Transit Priority Initiative

Krae Stieffenhofer

Kimley-Horn

Outline

- BaltimoreLINK
- Enhancing the New Network
- New Data – Meet Old Data
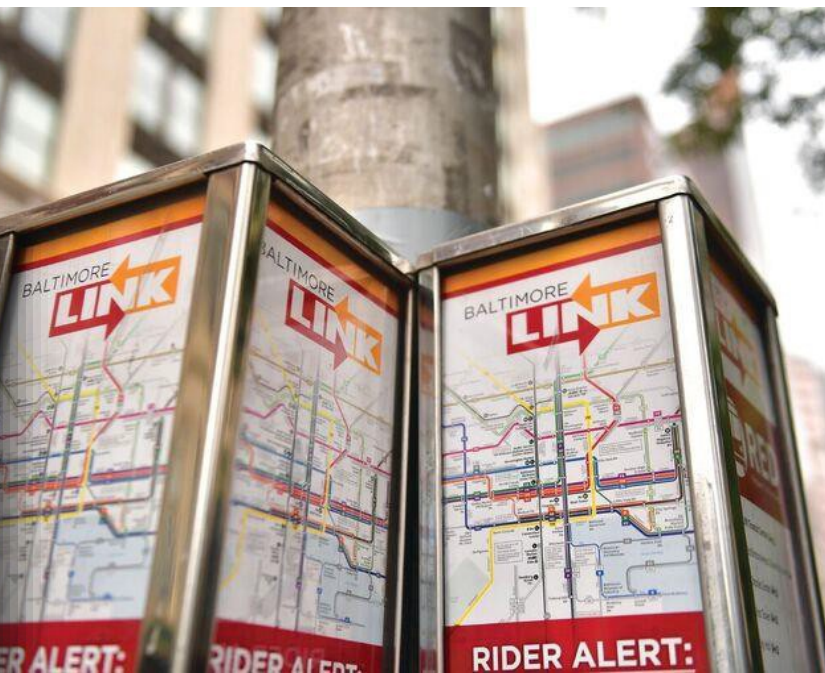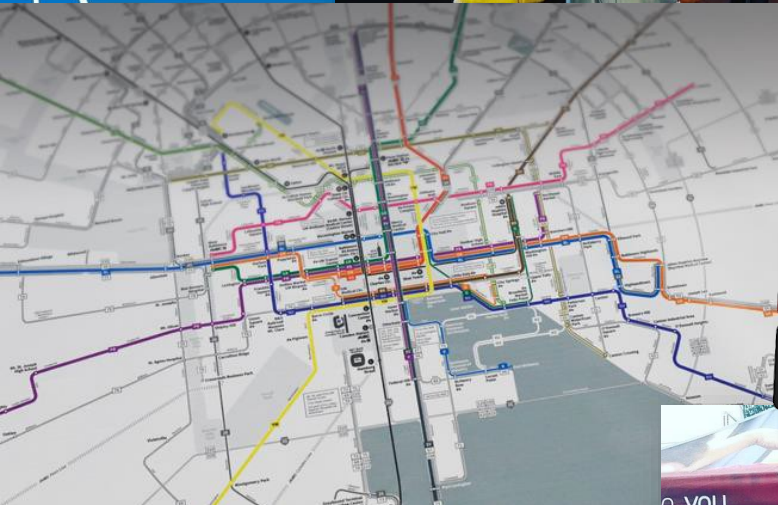- Current/Future Projects

MDOT MTA at a glance

- **Core Service:** Baltimore Metro Area
- **Commuter Service:** Statewide
- **6 modes:**
  - Local Bus
  - Light Rail
  - Metro
  - Commuter Rail
  - Commuter Bus
  - Mobility
- **Annual Ridership:** ~110 million
- **Employees:** 3,300

What is BaltimoreLink?

Announced 10/2015
Launched 6/2017

The New Structure of Baltimore Transit:

BaltimoreLink is a new kind of "grid and spoke" transit network offering three classes of service that reinforce the existing Metro SubwayLink, Light RailLink, and MARC Train systems:

CityLink

These color-coded "BRT ready" routes offer frequent, 24-hour service, form a downtown grid, and radiate out from the city on major streets.

LocalLink

These operate on neighborhood streets between the CityLinks and form crosstown "rings."

Express BusLink

These offer limited-stop service between outlying areas and downtown.

