BUS RAPID TRANSIT IN THE MILWAUKEE REGION
Bus Rapid Transit

Now is the right time for BRT in Milwaukee.

BRT is moving forward.

BRT builds needed connections.

BRT helps solve an impending traffic problem.

BRT can transform the East-West Corridor.

BRT will drive Milwaukee into the 21st century.

Source: Laura Prevost Flickr
Existing Conditions: Milwaukee County Transit System

Source: Milwaukee County Transit System, 2016
Milwaukee County Transit System: Existing Ridership

Four primary transit routes, as reviewed within Ridership portion of the East West Feasibility study, operate within the east-west corridor.

30, 30X, 31 & the Gold Line.

Source: Milwaukee County Transit System, 2016 (mcts.org).
Some **challenges** to the MCTS that the BRT can overcome include (AECOM):

1. Service and stations **overrun** with a variety of bus routes.
2. Existing riders struggle to **transfer** or wait for connections.
3. Slow/Delayed schedules affect opinion of system and ridership.
4. No existing transit signal priority for current system.
5. Milwaukee has **no competitive transit option**.

Source: Gary Porter
East-West Corridor: Congestion and Lack of Connectivity

Current traffic volumes:
5,000 to 22,000 (AECOM)

Non-Motorized Traffic:
- Lack of connectivity throughout corridor
- Bicycle network is sporadic; not aligned well

Zero Car Households:
- 21 percent of homes with no access to a car meaning 1 in 5 homes on the corridor need quality public transportation (AECOM).

Source: Carl A. Swanson
East-West Corridor: Existing Population and Resident Income

Population Trends:

- Significant growth in 18-34 year olds (AECOM)
- 18 & over 65 years old categories decreased; 35-64 years olds remained the same (AECOM).
- The population is growing more in Wauwatosa, (AECOM).

Income of Residents on the Corridor:

- 23 percent of the population on the corridor lives below the poverty line (AECOM).

Source: East-West Feasibility Study, Existing Conditions, Section 4.4 Age (2014), Figure 4-10: Population Growth by Age Group, 2000 to 2014
BRT Challenges:
CORRIDOR CONCERNS

Source: The Milwaukee Business Journal
RESIDENT CONCERNS

IMPACT ON TRAFFIC CONGESTION

IMPACT ON PEDESTRIAN SAFETY
BUSINESS COMMUNITY CONCERNS

Source: GoogleMaps

IMPACT ON BUSINESS ACTIVITY

Source: GoogleMaps

IMPACT ON CUSTOMER PARKING

Source: GoogleMaps

IMPACT ON TRUCK DELIVERIES
BRT SYSTEM
CASE STUDIES

● BRT spurs development
● BRT increases ridership
● Coordinating with stakeholders is crucial
● Ensuring community buy-in is essential
● Creative marketing and branding is key
HealthLine - Cleveland, Ohio

Key Outcomes

- 60% increase in ridership (RTA, 2014)
- 18% of new riders were former automobile commuters (More Development For Your Transit Dollar, 2013)
- $5.8 billion in development generated (More Development For Your Transit Dollar, 2013)

Major Challenges

- Gaining the public’s acceptance
- Educating elected officials about BRT benefits

Key Lessons Learned

- Value of political champion
- Branding of BRT as high-class rapid transit system
- Benefit of partnering with institutions
ART- Albuquerque, New Mexico

Key Outcomes

- Increase of current business traffic
- Increase of development around the corridor

Major Challenges

- Trying to connect very separated parts of the city
- Historic corridor does not accommodate today’s car traffic well

Key Lessons Learned

- Accommodating BRT in a tight corridor can be done creatively
- Pre-opening events can bring interest to the project
- Well designed, attractive marketing material can explain a project well

Source: ABQ Ride
VivaNext - York, Ontario, Canada

Key Outcomes

- 10% ridership increase
- Decrease in travel time of 35%
- $1.8 Billion in land/corridor development

Major Challenges

- Widening highway caused pedestrian crossing issues
- Difficulty with transferring
- Empty busses

