



County of Fairfax, Virginia

Reston – Herndon Route Optimization

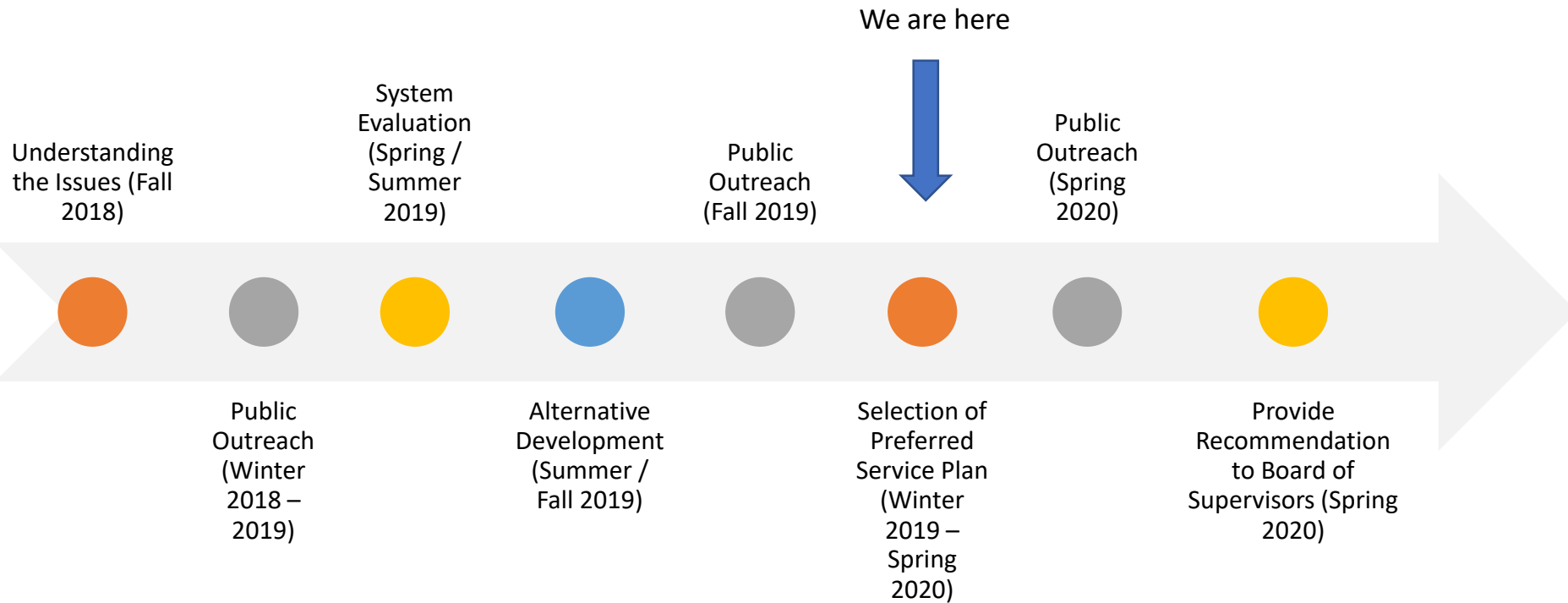


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Fairfax County Government Center
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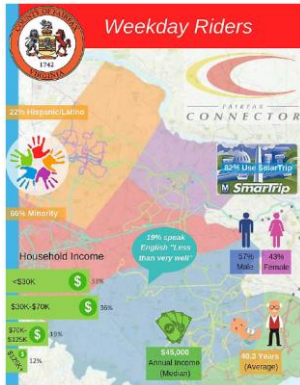


Planning Process





Outreach

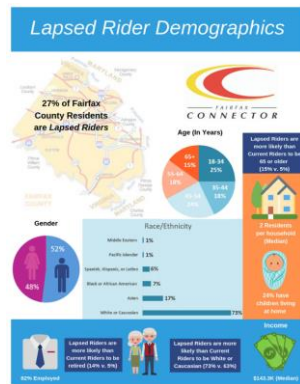


Marketing Survey

- Fall 2018: 2,600 responses
- Gathered data on why residents do not ride buses
- Used to determine what measures could be used to attract non-riders and reconnect with lapsed riders

