WILMINGTON TRANSIT
MOVING FORWARD

Advisory Group Meeting

November 18, 2015

WILMAPCO

DART
Moving Forward

Agenda

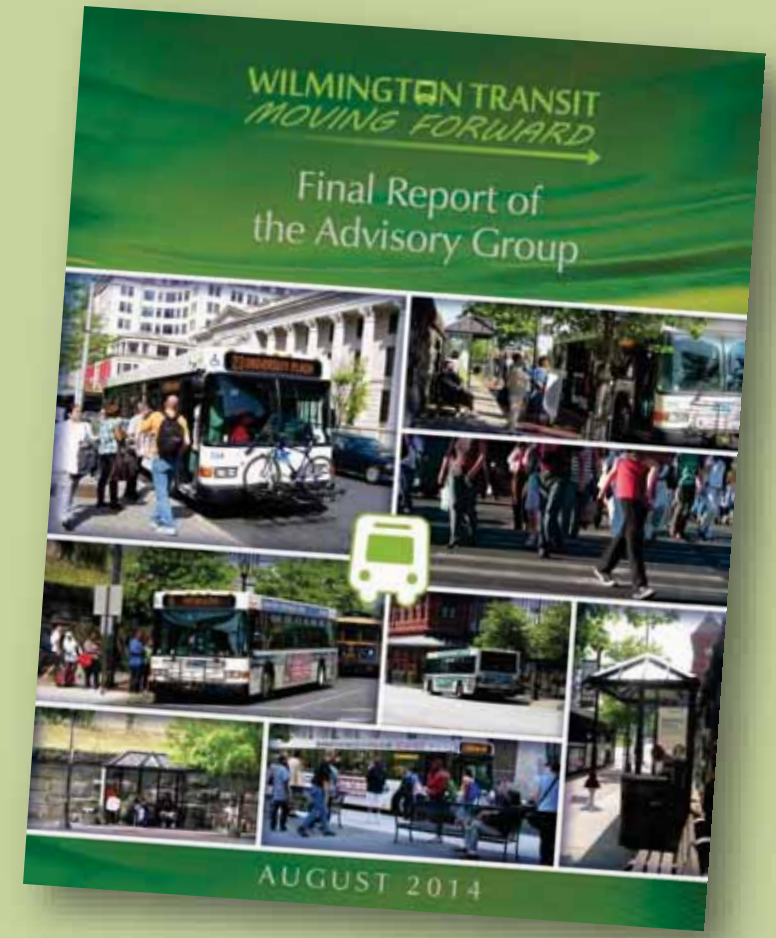
AG Meeting #1 – November 18, 2015

1. Welcome
2. WTMF Phase II Transition/ Goals
3. WTMF Short Term Recommendations Update (2015-2016)
4. WTMF Phase II Transit Operational Analysis
5. WTMF Phase II Transit Infrastructure Improvements
6. WTMF Phase II Path Forward

What we Plan to Do

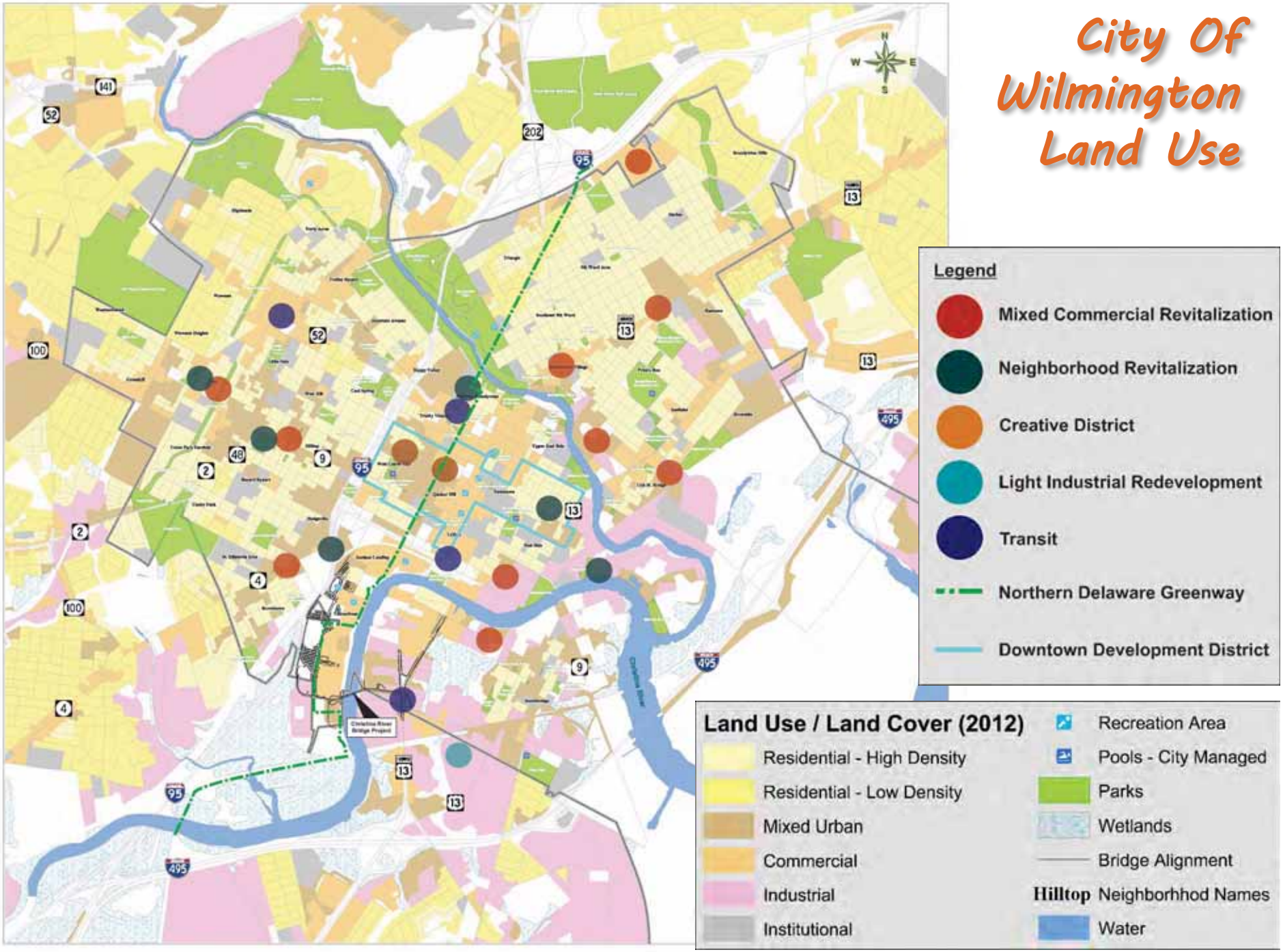
Transition

- New Project Team Members
- City of Wilmington Land Use
- Phase I to Phase II
  - Transit Operational Analysis
  - Transit Infrastructure Conceptual Design



**Consistent with City of Wilmington Growth and Revitalization Areas*

City Of Wilmington Land Use



January 2015 Service Change Highlights

- Improved access to employment
- Additional services (Sunday, new markets)
- Increased frequencies
- Direct service connection for local communities
- Improved scheduling efficiencies
- Improved service reliability
- Improved mobility
- Enhanced schedule coordination

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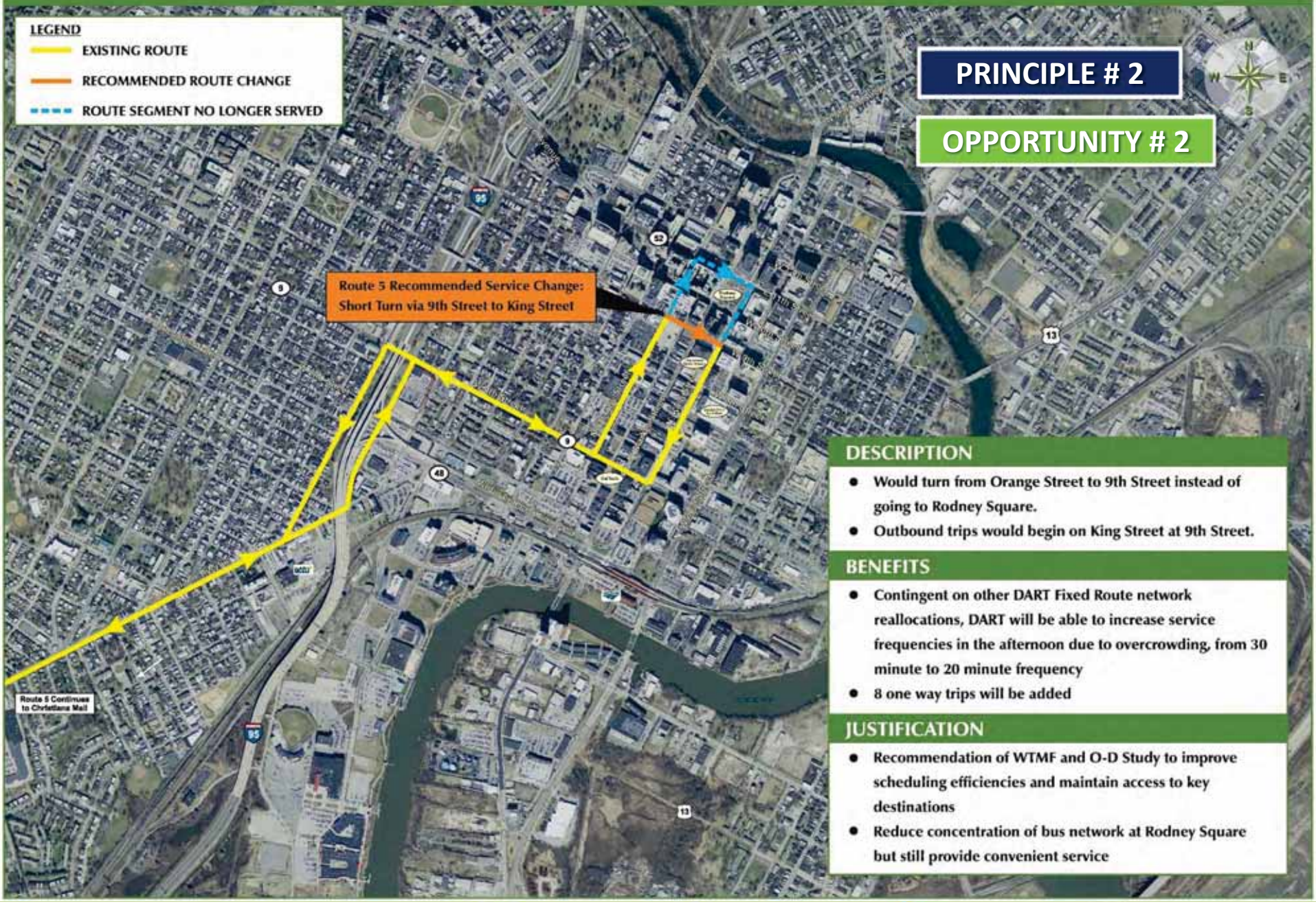
Route 5 - Increased Frequencies



Route 7 - Connecting Trolley Square and the Riverfront

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DESCRIPTION

- Providing new direct service to Trolley Square, ACME and Lincoln Towers.
- Would continue to serve Wilmington's Riverfront, Hedgeville area, St. Elizabeth's School & Parish, and St. Francis Hospital
- No longer serving Pennsylvania Avenue or Rodney Square.

BENEFITS

- Direct connection to/from Trolley Square and the Wilmington Riverfront

JUSTIFICATION

- Recommendation of WTMF and O-D Study to support areas emerging markets in the Riverfront area

PRINCIPLE # 1

OPPORTUNITY # 1

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Routes 17, 22, 25 - Realignment to Walnut Street

DESCRIPTION

- Would now access downtown Wilmington via Walnut Street instead of Orange Street, turning on 12th Street back to King Street.

