

# Driving Down the Costs of School Bus Transportation

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# Purpose and Goals

In 2014, the Ohio Department of Education awarded a \$1.76m Straight A grant to the Ohio Shared Services Collaborative – a shared services approach to reduce school district transportation costs.

Our goals are to reduce consortium fleet by 5 percent and reduce operating costs by an additional 2 percent, saving the 20 consortium districts \$4m over five years.

The potential for cost savings are centered around four key components:

- monitoring student ridership to analyze needs
- reducing idle times
- improving bus routes
- sharing transportation services and facilities where it makes sense

## Results To-Date (Year 2)

- Installed GPS units on 450 buses
- Distributed nearly 35,000 bus rider Radio Frequency Identification Cards (RFID) and captured 2.5 million data points
- Used GPS analysis to monitor idle times and reduce fuel use. Reduced idle times = \$50,831 annual savings
- Developed and launched OSSC Routes & Riders, an online application to facilitate scheduling within and across districts
- Route analysis completed for 25% of consortium districts, resulting in:
  - 5 to 7 reduced routes
  - Annual savings ranging from \$242,000 to \$376,000
  - Projected five year forecast savings ranging from \$1.4m to \$2.1m

## Future Goals (Years 3-5)

- Provide remaining districts alternate route scenarios  
= \$726,000 potential estimated annual savings
- Conclude a bus sharing feasibility study that will enable consortium to reduce spare fleet = \$40,000 potential savings
- Develop shared routes to common locations such as career centers  
= \$31,800 annual savings per district
- Begin a study related to shared transportation facilities and personnel
- Collaborate with personnel in state Auditor's office for facilities study
- Develop dashboards for daily monitoring at district and consortium level
- Expand pilot to an additional 62 districts in southern and eastern Ohio

