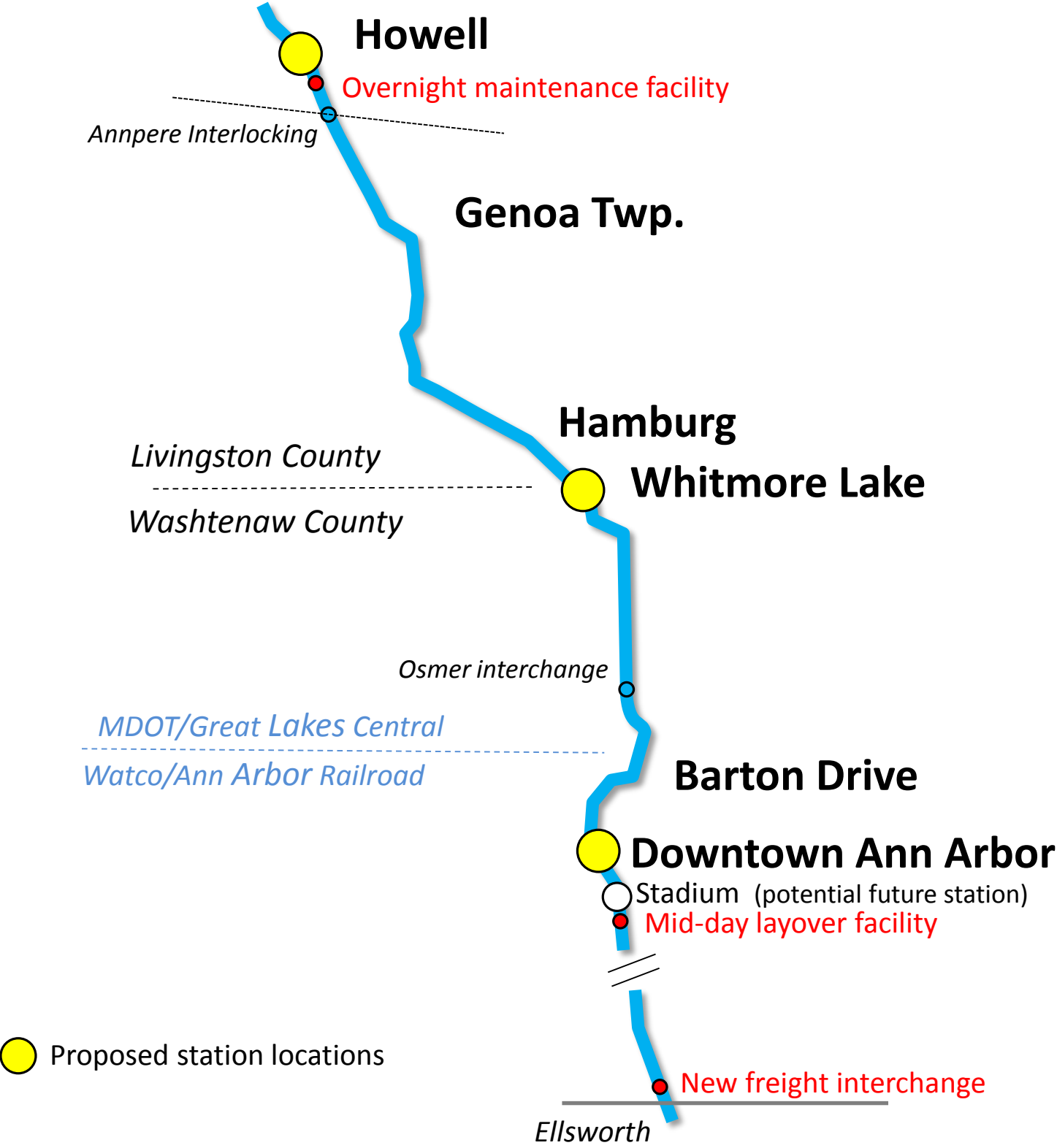
- No station at Barton Drive



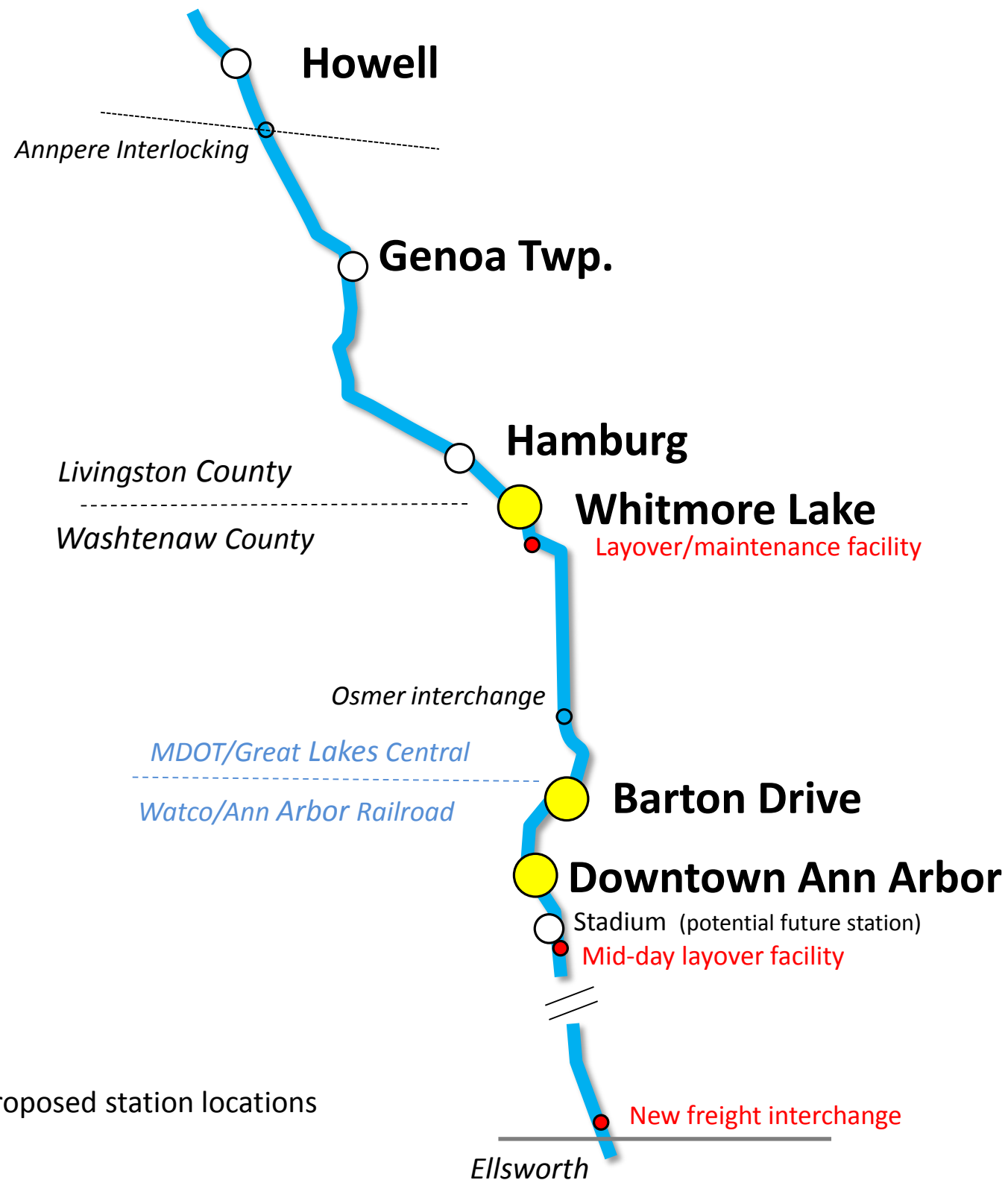
# Option: Starter Service – Howell/WL/AA