✓ **Shortened** some of our longest routes

✓ **Increased frequencies** on key routes

✓ **Decongested** the downtown corridors
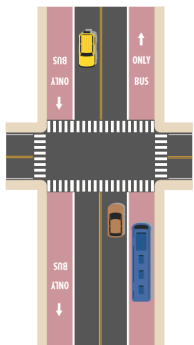
Improving the Frequent Transit Network

New Frequent Service

Old System Frequent Service (remained under BaltimoreLink)

BaltimoreLink Frequent Transit Network

Frequent Transit Network (FTN): Any route that has service at least every 15 minutes between the hours of 7am and 7pm on weekdays
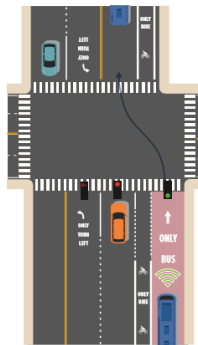
Transit Priority Initiative

- Project purpose: Identify segments of high frequency routes that could benefit from coordinated infrastructure improvements
  - All 12 CityLink Routes & LocalLink 22, 26, 29, 30, 54, 80

- Develop a Toolkit for the MTA to easily refer to for future implementation
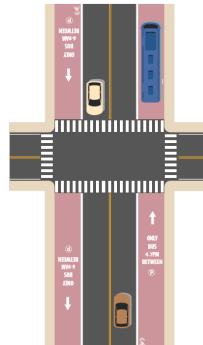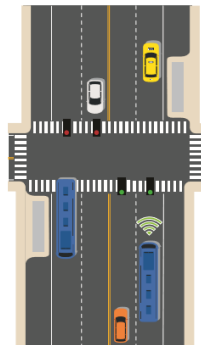

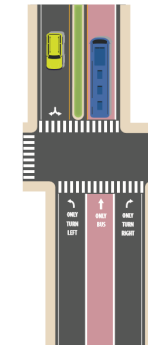Dedicated Transit Lanes   Intersection Queue Jump   Peak Period Transit Only Lane   Curb Extensions   Left Side Bike Lane   Transit Only Aperture
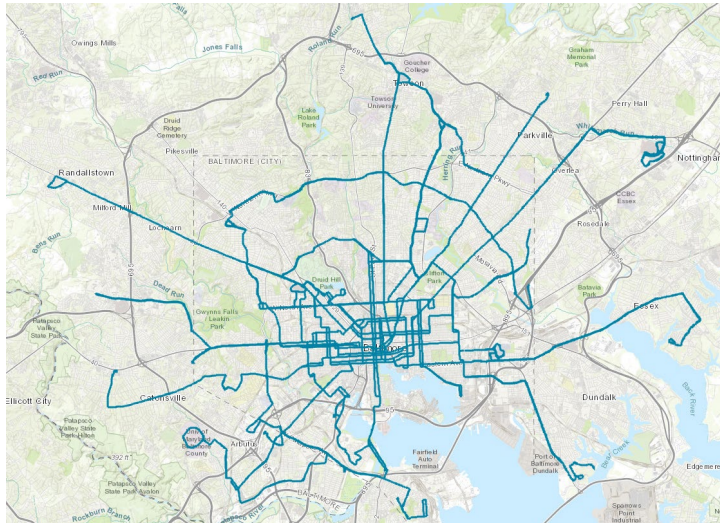
Other Improvements:

- Stop consolidation
- Level Boarding
- Far side bus stops
- TSP

How to Prioritize?

