Greater Cleveland Regional Transit Authority

Transit System Developments
Ohio Transportation Engineering Conference
October 2015
Greater Cleveland RTA Overview

- Service Area Pop.: 1.5 million
- Annual Operating Budget: $255 million (2015)
- $77 million Annual Capital Budget (2015)
- 2,300 Employees
Greater Cleveland RTA Overview

- Fixed Route Bus:
  - 428 Buses
  - 60 Routes
- Downtown Trolleys
  - 17 Trolleys
  - 1.6 million annual trips
Greater Cleveland RTA Overview

- Ohio’s Only Rail Transit System
- Red Line Rail
  - 60 Vehicles
  - 18 Stations, 19 Miles
  - 6.2 million annual trips
- Light Rail (3 lines)
  - 48 Cars
  - 34 Stations, 15.3 miles
  - 2.7 million annual trips
Greater Cleveland RTA Overview

- Light Rail (Blue, Green, Waterfront Lines)
  - 48 Light Rail Cars
  - 34 Stations
  - 15.3 route miles
  - More than 2.7 million annual trips
Greater Cleveland RTA Overview

- Ohio’s First Bus Rapid Transit (BRT)
  - 2 Routes
  - 39 vehicles
  - 79 stations
  - 5 million annual trips (and growing)
Cleveland State Line (Clifton Boulevard)

• $20 million “BRT Light”
  – 4 miles of improvements
  – 16 Articulated Vehicles
  – Peak period lane restriction (with enforcement)
  – Signal Priority
  – BRT “Stations”
  – Streetscape Improvements (median, crosswalks, etc.)

• New retail coming at Clifton-West 117th Street
BRT Success in Cleveland

- HealthLine: Ridership 70% increase since 2008
- Clifton: Increase since 2014
- $4-$6 Billion in HealthLine Corridor Investment since 2008
Cedar-University Circle Red Line Station

- $15 million reconstructed station opened August 2014
- Improves bus interface and access to surrounding uses
  - Case Western Reserve
  - University Hospitals
Little Italy Red Line Station

- New $11.1 million station at Mayfield Road, in the heart of University Circle and Little Italy
- Opened in August; First new Red Line station since 1968
- Redevelopment has anticipated the station opening
RTA’s Priority Transit Corridors

- Identified in RTA 2010-2020 Master Plan
- HealthLine, Blue Line Extensions
- New BRT Corridors
  - W. 25th Street
  - E. 93/E. 105th Street (Crosstown)
  - Other Priority Corridors
- Reconstruction of ADA Key Rail Stations
E. 93rd - 105th Street Corridor Analysis

- Tiger Grant-Funded Analysis of BRT, Complete Streets Improvements
- Served by one of RTA’s strongest crosstown routes
- Connects RTA’s E. Woodhill Red Line Rapid Station and Opportunity Corridor to Cleveland Clinic
West 25\textsuperscript{th} Street Transit Planning Study

- Ohio City’s Main Street
- Connects many high ridership west side routes
- Exploring “BRT light”
  - Peak period parking restrictions, exclusive lanes
  - Coordination of schedules to produce even headway
  - Stop consolidation, stations
  - Traffic, signal improvements
Lakefront Multimodal Center

- Relocate Greyhound from CSU Area
- Replace Amtrak station, position for rail expansion
- Redevelop property between the Shoreway and the Tracks
East 79th Street Station Land Use Plan

- City of Cleveland developing transit-supportive land use plan for area around E. 79th Street Stations
- Result of study analyzing possible closure of stations
- Opportunity Corridor will generate development in the area
East 79<sup>th</sup> Street Station Land Use Plan

- 2014 Analysis examined potential closing of low-ridership stations
- 300 daily riders
- $15 million replacement cost
- ADA Requirement
East 79th Street Station Land Use Plan

- Analyzed transit system, land use and proposed development
- Conducted extensive outreach with stakeholders, transit users, residents
East 79th Street Station Land Use Plan

o Conclusion: Refurbish Red Line Station
  o Stakeholder and resident opposition to closing
  o Inconvenience for many existing riders
East 79th Street Station Land Use Plan

- Proposed city land use plan *reduced* area density
- City of Cleveland, area community development group committed to reinvestment
East 79th Street Station Land Use Plan

- City, RTA developing Station Area Plan
- Station area plan will help insure that new development from Opportunity Corridor is Transit-Supportive
Challenges

- More than $200 million in unfunded capital needs (state of good repair on existing infrastructure).
- Excludes replacement of all rail cars—RTA’s is the oldest rail fleet in the US.
Health Line Corridor Extension Project

Red Line/HealthLine Extension Major Transportation Improvement Analysis
What is the purpose and need?

