Gaithersburg Circulator Study

June 2014

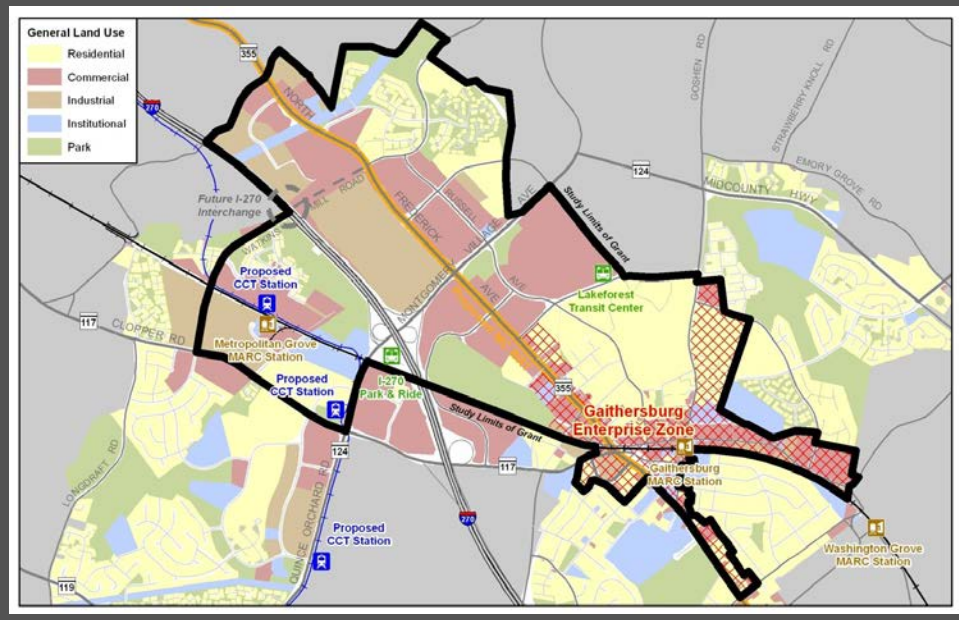
NELSON NYGAARD

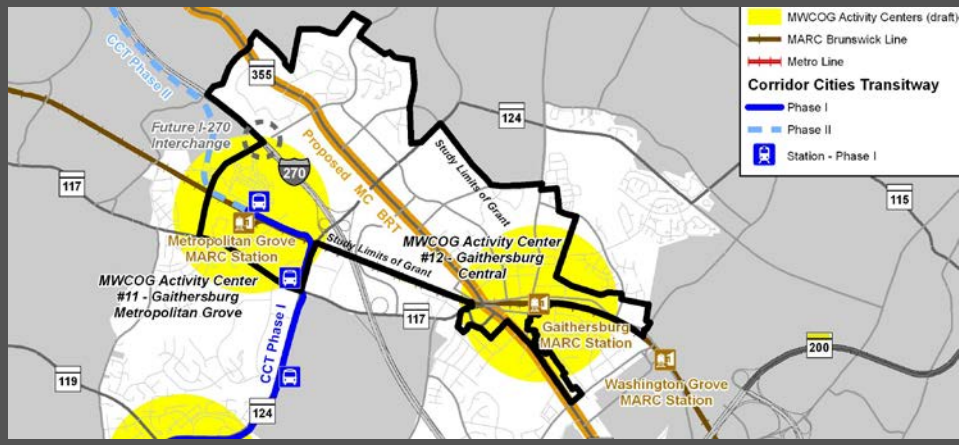
Project Overview

- Project part of MWCOG's Transportation/Land-Use Connections (TLC) Program
  - Provides local jurisdictions with funding and consulting assistance to support projects that integrate transportation and land-use planning
- Nelson\Nygaard is a national planning consulting firm focused primarily of transit service design and redesign
- Determine how to develop, fund, and operate a circulator in order to complement new and existing transit and urban development projects in Gaithersburg
- Strengthen connections to MWCOG-defined Regional Activity Centers

