MICROFILM DIVIDER

OMB/RECORDS MANAGEMENT DIVISION
SFN 2053 (2/85) 5M

ROLL NUMBER

DESCRIPTION

2268

2001 SENATE APPROPRIATIONS

SB 2268

2001 SENATE STANDING COMMITTEE MINUTES

BILL/RESOLUTION NO. SB2268

Senate Appropriations Committee

☐ Conference Committee

Hearing Date January 30, 2001

Tape Number	Side A	Side B	Meter #
Tape #1	x		22.4 - 54.7
Tape #1		x	0.0 - 2.1
Committee Clerk Signature Connie Pietsch			

Minutes:

Senator Nething, Chair of the Senate Appropriations Committee, opened the hearing on SB2268.

Senator Terry Wanzek, District #29, spoke in support of the bill, proposed to fund the data envelopment analysis project. With the high transportation costs - the fuel prices - etc. this appears to be necessary for all school districts. It is an opportunity for the districts to work together -- it's amazing what can be done using the available high technology programs. He distributed copies of pages from the ESRI, ArcNews-Winter 2000/2001 (copy is attached).

Tom Decker, Director of Finance and Organization, Department of Public Instruction, testified in support of SB2268 (a copy of his written testimony is attached).

Senator Nething: Exhibit 5 -- students transported, per comparison, efficiency all appear to be objective items...but operating environment not so, more subjective? What goes into this category?

Tom Decker: Agree they are objective. But with the GIS system all roads can be rated-- a quantifiable item, allowing wide range of input/output.

Senator Nething: Example: weather? Peer comparison?

Tom Decker: Dealing with all those factors now. Some years some of the districts will come up short -- some districts benefit.

Senator Tallackson: There are so many things to consider -- still consider first one on, last one off?

Tom Decker: Yes, the capability of computer system factors in anything the district wants. Some districts will have some unique items.

Senator Tomac: 5 children on a route..how could it be more efficient? 1 road to follow? The benefit of this bill to that district? Will you come back next session with the efficiency rating for each school district? Do what? Be same as now?

Tom Decker: Over the long haul the district will be better off -- need to build in incentives for school systems. Peer groups should lead -- some routings will be small, some big -- need to take into consideration how the bus costs effect the system. There is a tread for less children, the riding time is a concern -- each district need to look at the mix involved. Montana for example: will take their buses on major roads only, the parents are responsible to bring them to the bus.

Senator Tomac: Throw in 100 thousand dollars --- for policy decision to net efficiency? I've had calls regarding big buses used in an area for small number of students (67 cents mile -- this problem been addressed -- wouldn't a smaller bus be cheaper to run? I'm told the larger buses stand up better, are cheaper to purchase as used vehicles; so in the long run cheaper for the district. Considering all the variables - determining an inefficient system -- does this really address change? Does what for us 2 years from now?

Tom Decker: Could be considered micro-management ..but we feel it would move towards more efficient systems. May need to implement over a few years. More years for adjustments and analysis of data -- but this all moves to efficiency.

Senator Bowman: Why aren't you currently looking into this without this bill? School administrators and boards, your department should be looking constantly? What different with this bill?

Tom Decker: The current payment system has no incentive to be efficient. We have been pushing transportation studies through NDSU since 1989 -- need this bill to allow more leverage for financial efficiency.

Senator Thane: Reorganization of school districts -- when some districts are dissolved -- does this make for more efficiency; have to provide transport ion?

Tom Decker: Need to continue door-to-door; but need to discuss policy regarding efficiency -- relatively effective-- every district may have different issues -- but need to have the most efficient vehicle systems -- push to check with peers.

Senator Thane: Efficiency out the window with reorganization of school districts?

Senator Nething: We'll hear more when we consider the bill.

Senator Holmberg: Was this request made by the department to OMB and then not funded? Why separate bill? Know your bill is being heard on the House side now.

Tom Decker: Optional request item when we submitted the department budget to the governor.

Senator Nething: Perhaps you'd like the OMB personnel to answer?

Senator Holmberg: Yes.

Sandy Paulson, OMB Analyst: It is not my agency, but I will find out and report back with the information.