Same project elements as Full Service option except:

- Reduced number of stations to expedite service + reduce capital/operating costs

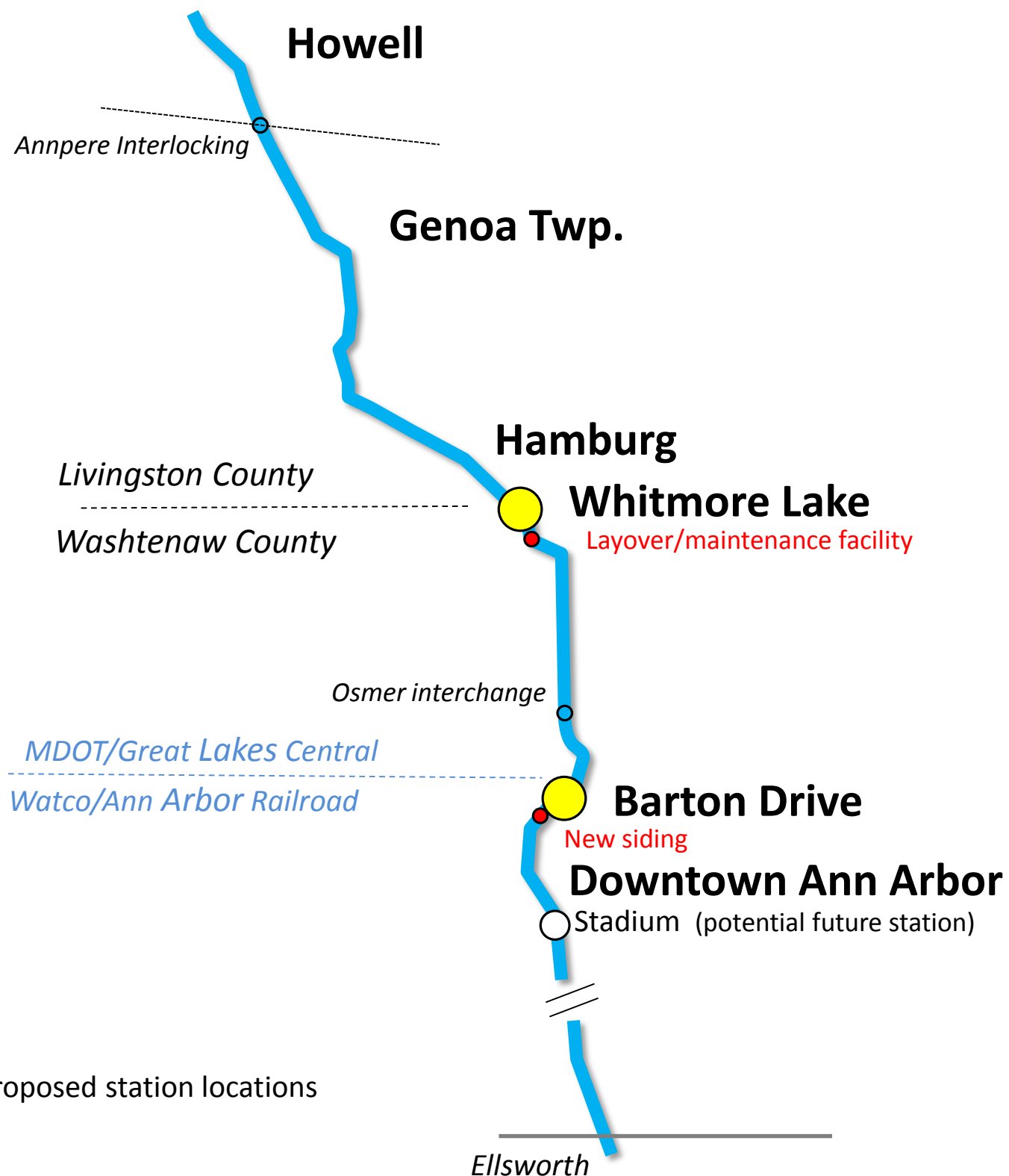


# Option: Shuttle Service – WL/BD/AA



- Train set(s) operating with a reverse commute to provide four trips to Ann Arbor in the AM / four trips to Whitmore Lake in the PM
- Dedicated bus service at Barton Drive Relocated freight interchange at Ellsworth Road
- Overnight layover and maintenance facility at Whitmore Lake
- Reduced mid-day layover facility in Ann Arbor
- 60 mph max speed
- Gates at all public crossings
- Positive Train Control
- 2 versions:
  - One train set
  - Two train sets (requires passing siding at Osmer)

# Option: Minimum Operating Configuration (MOC)



- A single train set runs back and forth between Whitmore Lake and Barton Drive
- Parking + layover/maintenance facility at Whitmore Lake
- Dedicated bus service at Barton Drive
- 40 mph max speed
- Grade crossing gates as warranted
- 2 versions:
  - PTC Option – 14 trains/day
  - PTC Exclusion – Centralized Traffic Control (CTC) signaling, 12 trains/day



# Capital Costs

- Inspected track, station and facility sites
- Selected feasible locations for stations and layover / maintenance facilities
- Coordinated w/ railroad property owners; establish requirements for use of railroad owned property
- Coordinated w/ FRA to confirm regulatory requirements, including Positive Train Control (PTC)
- Prepared Conceptual Designs for
  - Layover/maintenance facilities
  - Freight interchange sidings