Key Lessons Learned

- Marketing is key
- Invest in transit hubs

Source: York Region Rapid Transit Corporation
EmX- Eugene-Springfield, Oregon

Key Outcomes

- System creates award-winning 'green' image (Tann, 2009)
- Ridership jumps 50% (Tann, 2009)

Major Challenges

- Local advocacy concerns (Crowley, 2016)
- Business community hesitant (Crowley, 2016)
- Concerns about landscaping and parking removal (Crowley, 2016)

Key Lessons Learned

- Consider ordinances and community (Crowley, 2016)
- Communication with stakeholders (Crowley, 2016)
- Invest in political advocates (Crowley, 2016)
Vision for BRT in Milwaukee

NEAR-TERM

● East West Corridor

LONG-TERM

● Expansion of BRT in Region
● Impacts on
  ○ Time-Savings
  ○ Equity
  ○ Development
Route Alignments

- Separating alignments by sections which exhibit similar street or context characteristics.
  - Downtown- Eastside (Water St. to Van Buren St.)
  - Downtown- Westside (Plankinton Ave to 8th St.)
  - Marquette University (8th St. to 16th St.)
  - Near West Side (16th St. – Hawley Rd.)
  - Bluemound Road (Hawley Rd. to 95th St.)

- **Goal of achieving BRT basics by ITDP**
  - Silver rating- Maximize dedicated lanes
    - Route receives score of 77 from standards calculator
Downtown East

- **Current Conditions**
  - AADT: 7,500 - 8,300
  - 2 lanes general traffic
    East/West
  - Curb-to-curb width: 58 feet
  - On-street parking: 33 spaces
Downtown East

- **New alignment**
  - Add dedicated curbside bus lanes
  - Add cycling infrastructure
  - Remove on street parking
Downtown East

Recommended station improvements at Wisconsin Avenue and Jackson Street
Downtown West

- **Current conditions**
  - AADT: 10,000
  - 1 lane for general traffic
    - East/West
  - 90 on-street parking spaces
  - 48 ft curb-to-curb
Downtown West

● **New Alignment**
  ○ Add bus lanes
  ○ Add cycling infrastructure
  ○ Remove Eastbound through lane/parking lane
  ○ Compliment movement on Wells Street
Main Station Downtown West
Marquette University

- **Current Conditions**
  - AADT: 14,000
  - 2 lanes general traffic
    - East/West
  - 0 on-street parking spaces
  - 76 ft curb-to-curb
Marquette University

- **New Alignment**
  - Add bus lanes
  - Add protected cycle lanes
  - Prohibit left turns through campus
  - Movement to go against general traffic
    - Allows for center platforms to be used by right loading buses
Conceptual Design Marquette University
Conceptual Design Marquette University
Near West Side

• **Current conditions**
  - AADT: 13,000 - 16,000
  - 2 lanes general traffic
    East/West
  - ~400 on-street parking spaces
  - 76 ft. curb-to-curb
Near West Side

- **New alignment**
  - Dedicated center bus lanes
  - Limit left turns to signalized intersections
    - Add signals at select intersections
  - Divert local routes to Wells Street
  - Net 0 loss of parking
Near West Side

27th Street aerial and street level vision
Bluemound Road

- Current conditions
- Two distinct characters

• Hawley Road to Glenview Ave
  - AADT: 10,000
  - 2 lanes general traffic East/West
  - ~400 on-street parking spaces
  - 60 ft. curb-to-curb
  - Local business oriented

• Glenview Ave to 95th St
  - AADT: 22,000
  - 2 lanes general traffic East/West
  - ~125 on-street parking spaces
  - 94 ft. curb-to-curb
  - Commuter oriented
Bluemound Road

**New alignment: East of Glenview Avenue**
- Maintain parking East of Glenview
- Add dedicated center bus lane
- Limit left turns
- Add signaled intersections
  - At select intersections
Bluemound Road

- New alignment: West of Glenview
  - Eliminate parking
  - Add dedicated center bus lane
  - Limit left turns
Proposed Milwaukee Regional Bus Rapid Transit System