Senator Holmberg: Don't suppose we can design a perfect system - but some things that you are talking about are already being done -- my niece and nephew call the neighbors when they will not need the bus to come to their stop on a particular day --- not sure if the mileage is adjusted that day by the driver? Do you check things like that?

Tom Decker: Add another zero or two and perhaps we can audit the school transportation systems.

Senator Andrist: Do you envision some flexibility:? Buses too big? Not enough people? But no payment for purchases? Envision flexibility rates within categories. Authority for more/less vehicles -- the size etc.?

Tom Decker: Flexibility is inherent -- every district is different . The program can have all the flexibility you want to build into it -- we don't want to penalize the past decisions.

Senator Tomac: Line 6 -- continue project ----doing some now? Will this have legislative input -- an interim committee formed for you to report to?

Tom Decker: Possible -- this is a high, complex mathematical system -- which Dr. Nygard has already completed-- we would plan to continue working with him and the districts. They have done some studies in the Carolinas and Texas. We requested this support in prior years, were back in '99 (received zero) -- are back again.

Hearing closed on SB2268 by Chairman Nething.

Subcommittee assignment: (Information Technology) Senator Solberg, Chair; Senator Schobinger and Senator Robinson.

February 15, 2001 Full Committee Action (Tape 3, Side B; Meter No. Second of three bills acted on 0.0 - 10.7)

Senator Nething reopened the hearing on SB2268.

Discussion on the bill.

Senator Solberg moved a DO PASS; Senator Tallackson seconded. Roll Call Vote: 11 yes; 2 no; and 1 absent and not voting.

Senator Solberg accepted the floor assignment.

Date: 2-15-01

Roll Call Vote #: _____

2001 SENATE STANDING COMMITTEE ROLL CALL VOTES
BILL/RESOLUTION NO. SB 2268

Senate Appropriations Committee

☐ Subcommittee on _____
or
☐ Conference Committee

Legislative Council Amendment Number _____

Action Taken Do pass

Motion Made By Sen Solberg Seconded By Sen Tallackson

Senators	Yes	No	Senators	Yes	No
Dave Nething, Chairman	✓				
Ken Solberg, Vice-Chairman	✓				
Randy A. Schobinger	✓				
Elroy N. Lindaas	✓				
Harvey Tallackson	✓				
Larry J. Robinson	✓				
Steven W. Tomac					
Joel C. Heitkamp	✓				
Tony Grindberg	✓				
Russell T. Thane		✓			
Ed Kringstad	✓				
Ray Holmberg	✓				
Bill Bowman	✓				
John M. Andrist		✓			

Total Yes 11 No 2

Absent 1

Floor Assignment Sen Solberg

If the vote is on an amendment, briefly indicate intent:

REPORT OF STANDING COMMITTEE (410)
February 15, 2001 5:18 p.m.

Module No: SR-28-3592
Carrier: Solberg
Insert LC: . Title: .

REPORT OF STANDING COMMITTEE

SB 2268: Appropriations Committee (Sen. Nething, Chairman) recommends **DO PASS** (11 YEAS, 2 NAYS, 1 ABSENT AND NOT VOTING). SB 2268 was placed on the Eleventh order on the calendar.

2001 HOUSE APPROPRIATIONS

SB 2268

2001 HOUSE STANDING COMMITTEE MINUTES

BILL/RESOLUTION NO. **SB2268**

House Appropriations Committee

☐ Conference Committee

Hearing Date **March 12, 2001**

Tape Number	Side A	Side B	Meter #
1		x	1003 -2609
Committee Clerk Signature			

Minutes:

HOUSE APPROPRIATIONS COMMITTEE HEARING ON SB2268.

Tom Decker, Director of Finance & Organization, Department of Public Instruction.

(Followed Written Testimony and answered questions after testimony)

Rep. Timm: Tom, do you have a copy of what you just read? Response was that he would get a copy for the clerk after the hearing.

Rep. Aarsvold: Do we have enough data available in terms of routing information to really make good judgments about this? I'm thinking in my own area for instance, does Ken Neigard know that from Bill Mahers to my place for six months out of the year? Our buses have to travel and extra five miles to make that movement.

