USE OF PERFORMANCE STANDARDS AND MEASURES FOR PUBLIC TRANSPORTATION SYSTEMS

by

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16. Abstract

The North Carolina Department of Transportation Research Program in conjunction with the Public Transportation Division (NCDOT/PTD) sponsored this study of the use of performance standards and measures for public transportation systems. This request was driven by the desire to ensure that limited state funding is used in the most productive way possible, and in a way that encourages public transportation systems to maximize the efficiency and effectiveness of the delivery of their transit services.

The study was designed to answer two specific questions:

1. What are appropriate performance measures for transit systems to use?
2. Should performance measures be used to determine the allocation of funding, and if so, in what way?

In regard to what performance measures to use, the study recommends a number of measures for transit agencies to use as a minimum, and cites resources where the agencies can find additional measures to use if they so choose. In regard to the question of linking performance measures to the allocation of state transit funding, the study reached two key conclusions, one regarding urban transit systems, the other concerning rural systems.

1. For urban transit systems, it is recommended that the current State Maintenance Assistance Program (SMAP), which is strongly performance-based, be continued.
2. For rural public transportation, it is recommended that now is not the time to institute performance-based funding. Several preparatory steps are in order before implementation should be considered.

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SUMMARY

This study was conducted by the Institute for Transportation Research and Education for the NC Department of Transportation. It was designed to answer two main questions:

1. What are appropriate performance measures for transit systems to use?
2. Should performance measures be used to determine the allocation of funding, and if so, in what way?

In regard to what performance measures to use, the study recommends a number of measures for transit agencies to use as a minimum, and cites resources where the agencies can find additional measures to use if they so choose. In regard to the question of linking performance measures to the allocation of state transit funding, the study reached two key conclusions, one regarding urban transit systems, the other concerning rural systems.

1. For urban transit systems, it is recommended that the current State Maintenance Assistance Program (SMAP), which is strongly performance-based, be continued.
2. For rural public transportation, it is recommended that now is not the time to institute performance-based funding. Several preparatory steps are in order before implementation should be considered.

Although there are many good reasons for implementing performance-based funding, the report also describes a number of reasons why it may not be desirable. In spite of this, for urban systems it is recommended that the current SMAP program be retained. This is because it has been in place for 10 years, seems to be well-accepted by the transit agencies, and, most importantly, it has a desirable effect in terms of shifting funds toward the better performing systems. However, the SMAP program does need to be modified slightly in order to reflect that fact that the urban transit systems now operate a significant amount of demand-responsive service in addition to traditional fixed-route service. Also, rail service will soon be coming on-line in Charlotte and the Triangle and this will need to be incorporated into the funding formula.

On the rural side, the study concludes that this is not an appropriate time to implement performance-based funding allocation. There are a number of reasons for this including the uncertain quality of the data currently available, the large number of rural funding programs (12 separate programs, each with its own purpose and funding formula), and the fact that rural public transportation service in large measure involves transportation operated on at least a break-even financial basis under contracts with human service agencies. In addition, the performance-based funding formulas that were tested resulted in large variances from the funds currently allocated by existing formulas. This would undoubtedly be very disruptive for a number of the rural agencies, at least in the short-term.

Instead, it is recommended that a number of preparatory steps need to be taken before performance-based funding is considered for rural systems. These steps include an effort to improve (and better understand) the data available, and to examine the possibility of combining some of the current funding programs into more of a block grant approach (e.g., the three separate programs under the Rural Operating Assistance Program—Elderly and Disabled Transportation Assistance Program (EDTAP), Work First/Transitional Employment Transportation Program (Work First), and Rural General Public (RGP) program). In addition, the implications of changes to the funding programs on the Public Transportation Division's initiative to encourage the formation of more regional rural systems needs to be considered.

At least in the short-term, there may be better, more direct ways to improve performance at rural systems. One way is from outcomes anticipated from the NCDOT-sponsored Benchmarking Study that will begin in January 2005. Another way would be to institute a program of periodic transit system "performance audits."

In reaching these conclusions, the study included a review of relevant literature, a survey of other states as to their use of performance-based funding, interviews with key North Carolina public transportation stakeholders, and a survey of transit agencies (at the Community Transportation Conference in the fall of 2003). The literature review revealed that not many states are using performance-based funding, and that some states that have used it in the past have backed away from it. The literature also revealed that the issue is quite complex and controversial.

The survey of other states confirmed that not many states use performance-based funding formulas. The report describes those that do and the methods that they use. The stakeholder interviews revealed a wide variety of opinions as to whether performance-based funding should be utilized or not, and if so, the degree to which it should be used. Most stakeholders suggested that there should be a significant base funding level, and that only a portion of total funding should be based on performance. This sentiment was echoed in the survey of community transportation systems.

Two primary concerns regarding the general use of performance measures were frequently voiced in the surveys and interviews. The first was that great care must be taken if transit systems are to be compared with each other in regard to their performance (many people opposed this idea under any conditions). Such comparisons should be "apples to apples" as much as possible. However, this is considered difficult because many believe that each system has its own unique operating conditions and constraints. The second primary concern was the idea that systems should not be held accountable for things over which they have no control. For example, although public transportation can contribute to better air quality, it can't control air quality in a region and therefore shouldn't be financially penalized if air quality is poor.

A frequently-expressed concern specifically in regard to performance-based funding was that it shouldn't be used to penalize transit systems. These are often systems that need

more financial help, not less. Instead, some kind of "remediation" process should be used to help systems improve performance before any financial penalties are imposed.

A key issue explored in the study is the degree to which funding allocation should be based on performance as opposed to "need" or "equity". Most people who were interviewed or surveyed thought that all three factors should be considered; however, opinions varied widely about how much importance should be given to each. Alternative funding allocation formulas were tested as part of this study that included varying proportions of each of these factors.

For more information, interested readers are referred to two other documents prepared during the course of this study—*Technical Memorandum #1: Background Information*, and *Technical Memorandum #2: A Performance Measurement System*.

Technical Memorandum #1 contains more detailed information on:

- Literature Review—summary of findings from selected literature to date.
- State Practices—description of the current and historical practices.
- Stakeholder Interviews—key points from interviews conducted by ITRE staff.
- 2003 Community Transportation Conference Survey—findings from participants.

Technical Memorandum #2 presents more detailed information on:

- A description of current North Carolina transit funding programs.
- A proposed four-part approach to a performance measurement system—performance measures, performance-based funding allocation, statewide minimum operating standards for rural systems, and remediation assistance.

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I. INTRODUCTION

The North Carolina Department of Transportation Research Program in conjunction with the Public Transportation Division (NCDOT/PTD) sponsored this study of the use of performance standards and measures for public transportation systems. This request was driven by the desire to ensure that limited state funding is used in the most productive way possible (gets the "biggest bang for the buck"), and in a way that encourages public transportation systems to maximize the efficiency and effectiveness of the delivery of their transit services.

The study was designed to answer two specific questions:

1. What are appropriate performance measures for transit systems to use?
2. Should performance measures be used to determine the allocation of funding, and if so, in what way?

The second question had two important sub-questions:

1. If performance measures are used to determine funding allocations, should that be for all or just part of a system's funding? If part, what part?
2. How can the potential conflict between funding need and system performance be resolved? (Often a system with the most urgent need for funds is also a system that is performing poorly.)

Performance measures are an objective means of assessing performance. They are generally thought of as one of two basic types:

- *Efficiency measures* indicate the relationship between work performed and the resources required to perform it. They are usually expressed as a ratio of input to output, often as per unit costs. An example is cost per vehicle mile.
- *Effectiveness measures* are generally thought of as an indicator of how effective a transit system is in regard to accomplishing its goals. Typically this is thought of in relation to passengers carried and is measured by such factors as passengers per vehicle hour or mile, or percentage of costs recovered from operating revenues (recovery ratio). However, effectiveness measures can also simply indicate the achievement of goals and objectives. Examples are an increase in customer satisfaction to a target level, or a desired percentage increase in ridership.

Such measures are being increasingly used in both the public and private sectors as a means to improve performance and assess the achievement of organizational goals.

The use of performance measures is now quite common in government in general and in public transportation in particular. The use of performance measures for making funding decisions or allocations is much less common and more controversial. One common method of linking funding and performance is to provide some kind of monetary reward

or incentive for improved performance. Another method is to directly tie funding to performance through performance-based funding allocation formulas.

As discussed below, some states that have used performance-based funding in the past have backed away from such use. Also, although many funding agencies believe that performance-based funding can improve performance, not all funding recipients agree. The North Carolina Public Transportation Division has used performance measures for funding decisions to some extent in the past but changing conditions in the State have created a desire to re-examine their use.

One of the difficult issues addressed in this study is determining the extent to which funding allocation methods should be based on "need", "equity", and/or "performance". "Need" refers to one of several concepts, e.g., financial need (a transit system that is in financial difficulty), the size of the system (which influences the overall amount of funding needed), or special situations such as a transit system that serves an area that has a high proportion of residents who are transit-dependent. "Equity" refers to the concept of allocating the funds in a way that is perceived as fair or equitable, e.g., by giving an equal amount of funds to each county. "Performance" has to do to how well a system is performing and frequently is thought of in terms of its efficiency and effectiveness. These concepts are described in more detail later in the report.

The remainder of this report is organized into the following main sections:

- *Current North Carolina Transit Funding Programs.* This section describes the current funding programs for urban and rural public transportation systems in North Carolina.
- *Literature Review*. A summary of particularly relevant literature on the subject of performance measures in general and more specifically as they pertain to funding allocation.
- *Survey Findings*. This section describes three surveys that were an important component of this study: 1) a survey of performance measurement practices in other states; 2) interviews with key public transportation stakeholders in North Carolina; and, 3) a survey of public transportation agencies conducted at the Community Transportation Conference in Asheville, NC in October 2003.
- *Study Findings and Recommendations*. Key conclusions and recommendations are provided.
- *Implementation and Technology Transfer Plan*. How study findings can benefit the NCDOT and local transit systems, and plans for dissemination of study information.

II. CURRENT NORTH CAROLINA TRANSIT FUNDING PROGRAMS

This section summarizes current North Carolina urban and rural transit funding programs, and describes the operating statistics that are collected as well as the performance measures now calculated from those statistics.

Description of Current North Carolina Urban Transit Operating Grants

State operating funding for urban municipal and regional transit systems ($32.4 million in FY 04) is currently distributed through the State Maintenance Assistance Program (SMAP) according to the following formula:

- 30%--based on the number of revenue hours as modified by performance on unlinked passenger trips/revenue vehicle hour--compared to state average. (If more than average, more money. If less than average, less money.)
- 30%--based on the number of passenger trips as modified by performance on net cost/unlinked passenger trip--compared to state average. (If less than average, more money. If more than average, less money.)
- 30%--based on a system's share of total local revenues (includes both farebox and local contribution).
- 10%--equal shares. (This amounted to about $141,000 per system in FY 2004.)

SMAP funding cannot exceed the amount of local government assistance, nor can it exceed one-half of the "Remaining Net Operating Deficit" (the deficit remaining after operating revenue and federal operating assistance has been subtracted from total operating expenses). In addition, local government assistance cannot be less than the amount contributed in 1992-93.

Figure II-1 illustrates the breakdown of the various sources that could comprise an urban transit system's operating budget:

Figure II-1: Funding Composition of an Urban Transit Operating Budget

Component	Percent
Total Operating Expenses	100%
System Revenue (farebox and other)	20%
Net Operating Deficit	80%
Federal Operating Assistance (50% of Deficit)	40%
Remaining Net Operating Deficit	40%
Local Share	20%
State Share	20%

The current formula was adopted in 1994. After ten years it was time to assess its effectiveness and to propose adjustments to reflect new conditions and objectives.

A number of things should be noted about the current SMAP funding formula:

- Because of the availability of federal operating assistance and the required matching local contribution, SMAP funding is not a large percentage of most transit systems' operating budgets (on the order of 20% or so). This means that if a performance level of funding is included, even if this level is 25% of the total SMAP amount, then only about 5% of a system's budget would be based on performance. This doesn't provide a lot of leverage in regard to motivating performance.
- NCDOT Public Transportation Division staff believe many systems overlook the performance aspects of the formula. Moreover, a sensitivity analysis conducted several years ago showed that, as an example, a reduction in operating expenses has little impact on the amount of SMAP funding that a system receives (a ratio of 7:1, i.e., for every $7 in reduced expenses, only one additional dollar of SMAP funding is received).
- A few systems have not been eligible for their full SMAP allocation due to insufficient local contributions.
- There is no distinction between large or small systems or fixed route vs. demand-responsive services. The passenger and revenue hours data used for the allocations is only from fixed-route services at this time.
- The amount of SMAP funding, $32.4 million in FY 2004, may drop by about 10 percent in FY05 due to budgetary cutbacks.
- The formula was introduced in 1994. At that time, a number of transit systems operated only fixed-route services or limited paratransit services. Since then, ADA complementary paratransit service has been required and most systems operate some kind of demand-responsive service (one system, Cary, is totally demand-responsive), and two regional systems have begun operations (TTA and PART). In the near future, Charlotte will be starting light rail service, and TTA will follow a short time later. The formula therefore needs to be revisited.
- The Board of Transportation must approve any changes to the formula.

Description of Current North Carolina Rural Grants

There are four main grant programs for North Carolina rural transit systems:

- The Community Transportation Program (CTP);
- The Rural Operating Assistance Program (ROAP);
- The Discretionary Rural General Public (Discretionary RGP) Program; and
- The Regional and Intercity Service Program.

Two of these programs are comprised of sub-programs. There are seven components to the Community Transportation Program, including administrative assistance, the Human Service Transportation Management (HSTM) program (state administrative funds), the Small Urban Operating Assistance program (funding for these systems comes from SMAP), the Rural Capital Program, the Facility Improvement Program, the Technology Program, and the Employee Development Program.

There are three components to ROAP, including the Elderly and Disabled Transportation Assistance Program (EDTAP), the Work First Transitional/Employment Transportation Program (Work First), and the Rural General Public (RGP) program.

The Discretionary RGP program and the Regional and Intercity Service Program are stand-alone programs without separate component sub-programs. Each of the four main grant programs and its components is summarized in Figure II-2.

The RGP program provides operating assistance to rural systems in a manner most comparable to that of the SMAP program for urban and regional transit systems. RGP funds allocated as part of ROAP funds for FY 03-04 varied from $18,562 (Hyde County) to $93,157 (Wake County). Similar to the situation with SMAP funds, the amount of RGP funds allocated to rural transit systems does not, in many cases, make up a large part of a transit system's overall operating budget, and because of the small local match requirement (10 percent, which can be fares) doesn't provide a lot of leverage in regard to motivating performance.

Additional Discretionary RGP funds, amounting to nearly one-third of the formula allocation, were also disbursed in FY 03-04. Therefore, the combined amount of RGP assistance may be substantial to some rural transit systems.

There have also been changes in operations of rural transit systems, such as consolidation of county systems with urban operations in Rocky Mount, Goldsboro, and Hickory. In addition, the move toward regionalism is likely to affect rural and small urban transit systems in the near future. Any change in funding allocation must be able to accommodate this type of increased coordination and consolidation of transit services.

To summarize the methods used to allocate these various funding programs:

- No formulas are now used to allocate any Community Transportation Program or Regional and Intercity Program funds.
- The allocation of administrative assistance and HSTM funds was formerly determined according to the number of vehicles, miles operated, and passengers carried by each rural system. Once an "equilibrium" condition had been achieved following adjustments in funding to individual systems over a period of several years, recent changes in funding have been across-the-board percentage increases.
- Capital, Facility, Technology, Employee Development, and Discretionary RGP funds are awarded on a discretionary basis in response to grant applications submitted to PTD.
- ROAP funds are allocated:
    - Approximately 50% by equity to eligible counties
    - Approximately 50% by various factors (such as the elderly and disabled population, rural population, and Work First caseload in each county)

Figure II-2: Rural Transit Funding Programs and Components

Criterion	Community Transportation Program						
	Admin.	***HSTM***	***Small Urban Operating Assist.***	***Capital***	***Facility Improvement Program***	***Technology***	***Employee Development***
Sources of Funds	▪ Federal ▪ State ▪ Local	▪ State ▪ Local	▪ Federal	▪ (Federal possible) ▪ State	▪ State ▪ Local	▪ State	▪ Federal ▪ State ▪ Local
Grantees	CT Systems	▪ Consolidated Human Service ▪ Coordinated Human Service ▪ Or located in an urban area	Transit systems in small urbanized areas: ▪ AppalCART ▪ Wilson ▪ Salisbury	First priority to CT systems in urban counties and operators of only human service transportation	▪ CT Systems ▪ Small Urban Systems	▪ CT Systems ▪ Small Urban Systems	▪ CT Systems ▪ Small Urban ▪ Consolidated Human Service ▪ Coordinated Human Service
Federal Funds	$7,100,000 (FY 03-04)	$0	$530,000 (FY 04-05)	$1,300,000 (FY 04-05)	$0	$0	Included in Admin.
State Funds	$0	$2,400,000 (FY 03-04)	$ varies by year—SMAP funds	$7,750,000 (FY 03-04)	$2,000,000 (FY 03-04)	$500,000 (FY 03-04)	$0
Total Federal + State Funds	$7,100,000 (FY 03-04)	$2,400,000 (FY 03-04)	$ varies by year	$7,750,000 (FY 03-04)	$2,000,000 (FY 03-04)	$500,000 (FY 03-04)	Included in Admin.
Match Requirement	80% Federal 5% State 15% Local	85% State 15% Local	Per FTA req't.—not to exceed 50% of net operating deficit	90% State and possibly Federal 10% Local	90% State 10% Local	90% State 10% Local	85% Fed/State 15% Local
Restrictions				State funds are used before using any federal funds.		Baseline technology funded under Capital budget.	
Allocation Formula	Amount approved in previous fiscal year plus 5%	Amount approved in previous fiscal year plus 5%	Recent annual increases have been tied to increased % in TEA-21 funds.	Discretionary, based on need.	Discretionary, based on need.	Discretionary, based on need.	Discretionary, based on need.
Reporting	Annual	Annual	Annual	Annual	Annual	Annual	Annual

Criterion	Rural Operating Assistance Program (ROAP)			Discretionary RGP	Regional/ Intercity
	EDTAP	*Work First/ Employment*	*RGP*		
Sources of Funds	▪ State	▪ State	▪ State ▪ Local	▪ State	▪ Federal ▪ State
Grantees	▪ Counties	▪ Counties	▪ Counties	▪ Counties (single-county systems) ▪ Regional CT systems	▪ Private intercity bus ▪ Asheville-Black Mountain service ▪ Asheville-Henderson service ▪ Travelers Aid
Federal Funds	$0	$0	$0	$0	$ varies by year.
State Funds	$5,687,693 FY 03-04	$1,000,000 $ 750,000 for demonstration projects FY 03-04	$3,265,795 FY 03-04	$1,100,000 FY 03-04	$ varies by year.
Total F+S Funds	$5,687,693 FY 03-04	$1,750,000 FY 03-04	$3,265,795 FY 03-04	$1,100,000 FY 03-04	$400,000 FY 03-04
Match Requirements.	No match required	No match required	90% State 10% Local/fares	90% State 10% Local/fares	May be 50% Federal 50% State
Restrictions	▪ May not be used for capital items. ▪ Funds must remain within the program if transferred among counties in a regional system.	Funds may be transferred to EDTAP or RGP if not needed for Work First trips. Transferred funds assume requirements of recipient program.	Allocated only to counties providing transportation to the general public (96 + ECBI)	Applicants must provide anticipated performance standards for the proposed service (total passengers, cost/pass., revenue/mile, subsidy/ pass., farebox recovery.	
Allocation Formula	▪ 50% equally among all counties ▪ 22.5% no. of elderly as % of state total ▪ 22.5% no. of disabled as % of state total ▪ 5% population density	▪ 10% equally among all counties ▪ 45% population as % of state total (excluding county populations in urbanized areas) ▪ 45% no. Work First caseloads as % of state total on 1/1/02.	▪ 50% equally among eligible counties ▪ 50% county rural population as percent of state total rural county population (excluding population of urbanized areas	Application required; discretionary allocation.	None
Reporting	Annual; amount of funds expended and no. of one-way trips.	Annual; amount of funds expended and no. of one-way trips.	Annual; amount of funds expended and no. of one-way trips.	Annual; amount of funds expended and no. one-way trips	

Performance Measures Currently in Use

The foundation for developing a good performance measurement system is solid data. In order to minimize the burden and cost of collecting new data, one objective in this project is to use the data and measures already collected and used by North Carolina transit systems as much as possible.

Several performance measures are now reported and tracked through the annual operating statistics collected by NCDOT. The following operating statistics are collected and tabulated annually as provided by urban systems (including their dial-a-ride service), and by rural systems:

Figure II-3: Operating Statistics Currently Collected

Urban Systems	Rural Systems
Total peak hour vehicles	Total vehicles
Total passengers	Total passengers
Total revenue vehicle miles	Total service miles
Total revenue vehicle hours	Vehicle service hours
Total expenses	Total expenses
Total revenue	Total revenue
Total farebox revenue	
Net operating deficit	

The following performance measures are calculated annually from those statistics:

Figure II-4: Performance Measures Currently Calculated

Urban Systems	Rural Systems
Passengers per revenue mile	Passengers per revenue mile
Passengers per revenue hour	Passengers per revenue hour
Farebox revenue per passenger	Cost per mile
Farebox revenue/total expenses	Cost per hour
Recovery ratio	Cost per passenger trip
Net operating deficit per passenger	

In addition, changes from the previous fiscal year are calculated and reported for both the operating statistics and associated performance measures. While a transit system's performance may be useful when making discretionary funding decisions, performance is not used at this time as part of a formula to allocate any funding for North Carolina rural transit systems. (As described earlier, performance measures are used in the allocation of funds to urban, small urban and urban regional systems.)

III. LITERATURE REVIEW

Performance Measurement in General

Performance measurement is frequently used, in a variety of ways, for two primary and related purposes:

- To permit the monitoring of performance; and
- To motivate and facilitate the improvement of performance.

Performance measures may be described as being *input*, *output*, or *outcome* measures. *Input* measures look at the resources dedicated to achieving a goal; *output* measures look at the products produced; and *outcome* measures look at the impact of the products on the goals. *Outcome* measures are preferable, as they directly relate strategic goals to the results of the activities performed to achieve them.

To select performance measures, Kassoff suggests addressing the following (1**,** p. 52):

- Do the measures get to the heart of the key issues?
- Are the measures readily understood by all affected parties?
- Will measures be interpreted with consistency?
- Are the measures too complex, at the expense of being comprehensible?
- Are the costs to collect, validate, and update the underlying data within reason, particularly when weighed against the value of the results?
- Can easier, less costly measures satisfy the purpose?
- Are the measures too simplistic at the expense of offering useful insights?
- Do the measures assess outcomes that reveal key results, or do they assess outputs that measure level of effort, which may not be the best indicator of results?

Kassoff offers some key suggestions for a performance measurement program:

- Adopting a limited number of important measures with clear purposes;
- Measuring only what you are sure you need;
- Making measures and presentations as simple and straightforward as possible;
- Making the system to implement performance measures simple and supportive;
- Avoid measuring the wrong things; and
- Using measures to tell the true story, while focusing on opportunities and not allocating blame.

Data must be consistently defined, accurate, and repeatable. Data issues include, in addition to the availability and cost of desired data, ensuring the data are of good quality, and that data are available in the required form.

When analyzing and reporting performance, it is important to try to distinguish whether the results are due to internal (controllable) or external (uncontrollable) factors. In addition, analysis must account for the impact that multiple goals can have on each other.

Goals may be polar opposites, such that greater success in attaining one goal will result greater lack of success in attaining another goal.

A recent and very comprehensive study of performance measures for transit was performed under the Transit Cooperative Research Program by Kittleson and Associates, et al. This study identified the key aspects of an "Effective Performance-Measurement System" as follows (2**,** pp. 10-15):

- *Stakeholder Acceptance* –is vital for a program's long-term viability and usefulness.
- *Linkage to Goals* –it should be clear what goal(s) the measure will help achieve.
- *Clarity* – the program's intended audience should understand the performance measures.
- *Reliability and Credibility* – measures should be based on accurately and fairly assessing performance and whether they can be used as a tool to measure goal achievement.
- *Variety of Measures* – measures used should reflect a broad range of relevant issues.
- *Number of Measures* – the need for a variety of measures must be balanced to avoid overwhelming the end user with superfluous data.
- *Level of Detail* – measures should be sufficiently detailed to allow accurate identification of areas where goals are not being achieved, but not more complex than needed.
- *Flexibility* – provide the flexibility to permit change, while retaining links to historical measures.
- *Realism of Goals and Targets* – targets should be realistic, but slightly out of reach.
- *Timeliness* – allows all to understand the benefits that resulted from service improvements and allows agencies to quickly identify and react to problem areas.
- *Integration into Agency Decision-Making* – carefully consider what the performance results are indicating, and use results to evaluate the success of past efforts and to develop ideas for improving future performance."

The authors assign transit agency performance measures to the following eight primary categories (2, p. 5):

- Availability—when and where service is provided, and sufficient capacity
- Service delivery—reliability, customer service, passenger loading, and agency goal accomplishment
- Safety and security—the likelihood of being involved in an accident or becoming the victim of a crime while using transit
- Maintenance and construction—the effectiveness of the agency's maintenance program and impacts of construction projects on agency staff and passengers
- Economic—evaluation of performance from a business perspective, including use, efficiency, effectiveness, and administrative measures
- Community—transit's impacts on individuals and the community as a whole

- Capacity—the ability of transit facilities to move both vehicles and people
- Travel time—how long a transit trip takes, both by itself, and in comparison to another mode or an ideal value

It is important to note that performance measures must be applied differently to demand-responsive services than to fixed-route services, as they tend to operate in different environments and serve different purposes.

Analysis of performance measures can be done in several ways. Rather than use only one method of analysis, the authors suggest using several methods in combination (2, p. 7):

- Comparison with annual averages
- Comparison with a baseline
- Trend analysis
- Self-identified standards
- Industry standards
- Peer systems

The study suggests an eight-step process for the development of a performance measurement program. (2, pp. 11-16):

1) Define goals and objectives
2) Generate management support
3) Identify users, stakeholders, and constraints
4) Select performance measures and develop consensus
5) Test and implement the program
6) Monitor and report performance
7) Integrate results into agency decision-making
8) Review and update the program

Finally, the report includes an extensive menu of performance measures with guidance for whether they are appropriate for small, medium or large systems. In addition, there are measures provided for both fixed-route and demand-responsive services.

Performance Measurement and Customer Satisfaction

A key consideration in performance measurement is making sure that a strong customer perspective is included. Questions with regard to integrating customer satisfaction into performance measures include:

- What are transit customers' concerns with service—what do they want and need?
- How should those concerns be ranked—what are the priorities for those wants and needs?
- How can these concerns (wants and needs) be measured?

Customer service concerns from six studies that were reviewed by the research team are summarized in the following table.

Figure III-1: Summary of Key Customer Service Concerns

Chicago Transit Authority, 1997	Florida DOT, 2000	TCRP Report 46, 1999	TCRP Report 47, 1999	TCRP Report 54, 1999	TCRP Synthesis 45, 2002 (*according to transit agencies)*
Availability Access to Service	System design Span of service	Wait quality	Frequency of transit service (span of service and headways)	Convenient and Accessible	Frequency of service
Reliability, On-time Performance	Timeliness	Vehicle quality	Reliability of transit service	Reliable	On-time service
Communications, Driver Attributes	Experience of the bus ride	Trip quality	Behavior of other riders	Empathetic	Courtesy of employees
Fare Payment	Value	Information quality		Affordable	Personal safety (at facilities and on vehicles)
Personal Safety	Perceptions of safety			Safe and Secure	
Information	Printed schedule			Understandable and Intelligible	
Appearance Comfort				Clean and Comfortable	
Comfort at Stops					

While the differences in terminology used among the surveys make it difficult to generate exact comparisons among the surveys, customer service concerns that predominate include:

- Sufficient service;
- Reliable, on-time service;
- Safe conditions at stops and on board vehicles;
- Cost of the trip;
- Employee courtesy; and,
- Quality of information provided.

