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13. ABSTRACT (Maximum 200 words)

This report documents the Denver Regional Transportation District (RTD) Eco Pass Program and evaluates its impacts. The Eco Pass is an annual, unlimited-use photo identification pass covering transportation on all RTD transit routes. Employers in the Denver region may purchase passes for their employees as a tax-free benefit, and may deduct the cost as a business expense. The program uses a group insurance concept for pricing and enrollment. A typical transit commuter may save up to \$900 in monthly passes or \$1,200 in cash fares annually with the Eco Pass. Eco Pass users are assured a ride home in an emergency through a guaranteed ride home program.

The main goal of the Eco Pass Program is to increase transit ridership. RTD has been enrolling a growing number of employers in Eco Pass since its inception in 1991. Although it is clear that employers and employees who have obtained Eco Pass are very positive about the program, the evaluation could draw few firm conclusions about its effectiveness, because an evaluation mechanism was not implemented simultaneously with the program. Eco Pass appears to have influenced some people to shift to transit commuting, leaving their cars at home, but more information is needed to quantify the impacts and to determine which factors are critical in producing positive impacts.

The report recommends that RTD establish appropriate data collection mechanisms to permit a thorough and quantitative evaluation of this innovative program in the future.

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PREFACE

This case study document was prepared by the Research and Special Programs Administration's John A. Volpe National Transportation Systems Center, Office of Research and Analysis, Service Assessment Division, for the Federal Transit Administration, Office of Technical Assistance and Safety. Overall direction for the work was provided by the FTA project sponsor, Bert Arrillaga, Chief, Service Assistance Division. The project was performed under Project Plan Agreement TT-427, Regional Mobility Program Support.

This report documents the Denver Regional Transportation District (RTD) Eco Pass Program, presents an evaluation of its impacts to date, and makes recommendations concerning grants applied for by the Denver RTD and GO Boulder organizations, under the Regional Mobility Program, to expand and evaluate Eco Pass.

The Volpe Center appreciates the cooperation and contributions to this project by the many people contacted in the Denver area. Several people at the Denver Regional Transportation District (RTD) were particularly helpful. David Baskett, Director of Planning and Development, and Matt Raymond, then Product Management Administrator, were invaluable sources of information on Eco Pass and provided a regional perspective on the program. Paul Widler, Program Management Analyst, cheerfully responded to numerous requests for information and data. Many other RTD representatives provided key inputs to the evaluation.

The Volpe Center would like to acknowledge Robert Whitson, Alternative Modes Coordinator, and Tracy Winfree, Transit Planner, from GO Boulder, for their valuable support and insight on Eco Pass as implemented in Boulder. From the Denver Regional Council of Governments, Betty McCarty, Program Director, and Greg Krtinich, Assistant Director of RideArrangers, were extremely helpful in providing information on the guaranteed ride home program.

Finally, the author would like to thank Robert Brodesky of Dynatrend, Inc., and Robert Casey of the Volpe Center for their helpful and insightful comments in reviewing this report.

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1. SUMMARY

This report documents the Denver Regional Transportation District (RTD) Eco Pass Program and evaluates its impacts. The evaluation relies on existing information; however, the report recommends the development of statistical data collection systems to facilitate future evaluation efforts. Although Eco Pass appears to be an example of an innovative and creative program for increasing transit patronage in the Denver region, the evaluation could draw few firm conclusions about its effectiveness, because an evaluation mechanism was not implemented simultaneously with the program. This report highlights the need for appropriate data to be collected before, during, and after a demonstration program so that clear-cut and objective conclusions may be drawn about the program's impacts.

Background

The Denver RTD provides public transit service throughout a 2,304 square mile service area in the six-county Denver metropolitan area, which had a 1990 population of 1.8 million people. It has implemented innovative projects to encourage the public to ride the buses, including several reduced fare options, one of which is the Eco Pass.

In 1989, the City of Boulder, in coordination with RTD, introduced the Mobility Pass, the predecessor to the Eco Pass. The pass initially provided unlimited bus usage on twelve local Boulder routes, and later increased coverage to include travel on the ten regional bus routes serving Boulder. In September 1991, RTD assumed the program and offered an expanded and modified version, the Eco Pass, throughout the RTD service area.

