

# Final Recommendations

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Based on the feedback received online and at public meetings held in Summer 2023, the study team developed a final set of service recommendations that incorporate the best aspects from the preliminary scenarios as well as public feedback. These recommendations are based upon conditions and data provided at the time of analysis. Final route alignments or schedules may vary slightly upon implementation.

The final recommendations for BARTA and RRTA aim to address several key themes the study team heard through public and stakeholder engagement efforts and discovered through the market and service analyses, including:

- Providing more consistent span of service and frequencies across all routes.
- Reallocating services to be less concentrated during peak periods and provide additional service during off-peak periods and weekends.
- Interlining routes for efficiency gains.
- Simplifying route alignments and eliminating one-way loops.

While these changes may have resulted in the elimination of under-performing route segments, resources in the plan are concentrated in the areas that offer the greatest transit potential and aim to address known challenges with the system. The changes in travel apparent following the COVID-19 pandemic make clear that the typical peak-hour, commute-focused service is not as desirable as consistent all-day service on weekdays and weekends. This plan is intended to fill service gaps and improve mobility for transit-dependent populations in the BARTA and RRTA service areas.

## BARTA Service Recommendations

The final recommendations for the BARTA system are primarily concentrated on fixed-routes service, with three phases of implementation strategies (**Figure 31** and **Figure 32**). Phase 1 of implementation focuses on service alignment changes with only minor improvements to level of service; Phase 2 and Phase 3 focus on improving headways and expanding the service span of realigned routes.

Each BARTA route is impacted in some way by the recommended changes in the proposed network. Each route will retain its current route number, with the exception of Route 20 and Route 22, which will be changed to Route 120 and Route 122, respectively, to reflect their route type as long, regional connector routes. The proposed system aims to provide bi-directional service to the greatest extent possible to facilitate more direct travel between origins and destinations, rather than necessitating out-of-direction travel on one-way loops.

The proposed BARTA network concentrates fixed-route service in high-density, transit-supportive locations where it can be most effective. Some route segments that have performed poorly in Birdsboro, Robesonia, and Womelsdorf have been eliminated. In the future, these routes could have microtransit zones to complement the fixed-route network, pending available resources.

Figure 31: BARTA Fixed-Route Service Recommendations

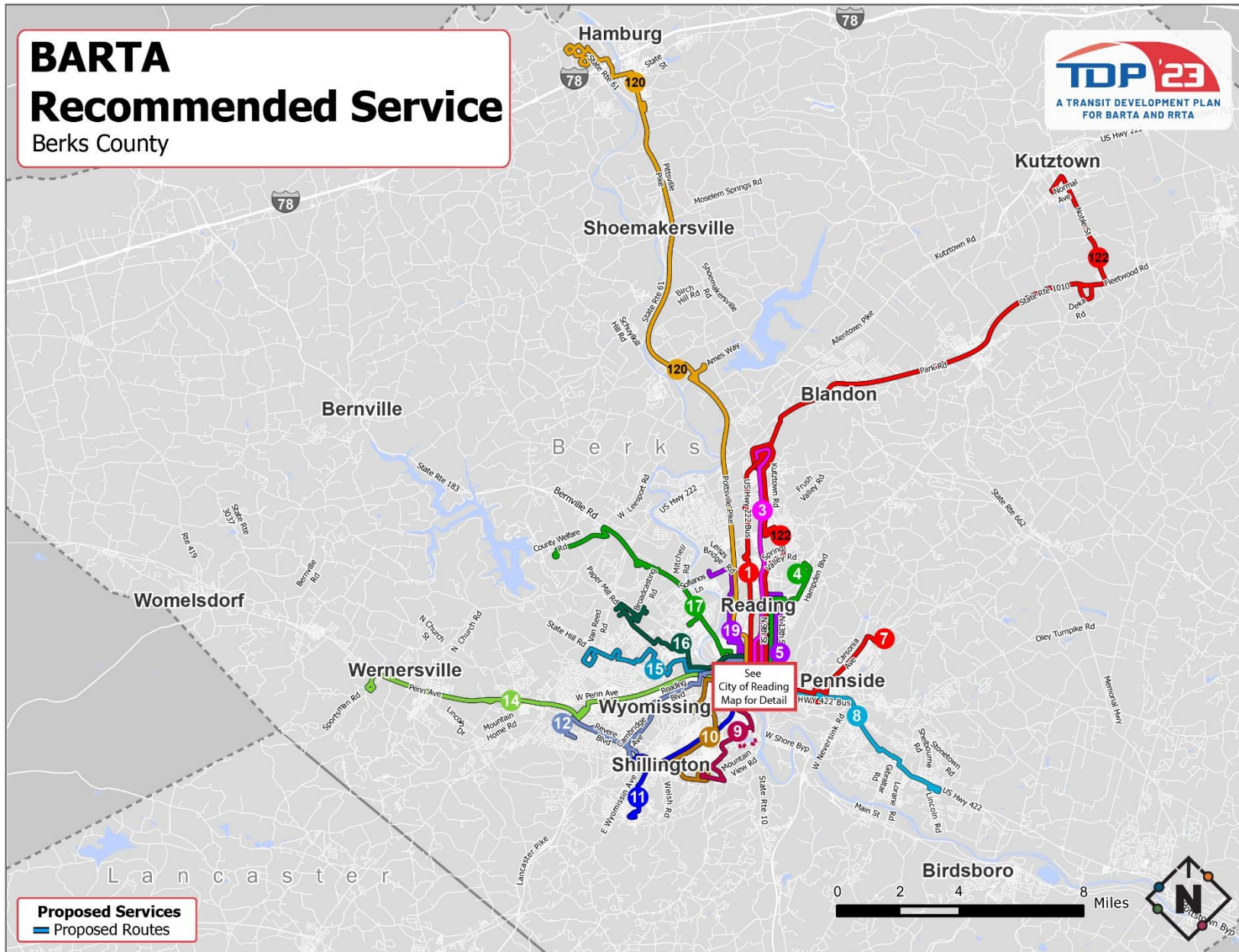
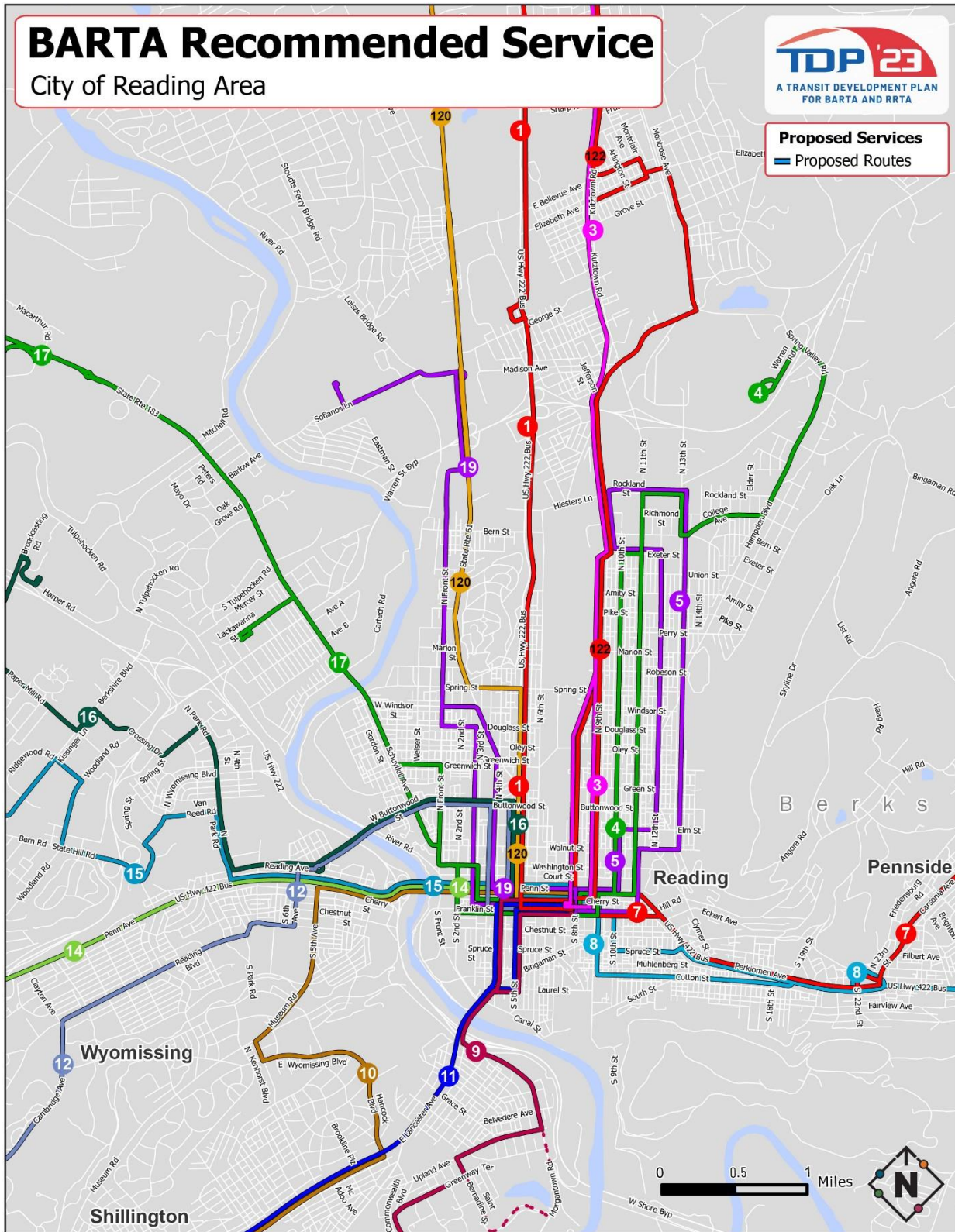




Figure 32: BARTA Fixed-Route Service Recommendations - Reading Area

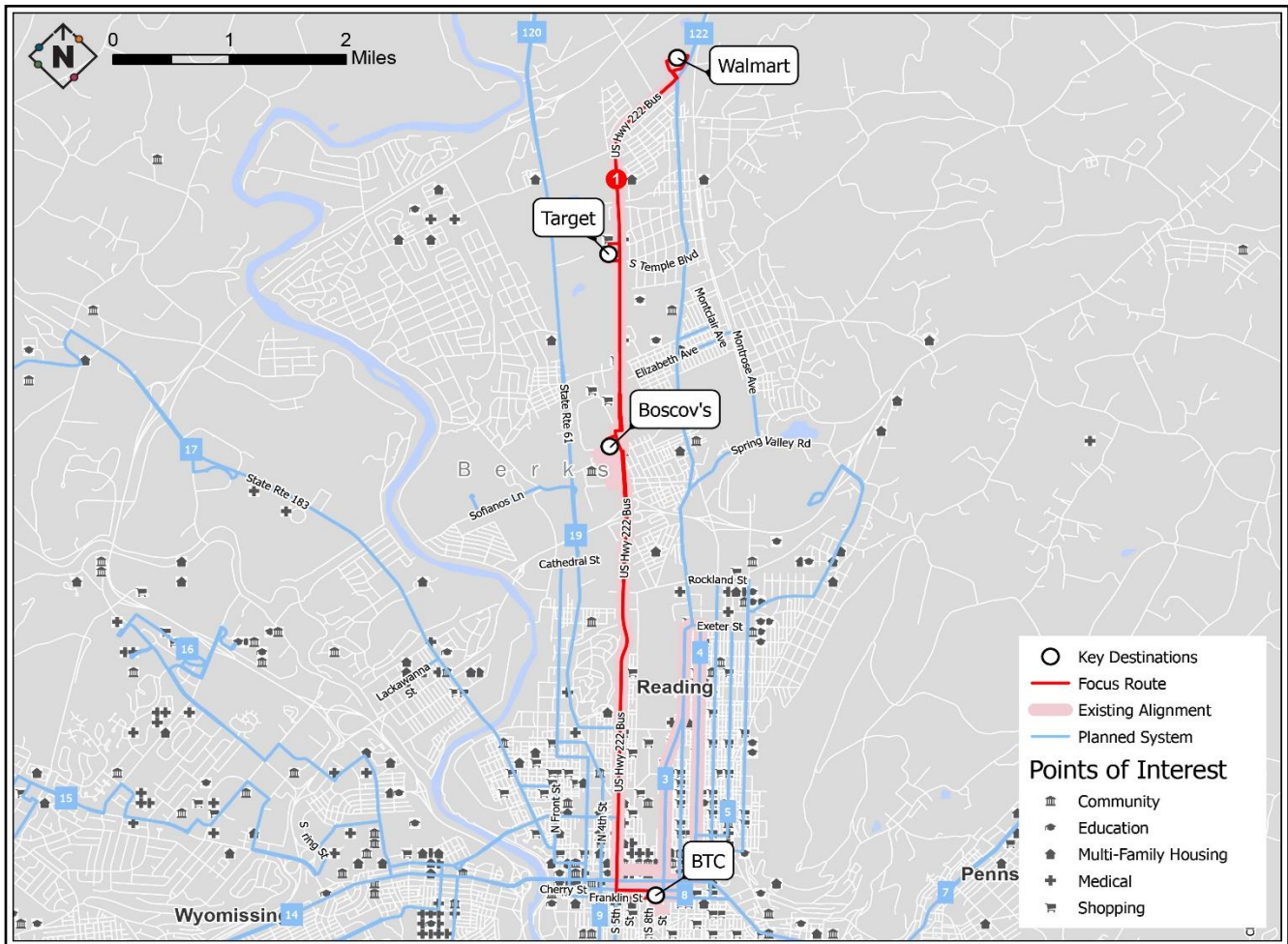




# BARTA CHANGE SHEETS

The service recommendations for each route are presented in a series of change sheets. These route-by-route change sheets highlight service frequency changes by phase and include current service information (as of January 2024) for comparison. The changes in level of service (span and frequency) respond to the results of the market analysis and service analysis as well as feedback received during public and stakeholder engagement. While the tables on the change sheets include specific proposed spans, these spans can be adjusted based on observed demand. If a route is proposed to operate 12 hours a day, so long as the number of hours it operates does not change, the cost of the service will not change.

## Route 1/Temple Alignment



### SERVICE RECOMMENDATIONS

Route 1's alignment will be similar to the current route alignment serving BTC in downtown Reading and Walmart at Temple via N 5<sup>th</sup> Street where it creates a connection opportunity with the proposed Routes 3 and proposed Route 122. Other key destinations being served by Route 1 are Target and Boscov's. To improve operating efficiency, this route has been interlined with Route 15.

Route 1 performs well overall compared to other BARTA routes and thereby does not warrant major alignment changes. The proposed earlier start of service on weekends is to address pent-up demand. The reduction of span of service on weekdays and Saturdays reflects a decline in ridership after 10:00 p.m., based on existing ridership data.

## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|-------------------------|--------------------|------------------------|
| Weekday     | 5:30 a.m. to 12:00 a.m. | 20                 | 30                     |
| Saturday    | 6:30 a.m. to 12:00 a.m. | 20                 | 30                     |
| Sunday      | 10:00 a.m. to 7:00 p.m. | 30                 | 30                     |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|-------------------------|--------------------|------------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 30                 | 60                     |
| Saturday    | 7:00 a.m. to 10:00 p.m. | 60                 | 60                     |
| Sunday      | 8:00 a.m. to 8:00 p.m.  | 60                 | 60                     |

### PHASE 2: MID-TERM

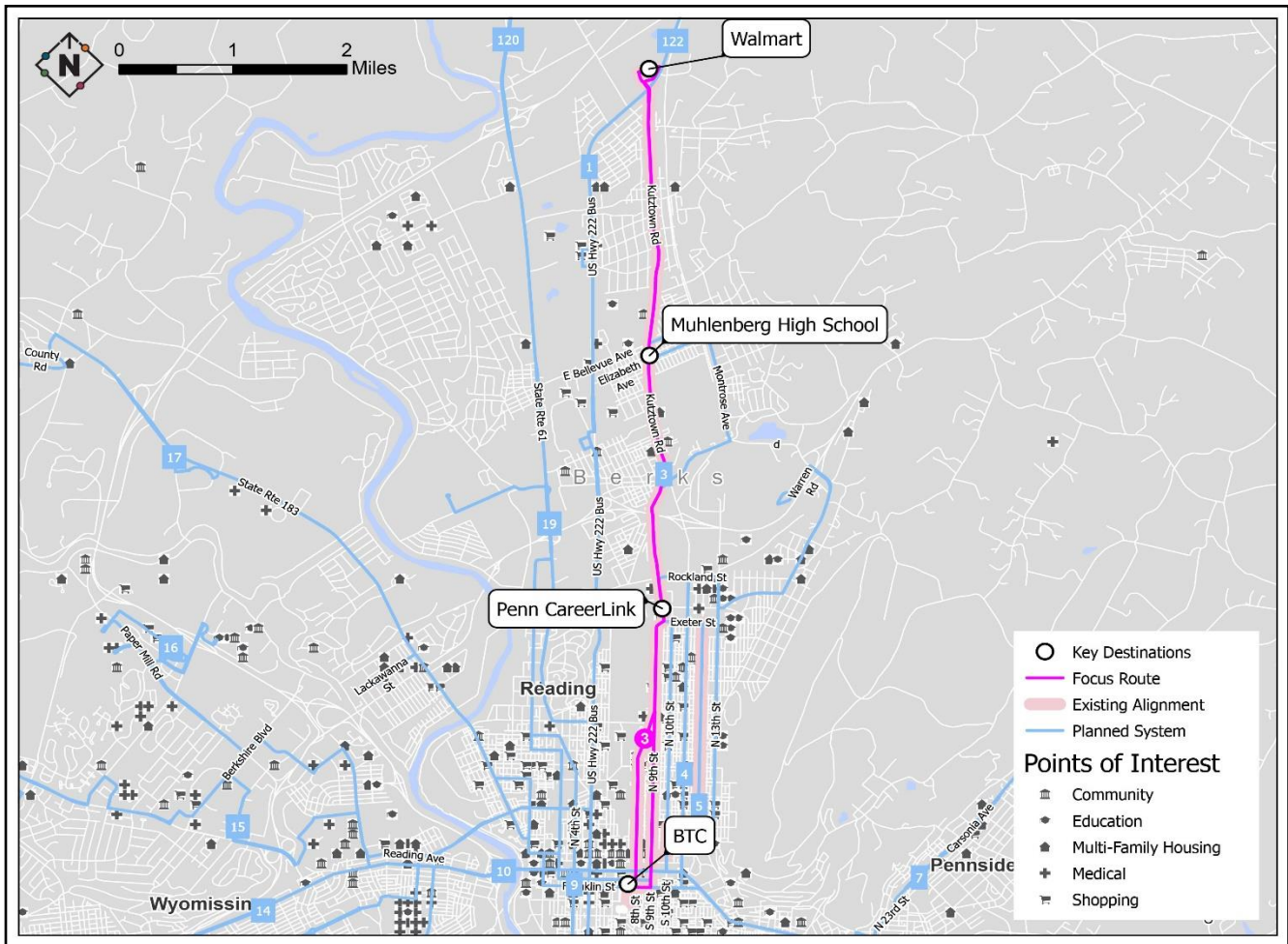
| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|-------------------------|--------------------|------------------------|
| Weekday     | 5:00 a.m. to 11:00 p.m. | 30                 | 60                     |
| Saturday    | 7:00 a.m. to 10:00 p.m. | 30                 | 60                     |
| Sunday      | 8:00 a.m. to 8:00 p.m.  | 30                 | 60                     |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|-------------------------|--------------------|------------------------|
| Weekday     | 5:00 a.m. to 11:00 p.m. | 30                 | 60                     |
| Saturday    | 6:00 a.m. to 10:00 p.m. | 30                 | 60                     |
| Sunday      | 8:00 a.m. to 8:00 p.m.  | 30                 | 60                     |



## Route 3/ Temple Via Kutztown Rd Alignment



### SERVICE RECOMMENDATIONS

Route 3's alignment will be similar to the current route alignment connecting BTC in downtown Reading and Walmart at Temple via Kutztown Rd where it creates a connection opportunity with the proposed Route 1. Furthermore, Route 3 will serve the same alignment as the proposed Route 122 from Laureldale to Temple creating potential for connections along the way. Other key destinations being served by this route are Muhlenberg High School and Penn CareerLink.

Route 3 performs well overall compared to other BARTA routes and thereby does not warrant major alignment changes. The proposed Sunday service is to address demand on weekends. Relatively low and inconsistent ridership per trip during the weekday peak periods warrants an increase in peak headways.

## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|------------------------|--------------------|------------------------|
| Weekday     | 5:15 a.m. to 6:45 p.m. | 30                 | 60                     |
| Saturday    | 6:15 a.m. to 6:15 p.m. | 60                 | 60                     |
| Sunday      | -                      | -                  | -                      |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|------------------------|--------------------|------------------------|
| Weekday     | 6:00 a.m. to 7:00 p.m. | 60                 | 60                     |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60                     |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60                     |

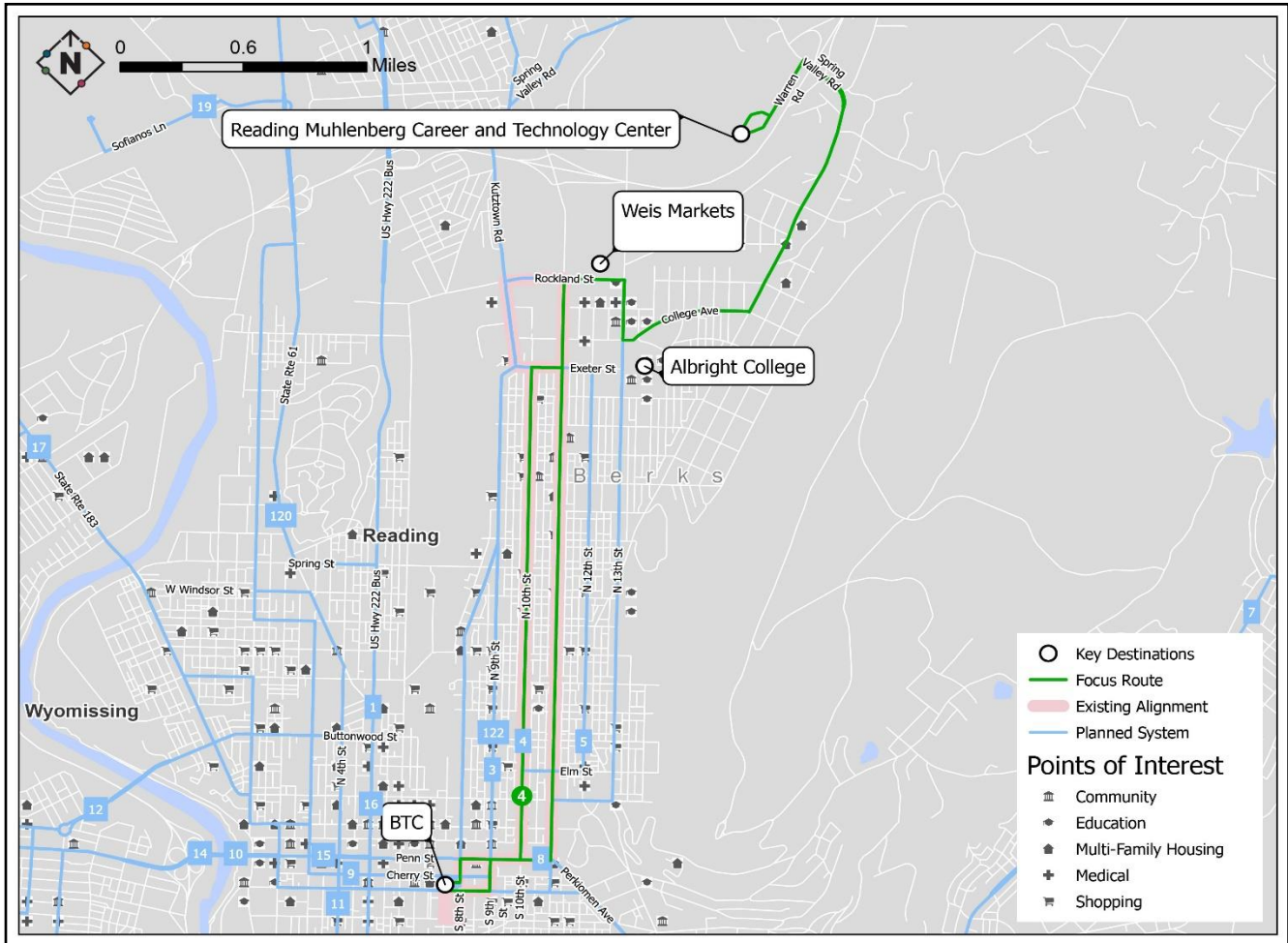
### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 8:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 8:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

# Route 4/ Reading Muhlenberg Career & Technology Center Alignment



## SERVICE RECOMMENDATIONS

Route 4’s alignment will be similar to the current route alignment between downtown and Rockland Street. From Rockland Street, the route will turn east to serve Weis Market, Albright College, and Reading Muhlenberg Career and Technology Center via Hampden Boulevard. Service to Pennsylvania CareerLink on Kutztown Road would be picked up by the proposed Route 5. This route has been interlined with the proposed Route 14, and will have similar peak and off-peak frequencies.

Route 4 performs well overall compared to other BARTA routes and thereby does not warrant major alignment changes. The proposed alignment changes will ensure direct service to a full-service grocery store (Weis Market) on the northern end of the route. The proposed earlier start of service on Sundays is to address weekend demand. The reduction of span of service on Saturdays reflects low ridership per trip before 7:00 a.m. and after 8:00 p.m. Additionally, service during the peak periods is inconsistent; headways range from 20 minutes to 45 minutes, thereby warranting a change to 30-minute weekday peak headways in the short term.



## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|-------------------------|--------------------|------------------------|
| Weekday     | 4:45 a.m. to 11:00 p.m. | 20                 | 40                     |
| Saturday    | 4:45 a.m. to 10:40 p.m. | 40                 | 40                     |
| Sunday      | 11:15 a.m. to 6:30 p.m. | 60                 | 60                     |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 9:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

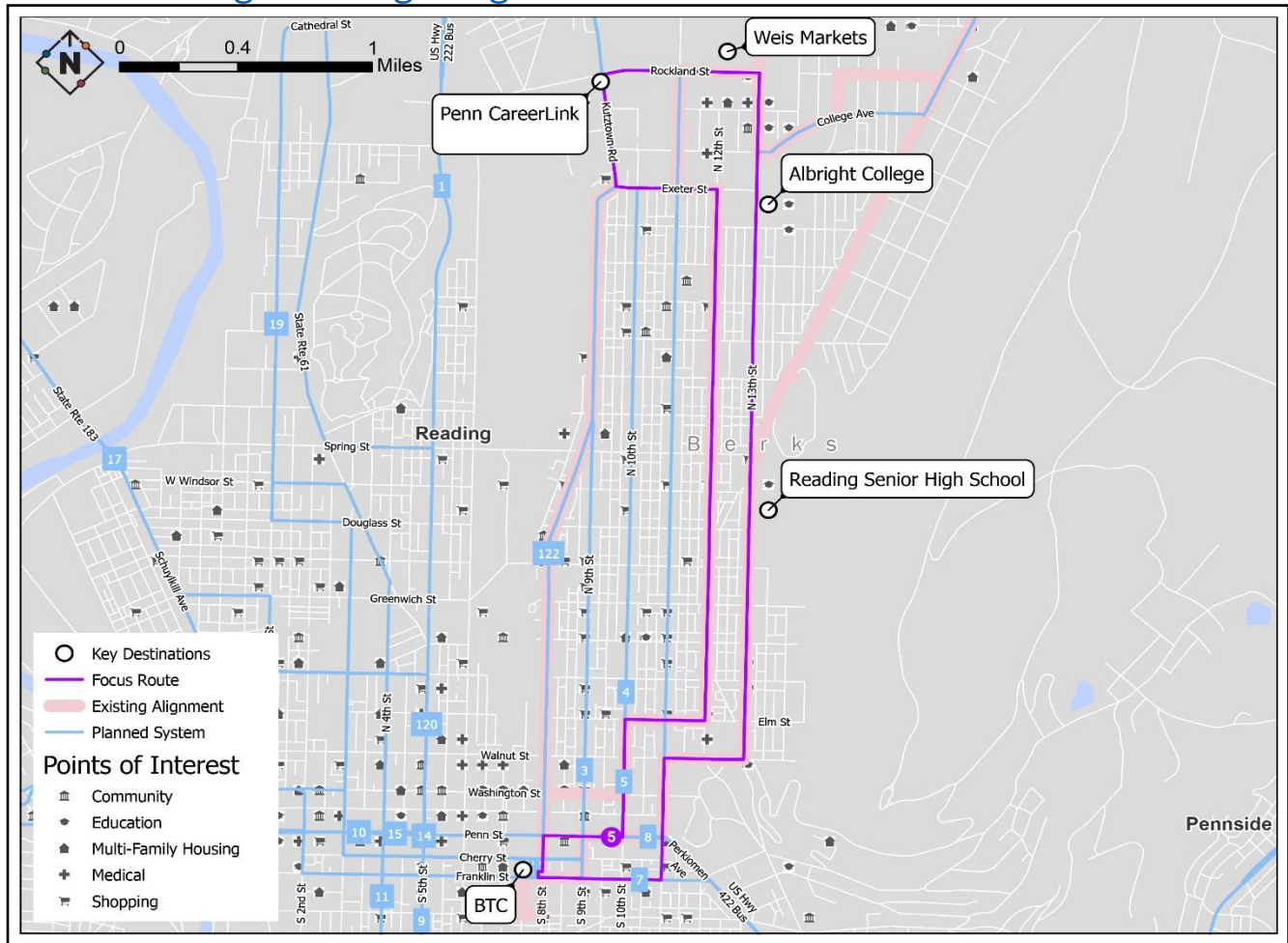
### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 9:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 9:00 p.m.  | 30                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |

## Route 5/Albright College Alignment



### SERVICE RECOMMENDATIONS

Route 5 will continue to provide service between Albright College and downtown Reading; however, service will shift from Hampden Boulevard to 13<sup>th</sup> Street to serve Pennsylvania CareerLink on Kutztown Road. Hampden Road service would partially be picked up by the proposed Route 4. This route has been interlined with the proposed Route 16 and will have similar peak and off-peak frequencies.

Route 5 warrants some alignment changes due to its performance; eliminating the one-way service and extending service to the Pennsylvania CareerLink is expected to expand ridership and productivity. The reduction of span of service on weekdays and Saturdays reflects low ridership per trip before 6:00 a.m. and 7:00 a.m. respectively. Furthermore, relatively low and inconsistent ridership per trip during the weekday off-peak periods warrants a reduction in peak headways. However, Saturdays show higher ridership in peak hours as compared to the off-peak hours and hence warrant improved peak headways and reduced off-peak headways. Additionally, service during the weekday peak periods varies from 30-minutes to 45-minutes. The service recommendations will make headways more consistent throughout the service day.

## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|------------------------|--------------------|------------------------|
| Weekday     | 5:20 a.m. to 6:20 p.m. | 30                 | 45                     |
| Saturday    | 6:15 a.m. to 6:15 p.m. | 45                 | 45                     |
| Sunday      | -                      | -                  | -                      |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 9:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 30                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

### PHASE 2: MID-TERM

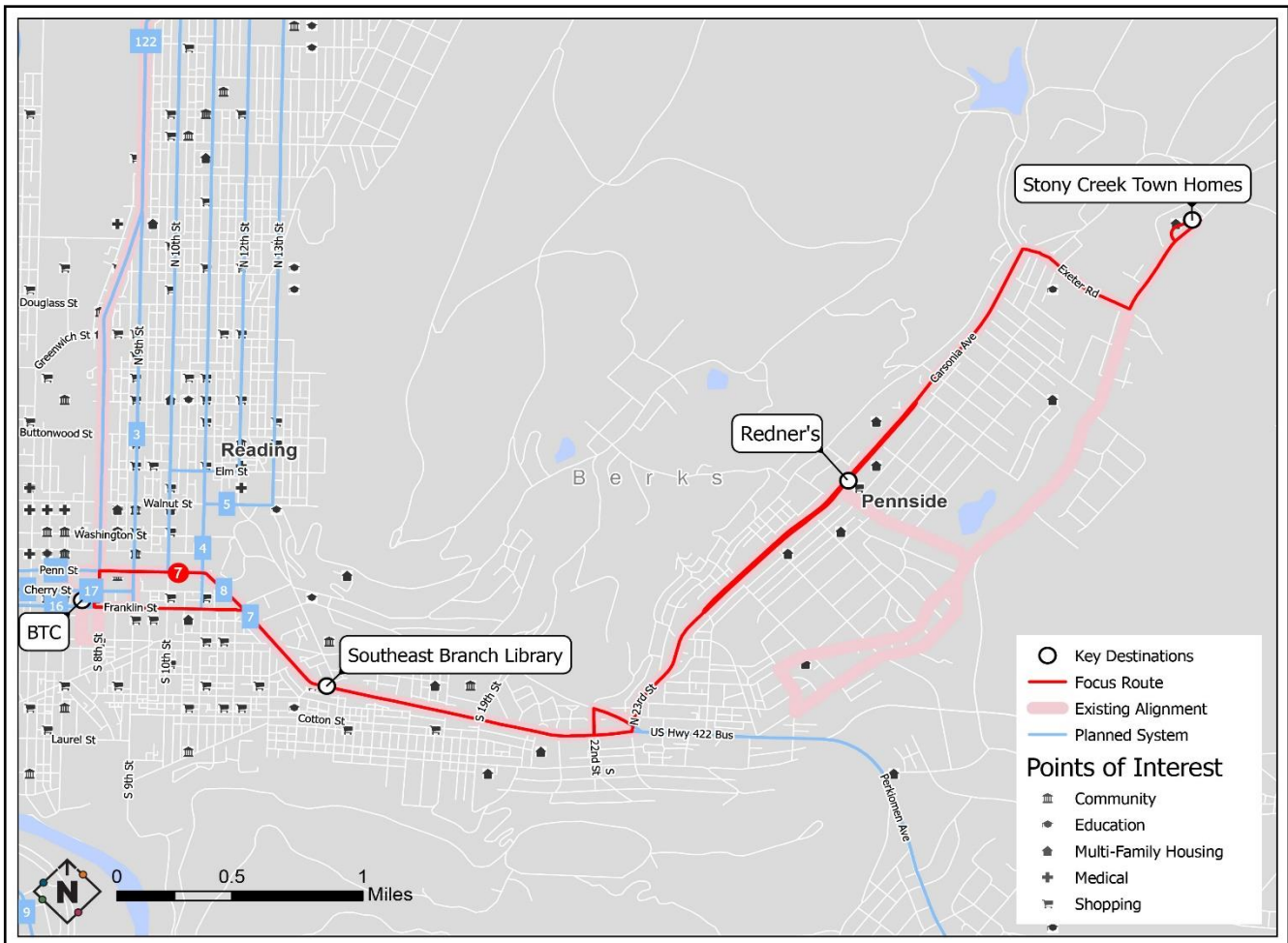
| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 9:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 30                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 8:00 p.m.  | 30                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |



## Route 7/Pennside Alignment



### SERVICE RECOMMENDATIONS

Route 7 will be simplified to follow the same alignment in both directions. The route will operate between downtown Reading and Stony Creek Town Houses via Carsonia Avenue. Service along Butler Lane would be eliminated due to low ridership. In downtown Reading, inbound service would operate along Penn Street while outbound service would operate on Franklin Street to Perkiomen. This route has been interlined with the proposed Route 11 and will have similar peak and off-peak frequencies.

Route 7 warrants alignment change due to low productivity and ridership compared to other BARTA routes. Removing service along the Butler Lane corridor to limit one-way service loops will make the service easier for customers to understand; shifting transit out of areas with low transit need and potential will help focus transit service on areas more likely to generate ridership. Service span for both weekdays and Saturdays have been moved half an hour forward due to low ridership at the start of service.

### EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|------------------------|--------------------|------------------------|
| Weekday     | 5:30 a.m. to 6:30 p.m. | 30                 | 60                     |
| Saturday    | 6:30 a.m. to 6:30 p.m. | 60                 | 60                     |
| Sunday      | -                      | -                  | -                      |

### PROPOSED LEVEL OF SERVICE

#### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 7:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

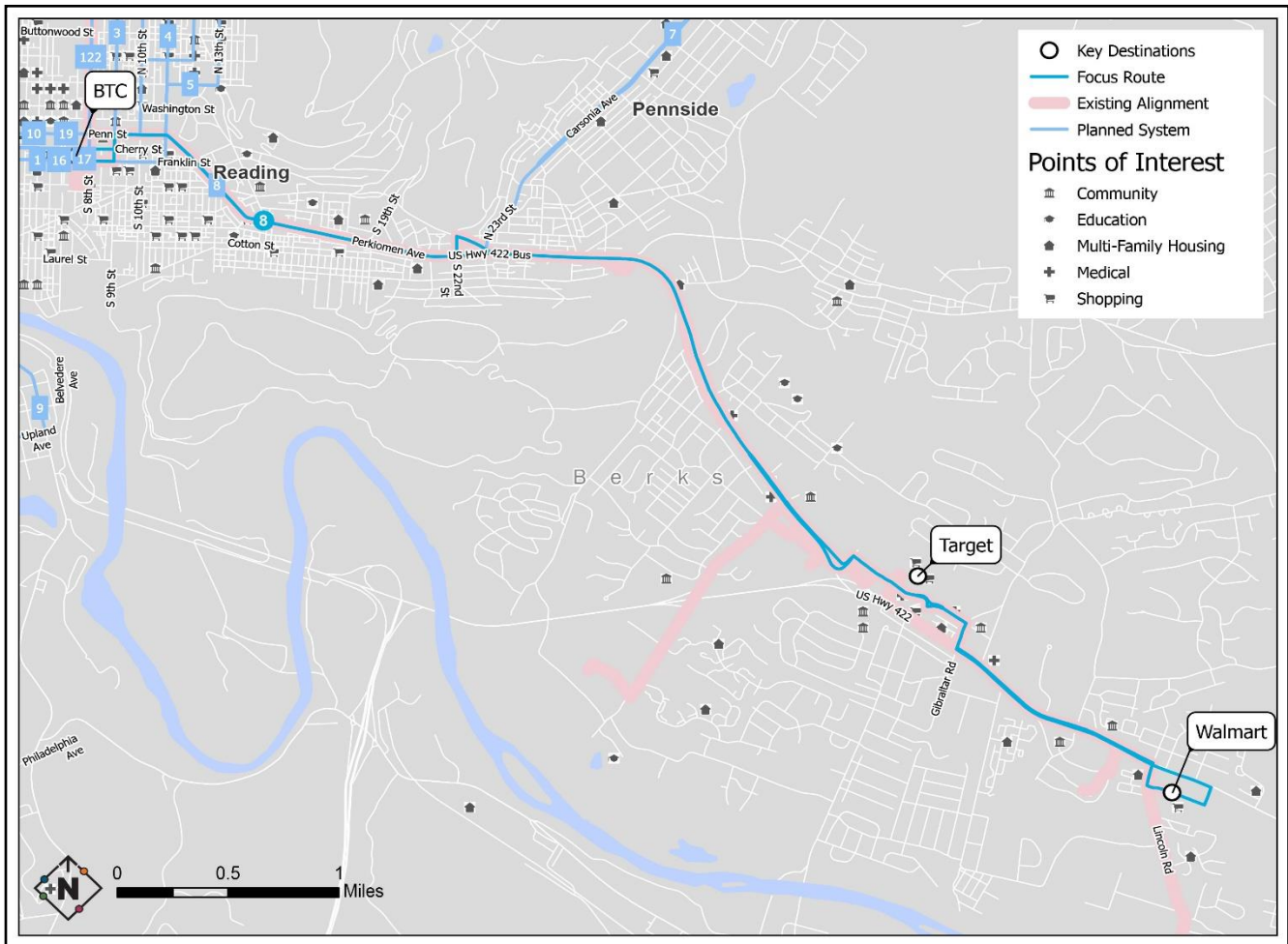
#### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 8:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

#### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 8:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 8:00 p.m. | 30                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

# Route 8/Reiffton/Shelbourne Square Alignment



## SERVICE RECOMMENDATIONS

Route 8 service will be realigned to operate between downtown Reading and the Walmart at Exeter Square Mall to focus on areas with the highest ridership potential. Service to Birdsboro will be cut due to low ridership. In addition, this route has been interlined with the proposed Route 19, and will have similar peak and off-peak frequencies.

Route 8 warrants major alignment changes in the form of removing service between Walmart at Exeter and Birdsboro, which is a low ridership area. Eliminating this unproductive segment will allow BARTA to concentrate resources in areas with higher demand. The expanded span of service for the route, especially on Sundays, will address pent up ridership demand. The reduction of span of service on weekdays and Saturdays reflects a decline in ridership after 07:00 p.m., based on existing ridership data. Additionally, service on weekdays is inconsistent during the peak and off-peak periods. This coupled with low ridership per trip warrants reduced headways during the peak and off-peak periods.

## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|-------------------------|--------------------|------------------------|
| Weekday     | 5:00 a.m. to 11:00 p.m. | 30                 | 60                     |
| Saturday    | 7:00 a.m. to 11:00 p.m. | 75                 | 75                     |
| Sunday      | 11:00 a.m. to 7:00 p.m. | 75                 | 75                     |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

### PHASE 2: MID-TERM

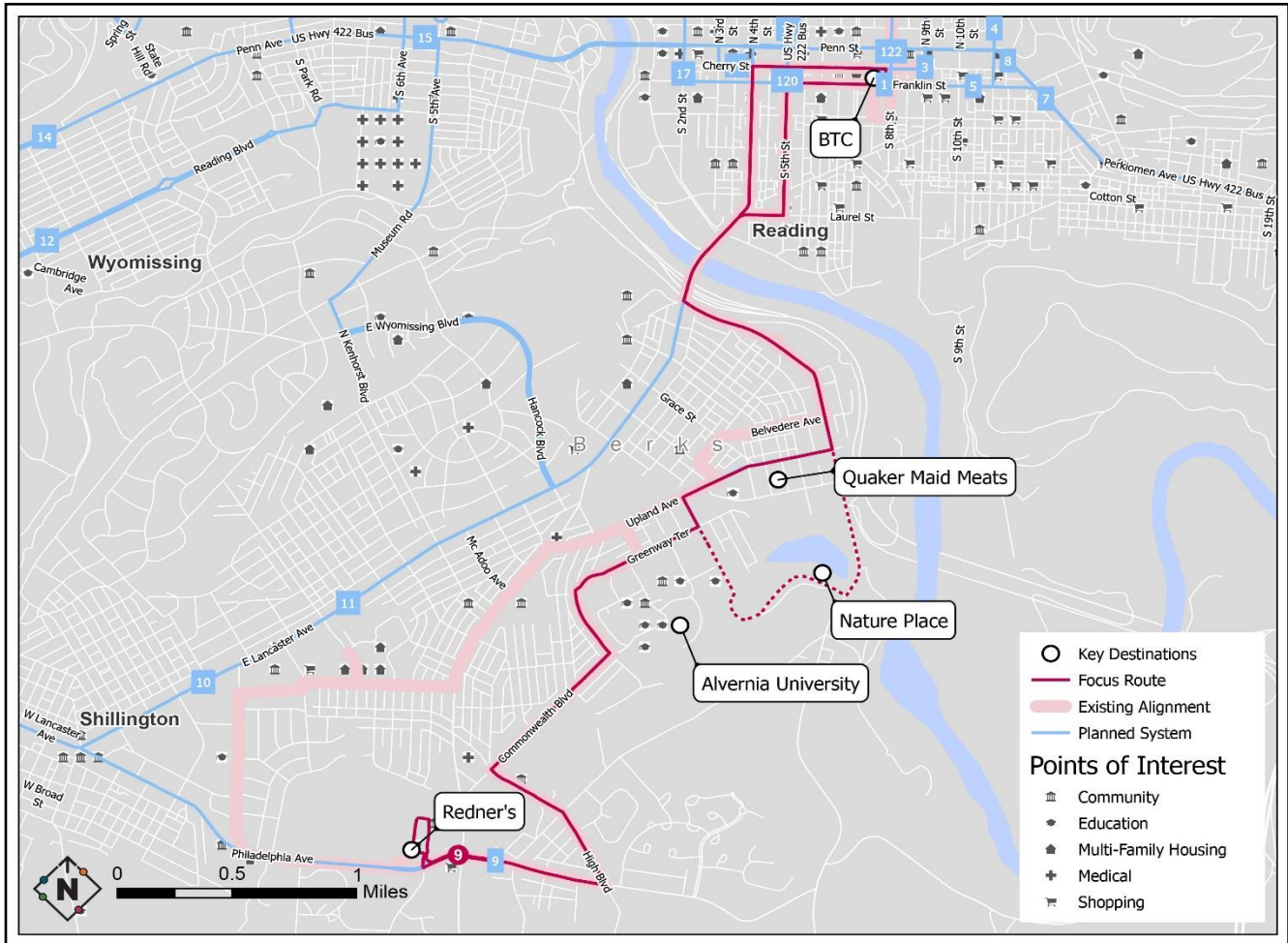
| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 8:00 p.m. | 60                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

### PHASE 3: LONG-TERM

| DAY OF WEEK   | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|---------------|------------------------|--------------------|------------------|
| Weekday       | 5:00 a.m. to 8:00 p.m. | 30                 | 60               |
| Saturday      | 6:00 a.m. to 8:00 p.m. | 60                 | 60               |
| <b>Sunday</b> | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |



## Route 9/Grill Via Kenhorst Alignment



### SERVICE RECOMMENDATIONS

Route 9 will be simplified to follow the same alignment in both directions. The route will operate between downtown Reading and Redner's at Kenhorst Plaza via Alvernia University. Connections to the proposed Route 10 could be made at Kenhorst Plaza. Service along New Holland Road would be eliminated due to low ridership. This route will be interlined with the proposed Route 10 and will have similar peak and off-peak frequencies.

Route 9 warrants alignment changes due to poor productivity compared to other BARTA routes. The realignment to provide more bi-directional service to Alvernia University, Quaker Maid Meats and nearby multi-family housing developments will make the service easier to understand for customers. Relatively inconsistent ridership per trip during the weekday peak periods warrants a reduction in peak headways. Service span for both weekdays and Saturdays have been moved a quarter of an hour forward due to low ridership at the start of service.

This route will operate with a deviation to The Nature Place at Berks Nature located in Angelica Creek Park three times a day.

## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN         | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|----------------------|--------------------|------------------------|
| Weekday     | 5:45 a.m. to 6:45 PM | 60                 | 60                     |
| Saturday    | 6:45 a.m. to 6:45 PM | 60                 | 60                     |
| Sunday      | -                    | -                  | -                      |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN         | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|----------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 7:00 PM | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 PM | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 PM | 60                 | 60               |

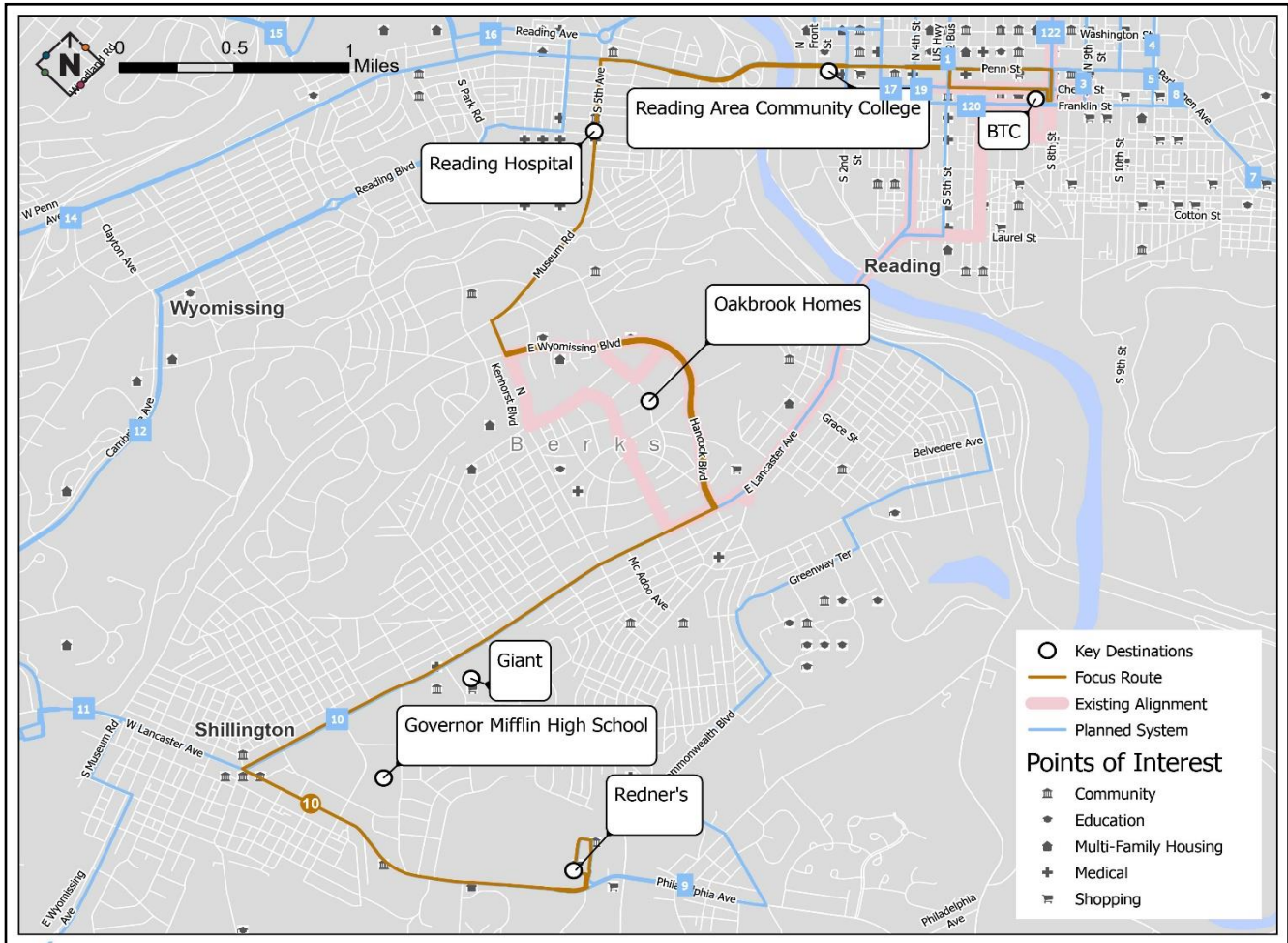
### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 8:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 8:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 8:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

## Route 10/Kenhorst Plaza Via Shillington Alignment



### SERVICE RECOMMENDATIONS

Route 10 will be simplified to follow the same alignment in both directions. The route will operate between downtown Reading and Redner's at Kenhorst Plaza, via Penn Avenue, Reading Hospital, Reading Housing Authority - Oakbrook Homes, Lancaster Avenue, and Philadelphia Avenue. Connections to the proposed Route 9 could be made at Kenhorst Plaza. This route has been interlined with the proposed Route 9, and will have similar peak and off-peak frequencies.

Route 10 performs poorly overall compared to other BARTA routes and thereby warrants major alignment changes to provide bi-directional service south of downtown. The reduction of span of service on weekdays and Saturdays reflects a relatively low ridership after 07:00 p.m., based on existing ridership data. Furthermore, relatively low and inconsistent ridership per trip during the weekday and Saturday off-peak periods warrants an increase in off-peak headways.

### EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|-------------------------|--------------------|------------------------|
| Weekday     | 5:30 a.m. to 10:10 p.m. | 30                 | 45                     |
| Saturday    | 6:30 a.m. to 10:10 p.m. | 45                 | 45                     |
| Sunday      | 11:30 a.m. to 7:00 p.m. | 60                 | 60                     |

### PROPOSED LEVEL OF SERVICE

#### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 7:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

#### PHASE 2: MID-TERM

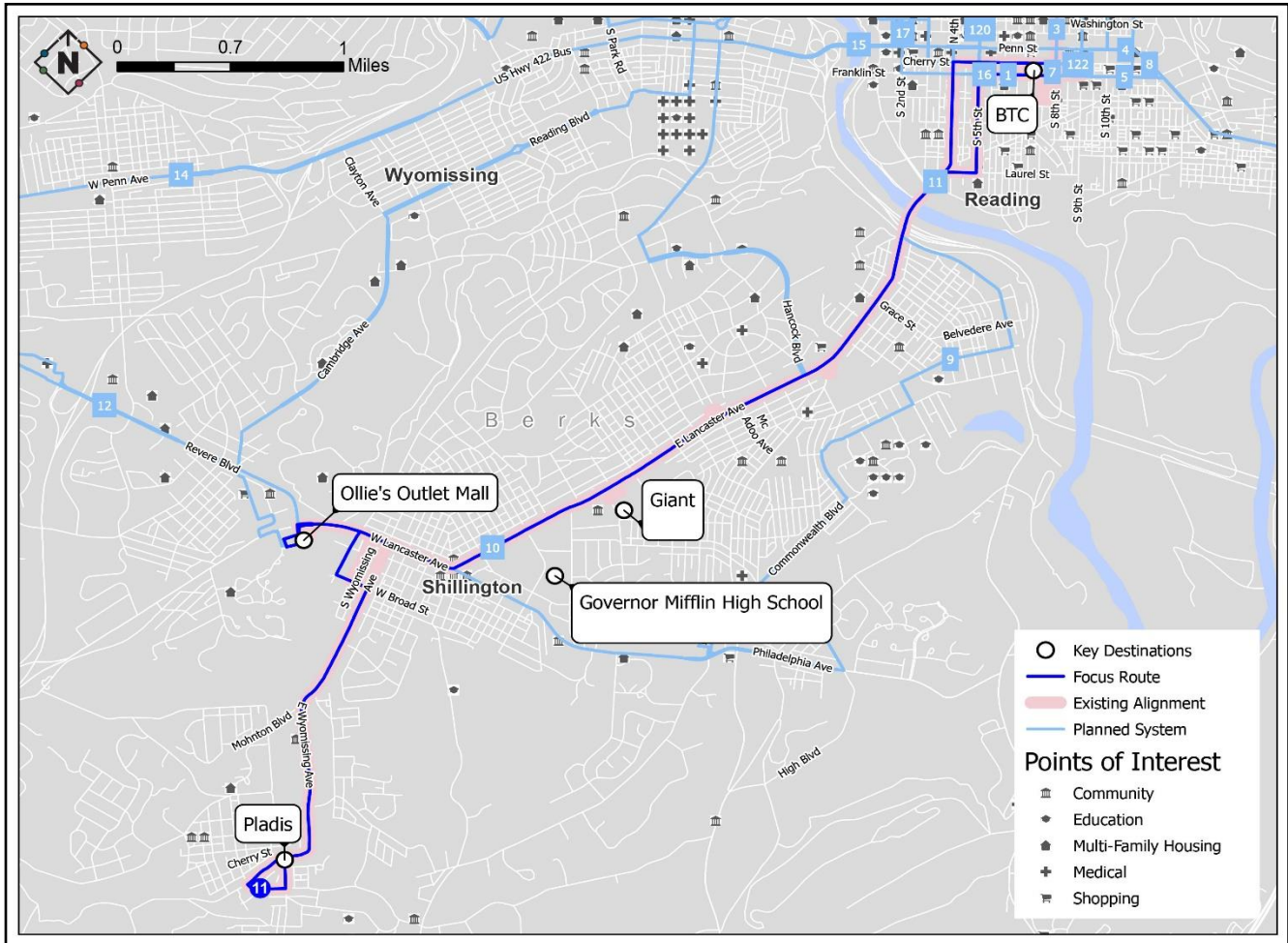
| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 8:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

#### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 8:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 8:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |



# Route 11/Mohnton Via Shillington Alignment



## SERVICE RECOMMENDATIONS

Route 11’s alignment will be similar to the current Route 11 alignment, connecting downtown Reading to Mohnton via E Lancaster Ave. This alignment will also serve Ollie’s Outlet Mall where transfers will be available to the proposed Route 12. This route will be interlined with the proposed Route 7, and will have similar peak and off-peak frequencies.

Route 11 performs well overall compared to other BARTA routes and thereby does not warrant major alignment changes. The proposed changes reduce out-of-direction travel while simplifying the schedule will make the service easier for customers to follow.

## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|------------------------|--------------------|------------------------|
| Weekday     | 5:30 a.m. to 6:45 p.m. | 30                 | 75                     |
| Saturday    | 6:30 a.m. to 6:30 p.m. | 60                 | 60                     |
| Sunday      | -                      | -                  | -                      |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 7:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

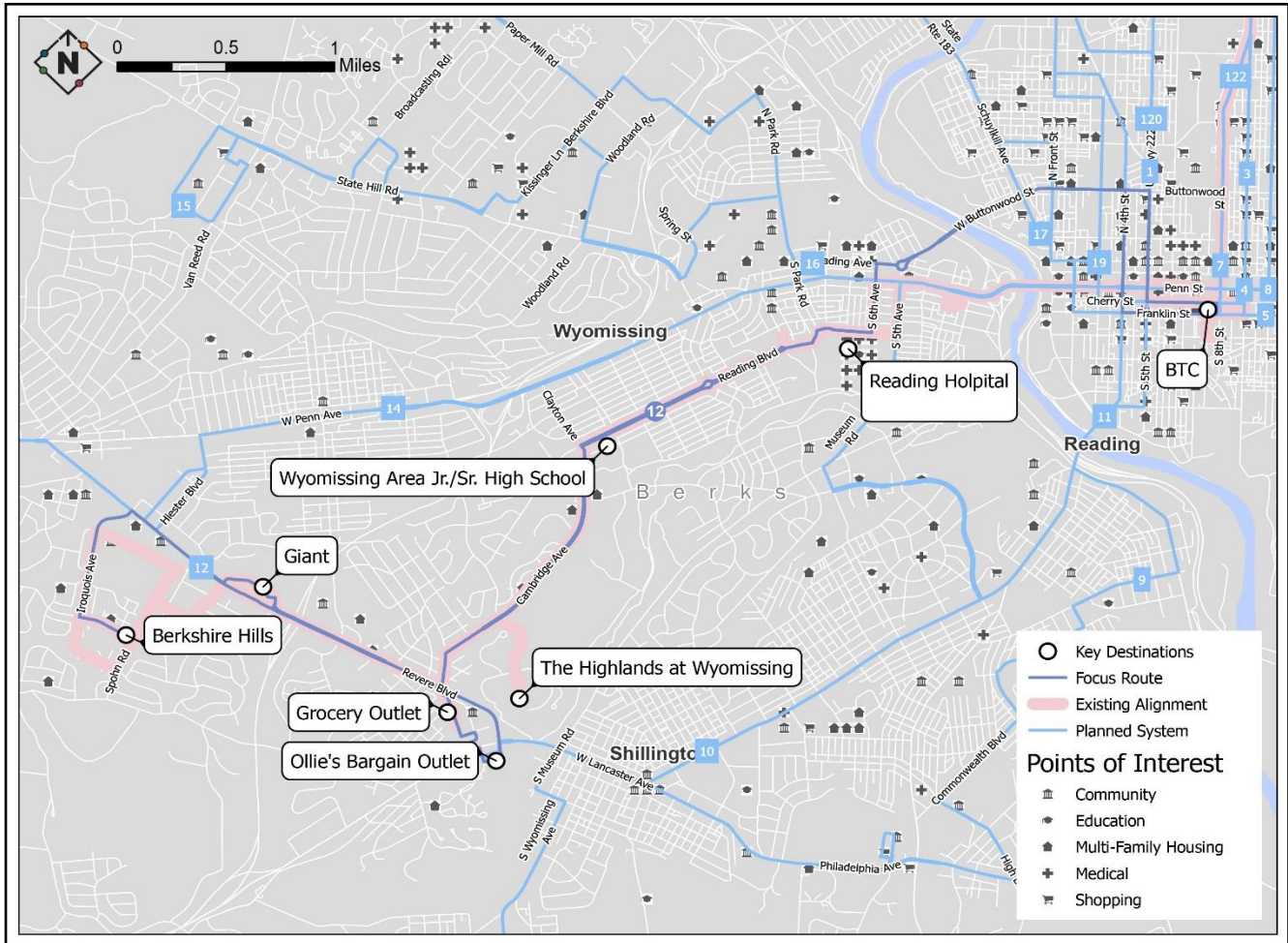
### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 8:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 8:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 8:00 p.m. | 30                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

# Route 12/Lincoln Park Vian Kenhorst Alignment



## SERVICE RECOMMENDATIONS

Route 12 will operate between downtown Reading and Berkshire Hills. Service will be shifted from Penn Street to Buttonwood Street to expand east-west service coverage northwest of downtown Reading. In addition, due to low ridership, The Highlands at Wyomissing will not be served directly from Parkview Lane. Instead, Route 12 buses will stop on Revere Boulevard near Sheetz to allow for accesses to the Highlands from Brae Circle. This alignment would also add service to Ollie’s Bargain Outlet and allow for connections to the proposed Route 11. Finally, service to Berkshire Hills will be simplified to operate along Iroquois Avenue in both directions. This will create a connection opportunity to the proposed Route 14. Route 12 will be interlined with the proposed Route 17 and will have similar peak and off-peak frequencies.