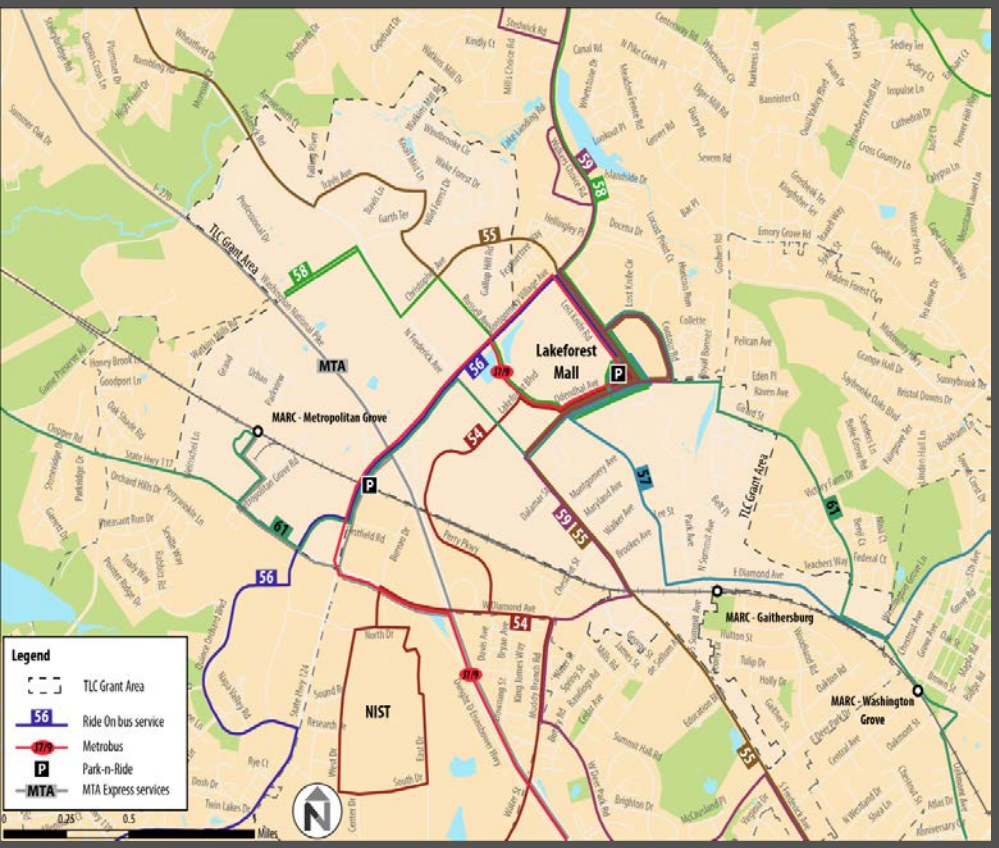
Study Area

- Northeastern portion of Gaithersburg
  - Mix of Land Uses
  - Range of housing types
  - Two MWCOG Activity Centers
  - One State of Maryland designated Enterprise Zone
  - Multi-modal transit environment
    - Local Bus
    - Commuter Bus
    - Commuter Rail
    - BRT (Planned)





Existing Transit Environment



Route	Morning Rush	Mid-Day	Afternoon Rush	Evening	Weekend	Weekend Evenings
Metro Red Line	6	6	6	12 to 15	6	12 to 15
Ride On 54	30	30	30	30	30	30
Ride On 55	10	15	10	20 to 30	15 to 20	30 to 45
Ride On 56	20	30	20	30 to 45	30	30
Ride On 57	20	25	20	30	20	30
Ride On 58	15	20 to 25	15	30	30	30
Ride On 59	15	20	15	30	30	30
Ride On 61	20	30	20	30 to 40	30	30
Ride On 70	12 to 15		12 to 15			
Ride On 79	30		30			
Ride On 100	6 to 8	15	6 to 10	15 to 30	30	30
Metrobus J7/J9	12 to 20 peak direction/ 30 opposite		12 to 20 peak direction/ 30 opposite			
MTA 201	60		60			
MTA 202	60 peak		60 peak			
MTA 204	30 peak		30 peak			
MTA 991	15 to 20 peak		15 to 20 peak			
MARC Brunswick Line	20 peak		20 peak			

Circulators

- Circulators are transit routes designed to provide short trips within a compact, defined area

- Successful circulators typically share most of the following attributes:
  - Frequent and reliable service
  - Simple and direct routing
  - Distinctive branding
  - Low or free fares
  - Stable and reliable funding
  - Clear purpose

Circulators

- The success of circulator has as much to do with its operating environment as its design