# Capital Cost Value Engineering

## 15-20% Cost Reduction is Possible

- Grade Crossing Warning System improvements \$5.3M (MDOT Diagnostic Study Team)
- Maintenance facility \$16.6M (Functional Requirements Analysis)
- PTC \$11.0M – FRA waiver potential
- 20% contingency and 33% professional services



# Operating and Maintenance Costs

- Developed conceptual operating and maintenance plan
- Prepared operating and maintenance costs
  - Fleet size
  - Infrastructure
  - Manpower requirements
  - Labor rates
  - Insurance

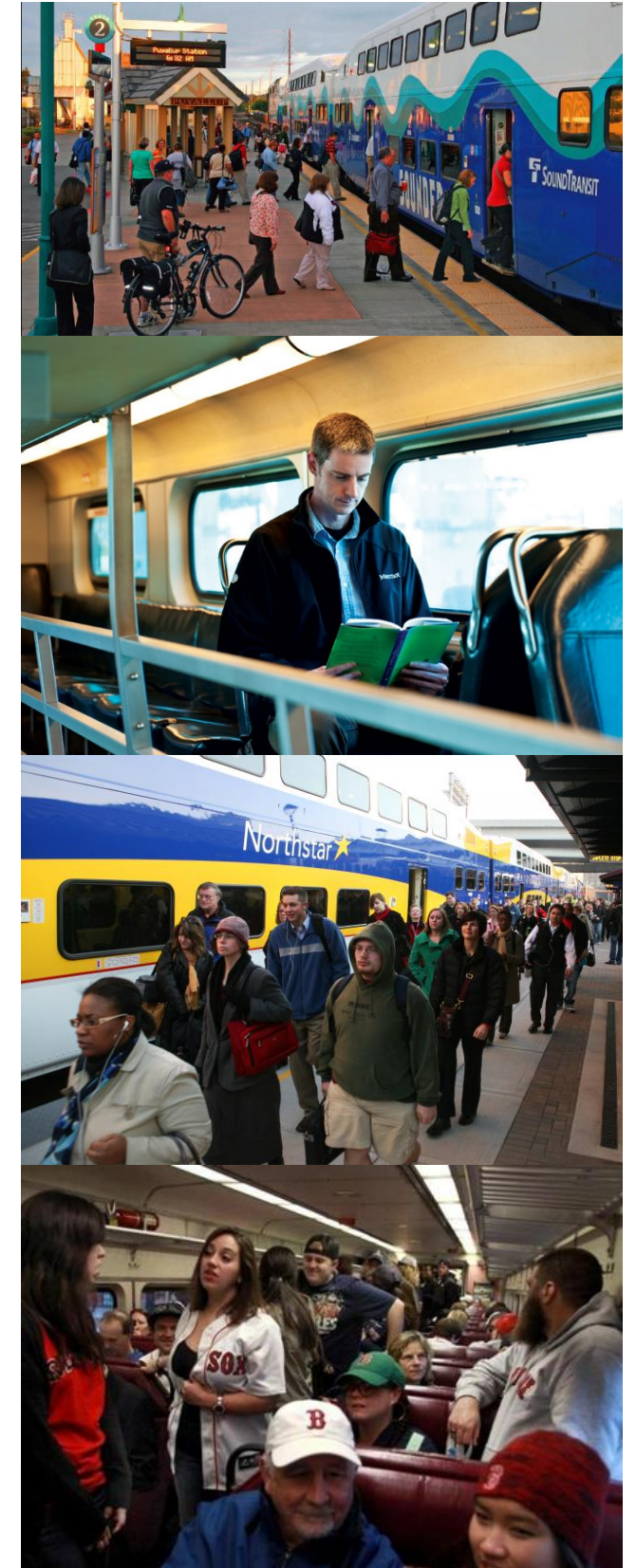


# Cost Comparison of Rail Options

Option Name	Stations						Capital Expense (MM)	Operating Expenses (MM/year)
	Howell	Genoa	Hamburg	Whitmore Lk (WL)	Barton Drive (BD)	Ann Arbor (AA)		
Full Service	X	X	X	X	X	X	\$122.3	\$13.2
Full Service w/o Barton Drive	X	X	X	X		X	\$121.0	\$13.1
Starter Service - Howell / WL / AA	X			X		X	\$118.4	\$12.9
Shuttle Service - WL/BD/AA (one train set)				X	X	X	\$61.3	\$6.6
Shuttle Service - WL/BD/AA (two train sets)				X	X	X	\$65.2	\$7.0
Minimum Operating Configuration w/ PTC				X	X		\$28.9	\$5.8
Minimum Operating Configuration w/o PTC				X	X		\$21.9	\$5.7

# Ridership Estimates – 3 Sources

- STOPS Ridership Model - AECOM
- Market Analysis – SEMCOG / WATS
- 2008 WALLY Coalition Survey, as adjusted by R. L. Banks Study



# Ridership Comparison of Rail Options

Option Name	Daily Rail Trips* (to and from Ann Arbor)	
	2015**	2040**
Full Service	1,205 - 1,840	1,618 - 2,346
Full Service w/o Barton Drive	1,190	1,540
Starter Service - Howell / WL / AA	1,170	1,500
Shuttle Service - WL/BD/AA (one train set)	1,350	1,960
Shuttle Service - WL/BD/AA (two train sets)	1,670	2,420
Minimum Operating Configuration	800	1,100

\* Assumes each person makes 2 trips per day

\*\* The market analysis and STOPS model used different target years but the effects on outcomes are negligible.

SOURCES: “North-South Commuter Rail Market Analysis”; Southeast MI Council of Governments; 2/1/2016, and “Ridership Forecasts for North-South Commuter Rail Feasibility Study- DRAFT Technical Memorandum”; AECOM; January 11, 2016

# Comparison with Prior Studies

Option Name	Option Stations						Capital Expense (MM)	Operating Expenses (MM/year)	Ridership (one-way trips)		Travel Time
	Howell	Genoa	Hamburg	Whitmore Lk (WL)	Barton Drive (BD)	Ann Arbor (AA)			STOPS 2015	STOPS 2040	
Full Service	X	X	X	X	X	X	\$122.3	\$13.2	1,840	2,346	51 mins.
Full Service w/o Barton Drive	X	X	X	X		X	\$121.0	\$13.1	1,190	1,540	48 mins.
"Starter Service" - Howell / WL / AA	X			X		X	\$118.4	\$12.9	1,170	1,500	44 mins.
Shuttle Service (one train set)				X	X	X	\$61.3	\$6.6	1,350	1,960	21 mins.
Shuttle Service (two train sets)				X	X	X	\$65.2	\$7.0	1,670	2,420	21 mins.
Minimum Operating Configuration w/ PTC				X	X		\$28.9	\$5.8	800	1,100	18 mins.
Minimum Operating Configuration w/o PTC				X	X		\$21.9	\$5.7	800	1,100	18 mins.
									Year 1 Daily Ridership (preference survey)		
WALLY Coalition/RL Banks Study	X	X	X	X	X		\$32.4	\$7.1	2,600	---	36 mins.