BENEFITS

- New service available for residents along Walnut Street and Wilmington's Upper Eastside

JUSTIFICATION

- Recommendation of WTMF and O-D Study to improve efficiencies and maintain access to key destinations
- Enhance Walnut Street as an identified transit corridor; O-D Study recommended realignment of routes to different patterns within downtown Wilmington streets

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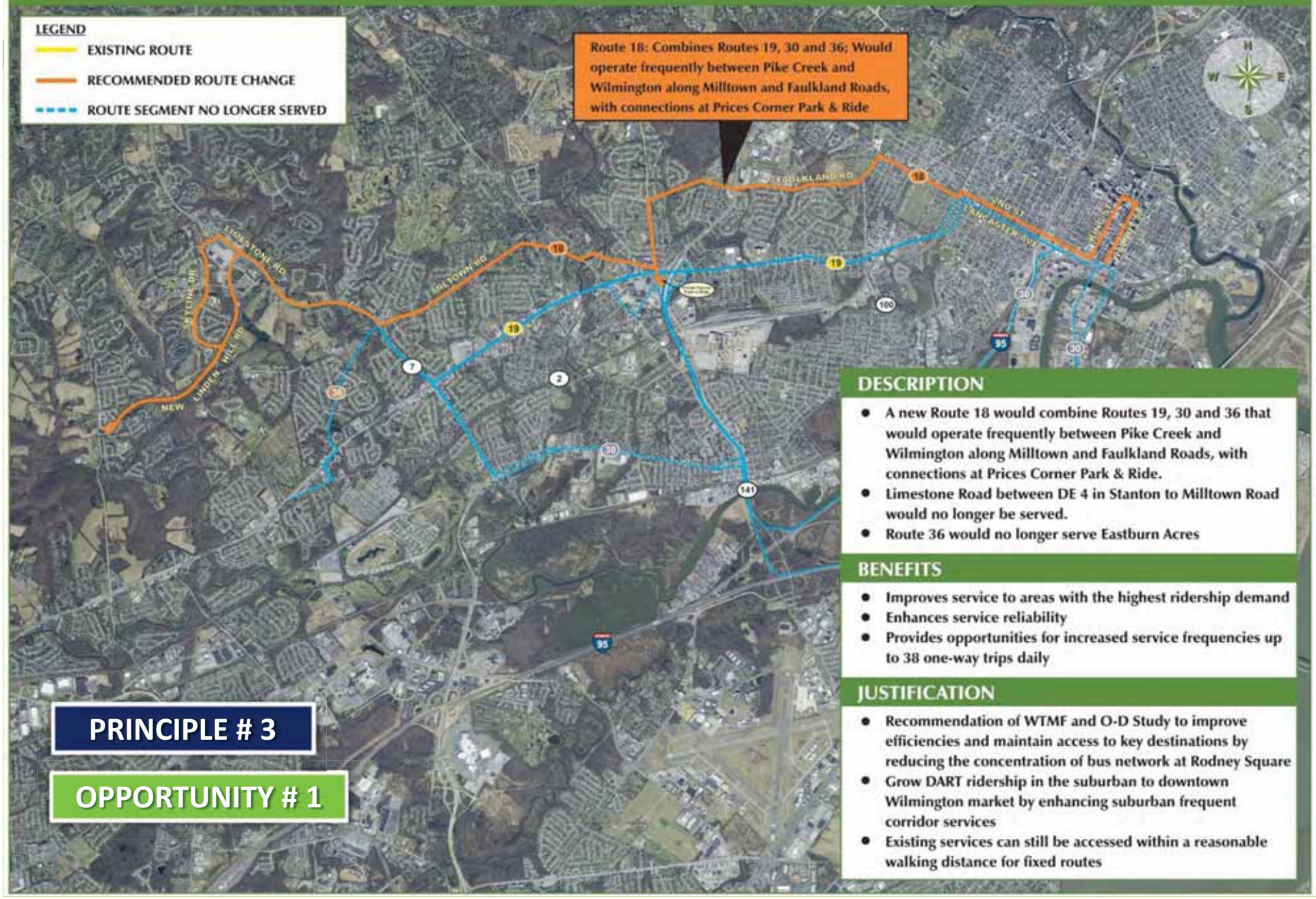
New Route 18 - Increased Frequencies and Quicker Service to Wilmington



DESCRIPTION

- A new Route 18 would combine Routes 19, 30 and 36 that would operate frequently between Pike Creek and Wilmington along Milltown and Faulkland Roads, with connections at Prices Corner Park & Ride.
- Limestone Road between DE 4 in Stanton to Milltown Road would no longer be served.
- Route 36 would no longer serve Eastburn Acres

BENEFITS

- Improves service to areas with the highest ridership demand
- Enhances service reliability
- Provides opportunities for increased service frequencies up to 38 one-way trips daily

JUSTIFICATION

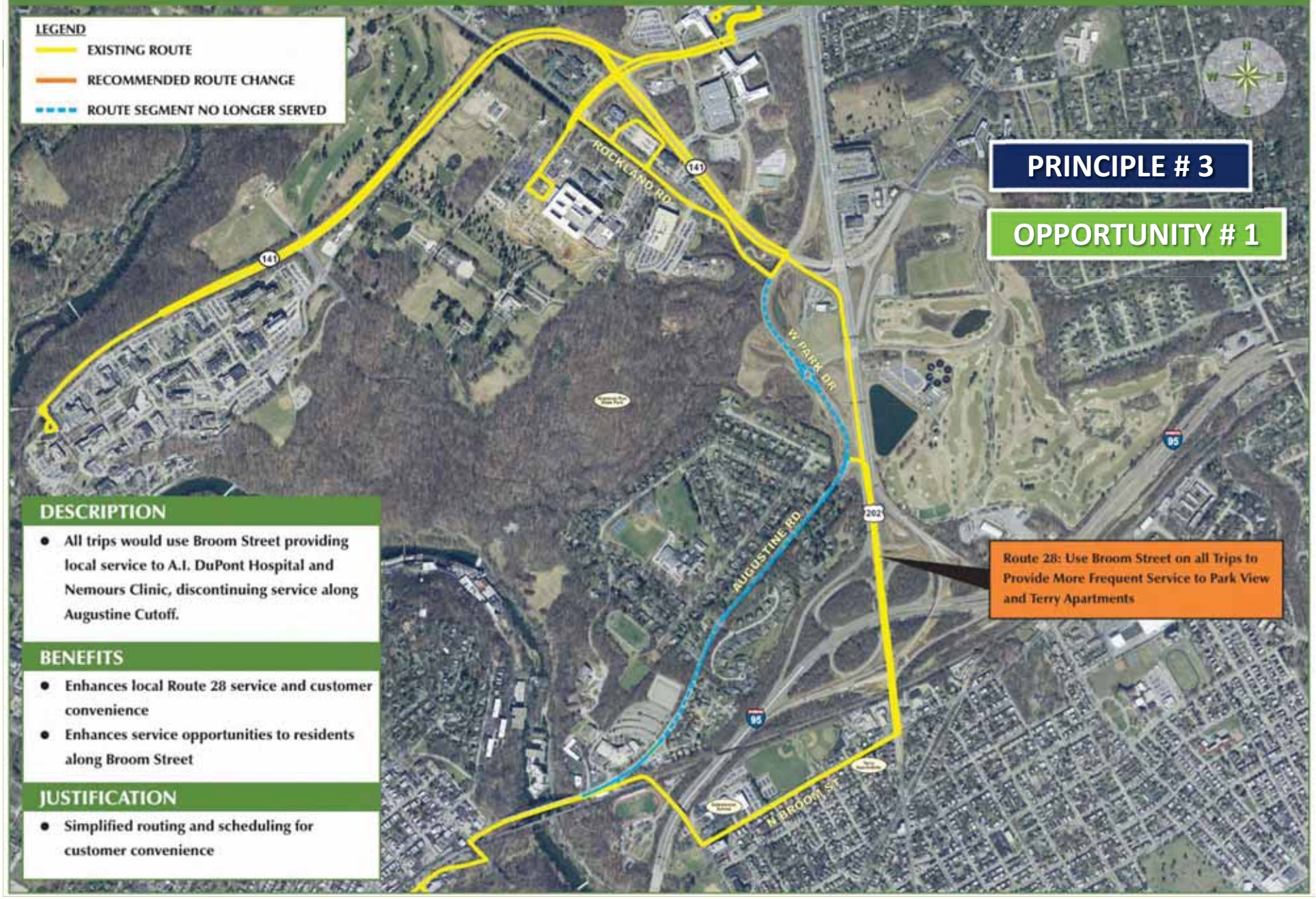
- Recommendation of WTMF and O-D Study to improve efficiencies and maintain access to key destinations by reducing the concentration of bus network at Rodney Square
- Grow DART ridership in the suburban to downtown Wilmington market by enhancing suburban frequent corridor services
- Existing services can still be accessed within a reasonable walking distance for fixed routes

PRINCIPLE # 3

OPPORTUNITY # 1

DART Moving Forward

Route 28 - Improving Local Access & Schedule Reliablilty for Customer Convenience



PRINCIPLE # 3

OPPORTUNITY # 1

DESCRIPTION

- All trips would use Broom Street providing local service to A.I. DuPont Hospital and Nemours Clinic, discontinuing service along Augustine Cutoff.

BENEFITS

- Enhances local Route 28 service and customer convenience
- Enhances service opportunities to residents along Broom Street

JUSTIFICATION

- Simplified routing and scheduling for customer convenience

May 2015 Service Change Highlights

- Route 8 – Extend route to Southbridge along Heald and A Streets
- Route 39 – More direct service between Wilmington and Newark.
  - No longer stops at Christiana Mall
- Continued service and schedule adjustments to support WTMF Short term recommendations

What has Been Done

New Service Route 47

- Improved access to employment
- Direct service connection for local communities

January 2016 Service Proposal

- Continue implementation of Short term improvements to:
  - Serve new markets
  - Direct service connection for local communities
  - Increase frequencies
  - Improved service reliability
  - Improved mobility

Routes 1 and 6 Alignment Proposal: January 2016

- **Route 1 to serve Amtrak Station**
- **Route 6 to serve Wilmington eastside, with no service to Amtrak on weekdays**