Mr. Decker: We have a considerable amount of data in terms of financial data on cost of operations, the size of buses, the age of buses, we also have the capability of linking up the Department of Transportation's new GIS system which lists all roads in North Dakota down

through several layers, basically down to township roads, so we have a great deal of data available but in fact some of the local circumstances that you talked about will be local judgments based on changing conditions of roads and North Dakota's unpredictable weather.

Rep Aarsvold: The lack of that data would surely impact pure comparisons that we would make and conclude, would you not agree?.

Mr. Decker: We believe that in fact the effect of that exact idea of unpredictable weather and road conditions is in fact reflected in every districts cost of operations at the present time. Every district to some degree puts up with this on a yearly basis and it is reflected in the cost of operations, so it would be reflected in our analysis of loops of peer districts.

Rep. Heuther: You said some of the districts, can you give us an example of some of the districts that have had this study done and then what was the savings if they implemented that?

Mr. Decker: Its been a couple of years and I'm not sure I remember with great detail what would have happened in individual studies. In a number of those studies we were able to park one or two buses, and we were able to limit ride time and we intentionally set a priority of 1 hour for ride time and we were able to achieve that, so if we idled one bus and still maintained 1 hour of ride time we would have made some gains, it varies from district to district but the primary point here is that the fundamental operational basis for transportation in North Dakota today is not oriented toward efficiency and a system that was orientated efficiency would lead districts themselves without outside pressure to annually look at their operations to see if there were efficiencies that could be gained.

Rep. Kerzman: Did this study look at a bidding process for busses or district owned equipment or did it just look at mileage and students?

Mr. Decker: In the analysis of all districts, we would look at all of their costs and basically what were going to be comparing is input functions, districts have choices, what were trying to get to is a payment basis that leads districts to make choices about those operational modes that are most cost effective, but yes, we would look at all of the different modes.

Rep. Timm: Tom, do you have any idea of that $100,000 your going to spend, do you have any idea of what the study will cost you? The way the bill reads, you appropriation $100,000 or so much of the $100,000 that you need.

Mr. Decker: We would expect that the full amount of this study in a contract with North Dakota State, who does the work, we work with them and we would define what we need to bring to the legislative committees in terms of final product.

Rep. Timm: Would this be the Great Plains Institute?

Mr. Decker: Dr. Ken Nygard and the division of computer science through the state university directly do this kind of work.

Rep. Byerly: When you talked about, and one of the things you barely touched on, was the things like the size of the bus and so on, the appropriateness of the bus for the route, because one constant things that we always hear about, that the school districts go out a put a 60 passenger bus on a 10 student run so they can get the 67 cents instead of the 25 cents. Do you anticipate as a result of this study being able to come back to us with some guidelines that maybe we can do some things in law will make it more efficient? Or is this purely a method of coming up with a formula to disperse money?

Mr. Decker: What we want to come up with is a payment structure that in and of itself pushes districts toward efficiency on an ongoing basis. When your in set of pure districts where your payment basis is rated off the most efficient outfit in the operation your going to be pushed to

look at your own operations regularly, and we would at least initially anticipate that we would not need to get into the business of defining equipment or putting any kind of limitations on equipment. If the payment structure itself pushes districts to make those decisions to review those parameters and come to an operational mode that is most cost effective for them.

Rep. Delzer: There are a few things that I don't quite understand, and I really don't want to talk about the study per say, I want to talk about the $100,000 to do it. Your going to hire NDSU do this with staff that they currently have on staff and how are those staff paid? Are they paid by the general fund partly already? And why was this not part of your operating expenses of $17 million dollars and would this get done if we did not give you the $100,000?

Mr. Decker: I'm not familiar enough with higher education funding to understand exactly how to answer you first question except to say that I that universities contact with many people for many kinds of studies and we in fact have contracted with them at other times. One of the pieces of this which I have seen working is that Dr. Nygard is able to employee two or three graduate students who are working on an advanced degree and give them graduate assistance money and get them to work on the project and help with the development, so they gain in education and we gain in producing he product that we want. The Math and the Mechanical processes are extremely complex math, and takes big computers and geniuses to understand this stuff and work through it, and that's why we need that level of expertise. We could not does this ourselves and we do not have the money to hire the expertise to go through the processes that we need to go through to do this. It was a piece of our optional package but this was in last time and a number of legislative sponsors that you see on this bill have an interest in this and believe that its going to be productive for us and terms of cost savings and transportation and that's why you see it as a separate bill.

