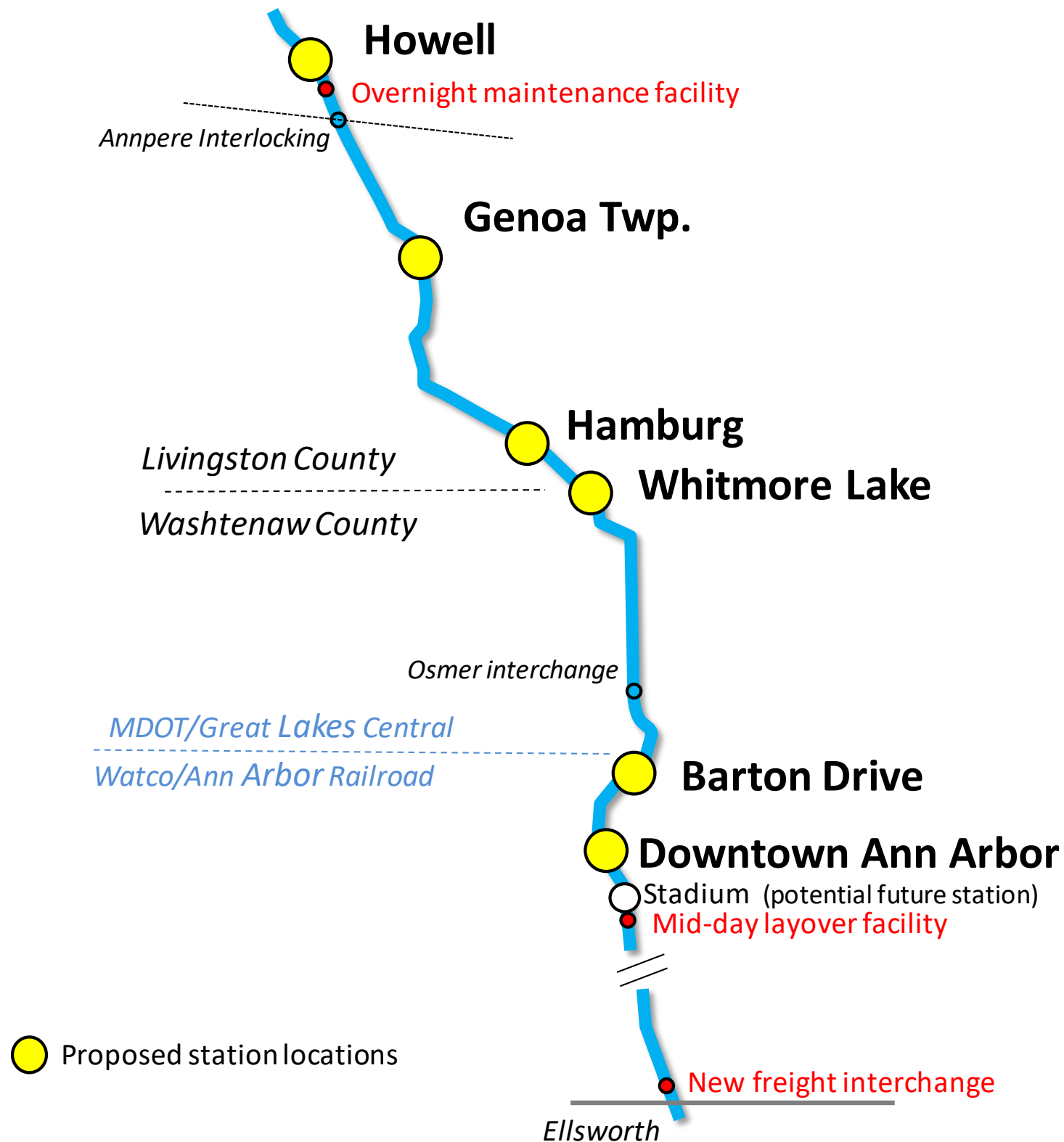


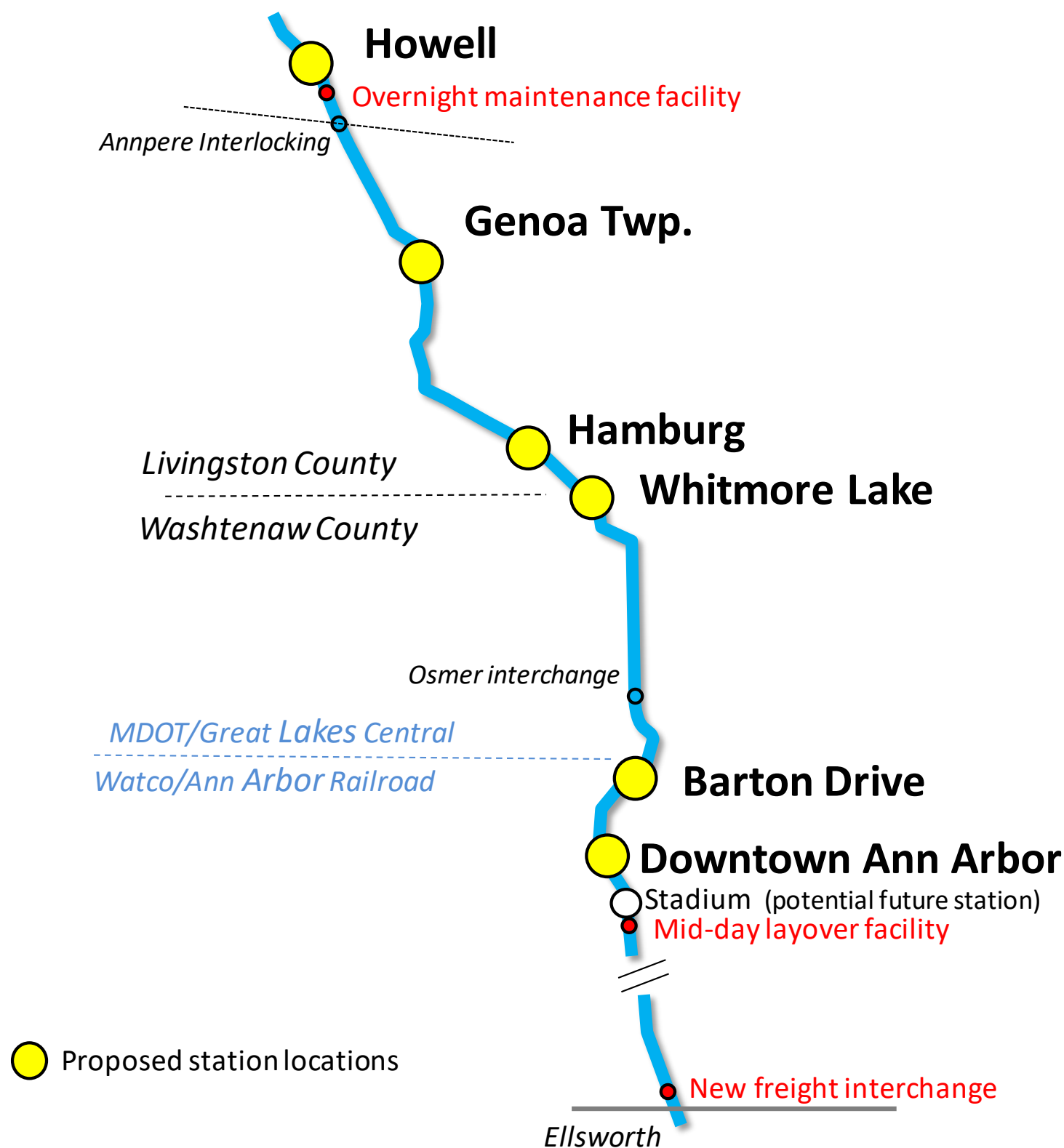
Option 1: Full Service

(Selected for Additional Analysis)