An important concept in measuring customer satisfaction is that of "importance" vs. "performance". For example, a customer may consider "safety" to be a very important factor in using transit, but if he or she perceives the safety of the system to be very high, then it is not as important a consideration as another factor on which the system may be performing poorly. The key is to measure not just importance but the perceived performance of the system in regard to a particular factor, and then to focus efforts on areas where importance is high and system performance is low. This helps avoid wasting scarce resources on problems that are not important.

Performance Measures and Funding Allocation

Performance measurement theory is based on the premise that a set of indicators can be used to distinguish "good" from "bad" performance. However, there are tradeoffs between adopting formula-based funding allocation methods and flexibility in responding to individual transit systems needs or social goals.

An excellent synthesis of performance-based funding programs was performed in 1994 under the Transit Cooperative Research Program. (3) It used the following definition of performance measurement.

> "Performance measurement is the assessment of an organization's output as a product of the management of its internal resources (dollars, people, vehicles, facilities) and the environment in which it operates."

Key conclusions of this synthesis study included (3, pp. 2-3):

- There is widespread agreement that local transit system performance should be tracked. Few agree that the results should guide financial subsidy decisions, and even fewer are doing it. Some of the related findings include the following:
    - It is difficult to reach consensus on what constitutes good performance, especially in light of the broad-based goals for transit funding assistance.
    - It is difficult to determine whether performance-based financial assistance should go to the good performers or the poor performers who may have greater financial needs.
    - Funding agency decision-makers remain skeptical of the reliability of data provided by many local authorities; there is concern that information can be skewed deliberately or inadvertently to meet benchmarks.
    - There is doubt as to whether performance measurement systems can truly be sensitive to the differences among transit systems; at the same time, external factors beyond the control of transit managers can also unbalance the playing field.
    - The influence of politics at state and local levels remains formidable, sometimes driving funding or operational decisions regardless of performance results.
    - Funding agency staff are reluctant to apply the financial penalties to local transit systems that might be dictated by performance-based decisions.
    - Performance-based funding may not respond appropriately to the competing pressures on public transit systems to take a hard-nosed business approach to service while also fulfilling their social mission.
- When performance components are used in subsidy allocation formulas, they tend to be combined with non-performance factors, or factors not traditionally viewed as performance characteristics, such as local financial contribution levels.
- Among state DOTs that include performance measures in their allocation formulas:
    - Performance measurement is used to provide an incentive level of funding rather than as a determinant of base allocations.

- Performance-based measures are being eliminated from allocation systems entirely.

Another 1994 study conducted by Brian Taylor "to assist the North Carolina Department of Transportation in developing a performance-based state operating subsidy program for public transit" defined the following four main categories of performance measures (4):

- *Cost efficiency*, or the relative cost of providing service (e.g., cost per vehicle hour).
- *Service efficiency*, or the ratio of service inputs to service outputs (e.g., employee hours per vehicle hour).
- *Service effectiveness*, a measure of whether the service is carrying many passengers (e.g., passengers per vehicle hour).
- *Cost effectiveness*, a measure that incorporates both cost and effectiveness (e.g., how much of total expenses are recovered from the farebox).

According to the author, no single measure reflects all four dimensions. However, cost effectiveness "comes closest". Three measures are suggested as capturing most aspects of transit performance:

- Operating cost/vehicle hour (*cost efficiency*).
- Passengers/vehicle hour (*service efficiency*).
- Operating income/operating expense (*cost effectiveness*).

The study outlines three approaches to making a linkage between performance and funding:

- *Uniform standards*—systems must meet or surpass a minimum level to receive funding.
- *Individual comparisons*--each system's performance is compared to its past performance or its goals.
- *Group comparisons*--systems are compared with peers either statewide or nationwide.

Each approach has both strengths and weaknesses. *Uniform standards* are easy to apply and treat all systems equally. However, there is no incentive for systems to exceed the minimum standards. *Individual comparisons* can be tailored to the individual system but don't allow any comparison with other systems. *Group comparisons* allow inter-system comparisons but may not allow for important differences in local operating goals or conditions.

An important point made by the Taylor study is that there is usually a conflict between performance-based funding systems and what is referred to as "distributional equity". Distributional equity has to do with policy goals of distributing funding in some equitable way throughout the political jurisdiction, in this case the state. This usually results in

some systems or funding recipients receiving funds even though they may be considered poor performers in general.

The study lists three basic approaches to transit-related distributional equity:

- *Geographic-based*—distribution among geographic areas on some equitable basis.
- *Operator-based*—distribution based on a formula based on amount of service provided.
- *Passenger-based*—distribution based on service consumed.

Of the three approaches, the passenger-based approach is considered to be the most closely related to performance. In addition to geographic equity, Bullard and Johnson describe two other aspects of transportation equity (5):

- *Procedural Equity*--the transportation decision-making process should be uniform, fair and consistent.
- *Social Equity*—benefits shouldn't flow disproportionately to wealthy persons (or communities), nor the adverse impacts flow disproportionately to lower income or minority persons (or communities).

Allocating funds according to performance measures could well be considered as undesirable from at least one of these equity perspectives.

The 1994 TCRP Synthesis study described earlier was recently updated and expanded (6). This update looked at the current use of performance measures by state DOTs, MPOs (Metropolitan Planning Organizations), and transit agencies in allocating funds or in guiding investments and expenditures. As pointed out in other literature, the study observes that there are different ways of defining performance beyond the traditional measures of efficiency and effectiveness. For example, one way is to measure progress toward achievement of such goals as increased ridership, market share, service coverage or degree of local financial contribution.

The study also points out that agency and community goals for transit are often in conflict. For example, increasing transit service by expanding geographic coverage or adding service in the evenings or on weekends will usually result in diminished performance as indicated by traditional productivity measures. In addition, some state and federal laws and regulations may have the same effect, e.g., the requirement to offer comparable, parallel demand-responsive service for disabled riders.

Based on the responses to the surveys used in the study, case studies and a literature review, the study reached a number of noteworthy findings and conclusions. These include:

- Transit funding decisions are made at a variety of levels (states, MPOs and transit agencies), and different performance measures may be used at each level.

- Transit system performance remains as an important consideration in the design, funding, operation and oversight of transit services.
- Measures that relate to broader community goals are increasingly being utilized. (It should be noted that many of these kinds of goals are not under the control of transit systems, e.g., air quality.)
- The use of performance measures for management and oversight, and their use in funding allocation, are increasingly being done as independent activities. Though their use in fund allocation is minimal (only four states according to the study), their use by transit systems is extensive.
- Several problems were cited when performance measures are used to allocate funds. For example, such allocation can conflict with the desire for stable and reliable funding. In addition, inequities can result when a well-performing system loses funds to another system that performs better. Similarly, inflexibility can be created if performance-based allocations make it difficult to meet legitimate needs.

The study found that the following six traditional measures are used by the four states where performance-based funding is utilized:

- Passengers per operating expense;
- Vehicle miles per operating expense;
- Cost per vehicle hour;
- Cost per vehicle mile;
- Passengers per vehicle hour; and,
- Cost per trip.

In summary, the study found that performance measures are currently used extensively in the transit industry. However, their use in allocating funds has been minimal, and the interest in using them for this purpose seems to have diminished, not grown, since 1994.

IV. SURVEY FINDINGS

As part of the research study, ITRE conducted surveys of three types of stakeholders, including:

- State Departments of Transportation;
- Key North Carolina stakeholders; and
- Participants attending the 2003 Community Transportation Conference.

The purposes of these surveys were to gather information on other states' use of, and experiences with performance measures to allocate transit funding, to gain information on stakeholders' experience with, or perceptions on using performance measures for the allocation of transit funding, and to gain insights on transit system managers' thoughts on the potential use of performance measures to allocate transit funding in North Carolina.

State Approaches

ITRE conducted a two-stage survey of state Departments of Transportation to gather information on current state funding practices. The first stage comprised a brief survey of all 50 state DOTs to determine if they used performance measures in allocating funding to transit systems. The second stage involved a more detailed survey of those that indicated using performance measures to allocate some or all funding. Follow-up calls were conducted for further clarification. (Note: this survey focused on funding for operating expenses; in general, capital funds are awarded on a discretionary, project-by-project basis.)

Texas used performance measures to allocate transit funding but no longer does so; other states have modified their process. For purposes of analysis, those states that currently use, or have used performance measures to allocate funds, states that use performance measures only to inform discretionary funding decisions, and states that use performance measures only for informative purposes, i.e., not to allocate funding, are listed in Figure IV-1 below. (Note: *North Carolina is not included in the table even though it uses performance measures; this use is described in detail elsewhere in this report*.)

Figure IV-1: States Using Performance Measures to Allocate Transit Funding

States Currently Using Performance Measures to Allocate Transit Funding	States Previously Using Performance Measures to Allocate Transit Funding	States Using Performance Measures to Inform Discretionary Transit Funding Decisions	States Using Performance Measures Only for Informative Purposes
▪ **California**—State Transportation Assistance Program (STA) ▪ **Florida**—Public Transit Block Grant Program ▪ **Indiana**—Public Mass Transit Fund (PMTF) ▪ **Iowa**—State Transit Assistance (STA); Section 5311—partial	▪ Texas	▪ Arizona ▪ Nevada ▪ Oregon	▪ Minnesota ▪ Wisconsin

States Currently Using Performance Measures to Allocate Transit Funding	States Previously Using Performance Measures to Allocate Transit Funding	States Using Performance Measures to Inform Discretionary Transit Funding Decisions	States Using Performance Measures Only for Informative Purposes
▪ **Missouri**—Elderly and Handicapped Transportation Assistance Program ▪ **Ohio**—Ohio Public Transportation Grant Program (OPTGP)—partial ▪ **New York**—State Transit Operating Assistance (STOA)—partial ▪ **Pennsylvania**—Urban and Rural Operating Assistance			

Note: "partial" means that performance measures are only used to allocate certain funds, not all.

Current Allocation of North Carolina Transit Funding

The North Carolina State Maintenance Assistance Program (SMAP) provides assistance to regional, urban and small urban areas transit systems for fixed-route and dial-a-ride service costs that are not covered by federal funding, and allocates this assistance by formula. The allocation formula for these funds is as follows:

- 30% based on passengers/vehicle hour
- 30% based on net cost/passenger
- 30% based on system's share of total local revenues
- 10% distributed in equal shares

North Carolina funding for rural and small urban transit systems is currently allocated according to several formulas and on a discretionary basis. Programs in which funding is awarded on a discretionary basis include:

- Rural Capital Program
- Facility Improvement Program
- Technology Program
- Regional and Intercity Service Program, and
- Human Service Transportation Management Program
- Discretionary Rural General Public (DRGP) Program

Programs in which funding is awarded to rural and small urban transit operators by formula include:

- Rural General Public (RGP) Program—50% based on rural population; 50% equity
- Elderly and Disabled Transportation Assistance Program (EDTAP)—50% equity by county; 22.5% elderly population; 22.5% disabled population; and 5%

population density (Note: *This formula is per state legislation not the NCDOT Board of Transportation*.)

- Work First/Employment Transportation Assistance Program—45% population; 45% number of Work First case loads; 10% equity

Funding Allocation Practices in Use/Formerly Used by Other States

Figure IV-2 summarizes performance measures now in use or formerly used by states to allocate state transit funding. More detailed information on each of these states is provided in Technical Memorandum #1.

Figure IV-2: Summary of Performance Measures Used by States to Allocate Funding

State	One-Way Pass. Trips	Vehicle Revenue Miles	Productivity-Outcome (Effectiveness)	Efficiency	Local Financial Support	Other
Florida	X	X				Population
Indiana			Passengers per operating expense	Vehicle miles per operating expense	Locally derived income per operating expense	
Iowa			Trips per operating expense	Revenue miles per operating expense	Locally derived income	
Ohio	X		Revenue per vehicle mile		Local revenue	
New York	X	X				
Missouri	X					Types of trips
California			Passengers per vehicle service hour; Passengers per vehicle service mile; Farebox recovery ratio	Operating cost per passenger; Operating cost per vehicle service hour; Vehicle service hours per employee		
Pennsylvania (former)			Ridership per hour	Cost per hour; Revenue per hour; Revenue per expense		
Texas (former)			Revenue recovery rate	Cost per mile		Population; Service area size; One-way trips per capita

Stakeholder Interviews

A second survey involved conducting interviews with key stakeholders or individuals with an important perspective or particular expertise about the issue. A list of stakeholders interviewed and the interview questions are provided as Appendix A. In general, performance measures are thought to be a good idea although most respondents recognized the difficulty of implementing them. A frequent concern raised was the need to be able to compare "apples and apples". Otherwise the system would be unfair and unworkable.

Interviewees were asked to rate a number of items that a performance measurement system should try to measure in terms of things usually considered to be transit system goals. The highest rating was given to traditional efficiency and effectiveness criteria, and to customer satisfaction. Other goals of transit such as relieving traffic congestion, improving air quality, and energy conservation were rated the lowest, probably because these were perceived as not under the direct control of transit systems.

A number of possible uses for performance measures were mentioned such as recognizing good performance, improving management decision-making, informing the board and public, and "getting the biggest bang for the buck."

There was also agreement by most interviewees that performance measures should be linked to the allocation of transit funding. However, most said that this should only be for part of the total funding. Most people believed that transit systems should receive a significant amount of baseline funding, and also have the ability to earn additional funds through good performance. Another strong sentiment expressed was that transit systems should not be penalized for poor performance, but instead should be helped. After all, it would not be the systems that would be penalized but the system's passengers.

A concern raised by many of the individuals was that a performance-based system could conflict with the need for innovation and creativity, e.g., starting up an experimental new route. Unless this kind of need is considered, systems may be reluctant to take risks that might negatively affect their performance and therefore their funding.

In terms of what kind of performance measures should be used, there was general consensus that traditional efficiency and effectiveness measures such as cost per mile and passengers per hour should be included. Customer satisfaction was another common response. As mentioned above, some consideration should be given to innovation and risk taking. A few individuals mentioned the need to consider larger issues such as traffic congestion, economic development and access to basic needs such as health care.

Interviewees were asked about the inherent conflict between funding approaches based on performance, financial need and "distributional equity" (allocating the money according to some equal share). Everyone recognized the difficulty in incorporating all of these factors in a funding program. The most common suggestion was again to provide a baseline funding amount that would reflect financial need, and then additional funds that would be based on performance. There was less agreement about performance

vs. distributional equity. Some believed that distributing funds on the basis of equity, e.g., on some kind of per capita basis, was poor public policy and resulted in less than optimal use of public funds. However, almost everyone recognized that in a political system this factor would probably have to be included to some degree.

One useful idea that surfaced during the interviews was the idea of phasing in such a performance-based funding system over a period of years. This would provide a learning experience for the systems involved and would also allow the data collection methods and the measures to be fine tuned and improved.

Community Transportation Conference Survey

At the Community Transportation Conference held in Asheville in October 2003, 29 participants were asked to complete a survey on the use of performance measures to allocate transit funding. A copy of the survey is included as Appendix B. In addition, personal interviews were conducted with interested conference participants.

Of the respondents to the survey, 72 percent reported that they use some form of performance measures while 28 percent do not. Three main types of measures were reported as being used:

- Rider usage (e.g., riders/mile or hour)
- Mileage per rider, or per vehicle
- Cost/rider, or per mile, or per hour

Other common measures reported as being used included accidents per 100,000 miles, revenue per mile or hour, and administrative expenses as a percent of total cost. Customer satisfaction surveys are used by 76 percent of the systems, and are conducted on average every 2.1 years.

When asked whether performance measures should be used to allocate funding, roughly one-third were in favor, one-third were opposed, and one-third didn't have an opinion. Of those who responded either in favor or "don't know," 77 percent favored the use of performance measures for allocating only a portion of funding, while 23 percent favored basing all funding on such measures.

The most common suggestions for which performance measures should be used were the same as the three main types listed above—rider-usage based, mileage per rider or vehicle, and cost-based (using fully-allocated costs).

Recommendations on the percentage of funds that should be distributed based on performance, financial need, and equity criteria were (averages of all responses):

- According to performance: 24%
- According to financial need: 49%
- According to distributional equity: 27%

Respondents perceived the greatest advantages to using performance measures to allocate funding as

- Encouraging better performance.
- Building credibility by documenting performance.
- Encouraging accomplishment of goals for transit funding.
- Predictability of funding from year-to-year.

The greatest disadvantages to using performance measures to allocate funding were seen as:

- Encouraging manipulation of data.
- Being too "mechanical" and not reflecting the real world.
- Being unable to predict funding from year-to-year.
- Burdensome to administer.
- Not being equitable to all recipients.

When asked how their performance measures were used, the most frequent responses were:

- Monthly reports to management.
- Route analysis, adjustment.
- Evaluations/reviews (e.g., for budget analysis).
- Board/Advisory Committee meetings.

Finally, in response to what special local factors needed to be considered in regard to implementing a performance-based funding allocation system, answers included:

- Distinguish rural vs. urban systems.
- Topographical factors such as mountains should be considered.
- Population density.
- Local, politically imposed goals.
- The need to cross county lines, esp. for medical trips.
- Special relationships with local human service agencies that influence goals and decisions.
- Public vs. private or non-profit status of system.

V. STUDY FINDINGS AND RECOMMENDATIONS

Use of Performance Measures in General

Whether or not performance measures are used in the allocation of state transit funds, the state should require all transit systems to implement an internal performance measurement system that includes certain required measures and components. It is proposed that the system:

- Assess performance in regard to key dimensions of service including:
  - Availability (e.g., geographic coverage, hours and days of availability, and intervals between fixed-route vehicles)
  - Service delivery (e.g., on-time performance, service reliability, miles between vehicle road calls, and driver courtesy)
  - Travel time (how long it takes to make a trip by transit, especially in comparison to an auto trip)
  - Safety and security (e.g., number of accidents per 100,000 vehicle miles, number of crimes against passengers, and number of safety-related complaints)
  - Appearance/comfort (e.g., clean, well-maintained vehicles with adequate climate control, and comfort at stops)
  - Information/communications (how easy it is to obtain information needed to make a trip—timetables, website, telephone; adequate communication about service delays, etc.)
- Include at least the following efficiency/effectiveness measures:
  - Passengers per vehicle hour and/or per mile
  - Cost per passenger
  - Revenue per passenger
  - Operating deficit per passenger
  - Cost per vehicle hour and/or per mile
  - Revenue per vehicle hour and/or per mile
  - Recovery ratio

  Other efficiency/effectiveness measures could be left to local option
- For demand-responsive service, some additional measures should be considered. For example:
  - Service denials (not receiving service at or near the time requested)
  - Wait time, and wait time deviation (the difference between promised and actual pickup times)
  - Percentage of missed or dropped calls, and calls held excessively long
- Include periodic customer satisfaction surveys.
- Be based on the organization's strategic plans, goals and objectives, and linked to the budgeting process.
- Include both trend analysis (e.g., year-to-year comparisons) and peer group comparisons.
- Require regular reports (monthly or quarterly) to the system's governing board/advisory board. In addition a report should be furnished to the NCDOT Public Transportation Division at least annually along with a description of how the measures are being used in planning and decision-making.

- Include a benchmarking process that incorporates performance standards and "best practices" analysis.

Note: An excellent resource for identifying, selecting and using appropriate performance measures, whether for large or small transit systems or for fixed-route or demand-responsive service is *TCRP Report 88*: *A Guidebook for Developing a Transit Performance-Measurement System.* (2)

Performance Measures and Funding Allocation

Recommendations are split for progressing beyond the use of performance measures to track transit systems' service efficiency and effectiveness to using performance measures to allocate operating assistance. We recommend the continued use of the SMAP formula, which contains a performance component, to allocate funding to urban transit systems, but do not recommend adopting performance measures as a criterion to allocate funding to rural transit systems at this time.

The remainder of this section includes a discussion of several important considerations in the design of a performance-based funding allocation, and key reasons for not linking performance measures to funding allocation.

Important Considerations

There are a number of important issues that need to be considered or incorporated in the design of a performance-based funding allocation method. These are discussed below.

Should a significant performance component be included in funding allocation? If so, should the primary performance criterion be efficiency/effectiveness?

There is a desire on the part of the Board of Transportation and the Public Transportation Division to incorporate some kind of performance measures or standards in transit funding allocations. Many of the other stakeholders interviewed expressed a similar view. At the same time, most people recognize that doing so in a meaningful way is a very complex task.

To the extent that performance measures are used in some way, the highest priority was given to efficiency/effectiveness as the primary criterion to be used.

How much of a performance component is enough to have a significant motivational impact?

To the extent that a goal of performance-based funding is to motivate better performance, if the performance component of funding is to be effective it has to be a large enough amount to actually motivate behavior. But how much is enough? At what level does it become an important factor in making decisions about service, decisions that are at the same time being influenced by a variety of other factors and pressures? On the negative side, if performance is a substantial factor in the amount of funding received, could poor performance result in creating a financial crisis at a transit system? Could an area's

attempt to develop transit services to meet a broad range of mobility needs, particularly during weekend and evening periods, hurt its performance and reduce its funding? Determining an appropriate performance-based amount would be a tough balancing act.

In addition to motivating better performance, are there other goals that should be considered?

Whether or not performance-based funding has a significant motivational aspect (i.e., actually influences day-to-day decision making), a performance-based system can have an important "distributional" effect. The effect is likely to shift funds from lower performers to higher performers even if there is not a conscious decision on the part of an agency to improve performance. An example is the federal operating assistance formulas that distribute some funds based on population and population density. This tends to direct funds to higher density urban areas where transit is most needed and where productivity is more likely.

Should transit agencies have a chance to address their performance problems before they are financially penalized?

A number of stakeholders emphasized the importance of helping transit agencies solve their performance problems before being penalized. This makes good sense, particularly when it is realized that it is not the transit system that is being penalized, but more likely its riders. However, creating a process of "remediation" before penalties are imposed makes it even harder to structure a formula-based allocation system. (This is discussed in more detail below.)

To what extent should recent or new developments be accommodated?

Clearly, things have changed since SMAP and other current transit funding programs were created (e.g. Cary's new demand-responsive service, the TTA/PART regional systems, and ADA demand-responsive service). In addition, there will soon be rail service in Charlotte and in the Triangle. These new kinds of services, as well as the move toward regional transit operations will need to be considered in developing a new funding allocation method.

How can the allocation method be structured so as to not discourage new or expanded service or other "innovation?"

A major concern raised by many stakeholders was how to deal with the development of new service or innovative programs that might have a negative impact on performance at least in the short-term. For example, new service on weekends is not likely to be as productive in terms of passengers per vehicle hour as existing weekday service. This will tend to reduce a system's overall performance. However, it is clear that discouraging such new service development should not be either an intended or unintended consequence of a performance-based funding system.

One way to handle this is to create a separate "demonstration" program where new service can be tested over a period of time without counting against a system's performance. If the new service meets an appropriate performance level after the demonstration period, it could be wrapped into the regular system. If not, it could be modified or dropped. Performance standards for such new service might be developed that would reflect the type of service that it is, e.g., weekday peak, weekday off-peak, or weekend/holiday.

Should there be a relatively large and predictable base amount, and then a performance-based level of funding?

Most stakeholders believe that there should be a relatively large amount of base funding provided to transit systems that is not performance-based. However, opinions varied widely. Some stakeholders would prefer that none of the funding be based on performance, while a few suggested that it should all be performance-based.

Should SMAP funding not exceed the local contribution or one-half of the "remaining net operating deficit" as is the case currently?

These features of the SMAP funding program are considered to be important requirements of the SMAP program. They operate to insure that there is strong local commitment to the transit system, and that it's not just the easy availability of state funds that drives decisions about local transit service.

Should rural transit systems be required to make some local financial contribution?

Some stakeholders would like to see an increase in the funding provided from local, as opposed to state and federal, sources. If a revenue recovery component that includes a local share contribution were to be incorporated into a rural operating assistance allocation formula, that could place local transit systems in a difficult position if their governing body did not support a contribution of local dollars. A requirement for contribution of local dollars could be particularly difficult to accomplish for a private non-profit operated system with little or no connection to local county government. That could result in a transit system being penalized financially for a decision made outside its control, with an ensuing decline in service quality.

If funding allocations were to be restructured to place greater emphasis on transit system performance, should there be a multi-year phase-in for testing, data refinement, adjustment, and accommodation?

This was also a concept shared by many of the stakeholders. They realize that implementation of a different funding system could be difficult, and that it could have significant impacts on individual transit systems. Enough time needs to be allowed to allow for wrinkles to be ironed out and for transit systems to adjust to possible changes to current funding levels.

How can the system be made flexible enough to respond to significant changes?

Obviously, things will continue to change and any new system would have to be flexible enough to respond if possible. It's not enough to just design a system that works for the situation that exists today. It should be tested, for example, against possible increases or decreases of funds, or such other changes that can reasonably be anticipated.

Should the method developed for urban systems be as similar as possible to that developed for rural systems in order to facilitate regionalism?

This makes good sense, particularly because the once relatively distinct line between urban and rural systems is blurring as urban and rural systems begin to merge in some urban counties, as urban systems operate more demand-responsive services, and as more and more transit agencies become part of regional systems.

Some Reasons for Not Linking Funding Allocations to Performance

Over the course of the study, a number of reasons surfaced as to why it might be preferable to separate funding from performance measures. These are summarized below:

Conflicting Goals. It is quite conceivable that a transit agency is charged with meeting conflicting goals. For example, if an important local goal is to increase geographic service coverage, the achievement of this goal might have negative impacts on performance as commonly defined, i.e. efficiency and/or effectiveness. Another example is a system that wants to develop new evening or weekend service. Generally, such service will be less productive than weekday service. Performance-based funding is likely to provide a disincentive for developing such service.

Weak Incentive Effect. A basic reason behind tying the allocation of funding to performance is that this will provide an incentive for funding recipients to perform better (in order to either generate additional funds or to avoid financial penalties). However, there is not much evidence that the various formulas used to fund transit agencies actually produce this result. One reason is that even if a single transit system were to make significant performance improvements, the formulas don't result in much of a funding change from year-to-year (in part due to the fact that the change at one system is but a small fraction of the statewide or nationwide numbers).

Furthermore, according to motivational theory, the link between an action and its reward (or punishment) should be as close in time as possible. The more separated they are, the weaker the impact on performance. Because of the length of time it takes to report and analyze the data upon which performance is evaluated, funding allocations are often based on data that is more than a year old.

Lack of Control of Over Performance. If funding is tied to performance, in order to be fair the factors influencing performance should be under the control of the transit agency. However, factors well beyond the control of the agency are often the cause of poor

performance, e.g., local economic problems leading to a drop in employment which in turn leads to a drop in ridership.

Experience in Other States. Several states that have tried performance-based funding have backed away from it, usually due to political pressures that are created by the performance funding "losers." If in fact the funding allocation system has a significant impact on shifting funds from poor to good performers, as is the underlying rationale for the concept, this creates countervailing forces by the losers to change the funding method.

Financial Need vs. Performance. Taking funds away from a poorly performing system may only compound the problem. It may be that the system needs more funds in order to solve underlying causes. Fewer funds may only make the situation worse.

Funding Instability. Another issue is the sustainability of additional funds earned through good performance. If these funds cannot be assured year after year, a transit agency may be reluctant to use them for something like starting new service if there is a chance that they may disappear.

Remediation vs. Penalty. A frequently expressed desire is to allow transit agencies an opportunity to improve their poor performance before they incur a financial penalty. After all, it is not the agency which will suffer as much as the passengers it serves. However, building in a year or two lag time between poor performance and its financial impact so that some kind of "remediation" can take place creates a substantial length of time between the performance and its consequence. Moreover, it creates difficulties in terms of the funds involved. Should they be withheld until the performance is improved (assuming it is possible to do this in terms of annual appropriations and the need to spend the funds in the fiscal year appropriated)? Alternatively, should the funds be paid initially and then be taken away later if performance is not improved?

Poor Data Quality. Finally, there is the issue of the quality of the data being used to evaluate performance. If data is not timely, verifiable, or consistently defined across all transit systems, it can only lead to shaky funding allocation decisions. In addition, there could be an incentive to manipulate the data to one's advantage wherever possible.