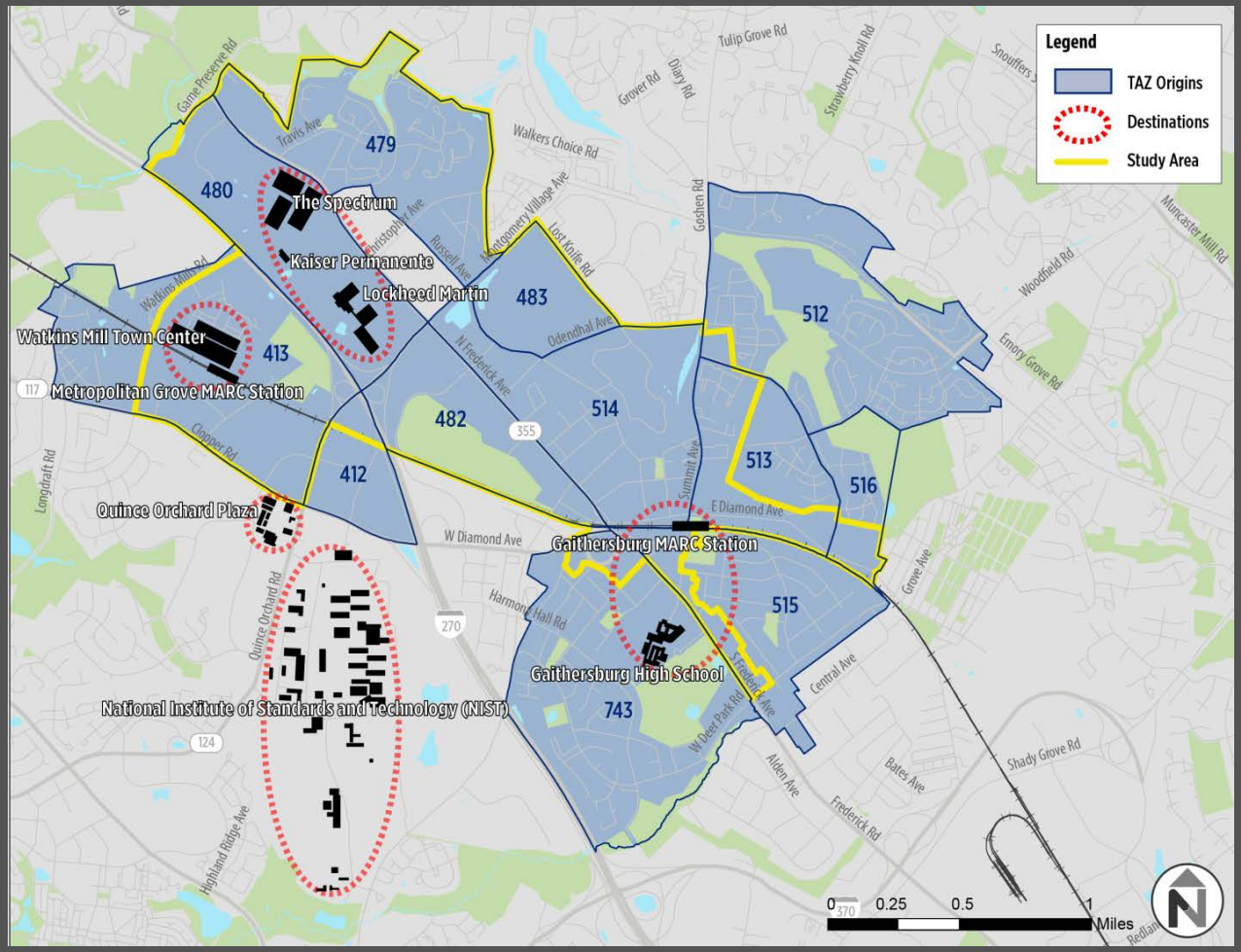
	DC Circulator	Charm City Circulator	Bethesda Circulator	GEORGE	Gaithersburg
Pedestrian-friendly street grid	✓	✓	✓	✗	✗
Attractions all day (18-hour day)	✓	✓	✓	✗	✓
High population density	✓	✓	✓	✗	✗
High employment density	✓	✓	✓	✗	✗
Limited parking availability	✓	✓	✓	✗	✗
Charge for parking	✓	✓	✓	✗	✗
Frequent, all-day transit (15 minutes or less, 18 hours a day)	✓	✓	✓	✗	✓
Steady high ridership all day and all week	✓	✓	✗	✗	✗
Free circulator fare	✗	✓	✓	✗	

Analysis

1. Establish “trip score” baseline
2. Develop service improvement options
3. Compare trip scores for each option
4. Analyze costs / benefits of each option
5. Recommendations