# Differences from Prior Studies

- **Extension into Ann Arbor**
  - Watco ROW
  - Track and grade crossing improvements
  - Additional Ann Arbor station
- **Major Facilities**
  - Full Maintenance Facility in Howell
  - Mid-day layover facility
  - Relocation of freight interchange
- **Positive Train Control**
  - Train separation/collision avoidance
  - Line speed enforcement
  - Temporary speed restrictions



# Highway Improvement Alternatives Reviewed (US-23 Study)

## Rejected by MDOT/FHWA

- No Build with Traffic System Management – rejected by MDOT/FHWA
  - Limited improvements
- US-23 Reconstruction and Widening – rejected by MDOT/FHWA
  - Widen US-23 to the median; reconstruct bridges, interchanges and mainline
- Additional High Occupancy Vehicle (HOV) – rejected by MDOT/FHWA
  - Widen US-23 to the median; reconstruct bridges, interchanges and mainline
  - 4 foot buffer between HOV and general purpose lane
- ATM and HOV – rejected by MDOT/FHWA
  - Shoulder lane designated as HOV for peak hour traffic

## Preferred by MDOT/FHWA; 2017 construction

- Active Traffic Management (ATM) – preferred by MDOT/FHWA; 2017 construction
  - Upgrade median shoulders for peak hour traffic

## Summary

Varying degrees of capacity improvements

Capital Expense: \$20M - \$385M

# Bus Alternatives Reviewed

Assume schedule and capacity matches Full Service rail option

## Full Capacity Express Bus

Utilize existing US-23/I-96 lanes; operate in mixed traffic  
36 motor coaches; 4 inbound AM/4 outbound PM trips  
2,346 daily trips (2040 projection; to and from Ann Arbor)

Howell to Ann Arbor Travel Time (6 stops)

- w/no incidents: +/- 75 mins.
- w/incidents: +/- 96 mins.

Capital Expense:	\$6.9M
Annual Operating Expense:	\$8.0M

## Bus Rapid Transit (rejected by MDOT/FHWA)

Widen US-23 and I-96 adding lanes for BRT  
36 motor coaches; 4 inbound AM/4 outbound PM trips  
2,346 daily trips (2040 projection; to and from Ann Arbor)

Howell to Ann Arbor Travel Time (6 stops)

- w/no incidents: +/- 75 mins.
- w/incidents: +/- 75 mins.

Capital Expense:	\$436M
Annual Operating Expense:	\$ 11.2M

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Assume schedule matches Starter rail option; capacity is limited

## Starter Express Bus

Utilize existing US-23/I-96 lanes; operate in mixed traffic  
4 motor coaches; 4 inbound AM/4 outbound PM trips  
264 daily trips (to and from Ann Arbor)

Howell to Ann Arbor Travel Time (4 stops)

- w/no incidents: +/- 60 mins.
- w/incidents: +/- 81 mins.

Capital Expense:	\$ 1.7M
Annual Operating Expense:	\$ 0.7M

North-South Commuter Rail Feasibility Study

# GOVERNANCE / FUNDING

# Governance and Funding

## Topics of Discussion

- Recent Commuter Rail Start Experience
- Major Michigan Governance Options
- Governance and Funding Directions
- Key Questions to Resolve

# Recent Commuter Rail Start Experience

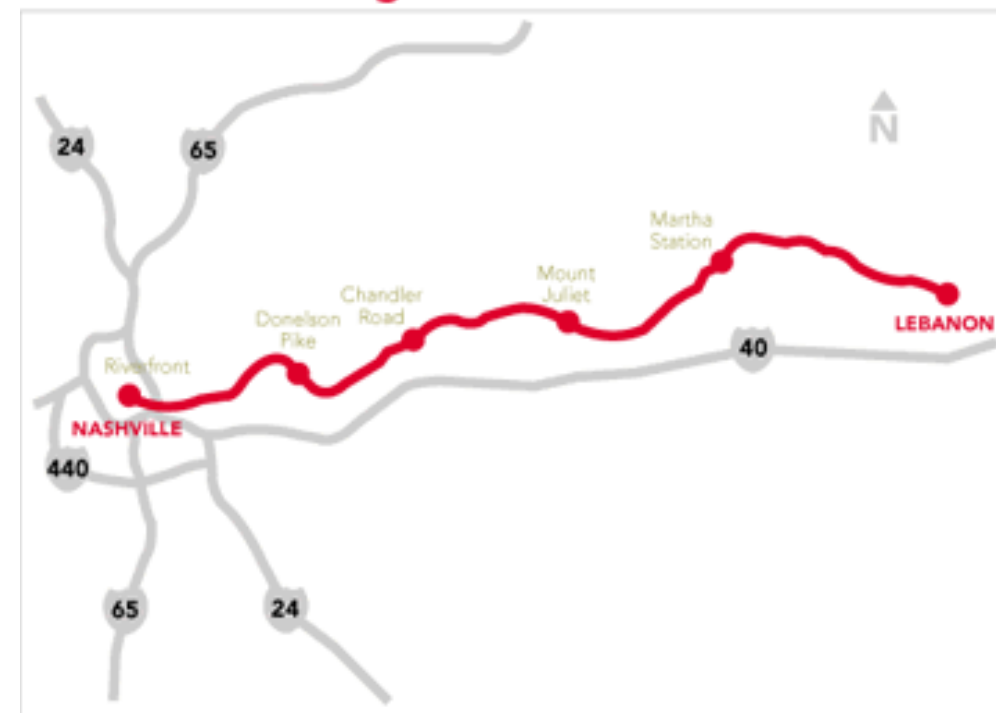
## East Corridor Commuter Rail, Nashville, TN

- City Authority Proposed Financial Plan

Proposed Source of Funds		Total Funding (Million\$)	% of Total
Federal	Section 5309 New Starts	\$24.0	58.5%
	FHWA High Priority Project Funds	\$7.4	18.0%
	Section 115 Funds (STP)	\$1.0	2.4%
State	TDOT – Transit Division	\$4.0	9.8%
Local	Wilson & Davidson Counties & NERA	\$4.7	11.5%
<b>Total</b>		<b>\$41.0</b>	<b>100%</b>



