FOURSQUARE ITP
INTEGRATED TRANSPORTATION PLANNING

Bloomington Route Optimization Study

PUBLIC AND STAKEHOLDER MEETINGS – MARCH 2019

Project Background

- Two primary transit operators in the City: BPTC and IU
  - 40,000 IU students account for 70% of BPTC ridership

- Strong ridership growth over past 35 years, but recent declines
  - Each system caries approximately 3 million riders per year
  - BT peaked at 3.5 million; IUCB peaked at 3.7 million

- Ridership declines in line with national trends
  - Changing mobility landscape
  - Changing market and development patterns

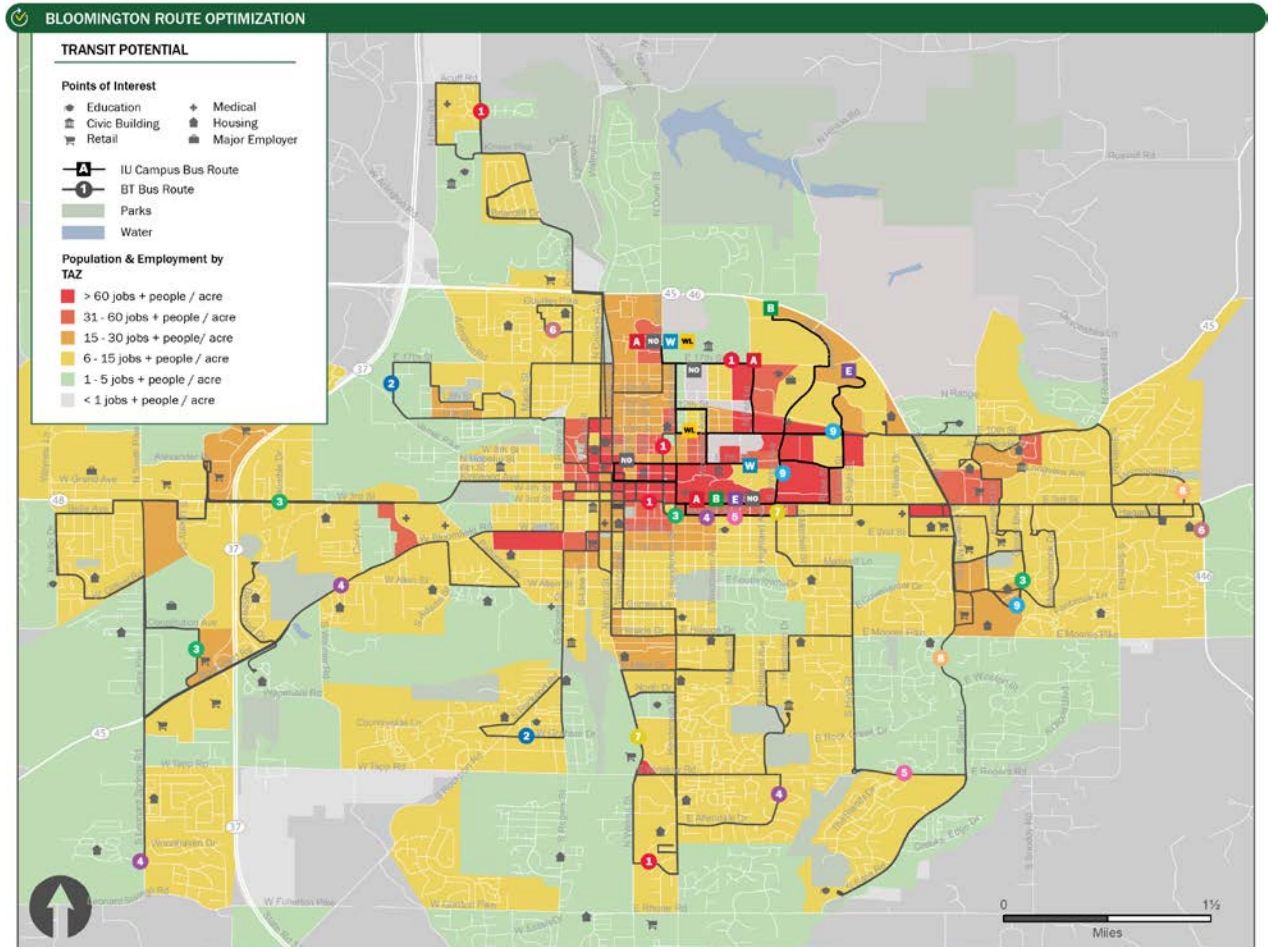
Project Goals

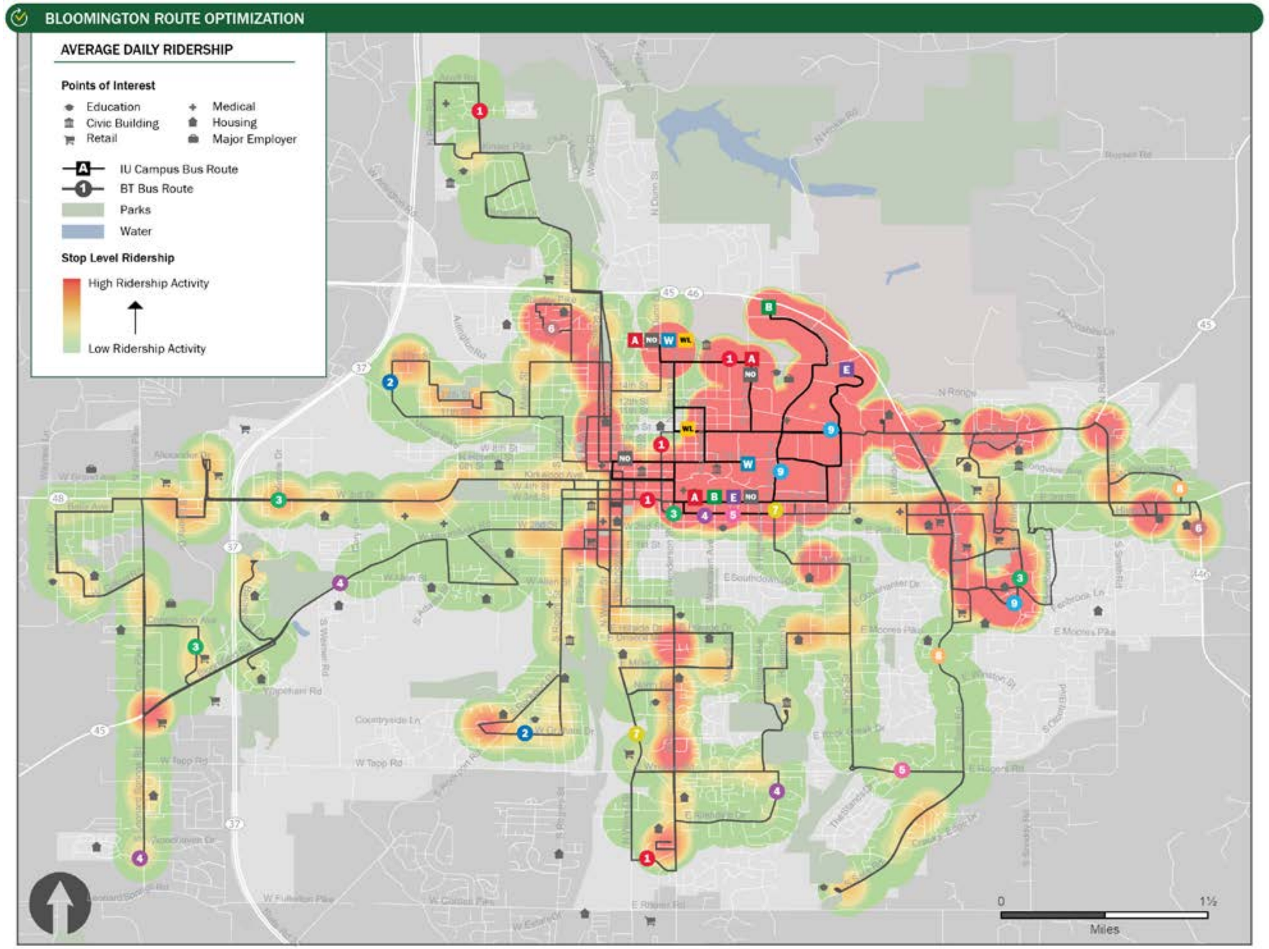
- Identify strengths and weaknesses of existing systems
  - Review travel patterns
  - Assess system efficiency
  - Identify unmet transit needs