Rep, Delzer: Where did it end up on your OAR list? How far down and how many above it were not funded?

Mr. Decker: I don't even know that I can recall that, we can get that information from the Department.

Rep. Timm: Any other questions of Mr. Decker? Any other testimony in support of SB2268? Any opposition to SB2268?

Hearing was closed on SB2268.

2001 HOUSE STANDING COMMITTEE MINUTES

BILL/RESOLUTION NO. **SB2268A**

House Appropriations Committee

☐ Conference Committee

Hearing Date **March 16, 2001**

Tape Number	Side A	Side B	Meter #
1	x		4555 - 5465
Committee Clerk Signature			

Minutes:

HOUSE APPROPRIATIONS COMMITEE ACTION ON SB2268A.

Rep. Timm: Let's take up SB2268. This was a $100,000 appropriation to be given to the Superintendent of Public Instruction for the purpose of continuing data envelopment analysis project, or transportation study. What is the committee's wishes? Anybody have an opinion on this?

Rep. Skarphol: I have a question. Does anybody have any idea of how much has already been spent because this is to continue the analysis project?

Rep. Timm: I don't remember. Does anybody remember from the testimony?

Rep. Gulleson: The last analysis that was done focused on shuttle trains, heavy rail cars, location analysis, this one and it might say in the bill specifically.

Rep. Monson: Being a school superintendent, I know that we could probably do a few things more efficiently out there, but I cannot see spending $100,000 for DPI to do a study to tell us if

were running our bus routes efficiently. We aren't just throwing money down a rat hole out there because our budgets are tight and were trying to make as efficient of bus routes as we can, and it boggles my mind to think that DPI is going to be able to tell me where my busses are running and not running or are efficient. They don't know that I have a bridge that washes out in the spring and a coulee somewhere. I think this is a waste of money.

Rep. Wald: If we are beyond the discussion stage, I would move for a DO NOT PASS. Seconded by Rep. Warner.

Celeste, OMB: I was just going to comment that this was in the optional package of the Department of Public Instruction. Over the years there has been a number of studies that have been done to ride more efficient methods, and what they were going to try and do is put this on a CD that could be brought from school to school so that schools could provide there own routes based upon the information that was available that was on that CD, the executive recommendation did not fund it, there is a lot of issues that come into play with bus routes, and so we felt that it wasn't a good use of funding it at this time.

Rep. Timm: We have a motion by Rep.Wald for a do not pass, and it was seconded by Rep. Warner. Any other discussion on the do not pass?

Rep. Heuther: Maybe a question for Celeste, is it NDSU that does this study for bus routes for schools. I believe my school district went ahead with this at one time and there was savings to be made, but we didn't run a number of buses at that time. But I think it did save our district about $15, 000 to $17,000 a year in running busses.

Rep. Wald: I'm wondering if were not confusing this with the Upper Great Plains Transportation Institute.

Rep. Byerly: In the testimony, there is a professor at NDSU who was doing this, it has nothing to do with transportation institute. Rep Heuther is right, it was done under contract that DPI had his professor to do some of these things.

Rep. Delzer: That's one of the reason's I'm going to support the DO NOT PASS. We have a lot of money in DPI already, and a lot of money in Higher ED. And I think this option would be available to school districts if they want to do it, to just go up there and contract for that particular outfit.

Rep. Timm: Any other discussion? We will call for a roll call vote for a DO NOT PASS. (17) YES (1) NO (3) absent and not voting. Motion passes. Rep. Monson will carry the bill to the floor.

End House Appropriations Committee action on SB2268A.