East Corridor Alignment



*\* Note that this project is exempt from New Starts criteria, because the proposed New Starts share is less than \$25 million.*

# Recent Commuter Rail Start Experience

## Northstar Corridor Rail Project, Minneapolis, MN

- State/Council Proposed Financial Plan

Proposed Source of Funds		Total Funding(Million\$)	Percent of Total
<b>Commuter Rail</b>			
Federal	Section 5309 New Starts	\$135.31	46.0%
State	MN GO Bond Proceeds	\$108.25	36.8%
Local	NCDA Capital Partners	\$27.06	9.2%
<i>Total Commuter Rail</i>		<i>\$270.62</i>	<i>92.0%</i>
<b>Multi-Modal Connection</b>			
Federal	Section 5309 New Starts	\$11.69	4.0%
State	MN GO Bond Proceeds	\$11.69	4.0%
<i>Total Multi-Modal Connection</i>		<i>\$23.39</i>	<i>8.0%</i>
<b>Total Project Capital</b>		<b>\$294.01</b>	<b>100%</b>

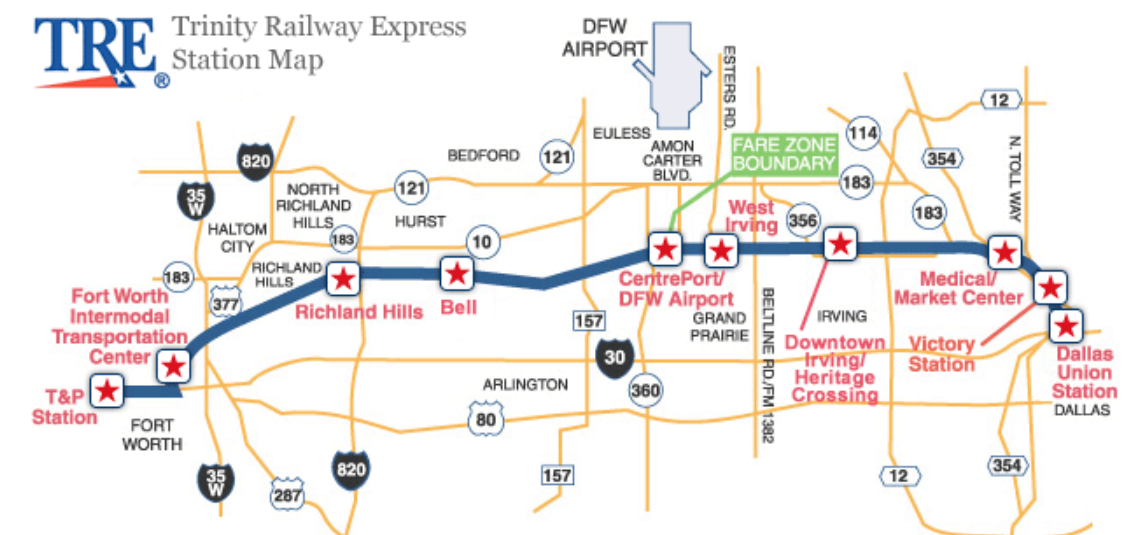


# Recent Commuter Rail Start Experience

## Trinity Railway Express RAILTRAN Phase II, Dallas-Ft. Worth, TX

- Authority (joint agreement) Proposed Financial Plan

Proposed Source of Funds		Total Funding (Million\$)	Percent of Total
Federal	Section 5309 New Starts	\$62.4	38.9%
	Section 5307 Formula	\$1.1	0.7%
	Flexible Funds (CMAQ & STP)	\$40.4	25.2%
	ISTEA Section 1108 Highway Funds (ITC)	\$16.1	10.0%
Local	Fort Worth Transportation Authority (FWTA) (0.5% sales tax)	\$21.3	13.3%
	Dallas Area Rapid Transit (DART)	\$8.1	5.0%
	Tarrant County & Cities	\$6.5	4.0%
	Railtran	\$4.6	2.9%
Other	Private – ROW Donation	\$0.1	0.0%
<b>Total</b>		<b>\$160.6</b>	<b>100%</b>



# Recent Commuter Rail Start Experience

## Key Takeaways from Recent Projects

- State, regional or sub-regional (multi-jurisdictional) authorities can advance capital and operations
- Federal share varies significantly, can combine multiple federal program funding sources including highway dollars
  - Should not be an expectation of 80% match for capital
- State may play a significant role
- Local share generally from multiple sources



# Capital Cost Comparison – Potential Funding

<b>Option Name</b>	<b>Capital Expense (MM)</b>	<b>Potential Section 5309 Funding Level (50%) (MM)</b>	<b>Potential Other Federal and State Funding Level (25%) (MM)</b>	<b>Potential Local Match Needed (25%) (MM)</b>
Full Service	\$122.3	\$61.2	\$30.6	\$30.6
Full Service w/o Barton Drive	\$121.0	\$60.5	\$30.3	\$30.3
Starter Service - Howell / WL / AA	\$118.4	\$59.2	\$29.6	\$29.6
Shuttle Service - WL/BD/AA (one train sets)	\$62.0	\$31.0	\$15.5	\$15.5
Shuttle Service - WL/BD/AA (two train sets)	\$65.2	\$32.6	\$16.3	\$16.3
Minimum Operating Configuration w/ PTC	\$28.9	\$14.5	\$7.2	\$7.2
Minimum Operating Configuration w/o PTC	\$21.9	\$11.0	\$5.5	\$5.5

# Michigan Governance Options

## Considerations

- Commuter rail requires intermunicipal governance
  - Need for coordinated decision-making structure
- Governance and funding decisions should be coordinated
  - Funding partners expect a role in governance; governance should be accountable to funding constituents
  - Stable local operations funding needs could be a larger long-term consideration than assembling capital funds
  - Specific provisions of law and agreements in formation will affect governance and funding, State of Michigan provides multiple potential options