Urban Performance-Based Funding

State funding for operating expenses for urban transit systems is currently allocated through the State Maintenance Assistance Program (SMAP). As previously described (Section II), these funds are allocated according to the following formula.

- 30 percent—based on the number of revenue hours as modified by performance on unlinked passenger trips/revenue vehicle hour compared to the state average. (If more than average, more money. If less than average, less money.)
- 30 percent—based on the number of passenger trips as modified by performance on net cost/unlinked passenger trip compared to the state average. (If less than average, more money. If more than average, less money.)

- 30 percent—based on system's share of total local revenues (includes both farebox and local contribution).
- 10 percent—equal shares.

Even though it does not seem that the performance components of the formula have much of a direct incentive effect on decisions made by transit systems, and even though few states use performance measures to allocate funding (North Carolina is one of only a handful according to a 2004 federal research report (6)), it is recommended that the current formula be retained. There are three primary reasons for this recommendation:

- The current formula has been in use for ten years and is generally accepted by the funding recipients.
- The Board of Transportation and the Public Transportation Division have expressed a desire for a performance-based component in funding allocation.
- Although it doesn't seem to have a significant incentive effect on performance, as explained below it nonetheless has a desirable effect in terms of allocating a higher proportion of funds to transit systems that are the most productive.

As part of this study, a number of alternative funding allocation formulas were tested. Part of the reason was to simplify the current formula which is somewhat difficult to understand in terms of how it translates into dollars. Part of the reason was to examine the impacts of "decoupling" funding from performance measures for all the reasons described earlier. As an example, one such formula tested was simply based on passengers carried, vehicle hours operated, local contribution and equal shares as follows:

- 30 percent—based on share of total state passengers
- 30 percent—based on share of total state vehicle hours
- 30 percent—based on share of local contribution
- 10 percent—equal shares

When the results of allocating funds by this formula were compared with the results produced by the current SMAP formula, it became clear that the SMAP formula does a better job of allocating funds to higher-performing systems (based on a combination of passengers per vehicle hour, net cost per passenger trip, and cost recovery ratio).

This is summarized in the following table that shows the percentage difference in funds received by transit systems based on their relative performance.

Figure V-1: Funding Change Relative to System Performance

Performance Ranking	Average % Change in Funding
Top one-third	-4.7%
Middle one-third	7.5%
Bottom one-third	19.7%

What the table shows is that in general, the alternative formula takes funds away from the better performing systems and gives it to the poorer performers. It also resulted in large variances for many systems compared to what they are currently receiving—for example, one system received 36 percent more funds, another received 20% less. The same was true, in different degrees, for all of the other formulas tested.

Recommendations for Changes in Urban Transit System Funding Allocation

The SMAP formula does need one important adjustment because it currently only utilizes operating data from fixed-route operations. However, most urban transit systems now operate a significant amount of demand-responsive service, primarily in order to meet the requirements of the Americans with Disabilities Act (ADA). On average, this service constitutes about 18 percent of all urban transit service provided but can run as high as 30-40 percent for some systems. In addition, one new system, Cary Transit, is totally demand-responsive. It is therefore recommended that in the future, operating data from demand-responsive service be included in the SMAP allocation formula.

One way to do this would be to split the funds available into two pots—one for fixed-route service, the other for demand-responsive. For example, the funds available might be split on the basis of a combination of revenue (reflecting service consumed) and expenses (reflecting service provided). (Using 2002 data, this would result in a split of 88 percent of overall funds to fixed-route and 12 percent to demand-responsive.) Then, the existing SMAP formula could be applied to each separate pot and the results combined into a single allocation for each system.

It would also make sense to consider Charlotte separately from the other systems (much as the Triangle's TTA now receives a separate allocation because of the special regional nature of the service it provides). In the case of Charlotte, it is so much larger than the other systems that it tends to dominate the operation of the SMAP formula (Charlotte accounts for approximately 40 percent of all fixed route passengers and revenue vehicle hours). Changes in the performance of a small system don't result in much of a change in its SMAP allocation because it is such a small percentage of the total.

In the future, rail systems will be coming on-line in Charlotte and in the Triangle area. It is difficult to assess the impact that rail service may have on the SMAP formula (in regard to its performance components). It could be argued that because rail systems typically carry more riders than bus routes, this will improve performance and therefore increase funding for these agencies. However, rail systems are also more expensive to operate than bus service and this would have the opposite effect. In addition, many of the rail passengers will be former bus riders and this will likely change the performance of the affected bus routes. It is therefore proposed that rail service simply be incorporated in the agency's overall operating statistics that are used in the SMAP formula and that it not be treated separately. However, it needs to be noted that unless the total SMAP allocation is increased accordingly, other transit agencies will suffer a reduction in funding.

Another development that could affect SMAP funding is the potential consolidation of transit services in the Triangle area under the TTA. This would create a system almost as large as Charlotte's and it might therefore make sense to create a separate large system category that would, for example, treat all systems with more than 10 million passengers a year separately from the small- and medium-size systems. This would also make sense because both of these systems will be operating rail service in the near future. Farther down the road, PART in the Triad area might also become a member of this large system category.

A final recommendation concerns the issue of new service development. Typically, new service, whether an expansion of hours (e.g., evening or weekend service) or an expansion in geographic coverage, will not be as productive as existing service. To the extent that adding less productive new service lowers overall system performance and therefore funding, it could provide a disincentive for adding new service. It is therefore recommended that a separate pot of funds be set up that can serve as a "demonstration program." In this way new service could be tested for a year or two before a decision is made whether to fold it into the existing system where it would become part of the regular SMAP funding allocation. Certain productivity standards could be established to help determine whether a new service should be continued, modified, or folded. This would be similar to the way the Discretionary Rural General Public funding program currently functions. This demonstration program could also be structured to test other innovative ideas or services.

However, it should be noted that if new service is transferred from the demonstration program to the regular SMAP program, other transit systems will experience a reduction in funding unless a commensurate amount of funding is added to SMAP. In addition, the successful functioning of a demonstration program requires adequate staff with the skills and time to properly manage the program. Awarding funds on a thoughtful, discretionary basis is much more complex and time consuming than distributing funds by a formula.

Rural Performance-Based Funding

There are several considerations that must be addressed in the development and application of a formula to allocate operating assistance to rural transit systems. Those considerations include:

- The wide variety of services and programs that exist.
- Contracted human service transportation vs. general public transportation.
- Wide-ranging and sometimes conflicting goals.
- Data quality and reliability.
- Award of some funding programs to county governments, and other funding programs to transit systems.
- Differences in local support for general public services.
- Possible implications for regionalization.
- Unexpended funds.

Each of these issues is discussed below.

Variety of Services and Programs

Rural transportation services address a variety of populations, needs, and purposes. Rural transportation tends to be less homogenous than fixed-route transit services provided in urban areas, often encompassing contracts with human service agencies for special transportation for medical, social services, and employment purposes in addition to the operation of more general purpose transportation. Funding streams have been developed at the federal and state levels to pay for these transportation services, including those associated with various human service programs and the Work First/Transitional Employment Transportation Program (Work First). In addition, North Carolina provides state funding for the transportation of elderly and disabled passengers who are not eligible for transportation assistance through human service programs.

Contracted Vs. General Public Transportation

With regard to service, a key aspect of rural transportation is human service transportation—transportation provided to clients of human service agencies to receive medical care, to participate in senior meal and social programs, and to access community activities. To provide a picture of the extent of human service transportation, consider that such transportation accounted for approximately 71.8 percent of the trips operated statewide in North Carolina by rural transit systems during FY 02.[1] In that same period, only 7.4 percent of rural transit trips were for general public passengers.[2] This proportion of human service or special purpose trips compared to general public trips compares to a proportion of trips operated by urban transit systems of 2.2 percent ADA paratransit and 97.8 percent general public trips.

As a result of contracts executed with human service agencies, rural transit systems operate human service transportation on at least a break-even financial basis. Rural transit systems are directed to calculate the costs of those contracts on the basis of the fully allocated costs to provide those transportation services. Therefore, the majority of rural transportation service is not operated on a deficit basis, unlike fixed-route services in urban areas.

Since rural transit systems execute contracts with human service agencies for the transportation of agency clients, and those contracts are awarded on the basis of fully-allocated costs, it would appear that the contracting human service agencies would review costs, and if they were deemed to be high, would take steps to encourage the transit system to reduce those costs to the minimum possible amount or the human service agency would seek an alternate transportation provider. This process should result in some measure of financial efficiency and effectiveness for transportation operated under contract.

From that perspective, it is appropriate to apply performance measures only to funds used for general public transportation services, as there is no direct third party oversight of

[1] Calculated from NCDOT operating statistics as follows: 1,331,175 EDTAP + 117,501 Work First + 419,837 RGP + 94,887 Discretionary RGP units of service = 71.8 % of 6,952,543 Total FY 02 Passengers.
[2] Calculated from NCDOT operating statistics as follows: 419,837 RGP + 94,887 Discretionary RGP units of service = 7.4 % of 6,952,543 Total FY 02 Passengers.

efficiency and effectiveness of those services, and they are typically operated on a deficit basis. NCDOT/PTD staff receive and review annual operating statistics and other information required in applications for various grant programs, but do not exercise direct control over a rural system's operations.

Wide-Ranging and Sometimes Conflicting Goals

Looking at public transportation in rural areas from another perspective, public transportation is asked to achieve a wide range of sometimes conflicting goals. Such goals typically include achievement of social as well as economic and service-related goals. For example, social goals may require a transit system to increase its transportation services to disadvantaged populations, which may be at cross purposes to achieving more cost effective and efficient service operations, as an increase in services may result in a decrease in a transit system's overall service efficiency and/or effectiveness. Examples of current funding programs targeted to achieve social goals include the Elderly and Disabled Transportation Assistance Program (EDTAP) and Work First/Transitional Employment Transportation Program (Work First). The goals of these programs are to increase transportation options available to the targeted populations, and to allocate funds on an equitable basis throughout the state. There is no requirement to achieve any specific level of efficiency or effectiveness in the provision of such trips.

However, NCDOT/PTD policy is to maximize use of scarce resources, whether they be financial, human, or vehicles and equipment. For that reason, the state requires all transit systems to collect and report annual operating statistics so that system performance may be checked for trends, and compared among peers.

Data Quality and Reliability

All formulas used to allocate resources are based on data. The quality of the application of the formula is only as consistent as the quality of the data. Therefore, it is essential that there be consistency in data collection, compilation, and reporting methods. In order for funding to be allocated equitably through a formula, all transit systems must collect the same data, using the same methods, compile it identically, and report it using a consistent format. Absent any one of these critical steps, the data will be flawed, and there will be resulting inequities using such data in the application of a formula to allocate funding.

From review of operating statistics data provided by NCDOT, we are not confident that the data is of sufficiently consistent quality to enable its use in a formula to allocate funds at this time. There are seeming anomalies in some statistics among otherwise similar transit systems. The reasons for those seeming anomalies are unclear. Some or all variance from "normal" data values for similar-sized transit systems could be the result of conditions unique to various service areas. Some or all of the variance could also be the result of flawed data, inconsistent data gathering, compilation, or reporting methods. When recent operating statistics data is entered into formulas, in many cases, the output has significant shifts from current funding allocations.

Examples of these variances, as revealed through an investigation of potential funding allocation formulas, are described in detail in the following section describing the application of a two-stage allocation methodology. Without a clear understanding of the reasons responsible for these variances, we believe it is inappropriate to apply the data to allocate rural operating assistance at this time.

Award of Funds to Counties vs. Local Transit Systems

Some funding programs designate local transit systems as the recipient of funds (e.g., RGP, Community Transportation Grants) while other funding programs designate county governments as the recipient of funds and do not require all funds to be awarded to the local transit system (e.g., EDTAP, Work First). The lack of a single, common recipient agency for all program funds hinders the potential to combine or consolidate current separate funding programs into more of a block grant approach to awarding rural transit funds.

For example, EDTAP funds are awarded to county governments, which can distribute those funds to various local transportation providers including the local transit system. RGP funds are to be allocated only to rural transit systems. If EDTAP, Work First, and RGP funds were to be distributed through a single formula, there would need to be an agreement on what organization would be the recipient of those funds, in addition to developing a formula that targeted the needs of the various special populations involved (e.g., elderly, disabled, transitioning from welfare to work, and general public). The designation of local transit systems as sub-grantees for Community Transportation (CT) funds, and county governments as the sub-grantees for ROAP funds creates a barrier to the potential awarding of administration and operating funding assistance through a single grant.

Differences in Local Support for RGP Operations

Some transit systems and their governing boards welcome the opportunity to increase RGP ridership, while other transit systems or their governing entities do not desire to increase RGP ridership. If NCDOT desires to increase RGP ridership but local operators or their governing entities do not, there are conflicts between state and local goals. Having a greater number of regional transit systems that were established as autonomous authorities could help in minimizing such policy conflicts.

Implications for Regionalization

It may not be an appropriate time to develop a new funding system that will likely cause a significant change in the distribution of funds at the same time as transit systems are grappling with the regionalization effort. Also, depending on what formula might be chosen, it could have a disincentive effect on regionalization. (One performance-based formula that was tested resulted in a significant reduction in funds for regional systems.)

Unexpended Funds

In FY 2002, a total of $550,000 was returned to the Public Transportation Division by transit systems or counties because they didn't spend the entire amount of their formula allocation ($118,000 was returned from EDTAP, $75,000 from Work First, $303,000

from RGP, and $55,000 from Discretionary RGP). It wouldn't make sense to create a different formula that continues some mismatch between funding allocations and local transit systems' ability to expend those funds, and results in some funds being returned. This would merely carry on the need for additional administrative resources at both the state and local levels.

Potential Rural Funding Allocation Approaches

Several approaches are possible to developing a performance-based funding allocation for rural operating assistance. Those approaches could develop a formula to allocate:

- Only RGP funds;
- All ROAP funds (EDTAP, Work First, and RFP);
- Some other combination of specific programs; or
- Review all PTD funding programs and develop a formula that would consolidate all operating assistance funding into a single grant, and would be allocated according to a formula that would include factors for different programmatic and/or social goals, such as elderly, disabled, employment, and/or general public transportation functions.

Another approach was utilized by the North Carolina Department of Public Instruction (DPI) to develop a formula to award school transportation funding to local school districts, as described in the box below.

In 1990-91, DPI hired a consultant (Ernst and Young) to study the issue at a reported cost of approximately $400,000. The study included a number of aspects, such as focus groups held around the state and some very sophisticated statistical analysis. The focus groups were used to help find out what factors were important in determining the cost of providing school bus service. A statistical regression analysis was used to determine the relative importance of each factor. The end result was a complex "efficiency" formula and methodology that has three main inputs:

- Number of students.
- Number of buses.
- Current cost of the service.

These results are then adjusted to reflect key local conditions and "level the playing field." The adjustments consider:

- Student density (the number of transported students per mile of road).
- The percentage of special needs children.
- The connectivity ("circuity") of roads.
- Average distance to school.
- Average geographic elevation.

The result for each school district is then compared to the top performers in the state. This comparison results in an efficiency factor that determines the percentage of the school's transportation costs that the state will fund. The system was phased in over a period of three years. Since 1990, the formula has been adjusted several times (as well as criticized) and DPI is now in the process of considering another consultant effort to improve or replace it.

Approaches Investigated

Based on the data available, ITRE followed two approaches to the development of a formula to allocate rural transit operating assistance. Those approaches were:

1. Application of a formula incorporating transit system size, vehicle hours, and two performance measures, in various combinations. This approach is somewhat similar to that used to allocate SMAP funding to North Carolina urban transit systems. Five alternatives of the formulas were tested.
2. Application of a two-stage process in which transit systems were first placed into groups according to the number of passenger trips, and each group was allocated a percentage of the overall program funds available. Then, transit systems within each group were awarded funds based upon their relative size, vehicle hours, and performance. This approach is somewhat similar to that used to allocate operating assistance to all transit systems in Indiana and Ohio.

Both approaches were applied to RGP funds, and the first approach was also tested using overall ROAP funding.

Attempting to develop a funding formula that incorporates a combination of ROAP and other program funds (e.g., Community Transportation Program), or to develop a single operating grant is beyond the scope of this study. However, such an investigation may be warranted as a future research study.

Application of a Formula

Initially, a formula was developed with five alternatives that incorporated varying weights or coefficients for operating statistics reflecting transit system size and average vehicle hours (e.g., number of passengers carried and vehicle hours operated), equity factors (an equal share to each county), and performance measures (cost per vehicle hour and passengers per vehicle hour). At first, these alternative formulas were applied to only RGP funds; later they were applied to the entire ROAP program funds. The formulas were applied to all the rural systems at one time. The allocations that resulted from the various formulas were then compared to what each system currently receives under the existing formulas. The result was wide variances, with some systems getting substantially more funds than they do now (3 or 4 times more), and some systems substantially less. As an additional complicating factor, some systems that now return allocated but unexpended funds to PTD each year would receive additional funds under these alterative formulas.

Next, the formulas were adjusted in an attempt to compensate for local constraints or conditions such as hard-to-serve geography or more transit-dependent populations. One such adjustment was a factor that reflected the number of state-maintained road miles per square mile of service area. This was used to modify the number of vehicle hours operated in order to compensate counties that have a service area that is more difficult to serve due to a limited number of alternate routes (e.g., in the mountains or in coastal areas). The other formula adjustment was to reflect the fact that some counties have a more transit-dependent population than others. An index was developed that shifted

additional funds to counties that have a higher proportion of households without automobiles. A comparative table showing the components of each of the alternative formulas investigated as well as the output from the analysis is shown in Appendix C.

Although these adjustments changed many of the funding variances described above, the changes were not substantial in most cases and wide variances still remained. If nothing else, such variances would be guaranteed to create a great deal of political controversy.

Application of a Two-Stage Process

The second approach utilized a two-stage approach in which rural systems were first grouped into categories according to size, a percentage of overall funds was allocated to each group, and then funds were sub-allocated within each group according to each transit system's relative size and performance within that group. This approach is similar to that used to allocate transit operating assistance in Ohio and Indiana. A more complete description of the process follows, and Appendix D presents detailed information on the application of this allocation method.

Operating statistics from Fiscal Years 2000, 2001, and 2002 formed the basis for this application. Three-year average statistics were calculated and used in this analysis as a means to smooth any variances that may have occurred during a particular year. Average statistics were calculated for:

- Number of vehicles;
- Service miles;
- Service hours; and
- Passengers.

Rural transit systems were then sorted according to the number of average passengers for the three-year period. Systems were then placed into groups. The boundaries between groups were set at points in which there was a relatively large increase in the number of passengers from the preceding system. This resulted in five groups of transit systems—identified as small, medium, large, extra large, and regional.

Each group's share of the RGP funds expended in FY 02 was then calculated by adding the reported FY 02 expenditures for all transit systems in each group. Each group's share of the total FY 02 RGP expenditures was then allocated among the transit systems in that group according to the following basis:

- 25 percent—Average Annual Passengers (indicator of transit system size—more passengers = more money)
- 25 percent—Average Annual Vehicle Hours (indicator of the amount of service provided and the difficulty in operating as a result of constraints outside the transit system's control—more hours = more money)
- 25 percent—Cost per Vehicle Hour (indicator of service efficiency—lower cost per vehicle hour = more money)

- 25 percent—Passengers per Vehicle Hour (indicator of productivity—more passengers per vehicle hour = more money)

Note that the use of Average Annual Vehicle Hours statistic was structured in a way to *reward* transit systems that reported a higher number of vehicle hours, which might seem counter to maximizing efficiency. It might seem that systems reporting fewer vehicle hours to transport a similar number of passengers should be rewarded for their efficiency. However, in this case, this indicator was used to provide more operating assistance to transit systems that reported a greater number of vehicle hours, as a means to address some systems' need to operate under circumstances outside their control that result in less efficient and productive operations. By "rewarding" systems that reported a higher number of vehicle hours to transport a similar number of passengers, this method attempts to take into account those circumstances.

The outcome from this application demonstrated significant changes from the current RGP allocation and expenditures. There are several factors contributing to these differences, including:

1. Differences between the factors used to allocate RGP funds currently—equity and need—and in the tested methodology, which includes performance measures.
2. Unexplained variances in the number of vehicle miles and hours among transit systems transporting similar numbers of passengers.
3. Lack of complete financial data for three consecutive fiscal years.

Each of these factors is discussed below.

1. The current RGP formula allocates funds based 50 percent upon equity (e.g., equal shares to each eligible county) and 50 percent on each county's share of the total state rural population. This allocation method currently over-allocates funds to some counties, and under-allocates funds to some other counties. A contributing factor to these instances of over- or under-allocation is the relative interest of local stakeholders in promoting and operating rural transportation services for the general public. As this study did not investigate interest in operating RGP transportation, it is unknown if there is a correlation between relative interest in providing RGP service and expenditures of RGP funds. Variances in the average cost per passenger are also a factor contributing to differences in local RGP expenditures. Transit system performance is not a factor in determining its RGP allocation or expenditures.

   Thus, the current allocation method is a reflection of various counties' current needs and abilities to expend funds. This may or may not have any relation to a transit system's performance, as measured in terms of its cost effectiveness and productivity. It likely does, however, reflect to some degree local priorities and interest in providing RGP service. Those priorities and interests may be in conflict with a desire to perform as efficiently or as productively as possible. In that case, discussion between local governing bodies and the NCDOT may be required to determine the relative emphasis to be placed on state and local priorities.

2. Several variances were revealed in the number of vehicle miles and vehicle hours among transit systems that transported similar numbers of passengers. For example:
   - Dare County—transports approximately the same number of passengers annually as Caswell and Hyde Counties, but reported approximately twice the average miles and hours as either of those systems.
   - Montgomery and Tyrrell Counties—reported approximately one-quarter the number of hours, and one-sixth the miles to transport a similar number of passengers as other counties transporting approximately 15,000 annual passengers.
   - The Eastern Band of the Cherokee Indians (EBCI) reported approximately one and one-third the number of miles to transport a similar number of passengers as reported in Bladen, Polk, Mitchell, Lincoln, and Cherokee Counties.
   - McDowell County reported approximately one-third the numbers of hours and miles to transport an equivalent number of passengers as Robeson, Cabarrus, and Alamance Counties.
   - Choanoke Public Transportation Authority reported approximately one-third less hours and one-quarter less miles to transport approximately ten percent more passengers than YVEDDI.

   Refer to the shaded cells in the Appendix D tables to determine additional instances of such variances. With regard to allocating funding, it is essential to determine the causes for these seeming anomalies. Is the variance in vehicle miles and/or hours a result of circumstances outside a transit system's control, such as a lack of alternative routes due to mountainous or coastal geographic location? Or, is the variance a result of the methods used to record, compile, and report statistics, or a combination of these or other causes? In any event, the causes for these seeming anomalies need to be determined in order to ensure that funds are allocated equitably.

3. Financial information provided by NCDOT contained complete and detailed information only for FY 02. Thus, while three-year average statistics were calculated for the operations, financial data for only a single year were available. While the financial data were for the most recent year available, those data do not in all cases reflect current conditions.

   For example, no RGP funds were allocated to Montgomery County in FY 02, reflecting the absence of RGP service in that county. That situation may change now that Randolph County will operate rural service in Montgomery County. Any funding allocation system must be responsive to ongoing changes taking place at North Carolina's rural transit systems, particularly given the anticipated emphasis on regionalism.

To determine the stability and predictability of this funding allocation approach from year to year, similar average statistics were calculated for the FY 2001-2003 period. Rural transit systems were again grouped according to similar numbers of average annual passengers. Refer to Appendix E for details.

Results, as shown in the comparison between groups calculated from FY 00-02 data and FY 01-03 data as presented in Appendix F, demonstrated that the boundaries of groups changed in some cases, and that some transit systems shifted from one group to another based on data calculated for their average annual passenger calculations for the two time periods. This indicates that this method would not result in a stable or predictable allocation of funds from year to year, and would require annual re-calculation of allocations within groups, as well as the divisions among the groups themselves. This lack of stability will not provide a reasonable basis for NCDOT staff or local transit managers to predict levels of funding in future years, and argues against its adoption as an allocation methodology.

The result of these factors is an inability to capture the current status of rural transit operations in North Carolina with the level of accuracy required for funding to be allocated incorporating measures of transit systems' performance. Specific recommendations for rural transit funding allocation follow.

Rural Funding Recommendations

In view of the many issues described above, it is suggested that this is not the appropriate time to implement performance-based funding for rural transportation systems. If the North Carolina Department of Transportation desires to adopt a performance-based funding allocation method in the future, a number of preparatory steps should be undertaken, including:

- Clarify goals for rural transit systems;
- Improve the quality and understanding of operating statistics data; and
- Consider moving to a block grant approach to funding.

In addition, a funding allocation methodology should facilitate, not impede the consolidation and development of regional transit systems.

Clarify Goals for Rural Transit Systems

The first step would be to clarify the short- and long-term goals for rural transit. For example, is the primary goal to increase the amount of general public service and/or to increase the geographic coverage in rural areas, or is the main goal to improve the efficiency and effectiveness of existing services? Depending on the primary goal, different performance measures might be called for. Also, differences between local and state goals for rural transit systems need to be addressed in order that local goals are factored into the quest to maximize service efficiency and productivity. Clarification of goals for rural transit system at the state level as well as at local transit systems would identify points of similarity and difference, and could provide a starting point for discussions between NCDOT and local governing bodies to establish common goals.

In addition, it would be useful to review each of the twelve programs that fund rural transportation systems to determine how well those programs are meeting their intended goals. For example, how effectively are the EDTAP and Work First programs meeting the transportation needs of their target populations? How effectively do the current

allocation formulas for these programs fund current transportation needs? The results of such an investigation would better inform a discussion of whether current formulas should be revised, and if so, how they should be modified.

Improve the Quality and Understanding of Operating Statistics Data

Next, it would be useful to undertake an effort to improve the quality and reliability of the existing data that is tracked, compiled, and reported by rural systems. As demonstrated by the statistics presented in the Appendices, there are seeming anomalies in data reported in operating statistics. There should be an effort to better understand these various anomalies that seem to exist, and to determine whether they are due to differences in local conditions or simply to the quality of the data available. Absent this understanding, if funding were to be awarded based to some extent upon performance, some transit systems could be unfairly penalized while others could be unjustly rewarded. It is essential that any funding allocation be conducted in a fair as well as in an expeditious manner.

A Block Grant Approach to Funding

Finally, consideration should be given to pursuing more of a block grant approach to funding. Rather than having 12 separate funding programs, each with its own funding methods or formulas, further study is warranted to determine if some programs can be consolidated. For example, the three separate components of the ROAP program (EDTAP, Work First and Rural General Public) might be combined into one program.

Consideration of funding program consolidation should include development of clear definitions of need, equity, and performance. For example, what constitutes "need"? What should be the combination of statistics used to represent need—transit system size, local financial capability, number of service area residents that are included in special populations (e.g., elderly, disabled, transitioning from welfare to work, without an automobile, etc.)? Similar consideration is required for "equity." Should equity be defined by geographic boundaries (e.g., by county or transit system service area), or by population (e.g., by county or service area population), or by some other factor? Similarly, how should performance be defined and measured? This study has used two performance factors—cost per vehicle hour and passengers per vehicle hour—but additional measures could be included to assess administrative performance, if administrative and operating funds were to be combined into a single grant.

Finally, the relative emphases on need, equity and performance must be defined in accordance with state and local goals. Many stakeholders and survey respondents at the Community Transportation Conference favored awarding the majority of funding according to "need" with additional funds awarded according to "performance." The current three formulas for ROAP components allocate a total of approximately 40 percent of funds on an equity basis) e.g., equal shares to each county) and the remaining 60 percent of funds according to various needs (the local proportions of three distinct populations).

If performance were introduced to allocation of ROAP funds, either the current equity or need components or both components would need to be reduced accordingly. For example, if ROAP funds were to be allocated according to a formula that included a performance component, we recommend carving out funds for the performance component from the current equity component, perhaps creating equal shares, i.e., 25 percent of total funding allocated according to equity and 25 percent allocated based upon performance.

