



## WILMINGTON DOWNTOWN CIRCULATION STUDY

Wilmington Initiatives Tech/Steering Committee

July 27, 2009



## Study Overview

- Develop vision and goals [complete]
- Define the problems [complete]
- Prepare recommendations [we are here]



## How We Identified Transportation Issues

1. Review of past downtown transportation studies
2. Listening tour/field observations
3. Transit operations interviews with DTC staff
4. Traffic analyses: existing and potential future



## 2. Listening Tour Results: Common Themes

1. Promote a vibrant, healthy Downtown, with a mix of 24-hour uses, through transportation improvements.
2. Ensure that Downtown streets balance all modes of travel (walking, bicycling, transit, and driving) and include buildings and streetscape that enhance street life.
3. Provide convenient, frequent transit service throughout the City, especially to the train station.
4. Reclaim Rodney Square as Downtown's premier public space.
5. Make Downtown more walkable.
6. Improve the existing street system for all modes of travel by timing traffic signals, evaluating street direction changes, and managing on-street parking and loading.
7. Match parking supply with demand.



### 3. Transit Operations: Overview

- 38 routes provide service to downtown Wilmington
- Most routes start or end downtown
- Express service on seven routes during weekday commute hours
- Standard 40-foot buses are used on most routes; notable exceptions are the Wilmington Trolley and 301
- Two basic downtown loops:
  - Orange Street loop: 22 routes
  - Amtrak loop: 12 routes



### 3. Transit Operations: Rodney Square

- Rodney Square is the start/end point for 20 routes
- Weekday bus trips:
  - Market Street: 41 trips
  - 10<sup>th</sup> Street: 248 trips
  - 11<sup>th</sup> Street: 388 trips
  - King Street: 499 trips (356 lay over)
- King Street side:
  - 50 trips between 8 and 9 am
  - 70 trips between 4:30 and 5:30 pm
  - 5 or 6 buses can serve this side at one time





## 4. Traffic Analyses

- Existing conditions based on counts conducted by this study
- Potential future conditions: What would happen if all traffic volumes grew by ten percent?
- How do we measure traffic?
  - “Level of Service” or LOS: measure of how speed and convenience
  - LOS = seconds of total delay experienced by the average motorist
  - LOS is measured by “grades” from A through F:
    - A: 0 to 10 seconds of delay
    - B: 10 to 20 seconds
    - C: 20 to 35 seconds
    - D: 35 to 55 seconds
    - E: 55 to 80 seconds
    - F: more than 80 seconds
  - Morning (7 to 9 am) and evening (4 to 6 pm) peak hours
  - LOS D or better is generally acceptable
  - New research is developing models on how to consider pedestrians, bicycles, and transit as well as motor vehicles in calculating LOS for urban streets



## Issues By Corridor

- Martin Luther King, Jr. Boulevard area
- Rodney Square
- Delaware Avenue/I-95 area
- Market Street
- Fourth Street
- King Street
- Orange Street
- Walnut Street
- Several other locations



## Martin Luther King, Jr. Boulevard Area

- Pedestrian access issues
- Traffic congestion at four intersections
- Public desire to remove the “sweeps”
- Unclear signing
- Maryland/Monroe safety and congestion issues
- Proposed bike route in the Wilmington Bicycle Plan
- Wilmington Transportation/Transit Center project
- Water Street project, Shipley to West

## Rodney Square

- Conflicts between pedestrian use of the square and its current function as a transit center
  - Safety for all modes of travel
  - Security
  - Aesthetics
  - Noise/air pollution



## Delaware Avenue / I-95 Area

- Pedestrian access issues
- Traffic congestion at six intersections
- Unclear signing
- Speeding
- Left turn prohibition from WB 10<sup>th</sup> to SB Washington
- Delaware, 11<sup>th</sup>, and 12<sup>th</sup> are proposed bike routes in the Wilmington Bicycle Plan
- Second phase of Delaware Avenue Gateway project