Date: 3/16/01
Roll Call Vote #: 1

2001 HOUSE STANDING COMMITTEE ROLL CALL VOTES
BILL/RESOLUTION NO. SB 2268

House APPROPRIATIONS Committee

☐ Subcommittee on _____
or
☐ Conference Committee

Legislative Council Amendment Number _____

Action Taken DO NOT PASS

Motion Made By WALD Seconded By WARNER

Representatives	Yes	No	Representatives	Yes	No
Timm - Chairman	✓				
Wald - Vice Chairman	✓				
Rep - Aarsvold	✓		Rep - Koppelman		
Rep - Boehm			Rep - Martinson	✓	
Rep - Byerly	✓		Rep - Monson	✓	
Rep - Carlisle	✓		Rep - Skarphol	✓	
Rep - Delzer	✓		Rep - Svedjan	✓	
Rep - Glassheim		✓	Rep - Thoreson	✓	
Rep - Gulleson	✓		Rep - Warner	✓	
Rep - Huether	✓		Rep - Wentz	✓	
Rep - Kempenich					
Rep - Kerzman	✓				
Rep - Kliniske	✓				

Total (Yes) 17 No 1

Absent 3

Floor Assignment MONSON

If the vote is on an amendment, briefly indicate intent:

2001 TESTIMONY

SB 2260

TESTIMONY ON SB 2268
SENATE APPROPRIATION COMMITTEE
January 30, 2001
By Tom Decker, Director of Finance and Organization
328-2267
Department of Public Instruction

I am here to speak in support of Senate Bill 2268.

Data Envelopment Analysis, DEA, is a procedure designed to measure relative efficiency or productivity of each of the members of a set of comparable operating units. In this case, the universe of operating units we are talking about are the school districts of North Dakota who provide transportation and receive transportation reimbursement from the state.

One of the first tasks in this project would be to divide all North Dakota school districts into categories or peer groups who have comparable circumstances. We may, for example, use the Foundation Aid categories which rank districts based on high school enrollments.

Local school districts employs a variety of inputs to operate their pupil transportation programs. These include administrative personnel, drivers, mechanics, buses, repair costs, fuel costs, etc. These inputs are combined to produce some level of students transported as the output. Data Envelopment Analysis is a mathematical process that allows comparison between districts in regard to the efficiency with which these inputs are converted into outputs -- students transported to school. The basic process involves identifying inputs and outputs, then weighing each input and output for each districts through a complex mathematical formula. The input and output variables are analyzed to determine the relative efficiency of each

district. The process also identifies those inputs which have the greatest effect on output costs.

Ultimately, a group of districts that are deemed to be comparable are rated on relative efficiency in their transportation operations. If the legislature chooses to make this the basis of a funding formula, the payment would be based on the operational cost of the most efficient district in each peer group. Using this as a funding basis, districts are clearly rewarded for efficiency in operations.

The Department of Public Instruction is working in cooperation with the College of Computer Science at North Dakota State University and Dr. Ken Nygard did some initial work with Data Envolvement Analysis in the 1997/1999 biennium. The main emphasis of the study during this period, however, was to complete the school maps project. However, initial work with Data Envolvement Analysis led those of us working on the effort to believe that it had significant potential as a basis for a transportation-payment system. A DEA based reimbursement system has been used in North Carolina since the early 90's. The plan was to continue the development of this funding scenario during the 1999/2001 biennium, however, the appropriation was not approved.

The current school transportation funding mechanism is based on historical district costs. It reimburses districts for mileage based on the size of bus and student rides, both in city and rural. The current payment system is, at best, neutral in regard to the issue of efficiency. One could argue that the current formula actually promotes or reinforces inefficiency. Several years ago, the legislature capped transportation payments at 90 percent of actual annual costs. Before that time, some districts were receiving more than 100 percent of their transportation costs through the formula. The

formula has not changed fundamentally, however, the cap prevents districts from receiving more than they actually spent for transportation. To some degree, the payment per mile system and payment per ride process in the formula encourages districts to purchase certain kinds of equipment -- mainly large buses. In a formula designed for greater efficiency, districts would be free to make choices about equipment, which produced outputs – that is students transported to school – in the most cost effective manner.

The Department has been working with North Dakota State University for a number of years to make available transportation efficiency studies for individual districts. However, very few districts have actually done transportation efficiency studies and some of those who have did not implement the recommendations of the study once it was completed. To some extent, at least, this reflects again the idea that there is no current incentive to efficiency in the current payment system.