As another example, what would be the feasibility of combining the Community Transportation Program's Administrative Assistance and Human Service Transportation Management programs into a single administrative assistance program? And, what would be the benefits from, and constraints to combining administrative and operating assistance programs into a single grant program? This would not only ease the administrative burden on the Public Transportation Division and on the transit agencies, but it could also facilitate the development of a performance-based formula that would apply to the unified funding program. In addition, it would give the transit agencies more flexibility in terms of using the funds in a way that most effectively meets their local needs. Policies and procedures for a block-grant funding approach would need to be developed carefully, to ensure accountability in terms of meeting program goals.

The current CT Program allocates administrative assistance according to a method developed over several years. The basis for administrative assistance allocation was the number of vehicles, vehicle miles, and passengers reported by each rural system. Those allocation amounts were adjusted during a period of several years until an "equilibrium" condition was reached. Allocations have been increased uniformly in subsequent years. This allocation system should be reviewed, as it can encourage inefficiencies. Providing more funds to transit systems that operate a greater number of vehicles can result in the unintended consequence of transit systems purchasing more vehicles than would be warranted by the number of passengers they transport. Similarly, rewarding greater vehicle miles and passengers can result in transit systems reporting inflated statistics in order to gain additional funding.

Allocation of administrative assistance would be improved with the addition of a performance component. While it is necessary to provide a greater amount of funds to larger transit systems, those funds should also reward transit systems that operate their transportation services most efficiently. For that reason, it would seem to make sense to consolidate administrative and operating assistance into one grant.

Facilitate, Not Impede Regionalization

Future trends also need to be considered. For example, it seems likely that there will be increasing instances where rural transit systems, as well as urban and rural systems will merge in some way. Any funding allocation method must facilitate, not impede this process. This suggests that a funding allocation method incorporating performance measures should also incorporate a grace period or exempt new regional organizations from having to compete with established transit systems and operations. Absent such a provision, transit systems will be reluctant to consider regional consolidation or to test

new services/routes, as new operations are very likely to be less efficient during their start-up period. A grace period structured over a five-year interval, with the performance-based component included in the overall funding calculations at the following rates, would help to encourage system consolidation and service expansion.

Figure V-2: Phased Application of Performance Measures

Year	Five-Year Period: Percentage of Performance-Based Funding to be Applied
1	20 %
2	40 %
3	60 %
4	80 %
5	100 %

Initially sorting regional rural transit systems into two groups could also help newly consolidated regional systems, as they would "compete" for funding only with other regional systems that were of a similar size (i.e., reported a similar number of annual passenger trips).

NCDOT needs to anticipate other changes that are anticipated to occur with rural transit systems, and ensure that funding allocation methods encourage those changes, not conflict with them.

Final Considerations

In the meantime, the Public Transportation Division can work to improve performance through the forthcoming NCDOT Benchmarking Project, or through other more direct means such as "performance audits" (or performance bonuses). In the absence of a funding allocation method that incorporates performance measures, every transit system should conduct an internal review of its performance on a regular basis. The components and procedures for that internal review will be defined through the Benchmarking research study.

Suggested Additional Research

As a result of conducting this research study, several topics for further research became apparent, including the following, each of which is subsequently discussed:

- Consolidation of funding programs;
- Understanding of perceived anomalies in operating statistics;
- Development of transit system incentive programs; and
- Measuring and tracking customer satisfaction.

Consolidation of funding programs: In addition to the suggested research into consolidation of current rural funding programs, given the desire to develop regional transit systems in urbanized areas, a study of the potential consolidation of funding to

urban and rural transit systems could be worthwhile. One difficulty to achieving consolidation of rural and urban systems is the existence of separate funding streams. While the NCDOT has developed methods to fund systems such as Tar River Transit, research into methods to streamline funding to consolidate urban and rural transit systems could facilitate the progress toward regionalism.

Understanding of perceived anomalies in operating statistics: Achieving a better and more detailed understanding of the factors generating what appear to be anomalies in operating statistics would allow development of a more effective approach to the allocation of rural transit funding. This understanding could lead to the development of a more equitable funding allocation formula, and would provide a means to really understand the extent to which various rural transit systems are unique, and the causes of that uniqueness. This could result in a more cooperative relationship between the NCDOT and its grantees, and could also result in a better understanding of local transit operations by both NCDOT and local transit system staff. This improved understanding could also help to improve the quality and consistency of data gathering, compilation, and reporting.

Development of transit system incentive programs: As discussed in the report, performance-based funding is a fairly indirect and ineffective way of actually motivating better performance. Research could be conducted to develop other more direct ways of doing so. For example:

- Awarding some discretionary funds to systems that perform in the top 10 percent compared to all systems statewide, or compared to some sub-group of "peer" systems.
- A "reward and recognition" program that would recognize "high-performance." (For example, annual awards at the annual transit conferences.)
- A program of bonuses to certain employees if performance goals or standards are met.
- Tying the performance appraisal and salary of the "executive director" to the achievement of performance goals.

Measuring and tracking customer satisfaction: Many people have stressed the importance of measuring customer satisfaction as a component of performance measurement. While some transit systems conduct such surveys, the process at many smaller transit systems seems more haphazard than systematic. A standard methodology could be developed for such surveys, and tabulation and analysis of such surveys could be conducted as an ongoing activity by NCDOT or by another organization under contract.

VI. IMPLEMENTATION AND TECHNOLOGY TRANSFER PLAN

The primary product of this study is recommendations to the North Carolina Department of Transportation, Public Transportation Division (PTD) in regard to the use of performance measures by North Carolina public transportation systems, and their use by PTD for the allocation of public transportation funding. These recommendations should assist PTD in their continued efforts to improve the efficiency and effectiveness of the State's transit systems, and to make the most effective use of limited State funding.

The recommendations will also provide guidance to North Carolina public transportation systems in regard to the importance of using performance measures, and about which measures to use and how to use them. In addition, this study will provide a solid foundation for the forthcoming FY 2005 research project—*Benchmarking for North Carolina Public Transportation Systems.*

Finally, ITRE will seek to disseminate the information from this study to a national audience through the Transportation Research Board, and to North Carolina transit systems through presentations at the annual meeting of the NC Public Transportation Association and/or at the Community Transportation System annual conference.

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APPENDICES

A. List of Stakeholders Interviewed and Interview Questions
B. Community Transportation Conference Survey
C. Application of Alternative Rural Formulas
D. Application of Two-Stage Allocation Method
E. Rural Transit System Groups Using FY 01-03 Operating Statistics
F. Comparison of Rural Transit Groups Based Upon FY 00-02 and FY 01-03 Average Statistics

Appendix A: List of Stakeholders Interviewed and Interview Questions

Agency	Name/Title
NC DOT	David King Deputy Secretary
NC DOT/Public Transportation Division	Miriam Perry Director
	Charles Glover Assistant Director
	Mike Kozak Assistant Director
Board of Transportation	Nancy Dunn (also PART Chair)
General Assembly	Wib Gulley
NC Public Transportation Association	David Eatman, Chairman
Selected transit system personnel	Urban: Bruce Black, Asheville Transit
	Rural: Gwen Hinson, Stanley County Diane Cox, KARTS
	Regional Urban: Nancy Dunn, PART Anne Franklin, TTA
	Regional Rural: Pete Averett, KARTS Chair
Municipal/County Officials	Cal Horton, Chapel Hill, Town Manager
	Tom Tysinger, Greenville, Director, Public Works
Other input:	Bill Rivenbark (Institute of Government Performance Measurement Project manager)
	Dennis Rash (now at UNC-C, former Board of Transportation)
	Jim Blackburn, General Counsel, NCACC (Assoc. of County Commissioners)
	Debbie Collins (ITRE)

Performance Measurement Project
Stakeholder Interview Questions

1. What do you think about the concept of performance measures for organizations in general, or transit systems in particular?

2. Following are some typical goals or objectives for a public transportation system. On a scale of 1 – 5 (with 1 = Not Important, and 5 = Very Important) how would you rate them in terms of what a performance measurement system should attempt to measure?

		Rating
a.	System efficiency/effectiveness	___
b.	Optimal use of public funding	___
c.	Customer satisfaction	___
d.	Community mobility	___
e.	Mobility of transportation disadvantaged	___
f.	Service coverage	___
g.	Relieving traffic congestion	___
h.	Improving air quality	___
i.	Energy conservation	___
j.	Other (Please describe):	
	_____	___
	_____	___

3. Do you think that performance measures ought to be used to determine funding for transit systems?
___ Yes ___ No

   a. If yes, what goal(s) should be achieved through the use of performance measures to allocate transit funding?

   b. If yes, what are your thoughts on how use of performance measures to allocate funding might work?

4. What other uses would you/your agency have for performance measures? Who would use these measures, and how would they be used?

5. Is/are there any aspect(s) of the current formulas or methods for allocating transit funding that you think need to be changed/improved? If so, please describe.

6. What special geographic or system characteristics should be addressed/included? (E.g., population density, demographics, special topography, type of service, etc.?)

7. Do you have any thoughts on specific performance measures to use, or on general types of measures? What should they measure? (E.g., should they measure efficiency? Effectiveness? Something else?)

8. Should performance measures be linked to the system's goals and objectives? The budgeting system? To the planning process? To anything else? If yes, how would this be best accomplished?

9. One of the dilemmas regarding the use of performance measures to determine or influence funding is that sometimes the most poorly performing organizations are the ones most financially in need. Moreover, sometimes the fact that they are not well funded is one of the reasons they perform poorly. Do you have any thoughts on this quandary?

10. A similar quandary is that of "performance" vs. "equity". There are usually political/policy pressures to distribute funds in a way that is perceived to be "equitable", i.e., everyone gets a "fair" share (e.g., per capita funding based on the population of an area). This can conflict with the concept that only well-performing systems should be funded (or should receive a greater proportion of the funding). Any thoughts?

11. Are you aware of any other public agencies that use performance measures? What has that experience been like?

12. (*If applicable*) Does your current organization use performance measures? Describe them and how they work. Are they effective? (If no--have you ever worked for an organization that has used performance measures? Describe them. Were they effective?) (Get documents/materials if possible.)

Appendix B: Community Transportation Conference Survey

USE OF PERFORMANCE MEASURES IN ALLOCATING PUBLIC TRANSPORTATION FUNDING

NCDOT Research Program Study
Conducted by
Institute for Transportation Research and Education (ITRE)

1. Does your transit system utilize any performance measures such as passengers per revenue hour, passengers per revenue mile, accidents per 100,000 miles, etc. to evaluate your operations?
   _____ No _____ Yes _____ Don't know

   If Yes, list the performance measures and how they are used:
   _____
   _____
   _____

2. Does your transit system conduct customer satisfaction surveys and/or utilize any other measures of customer satisfaction?
   _____ No
   _____ Yes, customer satisfaction survey conducted once every _____ years
   _____ Yes, other customer satisfaction measure(s)—*describe below*
   _____
   _____

3. Do you favor using performance measures to determine the allocation of transit funding?
   _____ No _____ Yes _____ Don't know

   If Yes or Don't know, should performance measures be used for allocating:
   ____ All funding ***or*** ____ Only discretionary funding above a base funding amount

   If Yes or Don't know, what measures do you think would be best to use, and why?

   _____
   _____

   If No, why not?

   _____
   _____

4. What local goals or special conditions make your system unique relative to other NC community transportation systems, and should be taken into consideration if using performance measures to allocate funds for transit systems?
   _____
   _____

Please continue on other side

5. Please rate each of the following advantages and disadvantages of using performance measures to allocate funding *using the following key*:

3 -- Strong advantage/disadvantage
2 -- Moderate advantage/disadvantage
1 -- Small advantage/disadvantage
0 -- Not an advantage/disadvantage at all

Rating	**Advantages**	***Rating***	**Disadvantages**
	It forces or encourages local transit systems to accomplish the goals for funding public transportation		It is burdensome to administer with respect to cost, data required, staff time, and other administrative support
	It forces or encourages local transit systems to improve performance		It encourages recipients to exaggerate aspects of their performance
	It is not burdensome to administer from a paperwork and reporting standpoint		It does not accomplish or it conflicts with program goals other than equity
	It is inexpensive to administer		It is subject to frequent appeal
	It is equitable to all recipients		It does not treat all recipients fairly
	It eliminates or reduces the politics of allocation decisions		Local recipients cannot predict from year-to-year how much money they will receive
	The recipients are satisfied		It is too mechanical and does not reflect real-world factors
	It builds credibility and constituency for transit by documenting actual accomplishment and performance		Other:
	Local recipients can predict how much money they will receive from one year to the next		Other:
	Other:		Other:

6. How would you balance the allocation of funding to best address transit system performance, financial need, and distributional equity (distributing funding equally throughout the state)? What percentage would you allot to each of these factors in developing a funding formula—you could allot *all* funding to *one* factor, *or split it* between any two, or all three factors. For example, if you think funding should be allotted based *only on financial need*, you would write the following:
__0__% Performance _100_% Need __0_% Distributional Equity

On the other hand, if you think all three factors should receive equal consideration, you would write:
_33_% Performance _33_% Need _33_% Distributional Equity

Please write your answer below:
_____% Performance _____% Need _____% Distributional Equity

Would you be interested in talking with us further about performance measures and how they might be used to improve transit system performance and/or to allocate funds? ___ Yes ___ No
If so, please use the sign-up sheet to schedule a time during the conference, or call us at the office.

Name: _____ Title: _____
Transit System: _____
Phone: _____ Email: _____

Appendix C: Application of Alternative Rural Formulas

In order to move beyond the theory of performance-based funding and see how alternative formulas would actually impact rural systems, five different formulas were tested. As summarized in the table below, the five formulas ranged from being based solely on system statistics and equal shares (Alternative A), to being based solely on performance measures (Alternative E).

Alternative Funding Allocation Formulas

Factor	A	B	C	D	E
Base Funds					
Ridership (this reflects the relative size of the system and performance in terms of rider generation, a key objective).	45%	25%	20%	10%	--
Vehicle hours, with and without modification according to an index of the number of state-maintained highway miles per square mile of service area (this reflects relative system size, the amount of service provided, a factor to account for constraints imposed by a lack of alternative routes, and correlates well with the cost of operations)	45%	25%	20%	10%	--
Equal Shares, with and without modification according to an index of the share of households without a car in the service area to the state total (excluding urbanized parts of counties)	10%	--	20%	--	--
Total Base Funding	**100%**	**50%**	**60%**	**20%**	**0%**
Performance-Based Funds					
Cost per vehicle hour	--	25%	20%	40%	50%
Passengers per vehicle hour	--	25%	20%	40%	50%
Total Performance-Based Funding	**--0%**	**50%**	**40%**	**80%**	**100%**
TOTAL	100%	100%	100%	100%	100%

As shown in the tables on the following six pages, the formulas were applied to all rural transit systems, first without including either index (straight ridership and vehicle hours statistics), then applying first one, and then the second index, and finally, applying both indices. The results show, in each case, the application of the formulas as compared to the funding currently received by each system:

1. RGP funds without adjusting indexes
2. RGP funds with the adjusting highway index
3. RGP funds with the adjusting equal shares index
4. RGP funds with both indexes
5. Total ROAP funds without adjusting indexes
6. Total ROAP funds with the adjusting highway index
7. Total ROAP funds with the adjusting equal shares index
8. Total ROAP funds with both indexes

As can be seen, in most cases the alternative formulas create significant variances from existing funding levels (shown in Column 3). (Note: AppalCART was not included in this analysis due to its dual urban/rural nature.)

RGP Funds without Adjusting Indexes

ID #	County	FY02 RGP EXPEND	Raw A - Base	(Raw A - Base) /Base)	Raw B-Base	% B Diff	Raw C	% C Diff	New D-Base	% D Diff	Raw E	% E Diff
1	Alamance	$22,920.00	$48,544	112%	$43,681	91%	$40,772	78%	$39,470	72%	$36,862	60%
2	Alexander	$24,616.00	$15,504	-37%	$14,246	-42%	$17,224	-30%	$14,400	-42%	$14,503	-41%
3	Alleghany	$3,683.53	$11,213	204%	$8,839	140%	$12,898	250%	$8,609	134%	$8,456	130%
4	Anson	$26,780.00	$21,005	-22%	$18,932	-29%	$20,973	-22%	$18,230	-32%	$17,762	-34%
5	Ashe	$23,801.84	$24,301	2%	$22,146	-7%	$23,544	-1%	$21,175	-11%	$20,527	-14%
6	Avery	$19,857.00	$23,583	19%	$24,972	26%	$25,805	30%	$26,176	32%	$26,979	36%
7	Beaufort	$27,986.00	$16,170	-42%	$17,917	-36%	$20,161	-28%	$19,829	-29%	$21,104	-25%
9	Bladen	$24,171.00	$20,669	-15%	$19,203	-21%	$21,190	-12%	$18,894	-22%	$18,688	-23%
11	Buncombe	$51,677.00	$61,464	19%	$56,709	10%	$51,194	-1%	$51,700	0%	$48,362	-6%
12	Burke	$39,620.00	$23,194	-41%	$20,511	-48%	$22,236	-44%	$19,297	-51%	$18,488	-53%
13	Cabarrus	$28,407.00	$36,542	29%	$34,336	21%	$33,297	17%	$32,519	14%	$31,308	10%
14	Caldwell	$37,186.00	$22,611	-39%	$20,723	-44%	$22,406	-40%	$20,026	-46%	$19,561	-47%
16	Carteret	$32,322.00	$23,332	-28%	$21,480	-34%	$23,012	-29%	$20,767	-36%	$20,274	-37%
18	Catawba	$43,607.00	$39,066	-10%	$49,857	14%	$45,713	5%	$65,677	28%	$69,556	37%
19	Chatham	$28,877.00	$36,864	28%	$40,204	39%	$37,991	32%	$41,693	44%	$42,685	48%
20	Cherokee	$20,087.20	$22,064	10%	$22,836	14%	$24,096	20%	$23,770	18%	$24,393	21%
22	Clay	$17,854.00	$17,661	1%	$16,136	-9%	$16,737	6%	$15,860	-10%	$15,676	-11%
23	Cleveland	$42,462.62	$41,782	-2%	$38,707	-9%	$36,793	-13%	$36,020	-15%	$34,228	-19%
24	Columbus	$31,269.19	$19,761	-37%	$17,041	-46%	$19,460	-38%	$16,034	-49%	$15,363	-51%
26	+Cumberland	$82,726.00	$30,031	-52%	$41,990	-33%	$39,420	-37%	$49,106	-22%	$63,850	-14%
28	Dare	$23,686.00	$14,571	-38%	$13,601	-43%	$16,628	-30%	$13,830	-41%	$14,049	-40%
29	Davidson	$56,282.00	$39,077	-31%	$38,062	-32%	$36,277	-36%	$36,790	-35%	$35,942	-36%
31	Duplin	$21,646.00	$41,105	90%	$44,062	104%	$41,077	90%	$45,038	108%	$46,689	111%
32	+Durham	$24,889.00	$24,617	1%	$19,669	-20%	$21,563	-13%	$16,869	-32%	$15,002	-39%
36	Gaston	$33,539.10	$96,865	189%	$113,898	240%	$96,946	189%	$119,609	257%	$123,416	268%
37	Gates	$19,487.13	$15,687	-20%	$13,862	-29%	$16,917	-13%	$13,665	-30%	$13,533	-31%
38	Graham	$17,278.00	$21,122	22%	$24,262	41%	$25,253	46%	$28,713	66%	$28,333	64%
40	Greene	$20,619.00	$10,012	-51%	$7,086	-66%	$11,496	-44%	$6,605	-68%	$6,284	-69%
41	Guilford	$78,192.87	$99,361	27%	$123,053	57%	$104,270	33%	$132,587	70%	$138,943	78%
43	Harnett	$43,737.00	$39,176	-10%	$41,128	-6%	$38,730	-11%	$41,630	-5%	$41,965	-4%
44	Haywood	$37,443.63	$38,038	2%	$39,306	5%	$37,273	0%	$39,474	6%	$39,586	6%
45	Henderson	$39,056.00	$47,669	22%	$49,556	27%	$45,471	16%	$49,461	27%	$49,381	26%
47	Hoke	$23,442.70	$21,742	-7%	$19,789	-16%	$21,658	-8%	$19,110	-18%	$18,657	-20%
48	Hyde	$5,337.00	$9,890	85%	$6,960	30%	$11,395	114%	$6,485	22%	$6,169	16%
49	Iredell	$59,439.14	$40,966	-31%	$43,009	-28%	$40,234	-32%	$43,462	-27%	$43,748	-26%
50	Jackson	$23,026.00	$14,760	-36%	$11,888	-48%	$15,338	-33%	$11,124	-52%	$10,614	-54%
51	Johnston	$61,141.00	$60,182	-2%	$56,837	-7%	$51,137	-16%	$52,461	-14%	$49,644	-19%
53	Lee	$25,492.00	$30,811	21%	$34,696	37%	$33,744	32%	$37,169	46%	$38,684	52%
54	Lenoir	$32,066.00	$24,064	-25%	$21,233	-34%	$22,814	-29%	$19,873	-38%	$18,967	-41%
57	Macon	$23,524.00	$20,823	-11%	$19,398	-18%	$21,314	-9%	$19,033	-19%	$18,817	-20%
58	Madison	$20,707.00	$23,479	13%	$24,386	18%	$25,335	22%	$25,305	22%	$25,919	25%
59	Martin	$22,656.00	$22,522	-1%	$21,667	-4%	$23,161	2%	$21,595	-5%	$21,547	-5%
60	Mecklenburg	$48,641.00	$138,266	184%	$171,766	253%	$143,240	194%	$184,590	279%	$193,140	297%
61	Mitchell	$19,609.00	$17,161	-12%	$16,737	-14%	$19,217	-1%	$17,282	-11%	$17,645	-10%
63	Moore	$23,493.61	$39,224	67%	$37,272	59%	$35,645	52%	$35,426	51%	$34,199	46%
65	New Hanover	$36,366.00	$43,285	19%	$35,758	-2%	$34,434	-5%	$30,298	-17%	$26,658	-27%
67	Onslow	$32,646.41	$21,331	-35%	$16,854	-48%	$19,310	-41%	$14,687	-55%	$13,243	-59%
68	Orange	$34,896.72	$40,921	17%	$43,162	24%	$40,373	16%	$43,763	26%	$44,134	26%
73	Pergen	$24,962.00	$26,921	8%	$26,948	8%	$27,386	10%	$27,112	9%	$27,222	9%
75	Polk	$29,897.42	$17,228	-42%	$14,892	-50%	$17,741	-41%	$14,285	-52%	$13,880	-54%
76	Randolph	$51,706.00	$30,147	-42%	$31,886	-38%	$31,336	-39%	$32,861	-36%	$33,512	-35%
77	Richmond	$16,416.20	$30,122	83%	$47,436	189%	$43,776	167%	$57,761	252%	$64,644	294%
78	Robeson	$48,543.00	$27,192	-44%	$26,523	-45%	$27,046	-44%	$26,252	-46%	$26,071	-46%
79	Rockingham	$41,432.72	$37,778	-9%	$34,370	-17%	$33,324	-20%	$31,749	-23%	$30,002	-28%
80	Rowan	$48,977.00	$36,483	-26%	$36,123	-28%	$33,926	-31%	$33,818	-31%	$32,948	-33%
81	Rutherford	$32,711.00	$31,145	-5%	$30,096	-8%	$29,804	-9%	$29,332	-10%	$28,823	-12%
82	Sampson	$24,428.00	$29,447	21%	$29,070	19%	$29,084	19%	$28,824	18%	$28,659	17%
83	Scotland	$25,331.00	$16,095	-36%	$18,342	-28%	$20,501	-19%	$20,560	-19%	$22,038	-13%
84	Stanly	$31,477.00	$30,575	-3%	$30,036	-5%	$29,867	-5%	$29,617	-6%	$29,338	-7%
87	Swain	$17,885.00	$30,741	72%	$37,730	111%	$36,012	101%	$41,817	134%	$44,542	149%
88	Transylvania	$11,937.00	$21,981	84%	$21,732	82%	$23,213	94%	$22,060	85%	$22,279	87%
92	Wake	$29,076.03	$66,063	127%	$54,694	88%	$49,503	70%	$45,268	56%	$39,033	34%
94	Washington	$4,959.00	$12,130	145%	$9,689	95%	$13,579	174%	$9,369	89%	$9,138	84%
96	Wayne	$33,956.00	$41,061	21%	$41,600	23%	$39,107	15%	$41,129	21%	$40,815	20%
97	Wilkes	$32,090.60	$33,611	5%	$33,702	5%	$32,789	2%	$33,325	4%	$33,073	3%
98	Wilson	$35,398.00	$21,660	-39%	$19,897	-44%	$21,745	-39%	$19,330	-46%	$18,966	-46%
100	Yancey	$15,309.56	$15,097	-1%	$15,004	-2%	$17,831	16%	$15,885	4%	$16,472	8%
101	EBCI (Cherokee	$17,153.00	$23,712	38%	$17,241	1%	$19,620	14%	$13,720	-20%	$11,373	-34%
201	CPTA*	$107,789.04	$93,904	-13%	$94,757	-12%	$99,116	-8%	$96,779	-10%	$98,127	-9%
202	ICPTA*	$100,364.00	$66,405	-44%	$41,628	-59%	$62,360	-38%	$38,563	-62%	$36,570	-64%
203	CARTS*	$43,658.28	$48,744	12%	$44,356	2%	$52,966	21%	$44,298	1%	$44,261	1%
204	KARTS*	$104,876.00	$66,307	-37%	$57,464	-45%	$69,281	-34%	$55,507	-47%	$54,203	-48%
205	YVEDDI*	$119,659.14	$113,062	-6%	$102,623	-14%	$105,409	-12%	$96,579	-19%	$92,550	-23%
206	NETS*	$54,750.07	$52,011	-5%	$46,407	-15%	$48,780	-11%	$43,462	-21%	$41,498	-24%
	Total	$2,622,368.95	$2,622,369	11%	$2,622,369	9%	$2,622,369	13%	$2,622,369	9%	$2,622,369	10%