Legend

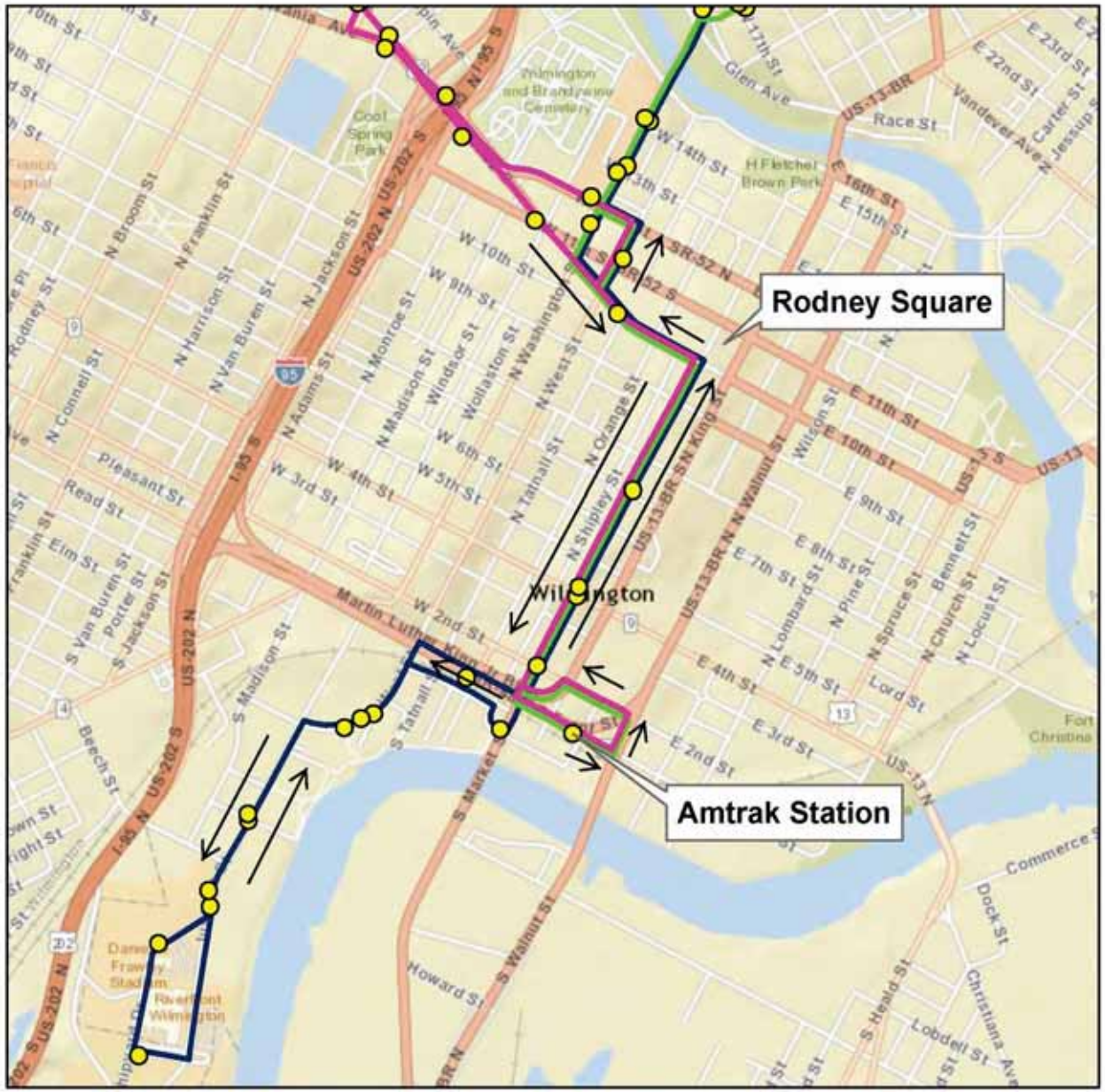
- Bus Stop
- Route 1
- Route 6

0 0.125 0.25 0.5 Miles

N

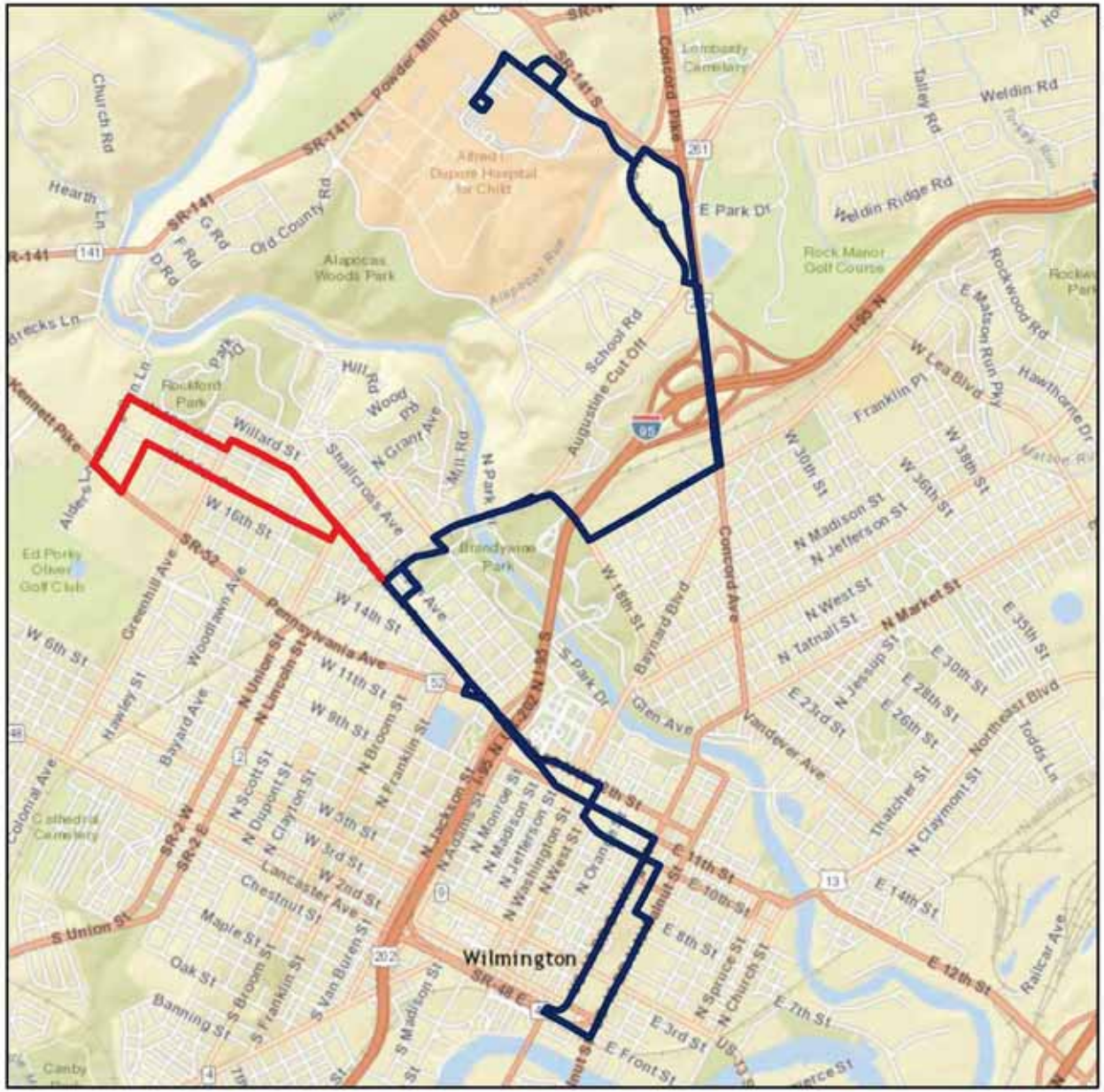
Delaware Transit Corporation
Source: Esri, FirstMap

Routes 10, 11, and 12 Market Street Proposal: January 2016



- **Increased frequency on Market Street**

Routes 10 and 28 Saturday Proposal: January 2016



- **Add 7 Saturday roundtrips to Route 28, replacing Route 10 Saturday service**

Legend

Route 10

Route 28

0 0.25 0.5 1 Miles

N

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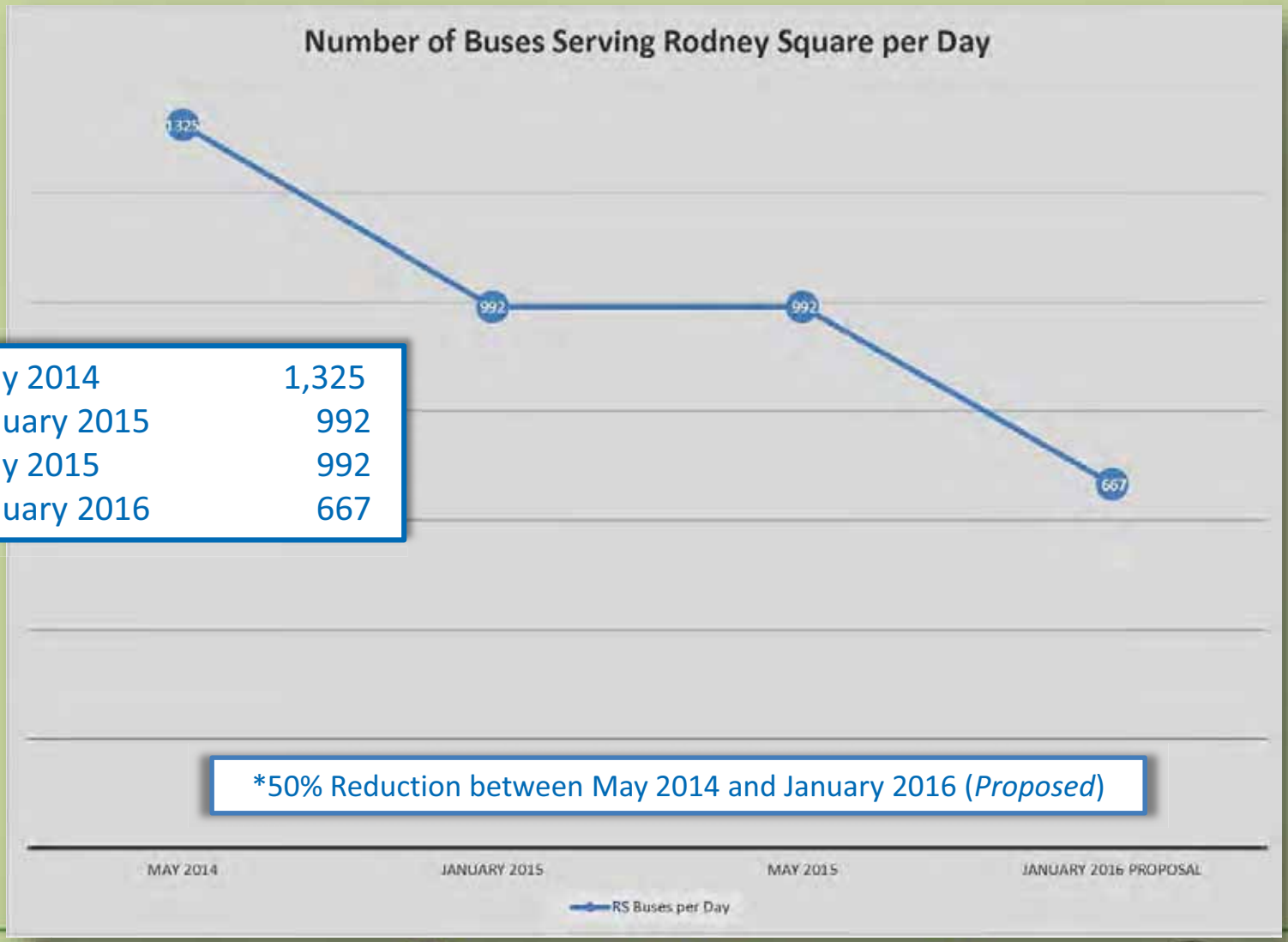
What has Been Done



May 2014	1,325
January 2015	992
May 2015	992
January 2016	667

*50% Reduction between May 2014 and January 2016 (*Proposed*)

TRANSIT OPERATIONAL ANALYSIS AND SUPPORT – WORK SCOPE

Transit Operational Analysis and Support task order is to assist in implementation of the short-term and mid-term opportunities identified in:

- Wilmington Transit Moving Forward – August 2014 (WTMF Phase I)
- Transit service recommendations identified in the New Castle County Transit Origin / Destination Study (O-D Study)

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WTMF – SELECT PRINCIPALS APPLICABLE TO THE COMPREHENSIVE OPERATIONS ANALYSIS

1. An optimal transit network should be developed through service quality
2. Transferring between transit routes should be convenient
3. Emphasize transit service in selected corridors and provide supporting infrastructure
4. Identify a system of transit locations to meet customers needs
5. Consider circulator bus routes to enhance the transit network

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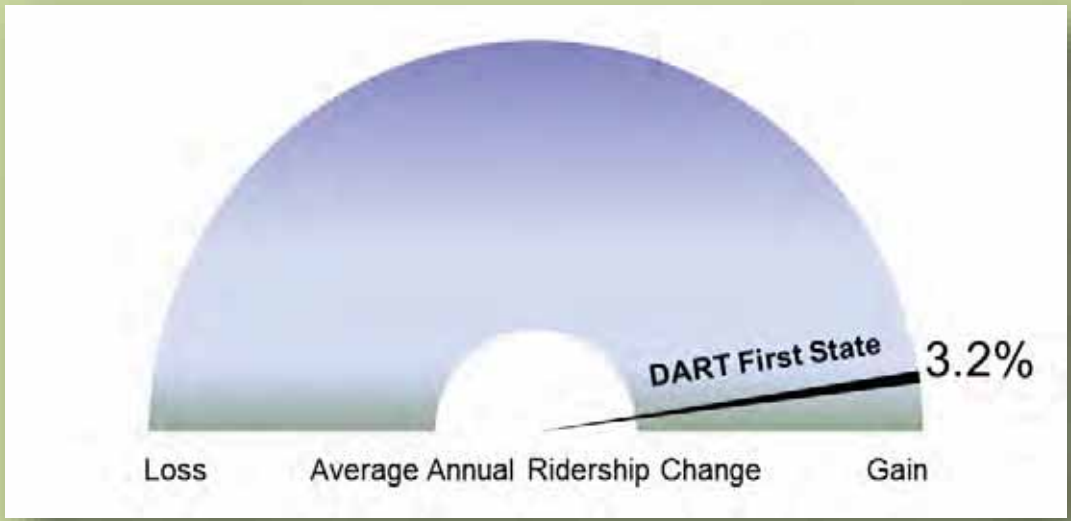
BACKGROUND – DART FIRST STATE RIDERSHIP GROWTH

From 2006 to 2011, DART First State's fixed route bus service annual ridership increased by an average of 3.2% percent per year.



System	Annual Change
Port Authority of Allegheny County	-2.0%
Richmond, VA	-1.9%
Maryland Transit Administration	-0.8%
New Jersey Transit	-0.8%
Rockville, MD	-0.4%
WMATA	-0.3%
SEPTA	0.7%
Allentown, PA	1.7%
DART First State	3.2%
Harrisburg, PA	3.3%

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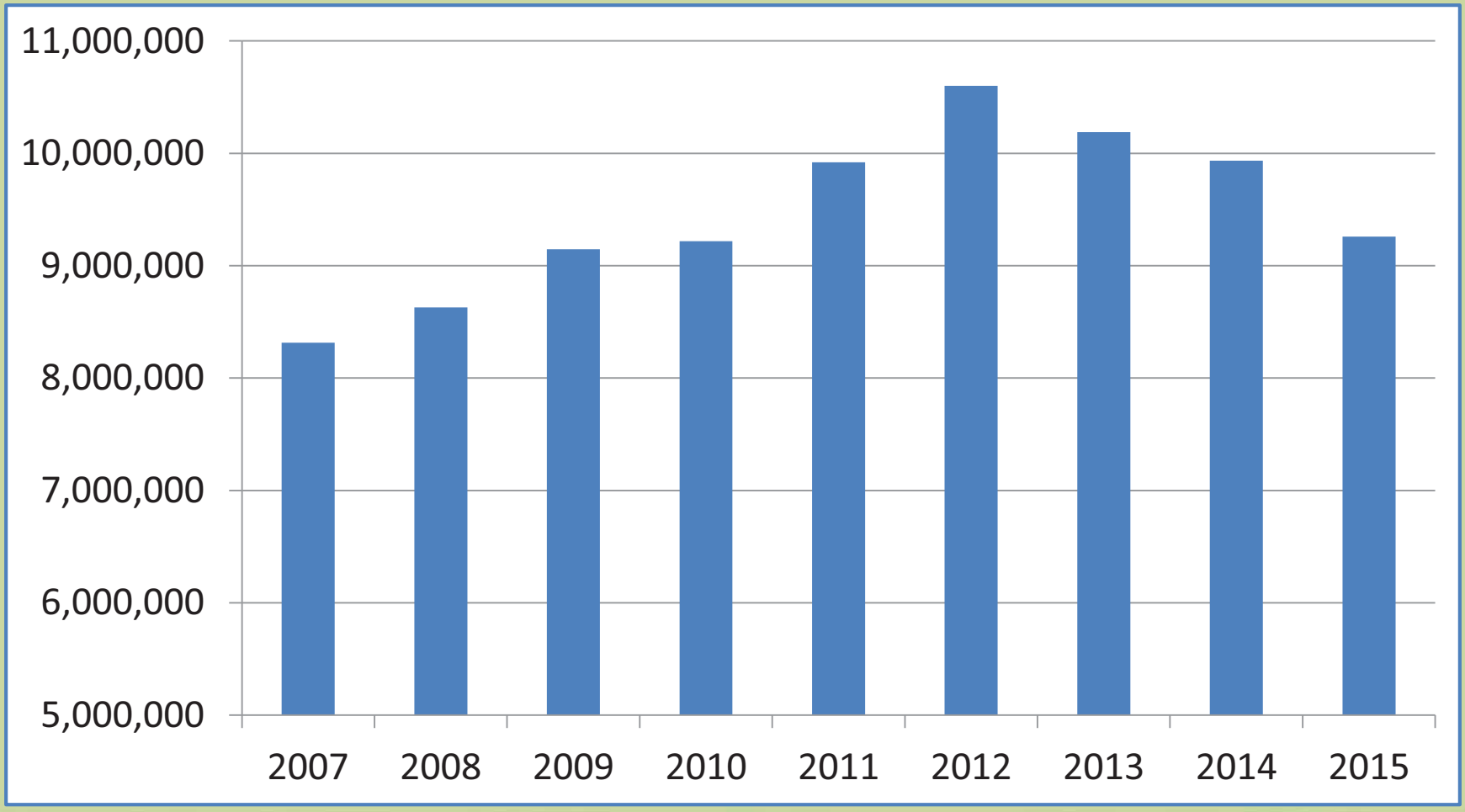
DART FIRST STATE ANNUAL FIXED ROUTE RIDERSHIP



