Fairfax County Public Schools
Transportation Study

Progress Report

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Project Introduction

- **3-part project that:**
  1. Analyzes the likely resource utilization impact of targeted transportation changes
  2. Continues bell time realignment study
  3. Evaluates net cost impact of 1 and 2
- **Results reported in October, 2006**
- **Expected outcomes include:**
  - ✓ Data and information for informed SB decisions
  - ✓ Completed feasibility evaluation for bell time realignments

Part 1 – Options to Reduce Cost

- **Update to base cost models (A) plus four targeted analyses:**
  - B. Modify out-of-boundary transportation
  - C. Consolidate bus stops
  - D. Increase secondary school walking distance
  - E. Modify attendance boundaries
- **Focus presentation on D & E to illustrate approach, challenges, and interpretation of results**

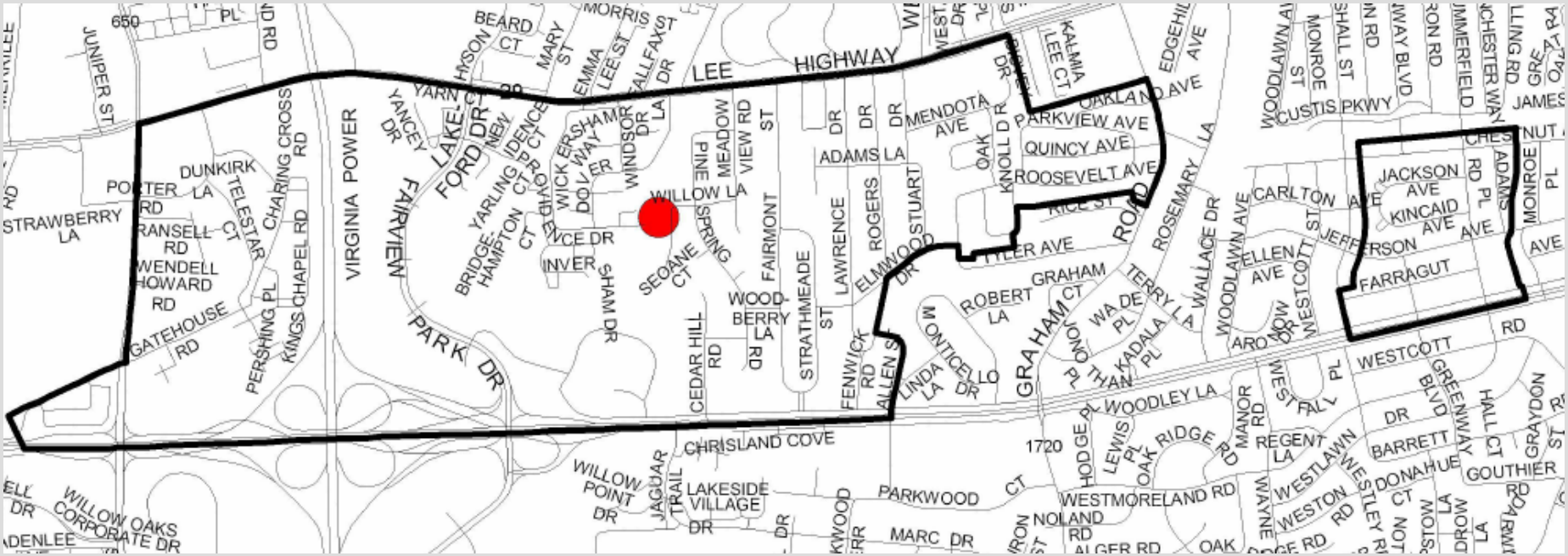
1D – Increase Walking Distance

- **"Easiest" base analysis in Part 1:**
  - ✓ Plot original walk zone boundaries
  - ✓ Plot, review, finalize revised walk boundaries
  - ✓ Tabulate walker count before & after
- **Sample result – Herndon High School**
  - ✓ Walkers before: 919
  - ✓ Walkers after: 1,248
- **Now what?**
  - ✓ Which specific bus routes are affected?
  - ✓ To what extent are they affected?
  - ✓ Which of these can be consolidated / eliminated?
  - ✓ What impact does *route* reduction have on bus *trips?*

1E – Modify Attendance Boundaries

- **Key baseline assumption: Evaluate boundaries on basis of transportation efficiency only**
- **Approach: Initial review based on professional judgment and experience**
- **Results (number of boundaries justifying further analysis):**
  - ✓ ES: 49
  - ✓ MS: 9
  - ✓ HS/SS: 9

1E – Example Boundary for Illustration



1E – Now What?

- **Too many boundaries for analysis in detail**
- **Approach:**
  1. Statistically valid sample (independence, sample size selection based on practical limits and desired confidence)
  2. Analyze and draw inferences about entire system
  3. Analysis must be route specific, as with 1D

Part 2 – Bell Time Analysis

- **Continuation of Phase 1**
- **Pre-defined scenarios and constraints facilitate more detailed approach, more confidence in results**
- **Three scenarios – all with HS on 2nd Tier:**
  1. 1 h 45 m transportation window
     8:00 – 9:45 start, 2:30 – 4:15 end
  2. 1 h 35 m transportation window
     8:00 – 9:35 start, 2:30 – 4:05 end
  3. No cost / no new buses
     Variable start and end times

Part 2 - Approach

- **Logistical modeling that maintains integrity of each individual bus route**
- **Steps for each scenario:**
  1. Select sample area
  2. Adjust bell times per scenario
  3. Identify route conflicts by evaluating each bus trip – segregate “orphan” routes
  4. Reassign orphans to available buses
  5. Create “new” buses and assign remaining orphans

Part 2 – Sample Area

School Name	Pyramid
Churchill Road ES (Grades: K-6)	Langley
Colvin Run ES (Grades: K-6)	Langley
Forestville ES (Grades: K-6)	Langley
Great Falls ES (Grades: K-6)	Langley
Spring Hill ES (Grades: K-6)	Langley
Cooper MS (Grades: 7-8)	Langley
Dogwood ES (Grades: FECEP, K-6)	South Lakes
Forest Edge ES (Grades: K-6)	South Lakes
Hunters Woods ES Arts and Sci (FECEP, K-6)	South Lakes
Lake Anne ES (Grades: FECEP, K-6)	South Lakes
Sunrise Valley ES (Grades: K-6)	South Lakes
Terraset ES (Grades: K-6)	South Lakes
Hughes MS (Grades: 7-8)	South Lakes
Aldrin ES (Grades: K-6)	Herndon
Armstrong ES (Grades: K-6)	Herndon
Clearview ES (Grades: Preschool, FECEP, K-6)	Herndon
Dranesville ES (Grades: K-6)	Herndon
Herndon ES (Grades: K-6)	Herndon
Hutchison ES (Grades: FECEP, K-6)	Herndon
Herndon MS (Grades: 7-8)	Herndon

Part 2 - Status

- Scenario 1 and 2 are constructed, identification of “orphan” routes is partially complete
- New constrained optimization approach being pursued for reassignment of orphan routes

Part 3 – Evaluate Net Impacts

- Final step after completion of Part 1 & 2
- Converts results for each element of the work plan to cost impact based on marginal cost analysis
- Considers likely level of service issues
- Brings together results of Part 1 and 2
- Make specific recommendations

Questions & Discussion