RGP Funds with the Adjusting Highway Index

ID #	County	FY02 RGP EXPEND	Hwy Index A	A % Diff	Hwy Index B	B % diff	Hwy Index C	C % Diff	Hwy Index D	D % Diff	Hwy Index E	E % Diff
1	Alamance	$ 22,920.00	$40,453	76%	$39,186	71%	$37,177	62%	$37,672	64%	$36,662	60%
2	Alexander	$ 24,616.00	$13,596	-45%	$13,186	-46%	$16,376	-33%	$13,976	-43%	$14,503	-41%
3	Alleghany	$ 3,683.53	$11,098	201%	$8,775	138%	$12,848	249%	$8,584	133%	$8,456	130%
4	Anson	$ 26,780.00	$21,476	-20%	$19,194	-28%	$21,182	-21%	$18,335	-32%	$17,762	-34%
5	Ashe	$ 23,801.84	$26,114	10%	$23,153	-3%	$24,350	2%	$21,577	-9%	$20,527	-14%
6	Avery	$ 19,857.00	$27,084	36%	$26,917	36%	$27,361	38%	$26,954	36%	$26,979	36%
7	Beaufort	$ 27,985.00	$18,467	-34%	$19,193	-31%	$21,182	-24%	$20,339	-27%	$21,104	-25%
9	Bladen	$ 24,171.00	$26,362	9%	$22,371	-7%	$23,724	-2%	$20,161	-17%	$18,688	-23%
11	Buncombe	$ 51,577.00	$57,181	11%	$54,329	5%	$49,291	-4%	$50,749	-2%	$48,362	-6%
12	Burke	$ 39,620.00	$22,887	-42%	$20,340	-49%	$22,100	-44%	$19,229	-51%	$18,488	-53%
13	Cabarrus	$ 28,407.00	$32,267	14%	$31,961	13%	$31,397	11%	$31,569	11%	$31,308	10%
14	Caldwell	$ 37,185.00	$24,652	-34%	$21,857	-41%	$23,313	-37%	$20,479	-45%	$19,561	-47%
16	Carteret	$ 32,322.00	$31,789	-2%	$26,179	-19%	$26,771	-17%	$22,636	-30%	$20,274	-37%
18	Catawba	$ 43,607.00	$34,072	-22%	$47,088	8%	$43,498	0%	$54,569	25%	$59,556	37%
19	Chatham	$ 28,877.00	$37,671	30%	$40,652	41%	$38,349	33%	$41,872	45%	$42,685	48%
20	Cherokee	$ 20,087.20	$26,022	30%	$25,035	25%	$25,855	29%	$24,650	23%	$24,393	21%
22	Clay	$ 17,664.00	$21,111	20%	$17,948	2%	$20,186	14%	$16,585	-6%	$15,676	-11%
23	Cleveland	$ 42,462.62	$34,165	-20%	$34,476	-19%	$33,408	-21%	$34,327	-19%	$34,228	-19%
24	Columbus	$ 31,269.19	$22,044	-30%	$18,309	-41%	$20,475	-35%	$16,541	-47%	$15,363	-51%
26	.+Cumberland	$ 62,728.00	$26,674	-57%	$40,125	-36%	$37,928	-40%	$48,360	-23%	$53,850	-14%
28	Dare	$ 23,586.00	$24,153	2%	$18,824	-20%	$20,887	-11%	$15,959	-32%	$14,049	-40%
29	Davidson	$ 56,282.00	$31,620	-44%	$33,919	-40%	$32,963	-41%	$35,133	-38%	$35,942	-36%
31	Duplin	$ 21,645.00	$42,150	95%	$44,642	106%	$41,541	92%	$45,270	109%	$45,689	111%
32	.+Durham	$ 24,669.00	$20,456	-17%	$17,247	-30%	$19,625	-20%	$15,900	-36%	$15,002	-39%
36	Gaston	$ 33,539.10	$71,022	112%	$99,546	197%	$85,464	155%	$113,868	240%	$123,416	268%
37	Gates	$ 19,487.13	$19,626	1%	$16,051	-18%	$18,668	-4%	$14,540	-25%	$13,533	-31%
38	Graham	$ 17,278.00	$28,633	66%	$28,455	65%	$28,591	65%	$28,382	64%	$28,333	64%
40	Greene	$ 20,519.00	$9,651	-53%	$6,885	-66%	$11,336	-45%	$6,525	-68%	$6,284	-69%
41	Guilford	$ 78,192.87	$78,800	1%	$111,631	43%	$95,132	22%	$128,018	64%	$138,943	78%
43	Harnett	$ 43,737.00	$37,143	-15%	$39,999	-9%	$37,826	-14%	$41,178	-6%	$41,965	-4%
44	Haywood	$ 37,443.63	$52,676	41%	$47,439	27%	$43,778	17%	$42,727	14%	$39,586	6%
45	Henderson	$ 39,055.00	$41,879	7%	$46,338	19%	$42,898	10%	$48,164	23%	$49,381	26%
47	Hoke	$ 23,442.70	$24,903	6%	$21,545	-8%	$23,063	-2%	$19,812	-15%	$18,657	-20%
48	Hyde	$ 5,337.00	$20,174	278%	$12,674	137%	$15,966	199%	$8,771	64%	$6,169	16%
49	Iredell	$ 59,439.14	$33,819	-43%	$39,043	-34%	$37,062	-38%	$41,866	-30%	$43,748	-26%
50	Jackson	$ 23,026.00	$18,834	-18%	$14,152	-39%	$17,149	-26%	$12,030	-48%	$10,614	-54%
51	Johnston	$ 61,141.00	$51,374	-16%	$51,744	-15%	$47,223	-23%	$50,484	-17%	$49,644	-19%
53	Lee	$ 25,492.00	$28,198	11%	$33,389	31%	$32,539	28%	$36,566	43%	$38,684	52%
54	Lenoir	$ 32,065.00	$22,489	-30%	$20,359	-37%	$22,114	-31%	$19,524	-39%	$18,967	-41%
57	Macon	$ 23,524.00	$25,022	6%	$21,691	-8%	$23,180	-1%	$19,966	-15%	$18,817	-20%
58	Madison	$ 20,707.00	$25,908	25%	$25,734	24%	$26,415	28%	$25,845	25%	$25,919	25%
59	Martin	$ 22,656.00	$25,297	12%	$23,209	2%	$24,395	8%	$22,212	-2%	$21,547	-5%
60	Mecklenburg	$ 48,641.00	$129,036	165%	$166,638	243%	$139,138	186%	$182,539	275%	$193,140	297%
61	Mitchell	$ 19,503.00	$18,386	-6%	$17,418	-11%	$19,762	1%	$17,554	-10%	$17,645	-10%
63	Moore	$ 23,493.81	$40,055	70%	$37,734	61%	$36,015	53%	$35,613	52%	$34,199	46%
65	New Hanover	$ 36,365.00	$36,218	0%	$31,832	-12%	$31,293	-14%	$28,728	-21%	$26,658	-27%
67	Onslow	$ 32,646.41	$26,663	-18%	$19,816	-39%	$21,680	-34%	$15,872	-51%	$13,243	-59%
68	Orange	$ 34,896.72	$37,499	7%	$41,281	18%	$38,852	11%	$42,992	23%	$44,134	26%
73	Person	$ 24,962.00	$26,716	7%	$26,834	8%	$27,295	9%	$27,067	8%	$27,222	9%
75	Polk	$ 29,897.42	$16,843	-44%	$14,679	-51%	$17,570	-41%	$14,199	-53%	$13,880	-54%
76	Randolph	$ 51,705.00	$27,459	-47%	$30,392	-41%	$30,141	-42%	$32,264	-38%	$33,512	-35%
77	Richmond	$ 16,416.20	$30,063	83%	$47,405	189%	$43,751	167%	$57,748	252%	$64,644	294%
78	Robeson	$ 48,543.00	$25,643	-47%	$25,663	-47%	$26,358	-46%	$25,908	-47%	$26,071	-46%
79	Rockingham	$ 41,432.72	$34,015	-18%	$32,279	-22%	$31,651	-24%	$30,913	-25%	$30,002	-28%
80	Rowan	$ 48,977.00	$30,841	-37%	$31,989	-35%	$31,419	-36%	$32,564	-34%	$32,948	-33%
81	Rutherford	$ 32,711.00	$28,960	-11%	$28,881	-12%	$28,933	-12%	$28,846	-12%	$28,823	-12%
82	Sampson	$ 24,428.00	$29,140	19%	$28,900	18%	$28,947	19%	$28,755	18%	$28,659	17%
83	Scotland	$ 25,331.00	$15,753	-38%	$18,152	-28%	$20,349	-20%	$20,484	-19%	$22,038	-13%
84	Stanly	$ 31,477.00	$27,370	-13%	$28,256	-10%	$28,432	-10%	$28,905	-8%	$29,338	-7%
87	Swain	$ 17,885.00	$66,558	272%	$57,629	222%	$51,930	190%	$49,776	178%	$44,542	149%
88	Transylvania	$ 11,937.00	$27,686	132%	$24,902	109%	$25,749	116%	$23,328	95%	$22,279	87%
92	Wake	$ 29,075.03	$51,254	76%	$46,373	59%	$42,926	48%	$41,969	44%	$39,033	34%
94	Washington	$ 4,959.00	$17,645	256%	$12,753	157%	$16,030	223%	$10,584	113%	$9,138	84%
96	Wayne	$ 33,956.00	$37,499	10%	$39,622	17%	$37,525	11%	$40,337	19%	$40,815	20%
97	Wilkes	$ 32,090.60	$34,925	9%	$34,321	7%	$33,284	4%	$33,572	5%	$33,073	3%
98	Wilson	$ 35,398.00	$19,718	-44%	$18,819	-47%	$20,882	-41%	$18,907	-47%	$18,966	-46%
100	Yancey	$ 15,309.56	$16,986	11%	$16,054	5%	$18,671	22%	$16,305	7%	$16,472	8%
101	EBCI (Cherokee	$ 17,153.00	$23,710	38%	$17,240	1%	$19,620	14%	$13,720	-20%	$11,373	-34%
201	CPTA*	$ 107,789.04	$109,540	2%	$103,444	-4%	$106,065	-2%	$100,254	-7%	$98,127	-9%
202	ICPTA*	$ 100,364.00	$64,066	-36%	$45,784	-54%	$65,764	-34%	$40,255	-60%	$36,570	-64%
203	CARTS*	$ 43,658.28	$64,376	47%	$53,039	21%	$59,913	37%	$47,772	9%	$44,261	1%
204	KARTS*	$ 104,875.00	$66,634	-36%	$57,645	-45%	$69,426	-34%	$55,580	-47%	$54,203	-48%
205	YVEDDI*	$ 119,859.14	$102,582	-14%	$96,790	-19%	$100,742	-16%	$94,246	-21%	$92,550	-23%
206	NETS*	$ 54,750.07	$49,290	-10%	$44,895	-18%	$47,571	-13%	$42,857	-22%	$41,498	-24%
	Total	$2,622,368.95	$2,622,150	1344%	$2,622,247	982%	$2,622,272	1220%	$2,622,320	819%	$2,622,369	711%

RGP Funds with the Adjusting Equal Shares Index

ID #	County	FY02 RGP EXPEND	ES Index A	A % Diff	ES Index B	B % Diff	ES Index C	C % Diff	ES Index D	D % Diff	ES Index E	E % Diff
1	Alamance	$ 22,920.00	$47,836	109%	$43,681	91%	$39,356	72%	$39,470	72%	$36,662	60%
2	Alexander	$ 24,616.00	$14,531	-41%	$14,246	-42%	$15,279	-38%	$14,400	-42%	$14,503	-41%
3	Alleghany	$ 3,683.53	$11,514	213%	$8,839	140%	$13,500	267%	$8,609	134%	$8,456	130%
4	Anson	$ 26,780.00	$22,110	-17%	$18,932	-29%	$23,182	-13%	$18,230	-32%	$17,762	-34%
5	Ashe	$ 23,801.84	$24,451	3%	$22,146	-7%	$23,844	0%	$21,175	-11%	$20,527	-14%
6	Avery	$ 19,857.00	$23,535	19%	$24,972	26%	$25,710	29%	$26,176	32%	$26,979	36%
7	Beaufort	$ 27,985.00	$16,762	-40%	$17,917	-36%	$21,345	-24%	$19,829	-29%	$21,104	-25%
9	Bladen	$ 24,171.00	$21,046	-13%	$19,203	-21%	$21,963	-9%	$18,894	-22%	$18,688	-23%
11	Buncombe	$ 51,577.00	$61,271	19%	$56,709	10%	$50,809	-1%	$51,700	0%	$48,362	-6%
12	Burke	$ 39,620.00	$22,684	-43%	$20,511	-48%	$21,217	-46%	$19,297	-51%	$18,488	-53%
13	Cabarrus	$ 28,407.00	$35,747	26%	$34,336	21%	$31,706	12%	$32,519	14%	$31,308	10%
14	Caldwell	$ 37,185.00	$21,997	-41%	$20,723	-44%	$21,178	-43%	$20,026	-46%	$19,561	-47%
16	Carteret	$ 32,322.00	$22,512	-30%	$21,480	-34%	$21,372	-34%	$20,757	-36%	$20,274	-37%
18	Catawba	$ 43,607.00	$38,139	-13%	$49,857	14%	$43,880	1%	$55,677	28%	$59,556	37%
19	Chatham	$ 28,877.00	$36,738	27%	$40,204	39%	$37,739	31%	$41,693	44%	$42,685	48%
20	Cherokee	$ 20,087.20	$22,120	10%	$22,836	14%	$24,208	21%	$23,770	18%	$24,393	21%
22	Clay	$ 17,664.00	$16,865	-5%	$16,136	-9%	$16,766	-5%	$15,860	-10%	$15,676	-11%
23	Cleveland	$ 42,462.62	$41,774	-2%	$38,707	-9%	$36,777	-13%	$36,020	-15%	$34,228	-19%
24	Columbus	$ 31,269.19	$20,390	-35%	$17,041	-46%	$20,718	-34%	$16,034	-49%	$15,363	-51%
26	.+Cumberland	$ 62,728.00	$29,792	-53%	$41,990	-33%	$38,941	-38%	$49,106	-22%	$53,850	-14%
28	Dare	$ 23,586.00	$12,826	-46%	$13,501	-43%	$13,139	-44%	$13,830	-41%	$14,049	-40%
29	Davidson	$ 56,282.00	$38,319	-32%	$38,062	-32%	$34,760	-38%	$36,790	-35%	$35,942	-36%
31	Duplin	$ 21,645.00	$41,246	91%	$44,062	104%	$41,360	91%	$45,038	108%	$45,689	111%
32	.+Durham	$ 24,669.00	$25,186	2%	$19,669	-20%	$22,302	-10%	$16,869	-32%	$15,002	-39%
36	Gaston	$ 33,539.10	$96,350	187%	$113,898	240%	$95,935	186%	$119,609	257%	$123,416	268%
37	Gates	$ 19,487.13	$15,951	-18%	$13,862	-29%	$17,447	-10%	$13,665	-30%	$13,533	-31%
38	Graham	$ 17,278.00	$21,168	23%	$24,282	41%	$25,345	47%	$26,713	55%	$28,333	64%
40	Greene	$ 20,519.00	$10,586	-48%	$7,086	-65%	$12,643	-38%	$6,605	-68%	$6,284	-69%
41	Guilford	$ 78,192.87	$99,201	27%	$123,053	57%	$103,951	33%	$132,587	70%	$138,943	78%
43	Harnett	$ 43,737.00	$39,052	-11%	$41,128	-6%	$38,481	-12%	$41,630	-5%	$41,965	-4%
44	Haywood	$ 37,443.63	$37,448	0%	$39,306	5%	$36,094	-4%	$39,474	5%	$39,586	6%
45	Henderson	$ 39,055.00	$46,538	19%	$49,555	27%	$43,209	11%	$49,451	27%	$49,381	26%
47	Hoke	$ 23,442.70	$22,031	-6%	$19,789	-16%	$22,235	-5%	$19,110	-18%	$18,657	-20%
48	Hyde	$ 5,337.00	$10,371	94%	$6,960	30%	$12,358	132%	$6,485	22%	$6,169	16%
49	Iredell	$ 59,439.14	$40,078	-33%	$43,009	-28%	$38,478	-35%	$43,452	-27%	$43,748	-26%
50	Jackson	$ 23,026.00	$14,486	-37%	$11,888	-48%	$14,791	-36%	$11,124	-52%	$10,614	-54%
51	Johnston	$ 61,141.00	$59,723	-2%	$56,637	-7%	$50,221	-18%	$52,441	-14%	$49,644	-19%
53	Lee	$ 25,492.00	$30,698	20%	$34,896	37%	$33,319	31%	$37,169	46%	$38,684	52%
54	Lenoir	$ 32,065.00	$25,866	-19%	$21,233	-34%	$26,419	-18%	$19,873	-38%	$18,967	-41%
57	Macon	$ 23,524.00	$20,126	-14%	$19,358	-18%	$19,920	-15%	$19,033	-19%	$18,817	-20%
58	Madison	$ 20,707.00	$23,338	13%	$24,385	18%	$25,053	21%	$25,305	22%	$25,919	25%
59	Martin	$ 22,656.00	$23,945	6%	$21,667	-4%	$26,006	15%	$21,595	-5%	$21,547	-5%
60	Mecklenburg	$ 48,641.00	$137,788	183%	$171,766	253%	$142,283	193%	$184,590	279%	$193,140	297%
61	Mitchell	$ 19,503.00	$17,590	-10%	$16,737	-14%	$20,076	3%	$17,282	-11%	$17,645	-10%
63	Moore	$ 23,493.81	$38,257	63%	$37,272	59%	$33,712	43%	$35,428	51%	$34,199	46%
65	New Hanover	$ 36,365.00	$43,069	18%	$35,758	-2%	$34,001	-7%	$30,298	-17%	$26,658	-27%
67	Onslow	$ 32,646.41	$20,624	-37%	$16,854	-48%	$17,896	-45%	$14,687	-55%	$13,243	-59%
68	Orange	$ 34,896.72	$40,754	17%	$43,182	24%	$40,039	15%	$43,753	25%	$44,134	26%
73	Person	$ 24,962.00	$26,136	5%	$26,948	8%	$25,817	3%	$27,112	9%	$27,222	9%
75	Polk	$ 29,897.42	$16,593	-45%	$14,892	-50%	$16,470	-45%	$14,285	-52%	$13,880	-54%
76	Randolph	$ 51,705.00	$29,031	-44%	$31,885	-38%	$29,105	-44%	$32,861	-36%	$33,512	-35%
77	Richmond	$ 16,416.20	$31,507	92%	$47,438	189%	$46,547	184%	$57,761	252%	$64,644	294%
78	Robeson	$ 48,543.00	$28,179	-42%	$26,523	-45%	$29,021	-40%	$26,252	-46%	$26,071	-46%
79	Rockingham	$ 41,432.72	$37,784	-9%	$34,370	-17%	$33,335	-20%	$31,749	-23%	$30,002	-28%
80	Rowan	$ 48,977.00	$36,080	-26%	$35,123	-28%	$33,119	-32%	$33,818	-31%	$32,948	-33%
81	Rutherford	$ 32,711.00	$31,000	-5%	$30,096	-8%	$29,613	-9%	$29,332	-10%	$28,823	-12%
82	Sampson	$ 24,428.00	$29,728	22%	$29,070	19%	$29,644	21%	$28,824	18%	$28,659	17%
83	Scotland	$ 25,331.00	$16,669	-34%	$18,342	-28%	$21,649	-15%	$20,560	-19%	$22,038	-13%
84	Stanly	$ 31,477.00	$29,755	-5%	$30,036	-5%	$28,216	-10%	$29,617	-6%	$29,338	-7%
87	Swain	$ 17,885.00	$30,282	69%	$37,730	111%	$35,094	96%	$41,817	134%	$44,542	149%
88	Transylvania	$ 11,937.00	$21,134	77%	$21,732	82%	$21,520	80%	$22,060	85%	$22,279	87%
92	Wake	$ 29,075.03	$64,864	123%	$54,594	88%	$47,125	62%	$45,258	56%	$39,033	34%
94	Washington	$ 4,959.00	$14,067	184%	$9,689	95%	$17,453	252%	$9,359	89%	$9,138	84%
96	Wayne	$ 33,956.00	$41,306	22%	$41,600	23%	$39,598	17%	$41,129	21%	$40,815	20%
97	Wilkes	$ 32,090.60	$33,812	5%	$33,702	5%	$32,791	2%	$33,325	4%	$33,073	3%
98	Wilson	$ 35,398.00	$22,784	-36%	$19,897	-44%	$23,994	-32%	$19,338	-45%	$18,966	-46%
100	Yancey	$ 15,309.56	$15,653	2%	$15,004	-2%	$18,943	24%	$15,885	4%	$16,472	8%
101	EBCI (Cherokee	$ 17,153.00	$24,709	44%	$17,241	1%	$21,616	26%	$13,720	-20%	$11,373	-34%
201	CPTA*	$ 107,789.04	$103,962	-4%	$94,757	-12%	$119,233	11%	$96,779	-10%	$98,127	-9%
202	ICPTA*	$ 100,364.00	$59,911	-40%	$41,528	-59%	$69,371	-31%	$38,553	-62%	$36,570	-64%
203	CARTS*	$ 43,658.28	$48,653	11%	$44,355	2%	$52,784	21%	$44,298	1%	$44,261	1%
204	KARTS*	$ 104,875.00	$67,728	-35%	$57,464	-45%	$72,123	-31%	$55,507	-47%	$54,203	-48%
205	YVEDDI*	$ 119,859.14	$110,496	-8%	$102,623	-14%	$100,236	-16%	$96,579	-19%	$92,550	-23%
206	NETS*	$ 54,750.07	$46,184	-16%	$46,407	-15%	$37,125	-32%	$43,462	-21%	$41,498	-24%
	Total	$ 2,622,368.95	$2,622,435	850%	$2,622,369	687%	$2,622,502	1057%	$2,622,369	702%	$2,622,369	711%

RGP Funds with the Adjusting Highway and Equal Shares Indices

ID #	County	FY02 RGP EXPEND	BOTH Index A	A % Diff	Both Index B	B % Diff	Both Index C	C % Diff	Both Index D	D % Diff	Both Index E	E % Diff
1	Alamance	$ 22,920.00	$39,745	73%	$39,186	71%	$35,760	56%	$37,672	64%	$36,662	60%
2	Alexander	$ 24,616.00	$12,624	-49%	$13,186	-46%	$14,431	-41%	$13,976	-43%	$14,503	-41%
3	Alleghany	$ 3,683.53	$11,399	209%	$8,775	138%	$13,449	265%	$8,584	133%	$8,456	130%
4	Anson	$ 26,780.00	$22,581	-16%	$19,194	-28%	$23,391	-13%	$18,335	-32%	$17,762	-34%
5	Ashe	$ 23,801.84	$26,264	10%	$23,153	-3%	$24,850	4%	$21,577	-9%	$20,527	-14%
6	Avery	$ 19,857.00	$27,036	36%	$26,917	36%	$27,266	37%	$26,954	36%	$26,979	36%
7	Beaufort	$ 27,985.00	$19,059	-32%	$19,193	-31%	$22,365	-20%	$20,339	-27%	$21,104	-25%
9	Bladen	$ 24,171.00	$26,749	11%	$22,371	-7%	$24,498	1%	$20,161	-17%	$18,688	-23%
11	Buncombe	$ 61,577.00	$66,989	10%	$64,329	5%	$48,906	-5%	$60,749	-2%	$48,362	-6%
12	Burke	$ 39,620.00	$22,377	-44%	$20,340	-49%	$21,080	-47%	$19,229	-51%	$18,488	-53%
13	Cabarrus	$ 28,407.00	$31,472	11%	$31,961	13%	$29,806	5%	$31,569	11%	$31,308	10%
14	Caldwell	$ 37,185.00	$24,038	-35%	$21,857	-41%	$22,085	-41%	$20,479	-45%	$19,561	-47%
16	Carteret	$ 32,322.00	$30,970	-4%	$26,179	-19%	$25,131	-22%	$22,636	-30%	$20,274	-37%
18	Catawba	$ 43,607.00	$33,166	-24%	$47,088	8%	$41,665	-4%	$54,569	25%	$59,566	37%
19	Chatham	$ 28,877.00	$37,545	30%	$40,652	41%	$38,098	32%	$41,872	45%	$42,685	48%
20	Cherokee	$ 20,087.20	$26,079	30%	$25,035	25%	$25,968	29%	$24,650	23%	$24,393	21%
22	Clay	$ 17,664.00	$20,126	14%	$17,948	2%	$18,215	3%	$16,585	-6%	$15,676	-11%
23	Cleveland	$ 42,462.62	$34,166	-20%	$34,476	-19%	$33,391	-21%	$34,327	-19%	$34,228	-19%
24	Columbus	$ 31,269.19	$22,673	-27%	$18,309	-41%	$21,733	-30%	$16,541	-47%	$15,363	-51%
26	+Cumberland	$ 62,728.00	$26,435	-58%	$40,125	-36%	$37,449	-40%	$48,360	-23%	$53,850	-14%
28	Dare	$ 23,586.00	$22,408	-5%	$18,824	-20%	$17,397	-26%	$15,959	-32%	$14,049	-40%
29	Davidson	$ 66,282.00	$30,861	-45%	$33,919	-40%	$31,445	-44%	$36,133	-38%	$35,942	-38%
31	Duplin	$ 21,645.00	$42,292	95%	$44,642	106%	$41,825	93%	$46,270	109%	$45,689	111%
32	+Durham	$ 24,669.00	$20,826	-16%	$17,247	-30%	$20,364	-17%	$15,900	-36%	$15,002	-39%
36	Gaston	$ 33,539.10	$70,517	110%	$99,546	197%	$84,454	152%	$113,868	240%	$123,416	268%
37	Gates	$ 19,487.13	$19,891	2%	$16,051	-18%	$19,198	-1%	$14,540	-25%	$13,633	-31%
38	Graham	$ 17,278.00	$28,678	66%	$28,455	65%	$28,683	66%	$28,382	64%	$28,333	64%
40	Greene	$ 20,519.00	$10,225	-50%	$6,885	-66%	$12,482	-39%	$6,525	-68%	$6,284	-69%
41	Guilford	$ 78,192.87	$78,641	1%	$111,631	43%	$94,813	21%	$128,018	64%	$138,943	78%
43	Harnett	$ 43,737.00	$37,019	-15%	$39,999	-9%	$37,578	-14%	$41,178	-6%	$41,966	-4%
44	Haywood	$ 37,443.63	$62,086	39%	$47,439	27%	$42,599	14%	$42,727	14%	$39,686	6%
45	Henderson	$ 39,055.00	$40,748	4%	$46,338	19%	$40,635	4%	$48,164	23%	$49,381	26%
47	Hoke	$ 23,442.70	$25,191	7%	$21,545	-8%	$23,640	1%	$19,812	-15%	$18,657	-20%
48	Hyde	$ 6,337.00	$20,656	207%	$12,674	137%	$16,929	217%	$8,771	64%	$6,169	16%
49	Iredell	$ 69,439.14	$32,940	-46%	$39,043	-34%	$36,306	-41%	$41,866	-30%	$43,748	-26%
50	Jackson	$ 23,026.00	$18,561	-19%	$14,152	-39%	$16,602	-28%	$12,030	-48%	$10,614	-54%
51	Johnston	$ 61,141.00	$50,918	-17%	$51,744	-15%	$46,306	-24%	$50,484	-17%	$49,644	-19%
53	Lee	$ 25,492.00	$27,986	10%	$33,389	31%	$32,113	26%	$36,566	43%	$38,684	52%
54	Lenoir	$ 32,065.00	$24,292	-24%	$20,369	-37%	$25,719	-20%	$19,624	-39%	$18,967	-41%
57	Macon	$ 23,524.00	$24,325	3%	$21,691	-8%	$21,786	-7%	$19,966	-15%	$18,817	-20%
58	Madison	$ 20,707.00	$25,768	24%	$25,734	24%	$26,133	26%	$26,845	25%	$25,919	25%
59	Martin	$ 22,656.00	$26,720	18%	$23,209	2%	$27,239	20%	$22,212	-2%	$21,547	-5%
60	Mecklenburg	$ 48,641.00	$128,557	164%	$166,638	243%	$138,181	184%	$182,539	276%	$193,140	297%
61	Mitchell	$ 19,503.00	$18,816	-4%	$17,418	-11%	$20,621	6%	$17,554	-10%	$17,646	-10%
63	Moore	$ 23,493.81	$39,089	66%	$37,734	61%	$34,081	45%	$35,613	52%	$34,199	46%
65	New Hanover	$ 36,365.00	$36,002	-1%	$31,832	-12%	$30,861	-15%	$28,728	-21%	$26,658	-27%
67	Onslow	$ 32,646.41	$25,956	-20%	$19,816	-39%	$20,266	-38%	$15,872	-51%	$13,243	-59%
68	Orange	$ 34,896.72	$37,332	7%	$41,281	18%	$38,518	10%	$42,992	23%	$44,134	26%
73	Person	$ 24,962.00	$25,932	4%	$26,834	8%	$25,726	3%	$27,067	8%	$27,222	9%
75	Polk	$ 29,897.42	$16,208	-46%	$14,679	-51%	$16,299	-45%	$14,199	-53%	$13,880	-54%
76	Randolph	$ 51,705.00	$26,343	-49%	$30,392	-41%	$27,910	-46%	$32,264	-38%	$33,512	-35%
77	Richmond	$ 16,416.20	$31,447	92%	$47,405	189%	$46,521	183%	$67,748	262%	$64,644	294%
78	Robeson	$ 48,543.00	$26,630	-45%	$25,663	-47%	$28,333	-42%	$25,908	-47%	$26,071	-46%
79	Rockingham	$ 41,432.72	$34,020	-18%	$32,279	-22%	$31,682	-24%	$30,913	-25%	$30,002	-28%
80	Rowan	$ 46,977.00	$30,438	-38%	$31,989	-35%	$30,612	-37%	$32,564	-34%	$32,948	-33%
81	Rutherford	$ 32,711.00	$28,814	-12%	$28,881	-12%	$28,641	-12%	$28,846	-12%	$28,823	-12%
82	Sampson	$ 24,428.00	$29,421	20%	$28,900	18%	$29,508	21%	$28,755	18%	$28,669	17%
83	Scotland	$ 25,331.00	$16,327	-36%	$18,152	-28%	$21,497	-15%	$20,484	-19%	$22,038	-13%
84	Stanly	$ 31,477.00	$26,550	-16%	$28,256	-10%	$26,791	-15%	$28,905	-8%	$29,338	-7%
87	Swain	$ 17,886.00	$66,099	270%	$67,629	222%	$61,013	185%	$49,776	178%	$44,642	149%
88	Transylvania	$ 11,937.00	$26,840	125%	$24,902	109%	$24,056	102%	$23,328	96%	$22,279	87%
92	Wake	$ 29,075.03	$50,065	72%	$46,373	59%	$40,547	39%	$41,969	44%	$39,033	34%
94	Washington	$ 4,959.00	$19,582	295%	$12,753	157%	$19,904	301%	$10,584	113%	$9,138	84%
96	Wayne	$ 33,956.00	$37,745	11%	$39,622	17%	$38,016	12%	$40,337	19%	$40,815	20%
97	Wilkes	$ 32,090.60	$34,926	9%	$34,321	7%	$33,286	4%	$33,572	5%	$33,073	3%
98	Wilson	$ 35,398.00	$20,842	-41%	$18,819	-47%	$23,131	-35%	$18,907	-47%	$18,966	-46%
100	Yancey	$ 15,309.56	$17,542	15%	$16,054	5%	$19,783	29%	$16,305	7%	$16,472	8%
101	EBCI (Cherokee	$ 17,153.00	$24,708	44%	$17,240	1%	$21,615	26%	$13,720	-20%	$11,373	-34%
201	CPTA*	$ 107,789.04	$119,599	11%	$103,444	-4%	$126,102	17%	$100,254	-7%	$98,127	-9%
202	ICPTA*	$ 100,364.00	$67,572	-33%	$46,784	-54%	$72,776	-27%	$40,255	-60%	$36,570	-64%
203	CARTS*	$ 43,658.28	$64,285	47%	$53,039	21%	$59,731	37%	$47,772	9%	$44,261	1%
204	KARTS*	$ 104,875.00	$68,055	-35%	$57,645	-45%	$72,268	-31%	$55,580	-47%	$54,203	-48%
205	WVEDDI*	$ 119,059.14	$99,996	-17%	$96,790	-19%	$95,569	-20%	$94,246	-21%	$92,560	-23%
206	NETS*	$ 64,750.07	$43,463	-21%	$44,895	-18%	$35,916	-34%	$42,857	-22%	$41,498	-24%
	Total	$ 2,622,368.95	$2,622,216	1380%	$2,622,247	982%	$2,622,405	1292%	$2,622,320	819%	$2,622,369	711%

