Rapid and Local Improvement Strategies and Recommendations
Problem Identification

Field Visit

- **Missing amenities** at bus stops (69% without shelters and 31% without benches)
- **Improper location** (53% of stops are mid block or near sided)
- **Lack of protected crosswalks** near stops
- **Discontinuous sidewalks**
- **Signal coordination** issues

Data Analysis

- **Delay** due to congestion of up to 20 mins/trip
- **Dwell time** between 20 and 45 mins/trip
- Greatest variability entering/existing downtown Santa Cruz and near Green Valley Road on Freedom Blvd
Problem Identification (continued)

Operator Input
• Turning vehicles cut buses off
• High pedestrian volumes
• Visibility challenges
• Difficulty turning
• Customers using cash increases dwell time
• Customers not familiar with service

Public Outreach
• Increase frequency and coverage
• Increased speed and efficiency
• Enhanced wheelchair access, security, and lighting
• Improved bus shelters and more amenities
• Provide up to date schedules and information
Figure 1A: Problem Identification - Santa Cruz to Capitola
- Additional 91X bus stop requested to serve the Banana Belt neighborhood
- Missing crosswalk at intersection of Cotton Ln & Soquel Dr
- Screen lights requested at intersection of Water St & Poplar Ave, and San Juan Ave & Soquel Ave
- Signal timing issues along Front St in front of Santa Cruz Transit Center
- Missing benches at the following intersections: Capitola Rd & 16th Ave, 41st Ave & Cross Rd, Water St & Ocean St
- Difficult five-lane pedestrian crossing along Soquel Dr
- Two signalized intersections located within 200 feet of each other that contribute to delay
- Additional bus stop requested at the intersection of Capitola Rd & Harborview Ct
- Missing crosswalks along Capitola Rd between McKee Ave and Thompson Ave

Figure 1B: Problem Identification - Capitola to Aptos
- Missing crosswalks along Soquel Dr between Capitola Ave and Porter Gulch Rd
- Missing benches along Soquel Dr between Robertson St & State Park Dr
- Missing benches along Soquel Dr between Mtr Vista Dr & State Park Dr
- High activity commercial area with many parking lots and driveways
- Missing bench at the intersection of Soquel Dr & Monroe Ave
- Additional bus stop requested at the intersection of Soquel Dr & Sprockels Dr
- Corridor Challenges:
  - High Travel Time Variability
  - Congestion-Induced Delay
  - Slow Bus Speeds
  - Challenging Bus Turn
- Bus Routes:
  - City Limits
  - Transit Center
  - Route 99A
  - Route 99W
  - Route 91X
Industry Best Practice

**Bus Priority Treatment**
- Dedicated Transit Lanes
- Traffic Movement Modifications
- Early Green/Extended Green Signal Operations (TSP)
- Queue Jumps

**Mobility and Access**
- Mobility Hubs
- Improved Roadway Crossings to Access Bus Stops
- Improved Sidewalks and Curb Ramps
- Level/Near-Level Boarding
Industry Best Practice

Bus Operations

Route Restructuring

Bus Stop Consolidation

Far-Side Stop Placement

In-Lane Stopping/ Bus Bulbs/ Transit Islands

Bus Operations

Red Curb
Industry Best Practice

Stop Amenities

1. Lighting and Security
2. Monument Sign
3. Real-time Arrival Information
4. Bus Shelter
5. Bench
6. System Map
7. Ticketing Kiosk
8. Trash receptacle
9. Bike Rack
10. ADA Ramps

Source: EMBARK, Oklahoma City
Proposed Rapid Corridors Improvements
<table>
<thead>
<tr>
<th>Improvement Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bus Stop Consolidation and Relocation</strong></td>
<td>Relocate, add, and remove stops to achieve a 1/2-mile stop spacing. Place stops to improve stop accessibility and safety.</td>
</tr>
<tr>
<td><strong>Enhance Bus Stop Amenities</strong></td>
<td>Install additional bus stop amenities, such as shelters, benches, and lighting, to improve comfort and safety of riders.</td>
</tr>
<tr>
<td><strong>Install Bus Bulbs &amp; Transit Islands</strong></td>
<td>Install bus bulbs and transit islands to allow buses to step into lane, removing the need to pull out of traffic to the curb and avoiding the need to wait for a gap in traffic to depart from the bus stop. Where stops are adjacent to bike lanes and space allows, provide a transit island to allow the bikes to travel behind the stop, eliminating bus-bike conflicts.</td>
</tr>
<tr>
<td><strong>Transit Signal Priority (TSP)</strong></td>
<td>Technologies used to reduce transit vehicle delays at signalized intersections. Examples include holding lights green for a few seconds, if needed to allow a bus to pass through before the light turns red, and turning the light green a few seconds earlier to reduce the wait time at red lights.</td>
</tr>
<tr>
<td><strong>Enhance Pedestrian Crossings</strong></td>
<td>Install Rectangular Rapid Flashing Beacons (RRFBs), Pedestrian Hybrid Beacons (PHBs), and high-visibility crosswalks to increase yielding of vehicles to pedestrians and enhance pedestrian safety around bus stops.</td>
</tr>
<tr>
<td><strong>Queue Jumps</strong></td>
<td>A queue jump is a travel lane specially marked or signed for transit vehicles at traffic signals that allows buses to get ahead of the traffic queue.</td>
</tr>
<tr>
<td><strong>Bus-Only Lanes and Shared Bus/Bike Lanes</strong></td>
<td>Bus-only lanes and shared bus/bike lanes are lanes restricted for use by buses and bikes only and are used to separate buses and bikes from traffic congestion.</td>
</tr>
<tr>
<td><strong>Road &amp; Intersection Reconfiguration</strong></td>
<td>Modify lane and intersection geometry and signal operations to optimize transit movements.</td>
</tr>
</tbody>
</table>
Approach for Bus Stop Recommendations