- Brookfield Square Extension
- 27th Street - North Extension
- 27th Street - South Extension
- Airport Extension
- Fond du Lac Avenue Extension
- National Avenue Extension
- UWM Extension
- Proposed East-West Corridor
SEWRPC Comparison

Very Similar Route Selection

Key Differences

- Downtown Waukesha
- Capitol Drive
- Hwy 32 to South Milwaukee
CRITERIA

Ridership

Time Savings

Cost

Population and Job Density

Equity

Development Potential
EXISTING RIDERSHIP

Existing MCTS Ridership

<table>
<thead>
<tr>
<th>Location</th>
<th>Ridership</th>
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<tbody>
<tr>
<td>Airport</td>
<td>6,676</td>
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<tr>
<td>Brookfield Square</td>
<td>5,471</td>
</tr>
<tr>
<td>27th St - South</td>
<td>8,737</td>
</tr>
<tr>
<td>27th St - North</td>
<td>8,737</td>
</tr>
<tr>
<td>Fond du Lac Ave</td>
<td>13,506</td>
</tr>
<tr>
<td>National Ave</td>
<td>13,506</td>
</tr>
<tr>
<td>UWM</td>
<td>14,567</td>
</tr>
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“Travel time savings appears to be the greatest contributor to BRT ridership gains”
- Transportation Research Board, 2007
Travel Time Savings

Figure 3: Relative Travel Speeds By Facility Type (Kittleson & Associates 2013)

Under typical congested urban conditions, curb bus lanes approximately double, and fully grade-separated busways (which eliminate stops at intersections) approximately triple, bus operating speeds.
Travel Time Savings

- Airport: 40.0%
- Brookfield Square: 46.1%
- 27th St - South: 46.7%
- 27th St - North: 46.7%
- UWM: 16.5%
- National Ave: 42.7%
- Fond du Lac Ave: 34.8%
Travel Time Savings

Percentage Travel Time Savings Per Mile

- Underground
- Avg. of Median & Curb Service
- Dedicated Curb Lane
- Dedicated Median Lane
COST

- Projected from East-West Corridor Study
POPULATION DENSITY

- Measured within ¼ mile of each route
**JOB DENSITY**

- Measured within ¼ of each route
- 2010 SEWRPC Data

![Chart showing job density in square miles]
EQUITY

- 27th St - North is top priority
- Fond du Lac
- 27th St - South
Development Potential: ZONING, VACANT LOTS, AND SURFACE PARKING
Development Potential

Analysis

- Analyzed each of the eight proposed routes
- 133 proposed stations within the City of Milwaukee
- Created quarter-mile buffers around each station (5 min. walk)

Examined

- Total area with zoning amenable to Transit Oriented Development (TOD)
- Total vacant area
- Total surface parking area

Development Value & New Tax Revenue

- Isolated vacant lots and parking lots over a half acre within a quarter-mile
- Created three tiers of values
- Created different development scenarios
TOD Zoning Analysis: Quarter Mile Buffer

Proposed 27th Street Line, Wisconsin Ave. and State St. Stops

Legend:
- TOD Excellent
- TOD Fair
- Parcels
- Streets

Map showing the proposed TOD zoning analysis within a quarter mile buffer of the proposed 27th Street line, Wisconsin Ave. and State St. stops.
<table>
<thead>
<tr>
<th>Route</th>
<th>Total Stations</th>
<th>TOD Excellent Area*</th>
<th>TOD Fair Area**</th>
<th>Vacant Area</th>
<th>Parking Area</th>
<th>TOD Area/Station</th>
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<tr>
<td>Fond</td>
<td>33</td>
<td>2,537,359</td>
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<td>Nat</td>
<td>16</td>
<td>20,770,307</td>
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<td>UWM***</td>
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<td>91,638,541</td>
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** NS2, LB2, RM3

***Note: 6 of the stations are doubles (i.e. One on Prospect, One on Farwell)
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***Note: 6 of the stations are doubles (i.e. One on Prospect, One on Farwell)
Development Value and New Tax Revenue