- Four train sets to Ann Arbor – AM /
Four trains sets to Howell - PM
- Dedicated bus service at Barton Drive
- 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



Option 1: Full Service Schedule



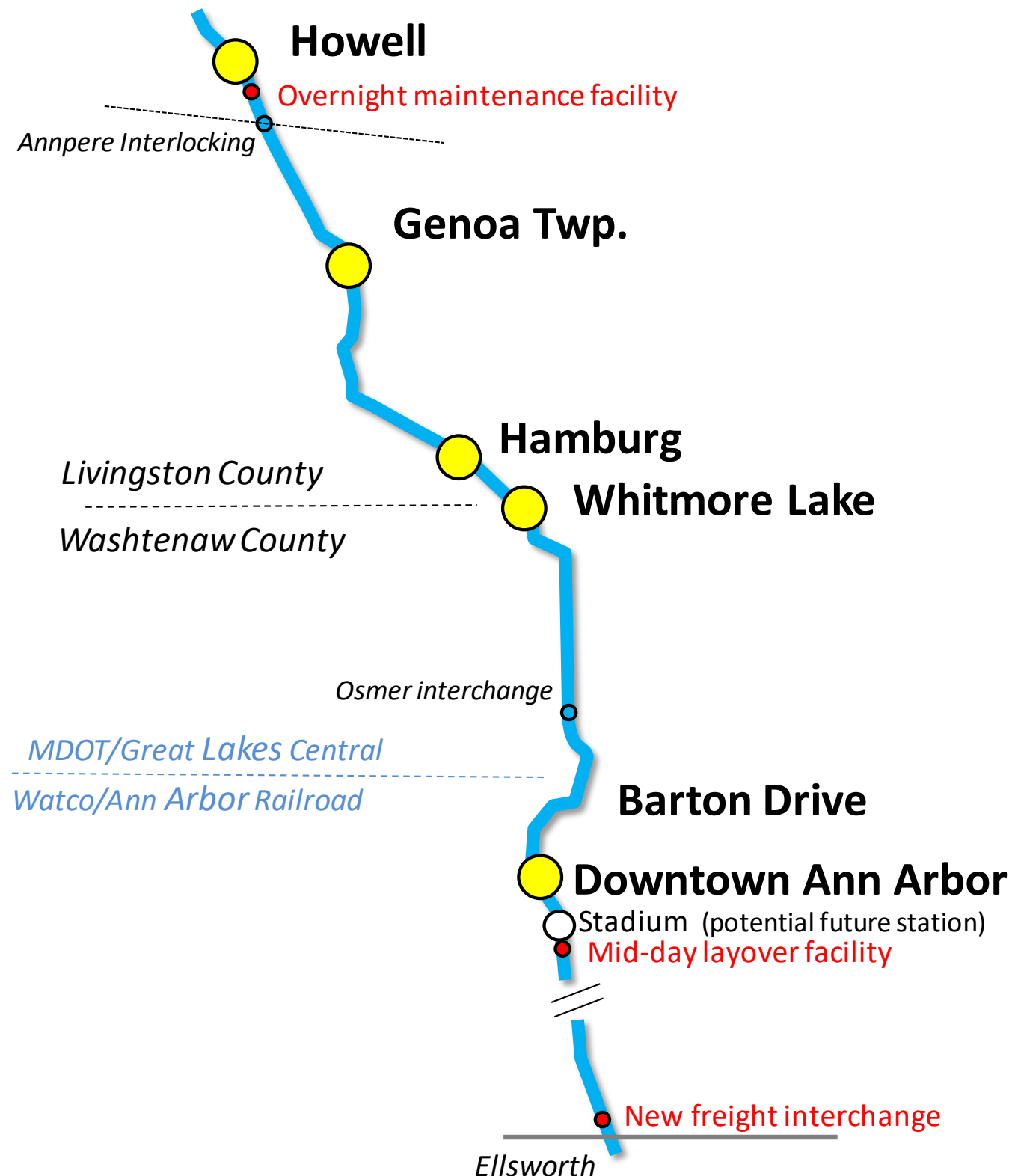
Morning Inbound Schedule

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

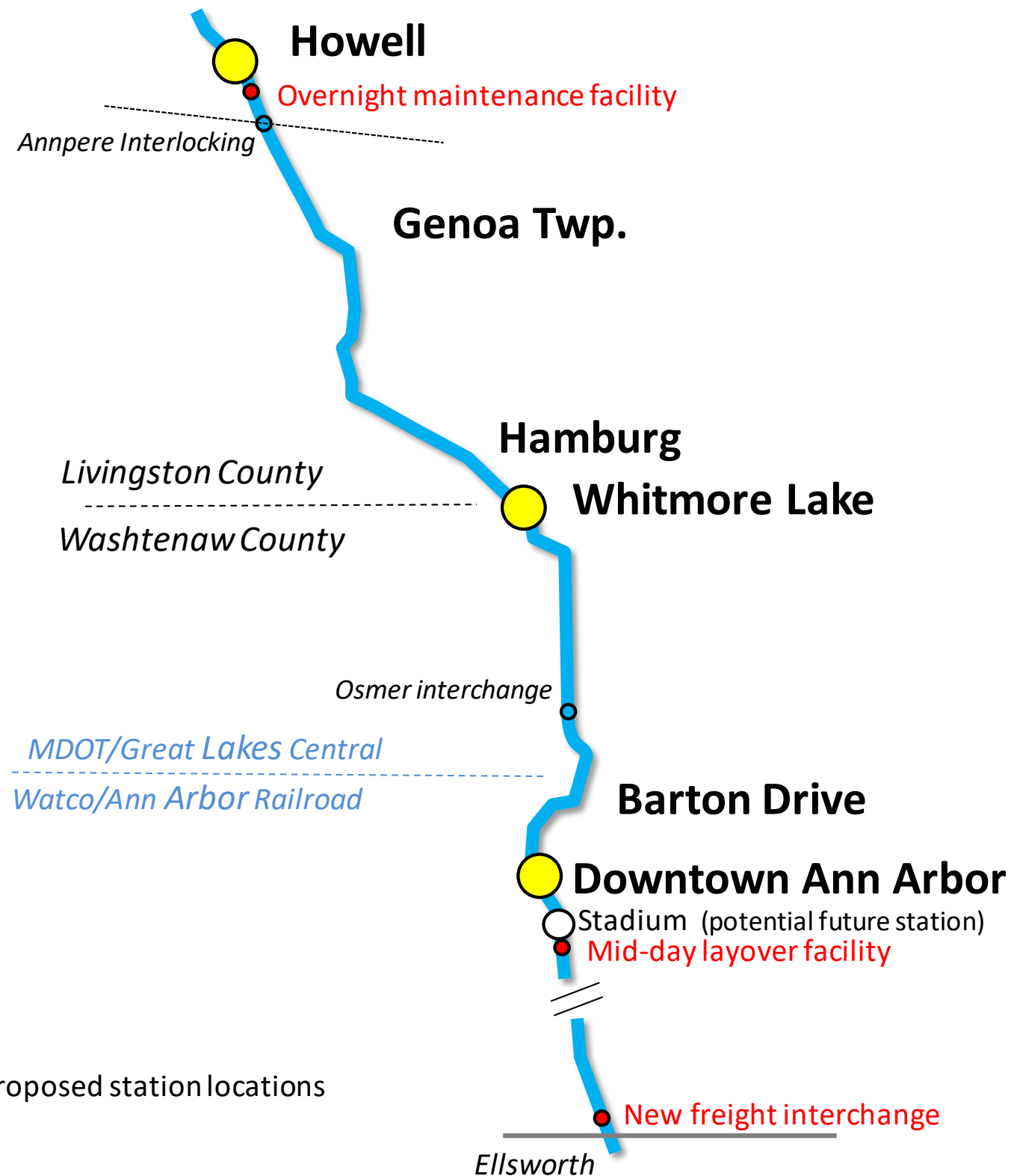
Option 2: Full Service w/o Barton Drive



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

Option 3: Starter Service – Howell/WL/AA

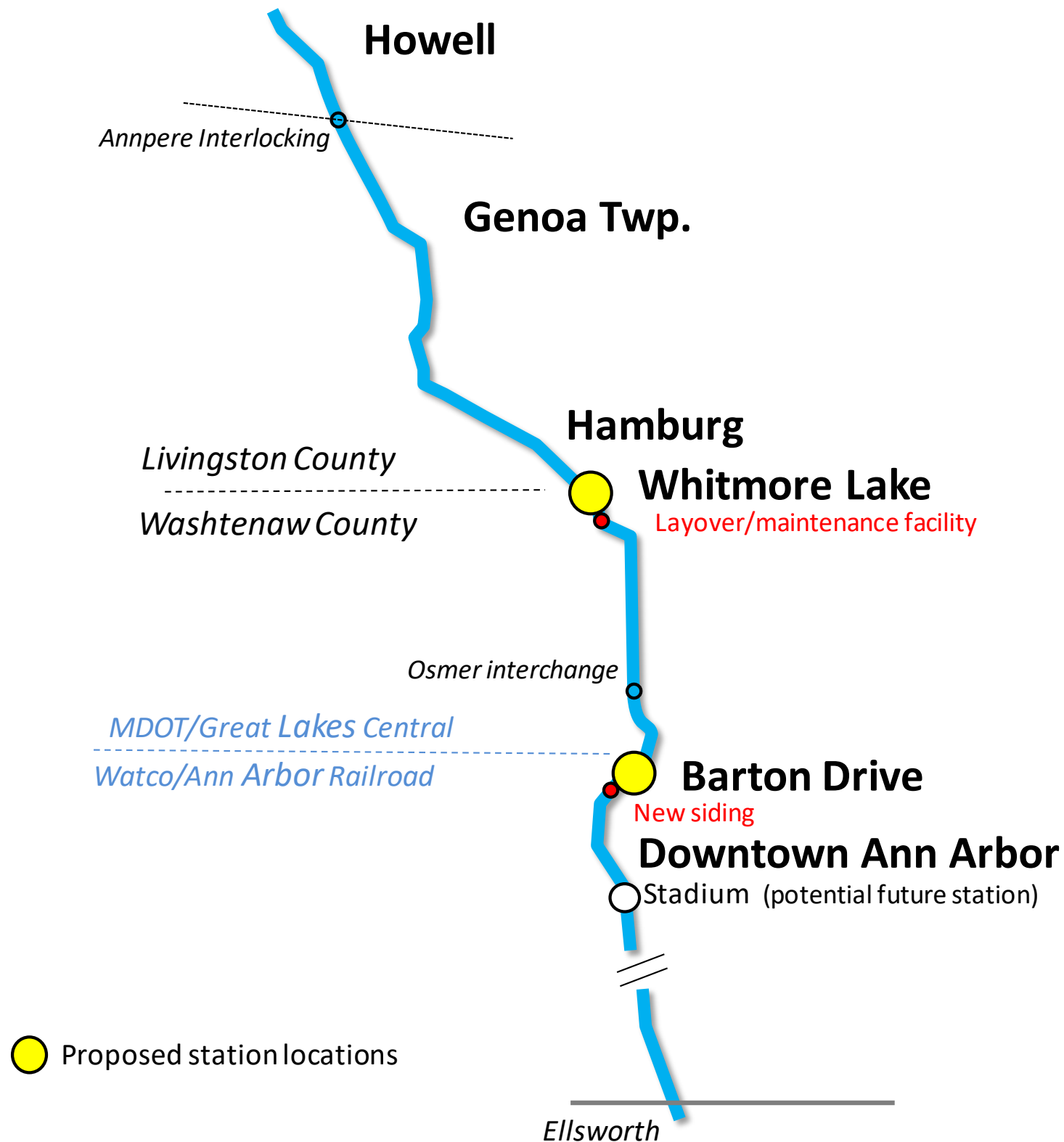
- Four train sets to Ann Arbor – AM /
Four trains sets to Howell - PM
- Dedicated bus service at Ann Arbor
- Mid-day layover facility in Ann Arbor
Overnight/maintenance facility in Howell
- Requires CSX coordination at the Annpere Interlocking
- Relocated freight interchange at Ellsworth Road
- 60 mph max speed
- Gates at all public crossings
- Positive Train Control
- **Reduced number of stations to expedite service +
reduce capital/operating costs**



Option 4: 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:
 - 4A: PTC* Option – 14 trains/day
 - 4B: PTC* Exclusion – Centralized Traffic Control (CTC) signaling, 12 trains/day