**Purpose:**
- Provide more travel choices
- Improve access, mobility and connectivity
- Provide faster, more-reliable public transit services
- Support redevelopment and channel new development

**Need:**
- Population and employment migration
- Increasing suburbanization in the study area
- Decreasing access to public transit network
- Increasing vehicle trips
- Increasing congestion
- Lack of reliable travel times
Why improve public transport?

- Reduce Congestion
- Conserve Energy
- Improve Environment
- Increase Choices
Alternatives
Alternative B (Heavy Rail Transit/DMU)

PROPOSED RTA RED LINE/HEALTHLINE EXTENSION
ALTERNATIVE B

LEGEND
ROUTE LENGTH = 5.72 MILES

Euclid Park-N-Ride
Alternative E (Bus Rapid Transit)

PROPOSED RTA RED LINE/HEALTHLINE EXTENSION
ALTERNATIVE E 300

East 300th Street / Shoregate Shopping Center
Alternative G (Bus Rapid Transit)

PROPOSED RTA RED LINE/HEALTHLINE EXTENSION
ALTERNATIVE G 300

East 300th Street / Shoregate Shopping Center
Catalyst for redevelopment
TOD: What Do We Mean?

Patterns of land use and development that feature:

- Transit-supportive density within walking or shuttle distance
- Mixed-use station areas or corridors
- A safe, walkable environment
- Adapting the model to industrial employment centers
A Catalyst for Redevelopment

Why is transit-oriented development (TOD) so important?

- Increases ridership and revenue for RTA
- Stimulates sustainable, thriving communities
- Enhances value capture opportunities to fund the project
- Improves chances of FTA New Starts/Small Starts funding
More simply put:

Transit Investment

Returns to Community

Economic Benefits
TOD Choices Couldn’t Be More Different

**Red Line Extension**
- Several *stations*
- A swath of industrial land with job destinations but poor connectivity

**HealthLine BRT Alternatives**
- Several *corridors*
- In the fabric of downtown Euclid, neighborhoods, lakeshore, industry
Urban Fabric Analysis

Red Line/HealthLine Extension Major Transportation Improvement Analysis
Urban Fabric Analysis
Urban Fabric: BRT Extension

- How do Euclid Ave., Lakeshore Blvd., St. Clair Ave., and the connecting streets compare to the HealthLine median corridor?

- Can they accommodate:
  - Distinctive stations?
  - BRT running ways?
  - BRT on a complete street?
Euclid Avenue Cross Section (Downtown)
St. Clair Avenue at East 156th Street
Urban Fabric: Red Line Extension

- Station spacing and location

- Pedestrian connectivity:
  - station design concept
  - horizontal and vertical connections
  - Is there something to connect to?

- Industrial land:
  - Land recycling opportunities vs. active employment centers
  - Is there a concerted public policy to recycle and reposition?

- Last-mile shuttle connections
Drilling Down: GIS, Babbitt (Euclid)
Drilling Down: GIS, Five Points (Collinwood)
Drilling Down: Euclid Ave. (East Cleveland)
A TOD Vision for Red Line Extension

Boston MBTA Assembly Square: heavy rail infill station, 65-acre industrial brownfield transformed by transit-oriented development
A TOD Vision for Bus Rapid Transit

York “VIVA” BRT: multiple corridors, complete streets, TOD plans and policies, a new downtown
Vision – Euclid Avenue at Noble Road
The Business Case
Our objective: Provide an unbiased assessment of transit alternatives resulting in consensus for a preferred alternative.
FTA New Starts Project Evaluation Rating

Summary Rating

Project Justification Rating (50%)
- Environmental Benefits (16.66%)
- Cost Effectiveness (16.66%)
- Land Use (16.66%)