Development Assumption

- Identified min. half acre vacant lots and parking lots
- 24 units/quarter acre
- 5000 sq ft of commercial/acre
- Based on Fond Du Lac Center and Lisbon Terrace

Tiers of Development

- One mile within Downtown, less than 35% poverty rate:
  - $100,000/unit, $100/sq ft commercial
- Outside one mile of Downtown, less than 35% poverty rate:
  - $70,000/unit, $70/sq ft commercial
- Greater than 35% poverty rate (low-income housing tax credit):
  - $40,000/unit, $40/sq ft commercial
- Derived from DCD recommendations
  - $100-125 thousand/unit in Walker’s Point, $100 per sq ft commercial
  - $35-40 thousand/unit using low-income housing tax credits
Vacant & Parking Lots Half Acre or More: Quarter Mile Buffer
Proposed 27th Street Line, Wisconsin Ave. and State St. Stops

Legend
- Half Acre or More
- Parcels
- Streets

[Map showing the proposed buffer zone with streets and landmarks labeled]
# Development Value Table

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Tier 1: $100,000/Unit, $100/100sqft Commercial
Tier 2: $70,000/Unit, $70/100sqft Commercial
Tier 3: $40,000/Unit, $40/100sqft Commercial
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**Tier 1**  
$100,000/Unit, $100/100sqft Commercial

**Tier 2**  
$70,000/Unit, $70/100sqft Commercial

**Tier 3**  
$40,000/Unit, $40/100sqft Commercial
## New Tax Revenue Table

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<td>$487,634.89</td>
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<td>$1,549,416.39</td>
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</tbody>
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**Tier 1**  
$100,000/Unit, $100/100sqft Commerical

**Tier 2**  
$70,000/Unit, $70/100sqft Commerical

**Tier 3**  
$40,000/Unit, $40/100sqft Commerical
### New Tax Revenue Table

<table>
<thead>
<tr>
<th>Routes</th>
<th>(T1 100%, T2 75%, T3 50%)</th>
<th>(T1 75%, T2 50%, T3 25%)</th>
<th>(T1 50%, T2 25%, T3 10%)</th>
<th>(T1 25%, T2 10%, T3 0%)</th>
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<tr>
<td>Fond</td>
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<td>$177,613.36</td>
<td>$246,607.78</td>
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<tr>
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<td>$5,872,773.46</td>
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<td>EW</td>
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<td>UWM</td>
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<td>$531,796.88</td>
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# EVALUATION

<table>
<thead>
<tr>
<th>Location</th>
<th>Existing Ridership</th>
<th>Cost</th>
<th>Time Savings</th>
<th>Development Potential</th>
<th>Population / Job Density</th>
<th>Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>27th St - North</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>27th St - South</td>
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<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
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<tr>
<td>Airport</td>
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<td>2</td>
<td>3</td>
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<td>1</td>
<td>3</td>
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</tr>
</tbody>
</table>
BRT Infographic Categories

**Economics**
- BRT the Cost and Benefits
- BRT and Businesses

**Environment**
- BRT and Safer Streets
- BRT and Environmental Benefits

**Equity**
- BRT and Accessibility
- BRT and Current MCTS Riders

**Comparison**
- Today versus the Future
- Before and After
BRT - THE COSTS & BENEFITS

THE CONCERN
"Bus Rapid Transit will be a waste of taxpayer money!"

DID YOU KNOW? Bus Rapid Transit can actually lead to economic benefits that greatly outweigh the costs to run it!

HERE’S WHY!

PROJECT COSTS
BRT in the East-West Corridor is estimated to cost between $42-48 million - this will be funded mostly with federal grants. Estimates for Milwaukee's share of construction costs are between $8-9 million. Annual operation costs are expected to be $3.7 million per year.

THE VALUE OF TIME
BRT will reduce the total trip length in the East-West Corridor by 15 minutes. Based on ridership projections and an average value of time of $12/hour, the estimated time savings BRT will provide translates to roughly $4.2 million per year.