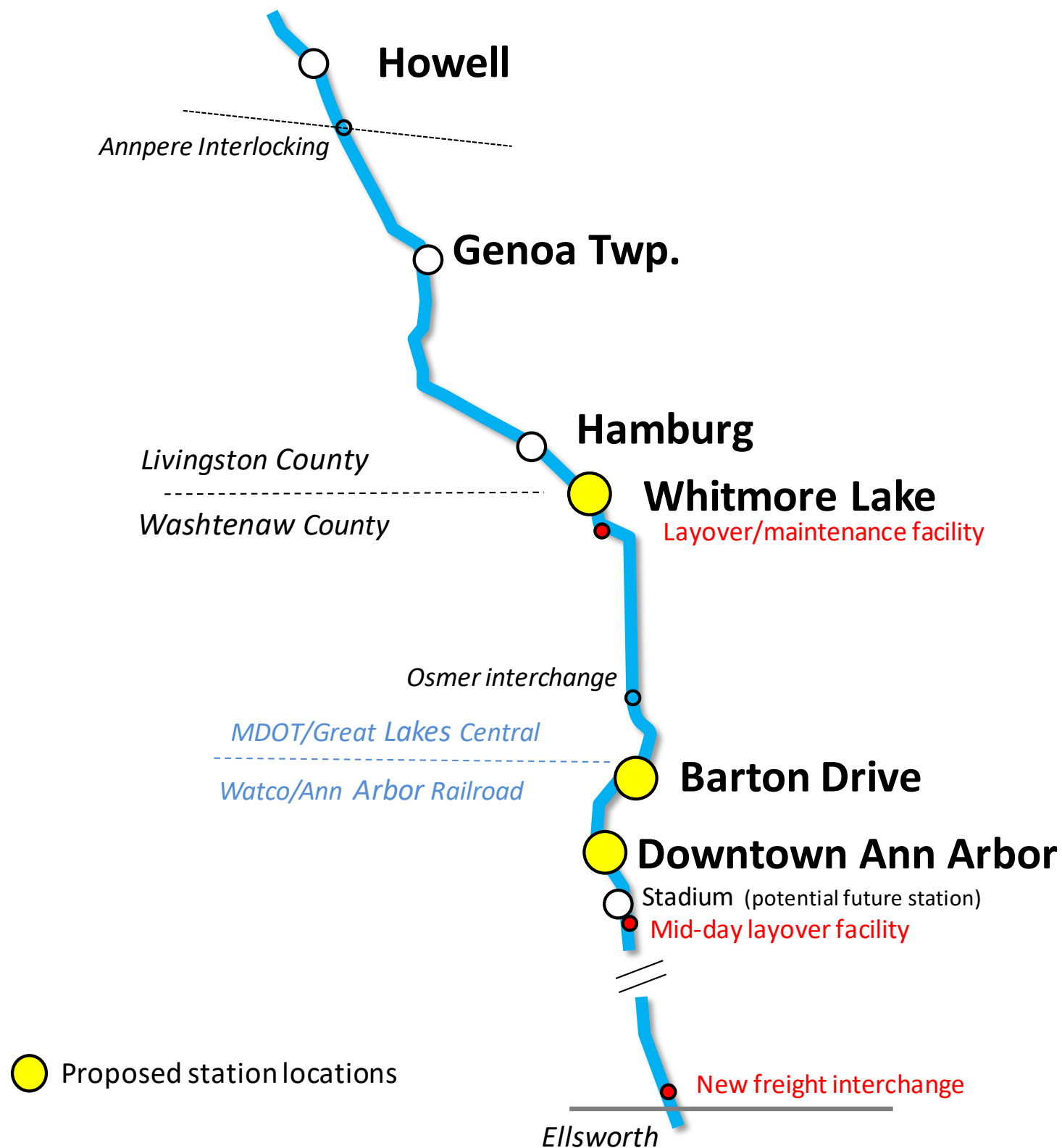
*Positive Trail Control



Option 5: Shuttle Service – WL/BD/AA

(Selected for Additional Analysis)

- 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
- Overnight layover and maintenance facility at Whitmore Lake
- Reduced mid-day layover facility in Ann Arbor
- Relocated freight interchange at Ellsworth Road
- 60 mph max speed
- Gates at all public crossings
- Positive Train Control
- 2 versions:
 - 5A: One train set
 - 5B: Two train sets (requires passing siding at Osmer)



Seven Rail Options Evaluated

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.