Onboard Survey

- Spring - Summer 2019: 2,550 responses
- Collected information on passengers' origins, destinations, preferences, and demographic characteristics
- Used for future planning purposes to increase ridership and improve the customer experience



Online Survey and Public Meetings

- Conducted two rounds of online surveys: 1,400 responses
- Conducted three rounds of public meetings and outreach





What We Heard: Service Improvements

Connectivity

Adjust routes:

- Key community locations
- Realign routes with travel patterns

Faster Travel

Adjust routes:

- Realign routes to be more direct
- Reduce unneeded travel patterns

Greater Span of Service

Adjust hours of service:

- Increase service hours on key routes to improve access and mobility

Increased Frequency

Adjust service:

- Add additional buses to key routes to increase mobility



Service Alternatives



Three service alternatives are being studied:

Alternative 1 – Existing Service Plus
Alternative 2 – Streamlined Service
Alternative 3 – Area Wide Transformation



All alternatives would be initially developed as budget neutral, with no increase (+/-2%) in total revenue hours.






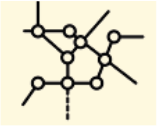











Develop Preferred Service Plan

May include elements of all alternatives
Micro-transit options (Alternative Transit Study)
Develop optional additional service recommendations



Alternative Comparison: Reston – Herndon

	Existing Service	Alternative 1: Existing Service Plus	Alternative 2: Streamlined Service	Alternative 3: Transformation
Key Locations 	 Rank: 4 of 4	 Rank: 3 of 4	 Rank: 2 of 4	 Rank: 1 of 4
Travel Time 	 Rank: 4 of 4	 Rank: 3 of 4	 Rank: 2 of 4	 Rank: 1 of 4
Transit Propensity 	 Rank: 4 of 4	 Rank: 2 of 4	 Rank: 3 of 4	 Rank: 1 of 4



Alternatives Evaluation



Transit Propensity

- Ability to serve:
 - Low-income households
 - Houses with one or zero vehicles
 - Minority households
 - Seniors
 - Disabled



Frequency Factor

- Assess service frequency by route in each alternative
- Higher score for greater frequency
- Used as a weight

Span of Service

- Assess hours of service by route in each alternative
- Higher score for greater hours of operations
- Used as a weight



Average Travel Time

- Travel time to major destinations
- Used ten origin and destination pairs to create an average travel time per alternative

Key Locations

- Employment centers
- Schools / colleges
- Hospitals
- Park-and Ride Lots
- Metrorail Stations
- Recreation Centers



Alternative Comparison: Reston – Herndon

Criteria	Existing	Alternative 1	Alternative 2	Alternative 3	Preferred Plan
Transit Propensity Population (higher is better)	72,800	93,200	87,500	88,400	89,700
Frequency Factor (2.5 max; higher is better)	0.99	1.03	0.86	1.36	1.43
Span of Service Factor (2.5 max; higher is better)	1.87	1.71	2.00	1.78	1.93
Avg. Travel Time (in minutes; lower is better)	57	56	54	46	49
Key Locations (higher is better)	57	65	64	63	68