THE VALUE OF TRANSIT ORIENTED DEVELOPMENT
BRT will create a more attractive, pedestrian-oriented environment that will benefit businesses along the route. Based on a study of properties in the corridor, it is estimated that BRT could generate $3 million per year in revenue related to Transit-Oriented Development.

THE VALUE OF SAFETY
BRT will create safer and more predictable streets. Based on comparable case studies, it is estimated that BRT could lead to annual savings of $10 million from costs associated with traffic accidents.

THE VALUE OF CLEAN AIR
BRT systems in Mexico City reduced air pollutants and saved an estimated $3 million in public health related expenses.

THE VALUE OF A ROBUST TRANSIT SYSTEM
BRT in the East-West Corridor will be the first step towards developing a more robust regional transit system. With such a system, many households would be able to forgo car ownership, saving an estimated $10,000 per year.
BRT & BUSINESSES

THE CONCERN
“Bus Rapid Transit will hurt my East-West Corridor business!”

DID YOU KNOW?
Bus Rapid Transit can lead to a better business environment that can positively impact your business!

HERE'S WHY

More shoppers, especially transit dependent shoppers can come to your business due to faster, more reliable transportation.

Street improvements like landscaping and street furniture can create a more attractive environment and encourage more people to visit the corridor.

Pedestrians and bicyclists travel comparable, if not more, money over the course of a month than automobile drivers.

Not all on-street parking spaces will removed.

Side streets and parking structures can accommodate for them removed spaces.

Nearby public transit corridors with higher property values.

Many people don't like parking in lots or garages.

Many people expect it just as a distance and don't want making

Business activity like TRUCK DELIVERIES can still run as usual, even if the parking lane is altered.

Other cities show that side streets and alley systems can accommodate for this activity

**BRT & SAFER STREETS**

**THE CONCERN**
“Bus Rapid Transit will make the streets less safe for my family!”

**DID YOU KNOW?**
Bus Rapid Transit can actually lead to **safer streets** and a more pedestrian-friendly environment!

**HERE’S WHY!**

- **Faster Transit Times:** BRT reduces travel times, not speeding down.
- **Easier crossing areas:** BRT stations add mid-crossing refuges for pedestrians, which shortens the overall distance needed to cross the street.
- **Reduced traffic congestion:** BRT can help generate more pedestrian traffic, putting more eyes on the street and increasing surveillance.
- **Pedestrian-friendly environment:** Many United States BRT stations are equipped with 24-hour lighting, emergency phones, and security cameras.
- **Increased safety:** In Latin America, streets with BRT have seen an average reduction in fatalities and injuries of over 40%.

For more information: Mobility and Safety - Bus Rapid Transit Systems - Practical Application Report - AECOM 2016.
BRT & THE ENVIRONMENT

THE CONCERN
"Bus Rapid Transit will add to the number of noisy, polluting buses!"

DID YOU KNOW? Bus Rapid Transit will improve air quality and reduce emissions in the East-West Corridor!

HERE’S WHY!
AN ATTRACTIVE, ECOLOGICALLY FRIENDLY SYSTEM

BRT in the East-West Corridor will transform the nature of the built environment. BRT improvements will calm traffic, remove cars from the road, and reduce emissions that pollute the air.

REMOVES CARS FROM ROAD
-6,700

Through increased ridership, BRT in the East-West Corridor will remove an estimated 6,700 cars from the road.

LOW-EMISSION BUSES
7,000 TONS

If fully realized, BRT may use low-emission buses that are more efficient to operate and have smaller carbon footprints. This could lead to a reduction of over 7,000 tons of carbon dioxide per year.

INCREASES LOCAL AUTONOMY

Through more efficient vehicles and increased ridership, BRT in the East-West Corridor will reduce dependence on foreign oil and increase local resilience.

REDUCES PERSONAL CARBON FOOTPRINT
30%

People who use public transit instead of a personal automobile reduce their contribution to greenhouse gases by 30%.

REDUCES VEHICLE MILES TRAVELED

Based on projected ridership, BRT will reduce vehicle miles traveled by over 50,000 every day—a trip to two trips around the world.

