OVERVIEW & PHASE I RESULTS

OVERVIEW
The City of Tampa is conducting the InVision: Tampa Streetcar Feasibility Study to evaluate modernizing and extending the existing streetcar system. The study is designed to advance mobility, livability, and economic development goals presented in the InVision: Tampa Center City Plan and build on recent and ongoing studies assessing transportation needs in the City and region.

PROJECT GOALS
» Provide a “One-Seat Trip” From Ybor City to Tampa Heights through the heart of Downtown Tampa.
» Maximize exclusive guideway operations to avoid congestion, ensure travel time reliability, and minimize impacts on traffic operations.
» Deliver high quality, accessible service with full day and late evening hours, high frequency service, and passenger amenities.
» Design so other transit vehicles can share the guideway and stops.

SYSTEM MODERNIZATION
The project calls for the modernization of the existing system and an extension to better connect downtown destinations. Modernization improvements include: the reconfiguration of existing stations, the reconstruction of several tight turns, upgrading of the traction power system, and expansion or replacement of the HART Streetcar Barn.

PHASE I PREFERRED ALIGNMENT
During Phase 1, the City identified two north/south oriented alignments as the preferred alignment options for the extension. Along a combination of Tampa Street, Franklin Street, and Florida Avenue, these alignments extend enhanced transit service from the end of the existing line on Franklin Street through the core of Downtown, to the vicinity of Marion Transit Center, and north to Tampa Heights.

These preferred alignments have the potential to deliver these benefits:
» Provide convenient, congestion resistant connections between major residential areas, employment centers, and cultural, educational, and entertainment destinations.
» Offer first mile/last mile link to destinations from regional parking resources and local and regional transit services.
» Improve access to and connections between major public spaces and event venues.

Enhanced transit service along these preferred alignments also establishes a strong foundation for future extensions of the system, consistent with on-going regional transit planning initiatives.

CONTACT INFORMATION
Project information is available on the City of Tampa website at www.tampagov.net/streetcar. Please direct questions or comments to Milton Martinez, PE., 813.274.8998, streetcar@tampagov.net, www.tampagov.net/streetcar.
PHASE 2 RECOMMENDATIONS

MODERNIZATION OF THE EXISTING SYSTEM
To support modern streetcar operations, the following improvements will need to be completed to the existing system:

- Reconstruct tight turns to accommodate turning radii of modern vehicles.
- Upgrade stations to allow for level boarding and serve larger vehicles.
- Expand or replace the HART Streetcar Barn to accommodate storage and maintenance for modern street vehicles.

EXTENSION THROUGH DOWNTOWN TO TAMPA HEIGHTS

BROREIN STREET
- Eastbound Brorein Street from the existing system on Franklin Street to Florida Avenue.

FLORIDA AVENUE
- Northbound Florida Avenue in an exclusive guideway from Brorein Street.
- Northbound Florida Avenue in a shared travel lane from Harrison Street to Palm Avenue.

PALM AVENUE
- Westbound Palm Avenue in a shared lane from Florida Avenue to Tampa Street.

TAMPA STREET
- Southbound Tampa Street in an exclusive guideway from Palm Avenue to Kennedy Boulevard;
- Southbound Tampa Street in a shared lane from Kennedy Boulevard to Whiting Street;
- Eastbound Whiting Street in a median to connect to the existing system on Franklin Street

FRANKLIN STREET
- Franklin Street alignment is not recommended.
**PHASE 2 – PROJECT RECOMMENDATION OPEN HOUSE**

**Preliminary Preferred Alignment Alternatives**

**3. Tampa Street from Palm Avenue to Tyler Street**  
East Side Running in Exclusive **Transit Lane**

**4. Tampa Street from Tyler Street to Kennedy Boulevard**  
East Side Running in Exclusive **Transit Lane**

**5. Tampa Street from Kennedy Boulevard to Whiting Street**  
East Side Running in **Shared Lane**

**2. Florida Avenue from Harrison Street to Palm Avenue**  
East Side Running in **Shared Lane**

**1. Florida Avenue from Brorein Street to Harrison Street**  
West Side Running in Exclusive **Transit Lane**

**RECOMMENDED GUIDEWAY NOTES**

- All typical sections are within existing right-of-way.
- Franklin Street alignment is not recommended.
**EXISTING CONDITIONS**

