Move New Haven CEC Meeting:
New Haven City Hall
October 24, 2018
5:30 PM

PRESENTED TO:
Community Engagement Committee (CEC)

PRESENTED BY:
VHB
Agenda for Community Engagement Committee (CEC) Meeting

- Introductions
- Phase 1 to Phase 2 Transition
- Overview of April 2018 O & D Survey
- Moving Forward:
  - Tool Kit for a Successful Bus System
  - Corridor Vision
  - Three Study Alternatives
- Study Schedule
- Feedback and Next Steps
Phase 1 to Phase 2 Transition

Phase 1:
Transition Phase 1’s data analysis:
- System-wide strengths and deficiencies
- Good and poor performer routes
- Customer feedback

Phase 2:
Develop data-driven recommendations to improve the system and fulfill the project’s Purpose & Need
Phase 2: Data Driven Approach

April 2018 Origins & Destination Survey:

- **Purpose:** Obtain corridor-specific transit origin and destination data to better understand how the system is used to help develop alternatives

- **Information we learned:**
  - Origins and destinations are dispersed throughout Greater New Haven
  - Roughly 60% of origins/destinations are in the city of New Haven
  - Majority of trips terminate either in the Downtown New Haven neighborhood or outside City of New Haven (e.g., Hamden, West Haven, Orange, East Haven)
  - Approximately 43% of all trips require a transfer
    - Of those trips that require a transfer, 21% don’t require a bus change must physically transfer buses (e.g. Route 243 - Whalley Avenue to Route 265 Congress Avenue transfer does NOT require a physical transfer at the New Haven Green. The passenger can remain on the same bus.)
  - The majority of trips/ O&Ds are on the following routes: 243 Whalley Ave, 265 Congress Ave, 212 Grand Ave & 238 Dixwell Ave
Phase 2: Corridor Vision
Selection of High Investment Corridors

System Vision:
- Start with Key Corridors to develop system foundation; then expand to improve full system
- Improves system for greatest number of users soonest

Focus on:
- Adding limited stop service
- Implementing transit signal priority
- Installing queue jumps or dedicated bus lanes
- Adding prominence to bus stops and increase the number of transfer hubs
- Providing real-time information at bus stops and hubs
- Providing span of service and headway consistency
- Eliminating unproductive route variations

Key Corridors
- Route 238 Dixwell Avenue
- Route 212 Grand Avenue
- Route 243 Whalley Avenue
- Route 265 Congress Avenue
Phase 2: Corridor Vision
(Routes D/212/238 and B/265/243)
How do we take what we know to make the system better?

- Strategy #1: Bus Rapid Transit (BRT) Lite features
- Strategy #2: Bus stop consolidation
- Strategy #3: Transit hubs

What are the benefits of a well-designed transit system?

- Improve connections to jobs and education
- Upgrade quality, reliability and speed of service
- Provide effective connections to walking, cycling, and rail service
- Make service more user-friendly
- Retain existing riders and attract new transit riders
- Reduce private automobile congestion and greenhouse gas production
- Provide cost-efficiency

- Strategy #4: Route simplification and restructuring
- Strategy #5: Transit priority
- Strategy #6: Frequent and diverse transit networks
Tool-Kit Strategy #1: Bus Rapid Transit (BRT) Lite Features

Study Goal: Upgrade quality of service, operating efficiency and productivity

Service Features:
- Frequent and reliable service of 10-15 minutes or less on designated lines
- Early morning to after midnight service
- Faster service with fewer stops
- Direct service with effective connections to local service and other modes

Infrastructure Features:
- Bus priority at intersections
- Real-time information and user-friendly maps
- Faster fare payment to reduce dwell times at bus stops
- Improved, distinct level-boarding bus-stops/stations with amenities
- Unique bus branding to increase visibility
- Smart technology buses
Tool-Kit Strategy #2: Bus Stop Consolidation

Study Goal: Upgrade quality of service, operating efficiency and productivity. Impacts reliability and travel time of a route.