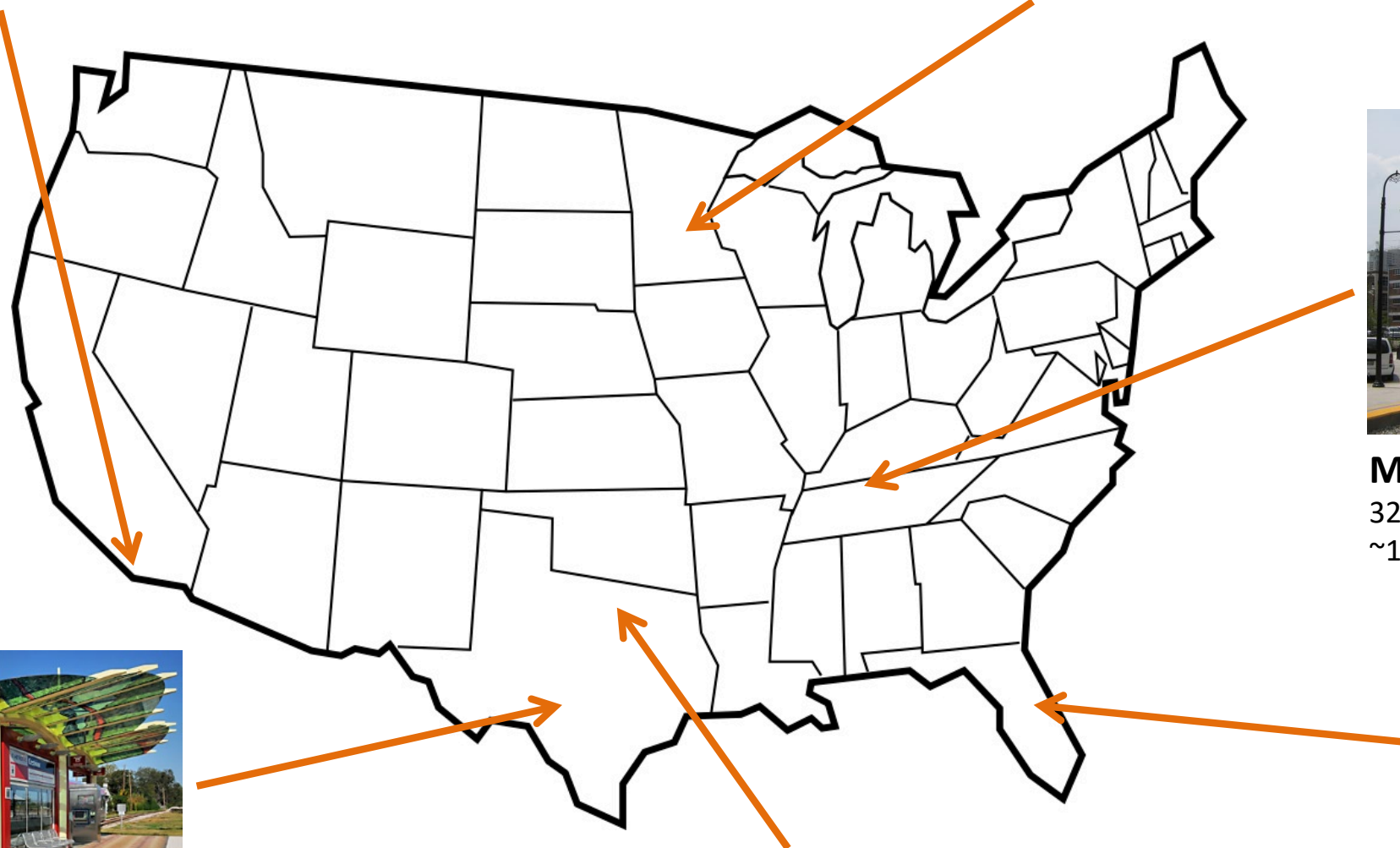
Commuter Rail Comparison



Coaster, San Diego
41 miles, 8 stations,
~5,600 passengers daily



Northstar Commuter Rail, Minneapolis
40 miles, 7 stations, ~7,000 passengers daily



Music City Star, Nashville
32 miles, 6 stations,
~1,225 passengers daily



Red Line, Austin
32 miles, 9 stations, ~2,900 passengers daily



A-Train, Denton County
42 miles, 6 stations,
~1,900 passengers daily



SunRail, Orlando
32 miles, 12 stations,
~3,800 passengers daily

Commuter Rail Comparison: Performance Metrics

Metric	System								
Performance Metric	North-South Option 1*	North-South Option 5B*	Music City Star	Northstar	SunRail**	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 Passenger Mile	\$1.84	\$1.53	\$1.15	\$0.83	---	\$0.41	\$1.32	\$1.49	\$1.04
Unlinked Trips per Veh-Rev-Mile	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.									
*** This represents the average value of existing, operating commuter rail systems.									

Federal Funding Eligibility: Financial Analysis

Project Development

In accord with FAST act requirements, the project sponsor is responsible for:

- Selecting the locally preferred alternative (LPA)
- Getting the LPA adopted in the fiscally constrained metropolitan transportation plan
- Completing the NEPA process (Categorical Exclusion, Finding of No Significant Impact or Record of Decision)
- Developing sufficient information for the FTA to develop a project rating.

Evaluation Criteria and Rating

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

Cost Effectiveness

- Federal share of the annualized capital cost/trip

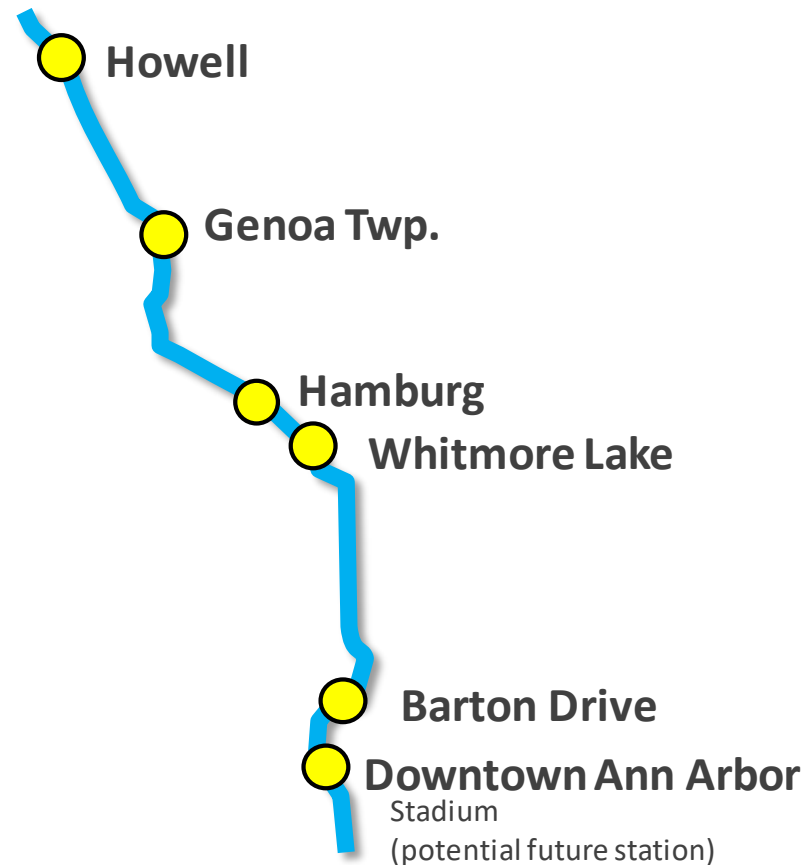
High:	<\$1.00
Medium-High:	\$1.01-\$1.99
Medium:	\$2.00-\$3.99
Medium-Low:	\$4.00-\$5.00
Low:	>\$5.00