## Market Street

- Pedestrian access issues
- Signal timing
- Conflicts with parked cars, school buses, emergency vehicles, trolley
- Proposed bicycle boulevard in the Wilmington Bicycle Plan
- Market Street Phase IV project, 11<sup>th</sup> to 16<sup>th</sup>



## Fourth Street

- Pedestrian access and safety issues, especially at King and Madison
- I-95 gateway/streetscape
- Traffic congestion at three intersections
- No left turn lane from EB 4th to NB Adams
- Downtown 4th Street project, I-95 to King

## King Street

- Excessive width south of 8<sup>th</sup> Street: pedestrian access issues and speeding
- Traffic queues: too many buses, some congestion due to MLK Jr. Blvd./Market signal
- Proposed bike route in the Wilmington Bicycle Plan
- King Street transit corridor project, MLK Jr. Blvd. to 13th



## Orange Street

- Spot issues
  - Pedestrian crossings at 10<sup>th</sup> Street
  - Lane shift at 9<sup>th</sup> Street
- Orange Street transit corridor project, MLK Jr. Blvd. to 13th

## Walnut Street

- Speeding
- Pedestrian access issues
- Lanes are not aligned across some intersections
- Traffic congestion at three intersections
- Walnut Street corridor improvements project, Front to 16<sup>th</sup>
- Wilmington Transportation/Transit Center project
- Leo J. Dugan Bridge improvements project



## Issues at Other Locations

- Old 9<sup>th</sup> Street “mall” creates issues for emergency vehicles and parking
- Exiting City Center garage on 12<sup>th</sup> Street
- Inadequate post office parking
- 12<sup>th</sup> Street connector
- Signal timing at 2<sup>nd</sup>/Shipley
- Other bike routes proposed by the Wilmington Bicycle Plan
- Riverfront access: I-95 ramps, new Christina River bridge

## General Topics

- Transit circulation/taxis
- Comprehensive pedestrian/streetscape improvements
- Parking, enforcement, and other policy issues
- Comprehensive bicycle improvements

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## Transit Short-Term Alternatives

1. Baseline
2. Staggered pulse
3. Amtrak loop shifted to Shipley Street

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## Transit Issues to Address

(Measures of Effectiveness)

- Reduction of peak bus queuing at Rodney Square
- Reduction of peak bus traffic on King Street
- Transit center site issues
  - Availability
  - Size
  - Bus capacity
  - Joint development opportunity
  - Engineering issues
- Ease of transfers

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## Transit Issues to Address

(Measures of Effectiveness continued)

- Parking impacts: on- and off-street
- Operational concerns/consistency with existing routes
- Proximity to destinations
  - Courthouse
  - Del Tech
  - Delaware Avenue employment centers
  - East Side residents
  - Government Center
  - Market Street mixed-use corridor
  - Rodney Square employment centers
  - West Center City residents
- Financial and other factors

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## Alt. 1: Baseline

- Existing operations
  - Orange Street loop: 22 routes
  - Amtrak loop: 12 routes



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## Alt. 2: Staggered Pulse

- No changes to existing route structure
- Shift roughly half of the Rodney Square departures from :15 and :45 to :00 and :30



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## Alt. 2: Staggered Pulse

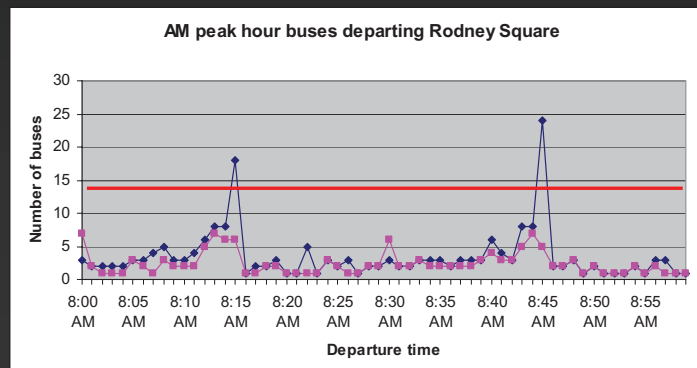
- Pros
  - Eliminates double- and triple-stacking of buses at Rodney Square
  - Central access to employment and residential centers
  - Still facilitates transfers
  - No site or parking impacts
  - Minimal cost
  - May reduce average wait times along inbound corridors
- Cons
  - There may still be too many buses at Rodney Square for some stakeholders