- Balances travel time and effective customer access. (With more bus stops, bus riders don’t have to walk as far to access transit service, but they may spend more time on the bus and waiting at the bus stop because service reliability is eroded and travel time is increased.)
## Bus Stop Consolidation Recommendation for New Haven Routes 212/238/243/265

### Feature: Bus Stop Consolidation

<table>
<thead>
<tr>
<th>Bus Routes</th>
<th>212 Grand Avenue</th>
<th>238 Dixwell Avenue</th>
<th>243 Whalley Avenue</th>
<th>265 Congress Avenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipalities Served</td>
<td>New Haven, North Haven</td>
<td>New Haven, Hamden</td>
<td>New Haven, West New Haven</td>
<td>New Haven, West New Haven, Orange</td>
</tr>
<tr>
<td>Current Number of Stops (inbound/outbound)</td>
<td>115</td>
<td>96</td>
<td>107</td>
<td>106</td>
</tr>
<tr>
<td>Number of Stops Eliminated (inbound/outbound)</td>
<td>-41</td>
<td>-30</td>
<td>-38</td>
<td>-35</td>
</tr>
<tr>
<td>Revised Number of Stops (inbound/outbound)</td>
<td>74</td>
<td>66</td>
<td>69</td>
<td>71</td>
</tr>
<tr>
<td>Average Stop Spacing in feet (existing) – Inbound/Outbound</td>
<td>753/796</td>
<td>615/648</td>
<td>793/851</td>
<td>680/624</td>
</tr>
<tr>
<td>Average Stop Spacing in feet (proposed) – Inbound/Outbound</td>
<td>1,130/1,283</td>
<td>914/923</td>
<td>1,042/1,120</td>
<td>1,030/919</td>
</tr>
</tbody>
</table>
Bus Stop Consolidation Example

Providence, Rhode Island

Transit Agency: Rhode Island Public Transit Authority (RIPTA)

- Removed 1,000 bus stops (20% system-wide) since 2012

**Strategy:**
- Completed 2012 operational analysis
- Due diligence with marketing studies
- Extensive stakeholder engagement
- Mindful of coverage issues and Title VI
Tool-Kit Strategy #3: Transit Hubs

Study Goals: Provide an integrated, multi-modal network and improve connections to jobs and schools

- Provides more direct travel
- Establishes mini-hubs where:
  - two or more frequent bus routes intersect
  - multiple bus/rail transfers occur
- Coordinates transit time-tables with reduced wait time
- Provide benches, shelters, canopies and perhaps a fixed building with amenities

Source: bertaux+Iwerks architects

Providence, Kennedy Plaza
Recommended CT *transit* New Haven Mini Hub Locations

- Route 243/Whalley Avenue – Whalley Avenue & Blake Street (Westville Center)
  - Junction to variation split of Route 243A and 243B

- Route 265 Congress Avenue – Campbell Avenue & Main Street (West Haven Center)
  - Junction to variation Route 265B and transfer to Route 271

- Route 212 Grand Avenue – Grand Avenue and Ferry Street
  - Junction to variation Routes 212W and 212U and transfer to Route 215

- Route 238 Dixwell Avenue – Dixwell Avenue and Putnam Avenue
  - Transfer to Route 237
Recommended CT *transit* New Haven Transfer Hub Locations
Analysis of Downtown Bus Hub

Current Hub:
New Haven Green

Potential Hub To Be Studied:
Tower Lane Lot
Transfer Hub Example

Providence, Rhode Island

Transit Agency: Rhode Island Public Transit Authority (RIPTA)

- 2012 Kennedy Plaza vision plan and redesign in coordination with business community

Features:
- Improved pedestrian amenities
- Real time bus information
- Concrete bus pads
- Bus stop shelter improvements
Tool-Kit Strategy #4: Route Simplification and Restructuring

