Outline

• Timing Strategies
  A. Progressions & Splits
  B. Shorter Cycle Length
  C. Cycle Coordination
  D. Feathering

• Phasing Strategies
  1. LPI [Leading Pedestrian Interval]
  2. Split Phase vs Split LPI
  3. Bicycle Signals & Phasing
A. Progressions & Splits (1)

• Faster Progression & Higher Split for Major Street that is Losing Lane

• Advantages
  – Compensates for lost moving lane, ped-bike benefits can come at no cost to motorists

• Challenges
  – Can reduce crossing time and provide opportunities for speeding
A. Progressions & Splits (2)

- Slower Progression & Lower Split for Major Street when Lane Cannot be taken

**Advantages**
- Calm traffic
- More opportunities to cross

**Challenges**
- Longer delays
B. Shorter Cycle Lengths

- Shortening Cycles, Increasing Frequency of Phase Turnover

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- Advantages
  - Facilitate pedestrian crossing, increase compliance
  - Discourage speeding
  - Reduce side street delay

- Challenges
  - Providing minimum crossing time on wider streets
C. Cycle Coordination, Supporting Lane Removal

|                | 15 | 30 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 | 180 | 195 | 210 | 225 | 240 | 255 | 270 | 285 | 300 | 315 | 330 | 345 | 360 |
|----------------|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 90 sec cycle   | X  | X  | X  | X  |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 120 sec cycle  |    | X  | X  |    | X  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 60 sec cycle   | X  |    |    | X  |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 120 sec cycle  |    |    | X  |    | X  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

Classon Ave, Brooklyn
D. Feathering

- Reduce green time for major road as it approaches location with constrained capacity

% Green Time for Major Artery

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- Advantages
  - Prevents traffic from overwhelming a pinch point
  - Provides a “slow & steady” feeling to motorists rather than “hurry up and wait”
Broadway-Amsterdam-W 71st St
Intersection Improvements
Manhattan, 2011
Broadway-Amsterdam-W 71st St
Intersection Improvements
Manhattan, 2011
1. Leading Pedestrian Interval

• Hold parallel/turning traffic for several seconds at beginning of pedestrian “WALK” phase

• Advantages
  – Gives pedestrians head start to “take” crosswalk before adjacent through/left turn movement phase
  – Improves motorist visibility of pedestrians

• Challenges
  – Holds all vehicles, not just turns
  – Pedestrian / turning vehicle conflict remains
2. Split Phase vs Split LPI

Split Phase

Split LPI
2. Split Phase vs Split LPI

**Split Phase**

- **Advantages**
  - Complete separation of pedestrian from turning traffic
  - No lost time for traffic proceeding straight

- **Challenges**
  - Limits time available for pedestrian crossing

**Split LPI**

- **Advantages**
  - LPI benefits
  - No lost time for traffic proceeding straight or pedestrians

- **Challenges**
  - Turning conflict remains
  - Requires turning traffic to use “flashing yellow” signal
Harlem River Park Gateway
Intersection & Access Improvements
Manhattan, 2011
Flatbush Ave & Atlantic Ave
Barclays Center
Brooklyn, 2012
7th Avenue at 23rd Street
Split Phase
7th Avenue at W 23rd Street
Pedestrian Safety Improvement
Manhattan, 2011
Atlantic Ave at Entrance to BQE
Brooklyn Waterfront Greenway Access
Brooklyn, 2012
Midtown: Split Phase or Split LPI?

60th St Right Turn to 3rd Avenue
- 350 R/Ts, 550 pedestrians
- Truck Route Connection
- Existing Split Phase
- Turn Demand > Time Provided
- Ped Killed During Turn Phase in 2013
3. Bicycle Signals/Split Phase vs Mixing Zones

- **Bicycle Signal / Split Phase**
  - Separates turning vehicles from thru bikes and peds
  - Poor LOS for Bikes / Non-Compliance
  - Reserved for heavy conflicts

- **Mixing Zone**
  - No Bicycle Symbol Signals
  - Turning Vehicles & Cyclists Negotiate Conflict
  - Cyclists can platoon w/signal progression
www.nyc.gov/dot

Thank You