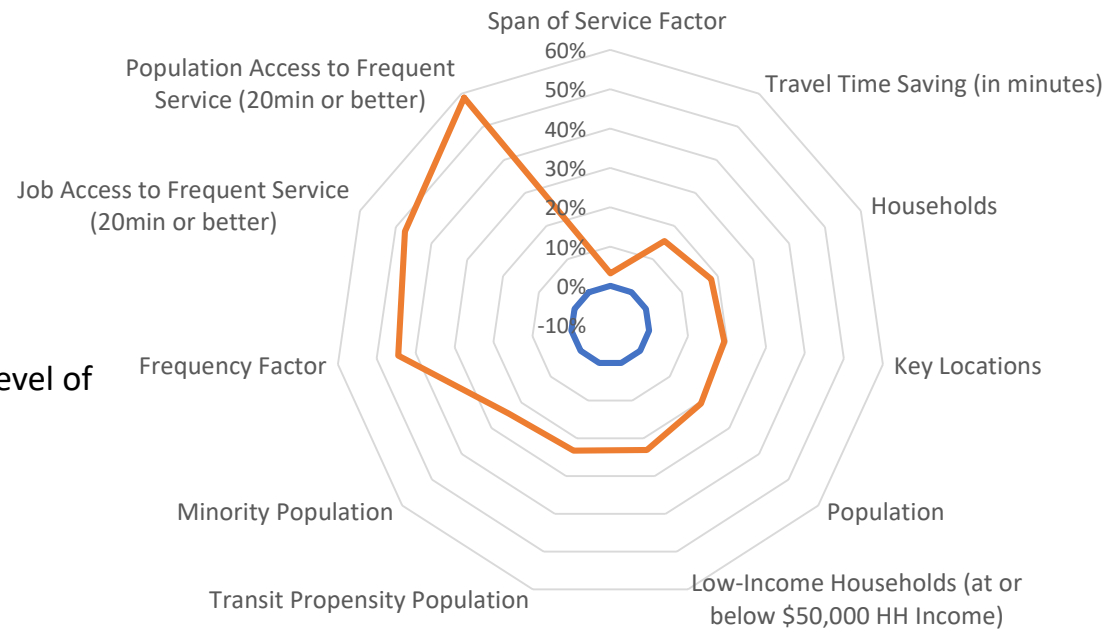
Alternative Comparison

Reston - Herndon Service Plan Evaluation

— Base — Preferred Plan

Ten criteria were used to assess the preferred plan.

- Comparison analysis:
 - Transit propensity
 - Travel time
 - Key locations
- Level of service:
 - Frequency
 - Span of service
 - 20-minute or better level of service (population)
- Socio Economic:
 - Population
 - Households
 - Minority
 - Low income
 - Job access





Facility Impacts

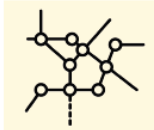
- The preferred plan has no impact on the Connector facilities' bus garages.
- The preferred plan spreads the usage of the existing transit stations.
 - No need for the south bus bays at Wiehle Reston East Metrorail Station (as previously assessed)

Metrorail and Transit Stations	Existing Service Routes per Station	Preferred Service Plan Routes per Station	Percentage Reduction
Wiehle – Reston East	25	8	-68%
Reston Town Center	-	11	-
Reston Town Transit Center	12	10	-16%
Herndon Station	13	7	-46%
Innovation Center	-	4	-



FAST FACTS: EXISTING SERVICE VS. PREFERRED PLAN

TRAVEL TIME BETWEEN KEY ORIGINS AND DESTINATIONS



	EXISTING SERVICE	PREFERRED PLAN	PERCENT CHANGE
Average Travel Time	57.3 Minutes	49.4 Minutes	-14%

POPULATION AND HOUSEHOLDS SERVED WITHIN A QUARTER-MILE OF SYSTEM



	EXISTING SERVICE	PREFERRED PLAN	PERCENT CHANGE
Population	157,400	189,600	+20%
Minority Population	79,000	98,200	+24%
Households	59,300	70,100	+18%
Low-Income Households (At or Below \$50,000)	9,100	11,200	+23%

POPULATION AND JOBS SERVED WITHIN A QUARTER-MILE OF PEAK SERVICE



FREQUENCY	EXISTING SERVICE		PREFERRED PLAN		PERCENT CHANGE	
	Population	Jobs	Population	Jobs	Population	Jobs
0-20 Minutes	71,900	65,600	114,100	96,700	+59%	+47%
21-30 Minutes	71,600	79,900	113,800	124,300	+59%	+56%
31+ Minutes	126,000	139,000	54,300	74,800	-57%	-46%





Preferred Plan Improvements

	EXISTING SYSTEM	PREFERRED PLAN	PERCENTAGE CHANGE
Schools	6	8	33%
Colleges	1	2	100%
Hospitals	2	2	0%
Metrorail Stations	6	9	50%
Social Service Facilities	4	5	25%
VRE Stations / Park-and-Ride Lots	10	13	30%
Population (within 45 minutes)	150,400	210,300	40%
Employment (within 45 minutes)	230,300	278,300	21%
Transit Propensity Population	72,800	89,700	23%
Total Population	157,400	189,500	20%



