Welcome
Meeting Agenda

• Introductions
• Project Update
• Transitways and Managed Lanes  
  – Breakout Session
• Level 2 Screening Criteria Review
• Lakefront Trail Update
• Next Steps
CPC/TF Meeting #6 Recap

• Meeting held May 18, 2017
• 63 Attendees
• Context Tailored Treatments Alternatives Workshop
• Meeting held July 12, 2017
• 262 Attendees
• Exhibits and PowerPoint:
  – Study Background/Phase I Process
  – Initial Range of Alternatives
  – Level 1 Screening
  – Context Tailored Treatments Alternatives
• 280 Comments received
• 2,439 Surveys received
Sample Question with Responses:

Q11 Creating new vehicle access to Addison going to/from the south on North Lake Shore Drive would be beneficial for access to the park and circulation.

- 49% “Agree”
- 24% No Opinion
- 25% “Disagree”
• NLSD users are multi-modal
• NLSD bus riders and motor vehicle users are both more likely to ride the bus if travel times are reliable and consistent
• Majority of NLSD bus riders’ destination is downtown, while the majority of NLSD motor vehicle users’ destination is other locations
• Maintaining a mix of lake, park, and city views while traveling along NLSD/Lakefront Trail is important
• Adding vehicle access at Addison is favored
Example Survey Feedback

Q15: Modes of Transportation Used Along the North Lake Shore Drive Corridor in the Past Year (Top 5 Responses)
2,143 Answered  Respondents made multiple selections

Stakeholder input will influence further analysis and decision-making
Example Survey Feedback

Q3: How many vehicles do you own?
2,439 Answered

Survey Respondents
- 1 car: 48%
- 0 cars: 41%
- 2+ cars: 11%

City of Chicago Residents
- 1 car: 45%
- 2+ cars: 28%
- 0 cars: 27%

Cook County Residents
- 1 car: 41%
- 2+ cars: 41%
- 0 cars: 18%

Stakeholder input will influence further analysis and decision-making
Example Survey Feedback

Q16: When you leave your home via motor vehicle and use North Lake Shore Drive, where is your most common destination?

1,967 Answered

- Downtown Chicago: 48%
- Surrounding neighborhoods: 22%
- Other area: 19%
- Lakefront/Beach: 6%
- Lincoln Park: 5%

Stakeholder input will influence further analysis and decision-making
**Example Survey Feedback**

**Q21:** Which of these factors would help make riding the bus along North Lake Shore Drive a better option for you?

1,094 Answered

- **If it was more cost-effective than other modes:** 3%
- **Other:** 14%
- **If bus speed along North Lake Shore Drive was faster than it is now:** 15%
- **I would not switch to a bus:** 21%
- **If bus travel time on North Lake Shore Drive was consistent and not affected by traffic:** 46%

Stakeholder input will influence further analysis and decision-making.
## Level 1 Screening Summary

<table>
<thead>
<tr>
<th>Initial Range of Alternatives Category</th>
<th>Initial Range of Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>No-Action</td>
<td></td>
</tr>
<tr>
<td>Transitways</td>
<td></td>
</tr>
<tr>
<td>Managed Lanes</td>
<td></td>
</tr>
<tr>
<td>Tunnels and Causeways</td>
<td></td>
</tr>
<tr>
<td>Context Tailored Treatments</td>
<td></td>
</tr>
</tbody>
</table>
Context Tailored Treatments

Previous Meetings:

<table>
<thead>
<tr>
<th>INITIAL RANGE OF ALTERNATIVES CATEGORY</th>
<th>ALTERNATIVES TO BE EVALUATED FURTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context Tailored Treatments</td>
<td>Corridor Modernization</td>
</tr>
<tr>
<td></td>
<td>Compressed Roadway</td>
</tr>
<tr>
<td></td>
<td>Frontage Drive</td>
</tr>
</tbody>
</table>

Context Tailored Treatments Alternatives were presented for feedback at Task Force #6 and Public Meeting #3
## Transitways and Managed Lanes