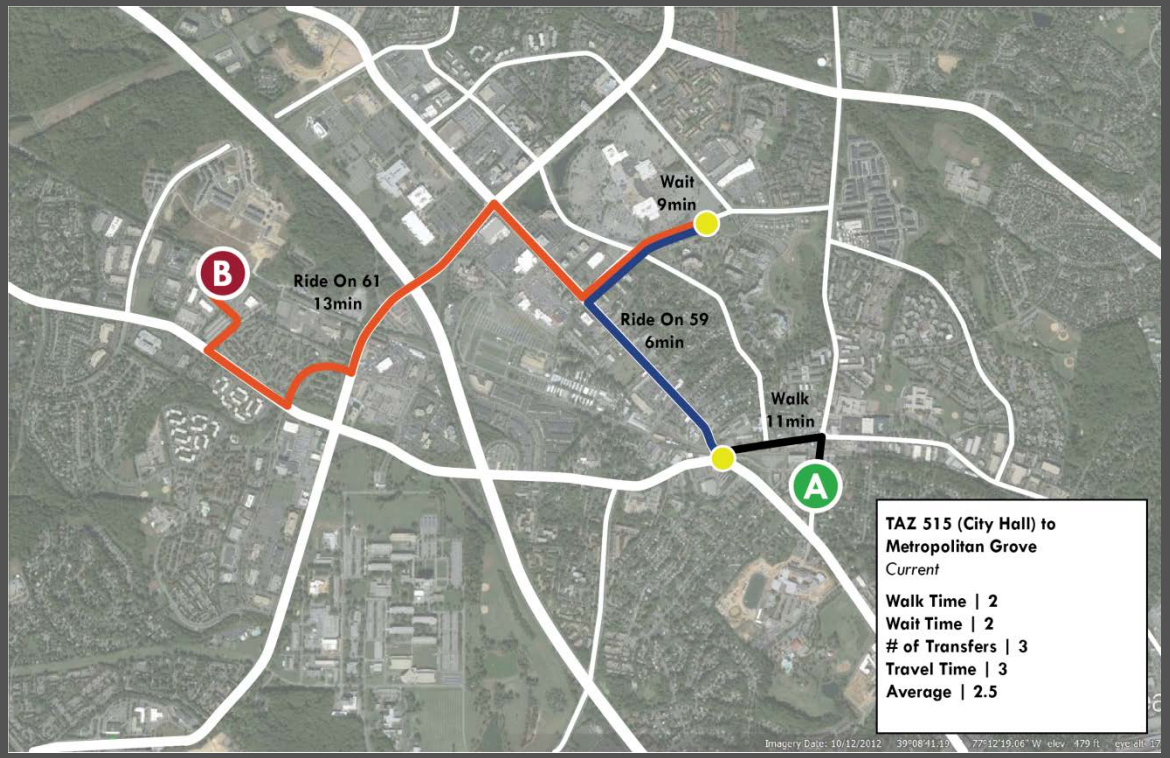
Trip Scores

- Quality of transit connections analyzed for 12 origins and 5 key destinations:



Trip Scores

Points	Walk Time	Wait Time (wait during transfer + headways divided by 2)	Number of Transfers	Total travel time
1	16 + minutes	31 to 40 minutes	3+	90 + minutes
2	11 to 15 minutes	21 to 30 minutes	2	61 to 90 minutes
3	6 to 10 minutes	11 to 20 minutes	1	31 to 60 minutes
4	0 to 5 minutes	0 to 10 minutes	0	0 to 30 minutes



Trip Scores

- Baseline:

Current	Diamond Square	Metropolitan Grove	Watkins Mill/Travis	Kaiser Permanente	Fairgrounds	Lakeforest Mall
TAZ	412	413	479	480	482	483
Olde Towne	2.75	2.75	3.75	3.25	3.75	4
Metropolitan Grove MARC station	3.75		3	3	3	3
Kaiser Permanente	2.75	2.75	3.5		2.75	3.5
Quince Orchard Plaza		3.25	2.75	2.75	2.75	3.5
NIST	4	3.25	2.75	2.5	3.25	3

Current (Continued)	Hidden Creek	Olde Towne	Asbury	City Hall	Girard/Victory Farm	Gaithersburg High School
TAZ	512	513	514	515	516	743
Olde Towne	3.25		3.5		3.25	
Metropolitan Grove MARC station	3.5	3.25	3.25	2.5	2.75	2.75
Kaiser Permanente	3.5	2.75	3	2.75	3	2.5
Quince Orchard Plaza	4	3.25	3.25	3.25	3.5	2.25
NIST	3	2.75	2.75	2.5	3.25	2