Financial Rating (50%)
- Current Conditions (25%)
- Commitment of Funds (25%)
- Reliability/Capacity (50%)

Cost Effectiveness (16.66%)
- Mobility Improvements (16.66%)
- Economic Development (16.66%)

Congestion Relief (16.66%)

Land Use (16.66%)

Reliability/Capacity (50%)

Commitment of Funds (25%)

Current Conditions (25%)

Financial Rating (50%)

Summary Rating

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Financial Rating (50%)
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- Reliability/Capacity (50%)

Cost Effectiveness (16.66%)
- Mobility Improvements (16.66%)
- Economic Development (16.66%)

Congestion Relief (16.66%)
Alternatives Evaluation Criteria for Tier 2

- Cost Effectiveness
  - Capital and operating costs
  - Ridership
  - Cost per trip

- Mobility Improvements
  - Reduction in auto VMT
  - Trips per zero car household

- Land Use
  - Urban Fabric analysis
  - Current land use plans

- Economic Development
  - Market Assessment
  - Redevelopment potential
Cost Effectiveness

Annual capital and operating cost per trip.

Number of trips is not an incremental measure but simply the total estimated trips.

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are we measuring?</td>
<td>Total annualized cost per project boarding</td>
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<tr>
<td>What are the sources?</td>
<td>FTA national transit model STOPS</td>
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<tr>
<td>Reporting methods</td>
<td>FTA standardized cost category workbook Cost effectiveness template</td>
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<tr>
<td>How did FTA determine rating breakpoints?</td>
<td>Sampling of recent New Start project data.</td>
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## Cost Effectiveness Index Values

<table>
<thead>
<tr>
<th>Features</th>
<th>Alternative B</th>
<th>Alternative E</th>
<th>Alternative G</th>
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<tbody>
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<td>Terminus</td>
<td>Babbitt Road</td>
<td>East 260th Street</td>
<td>East 260th Street</td>
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<td></td>
<td>E. 300th / Shoregate</td>
<td>E. 300th / Shoregate</td>
<td>E. 300th / Shoregate</td>
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<tr>
<td>Technology</td>
<td>HRT</td>
<td>Rapid +</td>
<td>Rapid +</td>
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<tr>
<td></td>
<td>DMU</td>
<td>BRT</td>
<td>BRT Lite</td>
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<tr>
<td>Route Miles</td>
<td>6.5</td>
<td>8.8</td>
<td>8.8</td>
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<td></td>
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<td>10.5</td>
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<tr>
<td>Cost Expenditures ($ millions)</td>
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<td>$53.0</td>
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<td>Ridership</td>
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<tr>
<td>Daily</td>
<td>13,400</td>
<td>8,200</td>
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<td></td>
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<td>9,500</td>
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<td>Annual (000)</td>
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<td>3,120</td>
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<td>Cost Effectiveness (Annualized Cost per Trip)</td>
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<td>Cost per Trip</td>
<td>$9.41</td>
<td>$21.59</td>
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<td>$6.57</td>
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</table>
Mobility Improvements

Total Number of Linked Trips using the proposed project, with a weight of two given to trips by transit dependent people. Reductions in daily automobile miles traveled.

<table>
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<tr>
<th>Question</th>
<th>Answer</th>
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<tbody>
<tr>
<td>What are we measuring?</td>
<td>Total “project boardings” with weighting of transit dependent trips. Reductions in daily automobile miles traveled (VMT)</td>
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<tr>
<td>What are the sources?</td>
<td>Local transit model or STOPS</td>
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<tr>
<td>Reporting methods</td>
<td>Travel forecast template; mobility template</td>
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### Reduced Automobile Vehicle Miles Traveled

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<th>Alternative B</th>
<th>Alternative E</th>
<th>Alternative G</th>
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<tbody>
<tr>
<td></td>
<td>HRT</td>
<td>DMU</td>
<td>Rapid+</td>
</tr>
<tr>
<td>Route Miles</td>
<td>6.5</td>
<td>6.5</td>
<td>7.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Average Daily Riders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily trips on project</td>
<td>13,400</td>
<td>8,200</td>
<td>8,800</td>
</tr>
<tr>
<td>New transit trips</td>
<td>11,100</td>
<td>5,600</td>
<td>3,300</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Daily Reductions in Automobile Miles Traveled (VMT)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily auto VMT</td>
<td>(75,200)</td>
<td>(45,900)</td>
<td>(23,100)</td>
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</table>
# Mobility Improvements