### Today’s Meeting:

<table>
<thead>
<tr>
<th>INITIAL RANGE OF ALTERNATIVES CATEGORY</th>
<th>ALTERNATIVES TO BE EVALUATED FURTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transitways</td>
<td>Transit Advantages at Junctions</td>
</tr>
<tr>
<td></td>
<td>Bus on Shoulder - Right</td>
</tr>
<tr>
<td></td>
<td>Dedicated Transitway - Left</td>
</tr>
<tr>
<td></td>
<td>Dedicated Transitway - Off Alignment</td>
</tr>
<tr>
<td>Managed Lanes</td>
<td>High Occupancy Vehicle Lane</td>
</tr>
<tr>
<td></td>
<td>High Occupancy Toll Lane</td>
</tr>
<tr>
<td></td>
<td>Express Toll Lane</td>
</tr>
<tr>
<td></td>
<td>Bus Only Lane</td>
</tr>
<tr>
<td></td>
<td>Express Reversible Lanes</td>
</tr>
<tr>
<td></td>
<td>Toll Lanes</td>
</tr>
</tbody>
</table>
Two categories of transit improvement options are under consideration for combination with CTT alternative(s):

- **Transitways** (Options that *add dedicated transit space in addition to existing general purpose lanes to improve bus mobility*).

- **Managed Lanes** (Options that *convert one or more existing general purpose lanes to a managed lane to provide high mobility for buses and potentially some autos*).
Review of Existing Transit Conditions
Transit Facts

• Approximately **69,000** transit trips on 9 corridor bus routes every weekday

• Weekday transit trips account for approximately **1 in 5** of all passenger trips on NLSD (Higher during peak periods)

• Most transit trips take place in peak periods when speed and reliability experience the greatest variability
Need for Transit Improvements

- NLSD is the busiest bus corridor in the CTA system.
- Belmont/Lake Shore Drive is the busiest CTA bus stop during the AM peak period.
- Transit trips along NLSD are projected to grow 15-20% by 2040.
Customer Experience

- Speeds on Outer Lake Shore Drive vary between 11 and 40 mph, depending on time of day and overall congestion levels.
- This means the same trip can take 3 to 4 times longer during congested times than at uncongested times.
- Variability also causes gaps and bus bunching, which can increase wait times and crowding.
- Approximately 60% of NLSD transit trips take place during peak periods, when speeds are slowest and most variable.

Example: Customer Experience: #147 AM Travel Times:

- Uncongested: 8 Minutes (Average at 6 AM)
- Typical: 18 Minutes (Average at 8 AM)
- Bad Day: 31 Minutes (95th Percentile at 8 AM)
Overview of Transitway Alternatives
## Transitway Alternatives

<table>
<thead>
<tr>
<th>Initial Range of Alternatives Category</th>
<th>Alternatives to be Evaluated Further</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transitways</td>
<td>Transit Advantages at Junctions</td>
</tr>
<tr>
<td></td>
<td>Bus on Shoulder - Right</td>
</tr>
<tr>
<td></td>
<td>Dedicated Transitway - Left</td>
</tr>
<tr>
<td></td>
<td>Dedicated Transitway - Off Alignment</td>
</tr>
</tbody>
</table>

Transit Advantages at Junctions

Bus on Right Shoulder

Dedicated Transitway on Left

Dedicated Transitway - Off Alignment
Transit Advantages at Junctions

Example at Fullerton Junction

- Bus-only Queue-jump Lane
- Bus Priority Signal
- Traffic Signal with Bus Priority Phase

Lake Shore Drive
Transit Advantages: Queue Jump Lanes

• Short lane that allows buses to bypass queues of general traffic

• Located at, or prior to, a junction or signalized intersection

Jeffery Ave at Anthony Ave, Avalon Park
Transit Advantages: Transit Signal Priority

- Reduces bus wait time at traffic signals by holding green lights longer or shortening red lights
- TSP lowers intersection dwell time for transit vehicles, lowering overall runtime
*NLSD between Grand and Montrose Avenues is depicted.
Bus on Right Shoulder

Proposed Typical Section Looking North Between Junctions*

Corridor Modernization Concept with Bus on Right Shoulder

*NLSD between Grand and Montrose is depicted.
Dedicated Transitway on Left

*Proposed Typical Section Looking North Between Junctions*

Corridor Modernization Concept with Dedicated Transitway Left Side

*NLSD between Grand and Montrose is depicted.*
Dedicated Transitway Off Alignment

Proposed Typical Section Looking North Between Junctions*

Corridor Modernization Concept with Dedicated Transitway Off Alignment

*NLSD between Grand and Montrose is depicted.
Summary of Transitway Alternatives

• Bus on Right Shoulder
  – Multi purpose auxiliary lane on right shoulder

• Dedicated Transitway on Left
  – Transit lanes in center of Drive avoid obstructions to enhance transit operations
  – Bus-only ramps at select junctions

• Dedicated Transitway Off Alignment
  – Transit lanes on separate alignment avoid obstructions to enhance transit operations
  – Bus-only ramps to connect to transitway
Overview of Managed Lane Alternatives
Managed Lanes Definition

What are Managed Lanes?
Lanes that use one or more operational strategies to manage traffic demand and operate more efficiently than general purpose lanes.
The NLSD project is looking at tolling as a strategy for both funding and/or traffic management.