- Recommend service improvements
  - Serve existing riders better
  - Attract new riders
  - Improve over-all system efficiency
  - Consider innovative solutions and emerging technologies

Project Approach

Market Analysis

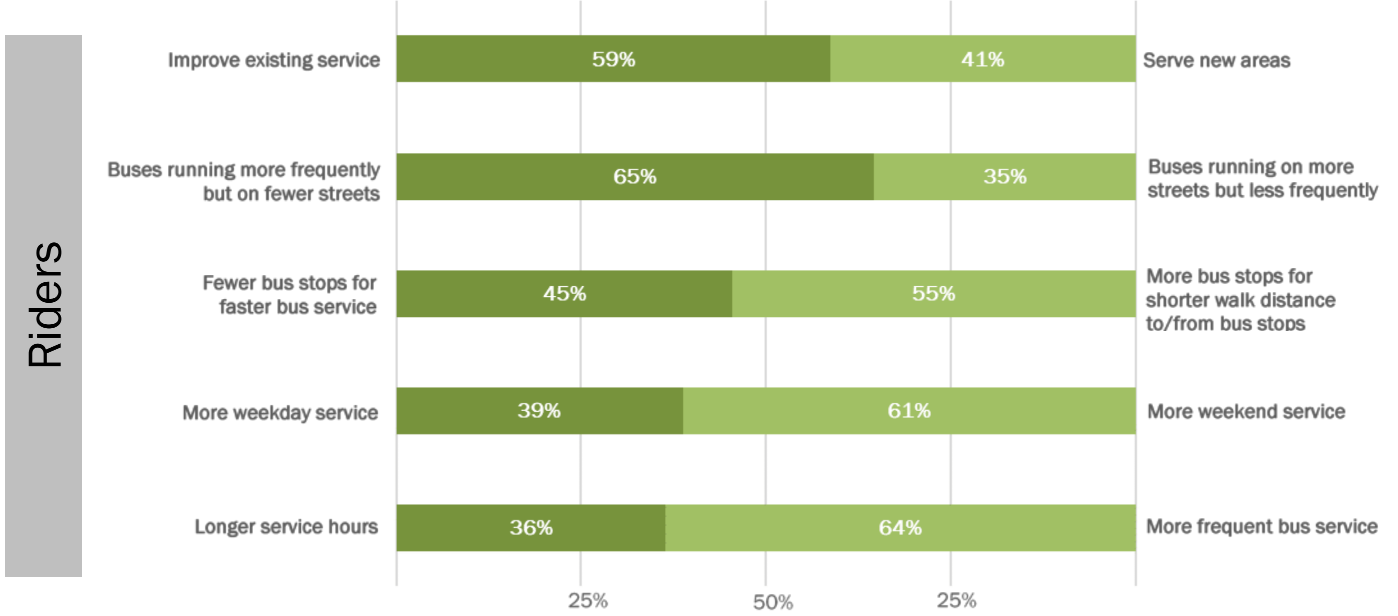


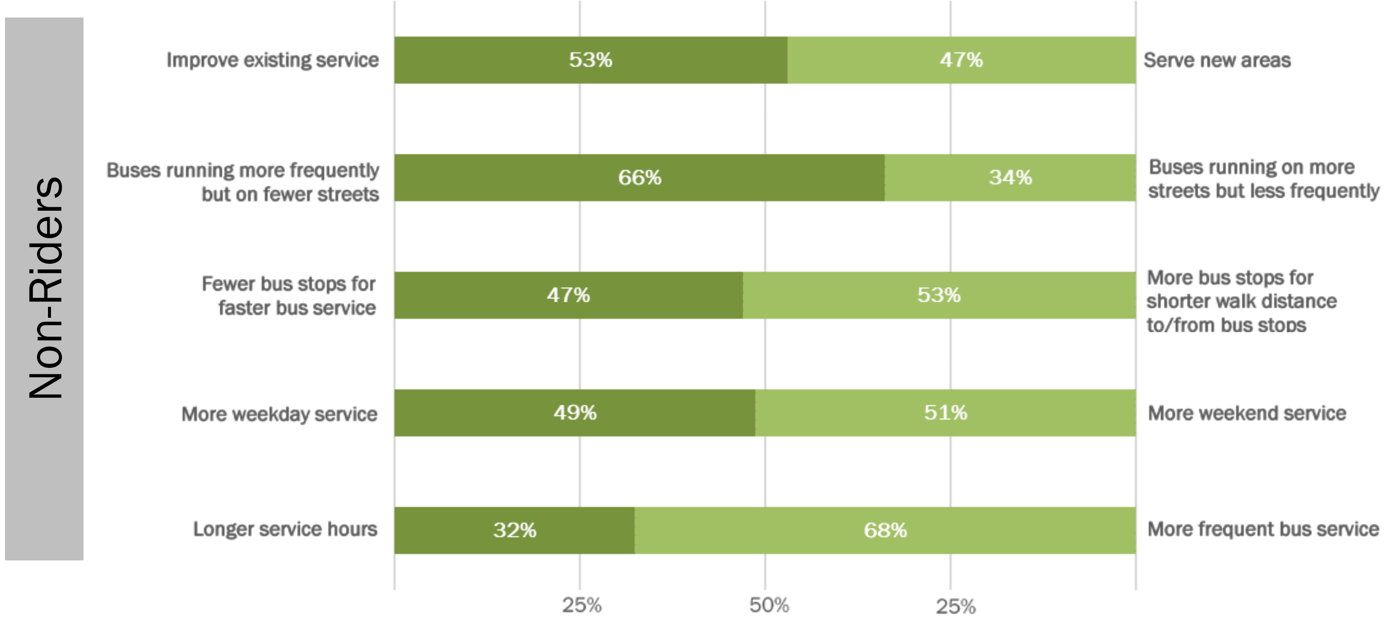


Survey Findings

- Open for approximately two months (November-December 2018)