CityLink Routes & LocalLink 22,26,29,30,54,80

18 High frequency routes were divided into segments → Quantitative Segment Analysis → Combined Segments into Corridors → Qualitative Corridor Analysis → Concept Development of Four Corridors → Keep moving forward!
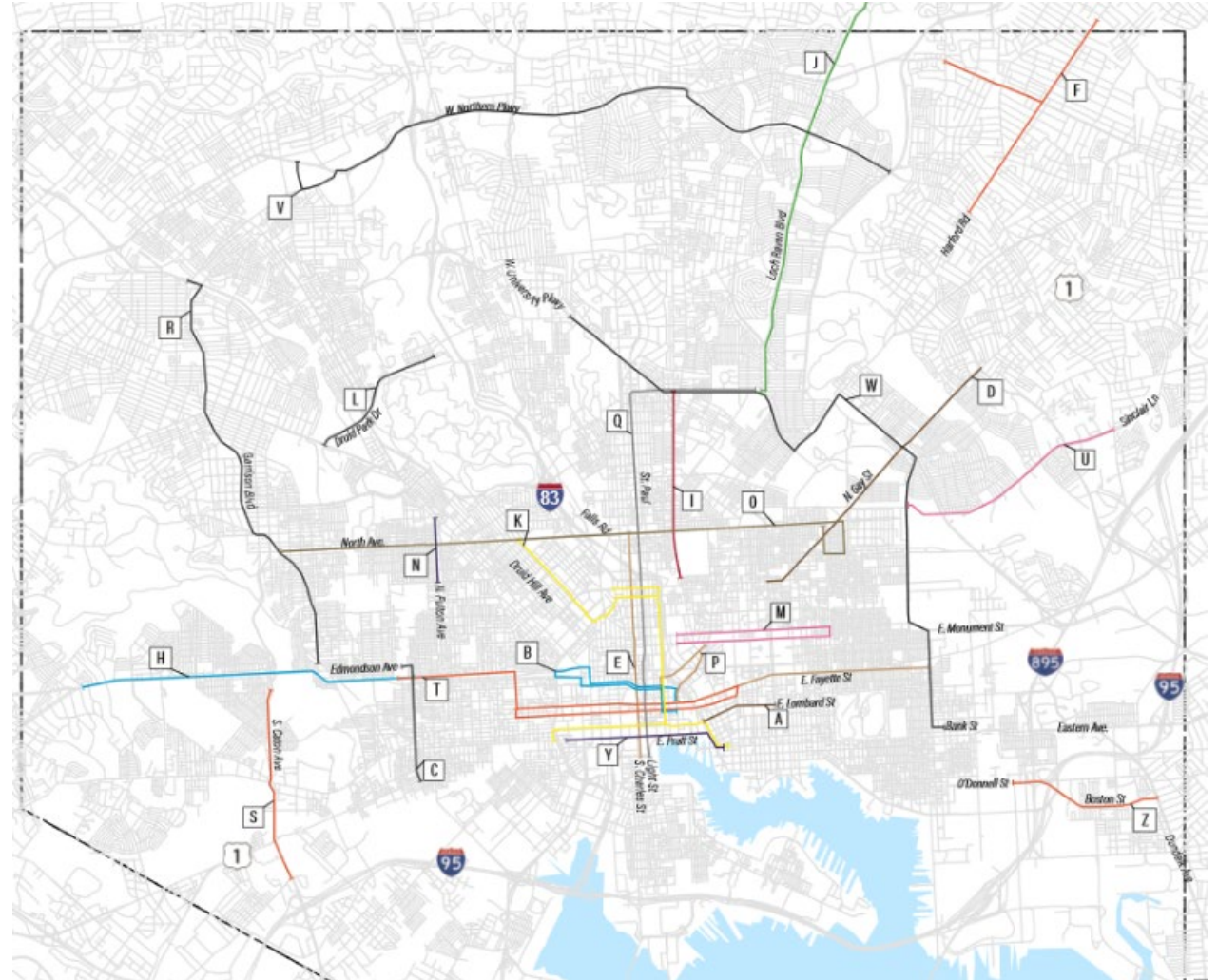
Transit Priority Quantitative Analysis

- Segments based on Roadway Characteristics

- Ranking Metrics
  - Reliability
  - Transit/Traffic Speed Ratio
  - Dwell Time per Boarding

- Ridership Threshold
  - Passenger Activity
  - Primary Route Load
  - Total Peak Bus Load

- Creation of Priority Corridors Map

Ranking Metrics - Reliability

- Reliability
  - Wanted to focus on consistency of travel times as opposed to on time performance
    - Independence of schedule as much as possible was desired
  - Used Coefficient of Variation (CV) applied at segment level
    - Standard Deviation/Average
  - Swiftly data was basis for this metric
    - Manual assignment of stop ids to segment start/ending points to compile segment travel times

Ranking Metrics - Transit/Traffic Speed Ratio

- Goal is to specifically speed up transit speeds – try to separate the analysis from general congestion
  - Baltimore City DOT has more jurisdiction in these cases
- Utilized the same travel times from reliability metric and calculated distance via a GIS analysis (stop-to-stop distances in GTFS)
- Compared transit speeds with RITIS (Regional Integrated Transportation Information System) data which utilizes probe data for general traffic analytics