As enrollment declines in North Dakota and as there are fewer students spread over larger areas, there is need for school districts to consider alternative routing methods in order to get students to school in a reasonable amount of time and do it reasonably cost efficiently. Again, the current system of transportation does not provide incentives for districts to analyze their transportation problems to determine the most efficient method of operation.

In many places in North Dakota, student ride time is becoming a serious problem. The Department has recommended, since at least 1989, that rides to and from school be limited to one hour or less. Dr. Ken Nygard from North Dakota State University assures me that with appropriate transportation funding this is a manageable task anywhere in North Dakota.

Completing the work on the Data Envelopment Analysis project will allow the Department to provide a proposed transportation-payment system for North Dakota schools to the next legislative system which rewards efficiency, and I believe will encourage districts to look at a variety of issues related to their transportation operations which will ensure quality of service as well as bringing greater efficiency to operations. I have attached a sheet that lists current transportation reimbursement rates, and a second sheet labeled Exhibit 5, which provides a simple schematic of the Data Envelopment Analysis process that I have described.

Foundation Aid Per Pupil and Transportation Payments

1999 - 2001 Biennium

FOUNDATION AID PAYMENTS	1999-2000		2000-2001	
Base Payment	$2,145		$2,230	
	Weighting Factor	Weighted Payment	Weighting Factor	Weighted Payment
Preschool	1.2377	$2,654.87	1.2145	$2,708.34
Kindergarten	0.5761	$1,235.73	0.5799	$1,293.18
Oneroom rural (Grades 1-8)	1.3107	$2,811.45	1.2997	$2,898.33
Grades 1-6 (Less than 100)	1.2071	$2,589.23	1.2138	$2,706.77
Grades 1-6 (100-999)	0.9510	$2,039.90	0.9519	$2,122.74
Grades 1-6 (1000 or more)	0.9828	$2,108.11	0.9898	$2,207.25
Grades 7-8	0.9790	$2,099.96	0.9785	$2,182.06
Grades 9-12 (Less than 75)	1.4795	$3,173.53	1.4779	$3,295.72
Grades 9-12 (75-149)	1.1921	$2,557.05	1.1888	$2,651.02
Grades 9-12 (150-549)	1.0705	$2,296.22	1.0482	$2,337.49
Grades 9-12 (550 or more)	1.0480	$2,247.96	1.0479	$2,336.82

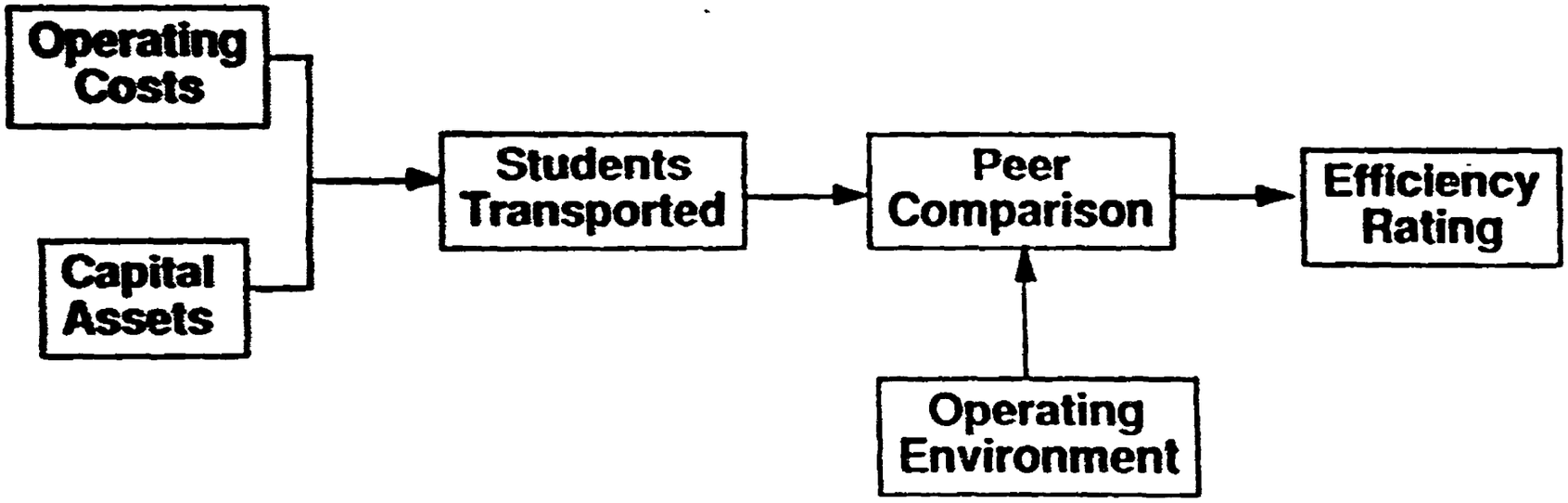
OTHER PAYMENT RATES	1999-2000	2000-2001 (est.)
Summer School Programs - High School (wpu)	$1,330	$1,360
Summer School Programs - Remedial Elem (wpu)	$2,145	$2,230
Special Education (ADM)	$156	$159
Tuition Apportionment (6-17 census)	$225	$235
Home education (wpu)	$1,072.50	$1,115.00
Limited English Proficiency (student)	$400	$400
Local Share (mill deduct)	32 mills	32 mills