Federal Funding Eligibility: Financial Analysis

Option 1 - Full Service

Cost Effectiveness Value: \$4.55

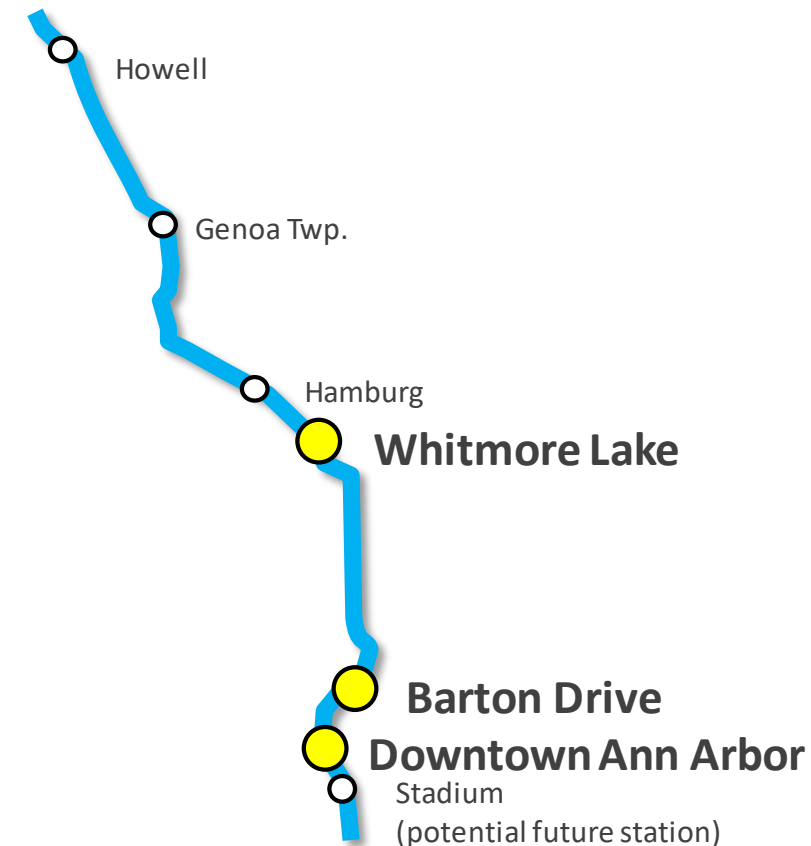
Cost Effectiveness Rating: Medium Low



Option 5B - Shuttle Service

Cost Effectiveness Value: \$2.68

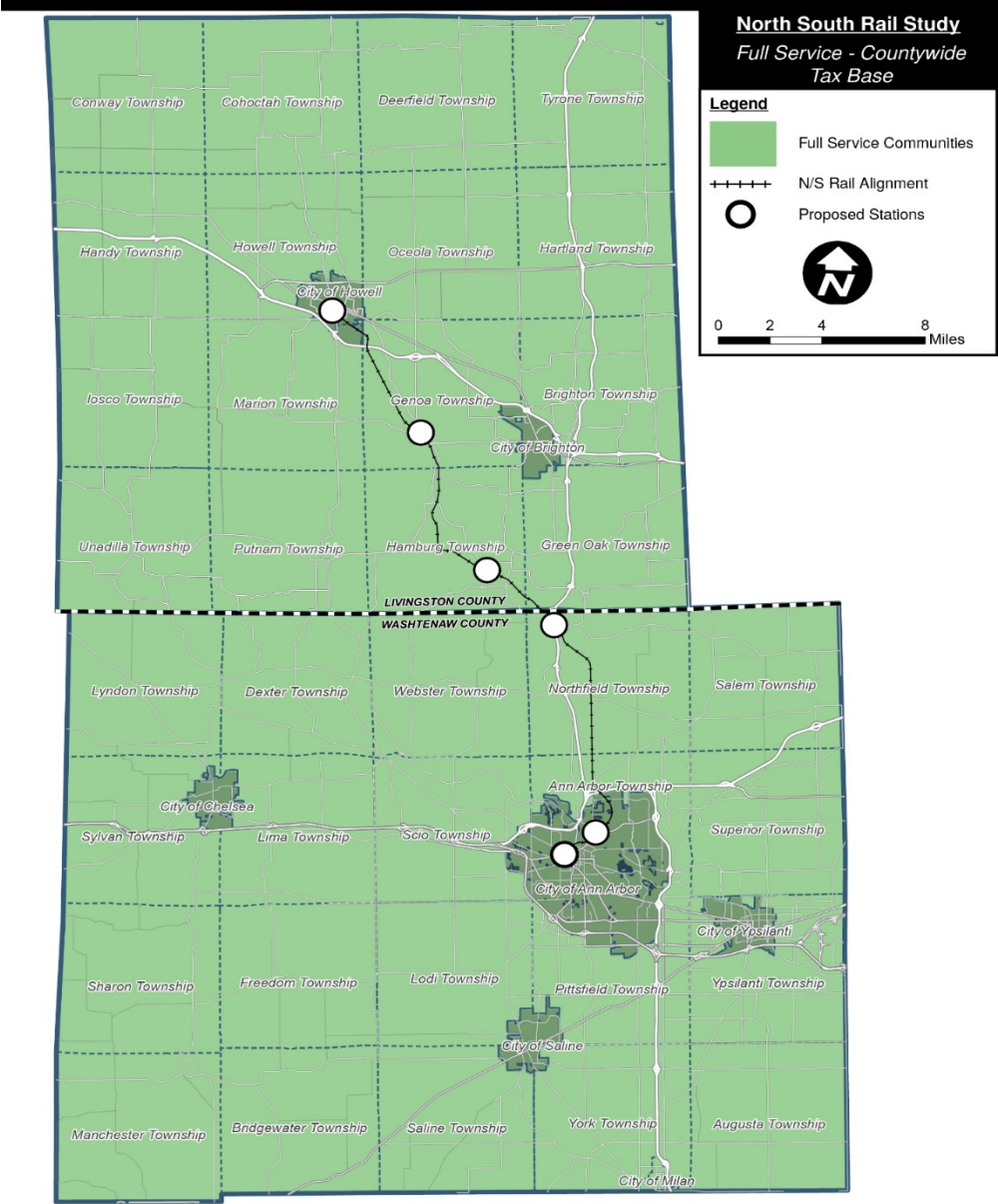
Cost Effectiveness Rating: Medium



- Assumed funding split: Federal (50%)/Federal-State (25%)/Local (25%)
- Option 5B is anticipated to be a stronger project as measured by Cost Effectiveness and an assumed 25% local funding commitment
- Option 1 could achieve a Medium rating provided a higher share of local funding is available

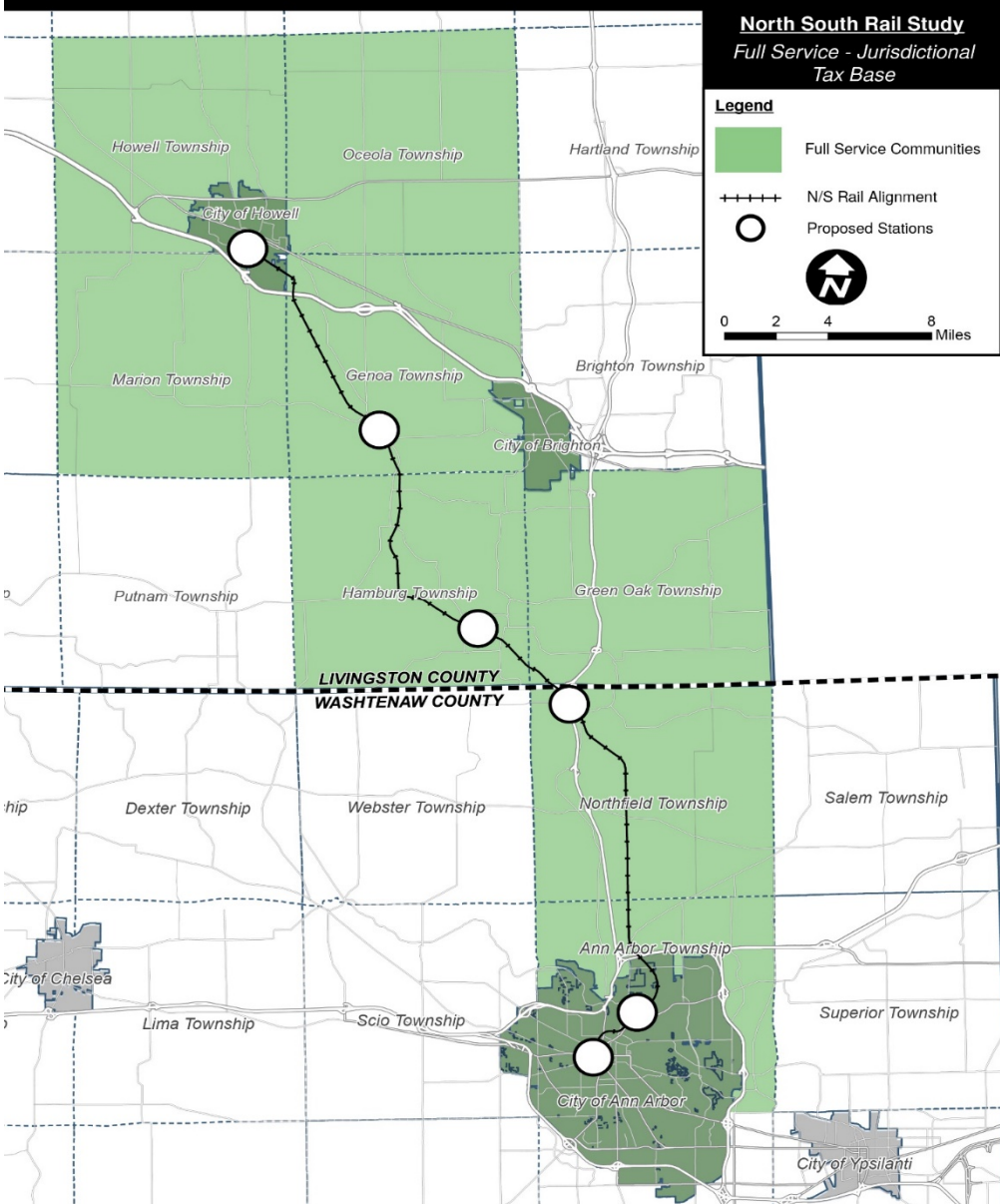
Millage Rate Analysis - Option 1: Full Service