Total ROAP Funds without Adjusting Indexes

ID #	County	FY02 ROAP EXPEND	Raw A - Base	Base) /Base)	Raw B- Base	% B Diff	Raw C	% C Diff	New D-Base	% D Diff	Raw E	% E Diff
1	Alamance	$110,510.83	$168,076	43%	$142,240	29%	$132,769	20%	$128,526	16%	$119,383	8%
2	Alexander	$66,381.00	$60,486	-24%	$46,388	-30%	$56,088	-16%	$46,891	-29%	$47,226	-29%
3	Alleghany	$42,080.73	$36,512	-13%	$28,782	-32%	$42,002	0%	$28,035	-33%	$27,537	-35%
4	Anson	$68,178.00	$68,400	0%	$61,649	-10%	$68,295	0%	$53,363	-13%	$57,840	-15%
5	Ashe	$74,474.64	$79,133	6%	$72,113	-3%	$76,867	3%	$69,962	-7%	$66,044	-10%
6	Avery	$60,604.00	$76,793	27%	$81,318	34%	$84,031	39%	$85,238	41%	$87,852	45%
7	Beaufort	$91,787.27	$52,657	-43%	$68,343	-38%	$66,061	-28%	$64,570	-30%	$68,722	-25%
9	Bladen	$76,993.00	$67,273	-13%	$62,530	-19%	$69,001	-10%	$61,526	-20%	$60,858	-21%
11	Buncombe	$182,571.00	$200,147	10%	$184,663	1%	$166,706	-9%	$156,364	-6%	$157,482	-14%
12	Burke	$113,334.39	$75,528	-33%	$66,790	-41%	$72,409	-36%	$62,838	-45%	$60,203	-47%
13	Cabarrus	$107,180.00	$118,994	11%	$111,811	4%	$108,425	1%	$105,894	-1%	$101,949	-5%
14	Caldwell	$102,699.71	$73,630	-28%	$67,482	-34%	$72,962	-29%	$65,211	-37%	$63,696	-38%
16	Carteret	$95,956.00	$75,977	-21%	$69,948	-27%	$74,935	-22%	$67,591	-30%	$66,020	-31%
18	Catawba	$139,203.00	$127,179	-9%	$162,352	17%	$148,858	7%	$181,302	30%	$193,935	39%
19	Chatham	$83,939.00	$120,043	43%	$130,918	56%	$123,711	47%	$135,766	62%	$138,998	66%
20	Cherokee	$65,653.20	$71,849	9%	$74,361	13%	$78,465	20%	$77,404	18%	$79,433	21%
22	Clay	$55,242.00	$58,128	5%	$52,546	-5%	$61,013	10%	$51,646	-7%	$61,047	-8%
23	Cleveland	$123,291.60	$136,057	10%	$126,045	2%	$119,812	-3%	$117,292	-5%	$111,458	-10%
24	Columbus	$94,033.46	$64,349	-32%	$55,491	-41%	$63,369	-33%	$52,212	-44%	$50,028	-47%
26	+Cumberland	$225,407.00	$87,793	-67%	$136,736	-39%	$128,364	-43%	$159,907	-29%	$175,354	-22%
28	Dare	$97,147.00	$47,448	-51%	$43,952	-55%	$54,146	-44%	$45,034	-54%	$45,748	-53%
29	Davidson	$151,737.00	$127,249	-16%	$123,943	-18%	$118,130	-22%	$119,801	-21%	$117,040	-23%
31	Duplin	$78,689.00	$133,852	70%	$143,480	82%	$133,760	70%	$146,669	86%	$148,776	89%
32	+Durham	$120,181.80	$80,812	-33%	$64,050	-47%	$70,217	-42%	$54,931	-54%	$48,852	-59%
36	Gaston	$151,915.10	$315,393	108%	$370,889	144%	$315,688	108%	$389,486	156%	$401,884	165%
37	Gates	$56,249.00	$51,081	-9%	$45,141	-20%	$55,089	-2%	$44,497	-21%	$44,067	-22%
38	Graham	$55,716.00	$68,781	23%	$79,072	42%	$82,234	48%	$86,986	56%	$92,262	66%
40	Greene	$53,590.00	$32,604	-49%	$23,074	-64%	$37,436	-41%	$21,508	-66%	$20,464	-68%
41	Guilford	$239,817.00	$323,654	35%	$400,704	67%	$339,540	42%	$431,749	80%	$462,446	93%
43	Harnett	$116,472.00	$127,671	10%	$133,927	15%	$126,118	8%	$135,561	16%	$136,651	17%
44	Haywood	$102,077.87	$123,864	21%	$127,996	25%	$121,372	19%	$128,541	26%	$128,906	26%
45	Henderson	$117,147.93	$155,227	33%	$161,367	38%	$148,070	26%	$161,028	37%	$160,802	37%
47	Hoke	$73,356.70	$70,800	-3%	$64,438	-12%	$70,527	-4%	$62,227	-15%	$60,753	-17%
48	Hyde	$41,353.49	$32,204	-22%	$22,663	-45%	$37,107	-10%	$21,110	-49%	$20,086	-51%
49	Iredell	$134,669.89	$133,366	-1%	$140,051	4%	$131,017	-3%	$141,496	5%	$142,459	6%
50	Jackson	$69,306.20	$48,063	-31%	$38,712	-44%	$49,846	-28%	$38,224	-46%	$34,564	-50%
51	Johnston	$147,106.00	$195,972	33%	$184,431	25%	$166,521	13%	$170,766	16%	$161,658	10%
53	Lee	$83,558.00	$100,657	20%	$113,633	36%	$109,883	32%	$121,033	45%	$125,867	51%
54	Lenoir	$91,360.31	$78,359	-14%	$69,143	-24%	$74,291	-19%	$64,715	-29%	$61,763	-32%
57	Macon	$70,432.68	$67,806	-4%	$63,096	-11%	$69,405	-1%	$61,978	-12%	$61,274	-13%
58	Madison	$63,906.00	$76,456	19%	$79,404	24%	$82,500	29%	$82,403	29%	$84,402	32%
59	Martin	$71,956.00	$73,341	2%	$70,556	-2%	$75,421	5%	$70,322	-2%	$70,165	-2%
60	Mecklenburg	$311,167.47	$450,241	45%	$559,328	80%	$466,439	50%	$601,089	93%	$629,930	102%
61	Mitchell	$60,724.00	$55,881	-8%	$54,502	-10%	$62,578	3%	$56,275	-7%	$57,457	-5%
63	Moore	$95,412.81	$127,726	34%	$121,370	27%	$116,072	22%	$115,367	21%	$111,365	17%
65	New Hanover	$131,856.00	$140,950	7%	$116,439	-12%	$112,127	-15%	$98,861	-25%	$86,809	-34%
67	Onslow	$93,252.62	$69,462	-26%	$54,881	-41%	$62,881	-33%	$47,827	-49%	$43,125	-54%
68	Orange	$106,540.00	$133,254	25%	$140,616	32%	$131,469	23%	$142,475	34%	$143,714	35%
73	Person	$128,028.93	$87,663	-32%	$87,752	-31%	$89,178	-30%	$88,287	-31%	$88,644	-31%
75	Polk	$74,628.37	$56,101	-25%	$48,496	-35%	$57,772	-23%	$46,516	-38%	$45,197	-39%
76	Randolph	$137,192.00	$98,168	-28%	$103,830	-24%	$102,040	-26%	$107,008	-22%	$109,126	-20%
77	Richmond	$75,470.20	$88,087	30%	$154,473	105%	$142,565	89%	$188,081	149%	$210,603	179%
78	Robeson	$154,049.00	$88,545	-43%	$86,359	-44%	$88,071	-43%	$85,485	-45%	$84,896	-45%
79	Rockingham	$122,036.68	$123,018	1%	$111,921	-8%	$108,513	-11%	$103,386	-15%	$97,697	-20%
80	Rowan	$144,584.44	$118,801	-18%	$114,374	-21%	$110,476	-24%	$110,123	-24%	$107,269	-26%
81	Rutherford	$103,052.00	$101,420	-2%	$98,002	-5%	$97,378	-6%	$95,515	-7%	$93,857	-9%
82	Sampson	$86,096.00	$95,891	11%	$94,663	10%	$94,707	10%	$93,859	9%	$93,323	8%
83	Scotland	$76,464.00	$52,412	-31%	$59,728	-22%	$66,759	-13%	$66,949	-12%	$71,764	-6%
84	Stanly	$90,209.61	$99,663	10%	$97,808	8%	$97,223	8%	$96,444	7%	$95,634	6%
87	Swain	$61,786.00	$100,103	62%	$122,853	99%	$117,267	90%	$136,171	120%	$145,043	135%
88	Transylvania	$61,057.46	$71,627	17%	$70,767	16%	$75,590	24%	$71,835	18%	$72,547	19%
92	Wake	$182,452.00	$215,091	18%	$177,777	-3%	$161,198	-12%	$147,375	-19%	$127,106	-30%
94	Washington	$45,580.00	$39,459	-13%	$31,552	-31%	$44,218	-3%	$30,475	-33%	$29,758	-35%
96	Wayne	$115,134.00	$133,708	16%	$135,464	18%	$127,347	11%	$133,929	16%	$132,906	15%
97	Wilkes	$97,176.60	$110,101	13%	$109,746	13%	$106,772	10%	$108,516	12%	$107,697	11%
98	Wilson	$100,746.35	$70,632	-30%	$64,792	-36%	$70,510	-30%	$62,972	-37%	$61,759	-39%
100	Yancey	$49,111.37	$49,159	0%	$48,859	-1%	$58,063	18%	$51,726	5%	$53,638	9%
101	EBCI (Cherokee	$17,153.00	$77,214	350%	$56,143	227%	$63,891	272%	$44,678	160%	$37,035	116%
201	CPTA*	$298,768.20	$305,763	2%	$308,563	3%	$322,765	8%	$315,147	5%	$319,636	7%
202	ICPTA*	$312,019.13	$183,675	-41%	$135,228	-57%	$203,064	-35%	$125,542	-60%	$119,084	-62%
203	CARTS*	$198,569.28	$158,728	-20%	$144,433	-27%	$172,476	-13%	$144,251	-27%	$144,129	-27%
204	KARTS*	$312,786.24	$215,918	-31%	$187,122	-40%	$225,802	-28%	$180,761	-42%	$176,604	-44%
205	YVEDDI*	$320,452.61	$360,234	12%	$334,177	2%	$343,246	5%	$314,495	-4%	$301,374	-6%
206	NETS*	$190,637.67	$169,366	-11%	$151,116	-21%	$158,846	-17%	$141,526	-26%	$135,133	-29%
	Total	$8,639,328.84	$8,539,330	4%	$8,539,330	2%	$8,639,330	5%	$8,639,330	2%	$8,539,330	2%

Total ROAP Funds with the Adjusting Highway Index

ID #	County	FY02 ROAP EXPEND	Hwy Index A	A % Diff	Hwy Index B	B % diff	Hwy Index C	C % Diff	Hwy Index D	D % Diff	Hwy Index E	E % Diff
1	Alamance	$ 110,510.83	$131,730	19%	$127,604	15%	$121,059	10%	$122,672	11%	$119,383	8%
2	Alexander	$ 66,381.00	$44,273	-33%	$42,938	-35%	$53,327	-20%	$45,511	-31%	$47,226	-29%
3	Alleghany	$ 42,080.73	$36,139	-14%	$28,575	-32%	$41,836	-1%	$27,952	-34%	$27,537	-35%
4	Anson	$ 68,178.00	$69,935	3%	$62,501	-8%	$68,977	1%	$59,704	-12%	$57,840	-15%
5	Ashe	$ 74,474.84	$85,037	14%	$75,393	1%	$79,291	6%	$70,264	-6%	$66,844	-10%
6	Avery	$ 60,604.00	$88,195	46%	$87,652	45%	$89,098	47%	$87,772	45%	$87,852	45%
7	Beaufort	$ 91,787.27	$60,134	-34%	$62,497	-32%	$68,974	-25%	$66,232	-28%	$68,722	-25%
9	Bladen	$ 76,993.00	$85,844	11%	$72,848	-5%	$77,255	0%	$65,653	-15%	$60,856	-21%
11	Buncombe	$ 182,571.00	$186,202	2%	$176,915	-3%	$160,508	-12%	$165,255	-9%	$157,482	-14%
12	Burke	$ 113,334.39	$74,528	-34%	$66,235	-42%	$71,964	-37%	$62,616	-45%	$60,203	-47%
13	Cabarrus	$ 107,180.00	$105,072	-2%	$104,077	-3%	$102,238	-5%	$102,800	-4%	$101,949	-5%
14	Caldwell	$ 102,699.71	$80,277	-22%	$71,175	-31%	$75,916	-26%	$66,688	-35%	$63,696	-38%
16	Carteret	$ 95,965.00	$103,517	8%	$85,248	-11%	$87,175	-9%	$73,711	-23%	$66,020	-31%
18	Catawba	$ 139,203.00	$110,952	-20%	$153,336	10%	$141,645	2%	$177,696	28%	$193,935	39%
19	Chatham	$ 83,939.00	$122,670	46%	$132,378	58%	$124,879	49%	$136,350	62%	$138,998	66%
20	Cherokee	$ 65,653.20	$84,738	29%	$81,522	24%	$84,194	28%	$80,269	22%	$79,433	21%
22	Clay	$ 55,242.00	$68,745	24%	$58,444	6%	$65,731	19%	$54,005	-2%	$51,047	-8%
23	Cleveland	$ 123,291.60	$111,252	-10%	$112,264	-9%	$108,788	-12%	$111,780	-9%	$111,458	-10%
24	Columbus	$ 94,033.46	$71,784	-24%	$59,622	-37%	$66,674	-29%	$53,864	-43%	$50,026	-47%
26	.+Cumberland	$ 225,407.00	$86,861	-61%	$130,662	-42%	$123,506	-45%	$157,477	-30%	$175,354	-22%
28	Dare	$ 97,147.00	$78,651	-19%	$61,297	-37%	$68,014	-30%	$51,968	-47%	$45,748	-53%
29	Davidson	$ 151,737.00	$102,965	-32%	$110,451	-27%	$107,337	-29%	$114,404	-25%	$117,040	-23%
31	Duplin	$ 78,699.00	$137,256	74%	$145,371	85%	$135,273	72%	$147,416	87%	$148,778	89%
32	.+Durham	$ 120,181.80	$66,613	-45%	$56,162	-53%	$63,906	-47%	$51,776	-57%	$48,852	-59%
36	Gaston	$ 151,915.10	$231,274	52%	$324,156	113%	$278,301	83%	$370,793	144%	$401,884	165%
37	Gates	$ 56,249.00	$63,910	14%	$52,268	-7%	$60,791	8%	$47,348	-16%	$44,067	-22%
38	Graham	$ 55,715.00	$93,238	67%	$92,659	66%	$93,103	67%	$92,421	66%	$92,262	66%
40	Greene	$ 63,590.00	$31,428	-51%	$22,421	-65%	$36,913	-42%	$21,247	-67%	$20,464	-68%
41	Guilford	$ 239,617.00	$256,601	7%	$363,508	52%	$309,783	29%	$416,871	74%	$452,446	89%
43	Harnett	$ 116,472.00	$120,951	4%	$130,249	12%	$123,176	6%	$134,090	15%	$136,651	17%
44	Haywood	$ 102,077.87	$171,530	68%	$154,476	51%	$142,557	40%	$139,134	36%	$128,906	26%
45	Henderson	$ 117,147.93	$136,372	16%	$150,892	29%	$139,690	19%	$156,838	34%	$160,802	37%
47	Hoke	$ 73,355.70	$81,092	11%	$70,156	-4%	$75,101	2%	$64,514	-12%	$60,753	-17%
48	Hyde	$ 41,353.49	$65,695	59%	$41,270	0%	$51,992	26%	$28,560	-31%	$20,088	-51%
49	Iredell	$ 134,669.89	$110,125	-18%	$127,139	-6%	$120,687	-10%	$136,331	1%	$142,459	6%
50	Jackson	$ 69,305.20	$61,331	-12%	$46,084	-34%	$55,843	-19%	$39,172	-43%	$34,564	-50%
51	Johnston	$ 147,106.00	$167,292	14%	$168,497	15%	$153,774	5%	$164,393	12%	$161,656	10%
53	Lee	$ 83,558.00	$91,824	10%	$108,726	30%	$105,957	27%	$119,071	43%	$125,967	51%
54	Lenoir	$ 91,360.31	$73,232	-20%	$66,295	-27%	$72,012	-21%	$63,575	-30%	$61,763	-32%
57	Macon	$ 70,432.68	$81,482	16%	$70,633	0%	$75,483	7%	$65,018	-8%	$61,274	-13%
58	Madison	$ 63,985.00	$84,367	32%	$83,800	31%	$86,016	34%	$84,161	32%	$84,402	32%
59	Martin	$ 71,955.00	$82,377	14%	$75,576	5%	$79,437	10%	$72,330	1%	$70,165	-2%
60	Mecklenburg	$ 311,167.47	$420,185	35%	$542,630	74%	$453,080	46%	$594,410	91%	$628,930	102%
61	Mitchell	$ 60,724.00	$59,872	-1%	$56,720	-7%	$64,352	6%	$57,162	-6%	$57,457	-5%
63	Moore	$ 95,412.81	$130,433	37%	$122,874	29%	$117,276	23%	$115,969	22%	$111,365	17%
65	New Hanover	$ 131,855.00	$117,939	-11%	$103,655	-21%	$101,900	-23%	$93,547	-29%	$86,809	-34%
67	Onslow	$ 93,252.62	$86,823	-7%	$64,526	-31%	$70,597	-24%	$51,685	-45%	$43,125	-54%
68	Orange	$ 106,540.00	$122,109	15%	$134,424	26%	$126,516	19%	$139,998	31%	$143,714	35%
73	Person	$ 128,028.93	$86,997	-32%	$87,382	-32%	$88,882	-31%	$88,139	-31%	$88,644	-31%
75	Polk	$ 74,628.37	$54,848	-27%	$47,798	-36%	$57,215	-23%	$46,238	-38%	$45,197	-39%
76	Randolph	$ 137,192.00	$89,414	-35%	$98,967	-28%	$98,150	-28%	$105,063	-23%	$109,126	-20%
77	Richmond	$ 75,470.20	$97,894	30%	$154,366	105%	$142,469	89%	$188,048	149%	$210,503	179%
78	Robeson	$ 154,049.00	$83,501	-46%	$83,566	-46%	$85,829	-44%	$84,364	-45%	$84,896	-45%
79	Rockingham	$ 122,036.68	$110,763	-9%	$105,113	-14%	$103,066	-16%	$100,663	-18%	$97,697	-20%
80	Rowan	$ 144,594.44	$100,429	-31%	$104,167	-28%	$102,310	-29%	$106,040	-27%	$107,289	-26%
81	Rutherford	$ 103,052.00	$94,303	-8%	$94,048	-9%	$94,214	-9%	$93,933	-9%	$93,857	-9%
82	Sampson	$ 86,066.00	$94,891	10%	$94,108	9%	$94,262	10%	$93,637	9%	$93,323	8%
83	Scotland	$ 76,464.00	$51,298	-33%	$59,110	-23%	$66,264	-13%	$66,702	-13%	$71,764	-6%
84	Stanly	$ 90,209.61	$89,127	-1%	$92,011	2%	$92,585	3%	$94,125	4%	$95,534	6%
87	Swain	$ 61,786.00	$216,735	251%	$187,658	204%	$169,103	174%	$162,089	162%	$145,043	135%
88	Transylvania	$ 61,057.46	$90,156	48%	$81,089	33%	$83,848	37%	$75,964	24%	$72,547	19%
92	Wake	$ 182,452.00	$166,901	-9%	$151,005	-17%	$139,780	-23%	$136,666	-25%	$127,106	-30%
94	Washington	$ 45,580.00	$57,457	26%	$41,528	-9%	$52,199	15%	$34,466	-24%	$29,758	-35%
96	Wayne	$ 115,134.00	$122,111	6%	$129,021	12%	$122,193	6%	$131,352	14%	$132,906	15%
97	Wilkes	$ 97,175.60	$113,728	17%	$111,760	15%	$108,384	12%	$109,322	12%	$107,697	11%
98	Wilson	$ 100,745.35	$64,209	-36%	$61,280	-39%	$68,000	-33%	$61,567	-39%	$61,759	-39%
100	Yancey	$ 49,111.37	$55,313	13%	$52,277	6%	$60,798	24%	$53,094	8%	$53,638	9%
101	EBCI (Cherokee	$ 17,153.00	$77,208	350%	$56,140	227%	$63,888	272%	$44,677	160%	$37,035	116%
201	CPTA*	$ 298,768.20	$356,700	19%	$336,850	13%	$345,385	16%	$326,462	9%	$319,536	7%
202	ICPTA*	$ 312,019.13	$208,621	-33%	$149,087	-52%	$214,151	-31%	$131,085	-58%	$119,084	-62%
203	CARTS*	$ 198,569.28	$209,629	6%	$172,712	-13%	$195,098	-2%	$155,562	-22%	$144,129	-27%
204	KARTS*	$ 312,786.24	$216,983	-31%	$187,713	-40%	$226,076	-28%	$180,987	-42%	$176,504	-44%
205	YVEDDI*	$ 328,452.51	$334,043	2%	$315,181	-4%	$328,050	0%	$306,897	-7%	$301,374	-8%
206	NETS*	$ 190,637.57	$160,506	-16%	$146,194	-23%	$154,908	-19%	$139,557	-27%	$135,133	-29%
	Total	$8,539,329.84	$8,538,617	708%	$8,538,934	382%	$8,539,013	553%	$8,539,171	221%	$8,539,330	114%