Route 12 has the lowest weekday ridership overall compared to other BARTA routes and ranks in the bottom three routes on several productivity measures, which warrants some alignment changes. Eliminating one-way loops and providing transfer opportunities are expected to improve ridership on the route. The service span for both weekdays and Saturdays have been moved to 06:00 a.m. and 07:00 a.m. respectively due to extremely low ridership at the start of service based on the existing ridership data. Furthermore, the peak and off-headways have been changed to 30-minutes and 60-minutes to simplify the schedules.

## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|------------------------|--------------------|------------------------|
| Weekday     | 5:30 a.m. to 7:00 p.m. | 45                 | 90                     |
| Saturday    | 6:15 a.m. to 7:00 p.m. | 45                 | 90                     |
| Sunday      | -                      | -                  | -                      |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 7:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

### PHASE 2: MID-TERM

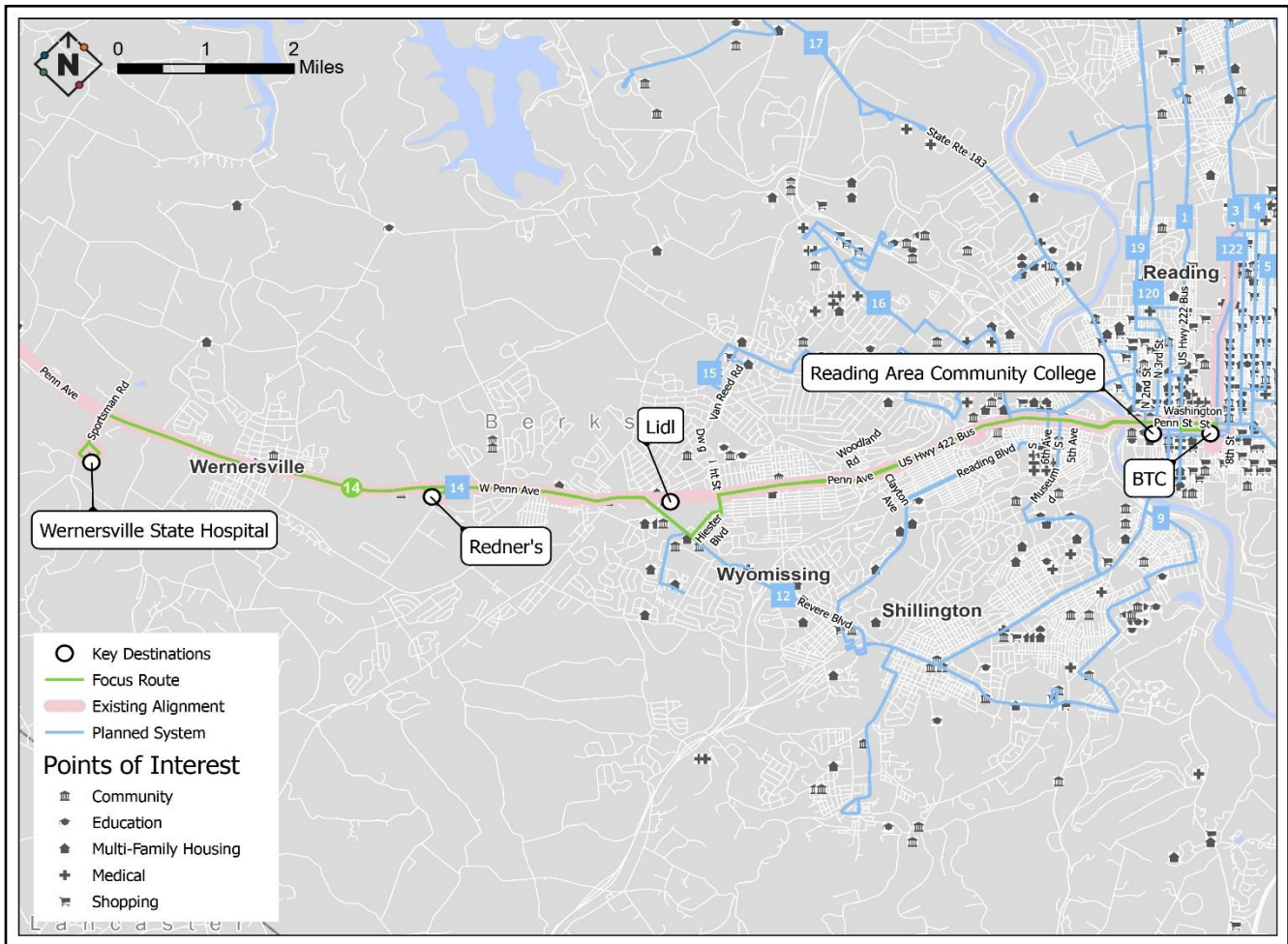
| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 8:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 8:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 8:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |



## Route 14/Wernersville Via Sinking Spring Alignment



### SERVICE RECOMMENDATIONS

Route 14 will operate between downtown Reading and Wernersville via US-422 and Penn Avenue. Route 14 will terminate at Wernersville State Hospital to focus service on areas with the highest ridership potential. Service to Robesonia and Womelsdorf will be eliminated due to low ridership. In addition, in the Sinking Spring/West Lawn area, service will be shifted south from US-422 to serve current destinations and planned developments along the Shillington Road corridor. This would also create a connection opportunity to the proposed Route 12 near Iroquois Avenue. Furthermore, this route has been interlined with the proposed Route 4 and will have similar peak and off-peak frequencies.

Route 14 performance is weaker compared to other BARTA routes which warrants some alignment changes. In particular, ridership declines precipitously west of Wernersville, which negatively impacts the route's productivity. To provide a more consistent service across the service day, the weekday service span has been modified to serve from 6:00 a.m. to 9:00 p.m.

## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|------------------------|--------------------|------------------------|
| Weekday     | 5:00 a.m. to 8:00 p.m. | 30                 | 60                     |
| Saturday    | 6:30 a.m. to 7:00 p.m. | 30                 | 60                     |
| Sunday      | -                      | -                  | -                      |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 9:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

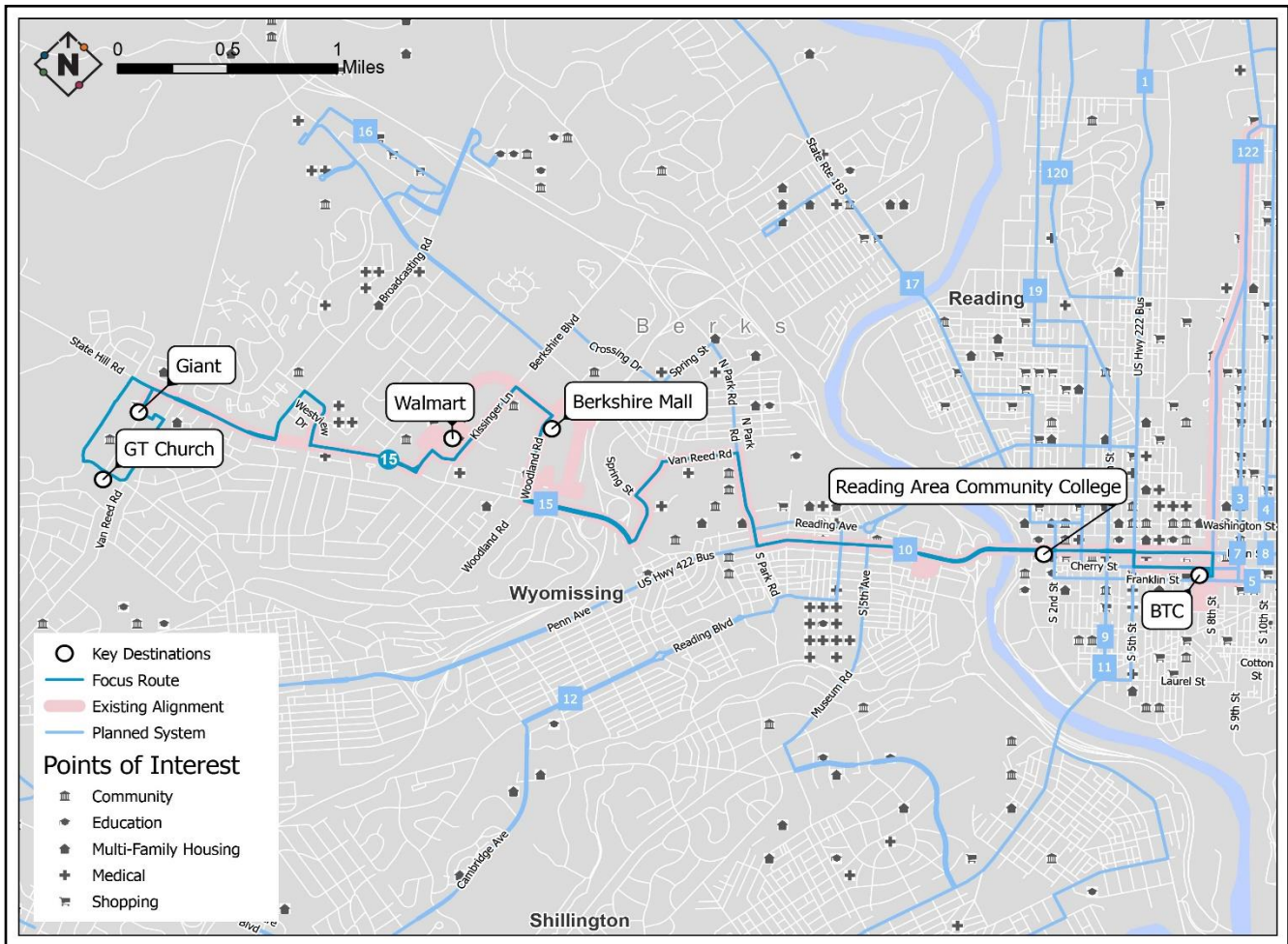
### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 9:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 9:00 p.m.  | 30                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |

## Route 15/ Berkshire Mall Alignment



### SERVICE RECOMMENDATIONS

Route 15 will remain largely unchanged from existing service and will provide a connection between downtown Reading and the Giant at State Hill Road. The route will continue to serve the Berkshire Mall property; however, instead of entering the Berkshire Mall property, Route 15 will serve the mall from Woodland Road in both directions. This will help simplify and speed up service, and improve access to destinations on both sides of Woodland Road. This route will be interlined with proposed Route 1 and will have similar peak and off-peak frequencies.

Route 15 performs well overall compared to other BARTA routes and thereby does not warrant major alignment changes. The proposed earlier start of service on Sunday will address pent-up demand. Relatively low and or inconsistent ridership per trip during the weekend peak periods warrant a change in headways from 30-minutes to 60-minutes.

## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|-------------------------|--------------------|------------------------|
| Weekday     | 5:30 a.m. to 11:00 p.m. | 30                 | 60                     |
| Saturday    | 5:30 a.m. to 11:00 p.m. | 30                 | 60                     |
| Sunday      | 10:00 a.m. to 6:30 p.m. | 30                 | 30                     |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 10:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 8:00 p.m.  | 60                 | 60               |

### PHASE 2: MID-TERM

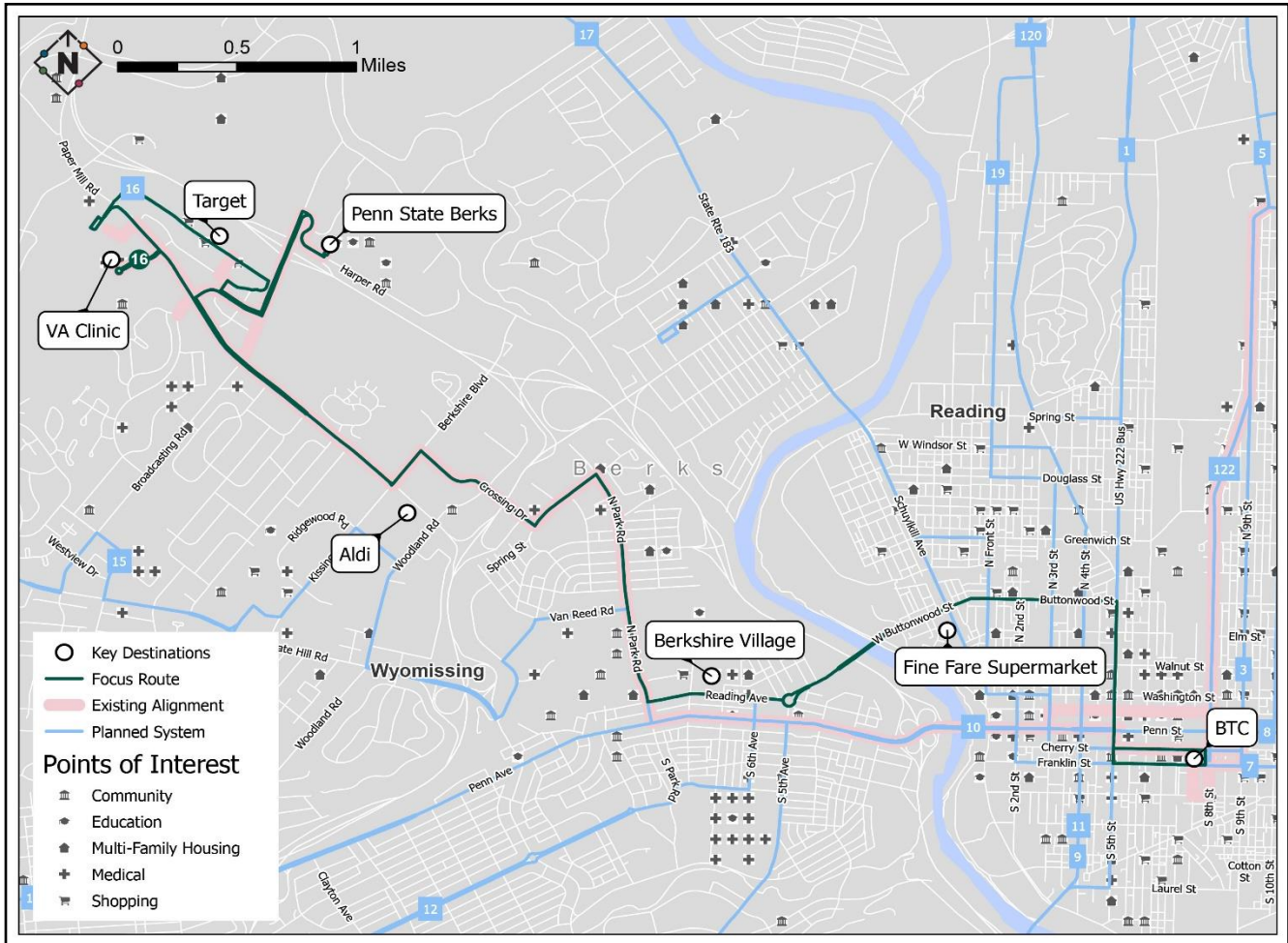
| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 11:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Sunday      | 8:00 a.m. to 8:00 p.m.  | 30                 | 60               |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 11:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Sunday      | 8:00 a.m. to 8:00 p.m.  | 30                 | 60               |



## Route 16/Broadcasting Square Alignment



### SERVICE RECOMMENDATIONS

To reduce travel time for most riders, Route 16 buses will serve Penn State Berks after Broadcasting Square and the VA Clinic on outbound trips. Inbound trips from Penn State Berks will also serve Broadcast Square and the VA. This will eliminate the need for riders who are traveling to retail and medical destinations to travel out of their way to Penn State Berks first. It will also allow for more direct and convenient service between Broadcasting Square and Penn State Berks. Service will also be shifted from Penn Street to Buttonwood Street to expand east-west service coverage northwest of downtown Reading. Moreover, this route will be interlined with the proposed Route 5 and will have similar peak and off-peak frequencies.

Route 16 performs relatively well overall compared to other BARTA routes and thereby does not warrant major alignment changes. The proposed changes will reduce one-way service segments and make travel more convenient for customers. The proposed changes to service span focus service to the times of day when demand is greatest, based on existing ridership data. The reduction of span of service on weekdays and Saturdays reflects a decline in ridership after 9:00 p.m. and 7:00 p.m. respectively. Furthermore, the Sunday span of service is modified to provide a more consistent service across the service day.

## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN          | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|-----------------------|--------------------|------------------------|
| Weekday     | 5:45 a.m. to 11:15 PM | 30                 | 60                     |
| Saturday    | 5:45 a.m. to 11:15 PM | 30                 | 60                     |
| Sunday      | 11:00 a.m. to 7:00 PM | 60                 | 60                     |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 9:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 30                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

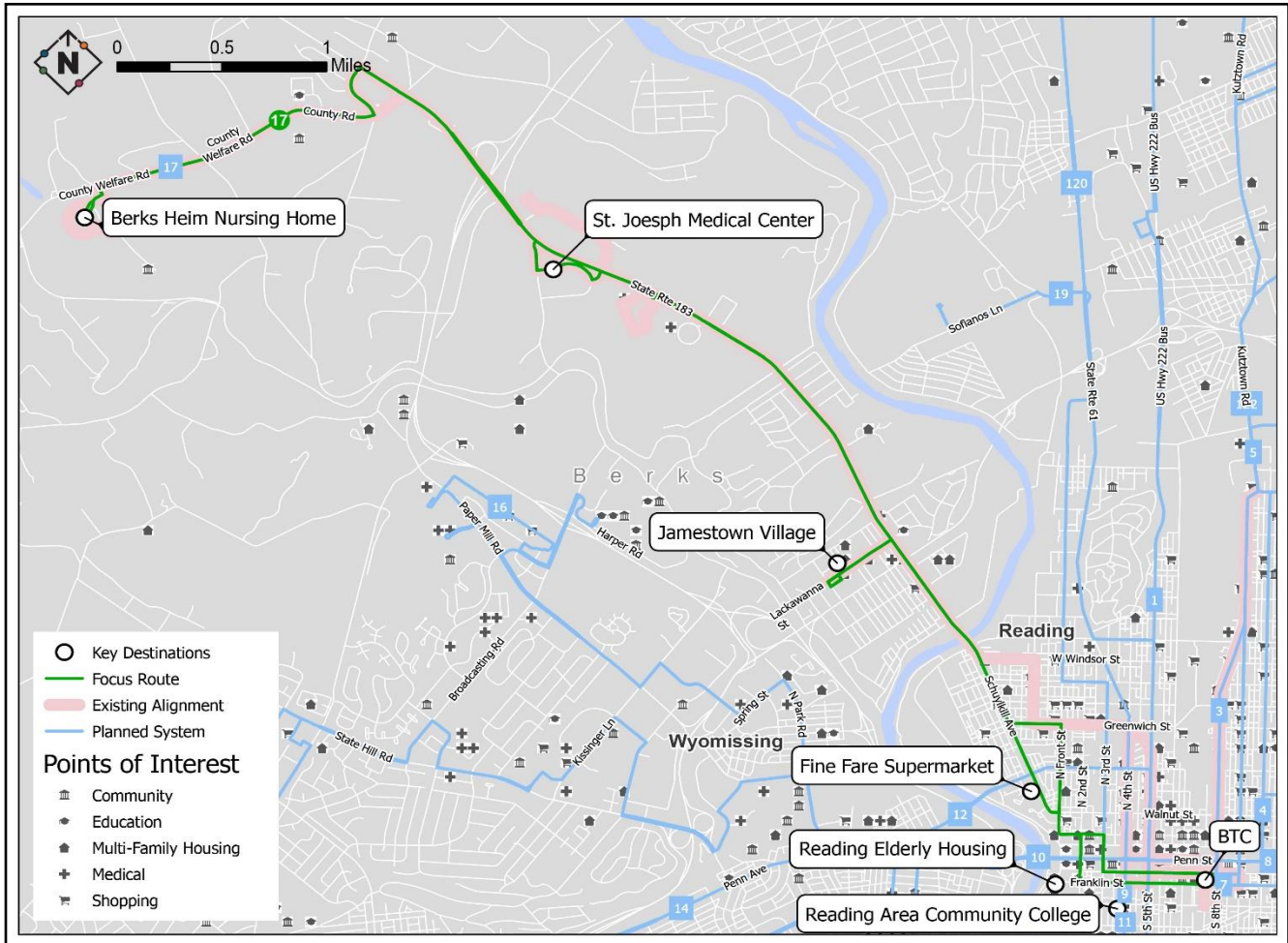
### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 9:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 30                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 8:00 p.m.  | 30                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |

## Route 17/Glenside/Airport/Berks Heim Alignment



### SERVICE RECOMMENDATIONS

Route 17 will be combined with Route 18 to provide consistent service throughout the service day. The proposed route will be most similar to the current Route 18 but will operate as far west as Berks Heim Nursing Home. This route will be interlined with route 12 and will have similar peak and off-peak frequencies.

Route 17 currently operates with a limited span of service and covers similar areas to those served by the current Route 18; however, Route 18 performs better across a variety of productivity metrics and has more consistent ridership. As such, adjustments are warranted on Route 17 to more efficiently and effectively serve the northwestern Berks County. Relatively high ridership per trip during the weekday peak periods warrants an improvement in peak headways.

## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|------------------------|--------------------|------------------------|
| Weekday     | 5:45 a.m. to 6:45 p.m. | 60                 | 60                     |
| Saturday    | 6:15 a.m. to 6:45 p.m. | 60                 | 60                     |
| Sunday      | -                      | -                  | -                      |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 7:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

### PHASE 2: MID-TERM

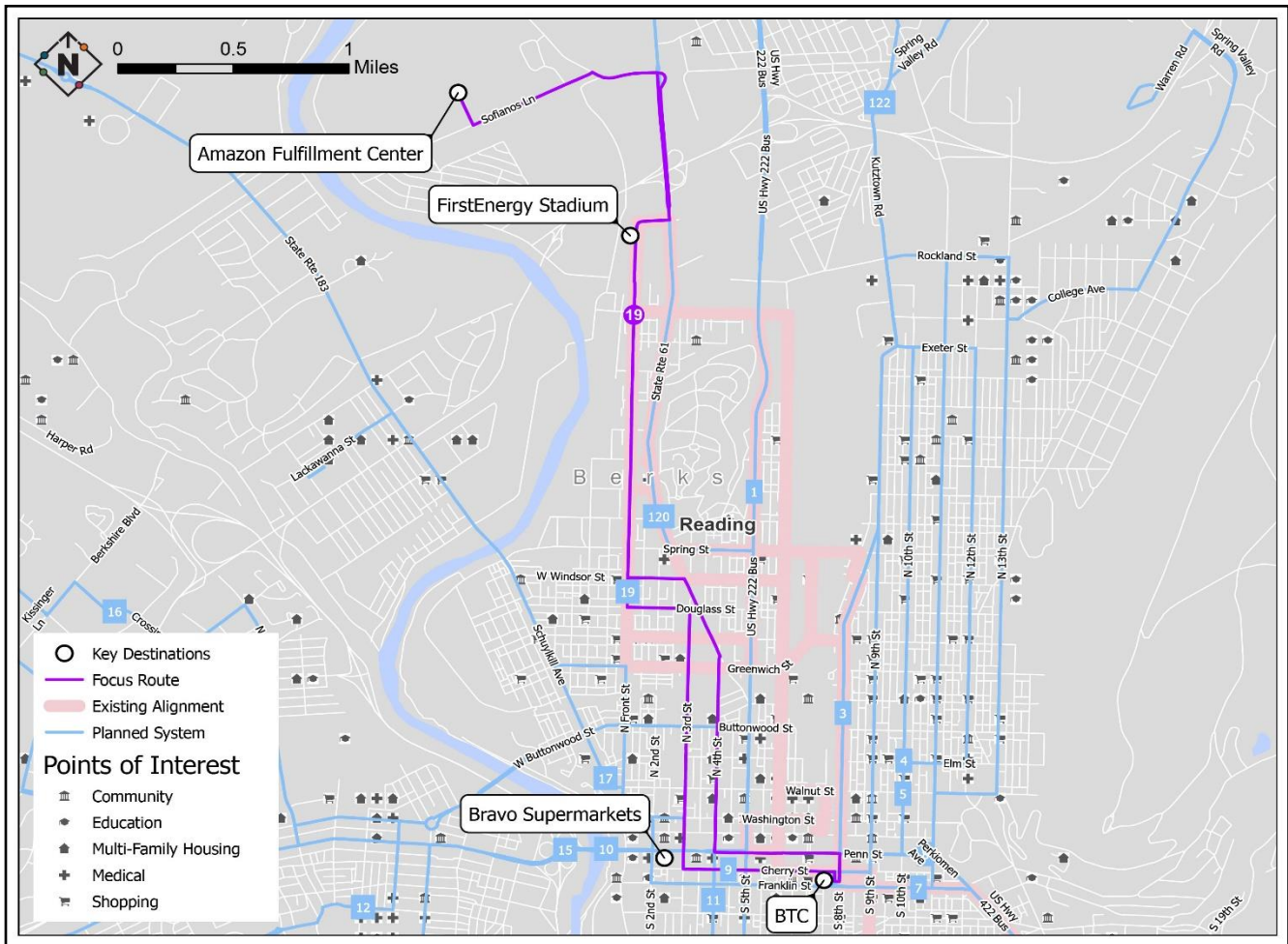
| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 8:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 8:00 p.m.  | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |



# Route 19/Riverside/First Energy Alignment



## SERVICE RECOMMENDATIONS

The Cotton Street branch of Route 19 will be eliminated. Service to the area will instead be provided by the proposed Routes 7 and 8. The northern branch of Route 19 will have several changes, including adding service to the Amazon Fulfillment Center near Leiszs Bridge Road. Service will also be shifted from 6th and 8th Street to 3rd and 4th Street to provide more two-way service northwest of downtown Reading. Finally, between downtown Reading and FirstEnergy Stadium, service would shift from Centre Street to Front Street to improve job-access opportunities along the corridor. Moreover, this route will be interlined with the proposed Route 8 and will have similar peak and off-peak frequencies.

Route 19, due its redundancies, does not perform well overall compared to other BARTA routes and thereby warrants major alignment changes. Relatively low and inconsistent ridership per trip during the weekday peak periods warrants a reduction in peak headways.



## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN             | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|--------------------------|--------------------|------------------------|
| Weekday     | 5:30 a.m. to 09:40 p.m.  | 30                 | 60                     |
| Saturday    | 6:30 a.m. to 09:45 p.m.  | 60                 | 60                     |
| Sunday      | 11:30 a.m. to 06:55 p.m. | 60                 | 60                     |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

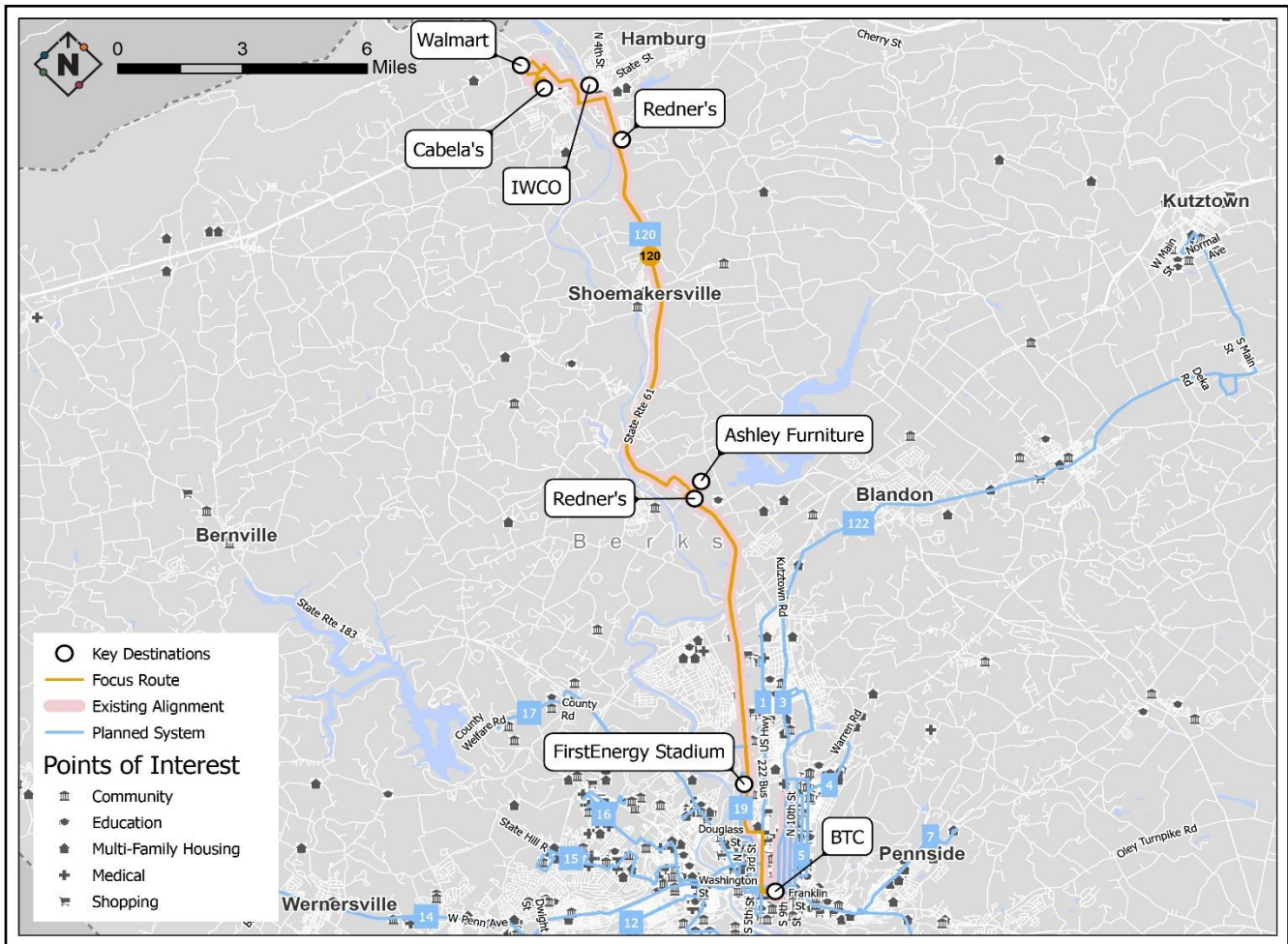
### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 8:00 p.m. | 60                 | 60               |
| Saturday    | 7:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 8:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

## Route 120/Hamburg Alignment



### SERVICE RECOMMENDATIONS

Route 20 will be renumbered as Route 120 to highlight that it is a long-distance regional route. In Reading, service will be simplified to operate along 5<sup>th</sup> Street in both directions. Service in Hamburg would also be simplified to operate along State Street and Industrial Drive in both directions.