LEGEND:

2.0 – 2.4	Poor Connectivity
2.5 – 2.9	|
3.0 – 3.4	|
3.5 – 3.9	|
4.0	Strong Connectivity

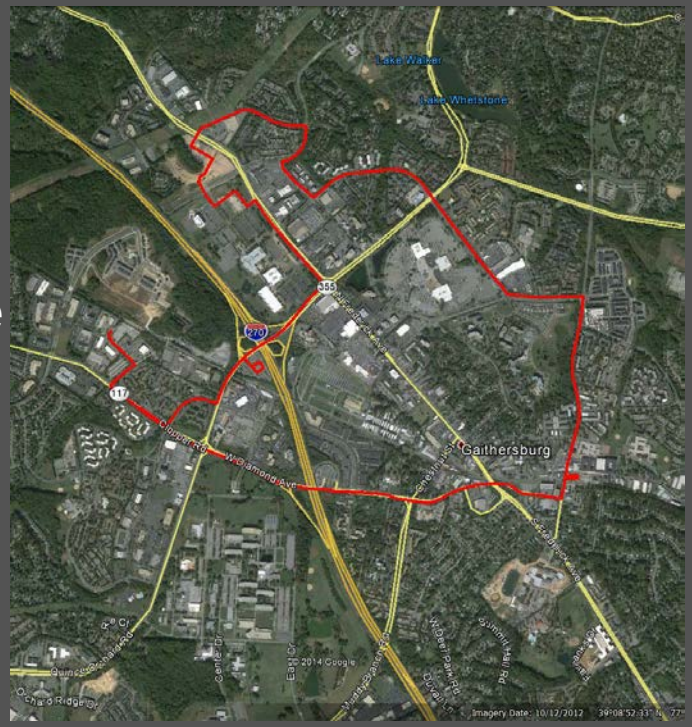
Service Improvement Options

- Each option designed to:
  - Improve connectivity in the short-range
  - Complement planned transportation improvements in the long-range (with minimal modification)

- Three alternatives considered
  - Two stand-alone circulator options
  - One option consisting of modifications to Ride On service only

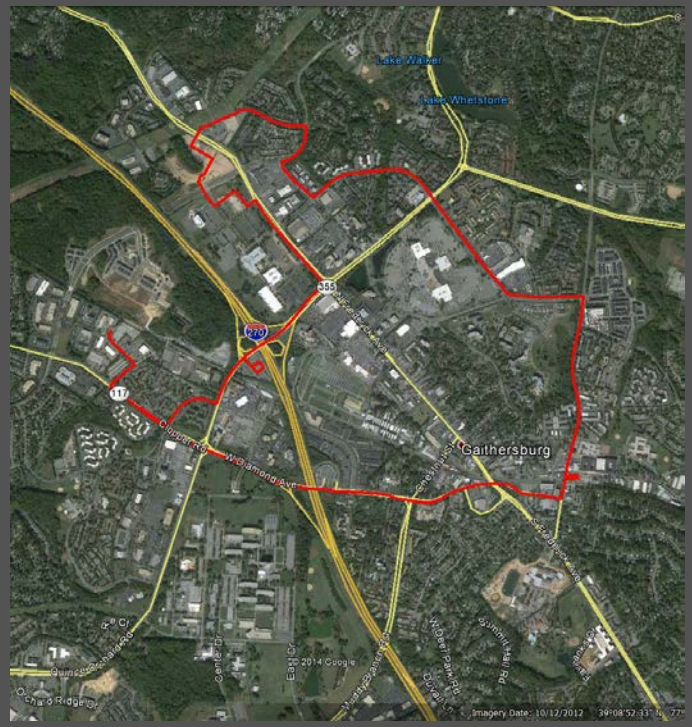
Service Improvement Options

- Option 1: Full Loop Circulator
  - 8.4-mile bi-directional loop
  - Serve all major activity centers
    - Olde Towne
    - Lakeforst Mall
    - Lockheed Martin / Kaiser Permanente
    - Metropolitan Grove
    - NIST
  - Serve high-density residential
    - North Summit Ave.
    - Odenhal Ave.
    - Travis Ave.
  - Serve transit hubs
    - Gaithersburg and Metropolitan Grove MARC stations
    - Quince Orchard Park & Ride
    - Lakeforest Transit Center



