MULTI-TIER SCHEDULING
FOR SCHOOL TRANSPORTATION

Guilford County Schools Transportation Department
January 2011
CURRENT STATUS

- Transportation Resources are Strained
- Results of remedial efforts to date:
  - Combined under-utilized buses – Reduced fleet by 10 buses to forego the purchase of additional buses.
    - In 2008, 634 operational buses
    - In 2009, 628 operational buses
    - In 2010, 624 operational buses
  - Implemented the shuttle point concept; increased ridership per bus; reduced operational buses - 2004
  - Increased replacement bus passenger capacity

- Future Concerns:
  - Continued increased student population – Ridership increase for 2010/2011 – 305 students
  - Continued increased of educational programs and schools
  - Increased bus routing requirements – Federally mandated unfunded initiatives – McKinney-Vento Act, NCLB
  - Measurement of routing effectiveness and efficiency by the State will become more stringent due to State/local budget cuts
  - Increased transportation expenditures – fuel, salaries, equipment, parts
The proposal: Multi-Tiered Scheduling

Opportunities

- To improve school bus transportation
- Reduce the number of buses in operation
- Reduce school bus costs
- Increase state funding
- Decrease local funding
- Provide separate transportation for middle and high school students
- Provide other tangible benefits to GCS
EXPLANATION

MULTI-TIER SCHEDULING CONCEPT

A multi-tiered schedule (MTS) assigns one bus to three or more schools to transport students to/from school each day.

Utilizing the MTS concept, school instructional times are coordinated so that each bus can make up to three bus runs each morning and afternoon.

School instructional times are established on three separate levels in order to maximize the efficient use of school buses.
MTS Concept Strategies

- The optimal bus run time is 45 minutes
- Increased instructional day for elementary students by 15 minutes per day
- Reallocate resources to support high school option schools or other non-traditional schools to increase participation
- Reduce transportation expenditures by reducing the number of buses/drivers required to transport students
- Increase efficiency, i.e., increase state funding; decrease LEA funding allocated to the Transportation Department
CURRENT GCS INSTRUCTIONAL SCHEDULES

TRADITIONAL SCHOOLS

Tier 1 – Elementary & Middle Schools

7:30 – 3:05 Oak Hill Elementary

7:40 – 2:35 Jackson Middle & Kiser Middle

Tier 2 – Middle & High Schools
8:35 – 3:30, 8:40 – 3:35, 8:45 – 3:40, 8:50 – 3:45
EXAMPLE - DUDLEY/SMITH TRANSPORTATION ZONE
CURRENT SCHEDULE & BUSES 2010/2011

Tier 1
7:45 – 2:25 Alderman, Archer, Bessemer, Foust
7:55 – 2:35 Frazier, Gillespie, Hunter, Peck, Vandalia
7:40 – 2:35 Jackson Middle
Total Tier 1 Buses – 55

Tier 2
8:40 – 3:35 Allen, Smith
8:50 – 345 Hairston, Dudley
Total Tier 2 Buses - 69
APPLICATION OF CRITERIA EXAMPLE:
DUDLEY/SMITH TRANSPORTATION ZONE
PROPOSED MULTI-TIER SCHEDULE

Tier 1
7:30 – 2:25 Alderman, Archer, Bessemer, Foust, Frazier, Gillespie, Hunter, Peck, Vandalia – 45 Buses

Tier 2
8:15 – 3:10 Dudley, Smith – 41 Buses

Tier 3
9:00 – 3:55 Allen, Hairston, Jackson – 38 Buses
APPLICATION OF THE MTS PROPOSAL FOR ALL TRADITIONAL SCHOOLS

<table>
<thead>
<tr>
<th>Zone</th>
<th>Current</th>
<th>Projected</th>
<th>Reduction</th>
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<tr>
<td>Dudley/Smith</td>
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<tr>
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<td><strong>Total Buses</strong></td>
<td><strong>460</strong></td>
<td><strong>368</strong></td>
<td><strong>92</strong></td>
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- Redistribute – 30 to 50 buses
- Out of Service – 42 to 62 buses
ESTIMATED REDUCTION IN TRANSPORTATION EXPENDITURES

- Projected operating expense savings
  - Approx annual cost to operate 1 bus = $20,575 (not including driver salaries & benefits)
  - Range of buses taken out of service = 42 to 62 buses
  - Potential range for reduction in operating expenditures = $864,150 to $1,275,650

- Projected savings for driver salaries & benefits
  - GCS Cost/Mile (driver salaries & benefits) = $0.62
  - Estimated miles a driver drives each day = 80
  - Estimated net decrease in miles per day per bus out of service = 50 miles
    - 50 miles x 42 x $0.62 x 180 = $234,360
    - 50 miles x 62 x $0.62 x 180 = $345,960

- Overall Projected Savings - $1.1M to $1.6M
OTHER SAVINGS

- Buses taken out of service can be added in as needed for future expansion. (Considered credits by the North Carolina Department of Public Instruction)
- Assumed Efficiency Rate Increase – 3.8% to 5.6%
Cabarrus County

- Implemented Three-Tier Bus Plan 2009/2010
  - Increase in instructional hours
  - Additional flexibility in meeting instructional hours requirement
  - Reduce absenteeism and turnover for bus drivers – most bus drivers would become full time employees
  - Increase safety on buses – savings allotted to the purchase of video camera systems for all buses
  - Financial benefits

- Tier 1 - High Schools 7:15 to 2:15 (6 elementary schools 7:30 to 2:15)
- Tier 2 – Most Elementary Schools – 8:15 – 3:00
- Tier 3 – Middle Schools – 9:00 – 4:00
Developed in 1993
- Over a 11 year period added 40 buses instead of 160 buses based on ridership increases and new schools
- Reduced the overall ride time for students
- Saved Wake Co $100M in transportation funding
- Operates at 100% Efficiency

- Tier 1 – 7:30 – 2:15
- Tier 2 – 8:15 – 3:00
- Tier 3 – 9:15 – 3:45
UNION COUNTY

• Tier 1 – Elementary 7:30 to 2:00
• Tier 2 – High 8:00 – 2:55
• Tier 3 – Middle 8:45 – 3:45

• Increased Efficiency Rating – 100%
• Leveled Expenditures
CHARLOTTE MECKLENBURG SCHOOLS

- Various start times for elementary and middle grade levels
  - 7:30 – 1:45  Elementary
  - 8:30 – 2:45  Elementary
  - 9:15 – 3:30  Elementary
  - 8:00 – 3:00  Middle
  - 8:45 – 3:45  Middle
  - 7:15 – 2:15  High
POSITIVE AND NEGATIVE ASPECTS OF MULTI-TIER SCHEDULING

Positive
Reduce number of buses

Potential decrease in student ride time

Improve student/bus ratio

Corresponding bell schedules

Separate middle and high school bus routes

Decrease in per bus expenditures

Increase in elementary instructional day

Resources are increased without spending capital funds

Negative
Necessitates changes in the current traditional school instructional schedules

Increase traffic by buses through neighborhoods

Elementary schools starting 10 minutes earlier in the morning.
**Next Steps**

- Develop Routing and Scheduling Plan for District
- Revise data in Routing System
- Provide Schools and Parents with New Bus Routing and Scheduling Information
- Advise DPI Transportation Services of Buses Taken out of Services
- Train Bus Drivers and Support Staff on Multi-Tier Plan and upcoming changes
- Implementation - August 2011
- Monitor Cost Savings (Efficiency Rating September 2012)
COMMITTEE MEMBERS

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