The Eco Pass Program

The Eco Pass is an annual, unlimited-use photo identification pass covering transportation on all RTD transit routes. Employers in the Denver region may purchase passes for their employees as a tax-free benefit. The program uses a group insurance concept for pricing and enrollment, with graduated rates based on company size and the level of bus service at the business location. Because the Eco Pass is provided to all employees, whether or not they actually use transit, the price per employee is low and attractive to employers. In addition, the funds the employer expends for this program are fully tax deductible.

A typical transit commuter may save up to \$900 in monthly passes or \$1,200 in cash fares annually with the Eco Pass. Eco Pass users are assured a ride home through a guaranteed ride home program, administered by the Denver Regional Council of Governments (DRCOG). In case of an unplanned emergency during the day, Eco Pass holders can obtain a taxi, free of charge, by showing their passes.

The main goal of the Eco Pass program is to increase transit ridership. Other significant goals are to reduce congestion, air pollution, vehicle miles traveled and the impact of the automobile on the environment; to increase parking availability to customers (as opposed to employees); and to improve the general quality of life in the region.

Recommendations

Both RTD and GO Boulder have requested grants through the Federal Transit Administration's Regional Mobility Program to expand their Eco Pass programs. RTD proposes to develop its marketing program for the pass and conduct a thorough evaluation. GO Boulder proposes to measure the effects of providing free Eco Passes to all downtown Boulder employees on their modal choice. It is recommended that, in light of the apparent achievements of Eco Pass during its first year and one half of operation, a grant be awarded to both RTD and GO Boulder. Each organization should evaluate more thoroughly and quantitatively the impacts of Eco Pass, and identify factors that insure a successful implementation of this type of pass program.

The grant should require that RTD take steps to collect the data necessary for a comprehensive evaluation of Eco Pass. In particular, RTD should set up a data collection system to track the number of eligible employees who actually obtain an Eco Pass, and conduct a sample survey of Eco Pass holders in all service levels and sizes of companies to estimate their current levels of Eco Pass bus usage.

2. INTRODUCTION

2.1 PURPOSE OF REPORT

This report documents the Denver Regional Transportation District (RTD) Eco Pass Program and evaluates its impacts. This evaluation relies on existing information; however, the report recommends the development of statistical data collection systems to facilitate future evaluation efforts. Although Eco Pass seems to be an example of an innovative and creative program for increasing transit patronage in the Denver region, the evaluation could draw few firm conclusions about its effectiveness, because an evaluation mechanism was not implemented simultaneously with the program. This report highlights the need for appropriate data to be collected before, during, and after a demonstration program so that clear-cut and objective conclusions may be drawn about the program's impacts.

2.2 BACKGROUND

2.2.1 Profile of the Denver Regional Transportation District

The Denver RTD provides public transit service throughout a 2,304 square mile service area in the six-county Denver metropolitan area, shown in Figure 2-1.¹ RTD operates fixed-route bus service on 157 routes as well as limited paratransit service, and plans to initiate light rail service in September 1994. In 1992, RTD provided approximately two million hours of revenue and non-revenue service using a fleet of 773 vehicles, including standard transit buses, small buses, intercity coaches, articulated buses, vans, and specially designed vehicles for use on the Sixteenth Street Mall in downtown Denver. RTD served 56,687,000 boarding riders (unlinked passenger trips) in 1991, or 191,000 boardings on an average weekday. RTD receives federal and local, but no state, funding and employs approximately 1,900 people. Its vehicles have an average fleet age of about 6.5 years and are maintained in four maintenance facilities.

RTD has implemented innovative projects in several areas of its operations. To encourage the public to ride the buses, RTD has developed a number of reduced fare options for passengers, including the Eco Pass. It has recently instituted express bus lanes on major highways to reduce trip duration. It is one of the first transit agencies in the United States to install an automated vehicle location system using satellite positioning technology to improve service to passengers and system security. It is currently investigating the feasibility of the smart card for future implementation.

