Curbside Management

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Curb / Flex Zone / Parking Lane Functions

Access for Commerce: Goods and services reach their market

Access for People: People arrive at destinations

Storage: Provides storage for vehicles or equipment

Mobility: Moves people and goods

Greening: Enhances aesthetics and environmental health

Activation: Offers vibrant social spaces
Who Wants a Piece of the Curb?

- Drivers, both TNC and non-TNC
- Parked vehicles and electric vehicle (EV) charging
- Bicycles and bicycle infrastructure
- Pedestrians and crossing infrastructure
- Couriers and delivery vehicles
- Local businesses
- Mobile vendors
- Transit and transit infrastructure
- ADA access
- Emergency services
- Taxis, transportation network companies (TNCs), and shuttles
- Parklets and streetscape
Importance of Managing the Curb

Current System: *Unorganized streets with lots of friction and reliability issues*

1. More modes competing for curbside
2. Increasing urbanization
3. E-commerce boom = increases delivery vehicles
4. Ride-hailing

*The time to reimagine the curbside space is now!*
Curbside Treatment: Relocation

- **Reallocating** the distribution of space of the curb while keeping the overall space for each mode constant
- Relocate curb space to **better utilize** the curb zone based on surrounding needs
Curbside Treatment: Conversion

- Convert curb space to different uses to better utilize the curb zone

- Understanding current / future curb demand
Curbside Treatment: Conversion

Alternative Curbside Uses

- Bus Lanes
- Bike Lanes
- Traffic Calming
- Delivery Hub Locker
- Shared-Micro Mobility Corral (Bird Cages)
- Transportation Network Company (TNC) Drop-Off Zone
Curbside Treatment: Flexibility

- Convert curb space to flexible time of day zones to meet demand-based uses throughout the day.
- Convert curbspace, implement technology, and modify infrastructure.
- Effective in mixed-use land scenarios where there are overlapping demands for space.
- Performance based pricing.
Treatment Selection Process

1. Inventory Existing Conditions
2. Identify Land Use and Activity Considerations to Develop Modal Priority
3. Identify Appropriate Treatment Alternatives
4. Assess and Present Alternatives for Public Feedback
5. Refine and Implement Treatments
Treatment Selection Process: Existing Conditions

Data Collection

- Large number and variety of data points collected
  - More complicated than simply capturing how many vehicles use a space in a day
  - Lack of standardization across agencies
- Occupancy Data: parking occupancy by block
- Vehicle Data: type of vehicle, license plate state and number, and the display of residential/visitor parking permits
- Technology makes the process more efficient
Treatment Selection Process: Modal Priority

- **CurbLR** is the becoming the standard way to store and share essential curb information.
- Overlay with maps to determine the adjacent context (pedestrian realm and vehicular travelway).
Treatment Selection Process: Alternatives

Curb Productivity

- **Curb Productivity Index** takes into account vehicle activity, occupancy, size, and dwell time to provide a relative utility of a given curb space.

\[
\text{Vehicle Curb Productivity} = \frac{\text{Vehicle Activity}}{\text{Total Dwell Time} \times \text{Curb Space Needed Per Vehicle}}
\]
If a car carrying two people is parked in an on-street parking space for two hours, that space served 2 passengers in 2 hour for those 20 ft.

\[
\frac{2 \text{ passengers}}{2 \text{ hours } \times 20 \text{ feet}} = 0.05 \frac{\text{passengers}}{\text{hour-feet}}
\]

To put this into units that are more applicable to street configuration, convert the space unit to the number of people per hour that would be served for every 20 feet of space.

\[
0.05 \frac{\text{passengers}}{\text{hour-feet}} \times 20 \text{ feet} = 1 \text{ passenger served per hour per 20 feet of curb}
\]
If in two hours a bus drops off and picks up 100 passengers, all bus loading events combined takes 12.5 minutes (i.e. 30 buses each dwelling for an average of 25 seconds), and the bus is 60 ft long, the curb productivity would be:

\[
\frac{100 \text{ passengers}}{12.5 \text{ minutes} \times 60 \text{ ft}} = \frac{8 \text{ passengers}}{\text{hour-ft}}
\]

= 160 passengers / hour-20ft
Treatment Selection Process: Alternatives

Curb Productivity

Number of people who can use the curb

- Parking: 60
- Drop-offs: 1,800
- Transit: 32,000
- Bicycles: 60,000
- Walking: 72,000
### Treatment Selection Process: Feedback

**Example:** NYC DOT surveyed Nostrand Ave merchants to ask where they would prefer loading zones with varying levels of restrictions.

#### Timing of merchant deliveries

<table>
<thead>
<tr>
<th>Time</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-10 AM</td>
<td>19%</td>
</tr>
<tr>
<td>10 AM-1 PM</td>
<td>31%</td>
</tr>
<tr>
<td>1-4 PM</td>
<td>26%</td>
</tr>
<tr>
<td>4-7 PM</td>
<td>13%</td>
</tr>
<tr>
<td>Other</td>
<td>11%</td>
</tr>
</tbody>
</table>

#### Delivery duration on Nostrand Ave

<table>
<thead>
<tr>
<th>Duration</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;10 mins</td>
<td>51%</td>
</tr>
<tr>
<td>10-30 mins</td>
<td>37%</td>
</tr>
<tr>
<td>&gt;30 mins</td>
<td>12%</td>
</tr>
</tbody>
</table>

#### Nostrand Ave delivery zone requests

- Prefer a delivery zone in front of your store in effect for 2-3 hours per day: 46%
- Prefer a delivery zone down the block or across the street in effect all day: 33%
- I prefer the existing situation: 10%
- Prefer a delivery zone around the corner that is in effect all day: 11%
Treatment Selection Process: Implement Monitor, Communicate, and Enforce the Rules

- "What gets measured gets managed"

- Technology to actively monitor, communicate, and manage use
  - Mobile payment technology
  - On street parking sensors
Looking to the Future: Challenges

“Ultimately, cities need to go curb by curb, street by street to determine priorities and policies. A data-driven approach to reconfiguring curbside space will reduce conflicts between modes and identify the most productive uses of space in each corridor.”