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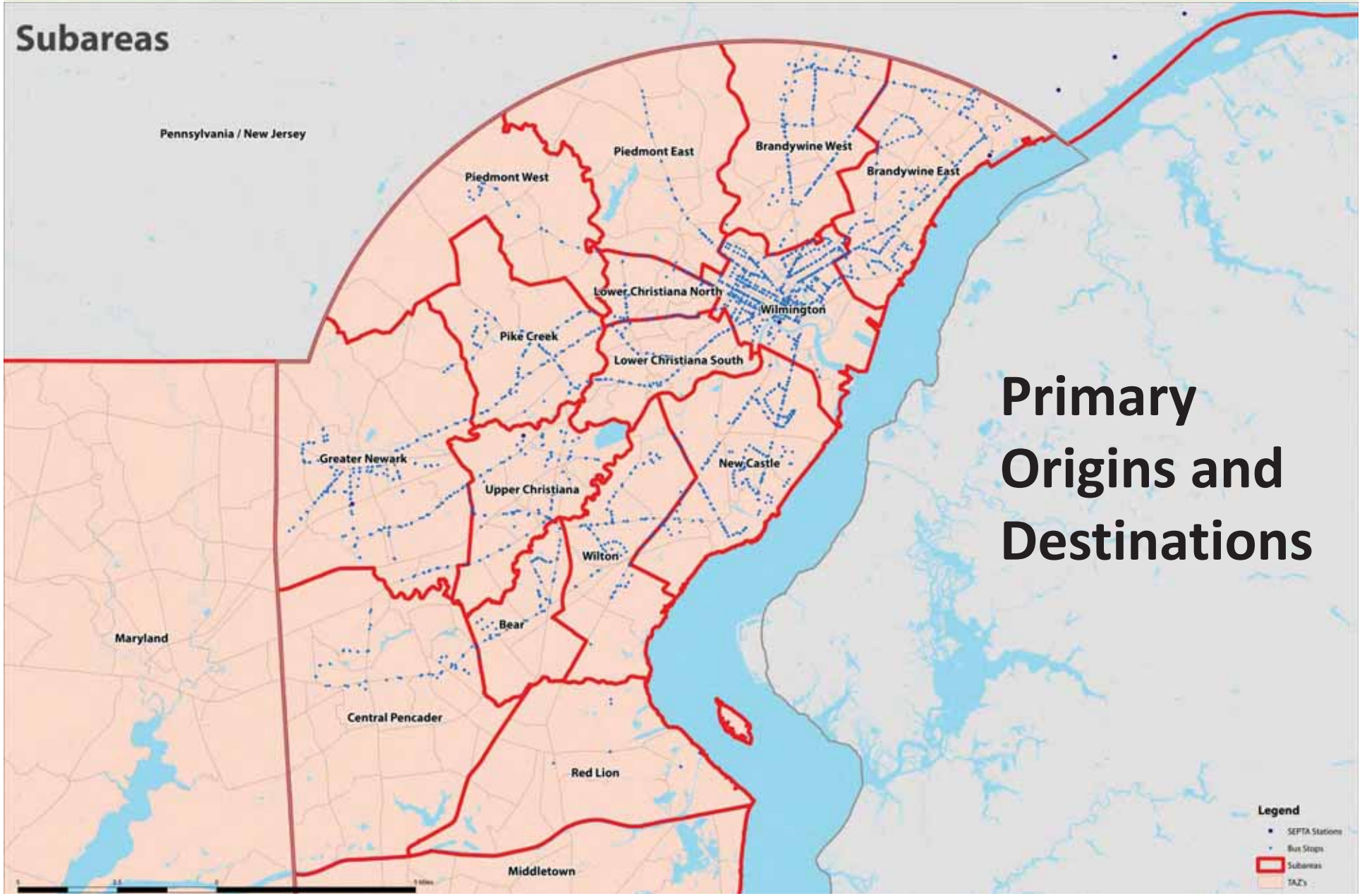
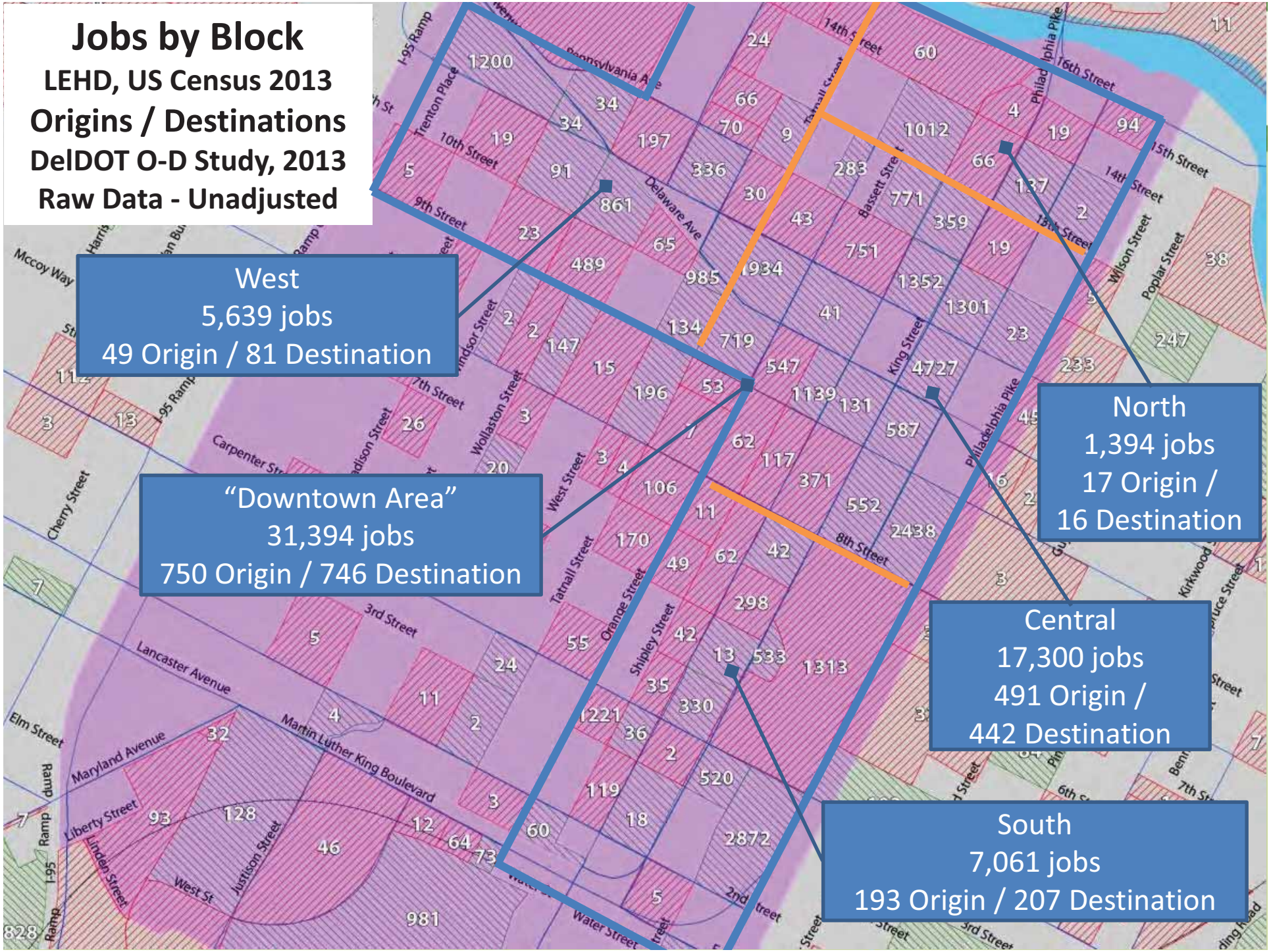
Transit Operations Analysis




Jobs by Block
LEHD, US Census 2013
Origins / Destinations
DelDOT O-D Study, 2013
Raw Data - Unadjusted
West
5,639 jobs
49 Origin / 81 Destination
"Downtown Area"
31,394 jobs
750 Origin / 746 Destination
North
1,394 jobs
17 Origin /
16 Destination
Central
17,300 jobs
491 Origin /
442 Destination
South
7,061 jobs
193 Origin / 207 Destination

O-D STUDY AVERAGE WEEKDAY RIDERSHIP ESTIMATES

Subarea	# Origin	Trips Within Subarea		Trips to Wilmington (excluding Wilmington)		Trips to other Subarea (except Wilmington)	
	#	#	%	#	%	#	%
Wilmington	15,522	7,140	46.00%			8,382	54.00%
All others	16,482	1,813	11.00%	8,274	50.20%	6,395	38.80%
Total	32,004						

O-D STUDY – ESTIMATED WEEKDAY TRANSFERS BY LOCATION

Location	Percentage	Estimated Weekday Transfers
Rodney Square	60%	5,648
Other Downtown	9%	842
Christiania Mall	10%	924
Other Suburban	21%	1,931
Estimated Total Weekday Transfers		9,345

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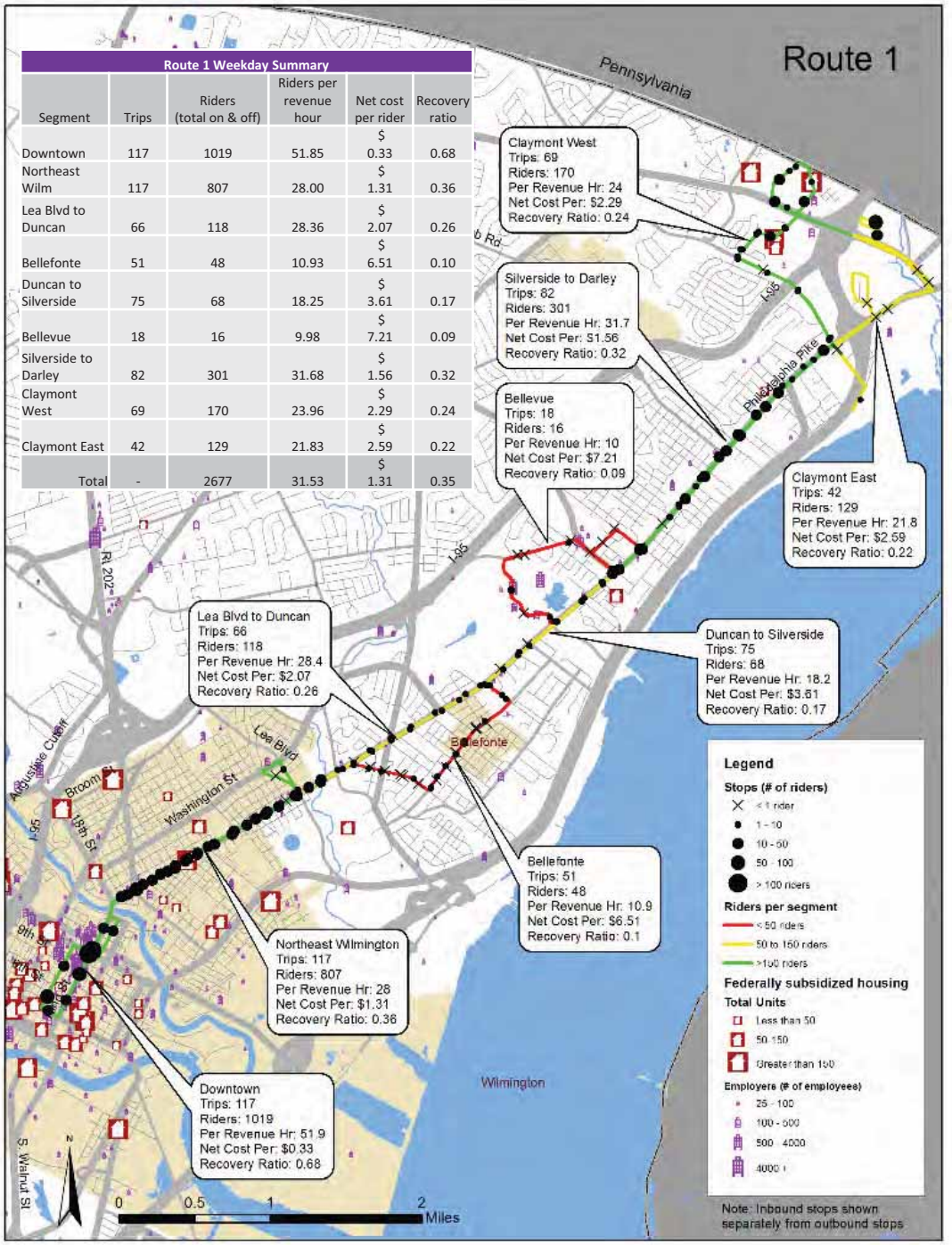
ROUTE AND SEGMENT PERFORMANCE

Route 1
Philadelphia Pike

- Peak Headway – 15 minutes
- 2,677 - Weekday Boardings
- 29.05 - Boardings per Rev Hr.
- High Ridership Segments
  - Downtown – 1019 riders
  - N. Market Street – 807 riders