<table>
<thead>
<tr>
<th></th>
<th>Alternative B</th>
<th>Alternative E</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>HRT</td>
<td>DMU</td>
<td>Rapid+</td>
</tr>
<tr>
<td>Route Miles</td>
<td>6.5</td>
<td>6.5</td>
<td>7.4</td>
</tr>
<tr>
<td>Zero Car Households</td>
<td>525</td>
<td>525</td>
<td>904</td>
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## Mobility Improvements

<table>
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<tr>
<th></th>
<th>Alternative B</th>
<th>Alternative E</th>
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</thead>
<tbody>
<tr>
<td>Daily trips on project</td>
<td>13,400</td>
<td>8,800</td>
<td>9,000</td>
</tr>
<tr>
<td>% trips from zero car households</td>
<td>33%</td>
<td>34%</td>
<td>40%</td>
</tr>
<tr>
<td>Transit dependent trips</td>
<td>4,422</td>
<td>3,608</td>
<td>3,400</td>
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<tr>
<td>Weighted trips</td>
<td>8,844</td>
<td>7,216</td>
<td>6,800</td>
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<tr>
<td>Non-transit dependent trips</td>
<td>8,978</td>
<td>5,192</td>
<td>5,100</td>
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<tr>
<td>Total Daily Weighted trips</td>
<td>17,822</td>
<td>12,408</td>
<td>11,900</td>
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<tr>
<td>Annualized mobility improvements (000)</td>
<td><strong>5,346,600</strong></td>
<td>3,722,400</td>
<td>3,570,000</td>
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</tbody>
</table>
Examination of the existing corridor and station area development, character, and affordability housing.

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
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</thead>
<tbody>
<tr>
<td>What are we measuring?</td>
<td>Number of legally binding affordable housing units. Density of population and employment within ½-mile of stations.</td>
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<tr>
<td>What are the sources?</td>
<td>Census data; affordable housing policies</td>
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<tr>
<td>Reporting methods</td>
<td>• Land Use Template (Quantitative)</td>
</tr>
<tr>
<td></td>
<td>• Table of quantitative data on land use characteristics</td>
</tr>
<tr>
<td></td>
<td>• Supporting documentation to substantiate statements made in the template.</td>
</tr>
</tbody>
</table>
## Benefits of Investments in Public Transit

<table>
<thead>
<tr>
<th><strong>Direct Benefits</strong></th>
<th><strong>Indirect Benefits</strong></th>
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</thead>
<tbody>
<tr>
<td>Mobility improvements</td>
<td>Increased economic activity</td>
</tr>
<tr>
<td>Travel time savings</td>
<td>Increased competitiveness</td>
</tr>
<tr>
<td>Cost savings</td>
<td>Productivity improvements</td>
</tr>
<tr>
<td>Transportation system efficiency</td>
<td>Land-use patterns change</td>
</tr>
<tr>
<td>Accident reduction</td>
<td>Property values increase</td>
</tr>
<tr>
<td>Energy savings</td>
<td>Residual impacts</td>
</tr>
<tr>
<td>Environmental quality improves</td>
<td>Residual community amenity</td>
</tr>
</tbody>
</table>
Summary Evaluation

- **Alternative B**
  - DMU option is not cost-effective.
  - HRT option provides significant mobility benefits.
  - HRT option *medium* rating for cost-effectiveness without right-of-way costs.
  - HRT costs twice as much as the BRT options and is less cost effective.

- **Alternative E**
  - Rapid+ option is not cost effective.
  - BRT option has fewer mobility benefits than Alternative B.
  - BRT option would qualify for a *medium* rating for cost-effectiveness.
  - Satisfies statutory requirement for dedicated transit lanes.
  - Future "transit village" development.

- **Alternative G**
  - Rapid+ option is not cost effective.
  - BRT option has fewer mobility benefits than Alternative B.
  - BRT option would qualify for a *medium* rating for cost-effectiveness.
  - Does NOT currently satisfy statutory requirement for dedicated transit lanes.
  - Future "transit village" development.
Thank you!