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## Alt. 2: Staggered Pulse

- Red line indicates the capacity of Rodney Square without assigned stops.
  - 4 buses along 11th Street (about 180 feet)
  - 6 buses along King Street (about 280 feet)
  - 4 buses along 10th Street (about 180 feet)
  - 14 buses total



Blue: Alt. 1

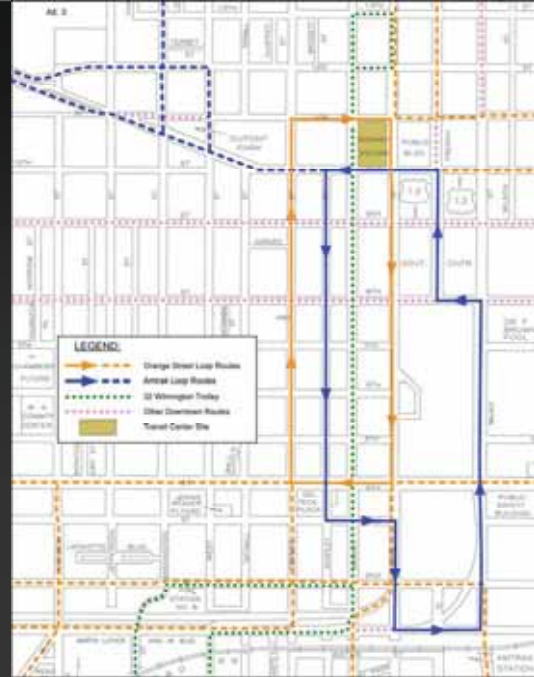
Pink: Alt. 2

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## Alt. 3: Amtrak Loop to Shipley

- No changes to existing Orange Street loop
- Shift inbound Amtrak loop to:
  - 10<sup>th</sup>
  - Shipley
  - 3<sup>rd</sup>
  - King



## Alt. 3: Amtrak Loop to Shipley

- Pros
  - Eliminates double- and triple-stacking of buses at Rodney Square
  - Central access to employment and residential centers
  - Still facilitates transfers (10<sup>th</sup> and Shipley is only a short block from Rodney Square)
- Cons
  - On-street parking impacts on Shipley Street
  - Two additional turning movements which have minimal impact on travel time