Total ROAP Funds with the Adjusting Equal Shares Index

ID #	County	FY02 ROAP EXPEND	ES Index A	A % Diff	ES Index B	B % Diff	ES Index C	C % Diff	ES Index D	D % Diff	ES Index E	E % Diff
1	Alamance	$ 110,510.83	$155,770	41%	$142,240	29%	$128,157	16%	$128,526	16%	$119,383	8%
2	Alexander	$ 66,381.00	$47,319	-29%	$46,389	-30%	$49,755	-25%	$46,891	-29%	$47,226	-29%
3	Alleghany	$ 42,080.73	$37,492	-11%	$28,782	-32%	$43,962	4%	$28,035	-33%	$27,537	-35%
4	Anson	$ 68,178.00	$71,997	6%	$61,649	-10%	$75,488	11%	$59,363	-13%	$57,840	-15%
5	Ashe	$ 74,474.84	$79,621	7%	$72,113	-3%	$77,644	4%	$68,952	-7%	$66,844	-10%
6	Avery	$ 60,604.00	$76,638	26%	$81,318	34%	$83,720	38%	$85,238	41%	$87,852	45%
7	Beaufort	$ 91,787.27	$54,584	-41%	$58,343	-36%	$69,505	-24%	$64,570	-30%	$68,722	-25%
9	Bladen	$ 76,993.00	$68,532	-11%	$62,530	-19%	$71,519	-7%	$61,526	-20%	$60,856	-21%
11	Buncombe	$ 182,571.00	$199,520	9%	$184,663	1%	$165,453	-9%	$168,354	-8%	$157,482	-14%
12	Burke	$ 113,334.39	$73,868	-35%	$66,790	-41%	$69,090	-39%	$62,838	-45%	$60,203	-47%
13	Cabarrus	$ 107,180.00	$116,405	9%	$111,811	4%	$103,247	-4%	$105,894	-1%	$101,949	-5%
14	Caldwell	$ 102,699.71	$71,630	-30%	$67,482	-34%	$68,962	-33%	$65,211	-37%	$63,696	-38%
16	Carteret	$ 95,965.00	$73,307	-24%	$69,948	-27%	$69,595	-27%	$67,591	-30%	$66,020	-31%
18	Catawba	$ 139,203.00	$124,195	-11%	$162,352	17%	$142,889	3%	$181,302	30%	$193,935	39%
19	Chatham	$ 83,939.00	$119,633	43%	$130,918	56%	$122,891	46%	$135,766	62%	$138,998	66%
20	Cherokee	$ 65,653.20	$72,031	10%	$74,361	13%	$78,830	20%	$77,404	18%	$79,433	21%
22	Clay	$ 55,242.00	$54,919	-1%	$52,546	-5%	$54,594	-1%	$51,646	-7%	$51,047	-8%
23	Cleveland	$ 123,291.60	$136,029	10%	$126,045	2%	$119,757	-3%	$117,292	-5%	$111,458	-10%
24	Columbus	$ 94,033.46	$66,397	-29%	$55,491	-41%	$67,465	-28%	$52,212	-44%	$50,026	-47%
26	.+Cumberland	$ 225,407.00	$97,013	-57%	$136,735	-39%	$126,805	-44%	$159,907	-29%	$175,354	-22%
28	Dare	$ 97,147.00	$41,767	-57%	$43,962	-55%	$42,784	-56%	$45,034	-54%	$45,748	-53%
29	Davidson	$ 151,737.00	$124,779	-18%	$123,943	-18%	$113,189	-25%	$119,801	-21%	$117,040	-23%
31	Duplin	$ 78,699.00	$134,313	71%	$143,480	82%	$134,682	71%	$146,659	86%	$148,778	89%
32	.+Durham	$ 120,181.80	$82,016	-32%	$64,050	-47%	$72,624	-40%	$54,931	-54%	$48,852	-59%
36	Gaston	$ 151,915.10	$313,747	107%	$370,889	144%	$312,396	106%	$389,486	156%	$401,884	165%
37	Gates	$ 56,249.00	$51,943	-8%	$45,141	-20%	$56,812	1%	$44,497	-21%	$44,067	-22%
38	Graham	$ 55,715.00	$68,930	24%	$79,072	42%	$82,531	48%	$86,986	56%	$92,262	66%
40	Greene	$ 63,590.00	$34,471	-46%	$23,074	-64%	$41,169	-35%	$21,508	-66%	$20,464	-68%
41	Guilford	$ 239,617.00	$323,034	35%	$400,704	67%	$338,499	41%	$431,749	80%	$452,446	89%
43	Harnett	$ 116,472.00	$127,165	9%	$133,927	15%	$125,307	8%	$135,561	16%	$136,651	17%
44	Haywood	$ 102,077.87	$121,944	19%	$127,995	25%	$117,533	15%	$128,541	26%	$128,906	26%
45	Henderson	$ 117,147.93	$151,543	29%	$161,367	38%	$140,703	20%	$161,028	37%	$160,802	37%
47	Hoke	$ 73,355.70	$71,739	-2%	$64,438	-12%	$72,406	-1%	$62,227	-15%	$60,753	-17%
48	Hyde	$ 41,353.49	$33,771	-18%	$22,663	-45%	$40,241	-3%	$21,118	-49%	$20,088	-51%
49	Iredell	$ 134,669.89	$130,506	-3%	$140,051	4%	$125,297	-7%	$141,496	5%	$142,459	6%
50	Jackson	$ 69,305.20	$47,172	-32%	$38,712	-44%	$48,166	-31%	$36,224	-48%	$34,564	-50%
51	Johnston	$ 147,106.00	$194,480	32%	$184,431	25%	$163,536	11%	$170,766	16%	$161,656	10%
53	Lee	$ 83,558.00	$99,964	20%	$113,633	36%	$108,497	30%	$121,033	45%	$125,967	51%
54	Lenoir	$ 91,360.31	$84,229	-8%	$69,143	-24%	$86,030	-6%	$64,715	-29%	$61,763	-32%
57	Macon	$ 70,432.68	$65,536	-7%	$63,035	-11%	$64,865	-8%	$61,978	-12%	$61,274	-13%
58	Madison	$ 63,985.00	$75,996	19%	$79,404	24%	$81,582	28%	$82,403	29%	$84,402	32%
59	Martin	$ 71,955.00	$77,973	8%	$70,556	-2%	$84,685	18%	$70,322	-2%	$70,165	-2%
60	Mecklenburg	$ 311,167.47	$448,683	44%	$559,328	80%	$463,323	49%	$601,089	93%	$628,930	102%
61	Mitchell	$ 60,724.00	$57,279	-6%	$54,502	-10%	$65,374	8%	$56,275	-7%	$57,457	-5%
63	Moore	$ 95,412.81	$124,578	31%	$121,370	27%	$109,777	15%	$115,367	21%	$111,365	17%
65	New Hanover	$ 131,855.00	$140,246	6%	$116,439	-12%	$110,719	-16%	$98,661	-25%	$86,809	-34%
67	Onslow	$ 93,252.62	$67,159	-28%	$54,881	-41%	$58,275	-38%	$47,827	-49%	$43,125	-54%
68	Orange	$ 106,540.00	$132,709	25%	$140,616	32%	$130,380	22%	$142,475	34%	$143,714	35%
73	Person	$ 128,028.93	$85,108	-34%	$87,752	-31%	$84,068	-34%	$88,287	-31%	$88,644	-31%
75	Polk	$ 74,628.37	$54,031	-28%	$48,495	-35%	$53,632	-28%	$46,516	-38%	$45,197	-39%
76	Randolph	$ 137,192.00	$94,536	-31%	$103,830	-24%	$94,775	-31%	$107,008	-22%	$109,126	-20%
77	Richmond	$ 75,470.20	$102,597	36%	$154,473	105%	$151,574	101%	$188,091	149%	$210,503	179%
78	Robeson	$ 154,049.00	$91,761	-40%	$86,369	-44%	$94,503	-39%	$85,485	-45%	$84,896	-45%
79	Rockingham	$ 122,036.68	$123,036	1%	$111,921	-8%	$108,549	-11%	$103,386	-15%	$97,697	-20%
80	Rowan	$ 144,594.44	$117,487	-19%	$114,374	-21%	$107,848	-25%	$110,123	-24%	$107,289	-26%
81	Rutherford	$ 103,052.00	$100,946	-2%	$98,002	-5%	$96,428	-6%	$95,515	-7%	$93,857	-9%
82	Sampson	$ 86,066.00	$96,804	12%	$94,663	10%	$96,532	12%	$93,859	9%	$93,323	8%
83	Scotland	$ 76,464.00	$54,281	-29%	$59,728	-22%	$70,498	-8%	$66,949	-12%	$71,764	-6%
84	Stanly	$ 90,209.61	$96,891	7%	$97,808	8%	$91,880	2%	$96,444	7%	$95,534	6%
87	Swain	$ 61,786.00	$98,608	60%	$122,863	99%	$114,278	85%	$136,171	120%	$145,043	135%
88	Transylvania	$ 61,057.46	$68,820	13%	$70,767	16%	$70,077	15%	$71,835	18%	$72,547	19%
92	Wake	$ 182,452.00	$211,219	16%	$177,777	-3%	$153,454	-16%	$147,375	-19%	$127,106	-30%
94	Washington	$ 45,580.00	$45,806	0%	$31,552	-31%	$56,832	25%	$30,475	-33%	$29,758	-35%
96	Wayne	$ 115,134.00	$134,507	17%	$135,464	18%	$128,946	12%	$133,929	16%	$132,906	15%
97	Wilkes	$ 97,175.60	$110,104	13%	$109,745	13%	$106,778	10%	$108,516	12%	$107,697	11%
98	Wilson	$ 100,745.35	$74,193	-26%	$64,792	-36%	$78,133	-22%	$62,972	-37%	$61,759	-39%
100	Yancey	$ 49,111.37	$50,971	4%	$48,859	-1%	$61,685	26%	$51,726	5%	$53,638	9%
101	EBCI (Cherokee	$ 17,153.00	$80,462	369%	$56,143	227%	$70,388	310%	$44,678	160%	$37,035	116%
201	CPTA*	$ 298,768.20	$338,537	13%	$308,563	3%	$388,263	30%	$315,147	5%	$319,536	7%
202	ICPTA*	$ 312,019.13	$195,091	-37%	$135,228	-57%	$225,895	-28%	$125,542	-60%	$119,084	-62%
203	CARTS*	$ 198,569.28	$158,432	-20%	$144,433	-27%	$171,882	-13%	$144,251	-27%	$144,129	-27%
204	KARTS*	$ 312,786.24	$220,546	-29%	$187,122	-40%	$234,857	-25%	$180,751	-42%	$176,504	-44%
205	YVEDDI*	$ 328,452.51	$359,812	10%	$334,177	2%	$326,402	-1%	$314,495	-4%	$301,374	-8%
206	NETS*	$ 190,637.57	$150,390	-21%	$151,116	-21%	$120,893	-37%	$141,526	-26%	$135,133	-29%
	Total	$ 8,539,329.84	$8,539,546	351%	$8,539,330	172%	$8,539,763	426%	$8,539,330	138%	$8,539,330	114%

Total ROAP Funds with the Adjusting Highway and Equal Shares Indices

ID #	County	FY02 ROAP EXPEND	BOTH Index A	A % Diff	Both Index B	B % Diff	Both Index C	C % Diff	Both Index D	D % Diff	Both Index E	E % Diff
1	Alamance	$ 110,510.83	$129,424	17%	$127,604	15%	$116,448	5%	$122,672	11%	$119,383	8%
2	Alexander	$ 66,381.00	$41,107	-38%	$42,938	-35%	$46,994	-29%	$45,511	-31%	$47,226	-29%
3	Alleghany	$ 42,080.73	$37,119	-12%	$28,575	-32%	$43,796	4%	$27,952	-34%	$27,537	-35%
4	Anson	$ 68,178.00	$73,531	8%	$62,501	-8%	$76,170	12%	$59,704	-12%	$57,840	-15%
5	Ashe	$ 74,474.84	$85,625	15%	$76,393	1%	$80,268	8%	$70,264	-6%	$66,844	-10%
6	Avery	$ 60,604.00	$88,040	45%	$87,652	45%	$88,788	47%	$87,772	45%	$87,862	45%
7	Beaufort	$ 91,787.27	$62,061	-32%	$62,497	-32%	$72,828	-21%	$66,232	-28%	$68,722	-25%
9	Bladen	$ 76,993.00	$87,103	13%	$72,848	-5%	$79,772	4%	$65,653	-15%	$60,856	-21%
11	Buncombe	$ 182,571.00	$185,575	2%	$176,915	-3%	$159,255	-13%	$165,256	-9%	$157,482	-14%
12	Burke	$ 113,334.39	$72,868	-36%	$66,235	-42%	$68,645	-39%	$62,616	-45%	$60,203	-47%
13	Cabarrus	$ 107,180.00	$102,483	-4%	$104,077	-3%	$97,059	-9%	$102,800	-4%	$101,949	-5%
14	Caldwell	$ 102,699.71	$78,277	-24%	$71,175	-31%	$71,916	-30%	$66,688	-35%	$63,696	-38%
16	Carteret	$ 95,965.00	$100,848	5%	$85,248	-11%	$81,835	-15%	$73,711	-23%	$66,020	-31%
18	Catawba	$ 139,203.00	$107,967	-22%	$153,336	10%	$135,677	-3%	$177,696	28%	$193,935	39%
19	Chatham	$ 83,939.00	$122,260	46%	$132,378	58%	$124,059	48%	$136,350	62%	$138,998	66%
20	Cherokee	$ 65,653.20	$84,921	29%	$81,522	24%	$84,559	29%	$80,289	22%	$79,433	21%
22	Clay	$ 55,242.00	$65,536	19%	$58,444	6%	$59,313	7%	$54,005	-2%	$51,047	-8%
23	Cleveland	$ 123,291.60	$111,224	-10%	$112,264	-9%	$108,733	-12%	$111,780	-9%	$111,458	-10%
24	Columbus	$ 94,033.46	$73,832	-21%	$59,622	-37%	$70,769	-25%	$53,864	-43%	$50,026	-47%
26	+Cumberland	$ 225,407.00	$86,081	-62%	$130,662	-42%	$121,947	-46%	$157,477	-30%	$175,354	-22%
28	Dare	$ 97,147.00	$72,970	-25%	$61,297	-37%	$56,652	-42%	$51,968	-47%	$45,748	-53%
29	Davidson	$ 151,737.00	$100,494	-34%	$110,451	-27%	$102,396	-33%	$114,404	-25%	$117,040	-23%
31	Duplin	$ 78,699.00	$137,717	75%	$146,371	85%	$136,195	73%	$147,416	87%	$148,778	89%
32	+Durham	$ 120,181.80	$67,817	-44%	$56,162	-53%	$66,313	-45%	$51,776	-57%	$48,852	-59%
36	Gaston	$ 151,915.10	$229,628	51%	$324,156	113%	$275,010	81%	$370,793	144%	$401,884	165%
37	Gates	$ 56,249.00	$64,772	15%	$52,268	-7%	$62,514	11%	$47,348	-16%	$44,067	-22%
38	Graham	$ 55,715.00	$93,386	68%	$92,659	66%	$93,401	68%	$92,421	66%	$92,262	66%
40	Greene	$ 63,590.00	$33,295	-48%	$22,421	-65%	$40,645	-36%	$21,247	-67%	$20,464	-68%
41	Guilford	$ 239,617.00	$256,081	7%	$363,508	52%	$308,742	29%	$416,871	74%	$452,446	89%
43	Harnett	$ 116,472.00	$120,546	3%	$130,249	12%	$122,365	5%	$134,080	15%	$136,651	17%
44	Haywood	$ 102,077.87	$169,611	66%	$154,476	51%	$138,718	36%	$139,134	36%	$128,906	26%
45	Henderson	$ 117,147.93	$132,689	13%	$150,892	29%	$132,323	13%	$156,838	34%	$160,802	37%
47	Hoke	$ 73,355.70	$82,031	12%	$70,156	-4%	$76,980	5%	$64,514	-12%	$60,753	-17%
48	Hyde	$ 41,353.49	$67,262	63%	$41,270	0%	$55,126	33%	$28,560	-31%	$20,088	-51%
49	Iredell	$ 134,669.89	$107,265	-20%	$127,139	-6%	$114,967	-15%	$136,331	1%	$142,459	6%
50	Jackson	$ 69,305.20	$60,441	-13%	$46,084	-34%	$54,063	-22%	$39,172	-43%	$34,564	-50%
51	Johnston	$ 147,106.00	$165,800	13%	$168,497	15%	$150,789	3%	$164,393	12%	$161,656	10%
53	Lee	$ 83,558.00	$91,131	9%	$108,726	30%	$104,571	25%	$119,071	43%	$125,967	51%
54	Lenoir	$ 91,360.31	$79,102	-13%	$66,295	-27%	$83,751	-8%	$63,575	-30%	$61,763	-32%
57	Macon	$ 70,432.68	$79,212	12%	$70,633	0%	$70,943	1%	$65,018	-8%	$61,274	-13%
58	Madison	$ 63,965.00	$83,908	31%	$83,800	31%	$85,099	33%	$84,161	32%	$84,402	32%
59	Martin	$ 71,955.00	$87,009	21%	$75,576	5%	$88,701	23%	$72,330	1%	$70,165	-2%
60	Mecklenburg	$ 311,167.47	$418,627	35%	$542,630	74%	$449,965	45%	$594,410	91%	$628,930	102%
61	Mitchell	$ 60,724.00	$61,270	1%	$56,720	-7%	$67,148	11%	$57,162	-6%	$57,467	-5%
63	Moore	$ 95,412.81	$127,286	33%	$122,874	29%	$110,981	16%	$115,969	22%	$111,365	17%
65	New Hanover	$ 131,855.00	$117,235	-11%	$103,655	-21%	$100,492	-24%	$93,547	-29%	$86,809	-34%
67	Onslow	$ 93,252.62	$84,520	-9%	$64,526	-31%	$65,992	-29%	$51,685	-45%	$43,125	-54%
68	Orange	$ 106,540.00	$121,664	14%	$134,424	26%	$125,427	18%	$139,998	31%	$143,714	35%
73	Person	$ 128,028.93	$84,442	-34%	$87,382	-32%	$83,773	-35%	$88,139	-31%	$88,644	-31%
75	Polk	$ 74,628.37	$52,778	-29%	$47,798	-36%	$53,075	-29%	$46,238	-38%	$45,197	-39%
76	Randolph	$ 137,192.00	$85,782	-37%	$98,967	-28%	$90,885	-34%	$105,063	-23%	$109,126	-20%
77	Richmond	$ 75,470.20	$102,404	36%	$154,366	105%	$151,488	101%	$188,048	149%	$210,503	179%
78	Robeson	$ 154,049.00	$86,718	-44%	$83,566	-46%	$92,262	-40%	$84,364	-45%	$84,896	-45%
79	Rockingham	$ 122,036.68	$110,782	-9%	$105,113	-14%	$103,103	-16%	$100,863	-18%	$97,697	-20%
80	Rowan	$ 144,594.44	$99,116	-31%	$104,167	-28%	$99,682	-31%	$106,040	-27%	$107,289	-26%
81	Rutherford	$ 103,052.00	$93,828	-9%	$94,048	-9%	$93,265	-9%	$93,933	-9%	$93,857	-9%
82	Sampson	$ 86,066.00	$95,804	11%	$94,108	9%	$96,088	12%	$93,637	9%	$93,323	8%
83	Scotland	$ 76,464.00	$53,167	-30%	$59,110	-23%	$70,002	-8%	$66,702	-13%	$71,764	-6%
84	Stanly	$ 90,209.61	$86,456	-4%	$92,011	2%	$87,242	-3%	$94,125	4%	$95,534	6%
87	Swain	$ 61,786.00	$215,240	248%	$187,658	204%	$166,114	169%	$162,089	162%	$145,043	135%
88	Transylvania	$ 61,057.46	$87,400	43%	$81,089	33%	$78,335	28%	$75,964	24%	$72,547	19%
92	Wake	$ 182,452.00	$163,029	-11%	$151,005	-17%	$132,036	-28%	$136,886	-25%	$127,106	-30%
94	Washington	$ 45,580.00	$63,764	40%	$41,528	-9%	$64,813	42%	$34,466	-24%	$29,758	-35%
96	Wayne	$ 115,134.00	$122,910	7%	$129,021	12%	$123,792	8%	$131,352	14%	$132,906	15%
97	Wilkes	$ 97,175.60	$113,731	17%	$111,760	15%	$108,390	12%	$109,322	12%	$107,697	11%
98	Wilson	$ 100,746.35	$67,870	-33%	$61,260	-39%	$75,323	-25%	$61,567	-39%	$61,759	-39%
100	Yancey	$ 49,111.37	$57,124	16%	$52,277	6%	$64,420	31%	$53,094	8%	$53,638	9%
101	EBCI (Cherokee	$ 17,153.00	$80,457	369%	$56,140	227%	$70,385	310%	$44,677	160%	$37,035	116%
201	CPTA*	$ 298,768.20	$389,464	30%	$336,850	13%	$410,893	38%	$326,462	9%	$319,636	7%
202	ICPTA*	$ 312,019.13	$220,037	-29%	$149,087	-52%	$236,982	-24%	$131,085	-58%	$119,084	-62%
203	CARTS*	$ 198,569.28	$209,332	5%	$172,712	-13%	$194,505	-2%	$155,562	-22%	$144,129	-27%
204	KARTS*	$ 312,786.24	$221,610	-29%	$187,713	-40%	$235,330	-25%	$180,987	-42%	$176,504	-44%
205	YVEDDI*	$ 328,452.51	$325,620	-1%	$316,181	-4%	$311,205	-5%	$306,897	-7%	$301,374	-8%
206	NETS*	$ 190,637.57	$141,529	-26%	$146,194	-23%	$116,955	-39%	$139,557	-27%	$135,133	-29%
	Total	$8,539,329.84	$8,538,833	729%	$8,538,934	382%	$8,539,445	594%	$8,539,171	221%	$8,539,330	114%

Appendix D: Application of Two-Stage Allocation Method

This Appendix provides detailed information for the two-stage approach to developing a potential method to allocate rural transit operating assistance, specifically RGP funds.

The first stage involved calculating three-year averages for the number of vehicles, vehicle miles, vehicle hours, and passengers for rural transit systems, and then clustering transit systems into groups based on ranges of average annual passengers. Three-year averages were calculated on the basis of Annual Operating Statistics for fiscal years 2000-2002. The table on the following page presents the groups of rural transit systems, sorted in ascending order by the number of average annual passengers for the three-year period. The explanation for the highlighted cells is as follows:

- Dark gray highlight = lower number of vehicle miles or vehicle hours than would be expected given statistics for other systems that carried a similar number of passengers. Seeming anomaly that requires further investigation and/or explanation.
- Light gray highlight = higher number of vehicle miles or vehicle hours than would be expected given statistics for other systems that carried a similar number of passengers. Seeming anomaly that requires further investigation and/or explanation.
- Gray highlight in right-hand column = large increase in number of passengers from the preceding system listed in the table. Used as break points to create groups of transit systems.

It is essential that the reasons for the variance from "peer" transit system values are understood for the highlighted cells. Unless and until there is an understanding of what part of the cause for these seeming anomalies is due to circumstances outside a transit system's control, and what part of the cause can be addressed through improved management and operating practices, application of a rural operating assistance funding formula will be inequitable.

Note that all regional systems were placed in one group, regardless of their number of average annual passengers.

Grouping of Rural Transit Systems as Sorted by Average Passengers for FY 00-02

		Organization	Average Vehicles	Average Miles	Average Hours	Average Passengers	Sequential Increase in Avg. Pax
SMALL	1	Montgomery	4	25,983	1,407	5,621	
<30,000	2	Caswell	9	188,907	8,002	13,313	7,692
Passengers	3	Tyrrell	2	29,347	1,815	13,530	217
	4	Hyde	6	202,658	6,699	15,578	2,048
	5	Dare	7	457,096	19,425	18,203	2,625
	6	Greene	7	192,148	6,374	20,023	1,820
	7	Washington	6	128,013	9,880	22,269	2,246
	8	Pender	13	324,898	15,683	23,816	1,548
	9	Gates	5	205,395	11,659	25,150	1,334
	10	Alexander	10	159,459	12,558	25,225	74
MEDIUM	11	Clay	10	289,906	16,137	32,846	7,622
30,000 -	12	Jackson	13	190,069	10,375	33,177	330
75,000	13	Allegheny	11	166,361	9,772	33,634	458
Passengers	14	Columbus	14	333,863	15,127	35,761	2,126
	15	Yancey	11	109,895	8,167	36,952	1,192
	16	Lincoln	17	226,613	22,309	38,220	1,268
	17	Scotland	11	135,469	7,480	38,988	767
	18	EBCI	27	344,567	20,211	40,528	1,540
	19	Mitchell	10	179,702	10,543	41,894	1,366
	20	Graham	11	129,577	15,671	42,452	558
	21	Hoke	16	324,923	15,648	42,621	169
	22	Macon	22	248,102	19,895	43,322	701
	23	Onslow	17	385,155	16,495	43,871	549
	24	Bladen	16	249,386	18,417	45,965	2,094
	25	Transylvania	13	238,748	15,444	46,256	292
	26	Martin	12	300,633	16,323	46,388	132
	27	Lenoir	11	279,300	19,570	46,696	307
	28	Wilson	10	313,145	16,673	47,413	717
	29	Polk	13	313,671	12,791	47,843	430
	30	Ashe	15	397,643	20,556	48,378	535
	31	Union	16	448,059	23,944	49,587	1,209
	32	Caldwell	14	338,137	14,775	49,733	146
	33	Cherokee	18	279,043	21,693	50,825	1,093
	34	Anson	12	385,628	17,348	50,937	111
	35	Beaufort	14	254,488	7,258	52,150	1,213
	36	Burke	18	425,844	24,029	52,434	284
	37	Durham	24	572,650	23,393	52,998	564
	38	Carteret	15	315,006	15,798	53,809	812
	39	Person	12	311,298	17,922	55,376	1,567
	40	Avery	12	172,386	15,588	56,927	1,550
	41	Lee	17	220,669	30,004	57,915	988
	42	Madison	13	252,080	14,616	58,633	718
	43	Brunswick	25	410,319	17,120	59,873	1,240
	44	Swain	14	144,120	18,501	62,427	2,554
	45	Haywood	23	402,944	32,133	64,931	2,504
	46	Rutherford	26	429,844	26,052	65,251	321
	47	Randolph	22	390,570	24,488	67,992	2,741
	48	Cabarrus	25	523,254	23,978	70,304	2,312
LARGE	49	Wilkes	21	438,844	28,051	76,591	6,287
75,001 -	50	Pitt	25	786,059	43,454	77,354	763
125,000	51	Sampson	29	518,139	23,246	78,825	1,471
Passengers	52	Rowan	33	475,371	32,965	80,762	1,937
	53	Cumberland	15	543,279	30,369	82,058	1,296
	54	Stanly	21	354,938	24,105	83,375	1,317
	55	Moore	28	831,067	38,715	83,989	614
	56	Robeson	21	521,177	23,782	84,185	197
	57	Rockingham	26	676,309	39,137	88,273	4,087
	58	McDowell	21	203,031	11,264	88,767	494
	59	Johnston	23	958,252	46,827	92,703	3,936
	60	Iredell	28	649,516	32,957	94,411	1,708
	61	Alamance	30	713,503	48,840	94,507	96
	62	Cleveland	27	699,178	36,106	96,558	2,051
	63	Chatham	22	488,585	23,008	96,989	431
	64	Davidson	21	408,215	34,612	98,089	1,100
	65	Richmond	11	149,358	12,011	98,957	868
	66	Hamett	25	739,524	31,262	101,005	2,048
	67	Henderson	29	338,367	36,964	102,508	1,503
	68	Wayne	23	488,530	26,791	104,867	2,359
	69	Orange	31	458,123	22,445	105,565	698
	70	New Hanover	27	809,229	34,039	106,870	1,305
	71	Catawba	20	400,549	21,042	107,376	507
	72	Duplin	23	569,398	24,770	107,981	605
EXTRA	73	Buncombe	35	915,514	63,171	126,740	18,758
LARGE	74	Wake	45	1,411,214	67,700	134,842	8,102
>125,000	75	Gaston	28	1,508,605	126,759	203,932	69,090
Passengers	76	Guilford	49	1,626,855	88,330	212,107	8,175
	77	Mecklenburg	35	2,685,387	82,639	393,982	181,875
	State Totals		1,443	34,614,697	1,930,116	5,352,200	
	State Averages		19	449,542	25,066	69,509	
REGIONAL	78	NETS	28	903,038	44,072	95,735	
	79	ICPTA	25	681,322	41,358	96,776	1,041
	80	CARTS	31	796,942	33,024	102,270	5,494
	81	KARTS	41	1,295,098	49,158	140,257	37,987
	82	YVEDDI	78	1,770,125	95,399	231,861	91,604
	83	CPTA	54	1,521,392	80,039	260,560	28,699
		Totals	258	6,977,917	343,050	927,461	
		Averages	43	1,162,986	57,175	154,577	
	84	Forsyth	not included in rural funding				

The second stage in this trial allocation method involved allocating funds to each transit system. Information on RGP expenditures and costs was used from FY 2002 Operating Statistics. RGP funds that were expended by each system were used as the basis to compile the share of total RGP funds to be allocated among each group. The reason for using expended funds, not allocated funds was that some systems request additional discretionary funds, and some systems return unexpended funds that were allocated. Using expended funds as the basis for this inquiry provides a closer match to the amount of funds each transit system was actually able to use.

The table on the following two pages shows the amount of total funds that each transit system would be allocated based on the formula below as compared to their actual FY 2002 expenditure. Funds were allocated on the following basis:

- 25 percent—Average Annual Passengers (indicator of transit system size—more passengers = more money)
- 25 percent—Average Annual Vehicle Hours (indicator of difficulty in providing trips—more hours = more money)
- 25 percent—Cost per Vehicle Hour (indicator of service efficiency—lower cost per vehicle hour = more money)
- 25 percent—Passengers per Vehicle Hour (indicator of productivity—more passengers per vehicle hour = more money)

Note that no allocation was made to transit systems that did not receive RGP funds in FY 2002, while some such transit systems have since become eligible for, and received RGP funds.