Preferred Plan Route Details

Route	Peak Frequency (minutes)	Off-Peak Frequency (minutes)	Weekend Service	Weekday Span of Service	Improvement
507	25	25	No	5:00 A.M. to 7:00 P.M.	No major
552	20	-	No	Peak hours	Increase connectivity
553	20	-	No	Peak hours	Increase connectivity
558	20	60	Yes	5:00 A.M. to 9:00 P.M.	Increase connectivity
574	30	45	Yes	5:00 A.M. to 9:00 P.M.	Shorten travel time
599	25	-	No	Peak hours	No change
605	30	45	Yes	5:00 A.M. to 9:00 P.M.	Increase frequency and shorten travel time
615	30	45	Yes	7:00 A.M. to 9:30 P.M.	Replace portion of 605



Preferred Plan Route Details

Route	Peak Frequency (minutes)	Off-Peak Frequency (minutes)	Weekend Service	Weekday Span of Service	Improvement
901	30	60	Yes	5:00 A.M. to 9:00 P.M.	New route, increase connectivity
921	40	40	Yes	7:00 A.M. to 7:00 P.M.	New route, improve linkage
924	20	60	Yes	5:00 A.M. to 10:00 P.M.	Extension
950	15	20	Yes	5:00 A.M. to 1:00 A.M.	Increase frequency
951	20		No	Peak hours	Increase frequency and extend route
952	20		No	Peak hours	Increase connectivity and frequency
954	30	60	Yes	5:00 A.M. to 9:00 P.M.	New route, increase connectivity
983	30	45	Yes	7:00 A.M. to 7:00 P.M.	Increase connectivity



Preferred Plan Route Details

Route	Peak Frequency (minutes)	Off-Peak Frequency (minutes)	Weekend Service	Weekday Span of Service	Improvement
RIBS 1 (501)	25	25	Yes	5:00 A.M. to 12:00 A.M.	Increase frequency
RIBS 2 (502)	20	30	Yes	5:00 A.M. to 12:00 A.M.	Increase connectivity and frequency
RIBS 3 (503)	25	25	Yes	5:00 A.M. to 12:00 A.M.	Increase frequency
RIBS 4 (504)	20	40	Yes	5:00 A.M. to 11:00 P.M.	Increase connectivity and frequency
RIBS 5 (505)	45	45	Yes	5:00 A.M. to 11:00 P.M.	Increase connectivity



Preferred Plan Plus: Reston - Herndon

- Additional improvements above budget neutral
- Improved frequencies on six routes: 605, 615, 924, 950, RIBS 1, and RIBS 2
- Improved span of service on four routes: 552, 553, 951, and 952
- Additional weekend service on three routes: 605, 615, and 924
- Increases total annual revenue hours by 54,000 over existing service
- First year capital and operating costs are estimated at \$11.1 million
- Additional 8 vehicles would be needed at a cost of \$4.6 million
- Annual cost of \$6.5 million
- Implementation of this plan can be phased over 18 to 24 months
- Preferred Plan Plus recommendations could be implemented incrementally



Preferred Plan Plus Route Details

Preferred Plan

Preferred Plan Plus

Route	Peak Frequency (minutes)	Off-Peak Frequency (minutes)	Weekend Service	Peak Frequency (minutes)	Off-Peak Frequency (minutes)	Weekend Service	Improvement
552	20	-	No	20	45	No	Off-peak service
553	20	-	No	20	60	No	Off-peak service
605	30	45	Yes	30	30	Yes	Saturday frequency improvement
615	30	45	Yes	30	30	Yes	Off-peak service and Saturday frequency
922	-	-	-	40	40	Yes	New route
924	20	60	Yes	20	30	Yes	Off-peak service and Saturday frequency



Preferred Plan Plus Route Details

Preferred Plan

Preferred Plan Plus

Route	Peak Frequency (minutes)	Off-Peak Frequency (minutes)	Weekend Service	Peak Frequency (minutes)	Off-Peak Frequency (minutes)	Weekend Service	Improvement
950	15	20	Yes	15	15	Yes	Off-peak frequency
951	20	-	No	20	45	No	Off-peak frequency
952	20	-	No	20	60	No	Off-peak frequency
RIBS 1 (501)	25	25	Yes	20	20	Yes	Weekday frequency
RIBS 3 (503)	25	25	Yes	20	20	Yes	Weekday frequency



Next Steps

1

Board input

Public outreach:
introduce preferred
plan

2

Conduct public
outreach

Refine preferred
plan

3

Board approval

Service
implementation

Public Meetings (pending):

- Hutchison Elementary School on March 21st
- South Lakes High School on March 24th