# Expansion

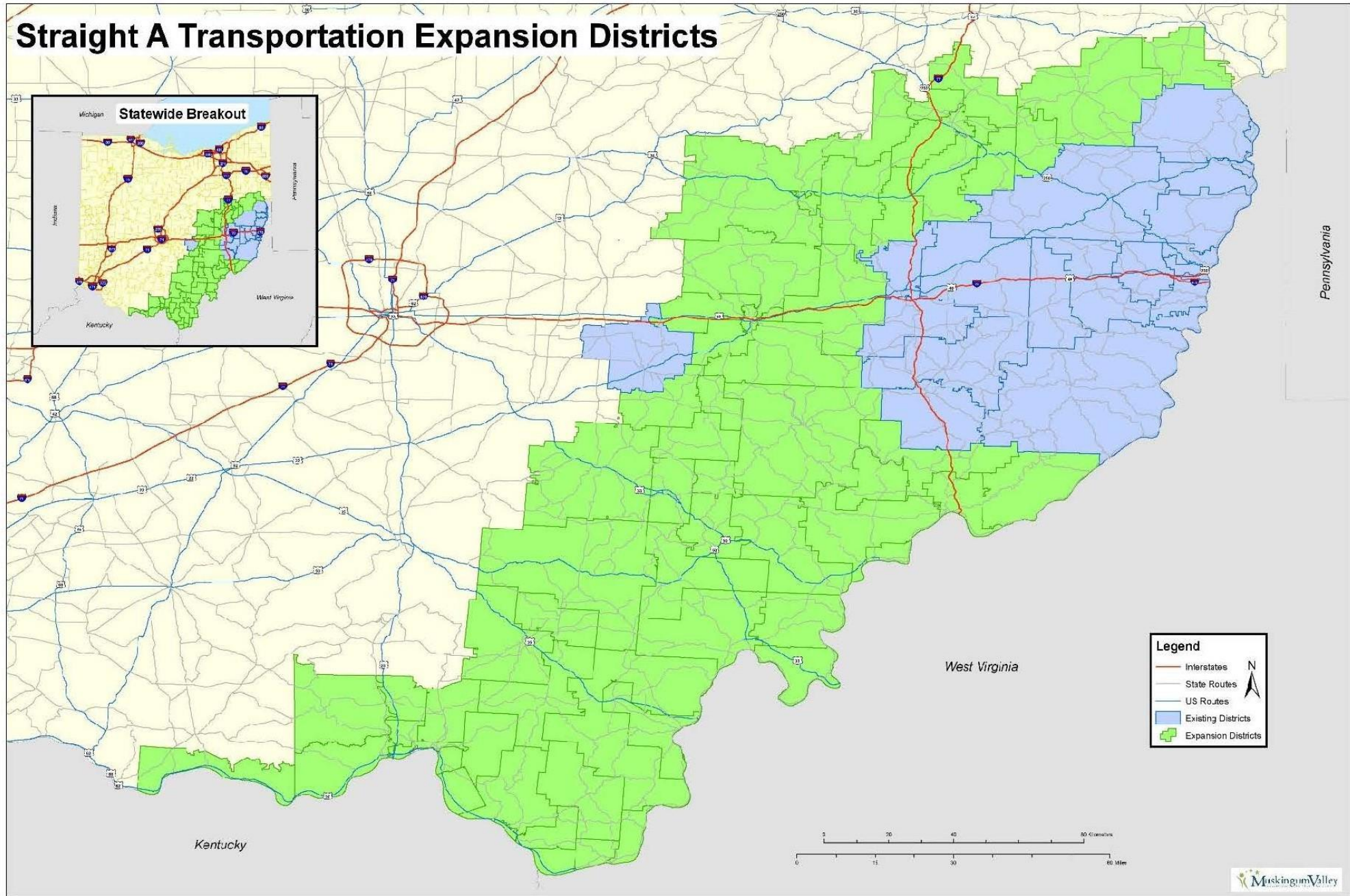
## Current

- 35,000 pupils
- 450 buses
- 2,825 square miles; 6% of Ohio
- 20 School Districts
- 1 Board of Development Disabilities
- 4 Educational Service Agencies
- 2 Information Technology Centers

## Proposed Expansion

- 133,670 pupils
- 1,328 buses
- 10,145 square miles; 22% of Ohio
- 82 School Districts
- 22 Boards of Developmental Disabilities
- 8 Educational Service Agencies
- 4 Information Technology Centers

# Straight A Transportation Expansion Districts



# How We're Finding Success

- Problem Solving Methodology – using Lean Six Sigma tools to reduce waste and improve processes within a shared services model
- Data – collecting student ridership, bus use, bus capacity, fleet size, current routes, and ride time duration. Aggregating the data to look for opportunities related to time, distance and fuel reductions.
- Analytics – 3 software platforms (ArcGis, GPS and RFID) combined into a unique approach to constantly capture and transform the data. More than 1000 lines of code were written to allow integration of software data.
- Shared Services Approach – individual districts lack the resources and skills to dig into the data and develop solutions. ESCs and ITCs can fill this gap by providing a collaborative and coordinated team approach

# Collaborative Shares Data, Saves Money

School Bus Fleet, November 2016, pp.42-44

CONSORTIUM

## Collaborative Shares Data, Saves Money

The Ohio Shared Services Collaborative received a \$1.76 million Straight A grant from the Ohio Department of Education to help school districts save money through shared services and bus rerouting.

By Katherine Fleming, Editorial Assistant

Departments in the Ohio Shared Services Collaborative equipped school buses with GPS trackers, and shared GPS data to students to report when they get on and off the bus. Data from the GPS and RFID cards helps districts determine how to plan routes more effectively.



While Monticompact Valley Educational Service Center joined with other school districts to form the Ohio Shared Services Collaborative (OSSC), it planned to reduce costs by 5% and cut operating costs by 25% with a goal of saving \$4 million over five years. The plan was supported by a five year, \$17.6 million Straight A grant from the Ohio Department of Education. The organization used the money to buy GPS and RFID equipment and create software to help them improve routes and share services. Now, after two years of work with 25 school districts and one board of developmental disabilities, the plan has been an effective plan organizers are hoping to expand to an additional 50 districts.

The consortium has been able to avoid any major pitfalls mainly because of the care that was taken in initial planning, according to David Branch, superintendent of Monticompact Valley Educational Service Center. The organization took into account the opinions of people who would be affected by the changes.