- 625 surveys submitted
  - 33% regular riders
  - 36% occasional riders
  - 30% non-riders





Service Analysis

City Service

City	Service Provider	Operating Expense Per Passenger Trip	Operating Expense Per Revenue Hour	Passenger Trips Per Revenue Hour	Passenger Trips Per Revenue Mile
Bloomington, Ind.	**Bloomington Public Transportation Corporation**	**$2.02**	**$70.59**	**34.92**	**3.31**
Athens, Ga.	Athens Transit System	$3.58	$76.94	21.48	1.88
Charlottesville, Va.	Charlottesville Area Transit	$3.39	$75.99	22.42	2.18
Flagstaff, Ariz.	Northern Arizona Intergovernmental Public Transportation Authority	$3.04	$84.00	27.67	2.28
Iowa City, Iowa	Iowa City Transit	$3.16	$91.02	28.77	2.20
Missoula, Mont.	Missoula Urban Transportation District	$3.21	$99.49	31.01	2.23
Muncie, Ind.	Muncie Indiana Transit System	$3.92	$96.91	24.72	1.78
	Peer Average	***$3.19***	***$84.99***	***27.28***	***2.27***

University Service

City	University	Operating Expense Per Passenger Trip	Operating Expense Per Revenue Hour	Passenger Trips Per Revenue Hour	Passenger Trips Per Revenue Mile
Bloomington, Ind.	**Indiana University**	**$1.95**	**$114.00**	**58.43**	**9.12**
Athens, Ga.	University of Georgia	$1.06	$56.56	53.2	6.21
Charlottesville, Va.	University of Virginia	$1.10	$82.23	75	8.11
Flagstaff, Ariz.	Northern Arizona University	$1.71	-	-	-
Iowa City, Iowa	University of Iowa	$0.77	$43.07	56.04	5.77
Missoula, Mont.	University of Montana	$1.62	$53.73	33.18	3.01
Muncie, Ind.	Ball State University	not tracked	not tracked	not tracked	not tracked
	Peer Average	***$1.37***	***$69.92***	***55.17***	***6.44***

Service Analysis / Service Scenarios

- Guiding Principles
  - Service Should be Simple:
    - For people to use transit, service should be designed so that it is easy to use and intuitive to understand
  - Service Should Operate at Regular Intervals:
    - In general, people can easily remember repeating patterns, but have difficulty remembering irregular sequences.
  - Routes Should Operate Along a Direct Path:
    - The fewer directional changes a route makes, the easier it is to understand. Circuitous alignments are disorienting and difficult to remember.
  - Routes Should be Symmetrical:
    - Routes should operate along the same alignment in both directions to make it easy for riders to know how to get back to where they came from.
  - Routes Should Serve Well Defined Markets:
    - The purpose of a route should be clear, and each should include strong anchors and a mix of origins and destinations.
  - Service Should be Well Coordinated:
    - At major transfer locations, schedules should be coordinated to the greatest extent possible to minimize connection times for the predominant transfer flows.