Route 1 Weekday Summary

Segment	Trips	Riders (total on & off)	Riders per revenue hour	Net cost per rider	Recovery ratio
Downtown	117	1019	51.85	$ 0.33	0.68
Northeast Wilm	117	807	28.00	$ 1.31	0.36
Lea Blvd to Duncan	66	118	28.36	$ 2.07	0.26
Bellefonte	51	48	10.93	$ 6.51	0.10
Duncan to Silverside	75	68	18.25	$ 3.61	0.17
Bellevue	18	16	9.98	$ 7.21	0.09
Silverside to Darley	82	301	31.68	$ 1.56	0.32
Claymont West	69	170	23.96	$ 2.29	0.24
Claymont East	42	129	21.83	$ 2.59	0.22
Total	-	2677	31.53	$ 1.31	0.35



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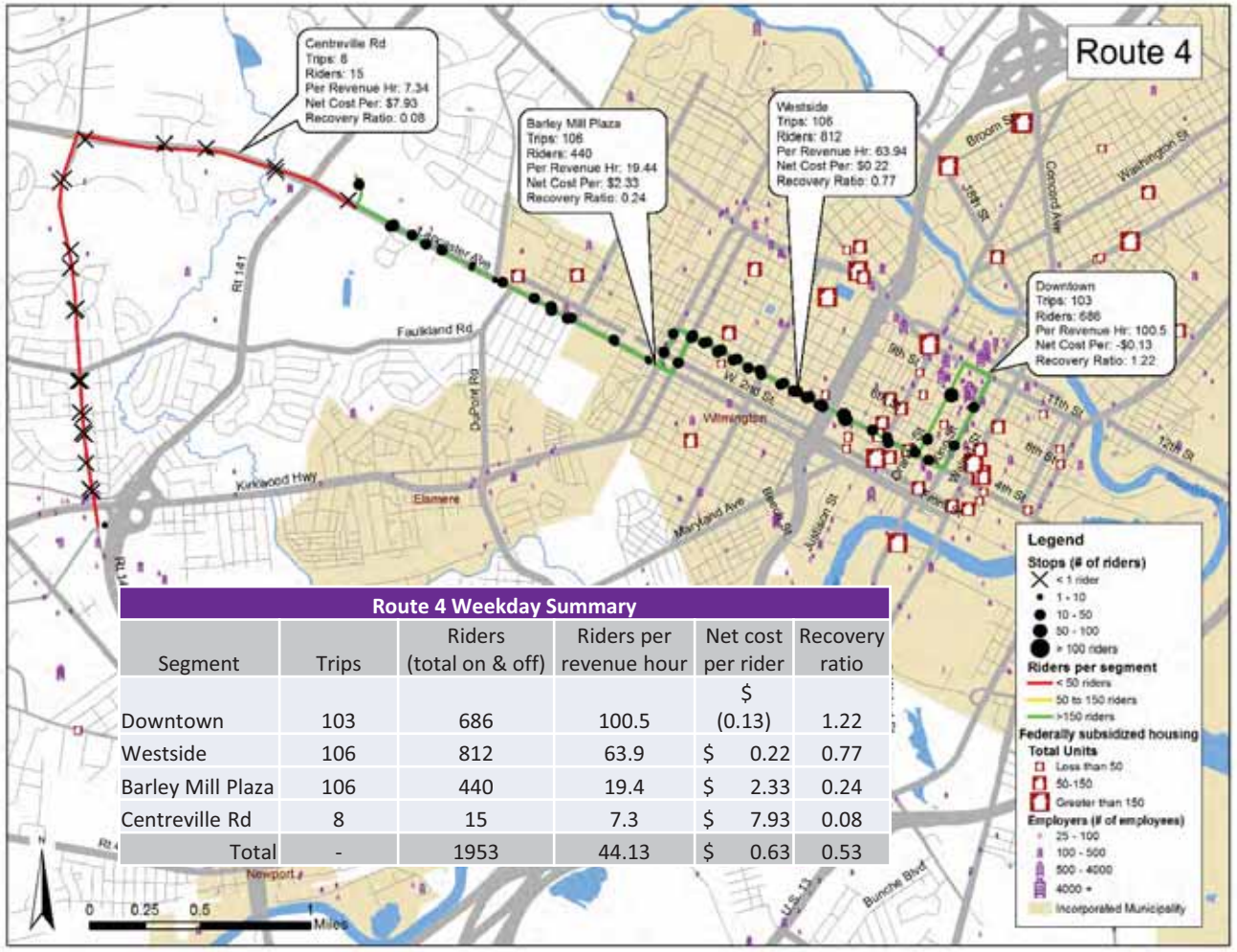
Transit Operations Analysis

ROUTE AND SEGMENT PERFORMANCE

Route 4

4th Street

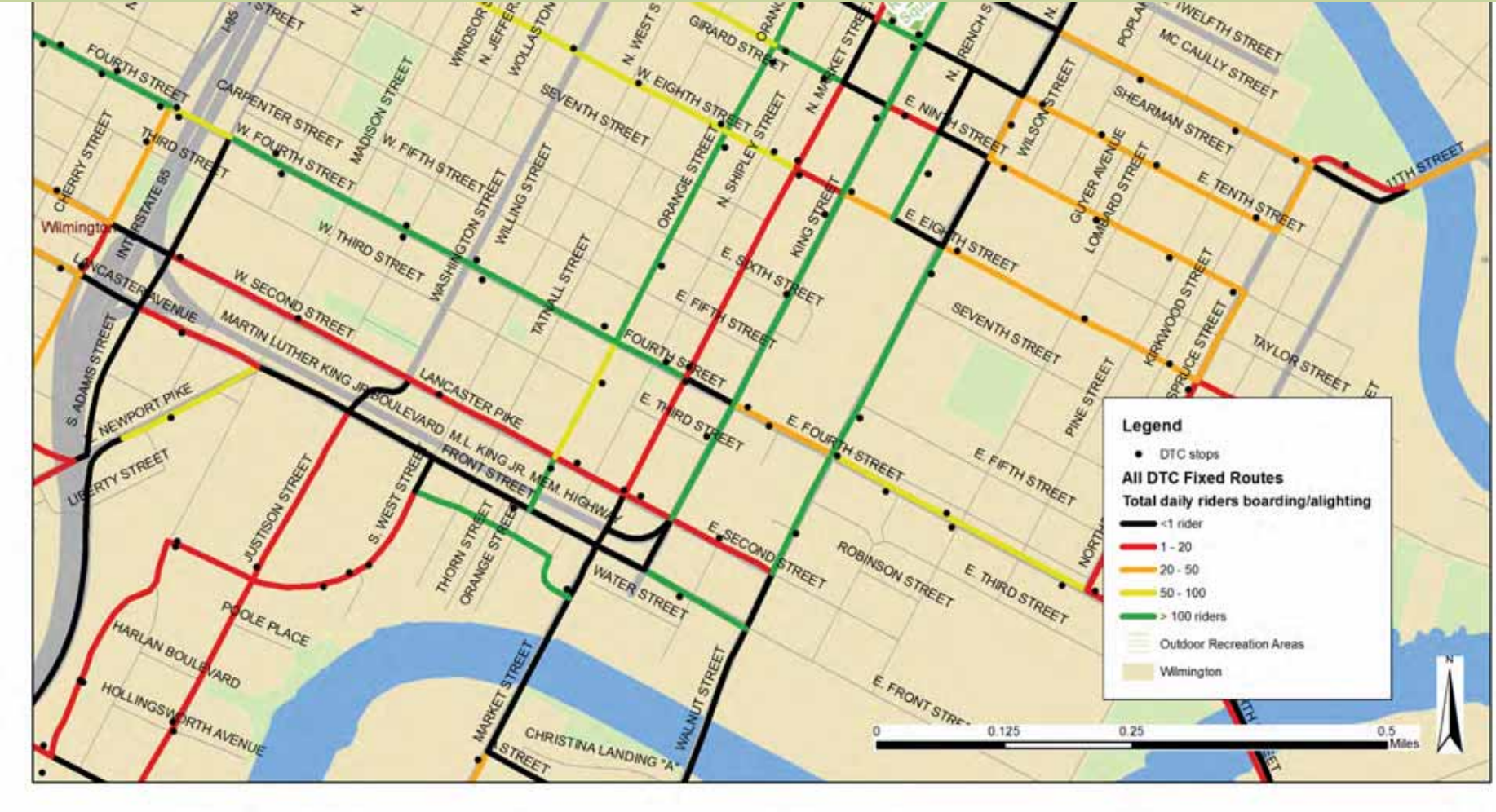
- Peak Headway – 20 minutes
- 1,953 - Weekday Riders
- 36.04 - Riders per Rev Hr.
- High Ridership Segments
  - Downtown – 688 riders
  - Westside - 4th Street – 811 riders
  - Barley Mill / Lancaster – 440 riders



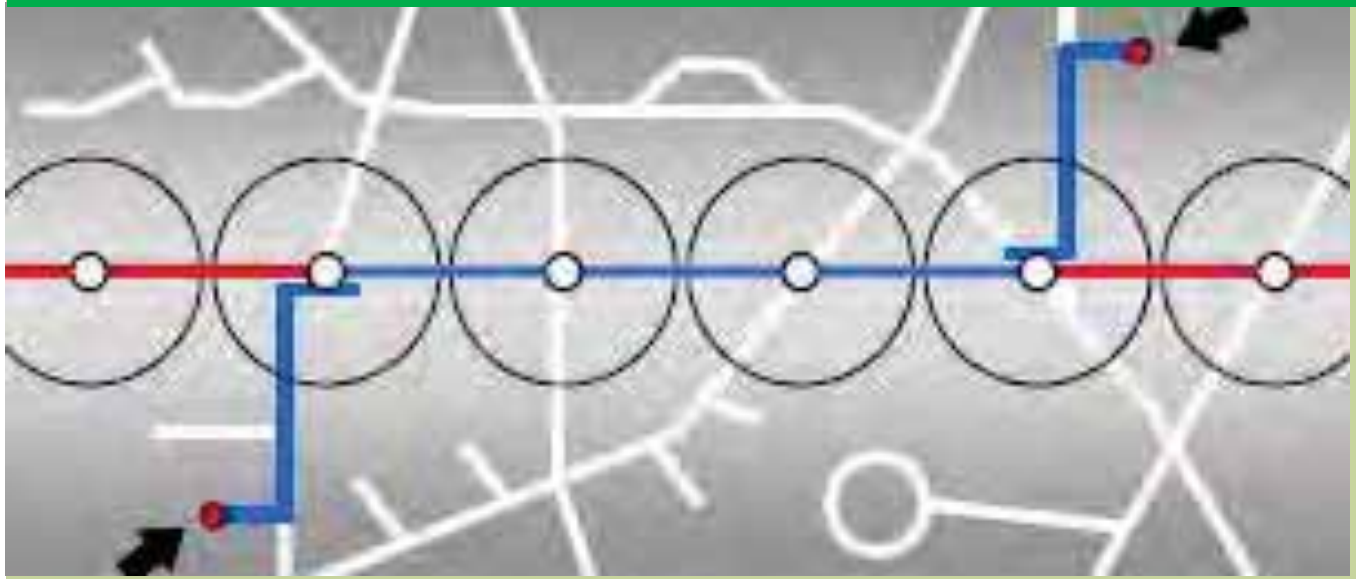
Route 4 Weekday Summary

Segment	Trips	Riders (total on & off)	Riders per revenue hour	Net cost per rider	Recovery ratio
Downtown	103	686	100.5	$ (0.13)	1.22
Westside	106	812	63.9	$ 0.22	0.77
Barley Mill Plaza	106	440	19.4	$ 2.33	0.24
Centreville Rd	8	15	7.3	$ 7.93	0.08
Total	-	1953	44.13	$ 0.63	0.53