There are two types of pricing / tolling strategies:

- Pricing only managed lanes to provide a reliable trip for buses and autos
- Tolling all lanes as a direct and sustainable revenue source
- Both can be compatible with one another

NLSD is working with CMAP and will further coordinate with planning efforts in the region to analyze tolling expressways as a long term operational sustainability strategy.
Managed Lanes Benefits

• Trip time reliability
• Time savings
• Improved mobility
• Improved transit service
• Congestion management
• Long term sustainability and adaptability
Managed Lane Considerations

- Vehicle eligibility determination
- Access
- Pricing
- Economic Equity
- Enforcement
- Unique features of NLSD
- Traffic impacts on local streets
## Managed Lanes

<table>
<thead>
<tr>
<th>INITIAL RANGE OF ALTERNATIVES CATEGORY</th>
<th>ALTERNATIVES TO BE EVALUATED FURTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managed Lanes</td>
<td>High Occupancy Vehicle Lane</td>
</tr>
<tr>
<td></td>
<td>High Occupancy Toll Lane</td>
</tr>
<tr>
<td></td>
<td>Express Toll Lane</td>
</tr>
<tr>
<td></td>
<td>Bus Only Lane</td>
</tr>
<tr>
<td></td>
<td>Express Reversible Lanes</td>
</tr>
<tr>
<td></td>
<td>Toll Lanes</td>
</tr>
</tbody>
</table>
Managed Lanes Roadway Configurations

- High Occupancy Vehicle (HOV) Lane
- High Occupancy Toll (HOT) Lane
- Express Toll Lane
- Bus Only Lane
- Express Reversible Lanes
- Toll Lanes

- **Option A** – Three-plus-One Managed Lane
- **Option B** – Two-plus-Two Managed Lanes
- **Option C** – Three-plus-Two Reversible Managed Lanes
- **Option D** – Four-plus-One Moveable Contraflow Lane
Managed Lane Access

• **Junction spacing challenges**
  – Close junction spacing limits ability to safely weave into and out of managed lanes
  – Direct express bus access needed at 6 junctions

• **Continuous vs. Direct managed lane access**
  – Continuous access is not feasible for NLSD
  – Direct access to/from managed lanes needed to avoid unsafe weaving
  – Number of managed lane access points must be limited for high mobility and travel time reliability
Potential Managed Lane Alternatives
Potential managed lane roadway designs:

- **Option A** – Three-plus-One Managed Lane (Bus-only or Bus & Auto)
- **Option B** – Two-plus-Two Managed Lanes
- **Option C** – Three-plus-Two Reversible Managed Lanes
- **Option D** – Four-plus-One Moveable Bus-Only Contraflow Lane (NB and SB, or SB Only)
Existing General Auto Access

- Grand
- Chicago
- Michigan
- LaSalle
- Fullerton
- Belmont
- Irving Pk.
- Montrose
- Wilson
- Lawrence
- Foster
- Bryn Mawr
- Hollywood

- Existing General Purpose Auto Access
Existing General Purpose Auto Access to Remain

Potential Combined Bus and/or Managed Auto Access
Express Bus Access

- Existing General Purpose Auto Access to Remain
- Potential Combined Bus and/or Managed Auto Access
- Express Bus-only Managed Lane Access
Typical Section Between Junctions

*Existing Typical Section Looking North*

*NLSD between Grand and Montrose Avenues is depicted.*
Option A – 3+1 Bus-Only Managed Lane*

Proposed Typical Section Looking North Between Junctions**

*Converts one general purpose lane in each direction to a Bus-Only Managed Lane.
**NLSD between Grand and Montrose Avenues is depicted.
Option A – 3+1 Managed Lane*

Proposed Typical Section Looking North
Between Junctions**

*Converts one general purpose lane in each direction to a Shared Bus/Auto Managed Lane.
**NLSD between Grand and Montrose Avenues is depicted.
Option B – 2+2 Managed Lanes*

Proposed Typical Section Looking North Between Junctions**

*Converts two general purpose lanes in each direction to Shared Bus/Auto Managed Lanes.
**NLSD between Grand and Montrose Avenues is depicted.
Option C – 3+2 Reversible Managed Lanes*

*Replaces one general purpose lane in each direction with two Reversible Managed Lanes.