Two County Tax Base



Tax Base: \$25.2 B
Mill Rate: 0.40
\$50/yr*

Jurisdictional Tax Base

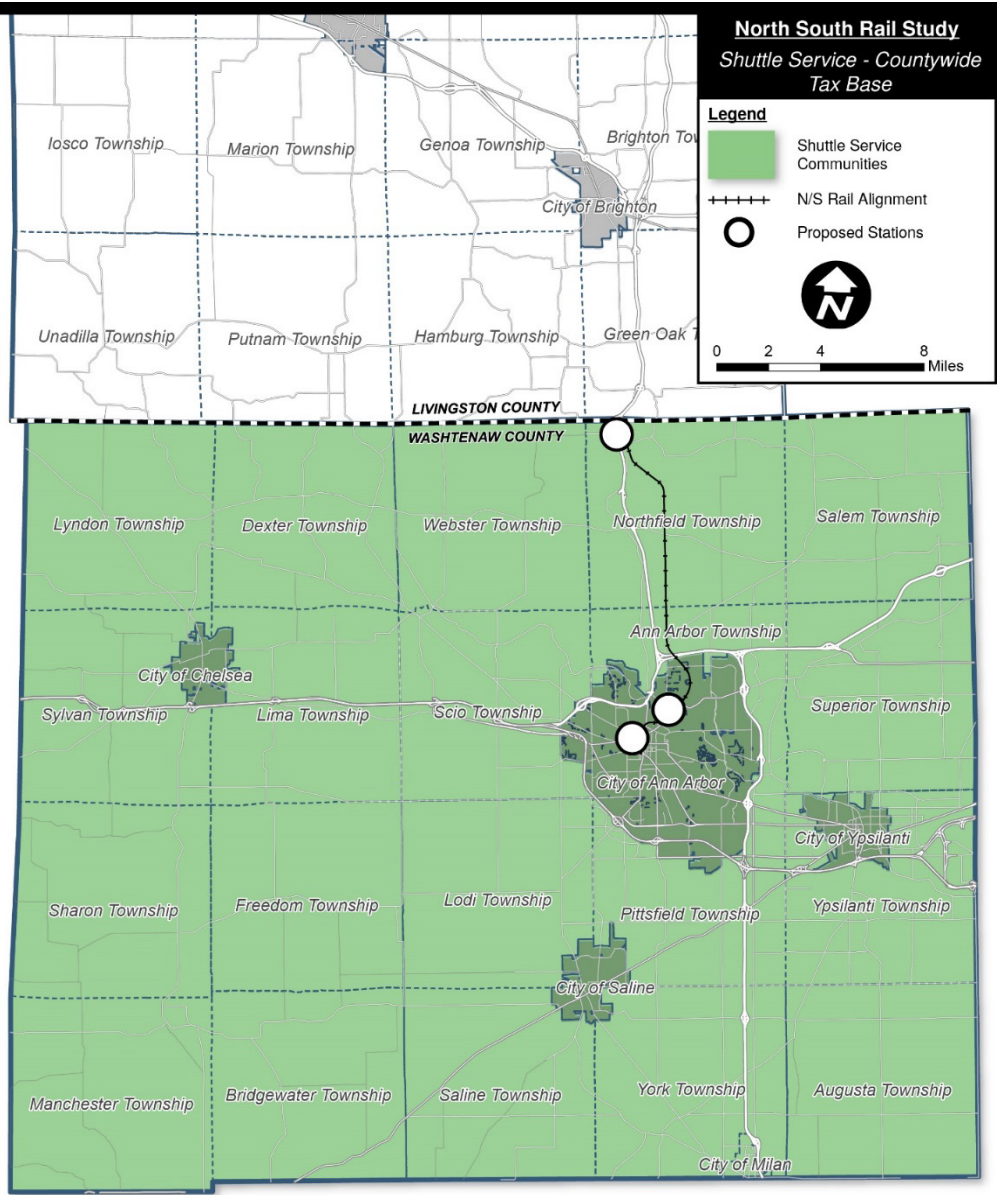


Tax Base: \$12.0 B
Mill Rate: 0.84
\$105/yr*

*based on \$250,000 property value = \$125,000 SEV

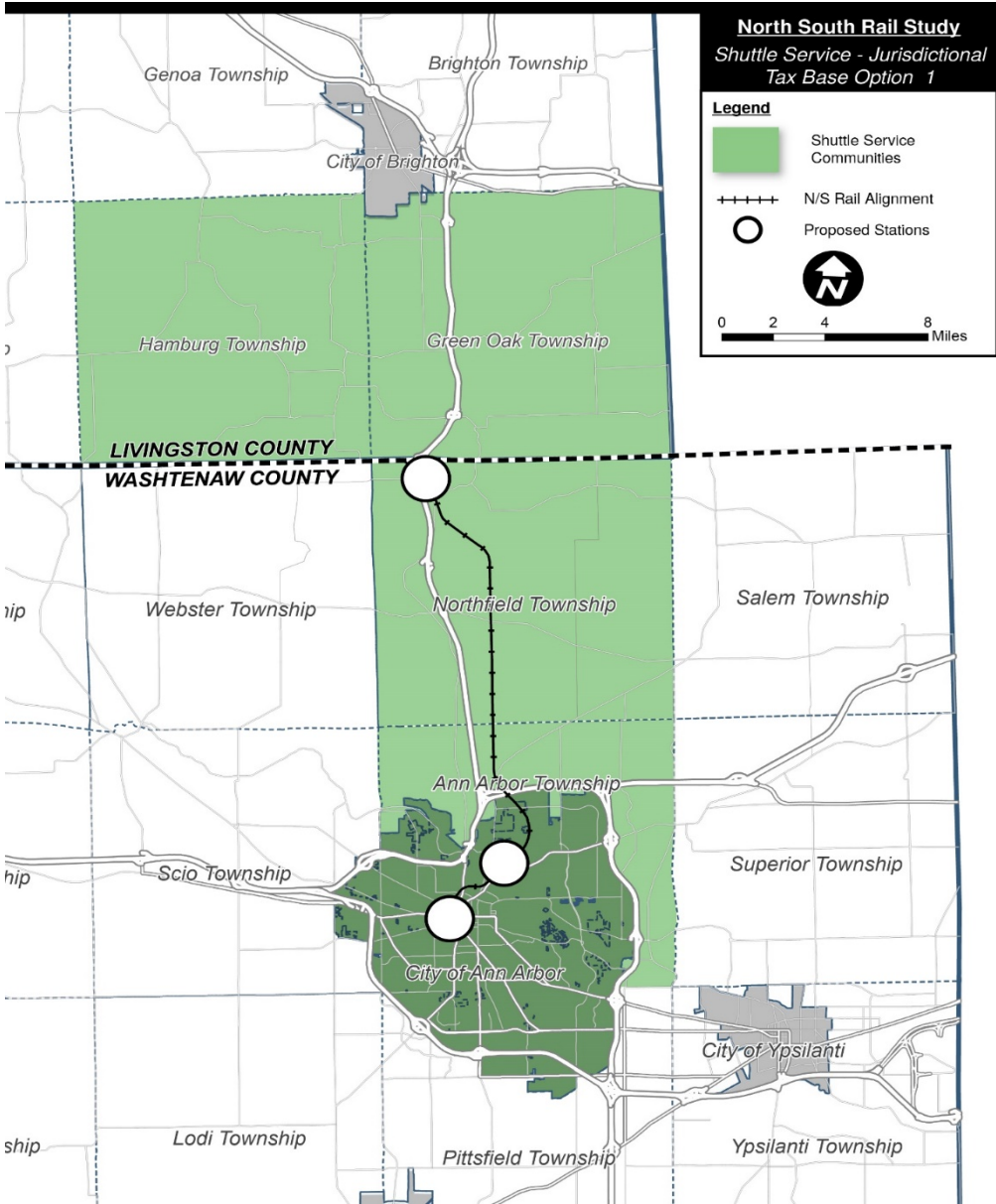
Millage Rate Analysis – Option 5B: Shuttle Service