One goal of RTD is to be in the forefront of transportation demand management, and to continue its five-year trend of increasing ridership. RTD's approach to marketing is to inform potential customers of all the alternatives to single occupancy vehicle travel, including the Eco

¹The six counties are Adams, Arapahoe, Boulder, Denver, Douglas and Jefferson Counties.

located in the region, including the National Oceanic and Atmospheric Administration, the Department of Commerce, the U.S. Army Corps of Engineers Rocky Flats Plant, Rocky Mountain Arsenal, the National Center for Atmospheric Research, and the National Institute of Standards and Technology. It also has a broad industrial base, and is home to the headquarters of several well-known businesses, including MCI, Celestial Seasonings, Coors, Johns Mansville, Martin Marietta, USWest, Gates Rubber Company, and more.

Boulder, often described as "Camelot" by its residents, is less diverse than the region as a whole. Its commercial base is characterized by small businesses and light industries. Home to an environmentally conscious citizenry that is extremely active in local affairs, Boulder established an alternative transportation program in the mid-1980's, now known as "GO Boulder," and a Citizens Transportation Advisory Committee in 1989. A very powerful group in Boulder, the Central Area General Improvement District (CAGID), levies a tax on all businesses in the central city, based on their square footage of office space. This tax is used to provide parking facilities, landscaping, and other improvements in the area. GO Boulder is actively promoting the Eco Pass to CAGID members, in particular.

2.2.3 History of the Eco Pass

In 1989, the City of Boulder, in coordination with RTD, introduced the Mobility Pass, the predecessor to the Eco Pass, to address the goals of its new master plan calling for a reduction in single occupancy vehicle usage. The Mobility Pass was based on the Seattle UPass, which was geared mainly to university students. The 250 employees of CAGID businesses that initially participated were provided with free unlimited bus usage on the twelve local Boulder routes. CAGID was billed by RTD according to the amount of pass usage indicated by data recorded by bus drivers. The program gradually expanded to include travel on the ten regional bus routes serving Boulder. Then it was sold to companies outside of downtown Boulder, increasing the number of pass holders to about 2,000 people. In September 1991, RTD assumed the program and offered an expanded and modified version, the Eco Pass, throughout the RTD area of coverage.

3. THE ECO PASS PROGRAM

3.1 PROGRAM CONCEPT

The Eco Pass is an annual, unlimited-use photo ID pass covering transportation on all RTD transit routes. Employers in the Denver region may purchase passes and provide them to all of their employees as a benefit. The program uses a group insurance concept for pricing and enrollment with graduated rates based on the level of bus service at the business location. The rates charged employers cover the lost farebox revenue as well as increases to service, capital costs, and administrative costs. Because the Eco Pass is provided to all employees, whether or not they actually use transit, the price per employee is low and attractive to employers, who view it as an inexpensive way to provide a fringe benefit and demonstrate their environmental commitment. In addition, the funds the employer expends for this program are fully tax deductible.

A typical transit commuter may save up to \$900 in monthly passes or \$1,200 in cash fares annually with the Eco Pass. Eco Pass users are assured a ride home through the guaranteed ride home program, administered by DRCOG. In the event of an unplanned emergency during the day, Eco Pass holders can obtain a taxi, free of charge, by showing their pass.

The Eco Pass is a laminated card displaying the employee's photograph on the front and a dated Eco Pass sticker and DRCOG stamp on the back. Employees of small companies must go to either the RTD main office in Denver or a facility in Boulder to have their photos taken for their passes. However, RTD does visit large companies with more than 20 employees to take their pictures. There is a \$5.00 charge for each photograph. However, RTD has allowed employees of about eight large employers, mainly government agencies, to affix dated Eco Pass stickers to the backs of their identification cards, and use them as Eco Passes. (This practice will be discontinued in 1994.) When a company renews its enrollment in subsequent years, new dated stickers will be affixed to the passes.

A student bus pass is offered to the students at the University of Colorado at Boulder (CU) on a limited basis. All students pay an \$11 (originally \$10 in 1991 and 1992) fee when they register each semester, entitling them to unlimited bus transportation within Boulder and to discounted fares on buses to Denver. Students are issued stickers to affix to their student identification cards, which are then used as CU student bus passes. Like Eco Pass, the CU student bus pass uses a group insurance concept for pricing based on the level of bus service in the Boulder area. Unlike the Eco Pass, the CU student bus pass does not offer the guaranteed ride home program.

of insurance companies, who base their premiums on probable claim incidence for a particular population.

