Transportation Routing Analysis to Improve Facility Use

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Scope Summary

• Develop a workable database of students and bus stops using existing data
• Establish a set of bus routes that best utilizes available building capacity
  ✔ Revision of previous Scenario 1 analysis
  ✔ Ease overcrowding in southern area
  ✔ Improve use of Swan Meadow capacity
  ✔ Balance use of Crellin
  ✔ Grade alignments in southern area
Primary Objectives

- Alleviate overcrowding at Broad Ford and Yough Glades
- Allow for Pre-K capacity at northern elementary schools
- Better utilize Swan Meadow capacity
- Maximize transportation efficiency

Assumptions on capacity availability

<table>
<thead>
<tr>
<th>School Name</th>
<th>Total Seats Available</th>
<th>Set aside for Pre-K</th>
<th>Total Available Seats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accident Elementary School</td>
<td>80</td>
<td>15</td>
<td>65</td>
</tr>
<tr>
<td>Friendsville Elementary School</td>
<td>97</td>
<td>15</td>
<td>82</td>
</tr>
<tr>
<td>Grantsville Elementary School</td>
<td>49</td>
<td>15</td>
<td>34</td>
</tr>
<tr>
<td>Route 40 Elementary School</td>
<td>35</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Crellin Elementary School</td>
<td>25</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Swan Meadow</td>
<td>35</td>
<td>0</td>
<td>35</td>
</tr>
<tr>
<td>Yough Glades Elementary School</td>
<td>9</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Broad Ford Elementary School</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
We would like to start with a blank slate, but…

• Geography and roadway network
  ✓ Distribution of students supports the combination run structure in place

• Contractual impact must be considered
  ✓ Time and mileage parameters held constant
  ✓ Regional assignments held constant

• Bell times held constant
  ✓ Need to maintain a manageable number of variables

Analytical Constraints

• Minimize the disruption of any transfers while still prompting efficiency
• When student movement is required, move the earliest grades
• Move the fewest students possible
• Maintain existing stop database to the extent possible
• Minimize ride time impact
• Control transportation cost variances
• Provide for long-term stability of solution
Existing Boundaries

Swan Meadow K-5 Option
Swan Meadow Impact

- Total of 57 students in revised boundary
  - ✔ 12 currently enrolled students would allow for full use of capacity
  - ✔ 13 Swan Meadow 6th to 8th graders to Southern Middle
- 3 Broad Ford students; 47 Yough Glades students transferred
- 9 bus routes impacted
  - ✔ 2 (7 & 78) already serve Swan Meadow
  - ✔ 7 (22, 23, 36, 38, 61, 66, 69) remaining buses all serve southern parts of the county;
  - ✔ limited impact on time or mileage

Yough Glades Revision
Yough Glades Revision Impact

- 57 Broad Ford Elementary students transferred
  - 10 seats available; 47 students transferred to Swan Meadow created capacity
- 4 shared routes already (4, 61, 69, 73)
- 6 routes would now have to also serve Yough Glades
  - 22, 34, 39, 60, 71, 75
  - Very minimal overall impact to support these extension
    - 6 buses * 2 miles per day * 180 days * $1.5954 = $3,446
Broad Ford and Crellin options

Broad Ford and Crellin revisions
Broad Ford and Crellin Revision Impact

• 25 Broad Ford students would transfer to Crellin
• 7 total routes impacted
  ✓ 4 currently go to both schools; drop off times are very different resulting in substantial changes to student stop times
  ✓ 3 routes would have to add Crellin Elementary as a stop (approximately 5 mile route path)
  ✓ Comparatively minimal cost impact
    ➢ 3 routes * 10 miles per day * 180 days * $1.5954 per mile = $8,615

Accident and Broad Ford options
Accident and Broad Ford revision

- 46 total students are moved from Broad Ford to Accident
  - 7 buses from Broad Ford would have increased capacity
  - 3 buses serving Accident would have routes extended
  - Bus 1, 64 and 86 would be extended by 8 miles each to collect students
    - Bus 1 – 19 students assigned; 38 minute route time; 20 miles
    - Bus 64 – 49 students assigned; 67 minute route time; 31 miles
    - Bus 86 – 23 student assigned; 69 minute route time; 34 miles
  - Bus 17 & Bus 58 also provide additional options for service
Accident and Broad Ford revision

**Accident and Broad Ford Impact**

- 48 total miles added to system per day
  - 48 miles * 180 days * $1.5954/ mile = $13,785
- 162 minutes added to the system daily (16 miles per day/18 miles per hour= 54 minutes per route * 3 routes)
  - (54/60)*$17.82/hour * 180 days * 3 routes = $8,661
- $22,446 increase in annual expenditures
Revised Boundaries

Cost Impact Summary

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Cost Impact</th>
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</thead>
<tbody>
<tr>
<td>Swan Meadow revision</td>
<td>$ 3,446</td>
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<tr>
<td>Yough Glades revision</td>
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</tr>
<tr>
<td>Broad Ford &amp; Crellin revision</td>
<td>$ 8,615</td>
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<tr>
<td>Broad Ford &amp; Accident revision</td>
<td>$22,446</td>
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<tr>
<td>Subtotal Impact</td>
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<td>Uncertainty factor</td>
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<td><strong>Total Projected Cost Impact</strong></td>
<td><strong>$37,958</strong></td>
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### Overcrowding relief summary

<table>
<thead>
<tr>
<th>From School</th>
<th>To School</th>
<th>Count of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yough Glades</td>
<td>Swan Meadow</td>
<td>47</td>
</tr>
<tr>
<td>Swan Meadow</td>
<td>Southern Middle School</td>
<td>13</td>
</tr>
<tr>
<td>Broad Ford</td>
<td>Yough Glades</td>
<td>57</td>
</tr>
<tr>
<td>Broad Ford</td>
<td>Swan Meadow</td>
<td>3</td>
</tr>
<tr>
<td>Broad Ford</td>
<td>Accident</td>
<td>46</td>
</tr>
<tr>
<td>Broad Ford</td>
<td>Crellin</td>
<td>25</td>
</tr>
</tbody>
</table>