For more information: Milwaukee County East-West Bus Rapid Transit Locally Preferred Alternative Reports. AECOM 2016
www.aecom.com, Milwaukee County 2016
BRT & CURRENT MCTS RIDERS

THE CONCERN
"Bus Rapid Transit will make service worse for local riders!"

DID YOU KNOW?
Bus Rapid Transit will improve frequency and quality of service in the East-West Corridor!

HERE'S WHY!
BETTER SERVICE AT THE SAME PRICE

$ = $

FASTER SERVICE SAVES TIME

BRT in the East-West Corridor is estimated to reduce the total trip length from end to end by 15 minutes. For riders who travel the full corridor every weekday, time savings will average approximately 5.4 days of travel time every year!

EQUITABLE INVESTMENT

11,820
10,920
Prime 2nd St to I-43 at 16th St, along Wisconsin Ave: the average number of weekday bus riders and cars are almost equal.

MORE FREQUENT SERVICE

BRT in the East-West Corridor will operate with more frequent service than current MCTS schedules. During peak hours, buses will arrive every 10 minutes. During off-peak hours, buses will arrive every 15-20 minutes.

HOW DOES BRT PROVIDE FASTER SERVICE?

Dedicated lanes
Level boarding
Pre-pay stations
Signal priority
Busway alignment

MINIMAL IMPACT TO LOCAL ROUTES

Though some local routes may need to shift to a block, BRT improvements will improve local service by efficiently serving the bus rapid transit corridor in Milwaukee.

For more information:
- WY Department of Transportation (2015)
- Milwaukee County Transit System (2015)
**BRT & ACCESSIBILITY**

**THE CONCERN**

"Bus Rapid Transit will not be accessible to all."

**DID YOU KNOW?**

Bus Rapid Transit is **easier to use and more accessible** than the current bus system.

**HERE'S WHY!**

**WITHOUT BRT**

- Lower overall bus ride for everyone
- No need to step up on bus
- Better station design allows for a safer, easier, and better overall riding experience
- Making riders from home to work and shopping smoother
- Easier boarding leads to faster, more reliable, and more on-time service for regular riders.
- This attracts new riders and can save money.

**WITH BRT**

- BRT stations are more protected from the elements, so it makes for a safer, more accessible environment to wait for the bus.
- BRT allows for longer bus stops which accommodate service animals and wheelchairs.
- All BRT stations will be ADA accessible, so everyone can use the station with little worries.

MILWAUKEE COUNTY TRANSIT TODAY vs. THE FUTURE WITH BUS RAPID TRANSIT

DOWNTOWN DISTRICT

CONGESTION
Downtown Milwaukee has the largest employment hub in Milwaukee with 81,000 jobs and 25,000 residents. Congestion is predicted to increase.

OPEN ROADS
BRT provides a sustainable transit to transport riders QUICKLY and SAFELY to their destinations.
Transit technologies improve driver and pedestrian safety around BRT stations.

PARKING
Only 33 existing parking spaces are being removed for the BRT, but in their place will be a protected bike lane. There are roughly over XXX spaces in the Downtown area. Meaning we are losing less than X% of parking!

- PROTECTED BIKE LINES MEAN BUSINESS
When San Francisco reduced car lanes and installed bike lanes and wider sidewalks on Valencia Street, 2/3rds of merchants said the increased levels of bicycling and walking improved business.

- In Toronto’s business district, 50% of customers traveling by bike spent $100 a month versus 34% who traveled by car.11

*Numbers reflect an estimated scenario and may vary by location.*

11http//www.tinyurl.com/16y2x

*Percentages reflect an estimated scenario and may vary by location.*
Recommendations

Move forward with BRT in the East-West Corridor to take advantage of existing momentum and public support.

Invest in a high-quality BRT system with dedicated lanes and frequent service to maximize potential benefits and build support for future transit initiatives.

Conduct an aggressive marketing campaign to advertise the benefits of BRT and counteract negative perceptions and misunderstandings.

Expand BRT beyond the EW Corridor to develop a Regional Transit System that focuses on improving connectivity for transit-dependent residents.
Q&A

Thank you for coming!