# Michigan Governance Options for Consideration

Option	Considerations
<p>1. New Joint Powers Agreement (under Act 7) established between Corridor municipalities / authorities</p>	<ul style="list-style-type: none"> <li>• Could be used to continue project planning and development, or organize to fund pilot transit services and build market</li> <li>• Funding provisions of Act 7 may not be adequate for long-term project financing</li> </ul>
<p>2. New Transit Authority (under Act 196) covering all or part of Washtenaw and Livingston Counties</p>	<ul style="list-style-type: none"> <li>• New authority could plan for and implement complementary services in Livingston and Washtenaw Counties</li> <li>• Authority could be established to grow along with project phasing (under Section 7 allowing for voluntary expansion of district)</li> <li>• New Authority could potentially develop multi-jurisdictional authority with AAATA under Act 7</li> </ul>
<p>3. Livingston County joins Regional Transit Authority of SE Michigan</p>	<ul style="list-style-type: none"> <li>• Provision in RTA Act allows for adjoining Counties to join</li> <li>• RTA currently proposing to complete commuter rail connection between Detroit and Ann Arbor</li> <li>• NS Rail project not in RTA's 20-year plan, expansion outside initial four-County area unlikely to be first priority</li> <li>• Could be a long term option dependent on success of RTA</li> </ul>

**Options are not mutually exclusive – some combination may be needed or feasible**

# Governance and Funding Directions

## Governance Decisions – Possible Influences

- Consideration of new transit authority in Livingston County, could provide basis for advancing project
- Regional Transit Authority (particularly if successful in securing funding) will have a comprehensive effect on transit planning, governance, and funding throughout southeast Michigan and neighboring regions
- Initial ridership and cost-effectiveness assessments indicate the N-S commuter rail service feasibility will improve as the region grows
- Governance plans may require
  - Continuing communication among interested jurisdictions
  - Monitoring RTA status, plans, future
  - Consideration of exploratory/formative structure:
    - early phase planning sponsorship pending economic feasibility
  - Combination of Act 7 / Act 196 / RTA

# Key Questions to Resolve / Discussion

- **Scope and Timing of Project**

- What project is being pursued? Where and what cost?
- Is there an exploratory phase ahead?
- Who are the project champions (esp. non-governmental)?

- **Governance**

- What is the geographic extent of corridor and who should be involved in governance?
- What is potential to establish new transit agency entity in all (or some portion) of Livingston County?  
Where does North-South Rail fall in terms of County priorities?
- What is the potential for RTA to consider advancing the project, and how affected by the outcome of the 2016 RTA vote?

- **Funding**

- What are viable local resources for transit capital and operating funding?
- What is funding capacity of State, RTA ,196 auth., others?
- How can further project development activities be funded?

North-South Commuter Rail Feasibility Study

## NEXT STEPS

# Next Steps

Task	Status
Alternatives Analysis (Bus / BRT / Highway)	Complete
Service Plans	Complete
Cost Estimates	Complete
Station Locations	Candidates identified
Demand Estimates	Completed
Comparison to Other Recent Service Starts	Underway
Financial Analysis, New Starts Eligibility	Pending
Governance	Underway
Funding	Underway

# Next Steps

- January/February 2017
  - Steering Committee
  - Advisory Committee
  - Community Meetings
- February 2017
  - Summary + Final Recommendations





# Feasibility Study

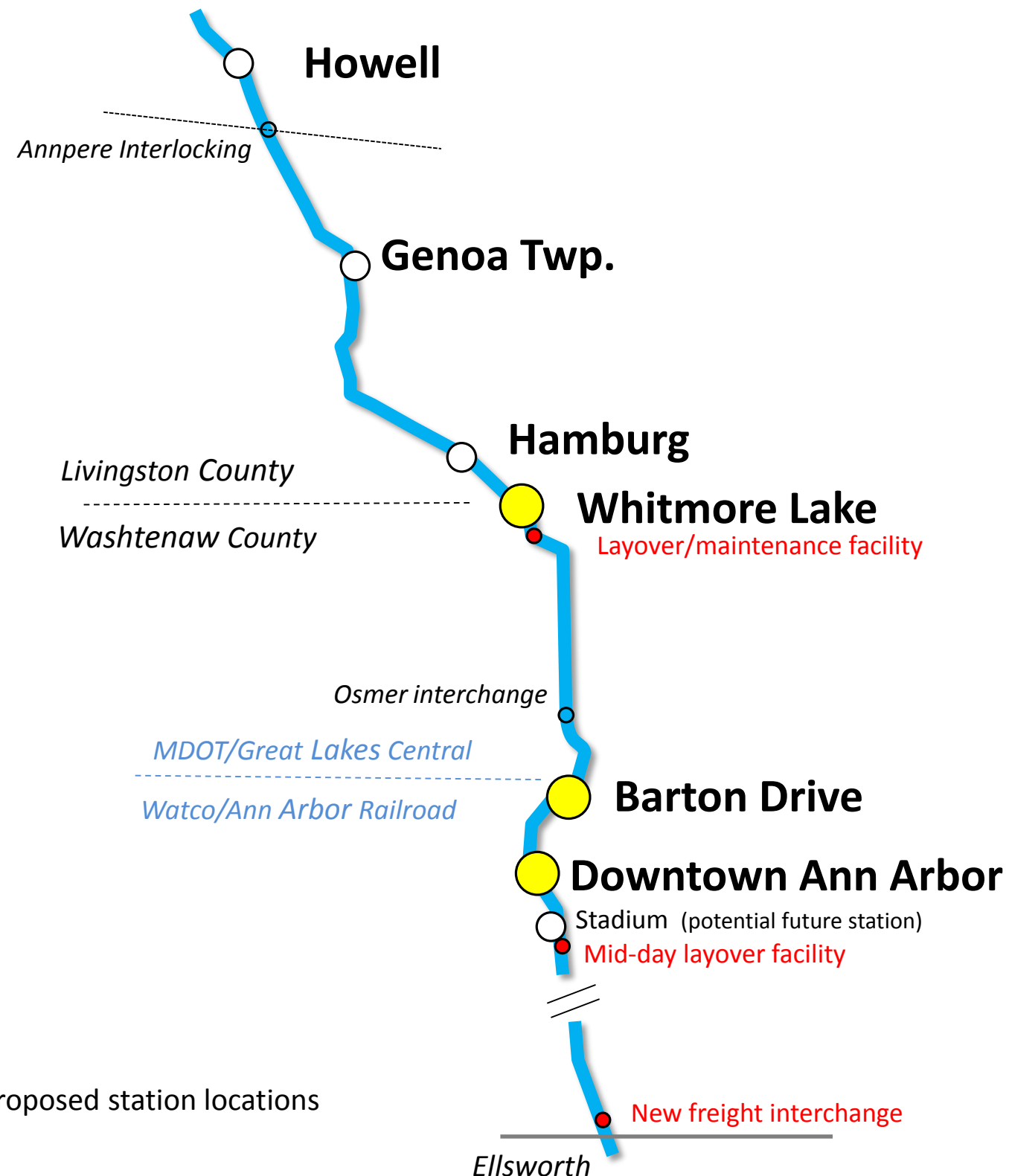
Community Meeting #2

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# Options Considered for Additional Analysis