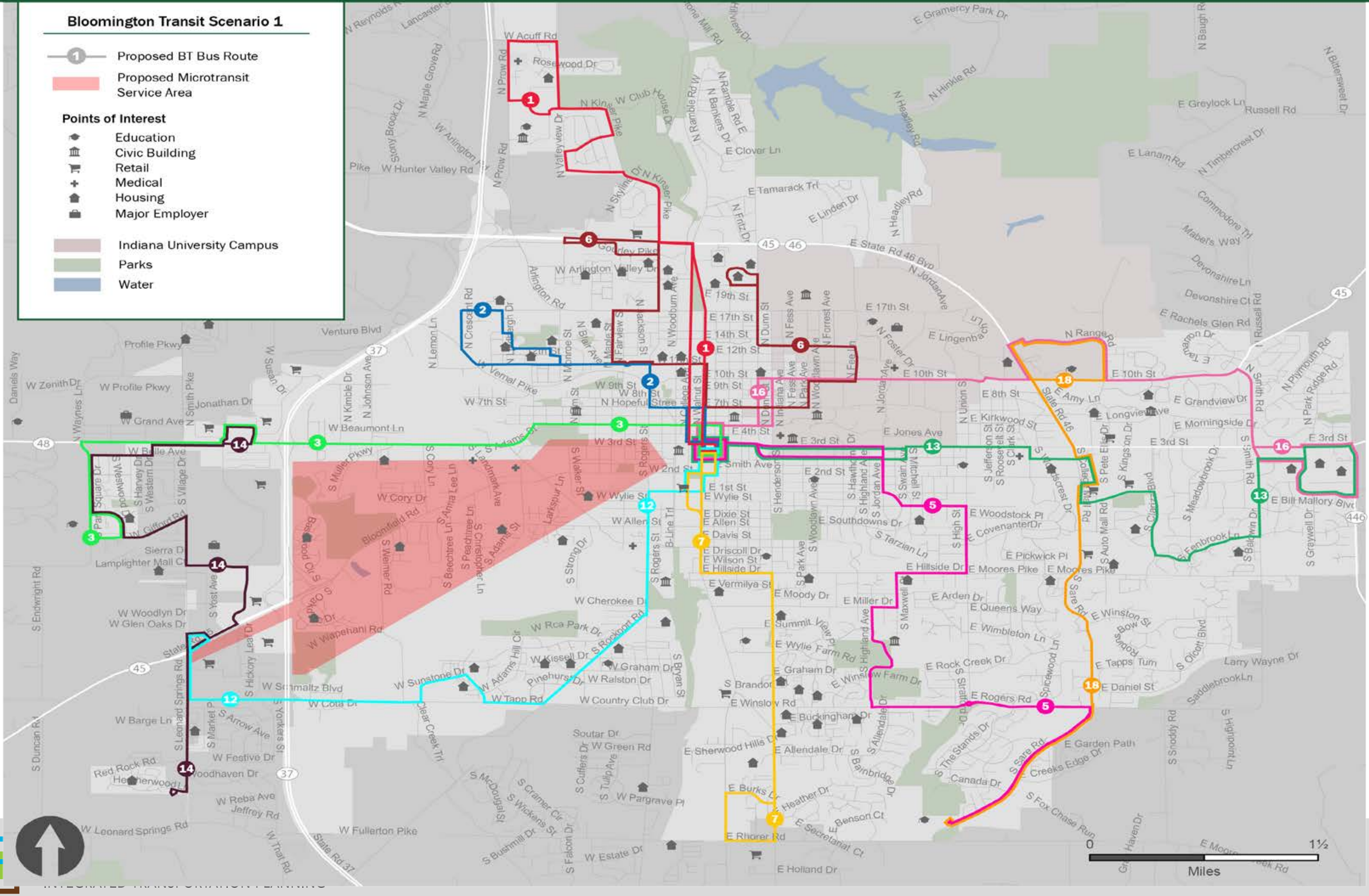
Service Scenarios

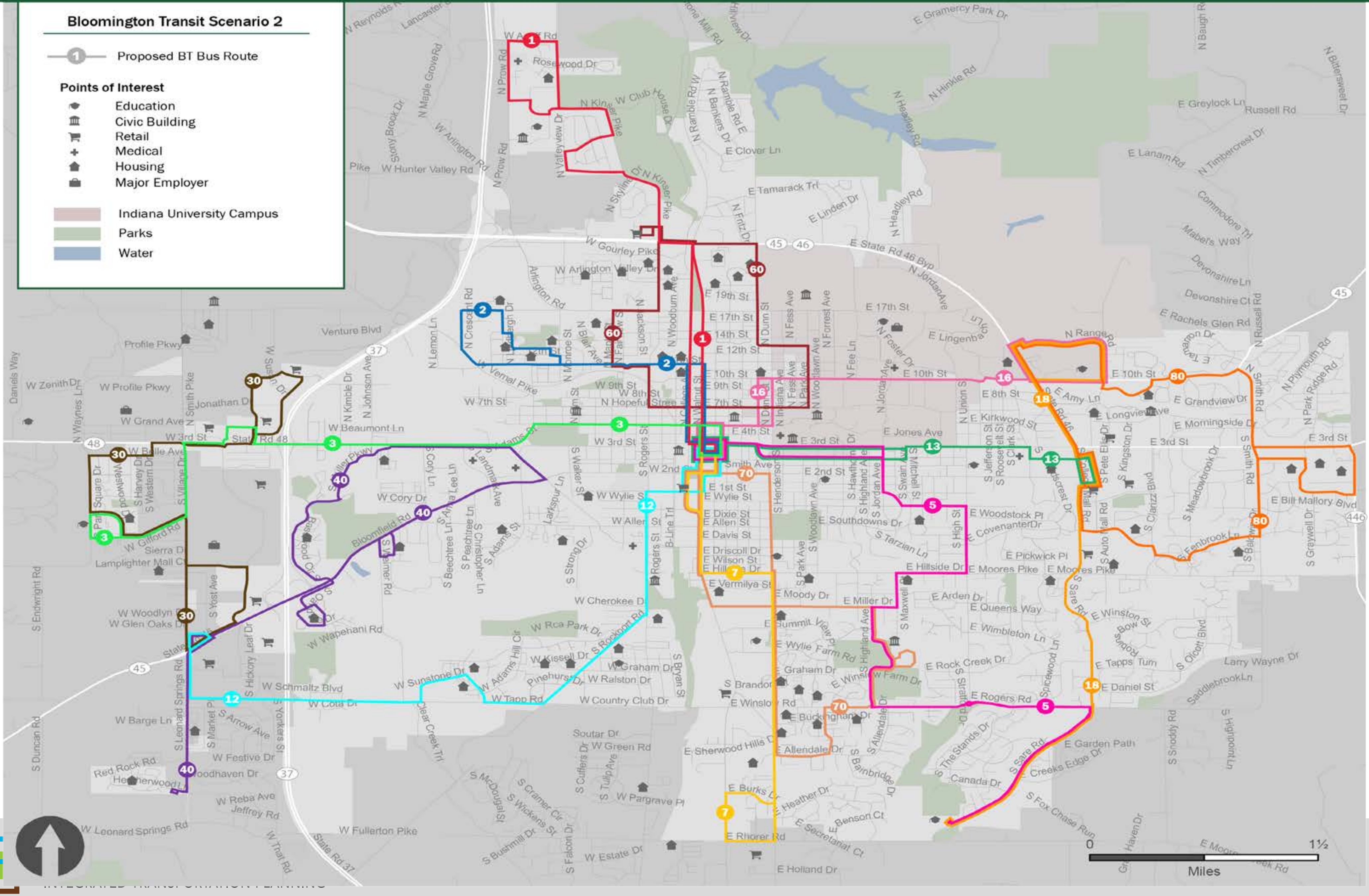
- Approach:
  - Follow guiding principles
  - Incorporate technical findings and stakeholder input
  - Provide options
    - Two scenarios for each service
  - Consider new technologies

BT Service Scenarios

- Scenario 1: “Out-and-Back Service Model”
  - Each route operates linearly to form a grid network
  - Most routes provide both local and regional connections
  - Transfers can accommodate movements between corridors

- Scenario 2: “Corridors and Circulators Service Model”
  - Fast and frequent service in key corridors
  - Bi-directional circulators for local access
  - Transfers can accommodate first/last mile connections


Bloomington Transit Scenario 1
Proposed BT Bus Route
Proposed Microtransit Service Area
Points of Interest
Education
Civic Building
Retail
Medical
Housing
Major Employer
Indiana University Campus
Parks
Water
0
1½
Miles


Bloomington Transit Scenario 2
Proposed BT Bus Route
Points of Interest
Education
Civic Building
Retail
Medical
Housing
Major Employer
Indiana University Campus
Parks
Water
0
1½
Miles

Microtransit

- Technology-driven demand-response service
  - More coverage than fixed-route service
  - More flexibility than traditional dial-a-ride service
  - Familiar interface for those who have used Uber/Lyft app (phone reservations also possible)
  - More control over vehicles and driver vetting than Uber/Lyft