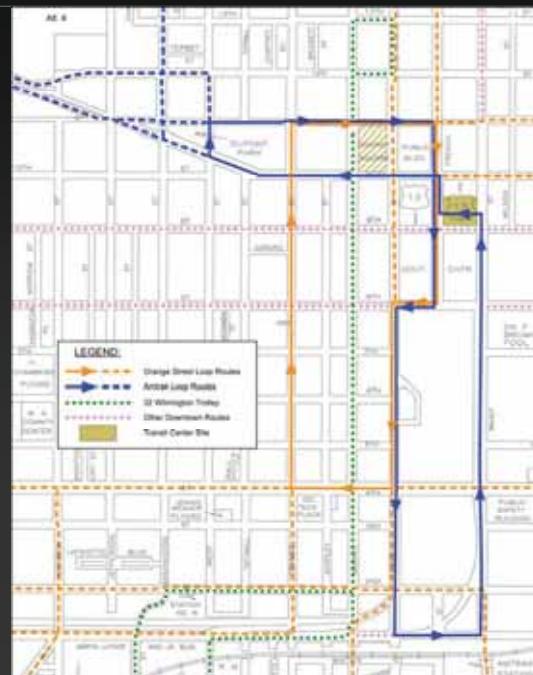
## Long-Term Alternatives

4. Transit center at 9<sup>th</sup> and French Streets (state lot)
5. Transit center at 8<sup>th</sup> and Orange Streets (old News Journal site)
6. Transit center at 9<sup>th</sup> and Orange Streets (Midtown Parking Center)
7. Transit center along a two-way Orange Street
8. Stops distributed along Orange and Shipley Streets
9. Transit center at 12<sup>th</sup> and Jefferson Streets (Colonial lot)
10. Transit center at 12<sup>th</sup> and Orange Streets (3 potential sites)



## Alt. 4: 9<sup>th</sup> and French

- Move southbound Orange Street and Amtrak loops one block east between 11<sup>th</sup> and 8<sup>th</sup>
- Run northbound Amtrak loop through transit center





## Alt. 4: 9<sup>th</sup> and French

- Pros
  - No bus layovers at Rodney Square
  - No buses at all on the King Street side of Rodney Square
  - On-site transfer opportunities with dedicated covered stops
  - State-owned site with joint development opportunity
  - Less on-street parking impacted than other long-term alternatives
  - Minimal off-street parking impacts (the site is a parking lot, but it is currently not used)
  - Relatively low capital cost among long-term alternatives because the site is already a State-owned surface lot
  - Adjacent to East Side residents, Rodney Square area, and Government Center



## Alt. 4: 9<sup>th</sup> and French

- Cons
  - Most downtown routes lengthened (but only by two blocks)
  - 4 blocks or more from West Center City residents and Delaware Avenue area
  - Small site compared to other long-term alternatives
  - Fewer layover opportunities than other long-term alternatives
    - 9 assigned stops
    - Up to 20 unassigned stops
  - Grade of some portions of the site exceeds 5 percent, requiring regrading to address accessibility



## Alt. 5: 8<sup>th</sup> and Orange

- No changes to existing Orange Street loop
- Reconfigure Amtrak loop
  - Inbound: 10<sup>th</sup> to Shipley to 3<sup>rd</sup> to King
  - Outbound: 8<sup>th</sup> to Orange



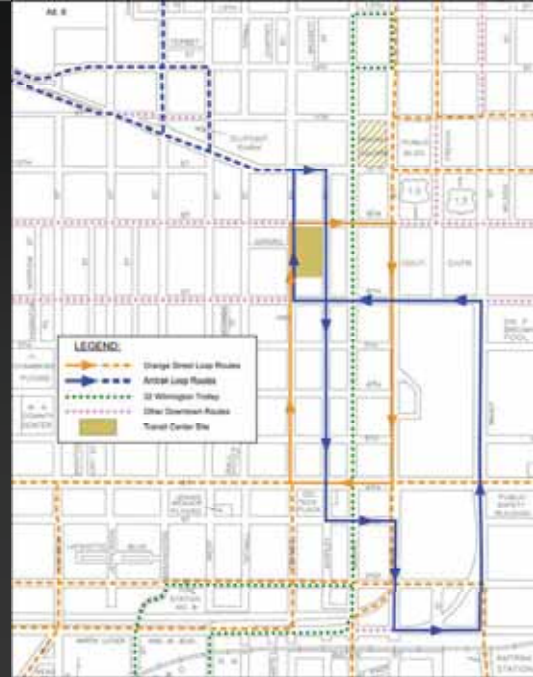
## Alt. 5: 8<sup>th</sup> and Orange

- Pros
  - No bus layovers at Rodney Square
  - On-site transfer opportunities with dedicated covered stops
  - Largest long-term alternative site, facilitating joint development
  - Site is owned by the Wilmington Parking Authority
  - Layover opportunities
  - Adjacent to West Center City residents and to Rodney Square and Delaware Avenue employment centers
  - Amtrak loop shortened, reducing travel times
- Cons
  - High capital cost to replace 222 existing surface parking spaces (could be offset by joint development revenue)
  - 5 blocks from East Side residents and Government Center