DTC FIXED ROUTE RIDERSHIP EXISTING CONDITIONS

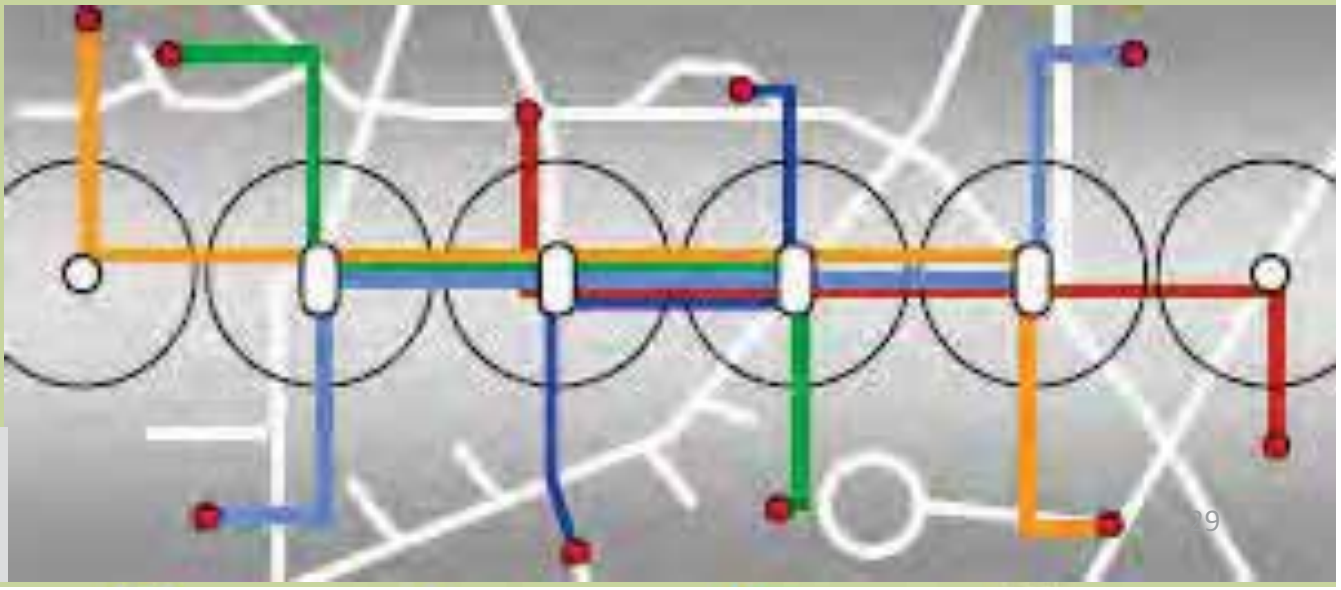


FIXED GUIDEWAY TRANSIT SERVICE CONCEPTS



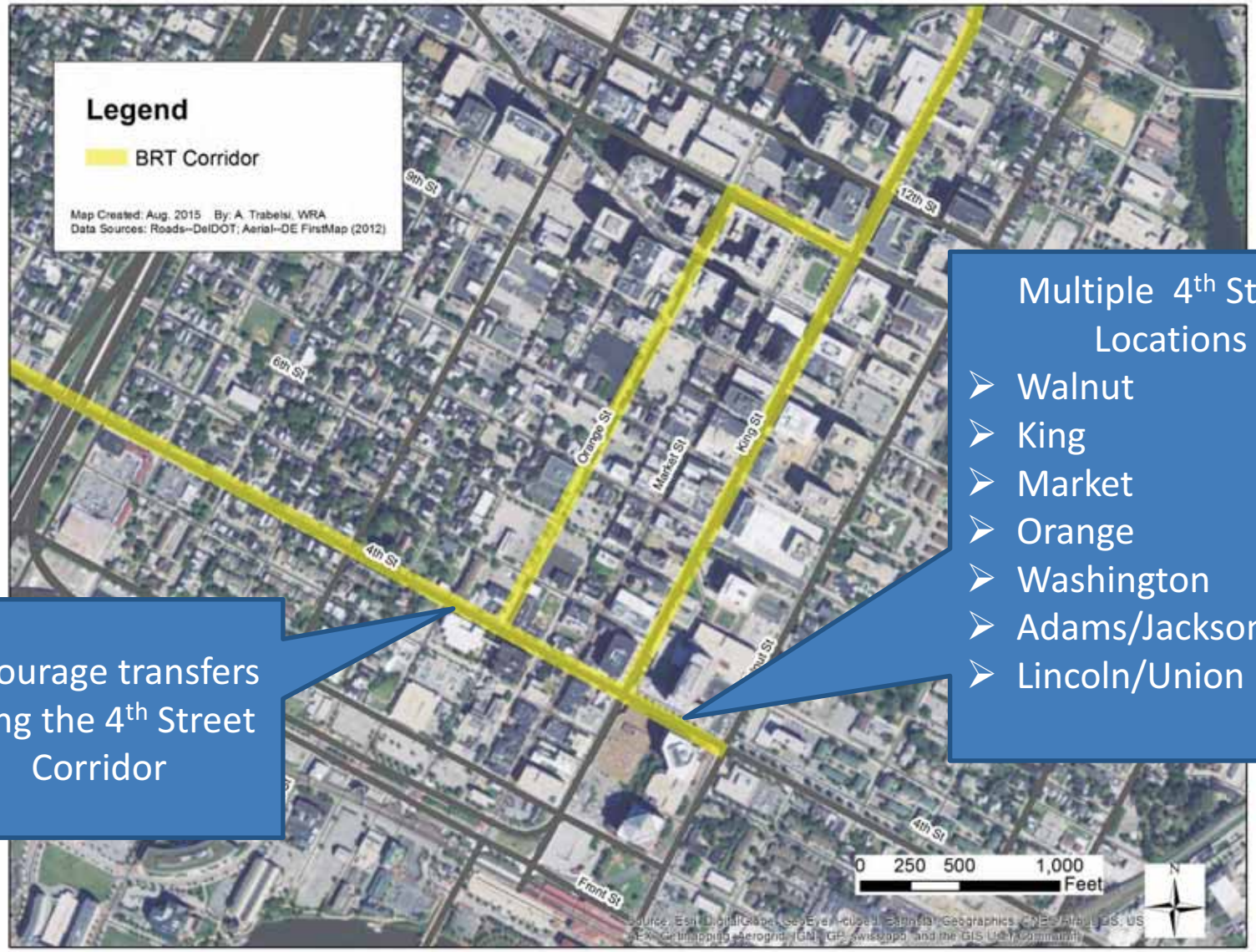
For trips outside the immediate stop areas, fixed guideway services including LRT and most BRT require multiple transfers to complete the trip.

By allowing local route buses to share the BRT corridor, more trips can be accomplished without a transfer and most trips only require one transfer.



Source:
Alan Hoffman
The Mission Group

TRANSIT CORRIDOR—4TH / ORANGE / KING STREETS



Encourage transfers along the 4th Street Corridor

Multiple 4th Street Locations

- Walnut
- King
- Market
- Orange
- Washington
- Adams/Jackson
- Lincoln/Union

COMPREHENSIVE OPERATIONS ANALYSIS NEXT STEPS

1. Opportunity for transfers
   - Move routes to 4th Street – both east and west
2. Environment for transfers
   - Frequent services
   - Enhanced passenger amenities
3. Developing corridor plans for:

- N. Market / Philadelphia Pike
- Concord Ave / Concord Pike
- Pennsylvania Ave / Kennett Pike
- Union / Lincoln / Kirkwood
- Maryland Avenue
- S. Market / Dupont / New Castle Avenue
- Christiana Mall / Newark
- Mid County

TRAFFIC OPERATIONS ANALYSIS

- Existing one-way street pattern funnels bus routes to Rodney Square
- Traffic model evaluation is underway to determine impacts resulting from conversion of one-way streets to two-way operations including:
  1. Walnut Street – 12th to 4th
  2. King Street - Brandywine Creek to 4th
  3. Orange Street – 12th to 4th
  4. 12th Street – Delaware Avenue to Walnut Street

Transit Infrastructure

Principle #15:

Identify streets in Wilmington where transit service and amenities could be emphasized. These could be streets that already include a significant amount of bus service or additional bus service could be added.

Opportunities:

1. 11th Street and 12th Street
2. Orange Street
3. 4th Street
4. Walnut Street
5. King Street
6. Martin Luther King, Jr. Boulevard/Front Street
7. French St

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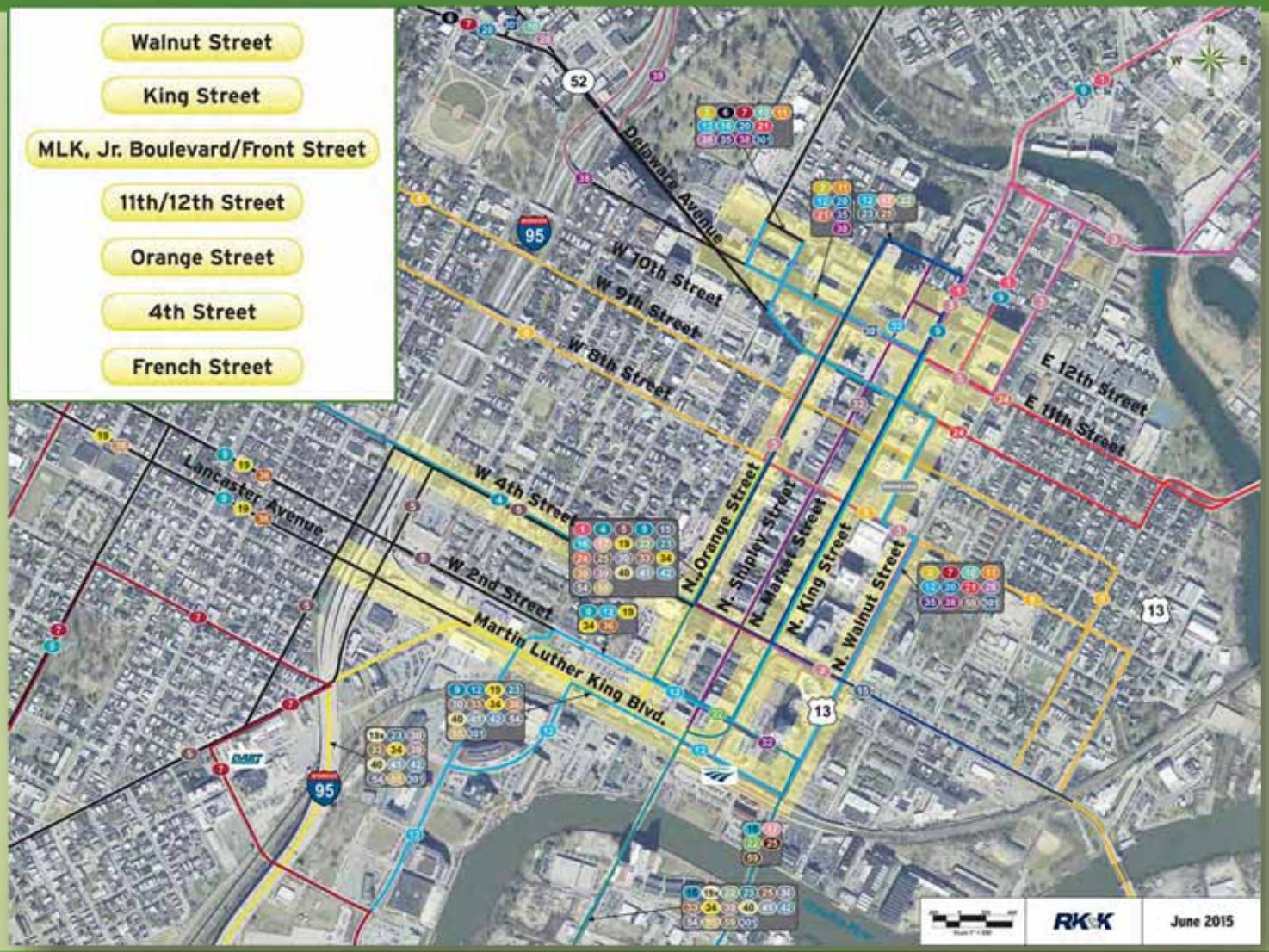
Transit Corridors



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Transit Locations

Principle #16:

Identify multiple transit locations within the City of Wilmington that build upon the existing O/D data.

Opportunities:

1. A hierarchy of transit locations:
   - Hierarchy 1 – Location where numerous bus routes cross and continue in service, and some routes may also terminate and need to layover.
   - Hierarchy 2 – Location where numerous bus routes cross and continue in service.
   - Hierarchy 3 – Location where a few bus routes cross and continue in service.

Examples – Hierarchy 1:

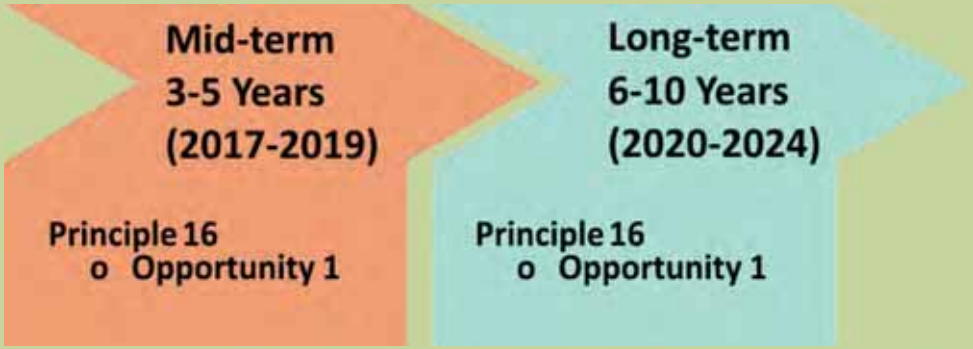
- 12th and Jefferson Streets, 8th and Orange Streets, 2nd and Front Streets/Front and Walnut Streets/Modified Amtrak Station

Examples – Hierarchy 2:

- Rodney Square, 9th and French Streets, 8th Street and 9th Street

Examples – Hierarchy 3:

- Union Street/Lincoln Street/Pennsylvania Avenue, Union Street and 4th Street, 2nd Street/Lancaster Avenue/Jackson Street



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Transit Infrastructure

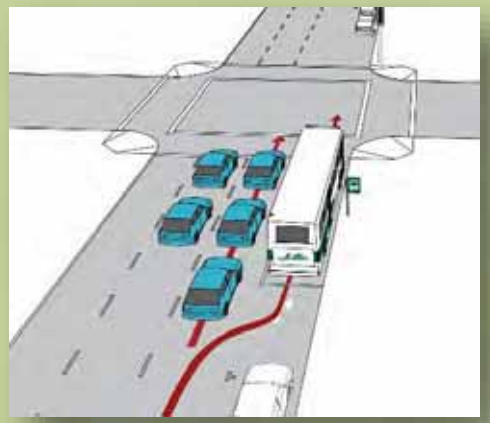
Transit Corridor Infrastructure Features

- Roadway
  - Corridor to support ped/bike/auto and bus
  - Bus Only Lane(s)
  - Shared Bus/Bike Lane(s)
  - Exclusive Transit Corridor
  - Queue Jumps/Signals
- Enhanced Passenger Amenities
  - Shelters
  - Signage
  - Corridor Branding
  - Passenger Information/Technology
- Implementable Improvements