**TABLE 3-1.
1991 ECO PASS PRICING STRUCTURE**

Service Level	Bus Service (# Trips)	Price per Employee	Business Location
I	1-9	\$20	Outer Suburban
II	10-24	\$35	Suburban
III	25-64	\$55	Boulder
IV	65+	\$145	Downtown Denver

As with the insurance industry, higher pass usage than that assumed by the original pass pricing formula will necessitate raising the prices. A survey of small Eco Pass companies in March 1992, showed that pass usage was much higher than expected, with about 50 percent of employees using the passes regularly for commuting to work as compared to projected usage ranging from 4 to 29 percent by service area. Daily bus ridership was also significantly higher than projected for employees of medium to large companies. Thus, in 1993, the prices were increased to account for high pass usage, as shown in Table 3-2 below. The outer suburban and suburban service levels were combined into one level, and a price differential was introduced for company size, giving larger companies a price break. (Appendix C contains formulas used to set pass prices.)

**TABLE 3-2.
1993 ECO PASS PRICING STRUCTURE**

Service Level	Bus Service (# Trips)	Price per Employee			Business Location
		1-24	25-249	250+	
A	1-24	\$35	\$30	\$25	Suburban
B	25-64	\$70	\$65	\$60	Boulder
C	65+	\$180	\$170	\$160	Downtown Denver

4. EVALUATING THE IMPACT OF THE ECO PASS

4.1 PREVIOUS STUDIES AND DATA SOURCES

4.1.1 RTD Eco Pass Survey (S1)

From March through May 1992, RTD conducted a survey among participants in Eco Pass after it had been in effect for at least seven months. The purpose of the survey was to measure Eco Pass usage and to assess its impact on bus ridership, with the ultimate goal of determining the need for adjusting the pass pricing formula. The survey was conducted in two parts: the first, to companies with 25 or fewer employees, the second, to larger companies. In the survey of small companies, representatives from 185 companies were asked to estimate the number of employees who rode the bus to work on an average day, and to respond to some pass pricing alternatives. No precision estimate was given for the survey results. In the survey of medium and large companies, about 200 employees from each of the four service levels were asked how they got to work that day, and about their typical weekly bus usage before and after Eco Pass. The survey produced an error rate of 7.1 percent with 95 percent confidence.

One problem with extrapolating the results of the survey of medium and large companies to the Eco Pass population is that the 17 companies participating in the survey may not represent the 30 nonparticipating companies. Since most respondents are employees of federal, state and local government agencies and organizations, their attitudes toward public transportation may not be representative of their counterparts in private companies. In addition, the public sector respondents may have different attitudes from the nonparticipating companies (primarily nonpublic sector companies) that compose the future market for Eco Pass.

Another troubling aspect of the survey is that key responses are based on respondents' recollection and speculation. In the small company survey, a company representative was asked to estimate the number of employees taking the bus to work on a typical day. In the medium to large company survey, the employee was asked to recall the number of weekly bus trips made both before and after Eco Pass. The accuracy of these types of responses is questionable.

In addition, the phrasing of the questions in the survey of medium to large companies makes it impossible to distinguish bus trips taken on the free downtown Denver mall bus shuttle from those taken on revenue-generating buses. Employees may take the shuttle for free with or without Eco Pass. Thus the survey data do not permit an accurate assessment of Eco Pass' sole impact on bus usage.

4.1.2 Boulder Downtown Eco Pass Survey (S2)

During July and August of 1992, GO Boulder conducted a survey of ECO Pass employees in the CAGID. The purpose of the survey was to ascertain their commuting patterns and their usage of the Eco Pass for all trip purposes, and to measure the preliminary effect of

One problem with these data is that the drivers do not always hit the proper keys, either by accident or by mistaken pass identification. The driver may have trouble differentiating the Eco Pass from other types of passes, since the Eco Pass does not have a standard form. Instead of issuing the same type of photo identification card to each pass holder, RTD has allowed the employees of the eight largest companies in Eco Pass, mainly government agencies, to affix current Eco Pass decals to the backs of their identification cards. Similarly, the CU student bus pass consists of a student identification card with a current sticker on the reverse. The nonstandard form creates the potential for bus drivers to confuse Eco Passes and CU student bus passes with other types of passes. RTD uses the keyed data unadjusted; it has not attempted to quantify the direction and degree of error.