TRANSPORTATION AID PAYMENTS	1999-2000	2000-2001
Small Vehicles (Rural)	$ 0.25 per mile	$ 0.25 per mile
Large Vehicles (Rural)	$ 0.67 per mile	$ 0.67 per mile
Pupil Per Day (Rural)	$ 0.40 per student	$ 0.40 per student
In-city Miles	$ 0.25 per mile	$ 0.25 per mile
Incity Rides	$ 0.20 per ride	$ 0.20 per ride
Family Transportation	$ 0.40 per mile (one way)	$ 0.40 per mile (one way)

Note: Transportation payments will be capped at 90% of the current transportation operating cost plus the eight year average of transportation equipment.

EXHIBIT 5

FORMULA FOR DETERMINING EFFICIENCY RATINGS



Ernst & Young

Spokane, Washington, Adopts GIS in School Districts

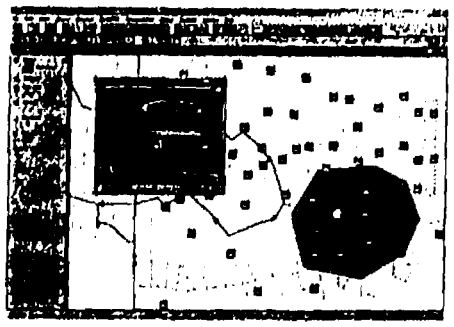
School Bus Routing Goes High-Tech

What a difference a good route makes. While getting kids on and off a school bus has been a task undertaken by school districts across the nation for many years, it's only with the recent tech explosion that districts have thought about using powerful software packages and computer mapping for school bus routing.

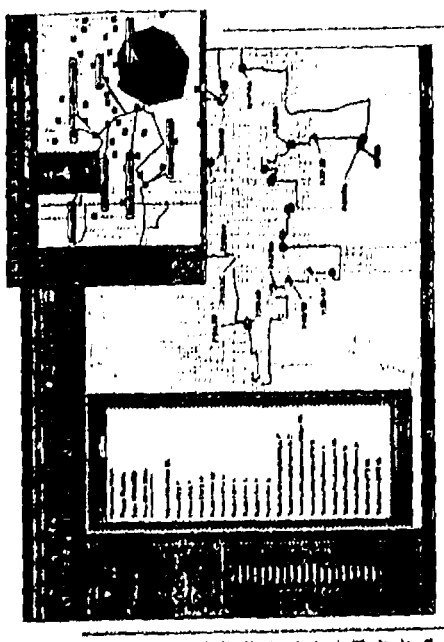
One such agency, the Central Valley School District located near Spokane, Washington, is leading the way in how it routes students, manages transportation information, and carries out its day-to-day tasks, and all at a fraction of the time and cost of previous methods.