**WEST**
- Walk: varies
- Parking: 11' to 11'
- Travel: 11' to 11'
- Bike: 8.5' to 5'
- Parking/Bike: 9.5' to varies

**EAST**
- Walk: varies
- Parking: 11' to 11'
- Travel: 11' to 11'
- Bike: 8.5' to 5'
- Parking/Bike: 9.5' to varies

**ALIGNMENT ALTERNATIVES & EVALUATION**

**1.1 - West Side Running in Exclusive Transit Lane**
- Maximizes Transit Travel Time Reliability
- Minimizes Traffic & Parking Impacts
- Allows for Shared Transit Use
- Minimizes Costs for ROW & Street Reconstruction

Maintains three travel lanes. East side parking and bike lane removed. Allows for right side stops in west side parking lane. Left turns to Kennedy and Cass displace west side parking.

**1.2 - West Side Running in Shared Lane**
- Maximizes Transit Travel Time Reliability
- Minimizes Traffic & Parking Impacts
- Allows for Shared Transit Use
- Minimizes Costs for ROW & Street Reconstruction

Maintains three travel lanes. Does not allow for right side stops. Left turns to Kennedy and Cass displace west side parking. Potential for blocked streetcar service with shared travel lane and west side parking.
**FLORIDA AVE BROREIN ST to HARRISON ST**

### Existing Conditions

#### West

<table>
<thead>
<tr>
<th></th>
<th>Walk</th>
<th>Parking/LTL</th>
<th>Travel</th>
<th>Travel</th>
<th>Travel</th>
<th>Bike</th>
<th>Parking/RTL</th>
<th>Walk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>11'</td>
<td>11'</td>
<td>11'</td>
<td>8.5'</td>
<td></td>
<td>70'-82'</td>
</tr>
</tbody>
</table>

#### East

<table>
<thead>
<tr>
<th></th>
<th>Walk</th>
<th>Parking/LTL</th>
<th>Travel</th>
<th>Travel</th>
<th>Travel</th>
<th>Bike</th>
<th>Parking/RTL</th>
<th>Walk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>11'</td>
<td>10'</td>
<td>4'</td>
<td>4'</td>
<td></td>
<td>70'-85'</td>
</tr>
</tbody>
</table>

### Alignment Alternatives & Evaluation

#### 1.3 - East Side Running in Exclusive Transit Lane

- Maximizes Transit Travel Time Reliability
- Minimizes Traffic & Parking Impacts
- Allows for Shared Transit Use
- Minimize Costs for ROW & Street Reconstruction

Maintains three travel lanes. West side parking and bike lane removed. Allows for right side stops on sidewalk but space is constrained. Right turns to Whiting and Washington displace east side parking.

#### 1.4 - East Side Running in Shared Lane

- Maximizes Transit Travel Time Reliability
- Minimizes Traffic & Parking Impacts
- Allows for Shared Transit Use
- Minimize Costs for ROW & Street Reconstruction

Maintains three travel lanes. Allows for right side stops with shift in bike lane. Potential for blocked streetcar service with shared travel lane and east side parking.
**2. FLORIDA AVE HARRISON ST to PALM AVE**

**EXISTING CONDITIONS**

<table>
<thead>
<tr>
<th>WEST</th>
<th>EAST</th>
</tr>
</thead>
<tbody>
<tr>
<td>WALK</td>
<td>8.5&quot;</td>
</tr>
<tr>
<td>TRAVEL</td>
<td>6.5&quot;</td>
</tr>
</tbody>
</table>

**ALIGNMENT ALTERNATIVES & EVALUATION**

**2.1 - East Side Running in Shared Lane**

- Maximizes Transit Travel Time Reliability
- Minimizes Traffic & Parking Impacts
- Allows for Shared Transit Use
- Minimize Costs for ROW & Street Reconstruction