**NLSD between Grand and Montrose Avenues is depicted.

Proposed Typical Section Looking North Between Junctions**
Option D – 4+1 Contraflow Managed Lane*

Proposed Typical Section Looking North Between Junctions

*Provides Contraflow Bus-only Lane in off-peak directions via moveable concrete barriers.

Moveable Barriers

Contraflow Bus-only Lane A.M. Peak Period Shown

Existing Roadway Width
## Transitways and Managed Lanes

We’d appreciate your comments on:

- Issues/concerns with design elements
- Preferences for design elements
- Locations where additional information needed

### Initial Range of Alternatives Category

<table>
<thead>
<tr>
<th>Transitways</th>
<th>Alternatives to be Evaluated Further</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Transit Advantages at Junctions</td>
</tr>
<tr>
<td></td>
<td>Bus on Shoulder - Right</td>
</tr>
<tr>
<td></td>
<td>Dedicated Transitway - Left</td>
</tr>
<tr>
<td></td>
<td>Dedicated Transitway - Off Alignment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Managed Lanes</th>
<th>High Occupancy Vehicle Lane</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High Occupancy Toll Lane</td>
</tr>
<tr>
<td></td>
<td>Express Toll Lane</td>
</tr>
<tr>
<td></td>
<td>Bus Only Lane</td>
</tr>
<tr>
<td></td>
<td>Express Reversible Lanes</td>
</tr>
<tr>
<td></td>
<td>Toll Lanes</td>
</tr>
</tbody>
</table>
Transitways and Managed Lanes Workshop

Breakout 1: 45 min
Break: 10 min
Breakout 2: 45 min

BREAKOUT GROUPS
(color assigned groups)
Level 2 Screening Criteria Review
# Level 1 Screening Summary

<table>
<thead>
<tr>
<th>INITIAL RANGE OF ALTERNATIVES CATEGORY</th>
<th>INITIAL RANGE OF ALTERNATIVES</th>
<th>RECOMMENDED FOR DISMISSAL</th>
<th>ALTERNATIVES TO BE EVALUATED FURTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>No-Action</td>
<td>No-Action</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Transitways</td>
<td>Transit Advantages at Junctions</td>
<td></td>
<td>Transit Advantages at Junctions</td>
</tr>
<tr>
<td></td>
<td>Bus on Shoulder - Right</td>
<td></td>
<td>Bus on Shoulder - Right</td>
</tr>
<tr>
<td></td>
<td>Dedicated Transitway - Left</td>
<td></td>
<td>Dedicated Transitway - Left</td>
</tr>
<tr>
<td></td>
<td>Dedicated Transitway - Off Alignment</td>
<td></td>
<td>Dedicated Transitway - Off Alignment</td>
</tr>
<tr>
<td></td>
<td>Light Rail Transit</td>
<td></td>
<td>Light Rail Transit</td>
</tr>
<tr>
<td>Managed Lanes</td>
<td>High Occupancy Vehicle Lane</td>
<td></td>
<td>High Occupancy Vehicle Lane</td>
</tr>
<tr>
<td></td>
<td>High Occupancy Toll Lane</td>
<td></td>
<td>High Occupancy Toll Lane</td>
</tr>
<tr>
<td></td>
<td>Express Toll Lane</td>
<td></td>
<td>Express Toll Lane</td>
</tr>
<tr>
<td></td>
<td>Bus Only Lane</td>
<td></td>
<td>Bus Only Lane</td>
</tr>
<tr>
<td></td>
<td>Express Reversible Lanes</td>
<td></td>
<td>Express Reversible Lanes</td>
</tr>
<tr>
<td></td>
<td>Toll Lanes</td>
<td></td>
<td>Toll Lanes</td>
</tr>
<tr>
<td>Tunnels and Causeways</td>
<td>Submerged Express Tunnel in Lake</td>
<td></td>
<td>Submerged Express Tunnel in Lake</td>
</tr>
<tr>
<td></td>
<td>Land Based Express Tunnel</td>
<td></td>
<td>Land Based Express Tunnel</td>
</tr>
<tr>
<td></td>
<td>Causeway in Lake</td>
<td></td>
<td>Causeway in Lake</td>
</tr>
<tr>
<td>Context Tailored Treatments</td>
<td>Corridor Modernization</td>
<td></td>
<td>Corridor Modernization</td>
</tr>
<tr>
<td></td>
<td>Compressed Roadway</td>
<td></td>
<td>Compressed Roadway</td>
</tr>
<tr>
<td></td>
<td>Frontage Drive</td>
<td></td>
<td>Frontage Drive</td>
</tr>
</tbody>
</table>
Alternatives Screening Process