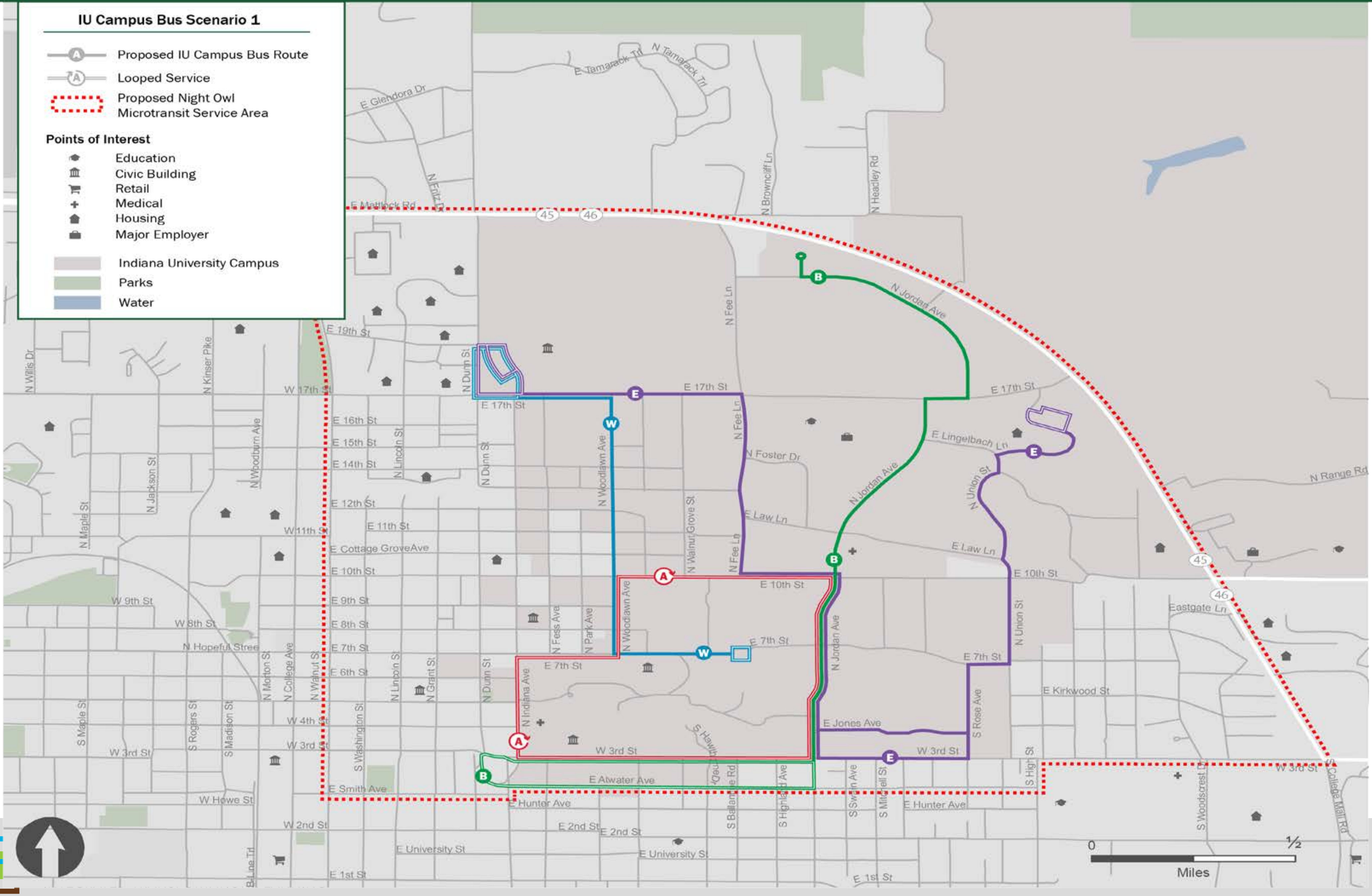
Turn-Key Service

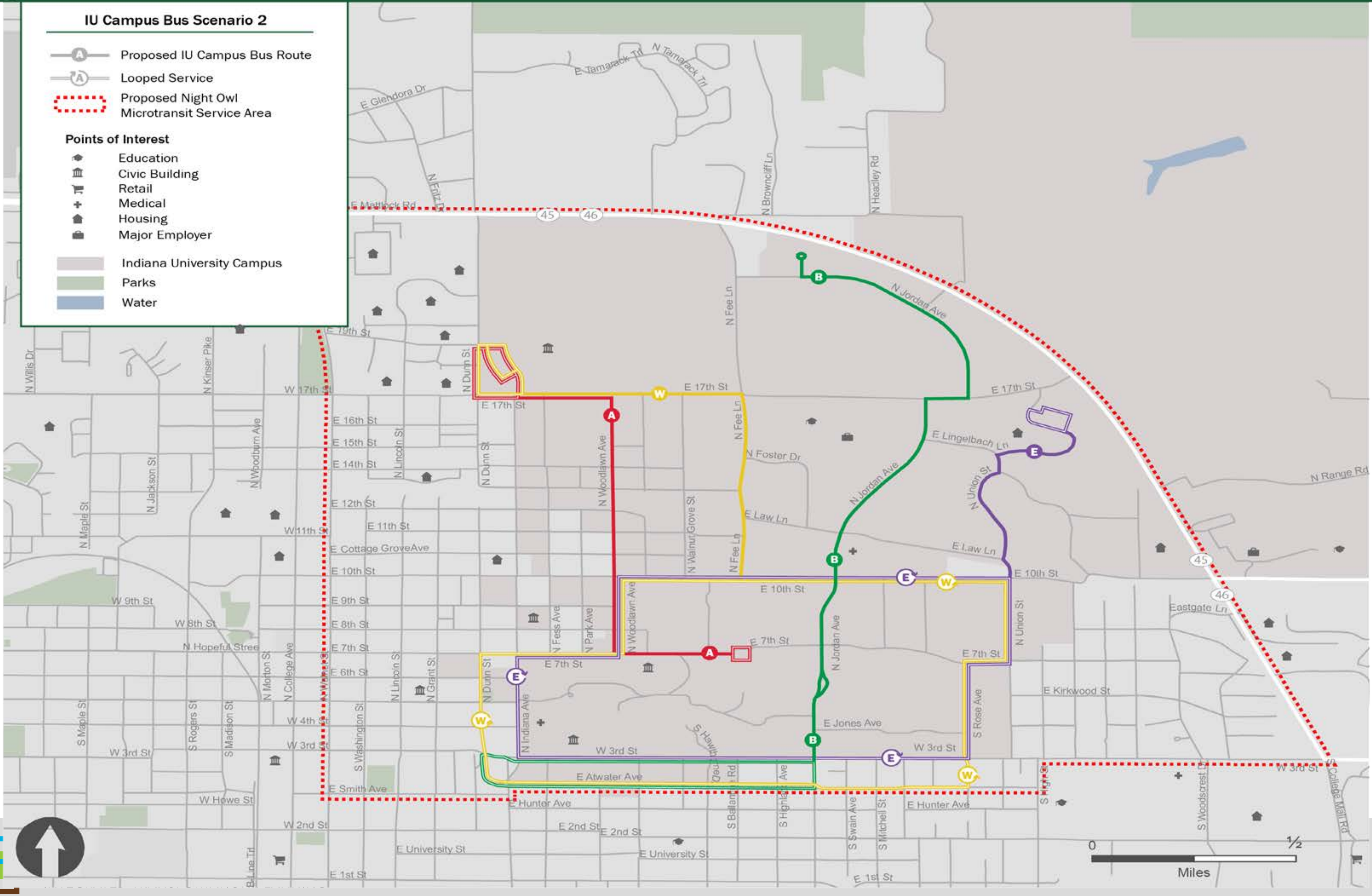
Technology Deployment

IU Service Scenarios

- Scenario 1: “Dedicated Circulator Model”
  - Network built around a dedicated circulator in the core of campus
  - Circulator is clockwise only, but operates in a relatively compact loop
  - Other routes provide feeder service from outlying areas
  - Transfers can accommodate first/last mile connections