Ranking Metrics - Dwell Time per Boarding

- Focus was to find locations in which boardings are taking abnormally long per passenger – perhaps locations where it is difficult to pull up to curb or get back into traffic
  - Specific focus of this analysis, as bump-outs are an easy-to-implement solution in the current climate
- Utilized the APC (Automated Passenger Count Data)

Ridership Thresholds

- To ensure that treatments are impacting a significant number of riders – and creating more value in the projects that are selected, a number of thresholds were applied to the analysis
  - As a result, AM and PM peaks were primarily evaluated
- Boarding and Alighting Activity
- Primary Bus Ridership (High Frequency Route Ridership)
- Total Bus Ridership (All routes that use the segment)
  - Added to consider locations with several slightly less frequent buses overlapped with each other

Qualitative Analysis

- Desktop review to note constructible improvements & opportunities for in-house fixes

- Meetings with bus operators

- Brainstorming with OSD

- Input from Baltimore City DOT
  - Current projects/priorities

- Quick fixes and more involved analysis

- **Develop low-cost, high-impact projects that can be completed quickly to improve the customer experience.**
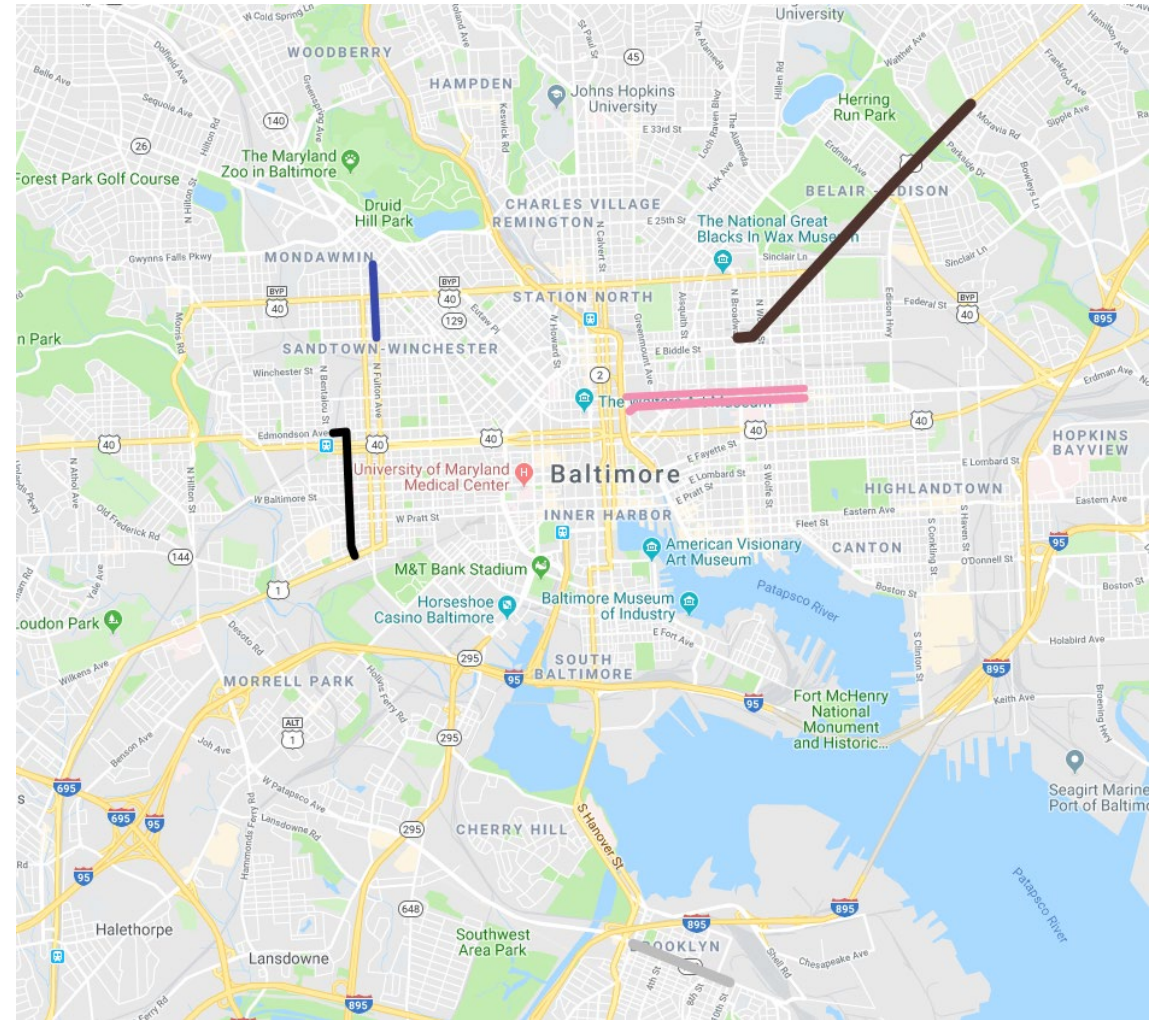
Projects