One County Tax Base



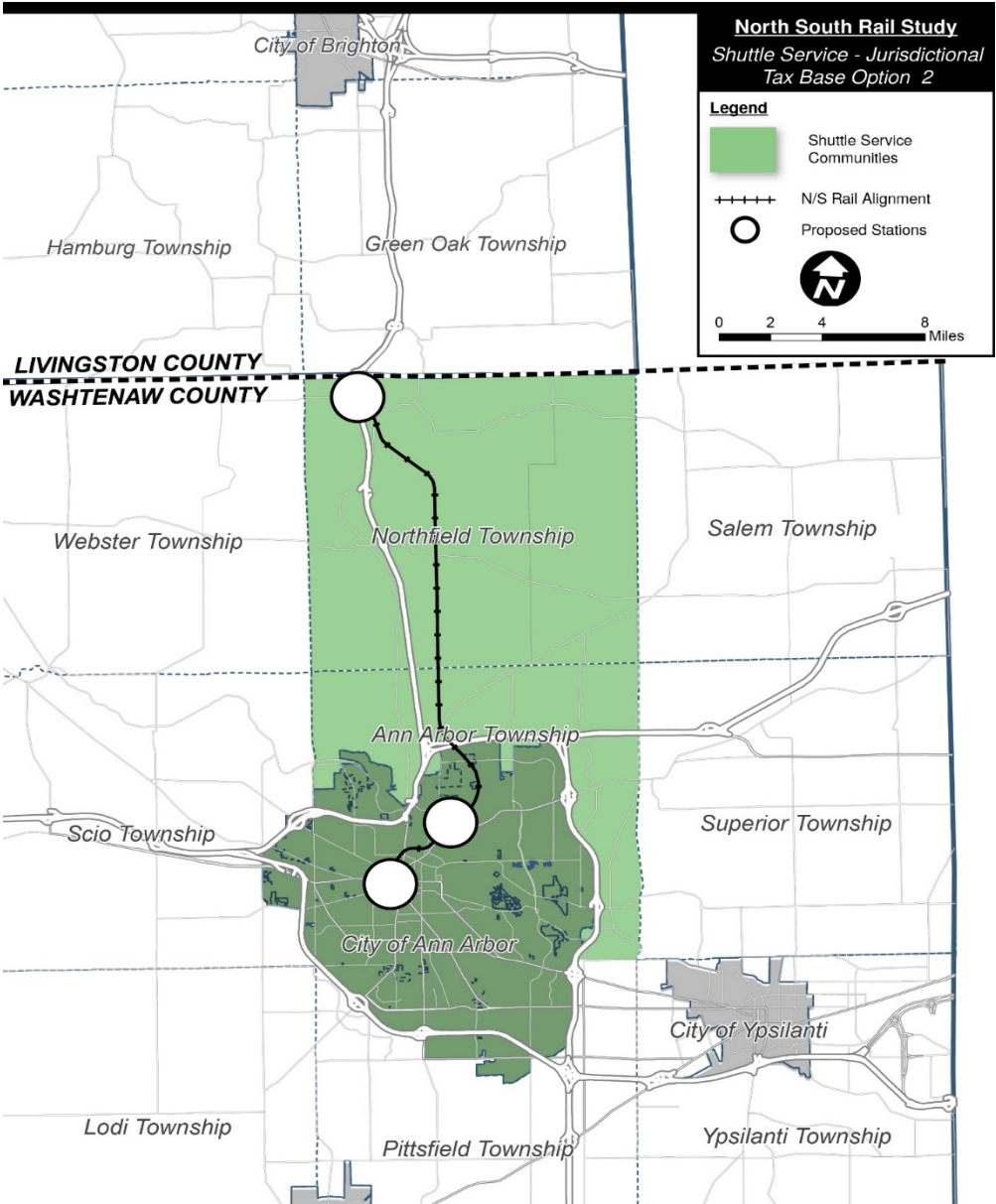
Tax Base: \$15.3 B
Mill Rate: 0.34
\$42.50/yr*

Jurisdictional Tax Base - 1



Tax Base: \$8.4 B
Mill Rate: 0.61
\$76.25 yr*

Jurisdictional Tax Base - 2



Tax Base: \$6.1 B
Mill Rate: 0.84
\$105/yr*

*based on \$250,000 property value = \$125,000 SEV