Maintains three travel lanes. Avoids I-275 turn lane at Kay. Allows for right side stop near Marion Transit Center but requires ROW for the stop site. Potential for blocked streetcar service with shared travel lane.
Preliminary Preferred Alignment Alternatives

**EXISTING CONDITIONS**

<table>
<thead>
<tr>
<th></th>
<th>WEST</th>
<th>EAST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Walk</strong></td>
<td>11’</td>
<td>11’</td>
</tr>
<tr>
<td><strong>Travel</strong></td>
<td>11’</td>
<td>11’</td>
</tr>
<tr>
<td><strong>Travel</strong></td>
<td>15’</td>
<td>15’</td>
</tr>
<tr>
<td><strong>Travel</strong></td>
<td>11’</td>
<td>11’</td>
</tr>
<tr>
<td><strong>Walk</strong></td>
<td>47’</td>
<td>47’</td>
</tr>
</tbody>
</table>

**ALIGNMENT ALTERNATIVES & EVALUATION**

### 3.1 - East Side Running in Exclusive Transit Lane

- **Maximizes Transit Travel Time Reliability**
- **Minimizes Traffic & Parking Impacts**
- **Allows for Shared Transit Use**
- **Minimize Costs for ROW & Street Reconstruction**


### 3.2 - East Side Running in Shared Lane

- **Maximizes Transit Travel Time Reliability**
- **Minimizes Traffic & Parking Impacts**
- **Allows for Shared Transit Use**
- **Minimize Costs for ROW & Street Reconstruction**

**EXISTING CONDITIONS**

**SEGMENT LOCATION**

**Tyler St to Kennedy Blvd**

**Alignment Alternatives & Evaluation**

4.1 - East Side Running in Exclusive Transit Lane

- Maximizes Transit Travel Time Reliability
- Minimizes Traffic & Parking Impacts
- Allows for Shared Transit Use
- Minimizes Costs for ROW & Street Reconstruction

Maintains three travel lanes. West side parking and bike lane removed. Allows for right side stops in east side parking lane. Right turns can displace east side parking.

4.2 - East Side Running in Shared Lane

- Maximizes Transit Travel Time Reliability
- Minimizes Traffic & Parking Impacts
- Allows for Shared Transit Use
- Minimizes Costs for ROW & Street Reconstruction

**EXISTING CONDITIONS**

### WEST

<table>
<thead>
<tr>
<th>Walk</th>
<th>Parking/Bus Turn</th>
<th>BKE</th>
<th>Travel</th>
<th>Travel</th>
<th>Travel/LTL</th>
<th>Parking/OVL</th>
<th>Walk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Varies</td>
<td>8’</td>
<td>5’</td>
<td>10’</td>
<td>10’</td>
<td>10’</td>
<td>Varies</td>
<td></td>
</tr>
</tbody>
</table>

56’

70’ - 88’

### EAST

- Maintains three travel lanes.
- Does not allow for right side stops.
- Partially avoids left turn queuing at Jackson.
- Avoids passenger drop off and valet at the Hilton.
- Potential for blocked streetcar service with shared travel lane and east side parking and turn lanes.

**ALIGNMENT ALTERNATIVES & EVALUATION**

**5.1 - East Side Running in Shared Lane**

- **Maximizes Transit Travel Time Reliability**
- **Minimizes Traffic & Parking Impacts**
- **Allows for Shared Transit Use**
- **Minimize Costs for ROW & Street Reconstruction**

Maintains three travel lanes. Does not allow for right side stops. Partially avoids left turn queuing at Jackson. Avoids passenger drop off and valet at the Hilton. Potential for blocked streetcar service with shared travel lane and east side parking and turn lanes.
**EXISTING CONDITIONS**

**WEST**  
- **PARKING:** 8'  
- **TRAVEL:** 10'  
- **TRAVEL:** 11'  
- **PARKING:** 8'  
- **WALK:** Varies

**EAST**  
- **PARKING:** 8'  
- **TRAVEL:** 11'  
- **TRAVEL:** 11'  
- **PARKING:** 8'  
- **WALK:** Varies

**ALIGNMENT ALTERNATIVES & EVALUATION**

**6.1 - East Side Running in Shared Lane**

- **Maximizes Transit Travel Time Reliability**
- **Minimizes Traffic & Parking Impacts**
- ** Allows for Shared Transit Use**
- **Minimize Costs for ROW & Street Reconstruction**

Maintains existing travel lanes. Allows for right side stops in limited locations south of I-275. Potential for blocked streetcar service with shared travel lane and east side parking.