Phase II Roadway Concepts

- Roadway concept(s) to consider

1. Queue Jumps
2. Bus Only Lane(s)
3. Shared Bus/Bike Lane(s)
4. Separated Bus/Bike Lane(s)



Queue Jumps Example

Bus Only Lane Example

Shared Bus/Bike Lane Example

Separated Bus/Bike Lane Example

Transit Corridors

Phase II Roadway Concepts

- Roadway concept(s) to consider

1. Median Only Bus Lane(s)
2. Contra-Flow Bus Lane(s)
3. Exclusive Bus Lane(s)
4. Exclusive Transit Corridor

Median Only Bus Lane Example

Contra-Flow Bus Lane Example

Exclusive Bus Lane Example

Exclusive Transit Corridor Example

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Transit Location Examples

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Prototype Bus Stop Components

- Shelter coverage on 3 sides with advertising ability on the back and downstream sides – Various Sized Shelters
- Accessible
- Strong Durability and Low Maintenance
- Shaded Roof - Translucent
- Benches with Center Rail
- Real Time LED Display
- Linear Panel of Bus Stop ID and Routes
- Separate Kiosk for Local Info
- LED Lighting
- Bike Rack
- Trash Cans
- Consider Security Features
- Shelter Pad Enhancements

Bus Stop Prototype Example

Transit Infrastructure Features

- Implementable Improvements
  - Short Term
  - Mid Term
  - Long Term
  - Cost
  - Stakeholder Support

- Identify Priority Corridors and Locations

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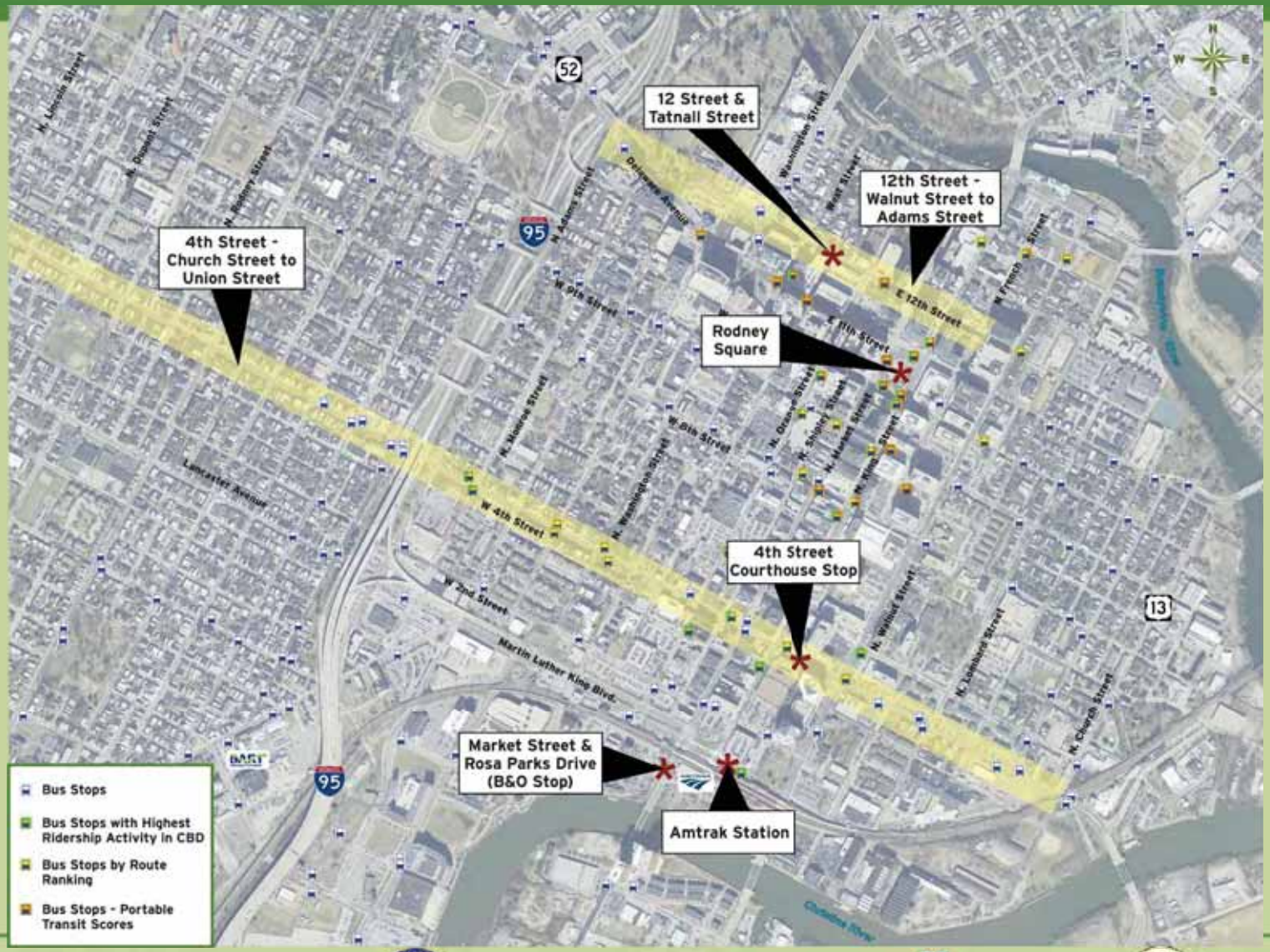
Priority Transit Corridors/Locations



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Location - Market Street & Rosa Parks Drive (B&O Stop)

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Location – Market Street & Rosa Parks Drive (B&O Stop)

Questions

- Should stop be split or moved to far side?
- Would a far side stop accommodate an improved shelter/stop within the 8-9 ft. sidewalk area?

Considerations

- 30 buses per peak hour use current stop – most continue south on Market – could be accommodated either near or far side
- Far side stop possible but tight - need 48 inches for pedestrian access and 5'x8' pad for wheelchair access
- Split would work since not a major transfer point
- Not enough space for bus pull off near or far side so buses will have to pass – more or less complicated with two stops?

Recommendation(s)

- Retain one bus stop location, but relocate
- Relocate bus stop to allow for enhanced passenger amenities
- Transit Routing Recommendations would reduce high volume of buses

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Location – Market Street & Rosa Parks Drive (B&O Stop)

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Location – 4th Street Courthouse Stop

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Location – 4th Street Courthouse Stop

Questions

- Can a mid-block stop be added on the north side of 4th Street across from the existing stop on the south side ("4th and French")
- If so, would the existing stops be eliminated?

Considerations

- Block currently has three bus stops
  - King and Walnut on north side (serves westbound Route 15)
  - Mid block on south side (serves eastbound Route 3 and 15)
- New stop would only serve westbound Route 15 – 2 buses per hour
- Would probably need to keep existing stops
  - King and 4th serves Courthouse entrance (500 N. King) and transfers
  - Walnut and 4th next closest stop is Lombard
- Could add mid-block and still keep existing stops but tight (block is about 575 ft.)

Recommendation(s)

- Retain existing bus stop locations and enhance passenger amenities
- 4th Street Corridor recommendations would support increase usage of bus stops

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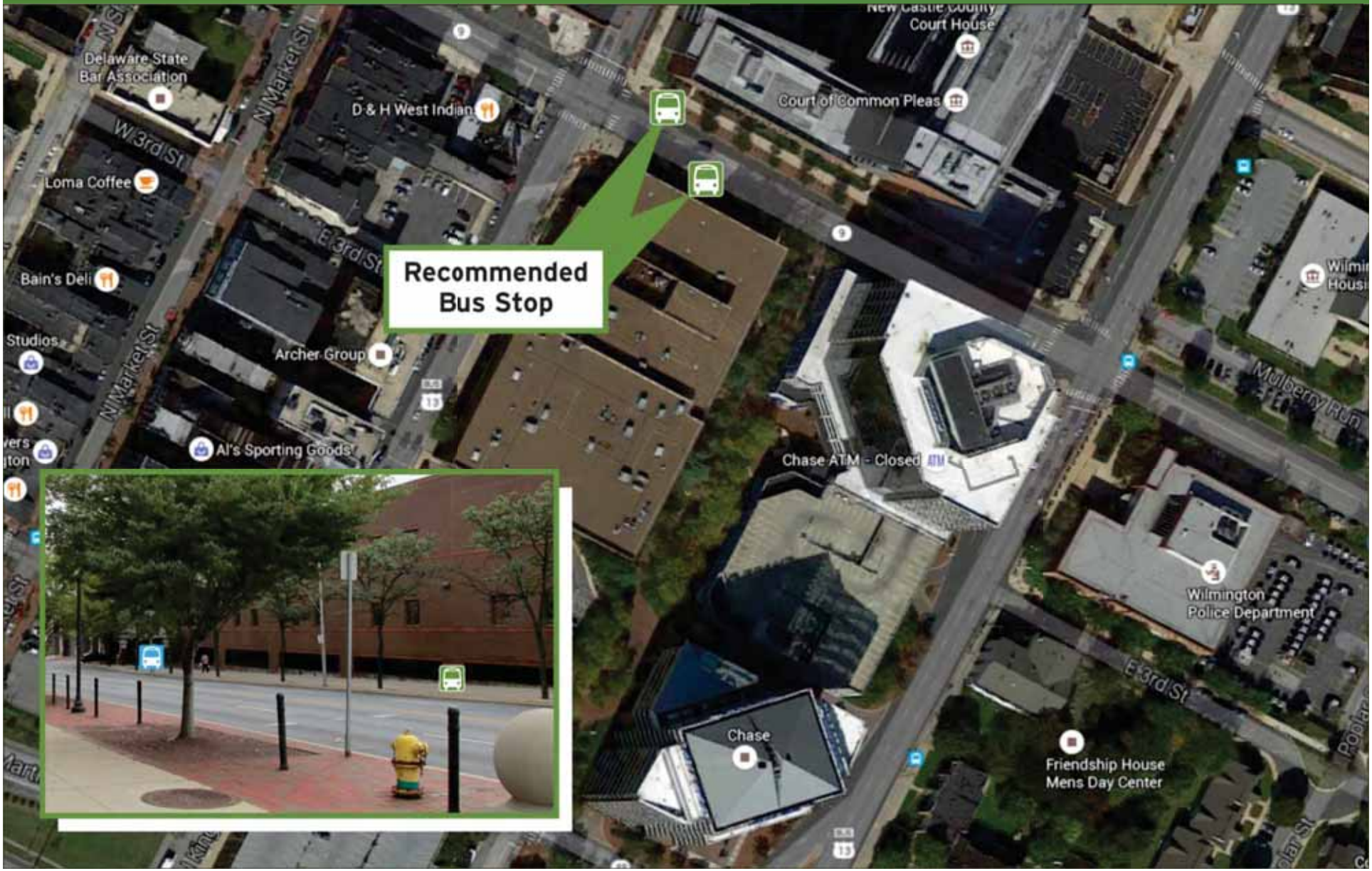
Location – 4th Street Courthouse Stop



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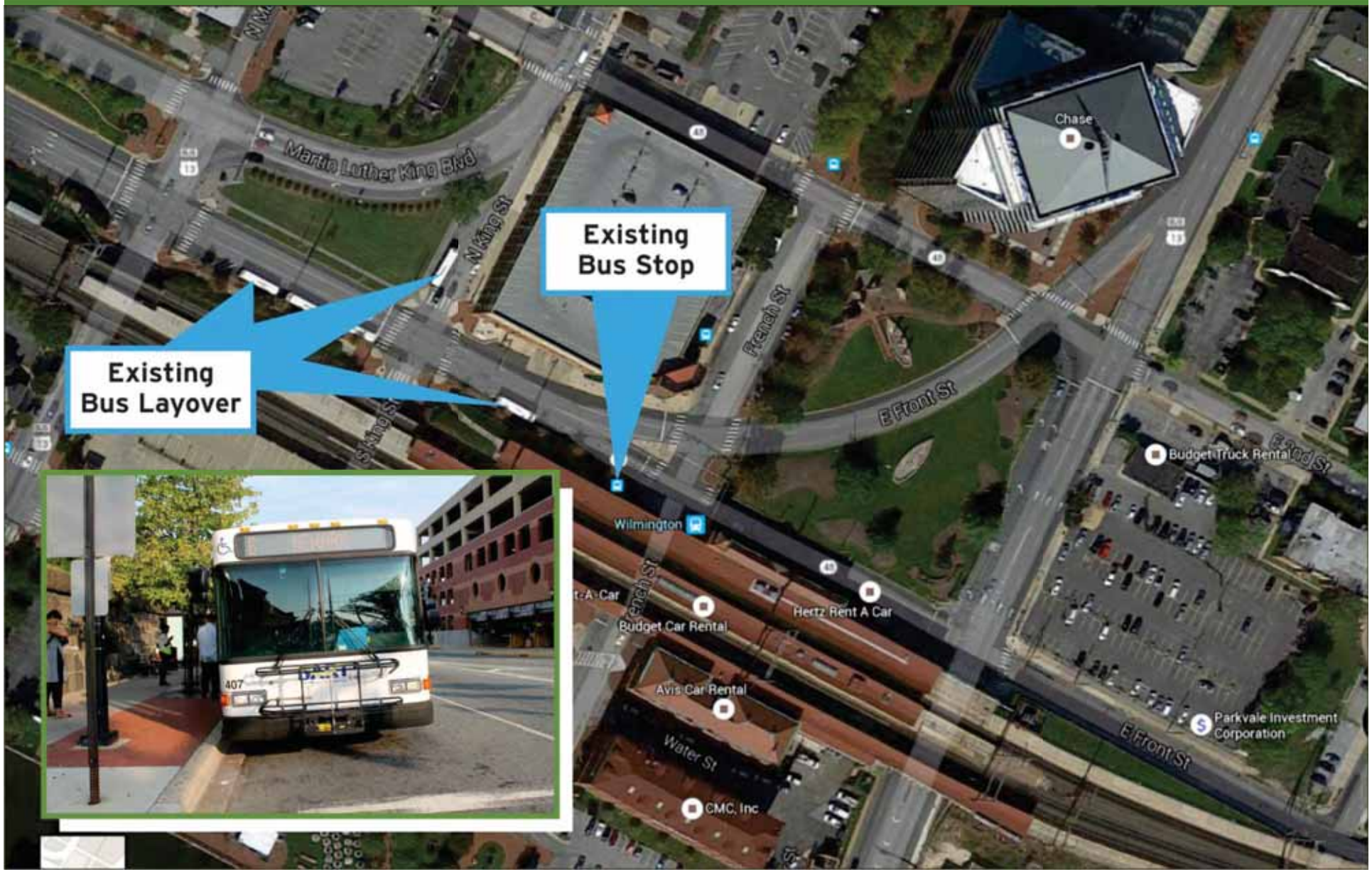
Location - Amtrak Station



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Location - Amtrak Stop

Questions

- Can the Amtrak stop be moved around the corner to the Porter site?
- Could the Porter site include both bus stop(s) and layover?