- Scenario 2: “Bi-Directional Service Model”
  - Two-way movement is available throughout the shuttle network
  - Each route is either bi-directional or overlaps another route operating in the opposite direction
  - Core circulation is less frequent, but more direct

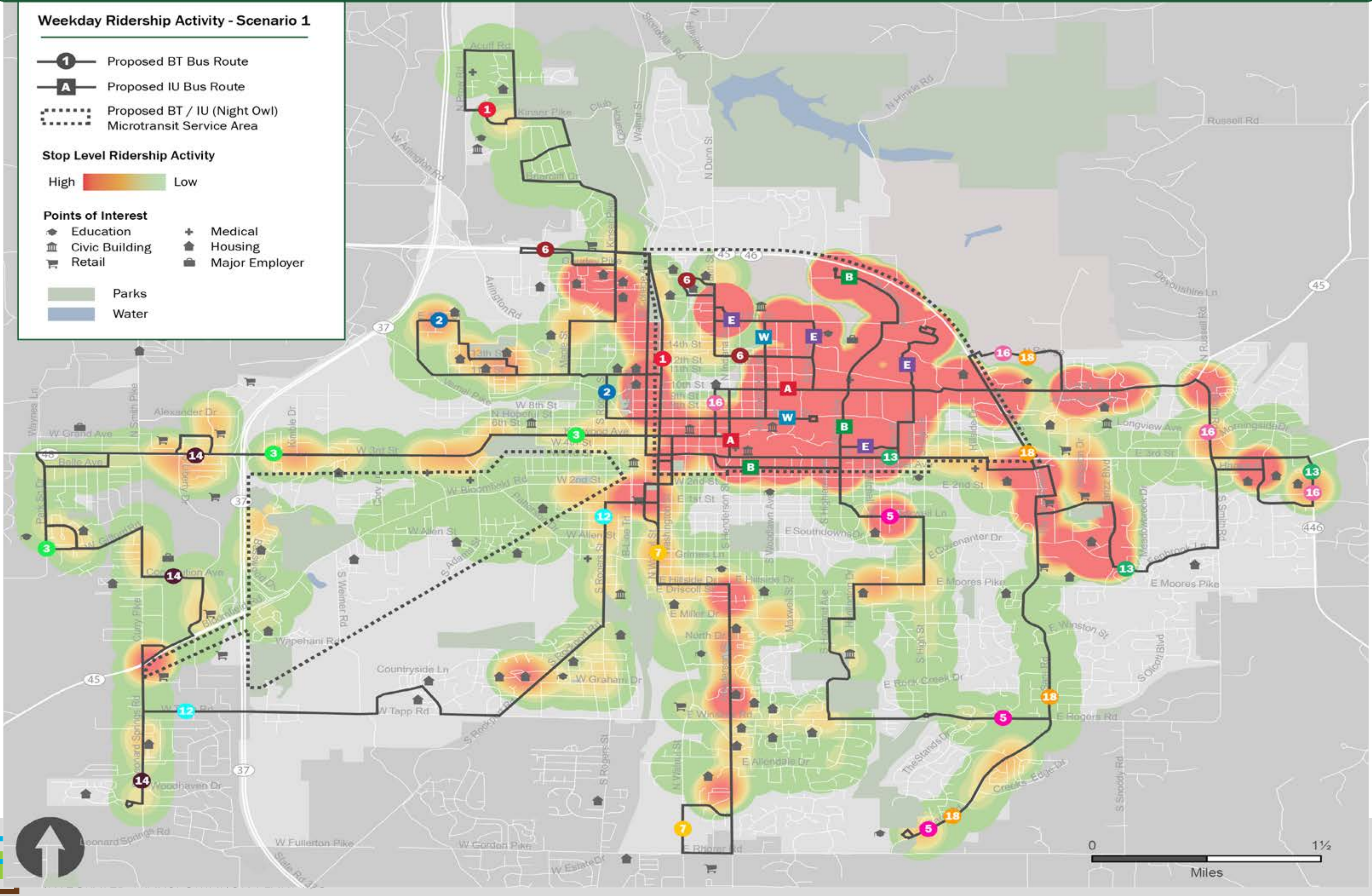

IU Campus Bus Scenario 1
Proposed IU Campus Bus Route
Looped Service
Proposed Night Owl
Microtransit Service Area
Points of Interest
Education
Civic Building
Retail
Medical
Housing
Major Employer
Indiana University Campus
Parks
Water
0
½
Miles