**NOTE:** Franklin Street alignment is not recommended.
### VEHICLE TECHNOLOGY

#### DECISION FACTORS

<table>
<thead>
<tr>
<th></th>
<th>REPLICA STREETCAR - Gomaco Birney Replica</th>
<th>PREMIUM BUS - New Flyer Xcelsior 60ft</th>
<th>MODERN STREETCAR - Siemens S70</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vehicle Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guideway Type</td>
<td>Fixed</td>
<td>Mixed</td>
<td>Fixed</td>
</tr>
<tr>
<td>Vehicle Dimensions</td>
<td>50' x 10'</td>
<td>60' x 8.5'</td>
<td>81' x 8.7'</td>
</tr>
<tr>
<td>Vehicle Passenger Capacity</td>
<td>101</td>
<td>123</td>
<td>225</td>
</tr>
<tr>
<td>Average Life Span</td>
<td>Approximately 30 years</td>
<td>Approximately 15 years</td>
<td>Approximately 30 years</td>
</tr>
<tr>
<td><strong>Vehicle Operations &amp; Costs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hourly System Capacity / Annual System Capacity</td>
<td>416 / 2.5M</td>
<td>507 / 3.1M</td>
<td>927 / 5.6M</td>
</tr>
<tr>
<td>Vehicle Trips Required for a Peak Demand of 2,000 Riders</td>
<td>20</td>
<td>16</td>
<td>9</td>
</tr>
<tr>
<td>Annual Operating Cost (in 2017 dollars)</td>
<td>$5.2M</td>
<td>$4.7M</td>
<td>$5.6M</td>
</tr>
<tr>
<td>High cost for parts. Low number of passengers carried in single vehicle means more drivers needed. High operating cost per rider.</td>
<td>Moderate number of passengers carried in single vehicle means fewer drivers needed. Moderate operating cost per rider.</td>
<td>High number of passengers carried in single vehicle means fewer drivers needed. Low operating cost per rider.</td>
<td></td>
</tr>
<tr>
<td>Capital Cost (in 2017 dollars)</td>
<td>$102M</td>
<td>$70M</td>
<td>$154M</td>
</tr>
<tr>
<td>Annualized Capital Costs (in 2017 dollars) (based on 30-year life cycle)</td>
<td>$3.4M</td>
<td>$2.4M</td>
<td>$5.2M</td>
</tr>
<tr>
<td><strong>Rider Experience</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ease of Access</td>
<td>Low</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>One boarding door, high floor entrance, and manually operated ramp limit ease of access for wheelchairs, bikes, and strollers.</td>
<td>Up to five boarding doors and low floor entrance allow ease of access for wheelchairs, bikes, and strollers.</td>
<td>Eight wide boarding doors and low floor entrance allow for ease of access and fast boarding for wheelchairs, bikes, and strollers.</td>
<td></td>
</tr>
<tr>
<td>Ride Quality</td>
<td>Moderate</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Potential to boost ridership based on travel comfort, accessibility, ride quality, and travel time reliability</td>
<td>Moderate</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Potential to influence property values and development potential along alignment</td>
<td>Moderate</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Lower perceived comfort, ease of access, and ride quality influences ridership. Fixed rail leads to evidence of permanence and confidence in investment.</td>
<td>Lower perceived comfort, ease of access, and ride quality influences ridership. Lower perception of permanence reduces development potential.</td>
<td>Higher perceived comfort, ease of access, and ride quality influences ridership. Fixed rail leads to evidence of permanence and confidence in investment.</td>
<td></td>
</tr>
</tbody>
</table>

*All costs are estimates for comparison purposes only*