Route 20 has lower productivity overall compared to other BARTA routes and thereby warrants some service span changes. The weekday and Saturday span of service has been divided into two segments to provide a more consistent service across the peak period, where ridership per trip is most consistent. Further, existing ridership declines sharply after 6:00 p.m. on weekdays and Saturdays, warranting a reduced span of service.

## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|-------------------------|--------------------|------------------------|
| Weekday     | 5:00 a.m. to 12:00 a.m. | 60                 | 65                     |
| Saturday    | 5:00 a.m. to 12:00 a.m. | 60                 | 65                     |
| Sunday      | -                       | -                  | -                      |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN                                      | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|---------------------------------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 9:00 a.m.;<br>3:00 p.m. to 7:00 p.m. | 60                 | -                |
| Saturday    | 7:00 a.m. to 9:00 a.m.;<br>3:00 p.m. to 7:00 p.m. | 60                 | -                |
| Sunday      | -                                                 | -                  | -                |

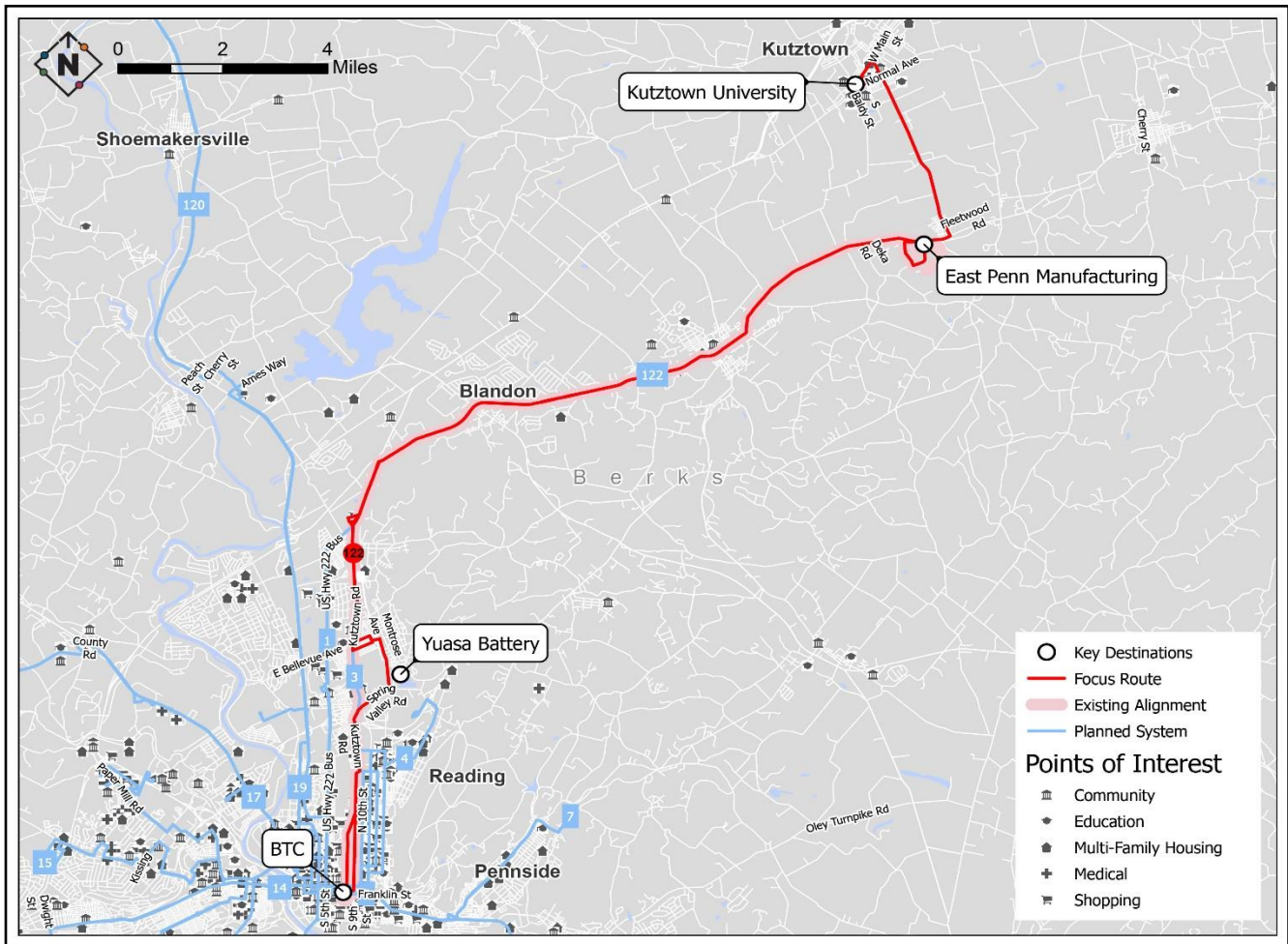
### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN                                      | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|---------------------------------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 8:00 p.m.                            | 60                 | 60               |
| Saturday    | 7:00 a.m. to 9:00 a.m.;<br>3:00 p.m. to 7:00 p.m. | 60                 | -                |
| Sunday      | -                                                 | -                  | -                |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 8:00 p.m. | 60                 | 60               |
| Saturday    | 6:00 a.m. to 8:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

# Route 122/Kutztown Alignment



## SERVICE RECOMMENDATIONS

Route 22 will be renumbered as Route 122 to highlight that it is a long-distance regional route. North of Reading, service will be shifted from Kutztown Road to Spring Valley Road and Montrose Avenue to serve employment destinations including Yuasa Battery. In addition, service will be extended north from East Penn Manufacturing in Lyons to also serve downtown Kutztown and Kutztown University.

Route 22 has lower productivity overall compared to other BARTA routes and thereby warrants some service span and alignment changes. Due to an overall low ridership, the weekday span of service has been divided into two segments to provide a more consistent service across the peak periods. Currently the route only operates a few trips a day thereby justifying the reduction in service span; consistent headways during the peak period will represent additional trips compared to current service.

## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|-------------------------|--------------------|------------------------|
| Weekday     | 5:15 a.m. to 12:05 a.m. | 4 trips            | 4 trips                |
| Saturday    | -                       | -                  | -                      |
| Sunday      | -                       | -                  | -                      |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM<sup>3</sup>

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 2 trips            | 4 trips          |
| Saturday    | -                       | -                  | -                |
| Sunday      | -                       | -                  | -                |

### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 60                 | 60               |
| Saturday    | -                       | -                  | -                |
| Sunday      | -                       | -                  | -                |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 10:00 p.m. | 60                 | 60               |
| Saturday    | 6:00 a.m. to 8:00 p.m.  | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |

<sup>3</sup> In Phase 1, Route 122 will operate six trips a day to match the shift times at East Penn/Deka. There are three shifts, the first starting between 5:45 a.m. and 7:00 a.m., the second starting between 1:45 p.m. and 3:00 p.m., and the third starting between 9:45 p.m. and 11:00 p.m.



# BARTA SERVICE CHARACTERISTICS

## INTERLINING

The recommended fixed-route network makes extensive use of interlining to optimize cycle times and ensure one-seat rides to key destinations. This practice can also reduce the total number of vehicles needed to operate a service, thereby reducing the total revenue hours and miles operated systemwide. Interlining is the practice of operating a single bus or a group of buses on more than one route. For example, if Route 1 is interlined with Route 15, then once a bus operator completes a trip on Route 1, they would proceed to Route 15, and alternate between the two routes throughout their shift. **Table 13** shows how interlining is used to optimize cycle times and ensure sufficient recovery times. Routes that are interlined are indicated with a plus (+) sign between them.

## REVENUE HOURS, VEHICLE NEEDS, AND FINANCIAL ANALYSIS

Phase 1 of the recommended service scenario is designed to be cost-neutral, meaning that it can be implemented within the constraints of BARTA’s current financial resources. However, as this TDP is intended to serve as a guide for service improvement, and the medium- and long-term recommendations go beyond BARTA’s existing financial resources, the impacts of the recommendations are quantified in terms of revenue hours, peak vehicle needs, and dollars. Over time operating costs may fluctuate because of inflation and other factors; however, annual revenue hours and peak vehicle should remain constant over time. The cost of service improvements in each phase are based off the estimated cost per hour as presented in **Chapter 3 Budget and Funding**, which estimated BARTA’s operating cost per hour as \$88.

The recommendations presented provide one option for phasing in new service, as proposed in this TDP; however, the recommendations are intended to be flexible and can be implemented based on availability of resources and ridership demand. The service recommendations are broken into packages, as laid out in **Table 14**. Packages are individual routes or groups of routes that are linked to one another. Changes on routes in a package must happen simultaneously to ensure that coverage is maintained as routes are realigned. Further, realigning routes that are interlined simultaneously will ensure that SCTA will see the operational efficiencies of interlining immediately, even if span and frequencies are not improved.

**Table 14: BARTA Recommendations Packages**

| RECOMMENDATION PACKAGE | ROUTES INCLUDED            |
|------------------------|----------------------------|
| Package 1              | Route 1 and Route 15       |
| Package 2              | Route 3                    |
| Package 3              | Route 4, 5, 12, 14, 16, 17 |
| Package 4              | Route 7 and Route 11       |
| Package 5              | Route 9 and Route 10       |
| Package 6              | Route 8 and Route 19       |
| Package 7              | Route 120                  |
| Package 8              | Route 122                  |

Revenue hours refers to the cumulative hours of service that all buses operating on a route provide to a community. One bus operating for ten hours will result in ten revenue hours of service. Ten buses operating for one hour each will also result in ten revenue hours of service. Revenue hours is a unit of measure used for budgeting purposes, as multiplying the annual revenue hours of a route by an hourly operating cost will produce the annual operating cost for the route.

**Table 15** shows the annual revenue hours, peak vehicle needs, and the estimated annual cost associated with each route or route pair in each of the three implementation phases. In FY 2023, BARTA operated 136,115 annual revenue hours for a total operating cost of \$12,028,668 and a peak vehicle need of 52 buses. These FY 2023 totals served as the baseline from which the recommendations were built.

Overall, the Phase 1 improvements increase annual revenue hours and the estimated cost of the service by less than two percent. The Phase 2 recommendations increase revenue hours and operating cost by 15 percent compared to FY 2023 service. In Phase 3 annual revenue hours and annual operating cost will increase by 46 percent.

**Table 15: Revenue Hours and Vehicle Needs by Phase - BARTA**

| ROUTES                         | ANNUAL REVENUE HOUR | WEEKDAY PEAK VEHICLE NEED | ESTIMATED ANNUAL COST (\$1000s) |
|--------------------------------|---------------------|---------------------------|---------------------------------|
| <b>Phase 1 - Short Range</b>   |                     |                           |                                 |
| Route 1 + 15                   | 27,820              | 5                         | \$2,458                         |
| Route 3                        | 4,524               | 1                         | \$400                           |
| Route 4 + 14                   | 26,052              | 6                         | \$2,302                         |
| Route 5 + 16                   | 14,352              | 4                         | \$1,268                         |
| Route 7 + 11                   | 12,688              | 4                         | \$1,121                         |
| Route 9 + 10                   | 12,688              | 4                         | \$1,121                         |
| Route 12 + 17                  | 19,032              | 6                         | \$1,682                         |
| Route 19 + 8                   | 9,048               | 2                         | \$800                           |
| Route 120                      | 6,396               | 3                         | \$565                           |
| Route 122                      | 5,460               | 3                         | \$483                           |
| <b>Total</b>                   | <b>138,060</b>      | <b>38</b>                 | <b>\$12,200</b>                 |
| Phase 1 Change from Existing   | 1,945               | -                         | \$172                           |
| Phase 1 % Change from Existing | 1.43%               | -                         | 1.43%                           |
| <b>Phase 2 - Mid Range</b>     |                     |                           |                                 |
| Route 1 + 15                   | 30,420              | 5                         | \$2,688                         |
| Route 3                        | 6,604               | 2                         | \$584                           |
| Route 4 + 14                   | 26,052              | 6                         | \$2,302                         |
| Route 5 + 16                   | 14,352              | 4                         | \$1,268                         |
| Route 7 + 11                   | 13,208              | 4                         | \$1,167                         |
| Route 9 + 10                   | 13,208              | 4                         | \$1,167                         |
| Route 12 + 17                  | 19,812              | 6                         | \$1,751                         |
| Route 19 + 8                   | 9,568               | 2                         | \$846                           |
| Route 120                      | 11,856              | 3                         | \$1,048                         |
| Route 122                      | 10,920              | 3                         | \$965                           |
| <b>Total</b>                   | <b>156,000</b>      | <b>39</b>                 | <b>\$13,786</b>                 |
| Phase 2 Change from Existing   | 19,885              | -                         | \$1,757                         |
| Phase 2 % Change from Existing | 14.61%              | -                         | 14.61%                          |
| <b>Phase 3 - Long Range</b>    |                     |                           |                                 |
| Route 1 + 15                   | 30,680              | 5                         | \$2,711                         |
| Route 3                        | 7,228               | 2                         | \$639                           |
| Route 4 + 14                   | 31,044              | 6                         | \$2,743                         |

| ROUTES                         | ANNUAL REVENUE HOUR | WEEKDAY PEAK VEHICLE NEED | ESTIMATED ANNUAL COST (\$1000s) |
|--------------------------------|---------------------|---------------------------|---------------------------------|
| Route 5 + 16                   | 16,224              | 4                         | \$1,434                         |
| Route 7 + 11                   | 15,184              | 4                         | \$1,342                         |
| Route 9 + 10                   | 14,456              | 4                         | \$1,277                         |
| Route 12 + 17                  | 21,684              | 6                         | \$1,916                         |
| Route 15                       | 2,886               | 0                         | \$255                           |
| Route 19 + 8                   | 14,456              | 4                         | \$1,277                         |
| Route 120                      | 15,444              | 3                         | \$1,365                         |
| Route 122                      | 15,444              | 3                         | \$1,365                         |
| <b>Total</b>                   | <b>198,250</b>      | <b>41</b>                 | <b>\$16,325</b>                 |
| Phase 3 Change from Existing   | 62,135              | -                         | \$4,295                         |
| Phase 3 % Change from Existing | 45.65%              | -                         | 35.72%                          |

## PUBLIC AND STAKEHOLDER FEEDBACK

BARTA held three sessions to engage the community regarding the recommended service changes. Full summaries of the feedback received during the stakeholder meeting and public meetings are available in **Appendix H**.

Attendees provided feedback on the proposed service changes, including the following comments on specific routes:

- One attendee worried about the decision to decrease service to Fairgrounds market; the facilitators responded that ridership at the Fairgrounds is low; however, service to the market will be maintained on another route.
- A participant suggested that Route 14 should serve the new apartment complex on Penlynn Drive; facilitators noted that it was unclear whether that street, still under construction, would be a public roadway or a private one, and whether it would be maneuverable by buses.
- Some participants expressed approval for the decision to retain service to Mohnton, which had been cut in earlier proposals.
- Several attendees expressed concerns about the proposed changes on Route 16. One person wondered if the change from Penn Street to Buttonwood Street would increase travel time; another worried that buses may have difficulty turning left from 5<sup>th</sup> Street onto Buttonwood Street.
- Another person requested that service on Route 19 be retained along Cotton Street and shared concerns about the impacts of the realignment on parking. The facilitators responded that Cotton Street will be served by Route 8 in the proposed scenario, and the agency is in discussion with the City of Reading about improvements to Cotton Street. Participants expressed support for shifting Route 19 to 3<sup>rd</sup> and 4<sup>th</sup> Streets.

Beyond questions about service along individual routes, multiple participants had questions about the implementation of the proposed service and advocated for availability of the service on nights and weekends.

# RRTA Service Recommendations

Like with BARTA, the final recommendations for the RRTA system is focused on fixed-routes service, with three phases of implementation strategies (**Figure 33** and **Figure 34**). Phase 1 of implementation focuses on service alignment changes with only minor improvements to level of service; Phase 2 and Phase 3 focus on improving headways and expanding the service span of realigned routes.

In the proposed final recommendations for the RRTA network, most routes keep their current route number. Route 1, Route 2, and Route 3 are separated into two routes each, creating a new Route 4, Route 7, and Route 8. Route 10, Route 11, and Route 21 have each been updated to Route 110, 111, and 121, respectively, to reflect their route type as long, regional connector routes.

The proposed system attempts to provide more direct service by operating bi-directionally, instead of in one-way loops. Bi-directional service allows for direct travel to and from destinations without additional travel that takes passengers out of the way. The proposed final recommendations focus service on denser areas where more people are likely to take transit trips, while reducing service in places that have seen low ridership numbers. Microtransit service may operate in these areas instead of fixed-route service.

Figure 33: RRTA Service Recommendations

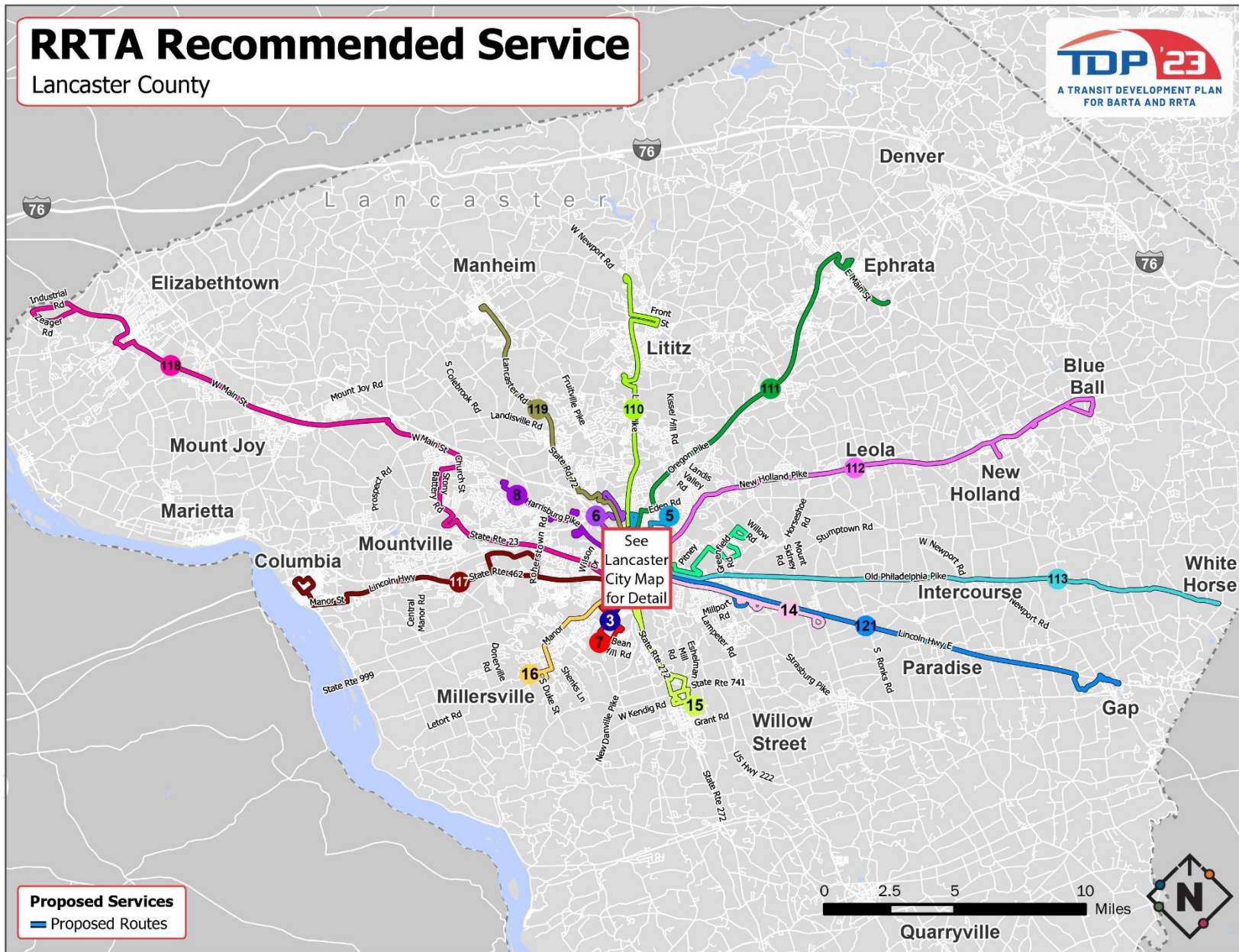
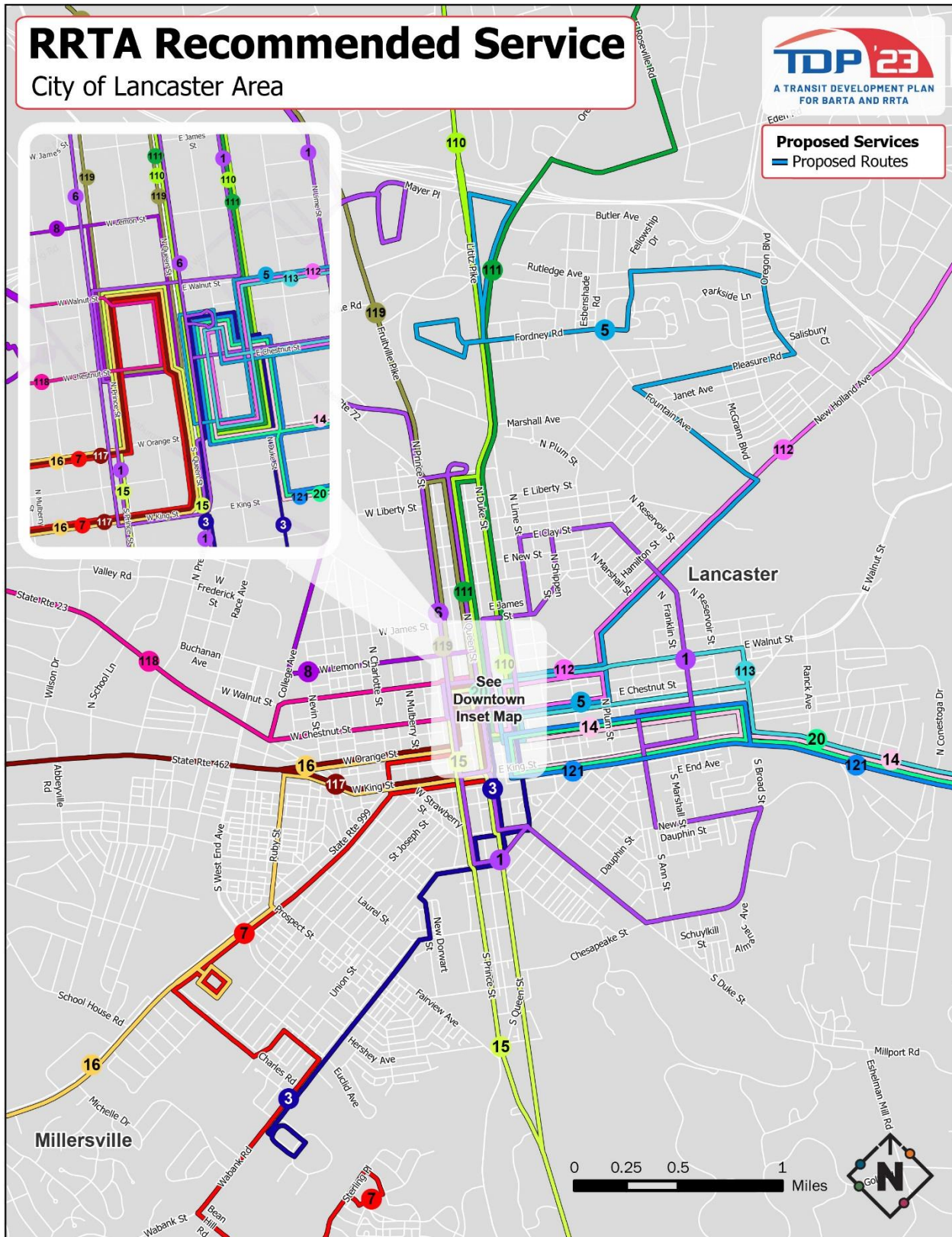




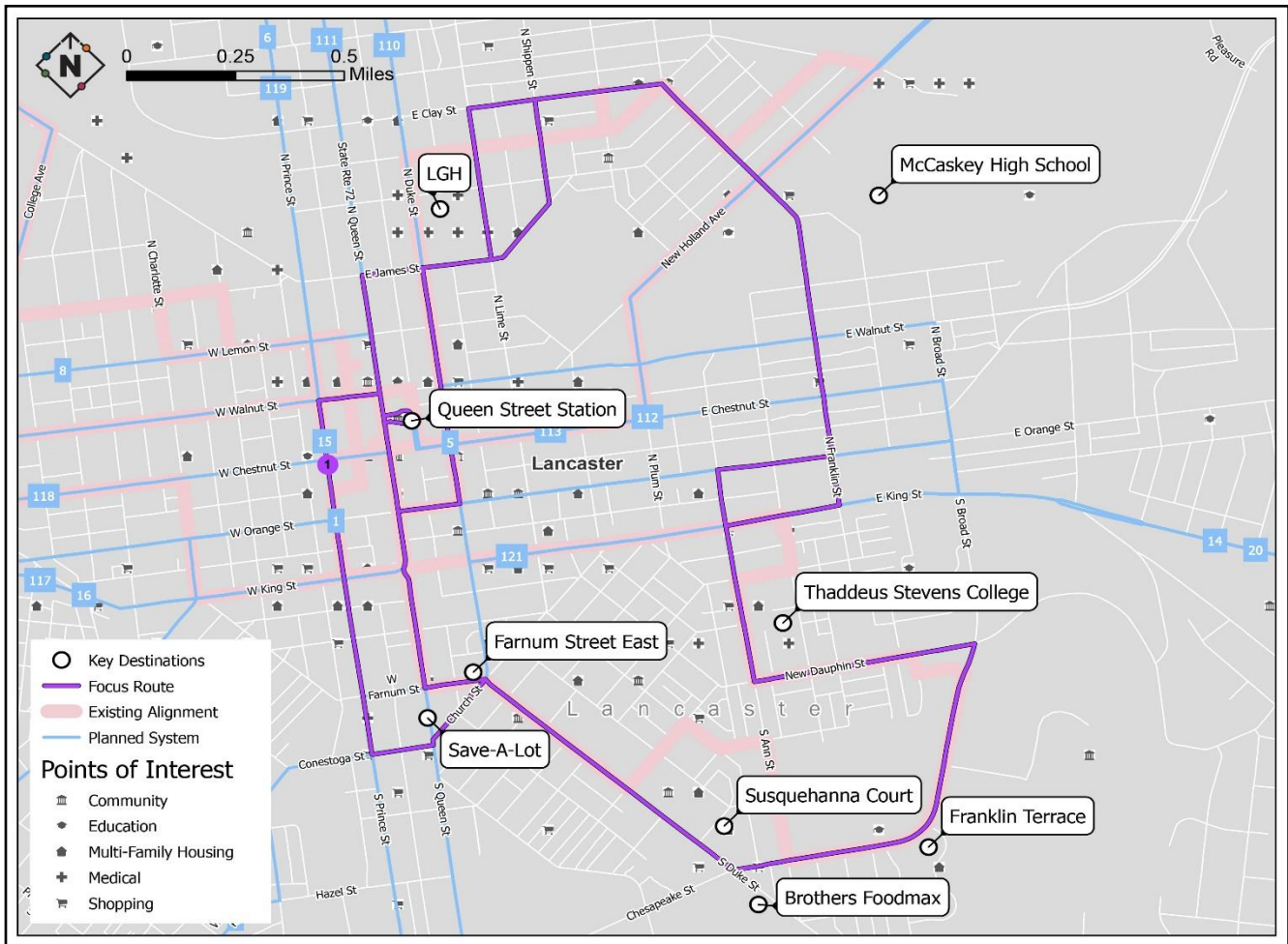
Figure 34: RRTA Recommended Service - Lancaster Area



# CHANGE SHEETS

The service recommendations for each route are presented in a series of change sheets. These route-by-route change sheets highlight service frequency changes by phase and include current service information (as of January 2024) for comparison. The changes in level of service (span and frequency) respond to the results of the market analysis and service analysis as well as feedback received during public and stakeholder engagement. While the tables on the change sheets include specific proposed spans, these spans can be adjusted based on observed demand. If a route is proposed to operate 12 hours a day, so long as the number of hours it operates does not change, the cost of the service will not change.

## Route 1 Southeast Alignment



### SERVICE RECOMMENDATIONS

Route 1 will combine parts of the current Routes 1 and 2 to create a new downtown and eastside circulator. The new route would travel clockwise and counterclockwise from the Queen Street Station to serve destinations including the Lancaster General Hospital (LGH), McCaskey High School, CTown Supermarkets, Thaddeus Stevens College, Brothers Foodmax, Save-A-Lot, and several large apartment communities. Route 1 will no longer serve Franklin & Marshall College, the Salvation Army Thrift Store, or Park City Center. Instead, these destinations would be served by proposed Route 5 and Route 6.<sup>4</sup>

Route 1 fills a need in downtown Lancaster, but the one-way service loop limits the route's effectiveness. The route's poor performance on some productivity measures, including passengers per trip warrant alignment and service changes. The reduction of span on Saturdays reflects low ridership per trip before 7:00 a.m. and after 10:00 p.m. The increase in span of service on Sundays is to facilitate weekend shopping trips.

<sup>4</sup> SCTA is working with its local partners and other stakeholders to confirm the proposed route alignment for Route 1 is feasible. Slight modifications to the route alignment may be made prior to implementation.

## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|-------------------------|--------------------|------------------------|
| Weekday     | 6:05 a.m. to 10:50 p.m. | 30 <sup>5</sup>    | 45                     |
| Saturday    | 6:50 a.m. to 10:50 p.m. | 30                 | 60                     |
| Sunday      | 11:10 a.m. to 6:40 p.m. | 65                 | 60                     |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN             | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|--------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m.  | 30                 | 60               |
| Saturday    | 7:00 a.m. –to 10:00 p.m. | 30                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.   | 30                 | 60               |

### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 30                 | 60               |

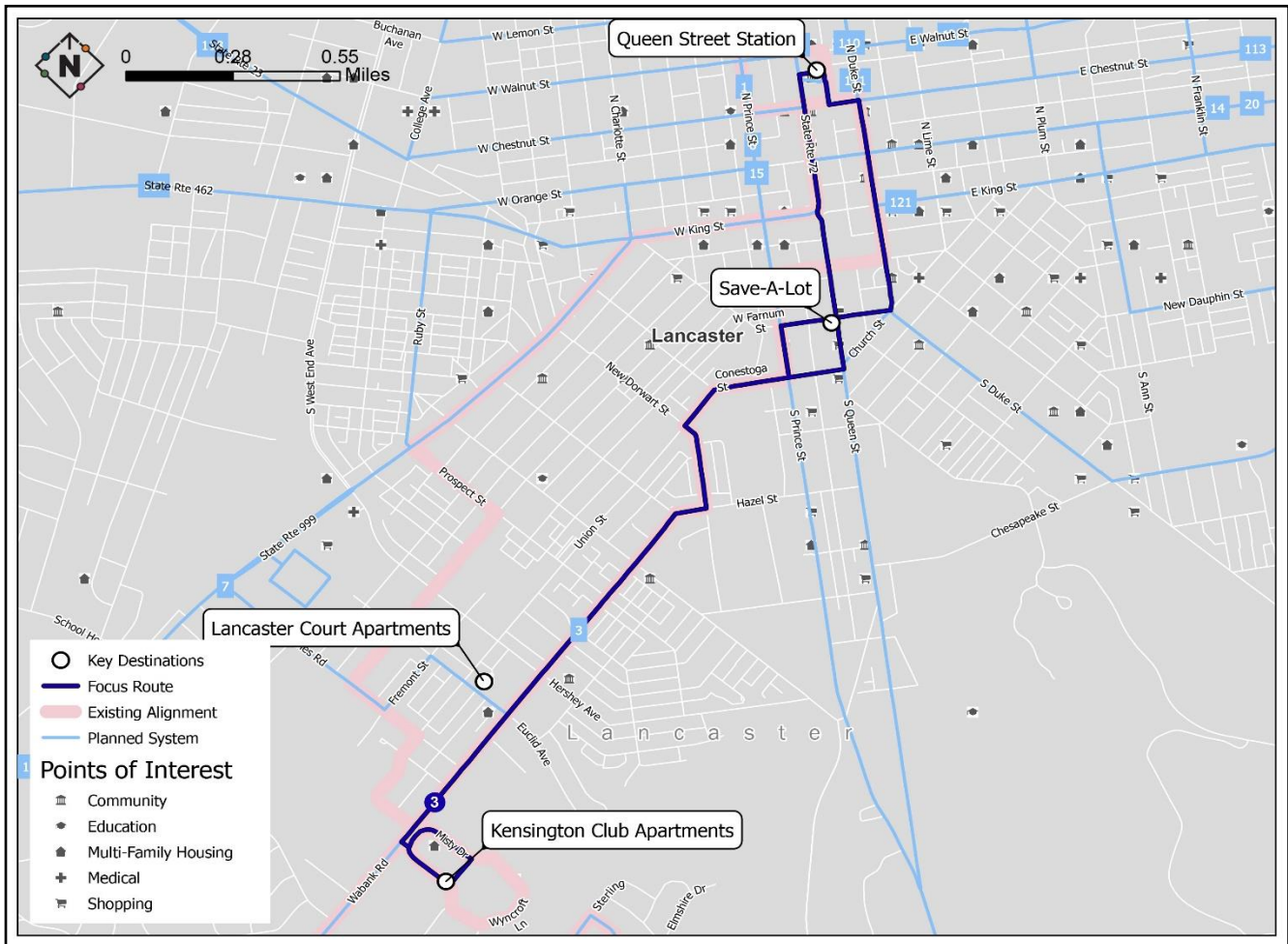
### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 11:00 p.m. | 30                 | 30               |
| Saturday    | 6:00 a.m. to 10:00 p.m. | 30                 | 30               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 30                 | 30               |

<sup>5</sup> Service during the peak and off-peak periods on weekdays and Saturdays is inconsistent; headways range from 25 minutes to 55 minutes.



# Route 3/Kensington Ct Alignment



## SERVICE RECOMMENDATIONS

Route 3 will be simplified to operate between downtown Lancaster and the Kensington Club apartments via Wabank Road in both directions. Manor Street (including Weis Market) and Sterling Place service will instead be provided by the proposed Route 7. Fruitville Pike service will be partially provided by proposed Route 6. Park City Center service will be provided by proposed Route 8. This route will be interlined with proposed Route 8 and will have similar peak and off-peak frequencies.

Route 3 performs well compared to other RRTA routes in terms of several productivity measures and serves strong anchors, which justifies maintaining much of the current alignment. Simplifying the route will make it easier for customers to use. The reduced span on all service days reflects low ridership per trip at the end of the service day.



## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|-------------------------|--------------------|------------------------|
| Weekday     | 5:55 a.m. to 10:35 p.m. | 35                 | 50                     |
| Saturday    | 7:45 a.m. to 10:35 p.m. | 45                 | 80                     |
| Sunday      | 10:50 a.m. to 6:50 p.m. | 55                 | 55                     |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 9:00 p.m. | 60                 | 60               |
| Saturday    | 7:00 a.m. to 8:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

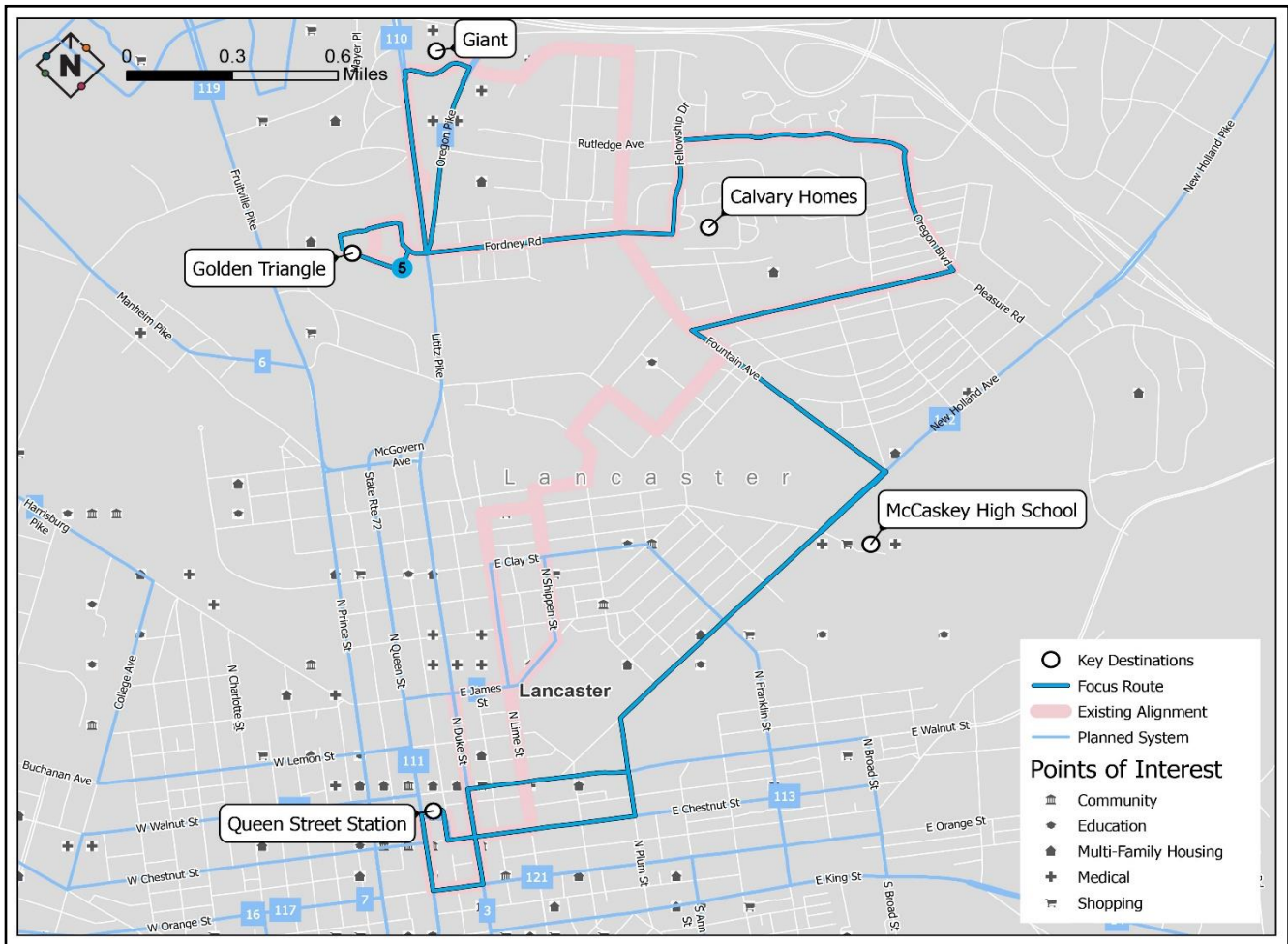
### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 60                 | 60               |
| Saturday    | 7:00 a.m. to 8:00 p.m.  | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |

## Route 5/Golden Triangle Alignment



### SERVICE RECOMMENDATIONS

Route 5 will operate between downtown Queen Street Station and Golden Triangle. Route 5 will be simplified to reduce areas of one-way service. Service will be shifted from Janet Avenue and Park Avenue to New Holland Avenue to pick up areas served by the current Route 2. This alignment will also include service to Lancaster Shopping Center and allow for connections to proposed Route 110 on Lititz Pike and proposed Route 111 on Oregon Pike on both sides of the shopping center. This route will also serve Calvary Homes as well as McCaskey High School on New Holland Ave where it will allow for connections to the proposed Route 112. Furthermore, this route will be interlined with the proposed Route 16 and will have similar peak and off-peak frequencies.

Route 5 performs poorly compared to other RRTA routes and thereby warrants alignment and span changes. Simplifying the alignment and implementing bi-directional service will make the route easier for customers to use.

## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|------------------------|--------------------|------------------------|
| Weekday     | 6:15 a.m. to 6:05 p.m. | 35                 | 50                     |
| Saturday    | 8:35 a.m. to 6:00 p.m. | 45                 | 240                    |
| Sunday      | -                      | -                  | -                      |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 8:00 p.m.  | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |

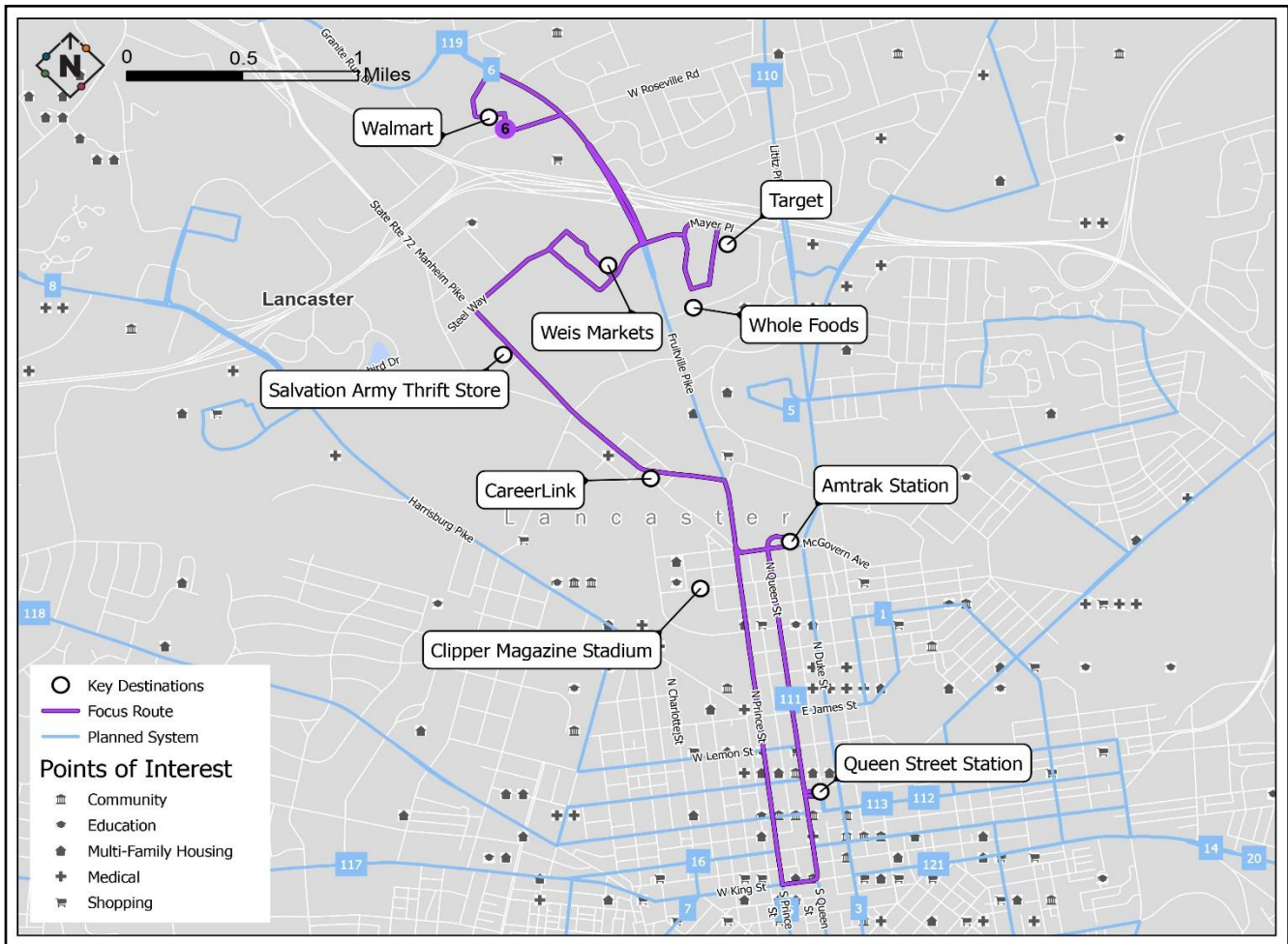
### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 8:00 p.m.  | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 10:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |

## Route 6/Walmart Alignment



### SERVICE RECOMMENDATIONS

Route 6 will operate between downtown Queen Street Station and Walmart on Fruitville Pike. Route 6 will be extended north to serve the Lancaster Amtrak station and retail destinations including the Salvation Army Thrift Store, Red Rose Commons (Weis Markets), The Shoppes at Belmont (Target / Whole Foods), and Walmart on Fruitville Pike.

Route 6 performs poorly compared to other RRTA routes and thereby warrants major alignment and span changes. Simplifying the alignment and implementing weekend service aim to improve ridership and productivity on Route 6. The route's ridership by trip is low compared to other RRTA routes, indicating that the route's performance does not justify the higher service frequencies. Reducing the peak and off-peak headways on this route will help to better match the supply and demand of service on this route.

## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|------------------------|--------------------|------------------------|
| Weekday     | 5:20 a.m. to 6:10 p.m. | 20                 | 30                     |
| Saturday    | -                      | -                  | -                      |
| Sunday      | -                      | -                  | -                      |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 8:00 p.m.  | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |

### PHASE 2: MID-TERM

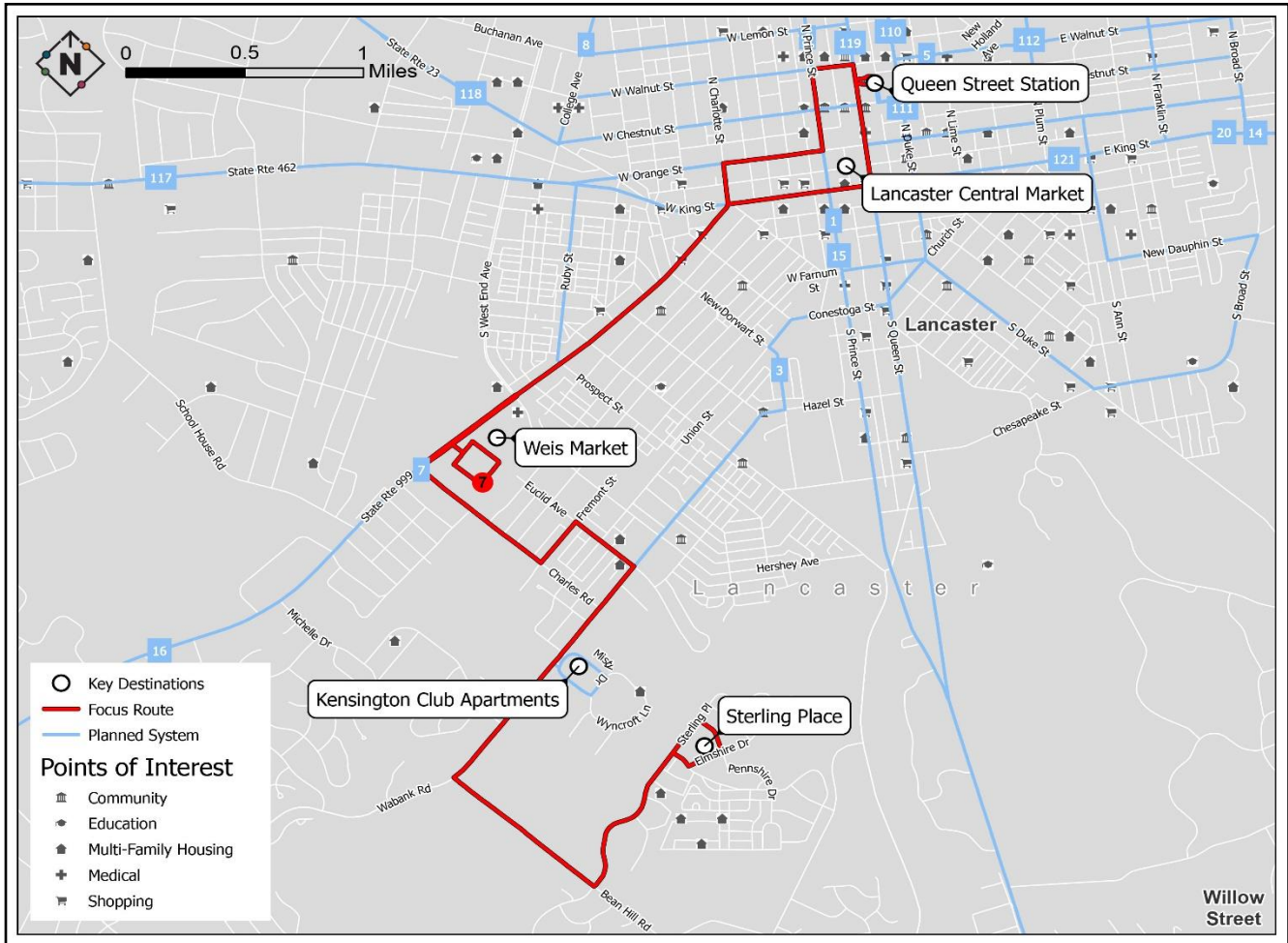
| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 8:00 p.m.  | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |



# Route 7/Sterling Place Alignment



## SERVICE RECOMMENDATIONS

Route 7 is a new route that will operate between downtown Lancaster and the Sterling Place apartments via Orange Street, Manor Street (Weis Market), Euclid Street, and Wabank Road, following the same alignment in both directions. This alignment allows for connection with the proposed Route 3 on Wabank St and the proposed Route 16 on Manor St.

This new route will fill a gap in service coverage and connect several points of interest.

### EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|--------------|--------------------|------------------------|
| Weekday     | -            | -                  | -                      |
| Saturday    | -            | -                  | -                      |
| Sunday      | -            | -                  | -                      |

### PROPOSED LEVEL OF SERVICE

#### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 8:00 p.m. | 60                 | 60               |
| Saturday    | 7:00 a.m. to 8:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

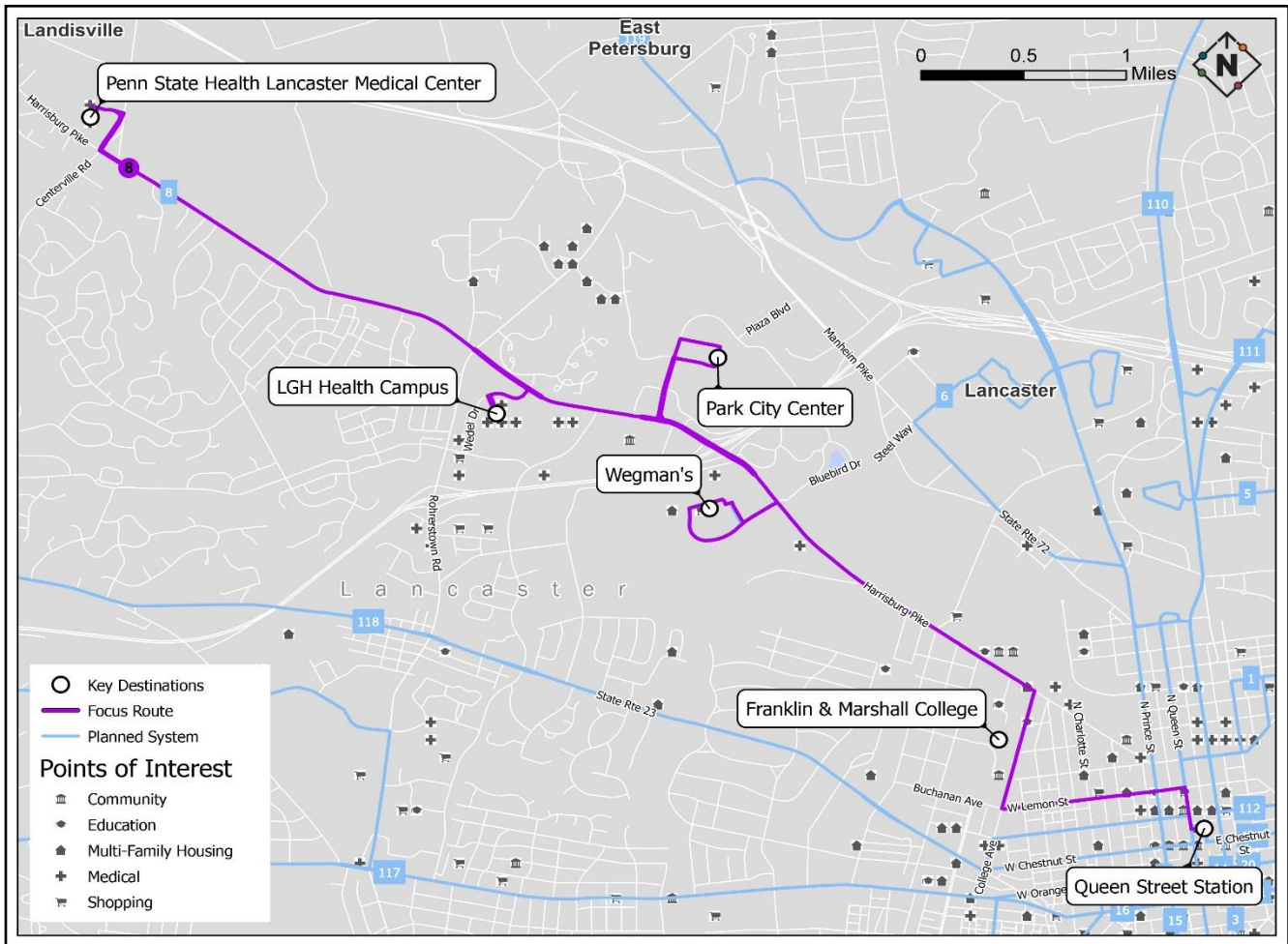
#### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 8:00 p.m. | 60                 | 60               |
| Saturday    | 7:00 a.m. to 8:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

#### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 8:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 8:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

## Route 8/Penn State Health Alignment



### SERVICE RECOMMENDATIONS

Route 8 is a new route that will connect downtown Lancaster and Franklin and Marshall College to Wegman's, Park City Center, the Lancaster General Health (LGH) Campus, and the Penn State Health Lancaster Medical Center. Service between downtown and LGH Campus, previously provided by Route 2 is now included as part of Route 8. This route will interlined with the proposed Route 3 and will have similar peak and off-peak frequencies.

This new route will fill a gap in service coverage and connect several points of interest.

## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|--------------|--------------------|------------------------|
| Weekday     | -            | -                  | -                      |
| Saturday    | -            | -                  | -                      |
| Sunday      | -            | -                  | -                      |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 60                 | 60               |
| Saturday    | 7:00 a.m. to 8:00 p.m.  | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |

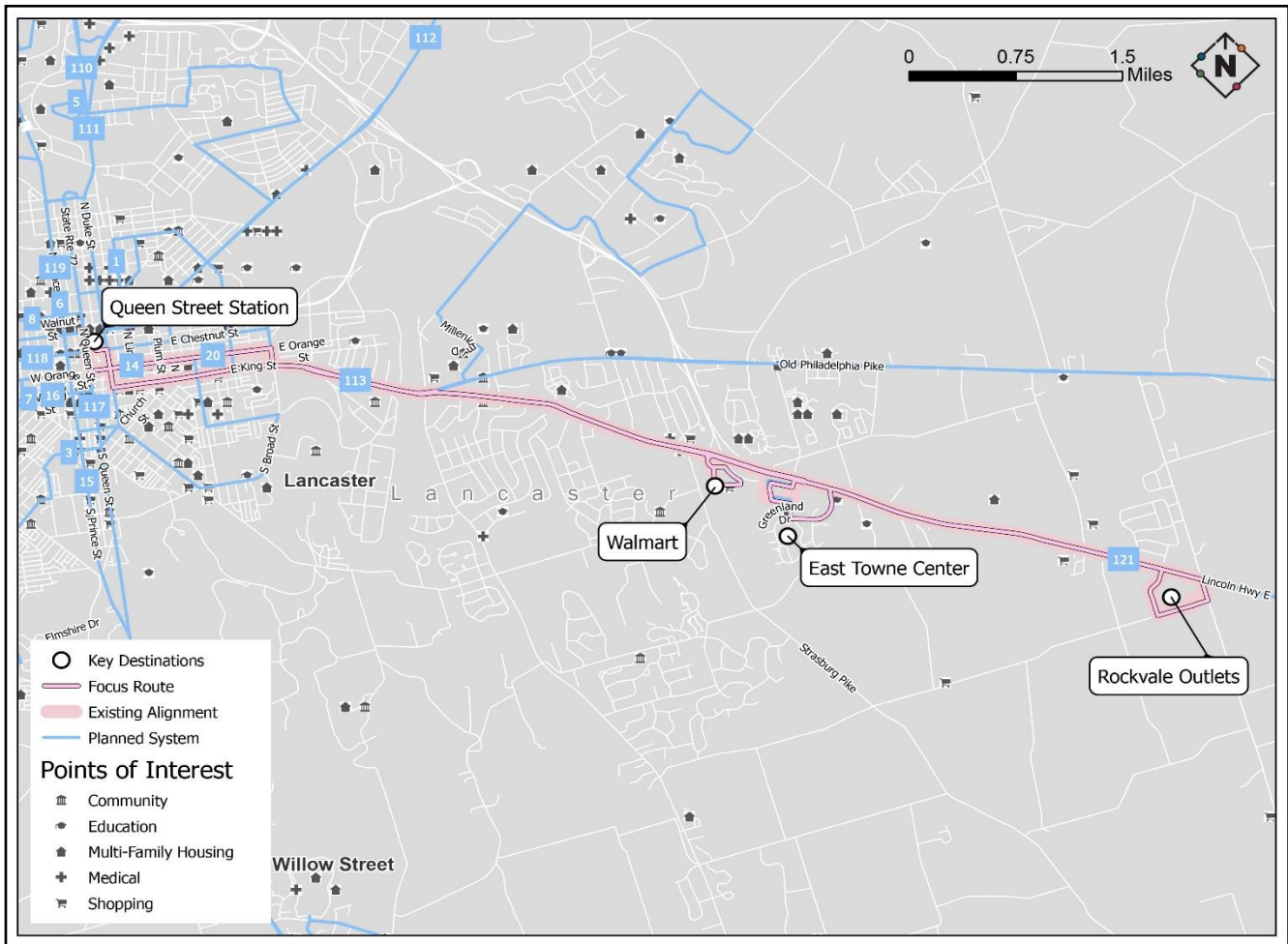
### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 60                 | 60               |
| Saturday    | 7:00 a.m. to 8:00 p.m.  | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |

## Route 14/Rockvale Outlets Alignment



### SERVICE RECOMMENDATIONS

Route 14’s alignment will be similar to the current route alignment, providing service between Downtown Lancaster and the Rockvale Outlets. New service on Route 14 would be added along Greenland Drive and S Oakview Road to expand coverage.

Route 14 performs well overall compared to other RRTA routes and thereby does not warrant major alignment changes. The route’s ridership by route is varied throughout the day, with higher ridership during the weekday peak periods and very limited ridership after 9:00 p.m. Reducing the service frequency during the off-peak period on weekdays could help make ridership more consistent throughout the service day.



## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|-------------------------|--------------------|------------------------|
| Weekday     | 5:40 a.m. to 10:40 p.m. | 25                 | 25                     |
| Saturday    | 5:40 a.m. to 10:40 p.m. | 25                 | 25                     |
| Sunday      | 7:15 a.m. to 7:10 p.m.  | 30                 | 45                     |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Sunday      | 8:00 a.m. to 10:00 p.m. | 30                 | 60               |

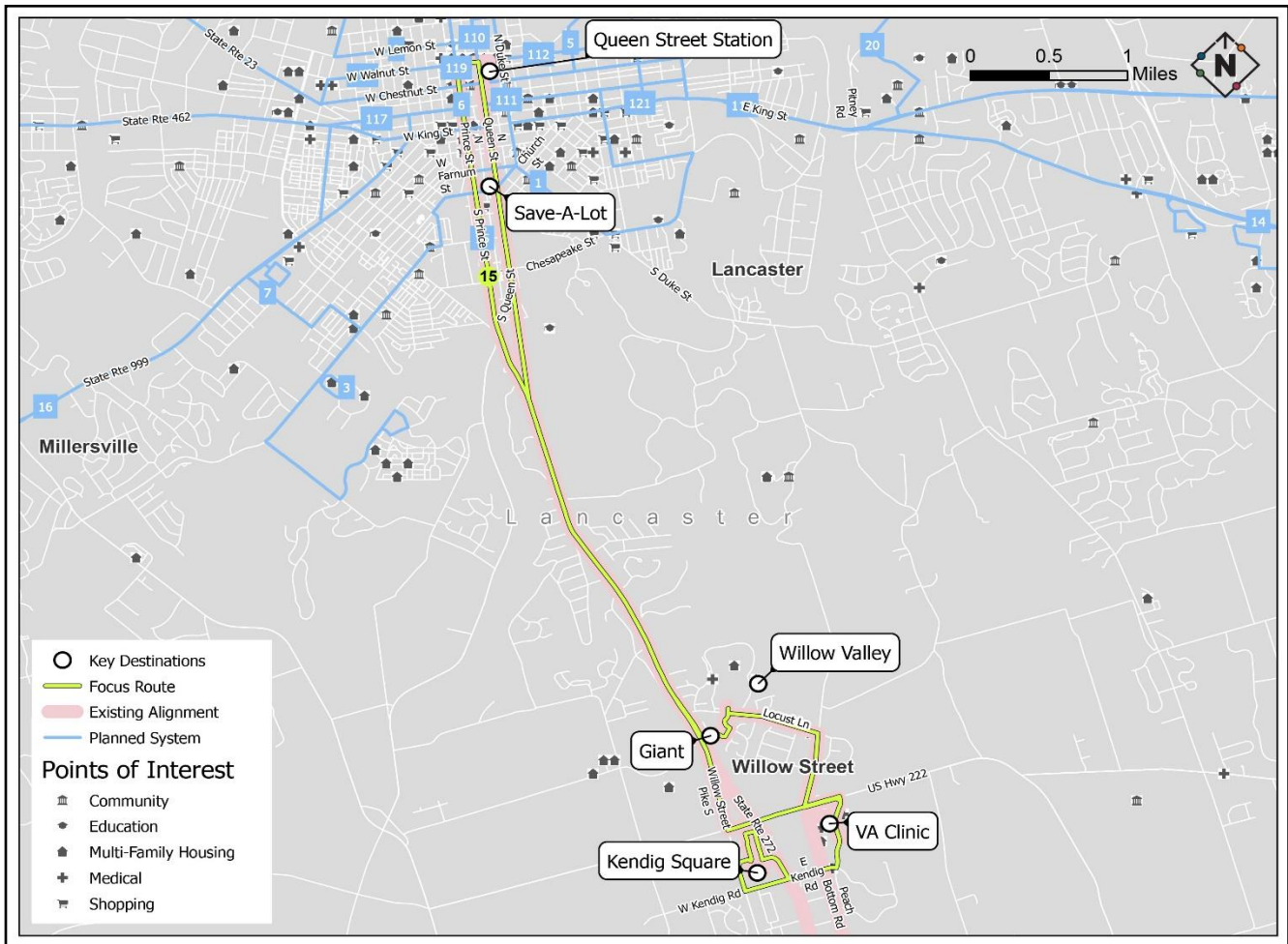
### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Sunday      | 8:00 a.m. to 10:00 p.m. | 30                 | 60               |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 11:00 p.m. | 30                 | 30               |
| Saturday    | 6:00 a.m. to 10:00 p.m. | 30                 | 30               |
| Sunday      | 8:00 a.m. to 10:00 p.m. | 30                 | 30               |

## Route 15/Willow Street Alignment



### SERVICE RECOMMENDATIONS

Route 15 will be simplified to operate between downtown Lancaster and Kendig Square via the VA Outpatient Clinic in both directions. The route will continue to serve the Willow Valley Community from Locust Lane. It will not operate south of Kendig Square due to low ridership. This route will be interlined with the proposed Route 20 and will have similar peak and off-peak frequencies.

Route 15 has relatively low ridership overall compared to other RRTA routes and thereby warrants minor alignment and level of service changes. Focusing service on areas with the greatest transit potential, as well as improving off-peak service headways should make the route more appealing to customers. Additionally, weekday peak headways vary, with the service operating every 40 to 60 minutes. Making headways consistent during the peak periods should make the service easier for customers to use.

### EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|------------------------|--------------------|------------------------|
| Weekday     | 5:50 a.m. to 6:10 p.m. | 40                 | 125                    |
| Saturday    | 8:20 a.m. to 4:20 p.m. | 60                 | 120                    |
| Sunday      | -                      | -                  | -                      |

### PROPOSED LEVEL OF SERVICE

#### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Saturday    | 7:00 a.m. to 5:00 p.m. | 60                 | 60               |
| Sunday      | -                      | -                  | -                |

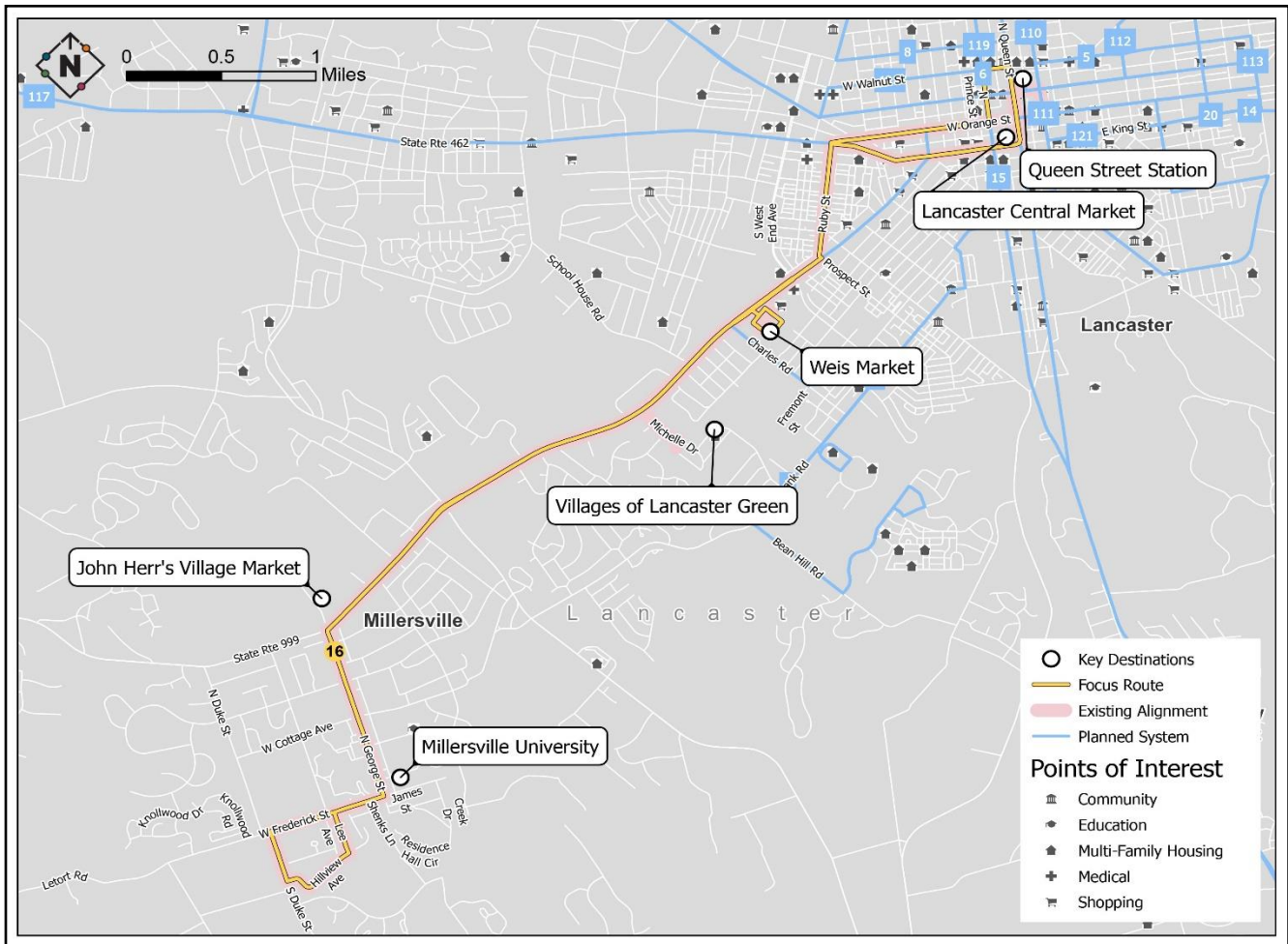
#### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Saturday    | 7:00 a.m. to 5:00 p.m. | 60                 | 60               |
| Sunday      | -                      | -                  | -                |

#### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Saturday    | 6:00 a.m. to 6:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

## Route 16/Millersville Alignment



### SERVICE RECOMMENDATIONS

Route 16's alignment will be similar to the current route alignment, providing service between downtown Lancaster and Millersville University. However, due to low ridership, buses will no longer directly serve The Villages of Lancaster Green on select trips. This route will be interlined with the proposed Route 5 and will have similar peak and off-peak frequencies.

Route 16 performs well overall compared to other RRTA routes and thereby does not warrant major alignment changes. The proposed earlier start of service on Sundays will address pent-up demand. Weekday ridership declines after 9:00 p.m., and Saturday ridership declines sharply after 5:00 p.m., warranting a reduction in level of service on those days.

## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|-------------------------|--------------------|------------------------|
| Weekday     | 5:40 a.m. to 11:10 p.m. | 35                 | 40                     |
| Saturday    | 5:40 a.m. to 11:10 p.m. | 35                 | 40                     |
| Sunday      | 11:15 a.m. to 7:00 p.m. | -                  | 60                     |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 8:00 p.m.  | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |

### PHASE 2: MID-TERM

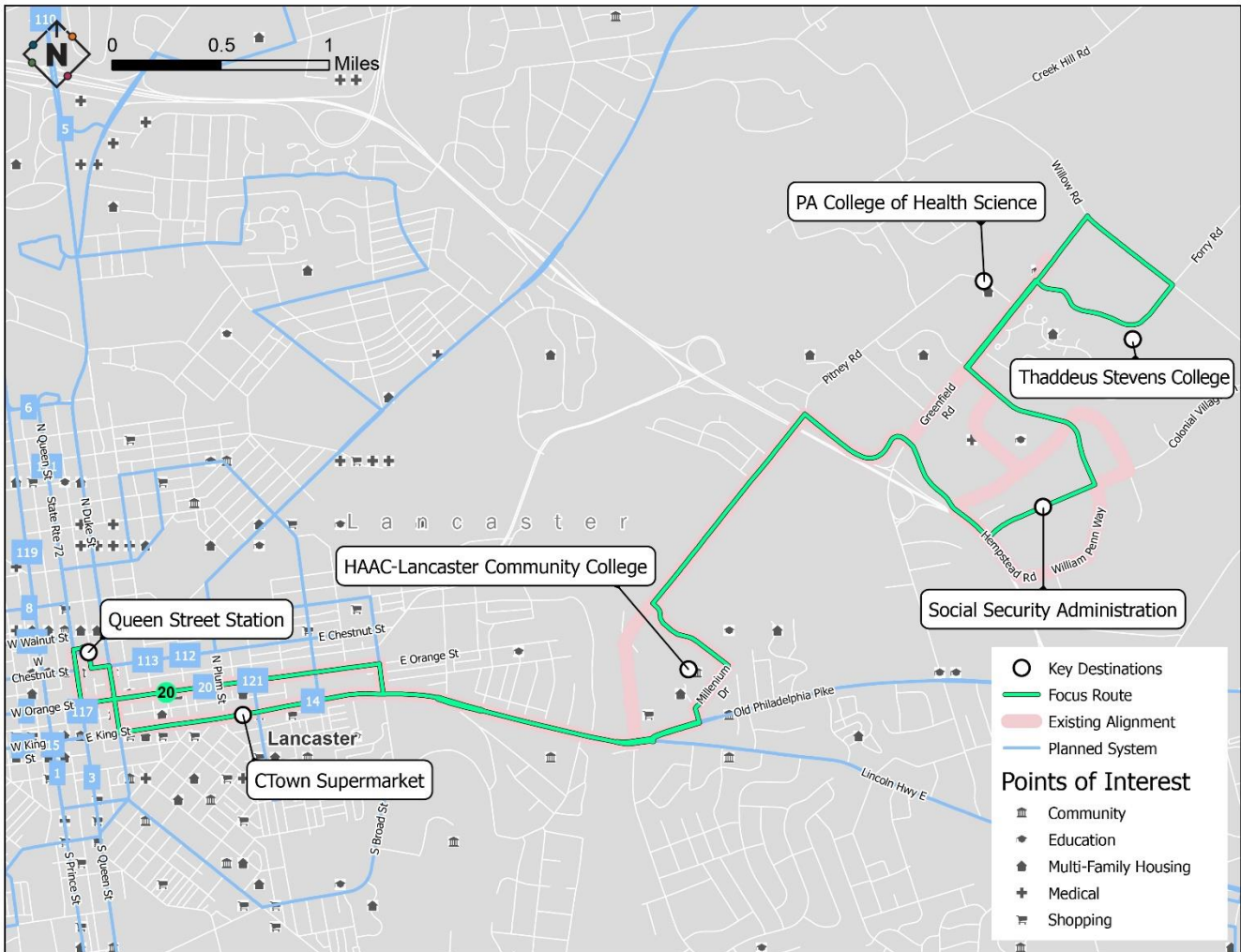
| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 7:00 a.m. to 8:00 p.m.  | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 10:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |



# Route 20/Greenfield Alignment



## SERVICE RECOMMENDATIONS

Route 20 will be simplified to reduce one-way service in the Greenfield area. The route will connect downtown Lancaster to Harrisburg Area Community College (HACC-Lancaster), the Social Security Administration office, the PA College of Health Sciences, and the Thaddeus Stevens College Transportation Center. This route will be interlined with the proposed Route 15, and will have similar peak and off-peak frequencies.

Route 20 performs poorly overall compared to other RRTA routes and thereby warrants minor alignment changes. Improvements to the alignment and level of service will make Route 20 more efficient and useful for customers. Ridership on Route 20 is concentrated during the weekday peak periods, which warrants eliminating midday service, at least in the short-term. During the PM Peak period, service is offered every 60 minutes, whereas in the AM Peak period, service is offered every 45 minutes; the recommendations proposes making service consistent during the peak periods. Lower ridership per trip justifies reducing the level of service.

### EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|------------------------|--------------------|------------------------|
| Weekday     | 5:20 a.m. to 6:10 p.m. | 45                 | 55                     |
| Saturday    | -                      | -                  | -                      |
| Sunday      | -                      | -                  | -                      |

### PROPOSED LEVEL OF SERVICE

#### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN                                   | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 9:00 a.m.; 3:00 p.m. to 7:00 p.m. | 60                 | 60               |
| Saturday    | 7:00 a.m. to 5:00 p.m.                         | 60                 | 60               |
| Sunday      | -                                              | -                  | -                |

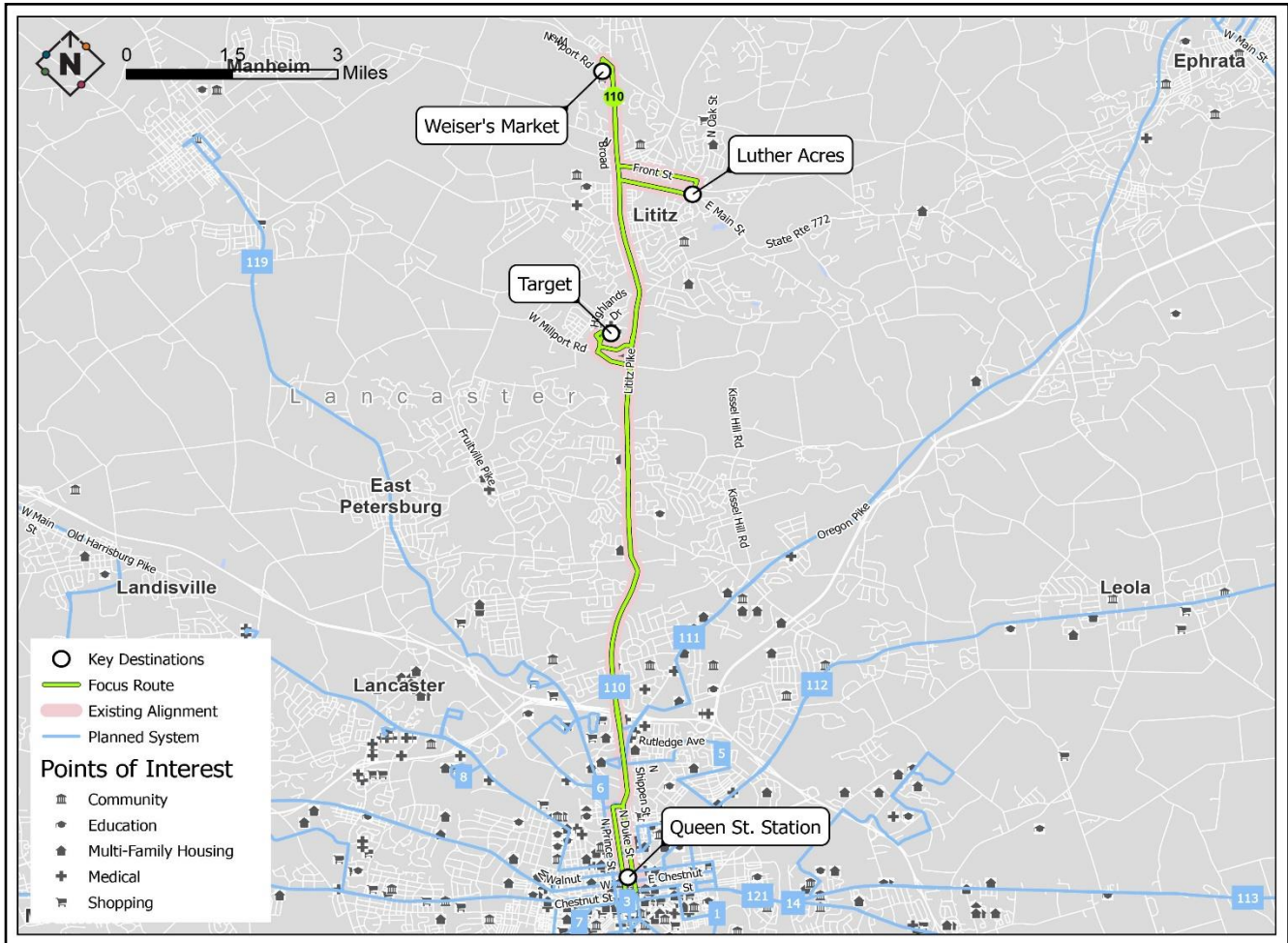
#### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN                                   | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 9:00 a.m.; 3:00 p.m. to 7:00 p.m. | 60                 | -                |
| Saturday    | 7:00 a.m. to 5:00 p.m.                         | 60                 | 60               |
| Sunday      | -                                              | -                  | -                |

#### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Saturday    | 6:00 a.m. to 6:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m. | 60                 | 60               |

## Route 110/Lititz Alignment



### SERVICE RECOMMENDATIONS

Route 10 will be renumbered as Route 110 to highlight that it is a long-distance regional route. Otherwise, the route's service coverage remains mostly unchanged and will continue to operate between downtown Lancaster and Lititz via Lititz Pike. This route will be interlined with the proposed Route 111 and will have similar peak and off-peak frequencies.

Route 10 has consistent ridership along the full length of the route, thereby warranting only minor alignment changes. Route 10 performs moderately well on several productivity measures compared to other routes, indicated span and headway changes may be warranted. On weekdays, ridership is concentrated during the peak period, warranting peak-only service, at least in the short-term.

### EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|------------------------|--------------------|------------------------|
| Weekday     | 5:10 a.m. to 6:35 p.m. | 35                 | 85                     |
| Saturday    | 6:45 a.m. to 6:40 p.m. | 80                 | 90                     |
| Sunday      | -                      | -                  | -                      |

### PROPOSED LEVEL OF SERVICE

#### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN                                   | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 9:00 a.m.; 3:00 p.m. to 7:00 p.m. | 60                 | -                |
| Saturday    | 7:00 a.m. to 9:00 a.m.; 3:00 p.m. to 7:00 p.m. | 60                 | -                |
| Sunday      | -                                              | -                  | -                |

#### PHASE 2: MID-TERM

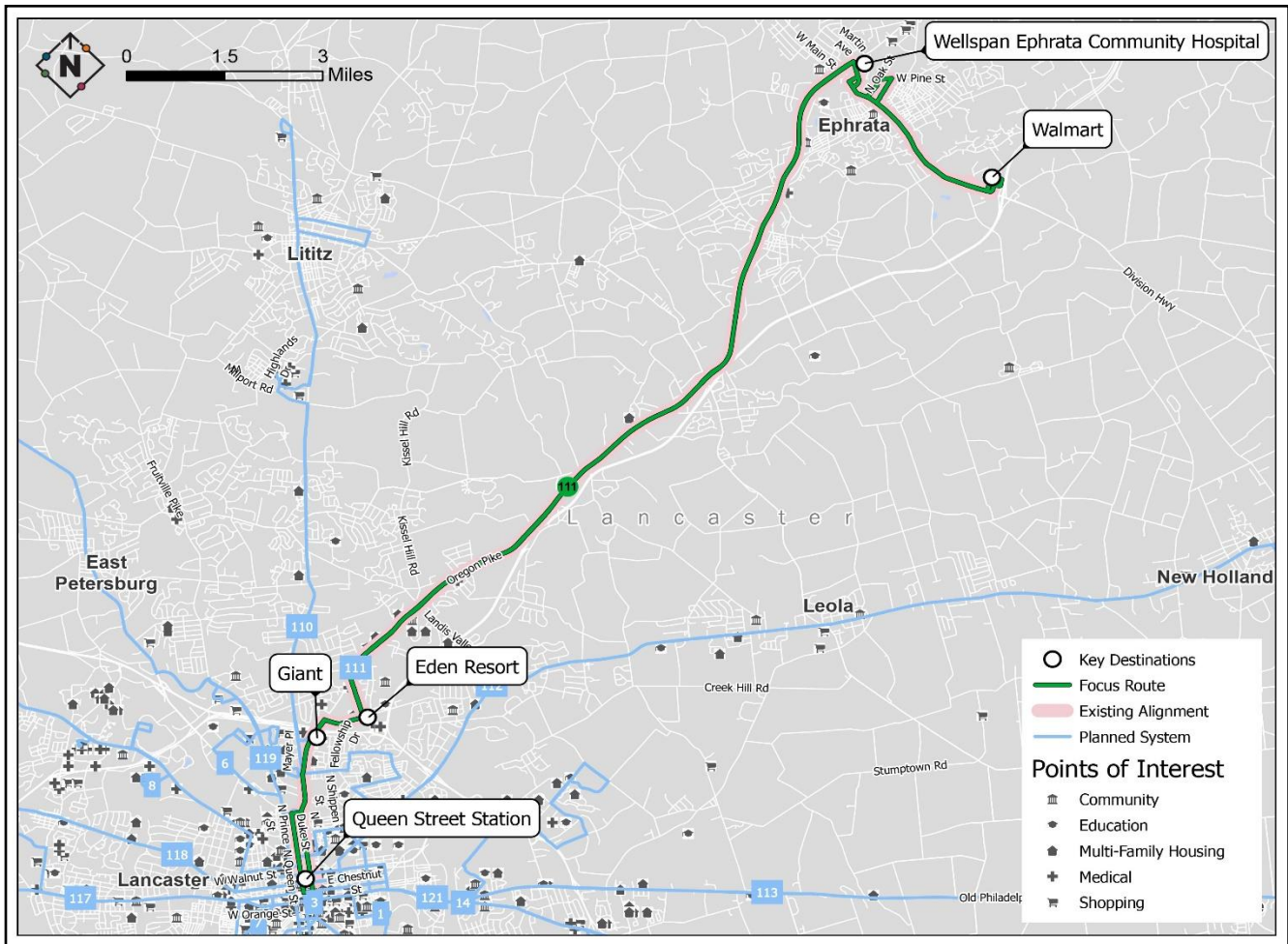
| DAY OF WEEK | SERVICE SPAN                                   | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 7:00 p.m.                         | 60                 | 60               |
| Saturday    | 7:00 a.m. to 9:00 a.m.; 3:00 p.m. to 5:00 p.m. | 60                 | -                |
| Sunday      | -                                              | -                  | -                |

#### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Saturday    | 6:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 7:00 p.m. | 60                 | 60               |



## Route 111/Ephrata Alignment



### SERVICE RECOMMENDATIONS

Route 11 will be renumbered as Route 111 to highlight that it is a long-distance regional route. Otherwise, the route’s service coverage remains mostly unchanged, providing service between downtown Lancaster and Ephrata via Reading Road and Oregon Pike. This route will be interlined with the proposed Route 110 and will have similar peak and off-peak frequencies.

Route 11 has consistent ridership across the full length of the route and thereby does not warrant any major alignment changes. However, the route performs moderately compared to other RRTA routes on several productivity measures, indicating the potential need for level of service changes. On weekdays, service operates infrequently throughout the service day and ridership is largely concentrated in the peak periods, warranting the elimination of midday service in the short term. On Saturdays, the route only runs 10 trips, split between the morning and afternoon, thereby justifying peak only service in the short-term.



## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|------------------------|--------------------|------------------------|
| Weekday     | 5:00 a.m. to 7:00 p.m. | 60                 | 120                    |
| Saturday    | 7:50 a.m. to 6:45 p.m. | 6 trips            | 4 trips                |
| Sunday      | -                      | -                  | -                      |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN                                 | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|----------------------------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 9:00 a.m.; 3:00 PM to 7:00 p.m. | 60                 | -                |
| Saturday    | 7:00 a.m. to 9:00 a.m.; 3:00 PM to 7:00 p.m. | 60                 | -                |
| Sunday      | -                                            | -                  | -                |

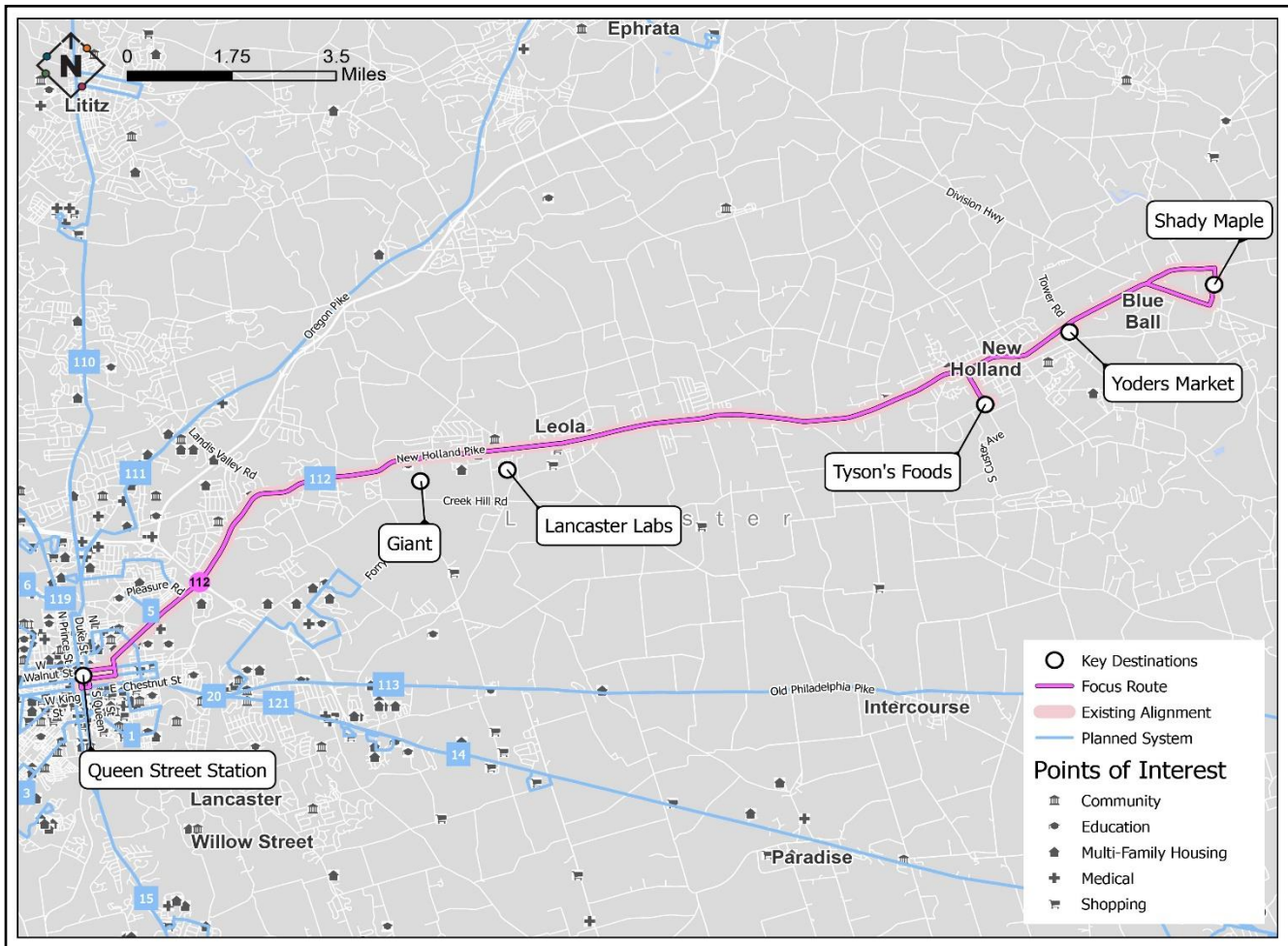
### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN                                   | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 7:00 p.m.                         | 60                 | 60               |
| Saturday    | 7:00 a.m. to 9:00 a.m.; 3:00 p.m. to 5:00 p.m. | 60                 | -                |
| Sunday      | -                                              | -                  | -                |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Saturday    | 6:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 7:00 p.m. | 60                 | 60               |

## Route 112/New Holland Alignment



### SERVICE RECOMMENDATIONS

Route 12 will be renumbered as Route 112 to highlight that it is a long-distance regional route. Otherwise, the route's service coverage remains mostly unchanged, providing service between downtown Lancaster and New Holland via New Holland Pike.

Route 12 performs well overall compared to other RRTA routes and thereby does not warrant major alignment changes. The route operates at inconsistent service frequencies throughout the day on weekdays, with headways ranging from approximately 40-minute headways to 70-minute headways. On Saturdays, the route operates only 10 trips, five in each direction in the morning and afternoon. Relatively low ridership across all service days warrants a reduction in the span of service, at least in the short term; making headways consistent across the service days should make the route easier for customers to use.

### EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|------------------------|--------------------|------------------------|
| Weekday     | 5:05 a.m. to 7:20 p.m. | 45                 | 90                     |
| Saturday    | 6:15 a.m. to 6:55 p.m. | 5 trips            | 5 trips                |
| Sunday      | -                      | -                  | -                      |

### PROPOSED LEVEL OF SERVICE

#### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN                                   | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 9:00 a.m.; 3:00 p.m. to 7:00 p.m. | 60                 | -                |
| Saturday    | 7:00 a.m. to 9:00 a.m.; 3:00 p.m. to 5:00 p.m. | 60                 | -                |
| Sunday      | -                                              | -                  | -                |

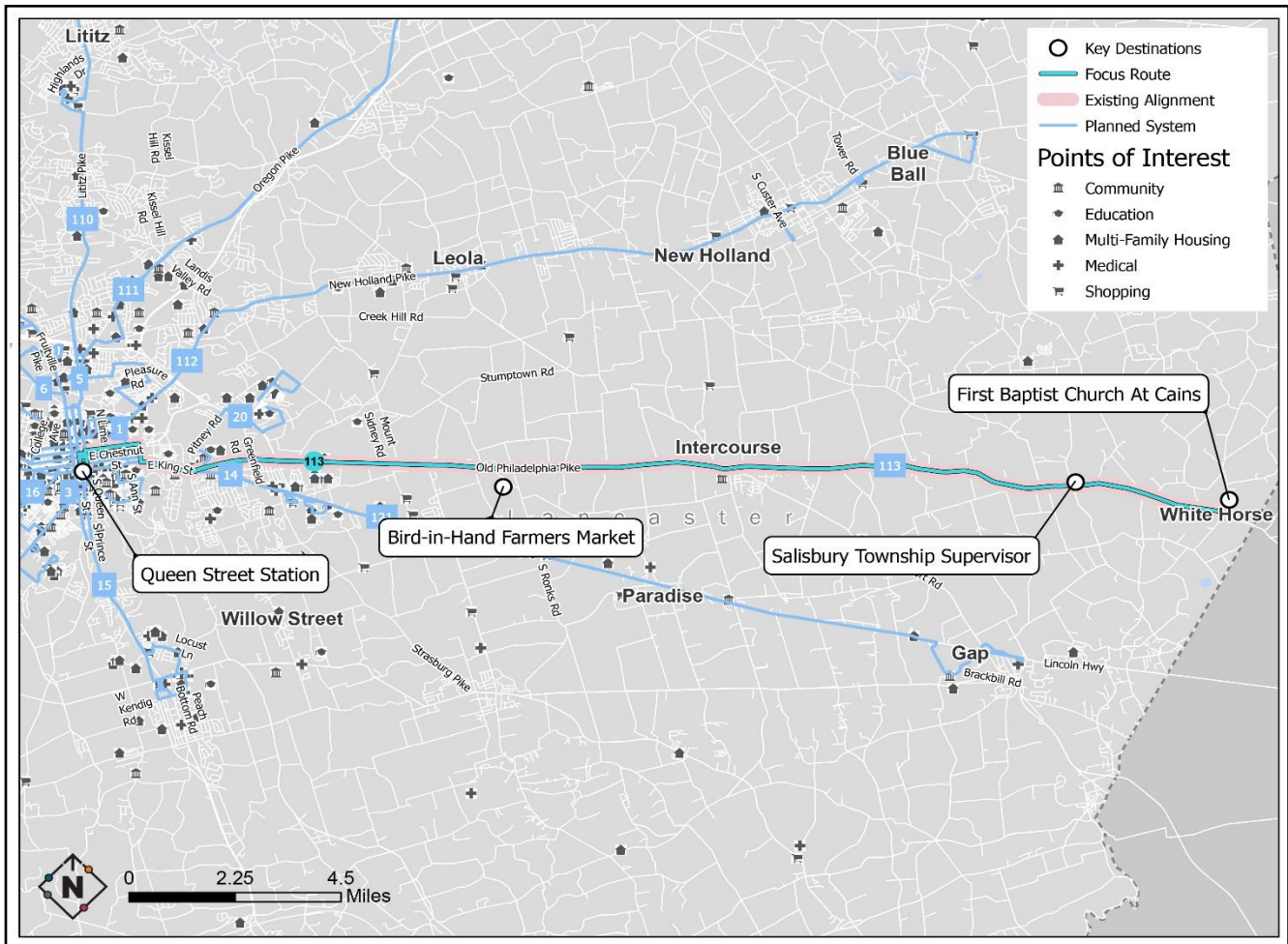
#### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN                                   | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 7:00 p.m.                         | 60                 | 60               |
| Saturday    | 7:00 a.m. to 9:00 a.m.; 3:00 p.m. to 5:00 p.m. | 60                 | -                |
| Sunday      | -                                              | -                  | -                |

#### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Saturday    | 6:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 7:00 p.m. | 60                 | 60               |

## Route 113/White Horse Alignment



### SERVICE RECOMMENDATIONS

Route 13 will be renumbered as Route 113 to highlight that it is a long-distance regional route. The route's alignment is similar to existing service. This route will be interlined with proposed Route 121 and will have similar peak and off-peak frequencies.

Route 13 performs moderately overall compared to other RRTA routes; the route has consistent ridership across majority of the route. The route operates at inconsistent service frequencies throughout the day on weekdays, with headways ranging from approximately 70-minute headways to over 120-minute headways. Low ridership per trip outside of the weekday peak periods warrants limiting weekday service to the peak periods only in the short term. On Saturdays, the route operates only six trips, two in each direction in the morning and one in each direction in the afternoon. The route's higher ridership on Saturdays, compared to other RRTA routes, indicates potential for additional weekend service.

### EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|------------------------|--------------------|------------------------|
| Weekday     | 5:30 a.m. to 6:35 p.m. | 60                 | 110                    |
| Saturday    | 6:30 a.m. to 5:15 p.m. | 6 trips            | -                      |
| Sunday      | -                      | -                  | -                      |

### PROPOSED LEVEL OF SERVICE

#### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN                                   | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 9:00 a.m.; 3:00 p.m. to 7:00 p.m. | 60                 | -                |
| Saturday    | 7:00 a.m. to 9:00 a.m.; 3:00 p.m. to 5:00 p.m. | 60                 | -                |
| Sunday      | -                                              | -                  | -                |

#### PHASE 2: MID-TERM

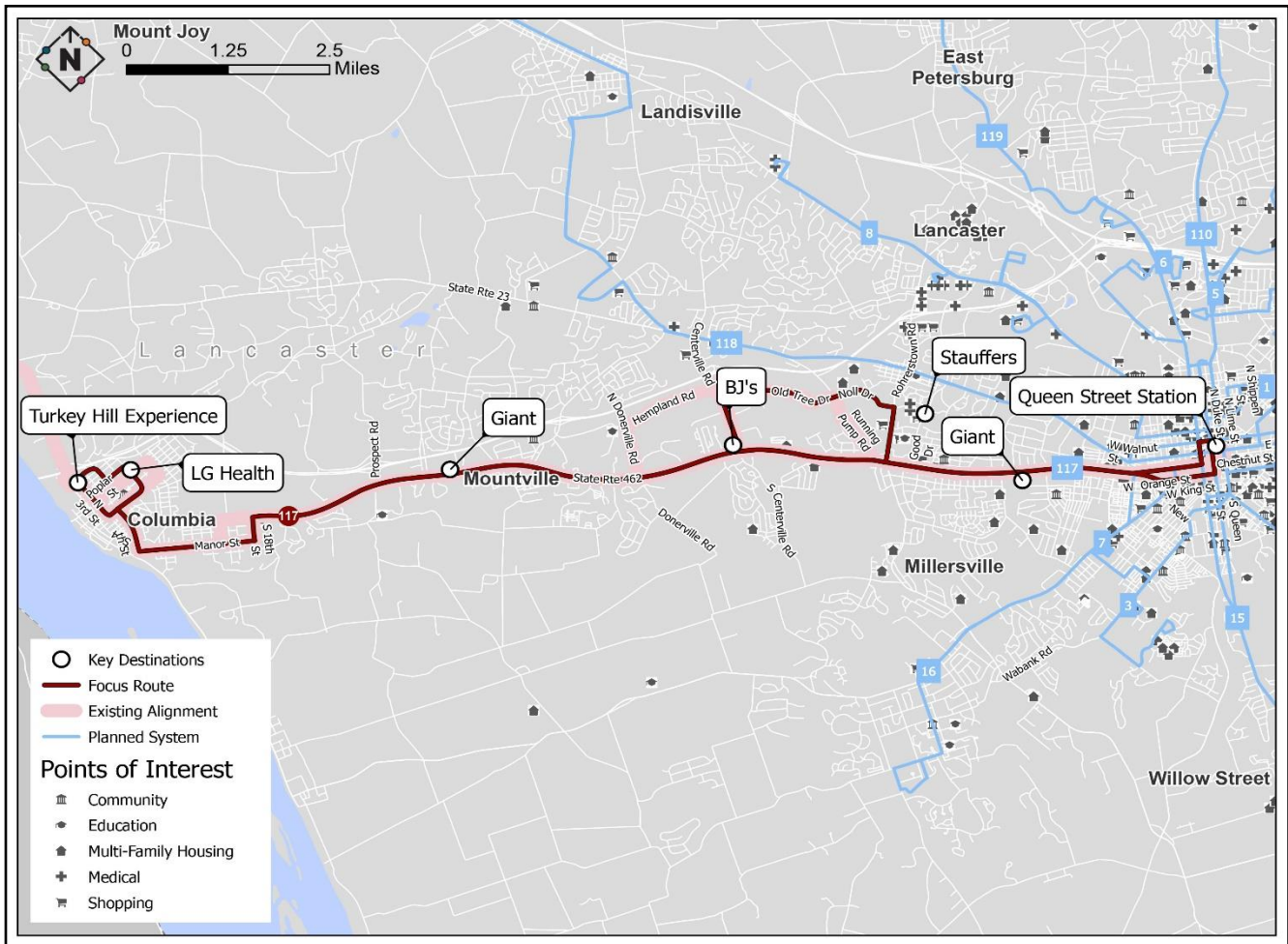
| DAY OF WEEK | SERVICE SPAN                                   | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 7:00 p.m.                         | 60                 | 60               |
| Saturday    | 7:00 a.m. to 9:00 a.m.; 3:00 p.m. to 5:00 p.m. | 60                 | -                |
| Sunday      | -                                              | -                  | -                |

#### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Saturday    | 6:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 7:00 p.m. | 60                 | 60               |



## Route 117/Columbia Alignment



### SERVICE RECOMMENDATIONS

Route 17 will be renumbered as Route 117 to highlight that it is a long-distance regional route. The route will operate between downtown Lancaster and Columbia via State Route 462. Service between Columbia and Marietta, previously provided from Route 17, could be provided by a pilot microtransit service, pending further study on microtransit feasibility and implementation. Service will be added along Rohrerstown Road between Columbia Avenue and Noll Drive connecting back to Columbia Avenue through Centerville Road to serve Aldi, BJ's, and other employment and activity centers.

Route 17 performs well overall compared to other RRTA routes; however, ridership drops off west of Columbia, warranting the elimination of service between Columbia and Marietta. The area between Columbia and Marietta is well suited to microtransit service and could serve as a microtransit pilot area. Additionally, low ridership per trip during the weekday off-peak periods justify reducing headways during the off-peak periods from 30-minutes to 60-minutes.

### EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|-------------------------|--------------------|------------------------|
| Weekday     | 4:50 a.m. to 10:05 p.m. | 30                 | 30                     |
| Saturday    | 6:15 a.m. to 8:50 p.m.  | 35                 | 70                     |
| Sunday      | 10:15 a.m. to 7:15 p.m. | 45                 | 45                     |

### PROPOSED LEVEL OF SERVICE

#### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 10:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |

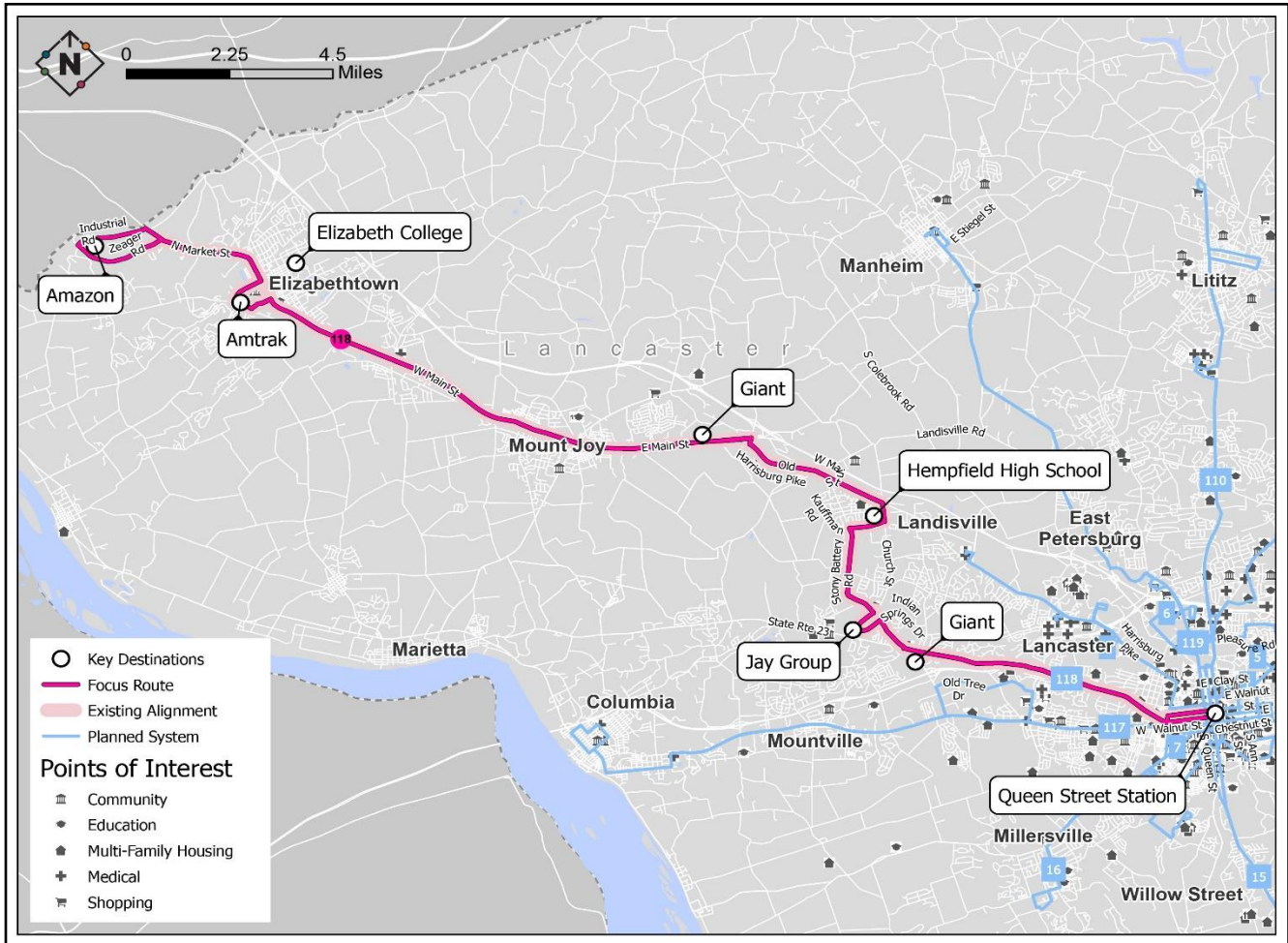
#### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 10:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |

#### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN            | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 10:00 p.m. | 30                 | 60               |
| Saturday    | 6:00 a.m. to 10:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 6:00 p.m.  | 60                 | 60               |

## Route 118/Elizabethtown Alignment



### SERVICE RECOMMENDATIONS

Route 18 will be renumbered as Route 118 to highlight that it is a long-distance regional route. Route 118 will operate along a similar alignment to the existing Route 18, providing service between downtown Lancaster and Elizabethtown. The route will continue to provide service to the Elizabethtown Amtrak station. The route will extend to Zeager Road and Industrial Road to serve the businesses in the industrial park, including Amazon and Nordstrom. This route will be interlined with the proposed Route 119 and will have similar peak and off-peak frequencies.

Route 18 performs moderately well overall compared to other RRTA routes, but it has relatively consistent ridership along the full length of the route. The route operates at inconsistent service frequencies throughout the day on weekdays, with headways ranging from approximately 60-minute headways to over 120-minute headways. On Saturdays, the route operates only four trips, one in each direction in the morning and afternoon. The connection to the Elizabethtown Amtrak station responds to feedback received during public outreach.

### EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|------------------------|--------------------|------------------------|
| Weekday     | 4:55 a.m. to 7:15 p.m. | 90                 | 120                    |
| Saturday    | 6:30 a.m. to 3:10 p.m. | 4 trips            | -                      |
| Sunday      | -                      | -                  | -                      |

### PROPOSED LEVEL OF SERVICE

#### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN                                  | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|-----------------------------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 9:00 a.m.; 3:00 p.m. – 7:00 p.m. | 60                 | -                |
| Saturday    | 7:00 a.m. – 9:00 a.m.; 3:00 p.m. – 5:00 p.m.  | 60                 | -                |
| Sunday      | -                                             | -                  | -                |

#### PHASE 2: MID-TERM

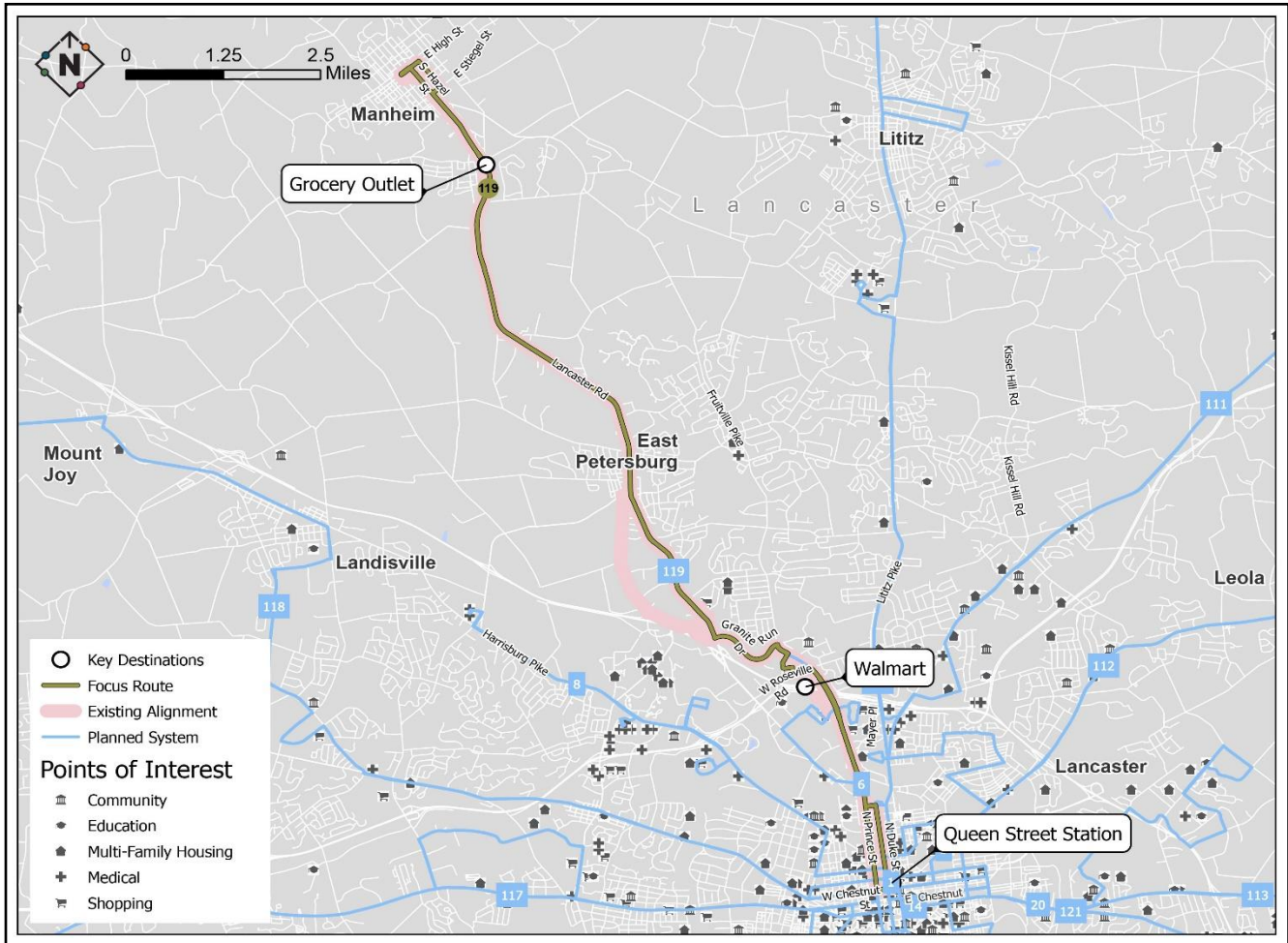
| DAY OF WEEK | SERVICE SPAN                                   | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 7:00 p.m.                         | 60                 | 60               |
| Saturday    | 7:00 a.m. to 9:00 p.m.; 3:00 p.m. to 5:00 p.m. | 60                 | -                |
| Sunday      | -                                              | -                  | -                |

#### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Saturday    | 6:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 7:00 p.m. | 60                 | 60               |



# Route 119/Manheim Alignment



## SERVICE RECOMMENDATIONS

Route 19 will be renumbered as Route 119 to highlight that it is a long-distance regional route. The Route 119 alignment will be similar to the existing Route 19 alignment, providing service between downtown Lancaster and Manheim along Lancaster Road. In addition, Hawthorne Centre (Walmart) will be served from Fruitville Pike instead of entering the parking lot. This route will be interlined with the proposed Route 118 and will have similar peak and off-peak frequencies.

Route 19 performs moderately compared to other RRTA routes and thereby warrants minor alignment change as well as level of service adjustments. Service operates inconsistently throughout the day, with large gaps in trips and low ridership during the midday (between 9:00 a.m. and 3:00 p.m.), which warrants elimination of midday service in the short-term. Later start times on weekdays and Saturdays are a result of lower ridership per trip early the morning.



## EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|------------------------|--------------------|------------------------|
| Weekday     | 5:10 a.m. to 7:15 p.m. | 55                 | 125                    |
| Saturday    | 8:20 a.m. to 4:20 p.m. | 90                 | 120                    |
| Sunday      | -                      | -                  | -                      |

## PROPOSED LEVEL OF SERVICE

### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN                                   | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 9:00 a.m.; 3:00 p.m. to 7:00 p.m. | 60                 | -                |
| Saturday    | 7:00 a.m. to 9:00 a.m.; 3:00 p.m. to 5:00 p.m. | 60                 | -                |
| Sunday      | -                                              | -                  | -                |

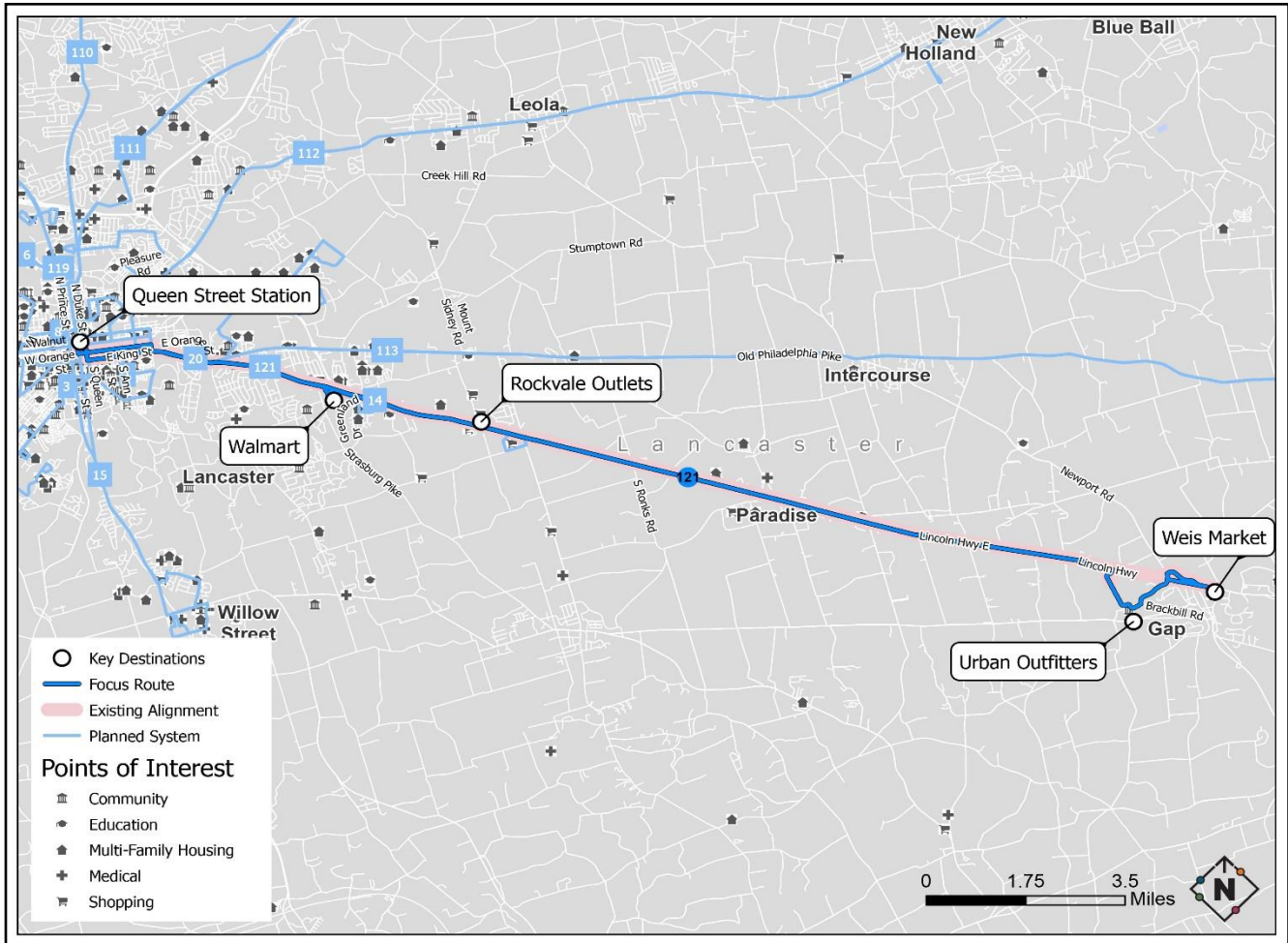
### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN                                   | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 7:00 p.m.                         | 60                 | 60               |
| Saturday    | 7:00 a.m. to 9:00 a.m.; 3:00 p.m. to 5:00 p.m. | 60                 | -                |
| Sunday      | -                                              | -                  | -                |

### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Saturday    | 6:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 7:00 p.m. | 60                 | 60               |

## Route 121/Gap Alignment



### SERVICE RECOMMENDATIONS

Route 21 will be renumbered as Route 121 to highlight that it is a long-distance regional route. Otherwise, the route’s service coverage remains mostly unchanged, operating between downcast Lancaster and Gap along Lincoln Highway. This route will be interlined with proposed Route 113, which will have similar peak and off-peak frequencies.

Route 21 performs poorly overall compared to other RRTA routes, which warrants level of service adjustments. Service operates inconsistently throughout the day, with large gaps in trips and low ridership during the midday (between 9:00 a.m. and 3:00 p.m.), which warrants elimination of midday service in the short-term. Ridership is consistently strong in Gap, indicating that fixed-route service should be maintained in the area.

### EXISTING LEVEL OF SERVICE

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY (MIN) |
|-------------|------------------------|--------------------|------------------------|
| Weekday     | 5:05 a.m. to 5:35 p.m. | 45                 | 130                    |
| Saturday    | 6:00 a.m. to 6:30 p.m. | 45                 | 130                    |
| Sunday      | -                      | -                  | -                      |

### PROPOSED LEVEL OF SERVICE

#### PHASE 1: SHORT-TERM

| DAY OF WEEK | SERVICE SPAN                                   | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 9:00 a.m.; 3:00 p.m. to 7:00 p.m. | 60                 | -                |
| Saturday    | 7:00 a.m. to 9:00 a.m.; 3:00 p.m. to 5:00 p.m. | 60                 | -                |
| Sunday      | -                                              | -                  | -                |

#### PHASE 2: MID-TERM

| DAY OF WEEK | SERVICE SPAN                                   | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------------------------------|--------------------|------------------|
| Weekday     | 6:00 a.m. to 7:00 p.m.                         | 60                 | 60               |
| Saturday    | 7:00 a.m. to 9:00 a.m.; 3:00 p.m. to 5:00 p.m. | 60                 | -                |
| Sunday      | -                                              | -                  | -                |

#### PHASE 3: LONG-TERM

| DAY OF WEEK | SERVICE SPAN           | PEAK HEADWAY (MIN) | OFF-PEAK HEADWAY |
|-------------|------------------------|--------------------|------------------|
| Weekday     | 5:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Saturday    | 6:00 a.m. to 7:00 p.m. | 60                 | 60               |
| Sunday      | 8:00 a.m. to 7:00 p.m. | 60                 | 60               |

# RRTA SERVICE CHARACTERISTICS

Like with the BARTA recommendations, The recommended fixed-route network for RRTA makes extensive use of interlining to optimize cycle times and ensure one-seat rides to key destinations. **Table 14** shows how interlining is used to optimize cycle times and ensure sufficient recovery times. Routes that are interlined are indicated with a plus (+) sign between them.

## REVENUE HOURS, VEHICLE NEEDS, AND FINANCIAL ANALYSIS

Phase 1 of the recommended service scenario is designed to be cost-neutral, meaning that it can be implemented within the constraints of RRTA’s current resources. However, as this document is intended to serve as a guide for service improvement, and the medium- and long-term recommendations go beyond RRTA’s existing financial resources, the impacts of the recommendations are quantified in terms of revenue hours and peak vehicle needs rather than dollars. This approach allows the document to remain relevant over time, even as operating costs may fluctuate.

The recommendations presented provide one option for phasing in new service, as proposed in this TDP; however, the recommendations are intended to be flexible and can be implemented based on availability of resources and ridership demand. The service recommendations are broken into packages, as laid out in **Table 16**. Packages are individual routes or groups of routes that are linked to one another. Changes on routes in a package must happen simultaneously to ensure that coverage is maintained as routes are realigned. Further, realigning routes that are interlined simultaneously will ensure that SCTA will see the operational efficiencies of interlining immediately, even if span and frequencies are not improved.

**Table 16: RRTA Recommendations Packages**

| RECOMMENDATIONS PACKAGE | ROUTES INCLUDED                                                    |
|-------------------------|--------------------------------------------------------------------|
| Package 1               | Route 1, Route 3, Route 5, Route 6, Route 7, Route 8, and Route 16 |
| Package 2               | Route 14                                                           |
| Package 3               | Route 15 and Route 20                                              |
| Package 4               | Route 110 and Route 111                                            |
| Package 5               | Route 112                                                          |
| Package 6               | Route 113 and Route 121                                            |
| Package 7               | Route 117                                                          |
| Package 8               | Route 118 and Route 119                                            |
| Package 9               | Columbia/Marietta Microtransit Pilot Zone                          |

**Table 17** below shows the annual revenue hours, peak vehicle needs, and the estimated annual cost associated with each route or route pair in each of the three implementation phases. In FY 2023, RRTA operated 116,997 annual revenue hours for a total operating cost of \$12,145,560, which made the average operation cost of \$103.83 per revenue hour. These FY 2023 totals serve as a baseline from which the recommendations are built.