4.1.6 Personal Contacts

Besides these quantitative sources, information was obtained from telephone contacts and meetings with management and staff of GO Boulder, RTD, CU, and the Denver Regional Council of Governments (DRCOG). Robert Whitson, Alternative Modes Coordinator, and Tracy Winfree, Transit Planner, from GO Boulder, and Marcie Page of the Citizens Transportation Advisory Committee, provided valuable historical and current insights and other information on Eco Pass as implemented in Boulder. David Baskett, Director of RTD Planning and Development, and Matt Raymond, then RTD Product Management Administrator, provided substantive information on Eco Pass development and administration, as well as a regional perspective on the program. John Pung, RTD Manager of Research and Product Development, Paul Widler, RTD Program Management Analyst, and Jerry Eddy, RTD Director of Customer Services/Scheduling, provided detailed information and data on Eco Pass and RTD operations. Joe Roy of the CU Parking Management Office discussed the parking situation at the university. Betty McCarty, Program Director, and Greg Krtinich, Assistant Director of RideArrangers of DRCOG, contributed information on the guaranteed ride home program.

4.2 ANALYSIS

4.2.1 Methodology

An assessment of the Eco Pass program was conducted using the above sources of information. Since no new data were collected to fill information gaps, the assessment was limited to areas that could be supported by available data. Where possible, measures were obtained for periods both before and after implementation of Eco Pass so that changes could be observed. In general, the data were sketchy and the evaluation, at times, relies on anecdotal information.

The program was evaluated in terms of how successfully it met its goals. The primary goal, increasing ridership, needs further clarification for analysis purposes. From RTD's point of view, increasing ridership means more than just increasing the number of boardings on the transit service. It also means increasing revenues. RTD must sell enough passes to offset farebox losses, occurring when established transit users convert to the Eco Pass program, and

4.2.2 Measures

4.2.2.1 System Effectiveness - These measures assess the impact of the Eco Pass program on overall transit system effectiveness, i.e., the degree to which the Eco Pass has increased transit ridership, the main goal of the program.

Boardings -- Figure 4-1 shows the growth of Eco Pass boardings since the introduction of the program (S5). In December 1992, there were 87,071 Eco Pass boardings, not including those of CU student bus pass holders, representing 2.3 percent of total revenue boardings on the RTD system.