- Shuttle Service – WL/BD/AA
- Bi-Directional Service-Diesel Electric
- Bi-Directional Service-Diesel Multiple Unit (DMU)

# Shuttle Service –WL/BD/AA



## Project Elements

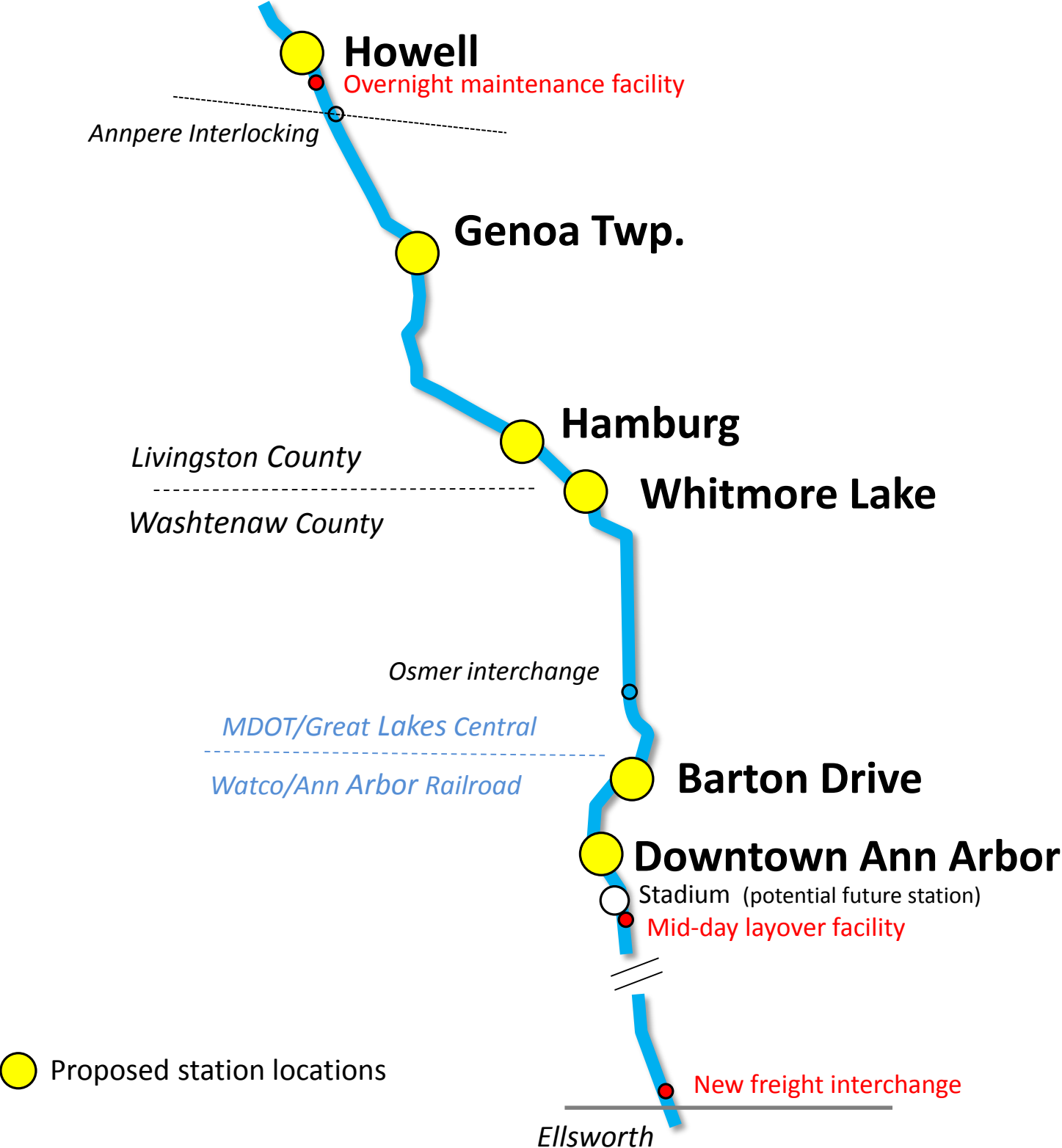
- Diesel-electric locomotives and coaches
- One to two train sets operating with a reverse commute to provide four trips to Ann Arbor in the AM / four trips to Whitmore Lake in the PM

## Potential Advantages

- Eliminates infrastructure north of Whitmore Lake
- Better utilization of labor and equipment
- Reduced overnight layover and maintenance facility at Whitmore Lake
- No CSX coordination required
- Eliminated or reduced mid-day layover facility in Ann Arbor
- May require passing siding at Osmer

*Shuttle Service was evaluated*

# Bidirectional Service w/Diesel Electric



## Project Elements

- Diesel-electric locomotives and coaches
- Two train sets operating with a reverse commute to provide two trips between Ann Arbor and Howell and four trips between Ann Arbor and Whitmore Lake to serve the AM and PM commutes
- Requires passing at Osmer and possibly Whitmore Lake sidings

## Potential Advantages

- Better utilization of labor and equipment
- Reduced layover and maintenance facilities

*Bidirectional Service w/Diesel Electric was considered but not evaluated within the current scope of work*

# Bidirectional Service w/DMU

## Project Elements

- Diesel multiple unit (DMU) in one or two car consists (NJT, DCTA, Capital Metro, BART, FWTa)
- Bi-directional service at 30 minute headways throughout the day
- May include timed passing at one or more center platform stations or an existing passing siding

## Potential Advantages / Challenges

- FRA compliance / waiver requirements
  - Temporal separation
  - Termination south of the Annpere interchange
- Shunting difficulty experienced in US operations
- Unique maintenance requirements
- Initial cost (\$3.6 M ea)
- Eliminates opportunity for shared fleet and maintenance with the East-West Corridor service
- Eliminates mid-day layover facility in Ann Arbor

*Bidirectional service w/DMU was considered and dismissed for the reasons noted above*