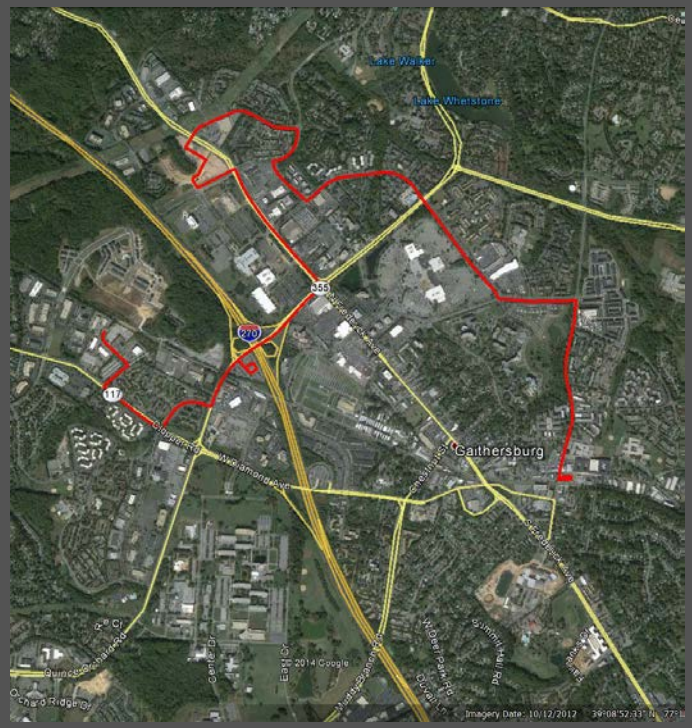
Service Improvement Options

- Option 1: Full Loop Circulator
  - Assumes 20-minute service frequency
    - Requires 4 buses in concurrent service
  - Assumes 15 hours of service per day, 250 days / year
    - 6:00 am to 9:00 pm
    - Weekdays only
  - Assumes operating cost of approximately $67 per service hour
    - $1,009,000 per year



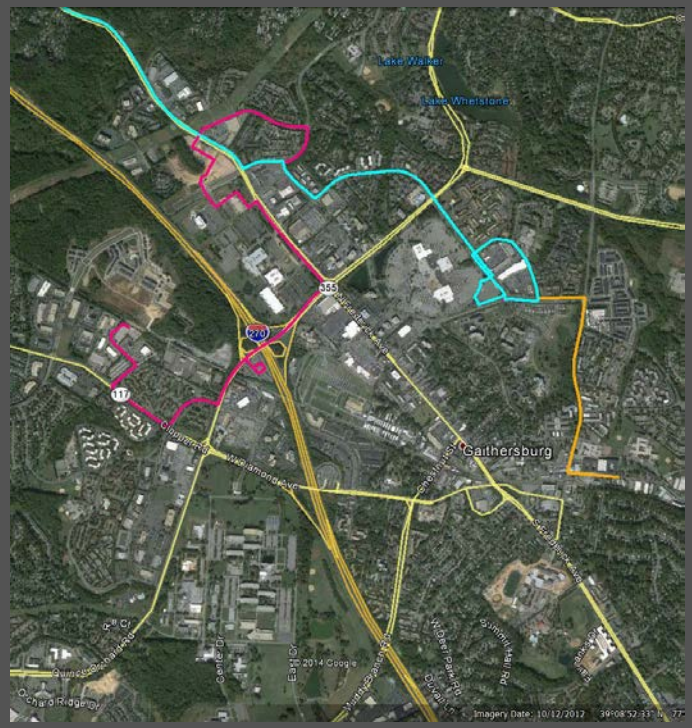
Service Improvement Options

- Option 2: Out-and-Back Circulator
  - 6-mile route between Metropolitan Grove and Olde Towne
    - No “express” connection along Diamond Ave.
    - Serves all major destinations except NIST
  - 3 vehicles required for 20-minute service frequency
  - Same schedule as Option 1
  - Estimated operating cost: $757,000 per year