"Central Valley School District has done an amazing job," says Kerry J. Somerville, chief executive officer, Education Planning Solutions (EPS)—the ESRI Business Partner that provided Central Valley School District with their GIS solution. "They've optimized their bus

Continued on page 16



SMARTR for Schools assigns students to bus stops based on eligibility and walking distance to the nearest bus stop.



Reporting student information along with routes can be displayed in a few seconds. Inset: Bus stops with students getting on at each stop.

School Bus Routing Goes High-Tech

Continued from cover

routing to save thousands of dollars. While Central Valley School District is one of the larger school districts in eastern Washington using GIS for bus routing, more and more school districts of all sizes are doing similar work and it's improving how they operate.

The Central Valley Transportation Department has for decades generated school routes using paper maps, push-pins, plastic transparencies, and colored pens. Addresses for every Central Valley student had to be located on a paper map and marked by hand. Using best judgment, transportation professionals then grouped the closest students, marked pickup points, and created the more than 250 runs for students in the Central Valley School District. But that was then.

To bring the company is using a customized solution known as SMARTR for Schools Transportation Module, a powerful stand-alone software system from EPS. The system comprises ArcView GIS, ArcView Network Analyst, and a bus manager database to save effectively manage transportation systems.

"In the past, all of our routes had to look at a map and try to figure out the best routes," says Debra Holmes, Transportation Supervisor, Central Valley School District. "Now, using the software, we can quickly create routes that are more accurately based on distance and provide the best driver routes. We can see all of the information when we need it."

What once involved combing through paper maps and map books and a virtual backpack of information—or worse, involved manual field data collection—is now just a few mouse clicks away. For instance, in the past, if a parent called and wanted to know the distance between their house and the nearest bus stop, a transportation official would often have to jump into a car, drive to the area, and manually calculate the distance. This was a timely process. Today, that process is automated and streamlined. Now a user simply types in an address, clicks a computer screen icon, and displays a map with the closest bus stop marked. With a click of a button, the distance pops up on a screen.

Central Valley School District's success is stunning. After using SMARTR for Schools, the school district realized a full week's reduction in the time it took to create the state reports. In addition to this, 5–6 routes could be eliminated with enforcement of school district walking policy realizing an additional $125,000 in savings.

Central Valley School District's success is stunning. After using SMARTR for Schools, the school district realized a full week's reduction in the time it took to create the state reports. In addition to this, 5–6 routes could be eliminated with enforcement of school district walking policy realizing an additional $125,000 in savings.

Routes would be optimized and only students who lived outside the walk zone would be transported. The only exceptions to this rule are students who live in areas designated as hazardous for walking, such as areas under construction or areas with heavy traffic.

The company that designed SMARTR for Schools provides multiple planning solutions to aid in education including software that aids in planning for the present as well as the future. Based in Florence, Montana, EPS provides software modules for student grade and census planning facilities, planning by geographic information, and student GPA planning.

"Our goal at EPS is to provide software that has not been available before," says Somerville. "We understand the busy schedules and tight budgets of school officials and that time and money are commodities not to be wasted. We've designed SMARTR for Schools using ArcView GIS and ArcView Network Analyst because we knew GIS provided the right type of analysis school districts need."

Central Valley School District uses SMARTR for Schools for a number of key applications. Along with route optimization, the school district can use the software for managing student and bus driver information, special education bussing management, driving directions, and bus accounting. For example, some school districts pay parents to drive their children to school. The software helps the school district keep track of those transactions.

In addition, the software provides an accident-tracking module so a user can more easily assess if there is a dangerous stretch of road along a school bus route. The software can also be used for fleet inventory, where the number of buses, equipment, engines, and other equipment data can also be maintained and analyzed.

The success of Central Valley and others has resulted in more than 50 districts across the country using the software, and the high-tech boom in school districts is ever expanding.

For example, school districts use GIS to geocode their student databases and ask questions such as What are the locations of students with the highest grade point averages? and Why?

"We use ArcView GIS as our GIS engine to look at a number of variables," says Somerville. "For example, we'll use GIS to see if there is a relationship between test scores and kids getting a meal at school versus kids who do not. GIS gives us a powerful technology to automate and integrate all data related to students and to use query capabilities to look at problems in a new way."

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Environmental Systems Research Institute Vista 46