"Our consortium developed talking points for school board members, superintendents, and bus supervisors before GPS ever went on school buses," Branch says. The consortium was initially driven by the Monticompact Valley Educational Service Center, with help from the Ohio Valley, Jefferson County, and Lake Central Ohio educational service centers, and the Ohio Mid-Eastern Regional Education Service Agency.

The consortium leaves the day-to-day control of school buses to individual school districts and shared buses on analyzing data and designing routes to help districts improve their school bus systems. Because it has information about all the school districts, the consortium can recommend ways for them to combine their routes or facilities.

### Shared goals

The majority of the districts in the OSSC are rural, meaning school buses have to travel long distances to pick up low students. Buses that drive longer distances cost more, so districts need to shorten or combine routes, serving more students with fewer buses. Saving money on transportation allows school districts to put that money back into the classroom.

"The more efficient we can make those bus routes, the better it is for the school bus, because it's less wear and tear on the school bus, the better it is for the school district because they're saving money, and the better it is for the students riding the bus because they don't have as long a bus ride," Branch explains.

Avoidable extra fees for inefficient routes have gone up over time, making it doubly important for school districts to know their routes.

### Fleet Facts


**Year started:** 2014  
**School buses:** 440  
**Students:** 36,000  
**Districts served:** 20, and one board of developmental disabilities  
**Transportation staff:** 444  
**Area of service:** 2,825 square miles

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## Collaborative Shares Data, Saves Money

The Ohio Shared Services Collaborative is analyzing an average savings ranging from 10% to 20% on the cost of its members' bus fleets. The shared bus fleet is a school bus for Middleburg Heights, which is one of the participating districts.



With the help of the grant and the collaboration of multiple districts, the consortium can maximize student ridership to find out how many buses are actually needed and whether routes can be shortened, as well as cross similarities to check feasibility of shared services and facilities.

To gather data, the consortium installed GPS units on 400 buses, allowing them to track routes more effectively, as well as track life time. The organization also equipped the buses with RFID readers, and issued 15,000 RFID cards to students to record when they get on and off the bus. Looking at the data from the GPS and RFID cards helps districts determine how to plan routes more effectively.

Most districts plan bus routes based on all the students in the district, but the consortium determines route planning on the basis of who actually rides the bus. Fisher says, Planning routes based on actual ridership leads to more efficient routes.

"The consortium worked with teams at universities to develop custom-made software to fit the needs of the school districts, such as the OSSC Routes & Ridership application, which allows scheduling within and across districts.

"Some of what we need to do hasn't been done before, so we have to build it," Fisher adds. "It's not something that's already propagated and ready to go."

### Results

The consortium is already showing algorithm cost savings, with more in period as the project continues. "We are projecting a 25% of consortium districts can be, an average savings ranging from \$24,000 to \$214,000," Branch says. If the remaining 25% of districts are equally successful, the consortium will easily reach its goal of \$4 million in savings. Route analysis has been completed in 25% of districts, leading to five to seven reduced routes, and several life share have resulted in savings in annual savings.


One benefit beyond cost savings is an increase in safety, Branch notes. The RFID technology means that districts always know who's on a bus. "If there's a bus accident, we can know in a matter of minutes who are the passengers on that bus," he explains. RFID technology can help parents track the RFID system times they can sign up for the system to receive text messages notifying them when their children get on and off the bus. In addition, drivers know the GPS device monitor their speed, which encourages safer driving practices.

### Next steps

Encouraged by their success so far, the consortium members hope to grow their organization. They plan to provide additional route data to the remaining 25% of their districts and develop shared routes to common locations. They also plan to expand their data with new routes, state a study on sharing buses and begin one about sharing facilities and personnel.

The organizers believe their expertise would be valuable beyond the districts they currently work in, and they hope the Ohio Department of Education will help them expand their consortium to a further 50 districts in southeast and western Ohio.

"We're ready to expand," Branch says. "We're hopeful that in the financial budget they'll find a way to help these school districts in south and central Ohio accomplish their goal of saving money through transportation of students." ■



The Ohio Shared Services Collaborative hopes to expand to 50 more school districts.

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