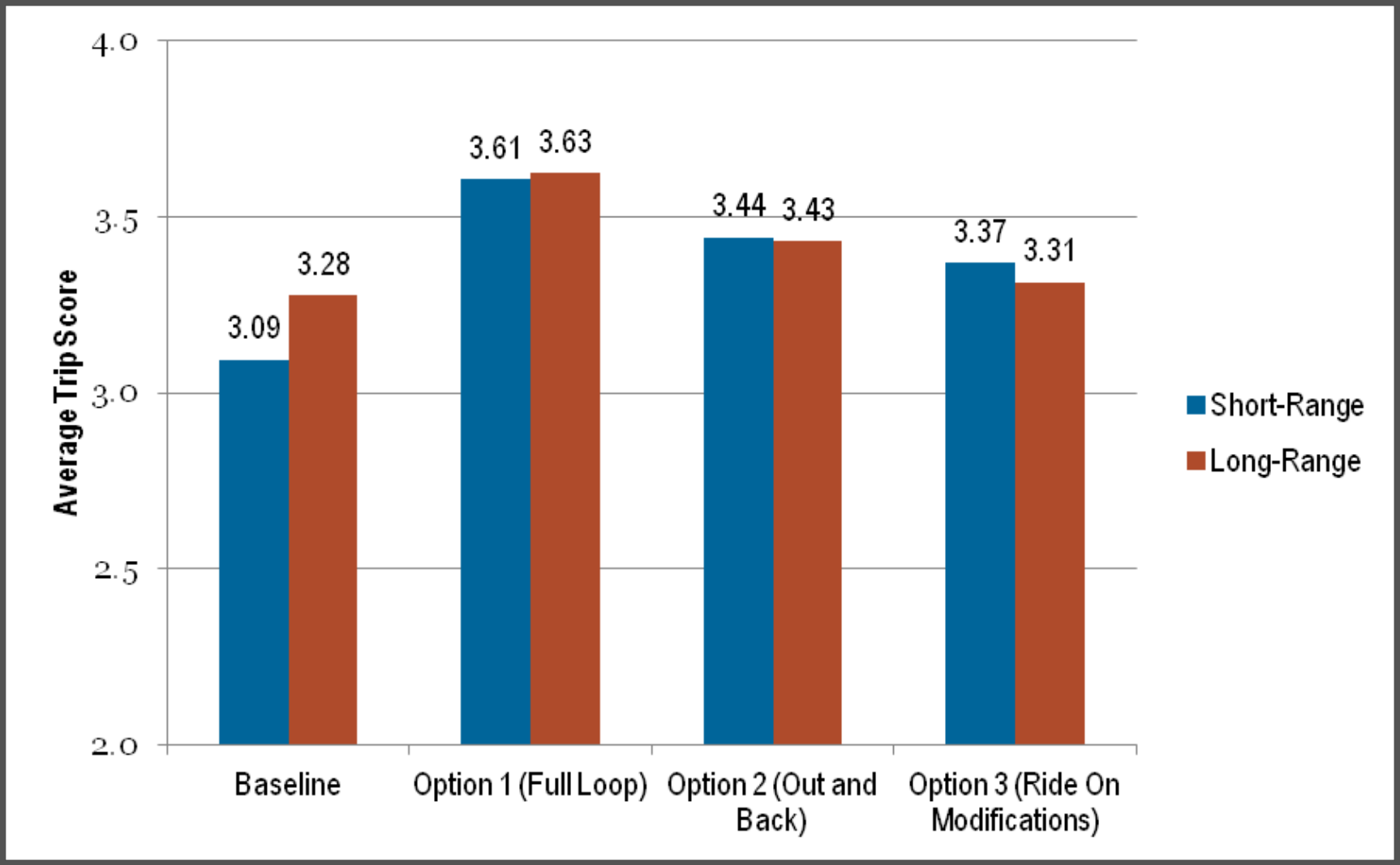


Service Improvement Options

- Option 3: Ride On Modifications
  - Re-route three existing lines to provide better coverage to current and planned activity centers
    - Ride On Routes 55, 57, and 58
    - Essentially mimics circulator coverage
  - Combination of service expansion and re-allocation
    - Requires 2 additional peak vehicles
    - Requires some trade-offs (ex. Summit Ave. vs. Russell Ave.)
  - Estimated additional operating cost: $491,000 per year