North-South Commuter Rail Feasibility Study

# RIDERSHIP ESTIMATION DETAILS

# Ridership Estimates - Models

## National Model: STOPS

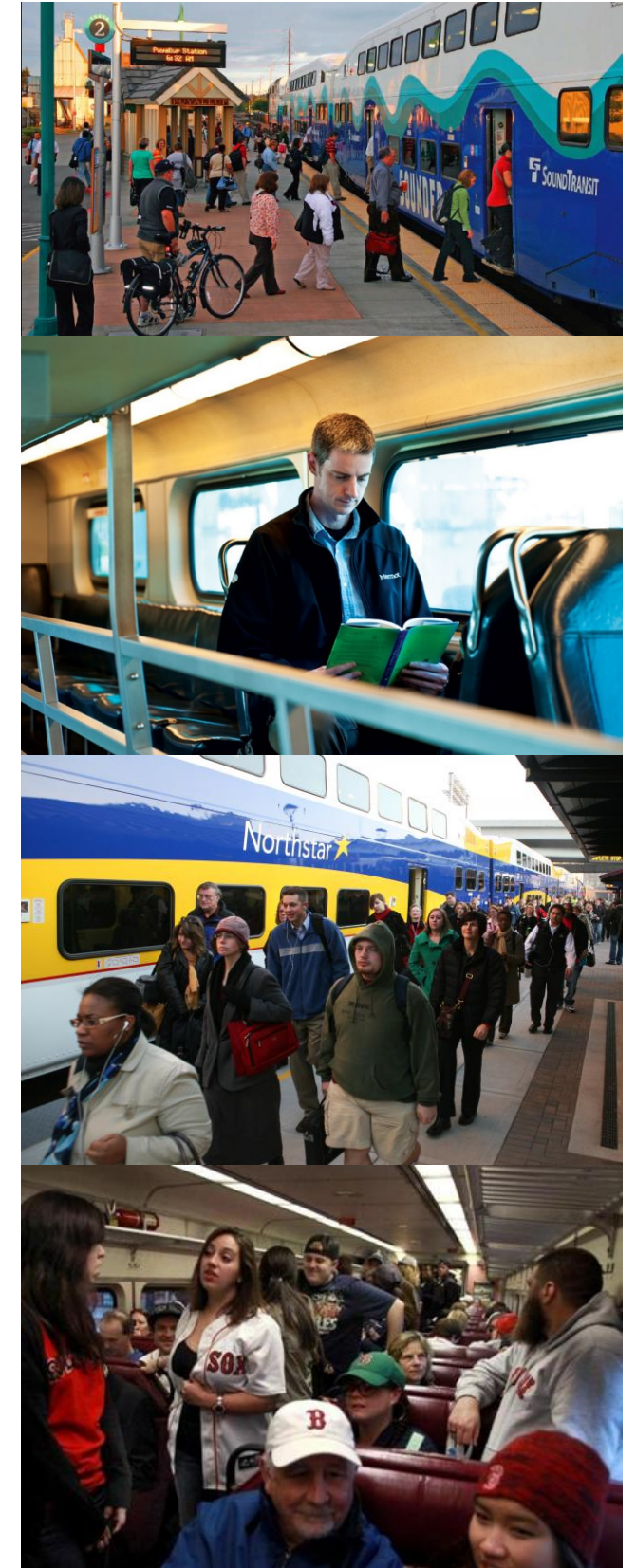
- Simplified Trips-on-Project Software
- “No questions asked”, FTA-approved
- Inputs:
  - Census Data Highway and Transit Networks
  - Travel Times (e.g. model assumes an average travel time of 37 minutes for the Howell district versus 35 minutes for Whitmore Lake.)
- Not Inputs:
  - Local Travel Behaviors
  - Commuter rail fares
  - Gasoline prices
  - Parking costs

Local Models: Not Available for this Study



# Ridership Estimates – Market Analysis

- Uses local population and employment forecasts
- Applied to locally-forecasted volumes of work trips by all modes
- Assumes typical local transit mode share using local data (5%)
- No measures exist for actual rail mode share in this region





# Ridership Estimates – Survey Data

- **WALLY Coalition Surveys - 2007**
  - University of Michigan
  - Washtenaw County
  - Ann Arbor DDA
  - Chambers of Commerce in Ann Arbor, Brighton and Howell
- **R.L. Banks Review of Survey Data**
  - Adjusted for Rider Frequency
  - Eliminated overlapping jurisdictions
  - Added Environmental Protection Agency, St. Joseph Mercy Hospital and Washtenaw Community College
- **“Stated Preference” technique**



# Comparison of Rail Options - Ridership

## Daily Rail Trips\* to and from Ann Arbor

Option Name	SEMCOG / WATS (Market Analysis)		STOPS (Forecasting Model)	
	2010**	2035**	2015**	2040**
Full Service	1,205	1,618	1,840	2,346
Full Service w/o Barton Drive	--	--	1,190	1,540
Starter Service - Howell / WL / AA	--	--	1,170	1,500
Shuttle Service – WL/BD/AA (one train set)	--	--	1,350	1,960
Shuttle Service – WL/BD/AA (two train sets)	--	--	1,670	2,420
Minimum Operating Configuration	--	--	800	1,100

- \* Assumes 2 trips per employee per day
- \*\* The market analysis and STOPS model used different target years but the effects on outcomes are negligible.
- SOURCES: “North-South Commuter Rail Market Analysis”; Southeast MI Council of Governments; 2/1/2016, and “Ridership Forecasts for North-South Commuter Rail Feasibility Study- DRAFT Technical Memorandum”; AECOM; January 11, 2016

# Station Level Market Analysis – Full Service

## Daily Rail Trips to and from Ann Arbor

Station (catchment area)	2010		2035	
	Total Ann Arbor Work Trips*	Rail Share (5% of Ann Arbor Work Trips)	Total Ann Arbor Work Trips*	Rail Share (5% of Ann Arbor Work Trips)
<b>Howell Area</b>	3,018	151	4,360	218
<b>Genoa</b>	1,875	94	3,868	193
<b>Hamburg</b>	5,175	259	7,005	350
<b>Whitmore Lake Area</b>	14,030	702	17,120	856
<b>Total</b>	24,098	1,205	32,354	1,618

\*Assumes 2 trips per employee per day

SOURCE: North-South Commuter Rail Market Analysis; Southeast MI Council of Governments; 2/1/2016

# UM Ridership, by Station Area (based on Market Analysis)

Daily Work Trips to and from the U-M

<b>Station</b> (catchment area)	<b>Total U-M Employees</b>	<b>Total U-M Employee Trips*</b>	<b>5% of U-M Employee Trips</b>	<b>Percent of Total U-M Employee Trips</b>
<b>Howell Area</b>	877	1,754	88	20%
<b>Genoa</b>	575	1,150	58	13%
<b>Hamburg</b>	802	1,604	80	18%
<b>Whitmore Lake Area</b>	2,169	4,338	216	49%
<b>Total</b>	4,423	8,846	442	100%

\*Assumes 2 trips per employee per day

SOURCE: North-South Commuter Rail Market Analysis; Southeast MI Council of Governments; 2/1/2016