Study Goal: Upgrade quality of service, operating efficiency and productivity

- Symmetrical inbound and outbound routes
- Eliminate route deviations with low demand
- Introduce route variations (if needed)
- Provide direct path of travel with multiple transfers
- Rename/renumber routes so they are logically linked to their markets, landmarks, hubs or orientation
- Make sure the route serves a well-defined market
- Frequent and fewer routes with coordinated transfer opportunities results in a faster overall trip

Indirect service with deviations vs. direct service
Route Simplification and Restructuring Recommendation for New Haven

- **Eliminate variations** with low daily boardings and alightings
- Propose reduction in # of route variations and part-time routes:

<table>
<thead>
<tr>
<th>Route</th>
<th>Route Name</th>
<th># of Variations &amp; Part-time Routes</th>
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<tbody>
<tr>
<td>265/243</td>
<td>Congress Ave/Whalley Ave</td>
<td>Current: 12, Proposed: 3</td>
</tr>
<tr>
<td>238/212</td>
<td>Grand Ave/Dixwell Ave</td>
<td>Current: 12, Proposed: 2</td>
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</table>

- Replace eliminated variations with on-demand service (to be explored with CTDOT)
- Will use Mobility on Demand pilot at Norwalk Transit District and Pinellas Suncoast Transit Authority’s partnership with Uber for guidance
Route Simplification and Restructuring Example

Variation Elimination in Providence, Rhode Island

Transit Agency: Rhode Island Public Transit Authority (RIPTA)

- Removed variations and deviations that compromised service

Strategy:
- Completed 2012 operational analysis
- Communicate to bus customers the benefits
- Phased implementation
- Mindful of coverage issues and Title VI
Tool-Kit Strategy #5: Transit Signal Priority

Study Goal: Upgrade quality of service, operating efficiency and productivity

- **Traffic Lanes** prioritized for bus use only on:
  - Medians
  - Curb lanes
  - Grade separated busways
  - All-day or peak period-only lanes

- **Queue Jump Lanes**

- **Transit Signal Priority**
Transit Signal Priority (TSP) Recommendation in New Haven

Transit Signal Priority (TSP) and/or Queue Jump

Criteria for Transit Signal Priority (TSP) location:

- Congestion rating via Google Maps
- More than 500 daily weekday riders along roadway segment

Recommended TSP locations:

- Campbell Avenue between Route 1 and Main Street (West Haven)
  - 11 traffic signals (~1.7 mile distance)
- Chapel Street between Church Street and York Street (New Haven)
  - 3 traffic signals (~1,800 feet distance)
- Elm Street/Broadway between Howe Street and Temple Street (New Haven)
  - 5 traffic signals (~2,500 feet distance)
- Grand Avenue between Olive Street and Ferry Street (New Haven)
  - 8 traffic signals (~1.3 mile distance)
- Congress Avenue between Cedar Street and Davenport Avenue (New Haven)
  - 3 traffic signals (~4,100 feet distance)

Queue jumps to be analyzed
Proposed TSP Corridors in New Haven

- Campbell Avenue between Route 1 and Main Street
- Congress Avenue between Cedar Street and Davenport Avenue
- Grand Avenue between Olive Street and Ferry Street
- Elm Street/Broadway between Howe Street and Temple Street
- Chapel Street between Church Street and York Street
- Campbell Avenue between Route 1 and Main Street
Rhode Island Public Transit Authority (RIPTA):
- **R-Line Route** – from Pawtucket to Cranston via downtown Providence
  - Implemented Transit Signal Priority (TSP) and queue jumps
  - ¼ mile spacing between bus stops
  - 17% reduction in running time
  - No dedicated right-of-way bus lanes
Tool-Kit Strategy #6: Frequent and Diverse Transit Networks

Study Goals: Upgrade quality of service, operating efficiency and productivity and improve connections to jobs and schools

- Service that is frequent enough on major corridors (that serve high-demand locations) and not require passengers to consult a schedule.