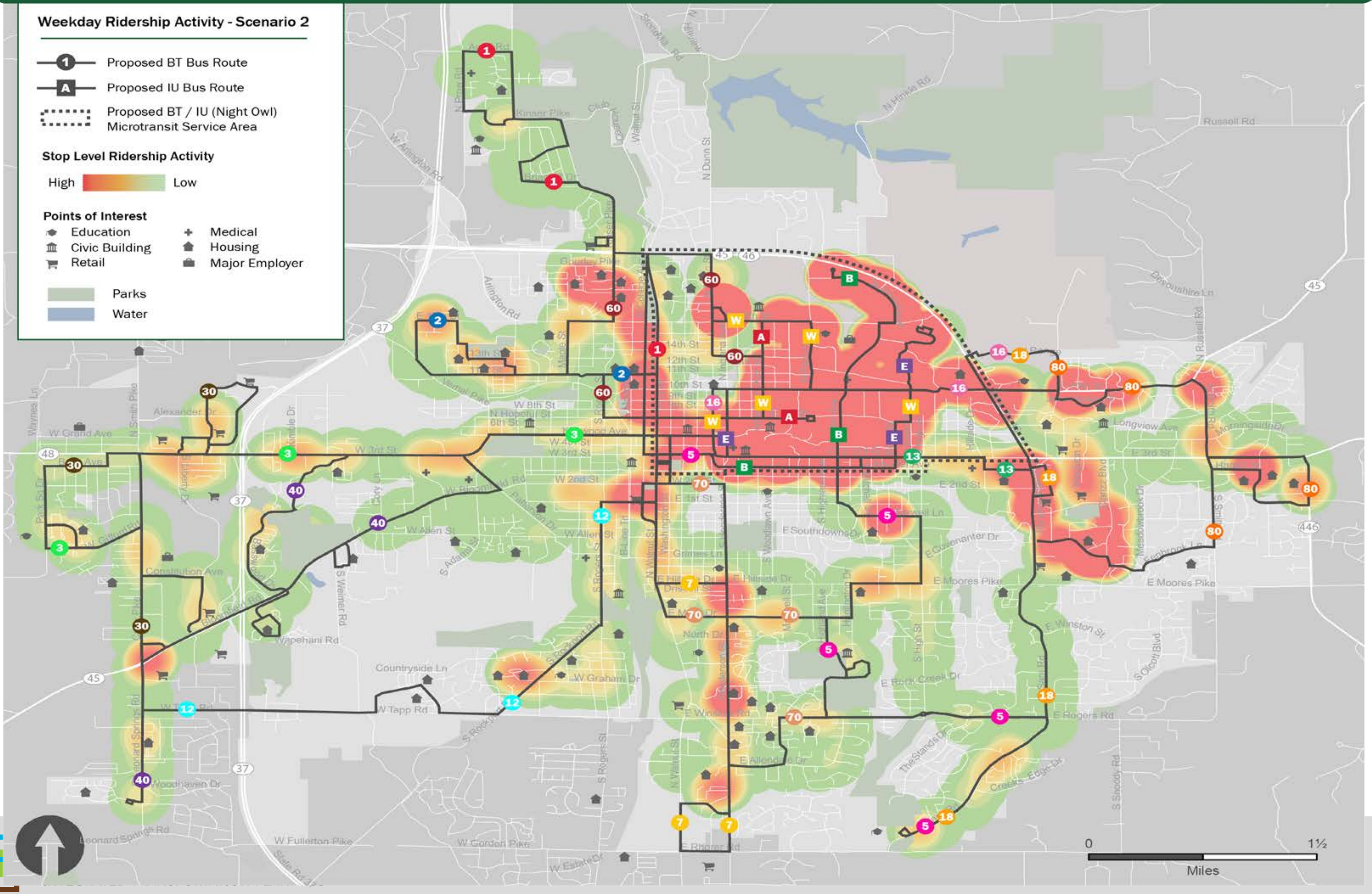

IU Campus Bus Scenario 2
Proposed IU Campus Bus Route
Looped Service
Proposed Night Owl Microtransit Service Area
Points of Interest
Education
Civic Building
Retail
Medical
Housing
Major Employer
Indiana University Campus
Parks
Water
0
½
Miles

Autonomous Shuttles

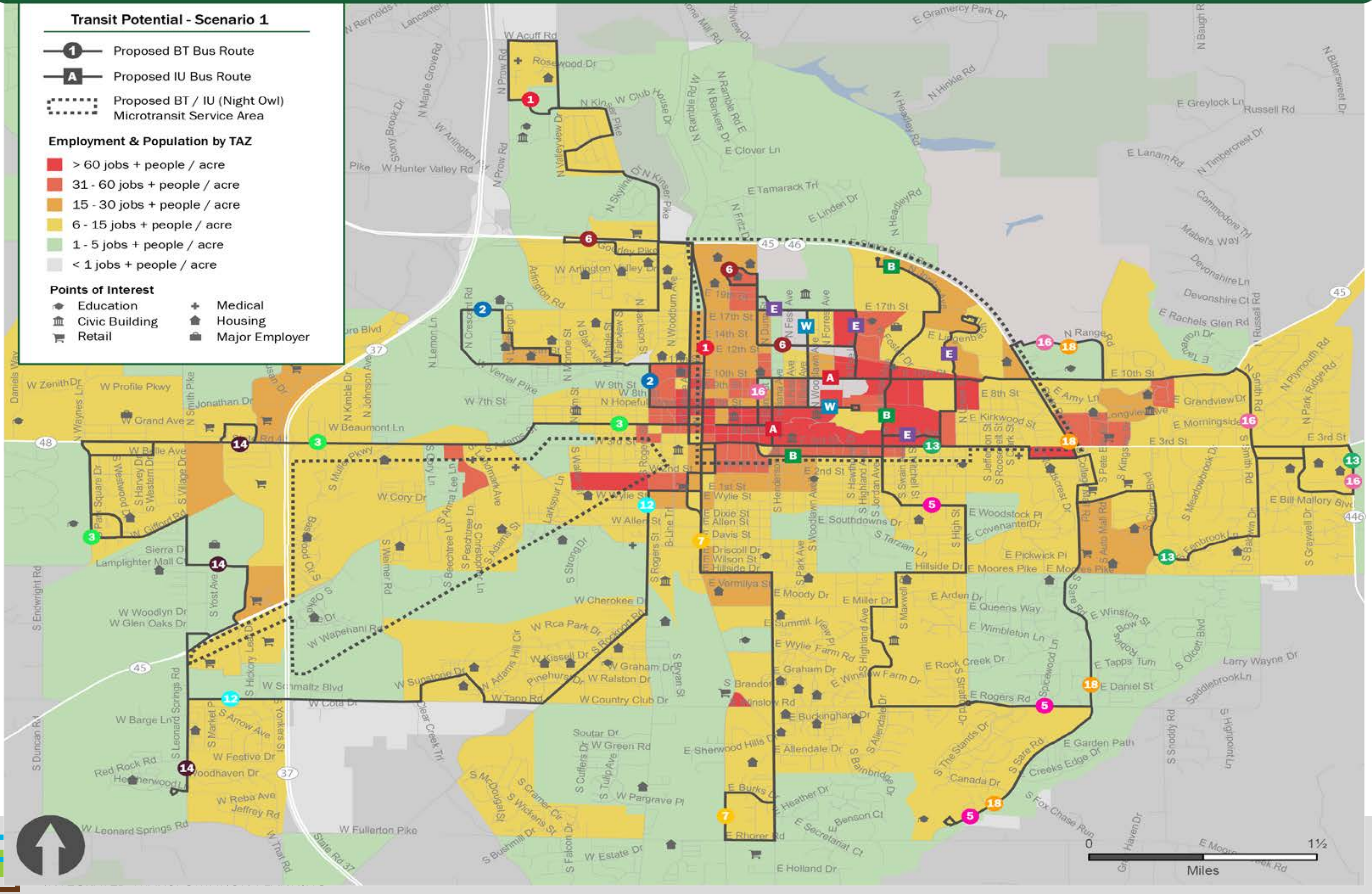
- Driverless fixed-route vehicles
  - Low speed (< 15 mph)
  - Relatively low-capacity (~ 10 passengers)
  - Fully electric (14-hour range)
  - Several on-going pilot programs