Overall, the Phase 1 improvements increase annual revenue hours and the estimated cost of the service by less than two percent. The Phase 2 recommendations increase revenue hours and operating cost by 12 percent compared to FY 2023 service. In Phase 3 annual revenue hours and annual operating cost will increase by 40 percent.

Table 17: Revenue Hours and Vehicle Needs by Phase - RRTA

| ROUTES                         | ANNUAL REVENUE HOUR | WEEKDAY PEAK VEHICLE NEED | ESTIMATED ANNUAL COST (\$1000s) |
|--------------------------------|---------------------|---------------------------|---------------------------------|
| <b>Phase 1 - Short Range</b>   |                     |                           |                                 |
| Route 1                        | 12,220              | 2                         | \$1,269                         |
| Route 3 + 8                    | 10,192              | 2                         | \$1,058                         |
| Route 5 + 16                   | 14,352              | 4                         | \$1,490                         |
| Route 6                        | 6,916               | 2                         | \$718                           |
| Route 7                        | 4,836               | 1                         | \$502                           |
| Route 14                       | 16,380              | 3                         | \$1,707                         |
| Route 15 + 20                  | 6,760               | 2                         | \$702                           |
| Route 110 + 111                | 6,084               | 3                         | \$632                           |
| Route 112                      | 7,176               | 2                         | \$745                           |
| Route 113 + 121                | 8,112               | 4                         | \$842                           |
| Route 117                      | 13,936              | 4                         | \$1,447                         |
| Route 118 + 119                | 8,112               | 4                         | \$842                           |
| <b>Total</b>                   | <b>118,716</b>      | <b>33</b>                 | <b>\$11,948</b>                 |
| Phase 1 Change from Existing   | <b>1,739</b>        | -                         | <b>\$197</b>                    |
| Phase 1 % Change from Existing | <b>1.49%</b>        | -                         | <b>1.63%</b>                    |
| <b>Phase 2 - Mid Range</b>     |                     |                           |                                 |
| Route 1                        | 12,220              | 2                         | \$1,269                         |
| Route 3 + 8                    | 10,712              | 2                         | \$1,112                         |
| Route 5 + 16                   | 14,352              | 4                         | \$1,490                         |
| Route 6                        | 7,176               | 2                         | \$745                           |
| Route 7                        | 4,836               | 1                         | \$502                           |
| Route 14                       | 17,004              | 3                         | \$1,765                         |
| Route 15 + 20                  | 4,680               | 2                         | \$486                           |
| Route 110 + 111                | 10,764              | 3                         | \$1,118                         |
| Route 112                      | 7,176               | 2                         | \$745                           |
| Route 113 + 121                | 14,352              | 4                         | \$1,490                         |
| Route 117                      | 13,416              | 4                         | \$1,393                         |
| Route 118 + 119                | 14,352              | 4                         | \$1,490                         |
| <b>Total</b>                   | <b>137,800</b>      | <b>33</b>                 | <b>\$13,606</b>                 |
| Phase 2 Change to Existing     | <b>20,823</b>       | -                         | <b>\$1,460</b>                  |
| Phase 2 % Change to Existing   | <b>17.80%</b>       | -                         | <b>12.02%</b>                   |
| <b>Phase 3 - Long Range</b>    |                     |                           |                                 |
| Route 1                        | 12,896              | 2                         | \$1,339                         |
| Route 3 + 8                    | 15,288              | 4                         | \$1,587                         |
| Route 5 + 16                   | 14,664              | 4                         | \$1,523                         |
| Route 6                        | 7,644               | 2                         | \$794                           |
| Route 7                        | 6,708               | 2                         | \$696                           |
| Route 14                       | 18,720              | 3                         | \$1,944                         |
| Route 15 + 20                  | 9,048               | 2                         | \$940                           |
| Route 110 + 111                | 14,664              | 3                         | \$1,523                         |



| ROUTES                              | ANNUAL REVENUE HOUR | WEEKDAY PEAK VEHICLE NEED | ESTIMATED ANNUAL COST (\$1000s) |
|-------------------------------------|---------------------|---------------------------|---------------------------------|
| Route 112                           | 9,776               | 2                         | \$1,015                         |
| Route 113 + 121                     | 19,552              | 4                         | \$2,030                         |
| Route 117                           | 15,704              | 4                         | \$1,631                         |
| Route 118 + 119                     | 19,552              | 4                         | \$2,030                         |
| <b>Total</b>                        | <b>170,976</b>      | <b>36</b>                 | <b>\$17,050</b>                 |
| <b>Phase 3 Change to Existing</b>   | <b>53,999</b>       | -                         | <b>4,905</b>                    |
| <b>Phase 3 % Change to Existing</b> | <b>46.16%</b>       | -                         | <b>40.38%</b>                   |

## PUBLIC AND STAKEHOLDER FEEDBACK

SCTA held three sessions to engage the community regarding the recommended changes to RRTA service. Full summaries of the feedback received during the stakeholder meeting and public meetings are available in **Appendix H**.

Attendees provided feedback on the proposed service changes, including the following comments on specific routes:

- Some participants expressed concern that new routing on Route 1 will increase travel time between Queen Street Station and Amtrak.
- One commenter thanked the planning staff for responding to earlier comments in support of adding service to Lancaster Medical Center.
- Multiple attendees suggested adding stops closer to Willow Valley, a large senior community, on Route 15.
- Some participants disapproved of the decision to eliminate service at the Amtrak station in Elizabethtown on Route 118. The facilitators responded that no ridership activity at the station was recorded; however, as a result of the feedback, service was added back to the Elizabethtown Amtrak station.
- Representatives of Elizabethtown College expressed support for locating bus stops closer to campus. The facilitators noted that the current plan includes for stops within a couple of blocks.
- One attendee observed that some seniors and people with disabilities may have trouble walking the distance needed to cross large parking lots, and consequently lamented the decision to remove the deviation into Red Rose Commons on Route 119.
- Another commenter noted that redevelopment in Manheim Pike east of Fruitvale Pike might increase demand for transit in that area. The facilitators noted that current ridership in that area is low.

Many commenters had questions about the proposed microtransit pilot and potential permanent microtransit zones.

At least seven people at the virtual meeting expressed support for a cross-county route that connects Manheim, Lititz, Akron, and Ephrata without having to transfer downtown. Several commenters said they would like to see increased frequency and additional service at nights and on weekends. Other participants shared concerns about the system's on-time performance.

# Microtransit Potential

In Berks County and Lancaster County there are opportunities to leverage technology and implement new types of transit service in the region, including microtransit. While microtransit vehicles are typically smaller and have a lower passenger carrying capacity than traditional fixed-route transit vehicles, the service can provide more coverage than fixed-route service as vehicles are not tied to specific routes. These features fit well with the current market for transit service in the region, where demand is still too low to justify some of the regional routes, leaving some communities without any service at all. In addition, microtransit's flexibility allows it to serve as a market probe, gauging the growth of ridership demand geographically and over time. As service evolves and matures, microtransit service can be adjusted by modifying service zones and/or fleet characteristics (number of vehicles, size of vehicles, percentage of wheelchair accessible vehicles, etc.), or the service can be replaced by fixed-route service where appropriate.

Microtransit can provide new and enhanced transit service that connects townships and provides local circulation to jobs and other destinations throughout both Berks and Lancaster Counties. In particular, the townships located outside of the City of Lancaster and Reading, where transit demand is lower and the road network is auto-oriented, are likely to benefit most from new microtransit service. Based on a high-level microtransit feasibility analysis conducted as part of this TDP, several areas arose as having microtransit potential. In Lancaster County, microtransit is recommended for the Columbia/Marietta area as well as along the Route 772 corridor, connecting Mount Joy, Manheim and Lititz, and along the Route 322 corridor, connecting Akron, Ephrata, and New Holland (**Figure 35**). In Berks County, microtransit service could be implemented in the Birdsboro area (**Figure 36**). Before SCTA moves forward with any microtransit implementation, additional analysis is required to confirm where microtransit is most feasible in the region as well as a recommended operating model for the new service.

## Microtransit Implementation

This TDP includes recommendations for where microtransit is likely to succeed. If funding is available, microtransit service can be implemented quickly, especially if it is launched as a pilot program. Because microtransit service is a new mode for the region, conducting a pilot first will be beneficial. A microtransit pilot will provide SCTA, RRTA, and BARTA with a better understanding of what may or may not work in the region and strategies for implementing such a service on a larger scale. Based on the high-level analysis, microtransit service is estimated to cost between \$500,000 and \$750,000 annually per zone; however, this estimate should be confirmed through further study.<sup>6</sup>

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<sup>6</sup> These cost estimates are high-level estimates; actual costs will depend on expected demand, vehicle need, and the operating model. Additional analysis will be required to determine the exact cost of these additional zones once it is determined that these zones will move forward.

Figure 35: Proposed Microtransit Zones - Lancaster County

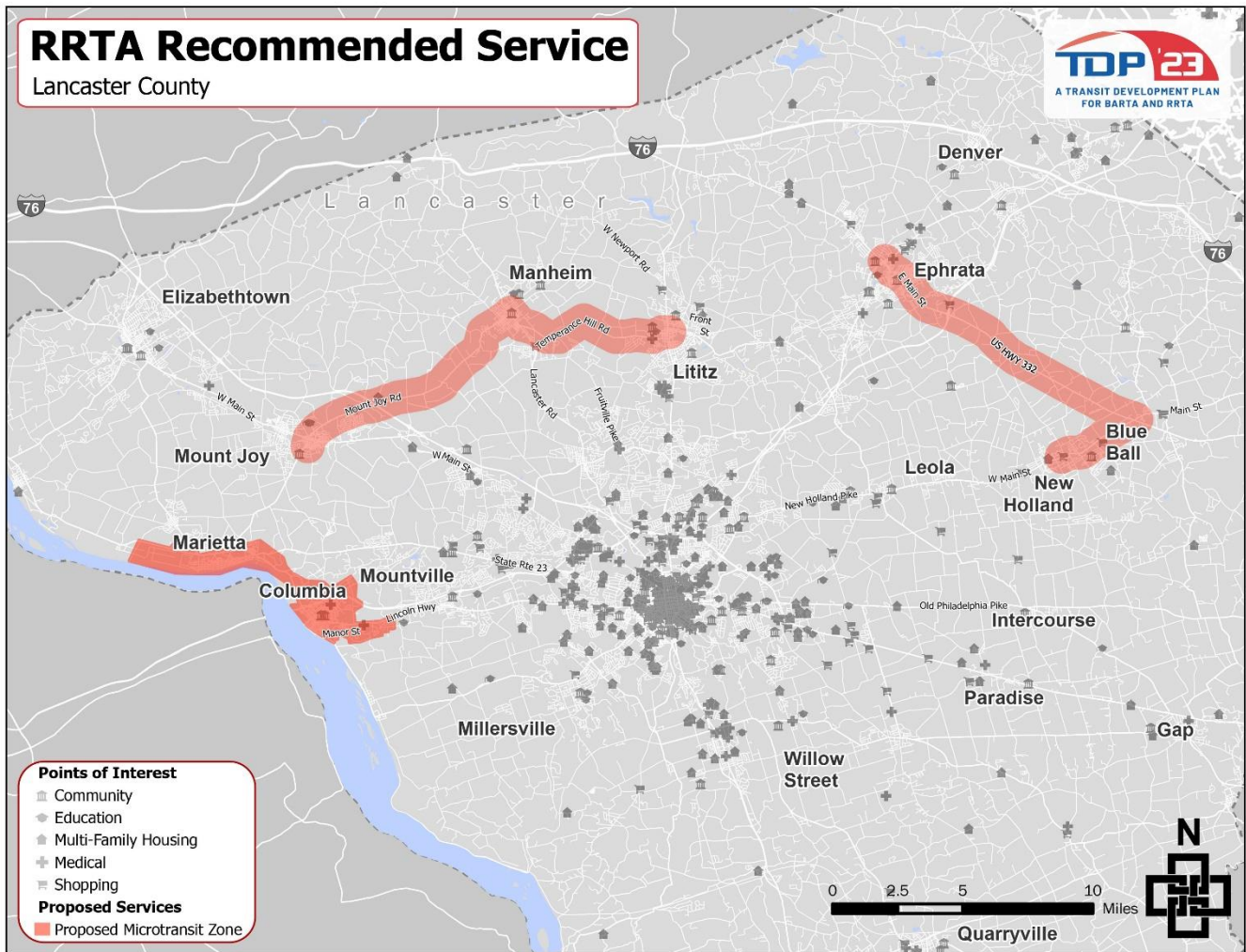
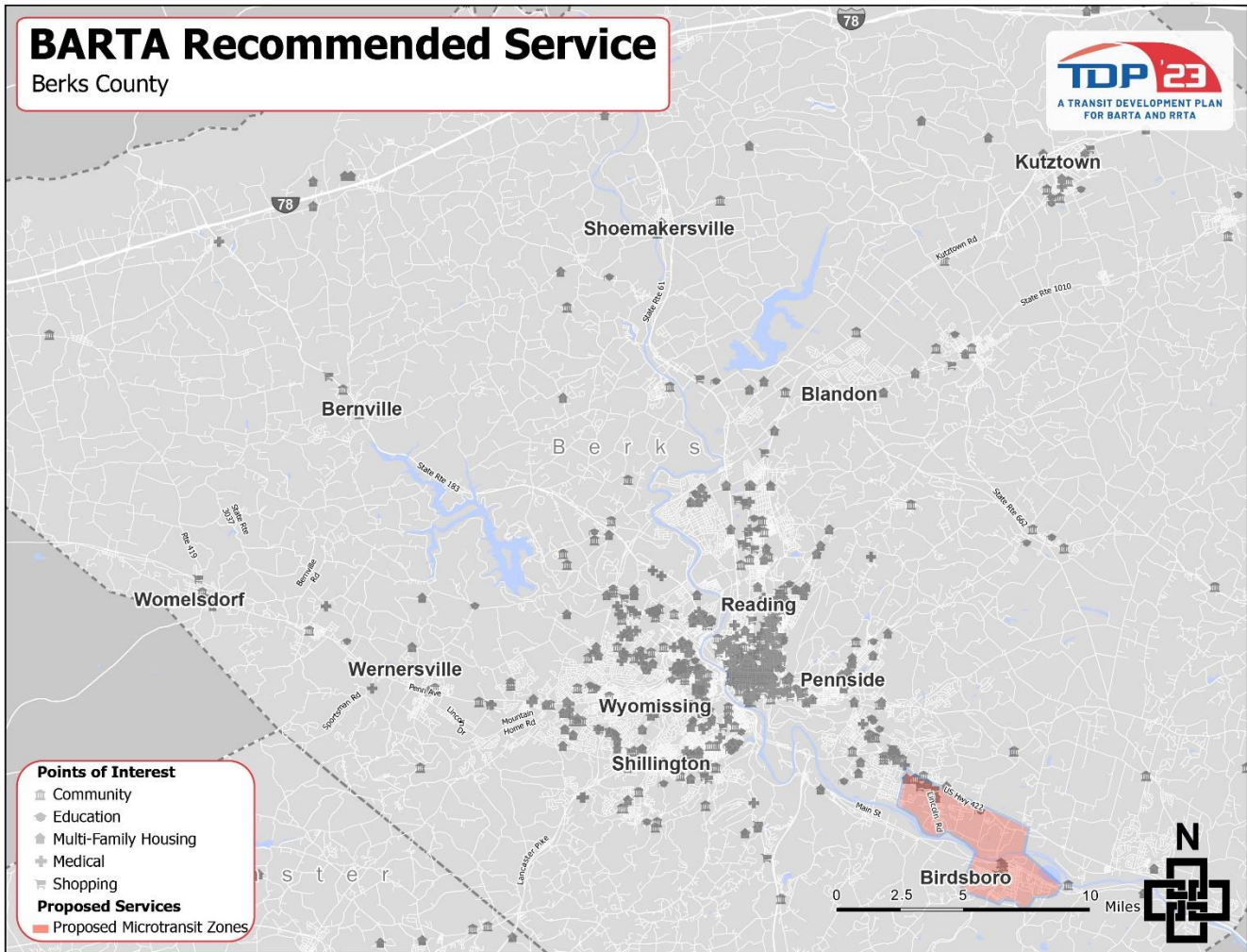


Figure 36: Proposed Microtransit Zones - Berks County



## Capital Improvements

Implementing the service recommendations in both Lancaster and Berks Counties will require some capital investments. These investments will take time to implement may require additional study; however, they will enhance the service provided by BARTA and RRTA and improve the customer experience. While all improvements do not need to happen at once, it is important to begin capital investments as part of Phase I, including investing in bus stops and vehicles and beginning studies to design and build new mobility hubs. The only capital investments tied to specific phases are vehicle investments; BARTA and RRTA will need to purchase additional vehicles prior to implementing some service recommendations.

## MOBILITY HUBS

BARTA and RRTA networks each include two primary transit hubs: BARTA Transit Center in downtown Reading and Queen Street Station in downtown Lancaster. Due to the hub and spoke nature of both the BARTA and RRTA fixed-route networks, nearly all routes in both systems will terminate or pass through the



transit centers in their respective service areas. The recommendations for both systems envision additional mobility hubs to facilitate transfers between routes as well as between fixed-route and future microtransit services. The recommended mobility hubs include:

- BARTA

- North Reading Plaza (Walmart): connection to Route 1, Route 3, and Route 122
- Kenhorst Plaza (Redner's): connection to Route 9 and Route 10
- Ollie's Bargain Outlet on Lancaster Pike: connection to Route 11 and Route 12

- RRTA

- Walmart on Fruitville Pike: connection to Route 6 and Route 119
- Walmart on Lincoln Highway: connection to Route 14 and Route 121

Each of these locations are important regional destinations where riders want to go, regardless of whether they want to transfer to another route that serves that location. By co-locating transit hubs and activity centers, transit riders can be productive and complete shopping and other errands while they wait for their connecting service. As new services are implemented and both the BARTA and RRTA transit networks evolve, additional mobility hubs could be implemented at high ridership locations.

To designate a location as a mobility hub and help support passenger activity, SCTA, BARTA, and RRTA could invest in enhanced shelters and other capital improvements at each location. Key elements to have at each location include a station or sign marker, bus shelter, seating, trash receptacles, and lighting. Other features that could be incorporated include landscaping and bike racks. The cost of installing a mobility hub will vary depending on the elements included. SCTA will collaborate with each municipality on the design of the mobility hub to ensure that it fits with the community characteristics.

## BUS STOPS

In addition to mobility hubs, the study team also recommends investing in basic bus stop infrastructure across the system. In particular, both BARTA and RRTA utilize a flag stop model, especially outside of Reading and Lancaster. During the first phase of engagement, the public and stakeholders indicated that the flag stop system can be challenging to understand and can limit customer's ability to easily use the bus. While it is not required that every bus stop have a bench or shelter, especially those that are infrequently used by customers, installing signs at all stop locations could improve a customer's ability to ride the bus. Bus signs along with a post cost approximately \$100 each. Installing a shelter would add to costs but could be beneficial at higher use stops. A small shelter costs approximately \$11,000, with some additional costs for installation.

## PEDESTRIAN ENVIRONMENT

Additionally, SCTA, in partnership with municipalities and counties, could further improve the customer experience by investing in sidewalk infrastructure, sidewalk lighting, and pedestrian crossings. These investments will improve the pedestrian environment overall and will make accessing the bus safer for customers. Most bus riders are pedestrians for some portion of their journey, and a safe and comfortable walking environment can help encourage overall transit use. Investments to pedestrian infrastructure is especially important along some of the major thoroughfares that the proposed BARTA and RRTA networks will operate, where speed limits can exceed 40 miles per hour and pedestrians may be required to cross



five or more lanes of traffic. Depending on the extent of sidewalk investments, the costs could be significant; however, these costs could be shared among multiple public entities.

## VEHICLES

The service recommendations will trigger the need for additional vehicles in later phase, a significant capital investment for the agency. While the proposed service includes recommendations to make service more efficient from an operating perspective, the full implementation of recommendations will increase service substantially, which will result in the need for additional vehicles.

**Table 18** presents the additional fixed-route vehicle need for expanded BARTA and RRTA by phase. This data does not account for the regular replacement of existing vehicles in BARTA and RRTA’s fleets; rather it highlights how many additional vehicles will be needed to operate the proposed fixed-route service. Neither BARTA nor RRTA will require additional fixed-route vehicles to implement the Phase 1 recommendations; however, RRTA will need two additional vehicles to operate microtransit service in the proposed Columbia/Marietta zone. While service does increase substantially over the three phases of implementation, many of the service recommendations focus on weekday off-peak and weekend service improvements, as well as a trimming down of unproductive alignments. As a result the total additional vehicle need by phase is modest. A fixed-route transit bus costs between \$800,000 and \$900,000.

**Table 18: Additional Fixed-Route Vehicle Needs by Phase**

| PHASE        | BARTA              | RRTA              |
|--------------|--------------------|-------------------|
| Phase 1      | -                  | -                 |
| Phase 2      | 1 vehicle          | -                 |
| Phase 3      | 9 vehicles         | 3 vehicles        |
| <b>Total</b> | <b>10 vehicles</b> | <b>3 vehicles</b> |

Because service is increasing, a vehicle may reach its useful life benchmark for milage faster than it currently does, which could impact replacement schedules. In addition, transitioning the fleet from diesel or propane to a battery electric fleet could also impact vehicle costs and require additional capital investments for charging. Battery electric transit buses can cost over \$1 million each; one charger can all cost over \$1 million.

# Anticipated Impacts of Final Recommendations

When fully implemented, the service recommendations will transform the transit networks for both BARTA and RRTA. While some service will be eliminated in unproductive route segments; increased headways and extended hours of service on multiple routes will improve transit service in areas where it is most likely to succeed. The following presents an analysis of the impacts of the final service recommendations to better gauge how the changes to the transit networks will affect transit riders.

## BARTA

Once fully implemented, the service recommendations for BARTA will enhance service frequency on numerous routes, especially during weekday peak periods and on weekends (**Table 19**). Currently, during the weekday peak period, only 12 of BARTA’s 19 fixed routes have a peak frequency of 30 minutes or better. Once the recommendations are fully implemented after Phase 3, 15 of the 17 proposed routes will

have peak frequencies of 30 minutes or better on weekdays. On Saturdays, three additional routes will have 30-minute service, and on Sundays, one additional route will have 30-minute service.

**Table 19: Number of Routes with Greater Than 30 Minutes Service - BARTA**

|          | WEEKDAY PEAK | SATURDAY PEAK | SUNDAY PEAK |
|----------|--------------|---------------|-------------|
| Existing | 12           | 5             | 2           |
| Proposed | 15           | 8             | 3           |

In addition, as **Table 20** shows, the proposed changes would increase the availability of transit service outside weekday peak periods. Currently, the transit service during off-peak periods is not as good as during peak periods, especially on Sundays, when only 6 out of 19 routes provide service. As an improvement, the proposed service would ensure that all 17 proposed routes provide at least 60-minute service on Sundays. Three routes would offer 30-minute service during peak periods on Sundays to enhance accessibility. In addition to improving off-peak service coverage, the proposed service would also provide consistent headways across all routes, as opposed to BARTA’s current service, which operates with off peak headways of 45, 75, or 95 minutes. Implementing consistent 30- and 60-minute headways on all routes makes service more reliable and predictable for customers.

**Table 20: Number of Routes with Regular 30- or 60-Minutes Service - BARTA**

|          | WEEKDAY PEAK | WEEKDAY OFF-PEAK | SATURDAY PEAK | SATURDAY OFF-PEAK | SUNDAY PEAK | SUNDAY OFF-PEAK |
|----------|--------------|------------------|---------------|-------------------|-------------|-----------------|
| Existing | 17           | 13               | 15            | 14                | 6           | 6               |
| Proposed | 17           | 17               | 17            | 16                | 17          | 17              |

As illustrated in **Table 21** the proposed service improvements would increase the number of people and jobs with access to reliable 30-minute service on weekdays and weekends. The improvements are most noticeable on weekends over 40 percent of people on Saturdays and 80 percent of people on Sundays would be within a 10-minute walk of bus routes that operate every 30-minutes.

Additionally, the service recommendations will ensure several key points of interest in Berks County are served by transit, which are not currently served. This includes Kutztown University, Kutztown Area High School, and Lehigh Valley Health Center. All of these destinations are served by the new Route 122.

**Table 21: Additional Accessibility to Frequent Service - BARTA**

|                                                            | POPULATION CHANGE | JOBS CHANGE | SENIOR POPULATION CHANGE | MINORITY POPULATION CHANGE | DISABILITY POPULATION CHANGE | HOUSEHOLD WITH POVERTY CHANGE | LIMITED CAR ACCESS HOUSEHOLD CHANGE |
|------------------------------------------------------------|-------------------|-------------|--------------------------|----------------------------|------------------------------|-------------------------------|-------------------------------------|
| Weekday Peak Periods with Greater Than 30 Minutes Service  | 0%                | 2%          | 0%                       | 3%                         | 2%                           | 2%                            | 0%                                  |
| Saturday Peak Periods with Greater Than 30 Minutes Service | 43%               | 11%         | 37%                      | 46%                        | 6%                           | 7%                            | 26%                                 |
| Sunday Peak Periods with Service                           | 83%               | 52%         | 101%                     | 35%                        | 46%                          | 55%                           | 30%                                 |

Based on the point of interest analysis, the supplemental points of interest integrated into the BARTA service are predominantly facilitated by the proposed Route 122. This includes coverage of Kutztown University of Pennsylvania, Kutztown Area High School, Lehigh Valley Health Center, as well as various libraries such as Kutztown Community Library and Rohrbach Library. Conversely, the curtailed coverage of points of interest is mainly observed in areas like apartment complexes and recreational spaces such as parks and fitness facilities.

## RRTA

Like the improvements on BARTA, the recommendations proposed for RRTA will increase service frequencies and span of service on numerous RRTA routes. Currently, during the weekday peak period, 5 out of 18 routes have service frequencies of 30-minutes or better. Once the service recommendations are fully implemented after Phase 3, 9 out of 18 routes will have service frequencies of 30-minutes or better. When the service recommendations are fully implemented, an additional three routes will have 30-minute frequencies on Saturdays and one additional route will have 30-minute frequencies on Sundays (**Table 22**).

**Table 22: Number of Routes with Greater Than 30 Minutes Service - RRTA**

|          | WEEKDAY PEAK | SATURDAY PEAK | SUNDAY PEAK |
|----------|--------------|---------------|-------------|
| Existing | 5            | 2             | 1           |
| Proposed | 9            | 5             | 2           |

In addition, RRTA’s proposed service plan provides more comprehensive and regular coverage of service overall. Currently, 6 out of 18 RRTA routes provide service less than every 60-minutes during the off-peak period on weekdays. These routes have service frequencies between 85 and 110 minutes. In the proposed service plan, as shown in **Table 23**, these routes all have headways of 60-minutes or better during the off-peak periods.

**Table 23: Number of Routes with Regular 30- or 60-Minute Service - RRTA**

|          | WEEKDAY PEAK | WEEKDAY OFF-PEAK | SATURDAY PEAK | SATURDAY OFF-PEAK | SUNDAY PEAK | SUNDAY OFF-PEAK |
|----------|--------------|------------------|---------------|-------------------|-------------|-----------------|
| Existing | 16           | 10               | 9             | 2                 | 4           | 5               |
| Proposed | 18           | 18               | 18            | 18                | 18          | 18              |

As illustrated in **Table 24**, the proposed service improvements would increase the number of people and jobs with access to reliable 30-minute service on weekdays and weekends. On weekdays, the number of people within a 10-minute walk to 30-minute or better transit service increases by nearly 25 percent compared to existing. Improvements are even more pronounced on weekends; over 50 percent more people on Saturdays and over 150 percent more people on Sundays will have access to 30-minute service once the recommendations are fully implemented.

Additionally, the service recommendations will ensure key points of interest in Lancaster County are served by transit, which are not currently served. This includes Penn State Health Lancaster Medical Center, Houston Run Community Center, Colebrook Apartments, and Loose Caboose Campground.

**Table 24: Additional Accessibility to Frequent Service - RRTA**

|                                                                | POPULATION CHANGE | JOBS CHANGE | SENIOR POPULATION CHANGE | MINORITY POPULATION CHANGE | DISABILITY POPULATION CHANGE | HOUSEHOLD WITH POVERTY CHANGE | LIMITED CAR ACCESS HOUSEHOLD CHANGE |
|----------------------------------------------------------------|-------------------|-------------|--------------------------|----------------------------|------------------------------|-------------------------------|-------------------------------------|
| Weekday Peak Periods with Greater Than 30 Minutes Service      | 23%               | 17%         | 27%                      | 27%                        | 10%                          | 19%                           | 7%                                  |
| Saturday Peak Periods with Greater Than 30 Minutes Service     | 54%               | 14%         | 55%                      | 56%                        | 1%                           | 20%                           | 19%                                 |
| Saturday Off Peak Periods with Greater Than 30 Minutes Service | 48%               | 49%         | 29%                      | 57%                        | 29%                          | 57%                           | 33%                                 |
| Sunday Peak Periods with Service                               | 164%              | 132%        | 210%                     | 57%                        | 124%                         | 152%                          | 123%                                |

# Conclusions and Next Steps

The recommendations included in this TDP will transform BARTA and RRTA's transit networks by addressing several key challenges that both agencies face. Additionally, they will make transit service in the region more efficient, effective, and useful to those who rely on it.

The transit service recommendations focused on several key themes, including:

- Providing more consistent span of service and frequencies across all routes.
- Reallocating services to be less concentrated during peak periods and provide additional service during off-peak periods and weekends.
- Interlining routes for efficiency gains.
- Simplifying route alignments and eliminating one-way loops.

Once fully implemented, after Phase 3, the proposed transit networks will provide simple and consistent service in Berks and Lancaster Counties. RRTA will operate over 170,000 revenue hours annually across 18 fixed routes; BARTA will operate nearly 200,000 revenue hours annually across 19 fixed routes. Additionally, 15 of the 19 BARTA routes and nine of the 18 RRTA routes will have 30-minute peak period service. Seventeen of the BARTA routes and 18 of the RRTA routes will have consistent 30-minute or 60-minute service during the off-peak periods and on weekends. These service changes are coupled with capital investments that will improve the passenger experience and make walking to and waiting for the bus safer and more convenient for BARTA and RRTA customers.