- ## Gay Street/Belair Road *(Preston Street – Moravia Road) 2.4 miles*

  - CityLink Brown, Express BusLink 115

  - Dwell time and transit/traffic speed ratio were identified as issues accompanied by high ridership

  - Opportunity for bus bulbs where full time parking exists

  - Opportunity for stop consolidation throughout corridor

  - Opportunity for safety and operational improvements on current sign enforced bidirectional lanes

  - Coordinating with BCDOT as they start design task to upgrade Belair Road at Erdman Avenue intersection

  - Currently being designed
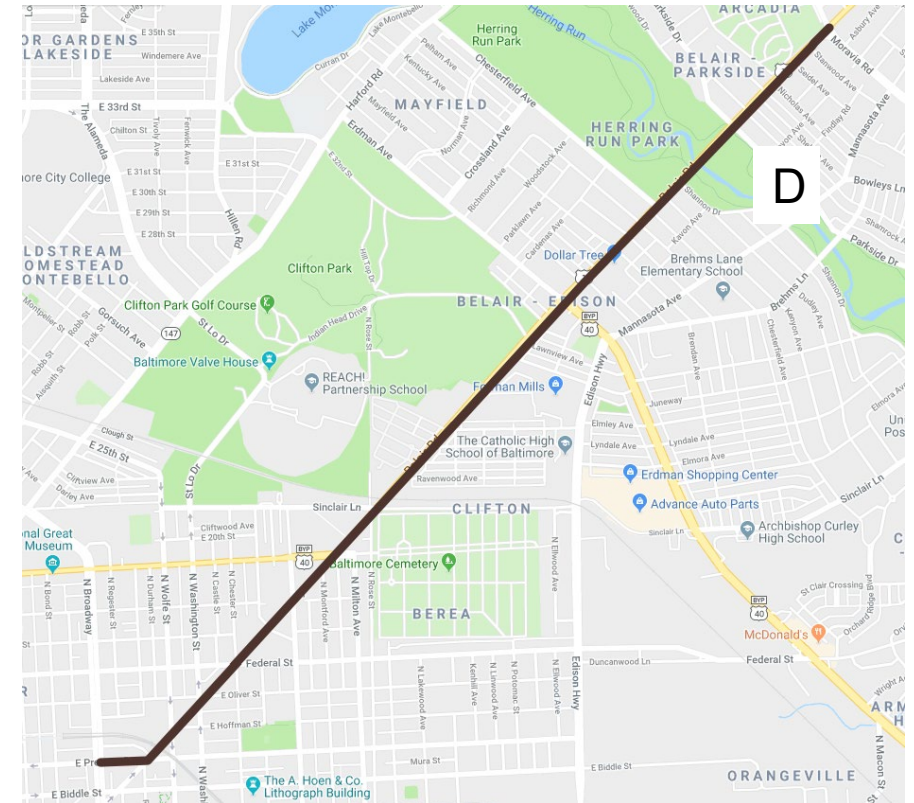
Projects

- ## Patapsco Avenue *(S Hanover Street – 10th Street) 0.8 miles*

  - CityLink Silver, LocalLink 29, LocalLink 67, Express BusLink 164

  - Reliability and transit/traffic speed ratio were identified as issues accompanied by high ridership

  - Traffic is light enough that a short bus-only lane is possible

  - Opportunity for bus bulbs where full time parking exists

  - Opportunity for bus/bike lanes

  - Coordinating with BCDOT as they start scoping planning task for a streetscape along Patapsco Avenue within same limits

  - Earmarked as the next corridor for preliminary design

Takeaways

- Ranking Methodology is complex, and am looking to continue to develop
- Would like to improve buy-in from BCDOT to be able to go after the big fish – downtown corridors where space and signal timings are at a premium
- Public and other stakeholders react well to data-first approach – have to create clear visualizations and diagrams
  - https://www.mta.maryland.gov/transit-priority-initiative

Questions?

Krae Stieffenhofer
Krae.Stieffenhofer@kimley-horn.com