## Alt. 6: 9<sup>th</sup> and Orange

- Shift north end of Orange Street loop from 11<sup>th</sup> to 9<sup>th</sup>
- Reconfigure Amtrak loop
  - Inbound: 10<sup>th</sup> to Shipley to 3<sup>rd</sup> to King
  - Outbound: 8<sup>th</sup> to Orange



## Alt. 6: 9<sup>th</sup> and Orange

- Pros
  - No bus layovers at Rodney Square
  - No buses at all on the 11<sup>th</sup> and King Street sides of Rodney Square
  - On-site transfer opportunities with dedicated covered stops
  - Second-largest long-term alternative site, facilitating joint development
  - More layover opportunities than other long-term alternatives
  - Adjacent to West Center City residents and to Rodney Square and Delaware Avenue employment centers
  - Both loops shortened, reducing travel times
  - Existing garage on site is functionally obsolete and not well utilized
- Cons
  - Privately owned (unknown if owner is willing to participate)
  - Very high capital cost to replace 462 existing structured parking spaces (could be offset by joint development revenue)
  - 4 blocks from East Side residents and Government Center



## Alt. 7: 2-Way Orange

- Convert Orange Street to two-way operation between MLK Jr. Blvd. and 12<sup>th</sup>
- No changes to existing Orange Street loop
- Reconfigure Amtrak loop
  - Inbound: 11<sup>th</sup> to Orange to MLK Jr. Blvd.
  - Outbound: Walnut to 10<sup>th</sup>



## Alt. 7: 2-Way Orange

- Pros
  - No bus layovers at Rodney Square
  - On-site transfer opportunities with dedicated covered stops
  - Either site is large, facilitating joint development
  - More layover opportunities than other long-term alternatives
  - Adjacent to West Center City residents and to Rodney Square and Delaware Avenue employment centers
  - Adds another southbound route downtown, easing pressure on King and Washington Streets in the pm peak hour
  - Creates a two-way transit priority corridor on Orange Street, reducing transit conflicts with other modes of travel
- Cons
  - 9<sup>th</sup> and Orange site is privately owned (unknown if owner is willing to participate)
  - High to very high capital cost to replace existing parking (could be offset by joint development revenue)
  - 4 to 5 blocks from East Side residents and Government Center
  - Adds southbound left turns to MLK Jr. Blvd. signal (but retains acceptable level of service)





## Alt. 8: Distributed Stops

- On-street stops instead of an off-street transit center
  - 800 and 900 blocks of Orange and Shipley Streets, as well as 8<sup>th</sup> Street between Orange and Shipley, are shown as an example
- No changes to existing Orange Street loop
- Reconfigure Amtrak loop
  - Inbound: 10<sup>th</sup> to Shipley to 3<sup>rd</sup> to King
  - Outbound: 8<sup>th</sup> to Orange



## Alt. 8: Distributed Stops

- Pros
  - No bus layovers at Rodney Square
  - More layover opportunities than other long-term alternatives
  - Adjacent to West Center City residents and to Rodney Square and Delaware Avenue employment centers
  - Amtrak loop shortened, reducing travel times
  - Very low capital cost among long-term alternatives
- Cons
  - Eliminates most direct transfer opportunities by distributing stops along five blocks
  - Impacts 3 to 4 times more on-street parking spaces than other long-term alternatives
  - 4 to 5 blocks from East Side residents and Government Center



## Next Steps

- Meeting with Secretary of Transportation, DelDOT, DTC, City of Wilmington – July 8
- Meeting with Wilmington Initiatives Partners – July 17
- Meeting with W.I. Technical & Steering Committees – July 27
- Meeting with Mayor Baker and staff – August 18