Considerations

- Northbound buses from the south
  - 5-6 buses per hour (4 routes)
  - Stay on Walnut
  - Enough space for two bus pull-off
- Buses turning left onto Walnut
  - 30 buses in peak hour (10 routes)
  - If no layover, 2-3 linear interior bus stops
  - If 7-8 routes layover, may need two interior lanes or sawtooth design
- Would need careful consideration of pedestrian flow and access

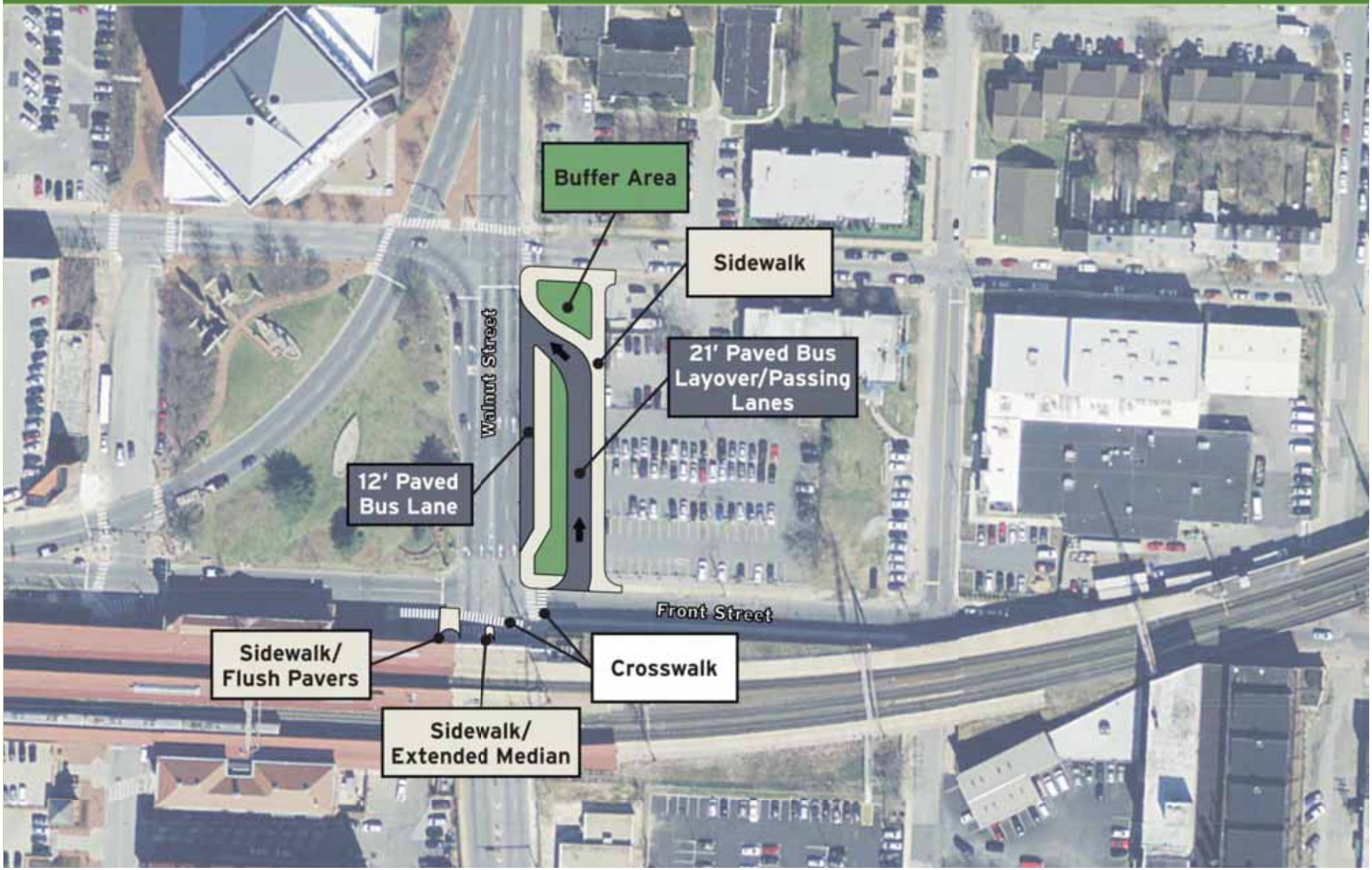
Recommendation(s)

- Enhance passenger amenities at Amtrak Station are difficult due to constraints
- Consider relocating Relocate Amtrak bus stop and layover activities to Porter Site
- Investigate feasibility of Rosa Parks Drive for staging buses.
- Ensure safe and accessible pedestrian access

WILMAPCO DART Moving Forward

WILMINGTON TRANSIT
MOVING FORWARD

Location - Porter Site



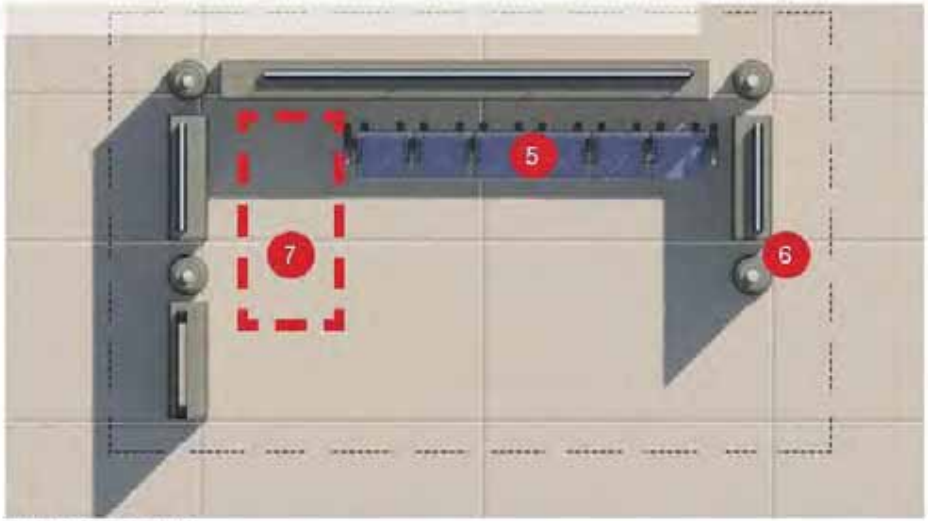
SITE PLAN

B & O TRAIN STATION SHELTER

TEVEBAUGH ASSOCIATES

RK&K

FLOOR PLAN
B & O TRAIN STATION SHELTER



PERSPECTIVE
B & O TRAIN STATION SHELTER

1. **ROOF STRUCTURE**
The roof system will be a trussed system with standing seam metal roof. Painted exposed steel roof with T & G Wood Decking.

2. **GLASS PANELS/ FRAMING**
1/2" Laminated Tempered Glass -Stainless Steel Metal Framing

3. **INFORMATION KIOSK BOARD**
Below each monitor will be an information board for Dart on schedules and Routes.

4. **VIDEO MONITOR SCREEN**
Monitor screen showing arrival time of each buss.

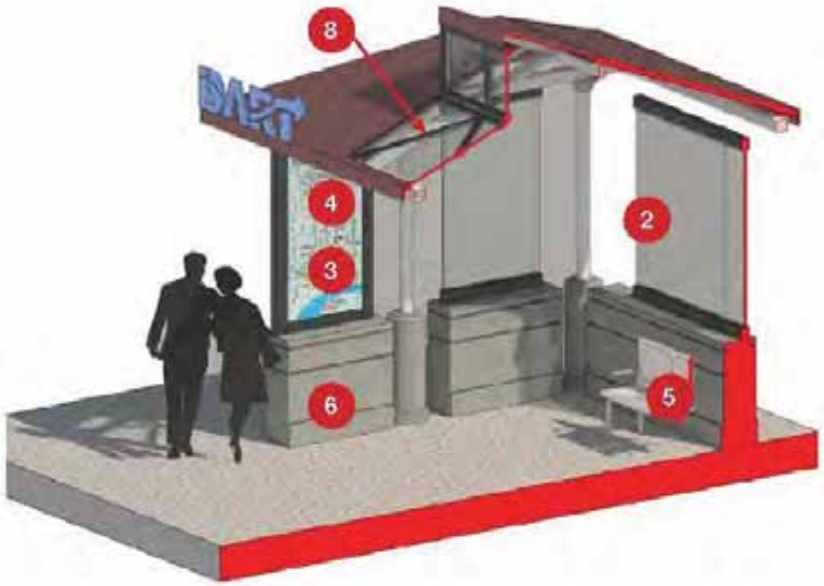
5. **SEATING**
Each bus shelter will include individual bench style seating. The bench is vandal-resistant and designed to prevent reclining.

6. **GRANITE BASES**
Granite 24" above grade will be installed similar to surrounding Train Station and preventative measure for snow and ice removal agents to eating away of ground contact metal.

7. **Wheelchair Waiting Area**
Provided a 36" by 60" clear area for Wheel Chair Waiting.

8. **Sky Light**
Clearstory and Skylight provide natural day lighting.

SECTION AXON
B & O TRAIN STATION SHELTER



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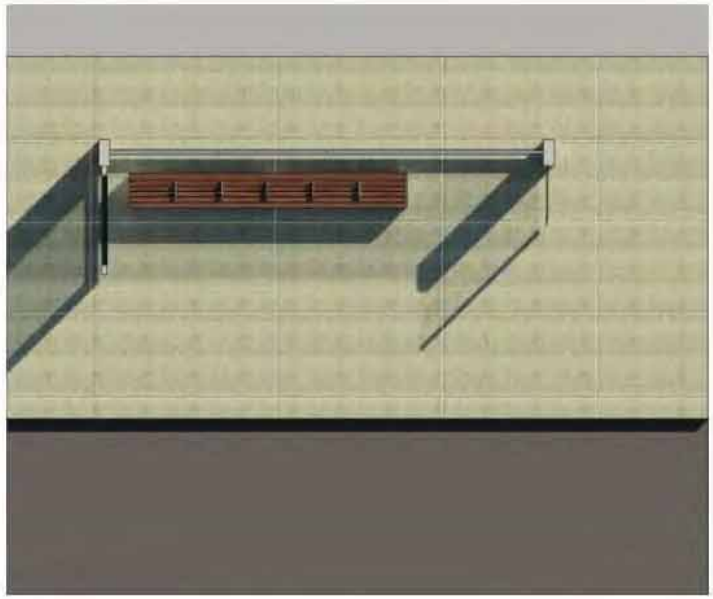
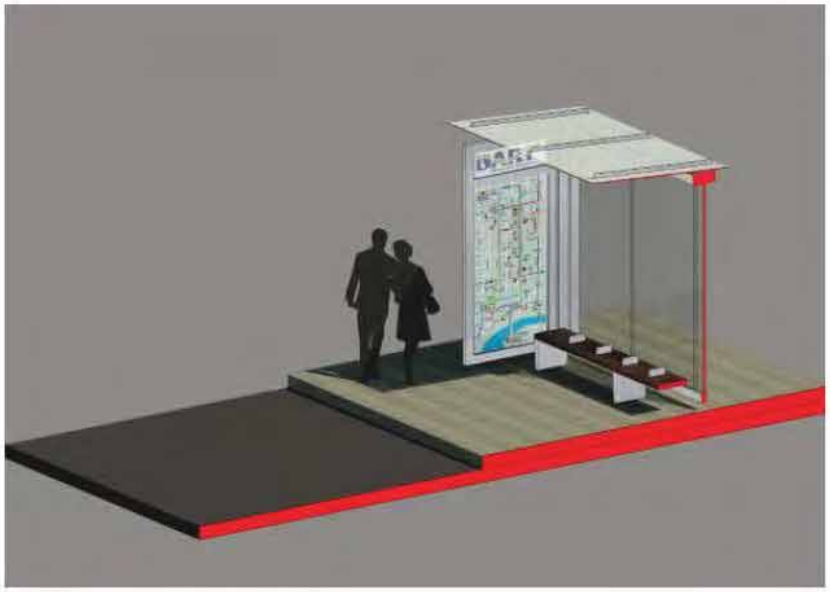
MARKET STREET
TENTH STREET
ELEVENTH STREET
KING STREET
DRAFT

Broadway and Broome St.


VINE & CALHOUN
UPTOWN TRANSIT DISTRICT


Bus
SW 5th &
Morrison
1 8 12 94
164 177




DART


DART

Phase II Path Forward

- Anticipated 9-10 Month Schedule
- Milestone
  - Spring 2016 TIGER Grant Consideration
- 2 Advisory Group Meetings
- Public Workshop Spring 2016