1. Initial Range of Alternatives
   - Level 1 Screening
     - Major Flaw Screening
       - Major Flaws
         - Dismiss Alternative
       - No Major Flaws
       - Meets Purpose & Need Test
2. Level 2 Screening
   - Refine Alternatives
   - Complete Detailed Purpose & Need Test
   - Assess Benefits & Impacts
   - Stakeholder Input
   - High Performing Alternative
3. Alternatives Carried Forward

We Are Here
Greater Detail
Level 2 Screening Process

PART A

TRANSITWAY ALTERNATIVES (TW)

CONTEXT TAILORED TREATMENT ALTERNATIVES (CTT)

MANAGED LANE ALTERNATIVES (ML)

TOP TW PERFORMERS

TOP CTT PERFORMERS

TOP ML PERFORMERS

ASSEMBLE COMBINATION ALTERNATIVES

PART B

TW CTT

ML CTT
Part A

- Evaluate alternatives within each category (TW, ML, CTT)
- Relative comparisons between alternatives and No Build
- Goal is to select top alternatives in each category for further development and evaluation in Part B
Level 2 Screening Process

Part B
- Create multiple combination alternatives from Part A
- Evaluate combination alternatives with an expanded set of criteria
  - Transportation, Social, Economic, Environmental criteria
- Relative comparisons between alternatives and no build
- Top alternatives will be the *Alternatives Carried Forward*
# Part A - Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Transitway (TW)</th>
<th>Context Tailored Treatment (CTT)</th>
<th>Managed Lane (ML)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Mobility</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Ridership/Reliability</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Access</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Visual Effects</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Construction Cost</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Constructability</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Sustainability</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Equity</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
</tbody>
</table>

**SOURCE:**

- Purpose and Need
- Social/Economic/Environmental Factors
### Part B Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Combination Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>✓</td>
</tr>
<tr>
<td>Mobility</td>
<td>✓</td>
</tr>
<tr>
<td>Ridership/Reliability</td>
<td>✓</td>
</tr>
<tr>
<td>Access</td>
<td>✓</td>
</tr>
<tr>
<td>Construction Cost</td>
<td>✓</td>
</tr>
<tr>
<td>Constructability</td>
<td>✓</td>
</tr>
<tr>
<td>Sustainability</td>
<td>✓</td>
</tr>
<tr>
<td>Environmental Resource Effects</td>
<td>✓</td>
</tr>
<tr>
<td>Park Space</td>
<td>✓</td>
</tr>
<tr>
<td>Adjacent Community Effects</td>
<td>✓</td>
</tr>
<tr>
<td>Compatibility with Regional and Local Plans</td>
<td>✓</td>
</tr>
</tbody>
</table>

**SOURCE:**
- Purpose and Need
- Social/Economic/Environmental Factors
Questions?
Trail Design Status Update

1. Coordination with Chicago Park District.
2. Established overarching principles to guide design.
3. Applying principles to lay out and design of trails.
Lakefront Trail Design: Key Issues

1. Separation & Alignment
   - Trail dimensions
   - Spacing guidelines
   - Method of separation

2. Trail Access
   - Grade-separated
   - Street-level

3. Trail Junctions
   - Landing pads
   - Separation from bike trail
Montrose Avenue Junction (Looking North)
High Speed Lakefront Trail - Junction Underpass Concept
Wilson Avenue Junction* (Looking Northwest)
High Speed Lakefront Trail – Junction Overpass Concept

* NLSD access ramps removed
• Incorporate feedback and continue analyses
• Task Force #8: Winter 2018
  – Review pedestrian/bike concepts and CTT Level 2 Screening results
• NTTS Meeting: Winter 2017/2018
North Lake Shore Drive

Thank You

www.northlakeshoredrive.org