**Location:**
- Near side
- ~1/3 mile for rapid and ~1,000ft for local

**Existing Amenities:**
- Shelter
- Bench
- Lighting
- Crosswalk
- Sidewalk

**Boardings:**
- >15 boardings
Key Rapid Intersection Draft Concepts
Front Street Bus Only Lane

- Convert outer lane into Bus Only Lane (pending traffic analysis evaluating the effect of removing one left turn lane from WB Soquel)
- Keep SB through the intersection and transition on the other side of the signal where the NB bus left turn lane currently is
- Convert drop-lane into Bus Only Lane
- Remove left-turn lane and move bus access to the southern driveway
- Provide large bulbout with the additional space from the lane reduction to improve access to the Transit Center

Legend:
- Bus Path of Travel
- Vehicle Path of Travel
- Bus Only Lane
- Bus Stop
River Street Northbound Bus Only Lane
Water Street/Soquel Avenue and Morrissey Avenue Intersection Concept

- Remove pork-chop to allow for new lanes
- Allow bus queue jump from EB Bus Only Lane with TSP
- Install EB through lane and EB Bus Only Lane on Water St
- Eliminate left-turn to S Morrissey Ave
- Add island or delineation to separate through traffic lanes
- Convert outer lane into a 15' shared bus and bicycle lane and have inside lanes be 11'. Refer to Figure 4 for full extents of bus/bike lanes
- Convert Soquel Ave to two-way traffic
- Consolidate into one island and relocate crosswalk to new park alignment
Soquel Drive and Porter Street Queue Jump
Freedom Boulevard and Lincoln Street Intersection Improvements

Reconfigure Lincoln St connection to Freedom to better align buses with proposed and relocated bus stops.

Add new signal to provide TSP for SB buses turning on to Lincoln St.
Local Corridors
## Goals and Performance Measures

<table>
<thead>
<tr>
<th>Type of Improvement</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus Speed &amp; Reliability</td>
<td>• On-Time Performance&lt;br&gt;• Trip Time&lt;br&gt;• Wait Times&lt;br&gt;• User Delay</td>
</tr>
<tr>
<td>Bus Stop Access</td>
<td>• Bus Stop Accessibility&lt;br&gt;• Bicycle and Pedestrian Safety&lt;br&gt;• Ridership&lt;br&gt;• Bus Stop Coverage&lt;br&gt;• User Delay</td>
</tr>
<tr>
<td>Bus Stop Amenities</td>
<td>• Passenger Waiting Experience&lt;br&gt;• Ridership</td>
</tr>
<tr>
<td>Costs &amp; Schedule</td>
<td>• Operation &amp; Maintenance Costs&lt;br&gt;• Capital Costs&lt;br&gt;• Timeline</td>
</tr>
</tbody>
</table>
Next Steps
Project Schedule

SEPTEMBER 2022 – JANUARY 2023
Data Collection and Existing Conditions

TECHNICAL WORKING GROUP MEETING, BUS OPERATORS INTERVIEW, FIELD INVENTORY

JANUARY–FEBRUARY 2023
Round 1 Community Engagement Survey and Pop-up Events

FEBRUARY – JULY 2023
Identify problems, develop strategies, and prioritize recommendations

TECHNICAL WORKING GROUP MEETING AND Elected Leadership Meeting

AUGUST – SEPTEMBER 2023
Round 2 Community Engagement

TECHNICAL WORKING GROUP MEETING

OCTOBER 2023
Develop Implementation Plan

NOVEMBER/DECEMBER 2023
METRO BOARD STUDY SESSION

OCTOBER 2023 – JANUARY 2024
Prepare Final Report and Presentation
Upcoming Project Activities

• Meetings with elected leaders
• Round 2 engagement
• Prioritize recommendations
• Develop implementation strategy and financial plan
• Produce final report and presentation
Questions or Comments?

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Director, Planning & Development