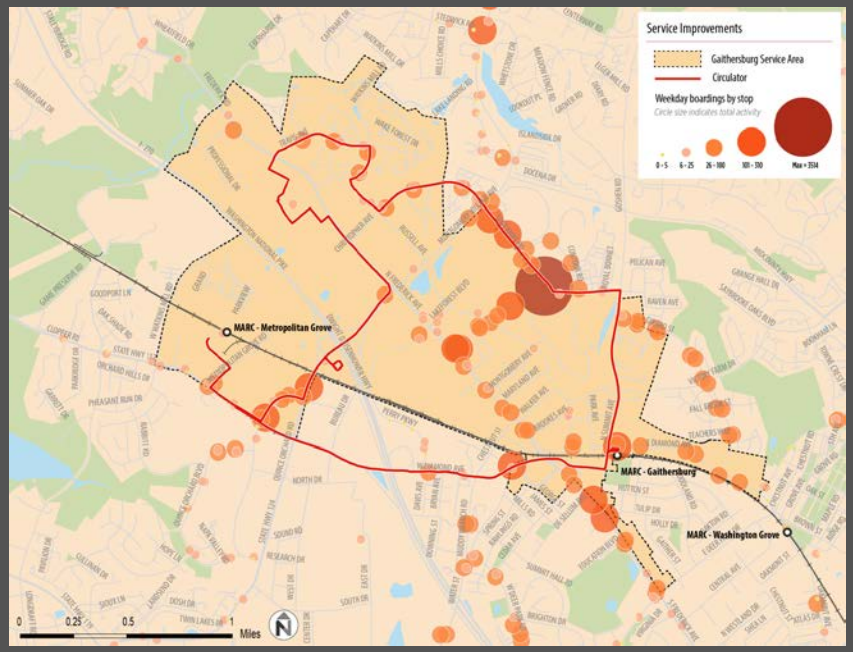


Trip Score Comparison



Cost / Benefit Analysis

- Operating costs are primarily a function of service hours
- Benefits expressed in terms of transit ridership growth within the study area
  - Likely proportional to service quality improvement
  - Existing ridership used as baseline



Option	Average Trip Score	Trip Score Improvement from Baseline Score	Estimated Study-Area Daily Transit Ridership (Ride On + Circulator)
Current	3.09		2,240
Option 1 (Full Loop Circulator)	3.61	14%	2,559
Option 2 (Out-and-Back Circulator)	3.44	10%	2,466
Option 3 (Ride On Modifications Only)	3.37	8%	2,422

Cost / Benefit Analysis

	Trip Score	Estimated Study-Area Daily Ridership	Estimated New Daily Riders	Estimated New Annual Riders	Additional Buses Needed for Peak Service	Additional Estimated Annual Operating Cost	Cost Per Additional Rider
Current	3.09	2,240	–	–	–	–	–
Option 1 (Full Loop Circulator)	**3.61**	**2,559**	**319**	**79,778**	4	$1,009,000	$12.65
Option 2 (Out-and-Back Circulator)	3.44	2,466	226	56,618	3	$757,000	$13.37
Option 3 (Ride On Modifications Only)	3.37	2,422	182	45,558	**2**	**$491,000**	**$10.78**

Funding

- Federal operating assistance is very difficult to come by in urbanized areas
- Capital assistance primarily goes to regional providers
- Most circulators are funded locally through public-private partnerships or special funding districts
  - DC Circulator: general funds (DDOT), parking revenues, farebox revenue
  - Bethesda Circulator: parking revenue (Bethesda Parking Lot District), bus sponsorships solicited by Bethesda Urban Partnership

Cost per vehicle	$250,000	$252,500	$255,025	$257,575	$260,151	$262,753	$265,380	$268,034	$270,714	$273,421
Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Vehicles required for service	5	5	5	5	5	5	5	5	5	5
Vehicles purchased or replaced	5							3		2
Vehicle Purchases	$1,250,000							$804,102		$546,843
Signage; Stops: Shelters	$30,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Fund Capital Reserve		$30,000	$30,000	$30,000	$30,000	$30,000	$30,000		$30,000	
Total Capital Costs	**$1,280,000**	**$40,000**	**$40,000**	**$40,000**	**$40,000**	**$40,000**	**$40,000**	**$814,102**	**$40,000**	**$556,843**
Operating Costs	$1,009,000	$1,039,270	$1,070,448	$1,102,562	$1,135,638	$1,169,708	$1,204,799	$1,240,943	$1,278,171	$1,316,516
Total Costs (Capital and Operating)	**$2,289,000**	**$1,079,270**	**$1,110,448**	**$1,142,562**	**$1,175,638**	**$1,209,708**	**$1,244,799**	**$2,055,044**	**$1,318,171**	**$1,873,359**

Conclusion / Recommendations

- Stand-alone circulator options would improve mobility, but would be very difficult to support financially under existing conditions
- Most viable approach is Option 3: Ride On modifications
- Study recommendations:
  - Work closely with Ride On to improve service to existing and planned activity centers
  - Complement existing service with targeted capital improvements as funding becomes available

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