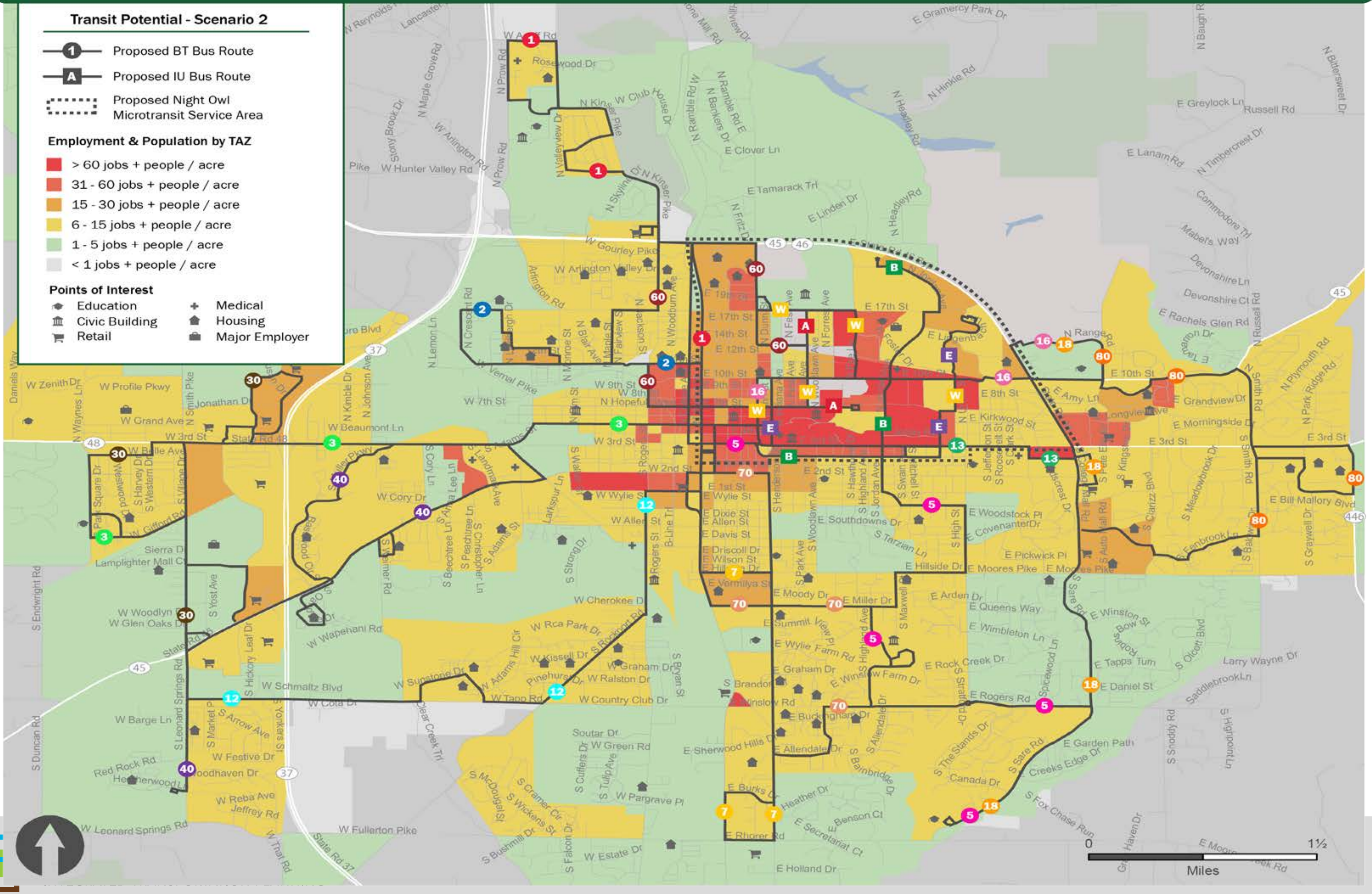
BLOOMINGTON ROUTE OPTIMIZATION




Weekday Ridership Activity - Scenario 2
Proposed BT Bus Route
Proposed IU Bus Route
Proposed BT / IU (Night Owl) Microtransit Service Area
Stop Level Ridership Activity
High
Low
Points of Interest
Education
Civic Building
Retail
Medical
Housing
Major Employer
Parks
Water
0
1½
Miles

BLOOMINGTON ROUTE OPTIMIZATION




Transit Potential - Scenario 2
Proposed BT Bus Route
Proposed IU Bus Route
Proposed Night Owl Microtransit Service Area
Employment & Population by TAZ
> 60 jobs + people / acre
31 - 60 jobs + people / acre
15 - 30 jobs + people / acre
6 - 15 jobs + people / acre
1 - 5 jobs + people / acre
< 1 jobs + people / acre
Points of Interest
Education
Civic Building
Retail
Medical
Housing
Major Employer
0
1½
Miles


THANK YOU
FOURSQUARE ITP
INTEGRATED TRANSPORTATION PLANNING
Hybrid Electric
EVERMANN
660
BLOOMINGTON TRANSIT
EASY MILE
645
Schwinn

Rural Transit

Rural Transit Ivy Tech/Cook Schedule

Departs Downtown Transit Center	Arrive Life Science & Nursing	Arrive Ivy Tech Main Campus	Depart Ivy Tech Main Campus	Arrive Downtown Transit Center
6:40 AM	6:55 AM	7:00 AM	7:00 AM	7:15 AM
7:15 AM	7:25 AM	7:45 AM	7:45 AM	8:15 AM
8:15 AM	8:25 AM	8:45 AM	8:45 AM	9:15 AM
9:15 AM	---	9:45 AM	9:45 AM	10:15 AM
10:15 AM	10:15-10:30 AM	10:45 AM	10:45 AM	11:15 AM
11:15 AM	11:15-11:30 AM	11:45 AM	11:45 AM	12:15 PM
12:15 PM	12:15-12:30 PM	12:45 PM	12:45 PM	1:15 PM
1:15 PM	1:45-2:00 PM	1:45 PM	1:45 PM	2:45 PM
2:15 PM	2:45-3:00 PM	2:45 PM	2:45 PM	3:15 PM
3:15 PM	3:45-4:00 PM	3:45 PM	3:45 PM	4:15 PM
---	---	---	4:15 PM	4:45 PM
4:15 PM	---	4:45 PM	4:45 PM	5:15 PM
---	---	---	5:15 PM	5:45 PM