- Strong connections to other services such as local service, express bus service or limited stop service and other modes.
Transit Network Recommendation for New Haven

- Improved headways (effective headways on trunk routes for both inbound and outbound service):
  - 238: 6.7 minutes
  - 212: 5.5 minutes
  - 243: 5.0 minutes
  - 265: 6.7 minutes

- Proposed span of service on major corridors:
  - 5:00am – 1:00am

- Enhanced bus service with limited express service overlay

- Limited stop service with BRT Lite stations spaced 1/2 –mile apart
  - Westville-West Haven BRT Lite (243/265)
    - 6.2-mile route
    - 13 stations
  - Hamden to New Haven BRT Lite (212/238)
    - 4.7-mile route
    - 9 stations

- Four (4) Mini-transfer hubs in New Haven and West Haven
  - 238: Dixwell Avenue and Putnam Avenue
  - 212: Grand Avenue and Ferry Street
  - 243: Whalley Avenue & Blake Street (Westville Center)
  - 265: Campbell Avenue & Main Street (West Haven Center)
Frequent and Diverse Transit Network Example

Houston, Texas

Transit Agency: Metropolitan Transit Authority (METRO) – Houston, Texas

- Revamped entire bus system to meet transit needs within sprawling city in 2015
- Established hubs where 2 or more frequent routes intersected and at rail/bus connections
- Implemented diverse headways and span of service with user-friendly color coding:

**METRO System Sistema de METRO**

Routes are color-coded based on service frequency during the midday and weekend periods:

- **15 minutes or better**
  - **15 minutos o mejor**
- **20 or 30 minutes**
  - **20 o 30 minutos**
- **60 minutes**
  - **60 minutos**
- **Weekday peak periods only**
  - **Solo horas pico de días laborales**
Phase 2: Three Alternatives for the Corridor Vision

1. **Enhanced bus** includes improvements to:
   - Provide consistent bus stop spacing
   - Implement Consistent Route Headways
   - Provide Consistent Span of Service
   - Clean-up of route variations
   - Potentially add new cross-town service

2. **“Lite” Bus Rapid Transit** builds upon Enhanced Bus and introduces a **limited service** with:
   - Transit signal priority (TSP)
   - Bus-only lanes or queue jumps
   - Prominent stations and new hubs
   - Real-time information at stations and hubs
   - Branded fleet with all door boarding
   - Off-board fare collection or smart card payment systems

3. Establish **“Mini Transit Hubs”** to:
   - Provide connections between routes and transfer points to route variations
   - Provide more direct travel
   - Coordinate transit time-tables with reduced wait time
Further Refinement of Alternatives

Next Steps

- Calculate time savings among selected alternatives
- Confirm the following:
  - Spans and headways for core service
  - Mini-hub and central hub locations
  - Transit Signal Priority (TSP) and queue jump or busway locations
- Calculate costs
- Consider on-demand service and associated costs
- Forecast ridership (Federal Transit Administration’s Simplified Trips-on-Project Software (STOPS))
- Stakeholder outreach
# Project Schedule

## Move New Haven
### TRANSIT MOBILITY STUDY

### PHASE 2

#### Task 6: Origins & Destination Survey
- Subtask 6.1: Development of O & D
- Subtask 6.2: Execution of O & D
- Subtask 6.3: Post Execution of O & D
- Subtask 6.4: Traffic, Parking, and Transit Data

#### Task 7: Phase 2 Outreach

#### Task 8: Alternatives Development
- Subtask 8.1: Alignment and Stops
- Subtask 8.2: Service Planning
- Subtask 8.3: Ridership
- Subtask 8.4: Financial Analysis
- Subtask 8.5: Graphics/Fact Sheet
- Subtask 8.6: Alternatives Definition Report
- TMC Review of Alternatives Definition Report
- VHB Revisions/Final Alternatives Definition Report

#### Task 9: Alternatives Evaluation
- Subtask 9.1: Evaluation Methodology
- Subtask 9.2: Alternatives Evaluation Analysis
- Subtask 9.3: Phase II Final Report Compilation
- TMC Review of Final Report
- VHB Revisions/Final Report

### Meetings
- Stakeholder Committee
- Community Engagement Committee
- Public
- Virtual Public

### Timeline

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<th>Task</th>
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