RGP Allocation, Including Allocation by Sub-Factors

	System	FY 2002 RGP Expenditures	RGP Allocation	Passengers Factor Allocation	Vehicle Hours Factor Allocation	Cost/Vehicle Hour Factor Allocation	Passengers per Vehicle Hour Factor Allocation
Small Rural	Montgomery	$0	$0	$0	$0	$0	$0
	Caswell	$0	$0	$0	$0	$0	$0
	Tyrrell	$0	$0	$0	$0	$0	$0
	Hyde	$5,337	$10,700	$3,034	$2,477	$1,901	$3,288
	Dare	$23,586	$22,030	$3,545	$7,183	$9,754	$1,548
	Greene	$20,519	$13,086	$3,900	$2,357	$1,120	$5,710
	Washington	$4,959	$16,300	$4,337	$3,653	$3,754	$4,556
	Pender	$0	$0	$0	$0	$0	$0
	Gates	$19,487	$18,383	$4,898	$4,311	$4,249	$4,925
	Alexander	$24,616	$18,005	$4,913	$4,644	$3,849	$4,599
	TOTALS	$98,504	$98,504	$24,626	$24,626	$24,626	$24,626
	% of State Total	3.85%					
	Share of State Total	$98,504					
Medium	Clay	$17,664	$19,577	$4,296	$5,959	$6,462	$2,860
	Jackson	$23,026	$14,847	$4,340	$3,831	$2,139	$4,538
	Alleghany	$3,684	$16,084	$4,399	$3,608	$3,125	$4,952
	Columbus	$31,269	$17,140	$4,678	$5,586	$3,260	$3,616
	Yancey	$15,310	$16,596	$4,833	$3,023	$1,606	$7,134
	Lincoln	$0	$0	$0	$0	$0	$0
	Scotland	$25,331	$17,562	$5,100	$2,762	$1,009	$8,692
	EBCI	$17,153	$49,029	$5,301	$7,463	$32,789	$3,476
	Mitchell	$17,553	$19,098	$5,480	$3,893	$2,604	$7,120
	Graham	$17,278	$22,502	$5,553	$5,787	$6,243	$4,919
	Hoke	$23,443	$20,914	$5,575	$5,778	$4,596	$4,966
	Macon	$23,524	$24,502	$5,667	$7,346	$7,454	$4,035
	Onslow	$32,646	$19,981	$5,738	$6,091	$3,161	$4,991
	Bladen	$24,171	$23,786	$6,012	$6,800	$6,066	$4,907
	Transylvania	$11,937	$23,149	$6,050	$5,703	$5,470	$5,926
	Martin	$22,656	$22,832	$6,068	$6,027	$5,098	$5,639
	Lenoir	$32,065	$23,404	$6,108	$7,226	$5,304	$4,766
	Wilson	$35,398	$22,022	$6,202	$6,230	$3,891	$5,699
	Polk	$29,897	$21,736	$6,258	$4,723	$3,101	$7,654
	Ashe	$23,802	$27,119	$6,328	$7,590	$8,330	$4,870
	Union	$0	$0	$0	$0	$0	$0
	Caldwell	$37,185	$21,975	$6,505	$5,456	$2,854	$7,160
	Cherokee	$20,087	$29,621	$6,648	$8,010	$9,869	$5,093
	Anson	$26,780	$25,552	$6,663	$6,406	$6,086	$6,397
	Beaufort	$27,985	$26,284	$6,821	$2,680	$756	$16,027
	Burke	$39,620	$27,653	$6,858	$8,873	$7,028	$4,894
	Durham	$0	$0	$0	$0	$0	$0
	Carteret	$32,322	$24,292	$7,038	$5,833	$3,581	$7,840
	Person	$24,962	$27,111	$7,243	$6,618	$5,932	$7,319
	Avery	$19,857	$27,604	$7,446	$5,748	$5,505	$8,905
	Lee	$25,492	$38,270	$7,575	$11,079	$14,834	$4,782
	Madison	$20,707	$27,724	$7,669	$5,397	$4,597	$10,061
	Brunswick	$0	$0	$0	$0	$0	$0
	Swain	$17,885	$32,193	$8,166	$6,832	$8,186	$9,010
	Haywood	$37,444	$39,930	$8,493	$11,865	$13,960	$5,612
	Rutherford	$32,711	$34,573	$8,535	$9,620	$9,427	$6,990
	Randolph	$51,705	$32,040	$8,894	$9,042	$6,030	$8,075
	Cabarrus	$28,407	$34,253	$9,196	$8,854	$7,386	$8,817
	TOTALS	$870,955	$870,955	$217,739	$217,739	$217,739	$217,739
	% of State Total	34.00%					
	Share of State Total	$870,955					

	System	FY 2002 RGP Expenditures	RGP Allocation	Passengers Factor Allocation	Vehicle Hours Factor Allocation	Cost/Vehicle Hour Factor Allocation	Passengers per Vehicle Hour Factor Allocation
Large	Wilkes	$32,091	$30,123	$7,594	$8,784	$7,925	$5,820
	Pitt	$0	$0	$0	$0	$0	$0
	Sampson	$24,428	$29,563	$7,816	$7,075	$7,019	$7,654
	Rowan	$48,977	$35,440	$8,008	$10,033	$11,734	$5,666
	Cumberland	$0	$0	$0	$0	$0	$0
	Stanly	$31,477	$31,165	$8,267	$7,336	$7,305	$8,258
	Moore	$23,494	$33,282	$8,328	$12,087	$7,781	$5,086
	Robeson	$48,543	$36,681	$8,347	$7,238	$12,563	$8,534
	Rockingham	$41,433	$36,307	$8,752	$11,911	$9,943	$5,701
	McDowell	$0	$0	$0	$0	$0	$0
	Johnston	$61,141	$40,695	$9,192	$14,252	$11,997	$5,255
	Iredell	$59,439	$38,157	$9,361	$10,030	$11,021	$7,745
	Alamance	$22,920	$39,030	$9,370	$15,168	$9,359	$5,132
	Cleveland	$42,463	$38,112	$9,574	$10,989	$10,155	$7,394
	Chatham	$28,877	$35,172	$9,617	$7,002	$6,845	$11,707
	Davidson	$56,282	$40,594	$9,726	$10,534	$12,374	$7,960
	Richmond	$16,416	$42,968	$9,812	$3,655	$6,155	$23,347
	Harnett	$39,912	$38,372	$10,015	$9,515	$9,498	$9,345
	Henderson	$39,055	$39,333	$10,164	$11,250	$9,780	$8,140
	Wayne	$33,956	$39,487	$10,398	$8,762	$9,389	$10,938
	Orange	$34,497	$39,659	$10,467	$6,831	$8,144	$14,218
	New Hanover	$36,365	$41,317	$10,596	$10,360	$10,753	$9,608
	Catawba	$43,607	$43,339	$10,647	$6,404	$10,598	$15,690
	Duplin	$21,645	$38,221	$10,706	$7,539	$6,418	$13,558
	TOTALS	$787,017	$787,017	$196,754	$196,754	$196,754	$196,754
	% of State Total	30.72%					
	Share of State Total	$787,017					
Extra Large	Buncombe	$51,577	$30,273	$7,127	$8,881	$9,534	$4,731
	Wake	$29,075	$35,067	$7,582	$9,518	$12,970	$4,997
	Gaston	$33,539	$43,603	$11,467	$17,821	$8,210	$6,104
	Guilford	$78,193	$46,771	$11,927	$12,418	$12,950	$9,477
	Mecklenburg	$48,641	$85,312	$22,154	$11,618	$16,592	$34,947
	TOTALS	$241,025	$241,025	$60,256	$60,256	$60,256	$60,256
	% of State Total	9.41%					
	Share of State Total	$241,025					
Regional	NETS	$54,750	$63,945	$13,710	$17,064	$15,303	$17,867
	ICPTA	$100,364	$74,134	$13,860	$16,013	$25,014	$19,247
	CARTS	$43,658	$68,825	$14,646	$12,786	$15,919	$25,473
	KATA	$104,875	$88,488	$20,087	$19,033	$25,899	$23,468
	YVEDDI	$119,859	$116,532	$33,205	$36,937	$26,399	$19,991
	CPTA	$107,789	$119,371	$37,315	$30,990	$24,289	$26,777
	Totals	$531,296	$531,296	$132,824	$132,824	$132,824	$132,824
	% of State Total	20.74%					
	Share of State Total	$531,296					
Excluded	Forsyth	$0	$0				
	Watauga	$32,705	$32,705				
	TOTALS	$32,705	$32,705				
	% of State Total	1.28%					
	Share of State Total	$32,705					
	State Totals	$2,561,502	$2,561,502				

Appendix E: Rural Transit System Groups Using FY 01-03 Operating Statistics

Similar calculations to those done with the FY 2000-2002 data were performed using FY 2001-2003 data to calculate annual average vehicles, vehicle miles, vehicle hours, and passengers. Rural transit systems were again sorted in ascending order according to the number of average annual passengers for the FY 01-03 period. This was done to compare the groups, and transit systems falling with each group with those calculated using the averages of the FY 00-02 period. Note that in developing this grouping, regional systems were sorted into two groups—Small or Large. This grouping into smaller and larger systems was done in anticipation of the creation of more regional systems throughout the state, and the need to begin to sort those systems by size, similar to the existing practice with single-county systems.

Results of those calculations are shown in the table on the next page, followed by a listing of the groups calculated using both the data from the FY 00-02 and FY 01-03 periods. The explanation for the shaded figures is similar to the table in Appendix C; however, average values were computed for vehicle miles and vehicle hours, as well as values 25 or 50 percent greater and lesser than average values. These values provide some indication of what could be expected to be a "normal" range for statistics within each group. Values of particular interest are highlighted as follows in this table:

- Light green indicates statistics that are notably lower than for systems transporting a similar number of passengers (i.e., better performance than for the group as a whole);
- Dark green indicates statistics that are lower than the values computed for the lower limits of the "normal" range (i.e., much better performance than for the group as a whole);
- Light orange indicates statistics that are notably higher than systems transporting a similar number of passengers (i.e., worse performance than for the group as a whole); and
- Dark orange indicates statistics that are higher than the values computed for the higher limits of the "normal" range (i.e., much lower performance than for the group as a whole).
- As in Appendix D, medium gray shading in the right-hand column highlights sequential increases in the number of passengers that are substantially above the trend demonstrated by the preceding and subsequent transit systems (i.e., a break or jump in passengers), which was used to determine break points between groups.

Similar to the case presented in Appendix D, it is essential that the reasons behind the variance from "peer" transit system values are understood for the highlighted cells. Unless and until there is an understanding of what part of the cause for these seeming anomalies is due to circumstances outside a transit system's control, and what part of the cause can be addressed through improved management and operating practices, application of a rural operating assistance funding formula will be inequitable.

FY 01-03 Data Sorted by Average Annual Passengers

SIZE		Organization	Average Vehicles	Average Miles	Average Hours	Average Passengers	Additional No. of Passengers From Preceding System
Small	1	**Montgomery**	4	21,993	1,800	6,522	--
< 25,000	2	**Tyrrell**	2	34,155	1,918	14,480	7,958
Passengers	3	**Caswell**	10	208,625	7,935	15,920	1,439
	4	**Dare**	7	381,228	15,958	16,059	140
	5	**Hyde**	6	191,054	6,901	17,285	1,226
	6	**Washington**	7	127,846	9,880	20,411	3,125
	7	**Greene**	7	200,564	6,670	20,507	97
		Group Average		166,495	7,294	15,884	
		Minus 50%		83,248	3,647	7,942	
		Plus 50%		249,743	10,942	23,825	
Medium	8	**Alexander**	10	160,897	13,062	25,144	4,636
25,000-75,000	9	**Allegheny**	10	209,922	9,516	26,434	1,290
Passengers	10	**Pender**	12	334,718	17,006	27,600	1,166
	11	**Gates**	7	269,520	12,613	29,170	1,570
	12	**Jackson**	13	190,198	10,321	30,363	1,193
	13	**Graham**	12	130,751	13,318	33,327	2,963
	14	**Clay**	11	304,381	16,353	34,786	1,460
	15	**Yancey**	11	116,775	8,288	37,618	2,831
	16	**Columbus**	16	386,380	18,136	38,570	952
	17	**Macon**	24	261,675	18,278	40,797	2,227
	18	**Bladen**	16	221,316	17,270	43,369	2,572
	19	**Polk**	13	280,984	12,017	43,369	1
	20	**EBCI**	30	372,037	22,422	44,069	700
	21	**Mitchell**	10	181,303	10,148	44,543	473
	22	**Lincoln**	17	215,800	21,335	45,025	482
	23	**Cherokee**	18	275,221	21,500	45,941	916
	24	**Scotland**	12	148,350	7,645	46,273	332
	25	**Hoke**	18	367,512	17,779	47,681	1,408
	26	**Onslow**	18	447,310	18,555	47,731	51
	27	**Brunswick**	26	348,797	14,902	47,844	113
	28	**Anson**	12	372,908	16,872	47,919	74
	29	**Transylvania**	10	244,797	15,466	47,975	56
	30	**Beaufort**	14	255,715	8,026	48,319	344
	31	**Ashe**	16	418,638	21,721	49,039	721
	32	**Wilson**	12	337,218	17,549	49,399	360
	33	**Caldwell**	15	319,264	15,367	50,351	952
	34	**Durham**	23	593,386	23,203	51,327	976
	35	**Burke**	20	478,112	21,475	51,353	26
	36	**Lenoir**	11	298,102	19,852	52,075	722
	37	**Union**	18	501,175	25,562	52,329	254
	38	**Martin**	15	339,648	18,546	52,689	360
	39	**Carteret**	17	359,250	18,013	55,281	2,592
	40	**Avery**	12	181,142	16,608	57,088	1,807
	41	**Wilkes**	23	521,151	31,442	59,140	2,052
	42	**Madison**	13	269,683	15,130	59,244	103
	42	**Lee**	17	224,578	29,595	59,832	588
	44	**Person**	13	329,294	22,853	60,457	625
	45	**Rutherford**	28	459,311	28,267	62,324	1,867
	46	**Cumberland**	15	432,533	22,286	63,291	968
	47	**Pitt**	26	660,834	37,222	65,794	2,503
	48	**Haywood**	24	413,676	32,547	66,273	479
	49	**Swain**	16	173,208	22,499	67,649	1,376
		Group Average	16	319,226	18,585	47,829	
		Minus 50%	8	159,613	9,292	23,914	
		Plus 50%	24	478,838	27,877	71,743	

SIZE		Organization	Average Vehicles	Average Miles	Average Hours	Average Passengers	Additional No. of Passengers From Preceding System
Large	50	**Moore**	29	777,659	37,878	76,109	8,460
75,000-130,000	51	**Rowan**	31	467,912	34,572	77,842	1,734
Passengers	52	**Randolph**	22	376,803	24,380	79,323	1,480
	53	**Sampson**	29	513,429	21,884	79,768	445
	54	**Stanly**	21	350,385	23,385	80,412	644
	55	**Rockingham**	24	631,773	34,742	81,566	1,154
	56	**Catawba**	20	307,709	18,000	82,272	706
	57	**Robeson**	20	502,273	22,845	83,540	1,268
	58	**McDowell**	20	193,419	10,690	84,036	496
	59	**Cabarrus**	25	679,503	27,833	85,751	1,715
	60	**Alamance**	31	712,592	53,518	86,545	794
	61	**Iredell**	28	669,301	35,341	91,181	4,635
	62	**Johnston**	25	1,043,652	61,129	91,229	48
	63	**Harnett**	25	835,089	31,442	91,422	193
	64	**Davidson**	22	397,787	32,441	92,829	1,407
	65	**Wayne**	23	501,809	32,289	96,203	3,374
	66	**Cleveland**	26	710,948	37,000	97,388	1,184
	67	**Richmond**	11	176,535	12,897	98,237	849
	68	**Duplin**	23	583,476	26,977	98,635	398
	69	**Chatham**	24	511,811	24,358	100,334	1,699
	70	**Orange**	31	447,907	24,918	112,930	12,596
	71	**New Hanover**	27	946,371	34,743	113,538	608
	72	**Wake**	49	1,499,248	68,289	120,423	6,885
	73	**Henderson**	32	374,447	44,042	121,921	1,498
	74	**Buncombe**	36	935,689	63,325	127,562	5,641
		Group Average	26	605,901	33,557	94,040	
		Minus 25%	20	454,426	25,168	70,530	
		Plus 25%	32	757,376	41,946	117,550	
Extra Large	75	**Gaston**	27	1,250,182	92,202	170,720	43,158
> 130,000	76	**Guilford**	48	1,689,511	91,732	222,718	51,998
Passengers	77	**Mecklenburg**	37	3,156,343	82,901	445,141	222,423
		Group Average	38	2,032,012	88,945	279,527	
Small Regional	78	**NETS**	32	961,454	46,269	94,129	
< 125,000	79	**ICPTA**	25	681,560	40,700	98,131	4,002
Passengers	80	**CARTS**	32	800,811	33,773	105,536	7,405
		Group Average	30	814,608	40,248	99,265	
Large Regional	81	**KARTS**	41	1,361,544	52,345	144,021	38,485
> 125,000	82	**YVEDDI**	74	1,786,640	94,017	225,571	81,550
Passengers	83	**CPTA**	56	1,395,414	65,621	244,676	19,105
		Group Average	57	1,514,533	70,661	204,756	
	84	**Forsyth**		not included in rural funding			

Appendix F: Comparison of Rural Transit Groups Based Upon FY 00-02 and FY 01-03 Average Statistics

The following table combines the information presented in Appendices D and E to provide a comparison of transit system groupings as calculated from averaging the operating statistics from Fiscal Years 2000-2002 and Fiscal Years 2001-2003.

Note that in addition to a change in the value used as a break point between "Small" and "Medium" systems, and "Large" and "Extra Large" systems, several rural systems changed groups. This changing of break point values and shifting of transit systems from one group to another could create problems for both NCDOT and local transit systems in any attempt to develop expectations for funding amounts on a year-to-year basis. This inability to predict future funding levels would create uncertainties at both the state and local levels, and would not be helpful to the establishment of stable, predictable rural transit operations.

Groups Based on FY 00-02 Statistics

Group		Organization	Average Vehicles	Average Miles	Average Hours	Average Passengers	Additional No. of Passengers From Preceding System
SMALL	1	Montgomery	4	25,993	1,407	5,621	–
<30,000	2	Caswell	9	188,982	8,802	13,313	7,692
Passengers	3	Tyrrell	2	29,147	1,815	13,530	217
	4	Hyde	6	202,658	6,699	15,570	2,040
	5	Dare	7	457,035	13,405	18,263	2,625
	6	Greene	7	192,148	6,374	20,823	1,820
	7	Washington	8	128,013	9,880	22,269	2,248
	8	Pamlico	13	324,938	15,583	23,816	1,548
	9	Gates	5	205,335	11,659	25,150	1,324
	10	Alexander	10	159,458	12,558	25,225	74
MEDIUM	11	Clay	10	289,934	16,137	32,846	7,622
30,000-75,000	12	Jackson	13	190,088	18,375	33,177	330
Passengers	13	Allegheny	11	166,361	9,772	33,634	458
	14	Columbus	14	320,867	15,127	35,761	2,128
	15	Yancey	11	109,895	8,187	36,952	1,192
	16	Lincoln	17	226,613	22,309	38,220	1,268
	17	Scotland	11	135,468	7,480	38,988	767
	18	EBCI	27	344,567	28,211	40,528	1,540
	19	Mitchell	10	129,732	13,543	41,314	1,786
	20	Graham	11	129,577	15,671	42,452	550
	21	Hoke	16	324,923	15,648	42,621	169
	22	Macon	22	248,182	18,995	43,322	701
	23	Onslow	17	385,155	16,495	43,871	549
	24	Bladen	16	248,338	18,417	45,385	2,514
	25	Transylvania	13	238,748	15,444	46,256	252
	26	Martin	12	300,837	16,323	46,388	132
	27	Lenoir	11	279,388	18,570	46,696	307
	28	Wilson	10	313,145	16,873	47,413	717
	29	Polk	13	313,671	17,291	47,843	430
	30	Ashe	15	397,843	28,556	48,378	535
	31	Union	16	448,058	21,944	49,587	1,209
	32	Caldwell	14	338,137	14,735	49,733	146
	33	Cherokee	18	279,043	21,693	50,825	1,093
	34	Anson	12	385,428	17,981	50,937	111
	35	Beaufort	14	254,498	7,458	52,150	1,213
	36	Burke	18	425,844	24,029	52,434	284
	37	Durham	24	572,058	23,393	52,988	554
	38	Carteret	15	315,036	15,798	53,809	812
	39	Person	12	311,298	17,922	55,376	1,567
	40	Avery	12	372,391	13,560	56,927	1,551
	41	Lee	17	220,985	38,004	57,915	988
	42	Madison	13	252,098	14,616	58,633	718
	43	Brunswick	25	410,318	17,120	59,873	1,240
	44	Swain	14	384,128	18,501	62,427	2,554
	45	Haywood	23	402,344	37,133	64,931	2,504
	46	Rutherford	26	429,844	28,052	65,251	321
	47	Randolph	22	390,678	24,488	67,992	2,741
	48	Cabarrus	25	523,254	23,978	70,304	2,312
LARGE	49	Wilkes	21	435,344	28,861	76,591	6,287
75,001-125,000	50	Pitt	25	786,059	41,454	77,354	763
Passengers	51	Sampson	23	510,133	23,546	78,825	1,471
	52	Rowan	33	475,371	32,965	80,762	1,937
	53	Cumberland	15	543,279	38,369	82,058	1,296
	54	Stanly	21	354,988	24,106	83,375	1,317
	55	Moore	28	831,967	39,715	83,989	614
	56	Robeson	21	521,177	23,782	84,185	197
	57	Rockingham	26	676,345	39,137	88,273	4,087
	58	McDowell	21	203,033	11,264	88,767	494
	59	Johnston	23	658,252	46,820	92,783	3,016
	60	Iredell	28	649,518	32,957	94,411	1,628
	61	Alamance	30	713,931	49,941	94,587	176
	62	Cleveland	27	699,178	39,106	96,558	2,351
	63	Chatham	22	400,531	23,008	96,989	431
	64	Davidson	21	408,215	34,612	98,889	1,180
	65	Richmond	11	149,358	12,011	98,957	068
	66	Harnett	25	739,524	31,262	101,035	2,048
	67	Henderson	29	338,387	35,964	102,598	1,563
	68	Wayne	23	480,530	28,791	104,867	2,269
	69	Orange	31	458,123	22,445	105,595	858
	70	New Hanover	27	809,228	34,039	106,878	1,283
	71	Catawba	20	400,548	21,042	107,376	587
	72	Duplin	23	569,398	24,770	107,981	605
EXTRA LARGE	73	Buncombe	35	915,514	63,171	126,748	18,758
>125,000	74	Wake	46	1,401,214	67,700	134,842	8,182
Passengers	75	Gaston	28	1,500,605	126,759	203,932	69,090
	76	Guilford	49	1,626,855	88,330	212,107	8,175
	77	Mecklenburg	36	2,685,387	82,639	350,932	101,875
REGIONAL	78	NETS	28	903,036	44,072	95,715	
	79	ICPTA	25	691,322	41,399	96,776	
	80	CARTS	31	796,942	33,024	102,278	
	81	KARTS	41	1,295,098	49,158	140,257	
	82	YVEDDI	76	1,770,125	95,398	231,861	
	83	CPTA	54	1,521,376	83,035	260,568	
		Totals	258	6,977,517	343,050	527,461	
		Averages	43	1,162,986	57,175	164,577	
	84	Forsyth	not included in rural funding				

Groups Based on FY 01-03 Statistics

Group		Organization	Average Vehicles	Average Miles	Average Hours	Average Passengers	Additional No. of Passengers From Preceding System
SMALL	1	Montgomery	4	21,993	1,800	6,622	–
< 25,000	2	Tyrrell	2	34,155	1,918	14,480	7,958
Passengers	3	Caswell	10	208,625	7,935	15,920	1,439
	4	Dare	7	361,228	15,900	16,058	140
	5	Hyde	6	191,054	6,001	17,286	1,228
	6	Washington	7	127,846	9,880	20,411	3,125
	7	Greene	7	200,564	8,670	20,501	90
		Group Average	6	166,495	7,294	15,884	
		Minus 50%	3	83,248	3,647	7,942	
		Plus 50%	9	249,743	10,942	23,825	
MEDIUM	8	Alexander	10	160,897	13,052	25,144	4,836
25,000-75,000	9	Allegheny	10	209,922	9,516	26,438	1,294
Passengers	10	Pamlico	12	334,718	17,008	27,600	1,166
	11	Gates	7	208,520	12,613	29,170	1,570
	12	Jackson	13	190,199	10,321	30,363	1,193
	13	Graham	12	130,761	13,318	33,327	2,963
	14	Clay	11	304,381	16,353	34,786	1,460
	15	Yancey	11	116,275	9,288	37,618	2,831
	16	Columbus	15	360,703	16,136	38,570	952
	17	Macon	24	261,675	16,278	40,797	2,227
	18	Bladen	16	221,316	17,270	43,368	2,572
	19	Polk	13	280,985	12,017	43,369	1
	20	EBCI	30	372,037	22,422	44,069	700
	21	Mitchell	10	181,203	10,145	44,543	473
	22	Lincoln	17	215,600	21,335	45,035	492
	23	Cherokee	19	276,221	21,900	45,941	916
	24	Scotland	12	188,350	7,845	46,273	332
	25	Hoke	18	367,512	17,779	47,681	1,408
	26	Onslow	15	447,310	16,655	47,731	51
	27	Brunswick	26	348,797	14,902	47,844	113
	28	Anson	12	372,503	16,872	47,918	74
	29	Transylvania	10	244,797	15,486	47,975	56
	30	Beaufort	14	255,715	8,036	48,319	344
	31	Ashe	15	418,631	21,721	49,038	721
	32	Wilson	12	337,218	17,549	49,398	360
	33	Caldwell	15	318,264	15,367	50,261	862
	34	Durham	29	593,388	23,303	51,307	976
	35	Burke	20	478,112	21,475	51,363	56
	36	Lenoir	11	298,102	19,852	52,075	722
	37	Union	15	501,175	25,952	52,329	254
	38	Martin	15	339,648	16,548	52,689	360
	39	Carteret	17	368,260	18,013	55,281	2,592
	40	Avery	12	181,142	16,905	57,288	1,007
	41	Wilkes	23	521,151	31,442	59,140	2,052
	42	Madison	13	268,663	15,130	59,248	108
	43	Lee	17	224,579	29,556	59,802	608
	44	Person	13	329,294	22,853	60,457	625
	45	Rutherford	28	459,311	28,367	62,304	1,847
	46	Cumberland	15	432,533	22,386	63,291	988
	47	Pitt	26	660,834	37,222	65,794	2,503
	48	Haywood	24	413,676	32,647	66,273	479
	49	Swain	16	173,208	22,499	67,649	1,376
		Group Average	16	319,220	16,605	47,029	
		Minus 50%		159,613	9,202	23,914	
		Plus 50%		478,838	27,877	71,143	
LARGE	50	Moore	29	777,768	37,675	76,108	5,400
75,001-130,000	51	Rowan	31	467,912	34,572	77,842	1,734
Passengers	52	Randolph	22	516,603	24,300	79,323	1,480
	53	Sampson	29	513,429	21,984	79,768	445
	54	Stanly	21	360,386	23,395	80,412	644
	55	Rockingham	24	631,773	34,742	81,566	1,154
	56	Catawba	20	307,709	18,003	82,272	706
	57	Robeson	20	502,273	22,845	83,540	1,268
	58	McDowell	20	193,419	30,690	84,036	496
	59	Cabarrus	25	679,503	27,833	86,751	1,715
	60	Alamance	31	712,592	42,819	86,545	794
	61	Iredell	29	669,301	35,341	91,181	4,636
	62	Johnston	25	1,043,052	81,128	91,229	48
	63	Harnett	25	835,089	31,442	91,422	193
	64	Davidson	22	397,797	32,441	92,828	1,407
	65	Wayne	29	501,809	32,389	96,203	3,374
	66	Cleveland	26	710,948	37,000	97,388	1,184
	67	Richmond	11	176,536	12,897	98,237	849
	68	Duplin	23	583,476	26,977	98,636	398
	69	Chatham	24	511,011	24,350	100,334	1,699
	70	Orange	31	447,907	24,313	112,930	12,596
	71	New Hanover	27	846,371	34,743	113,538	608
	72	Wake	49	1,430,248	65,330	120,423	6,885
	73	Henderson	32	374,447	44,042	121,921	1,498
	74	Buncombe	36	935,689	63,325	127,562	5,641
		Group Average	26	605,501	33,657	94,040	
		Minus 25%	20	454,426	25,368	70,530	
		Plus 25%	32	757,376	41,946	117,550	
EXTRA LARGE	75	Gaston	27	1,250,182	82,302	170,720	43,350
>130,000	76	Guilford	48	1,689,511	91,752	222,718	51,998
Passengers	77	Mecklenburg	37	3,156,343	82,931	445,141	222,423
		Group Average	38	2,032,012	85,945	279,527	
SMALL	78	NETS	32	961,454	46,289	94,129	
REGIONAL	79	ICPTA	25	681,560	40,700	98,131	4,002
< 125,000	80	CARTS	32	800,811	33,773	105,536	7,405
Passengers		Group Average	30	814,608	40,248	99,265	
LARGE	81	KARTS	41	1,351,544	62,145	144,021	35,485
REGIONAL	82	YVEDDI	74	1,786,840	94,017	225,571	81,550
> 125,000	83	CPTA	66	1,395,414	65,621	244,676	19,105
Passengers		Group Average	57	1,514,533	70,861	204,756	
	84	Forsyth	not included in rural funding				