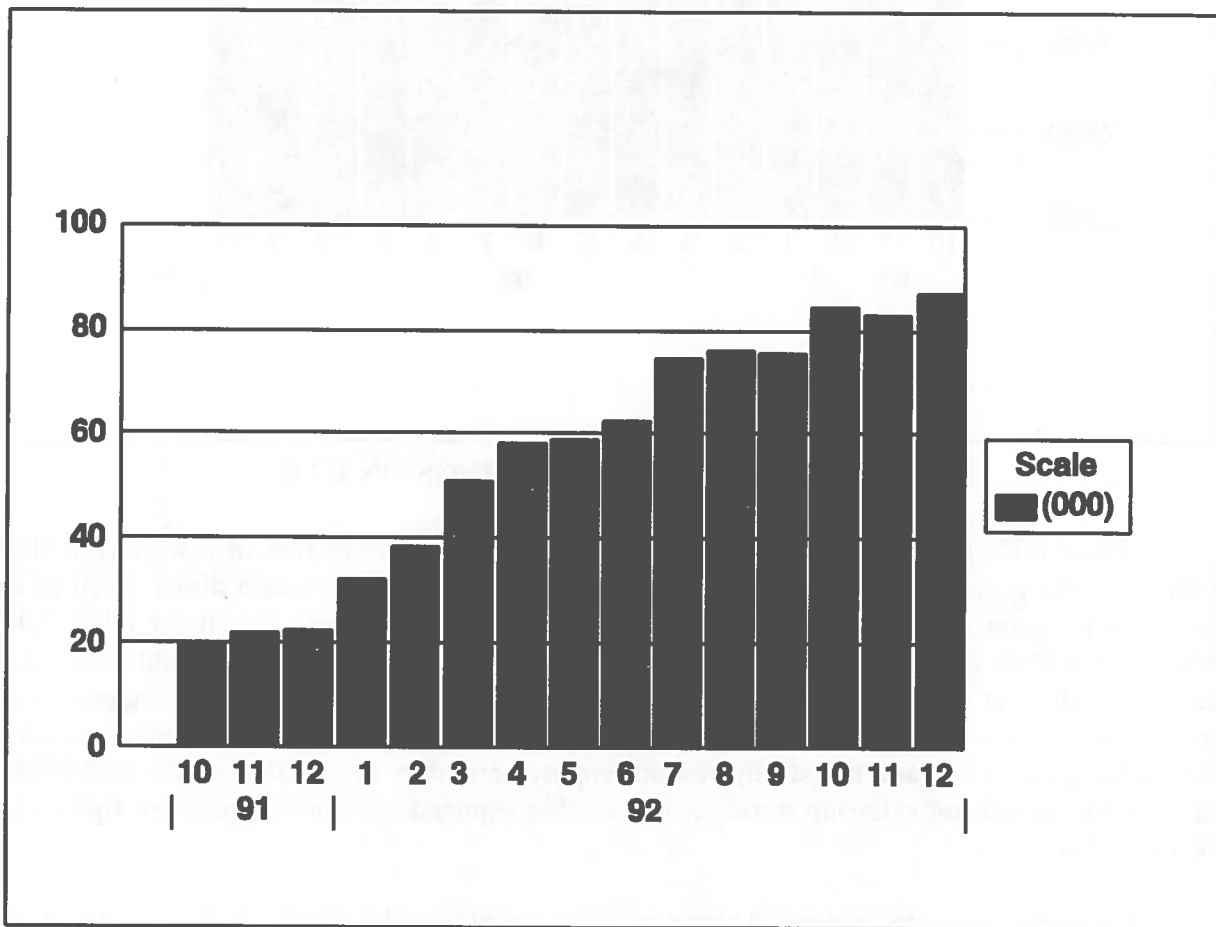


FIGURE 4-1. MONTHLY ECO PASS BOARDINGS

Figure 4-2 shows total revenue boardings for the RTD system. A comparison of average boardings for the last quarter of 1991 and 1992 shows an increase of 3.7 percent in 1992. (Appendix D contains RTD data supporting Figures 4-1 and 4-2.)

purpose increased by 1.6 trips per week, or about 78 percent, since they obtained the pass (S2). This number reflects a decrease in bus usage by some users since obtaining the passes, either because they switched to bicycles during the summer, or they moved. Over 80 percent of the increase in trips represents conversions from single occupancy vehicles.

Another survey (S1) shows that in medium to large companies in the Denver region as a whole, the number of trips taken by Eco Pass users increased during the first seven months of the program. The increase, as well as the degree of bus usage, seems related to the amount of bus service in the vicinity of the company, as shown in Table 4-2 below. Service Levels III and IV (downtown Denver and Boulder) with a high concentration of bus service during peak hours, experienced greater net increases and exhibited higher bus usage both prior to and after Eco Pass, than Service Levels I and II, with less bus service offered during peak hours. Note that Table 4-2 refers to all bus trips taken, including noncommuting trips and trips on the free mall shuttle.

**TABLE 4-2.
WEEKLY BUS TRIPS FOR EMPLOYEES WITH ECO PASS**

ONE-WAY BUS TRIPS PER WEEK				
	Service Level			
	I	II	III	IV
Prior to Eco Pass	0.6	0.6	1.4	5.1
After Eco Pass	1.8	2.5	3.7	7.3
Net Increase	1.2	1.9	2.3	2.2

Riders - The total number of individual riders (as opposed to boardings) on a transit system is difficult to measure directly, and thus is not generally available from most transit authorities, including RTD. In addition, the number of Eco Pass holders is not available, as RTD does not track how many eligible employees actually obtain passes.

The only available information on riders is the number of employees of companies enrolled in the program, which is equivalent to the number of potential Eco Pass riders. Table 4-3 below shows the growth in eligible employees. In May 1992, this number was 14,840 employees, with Boulder companies accounting for about half of this figure (S5). As of January 1993, the number of employees in participating companies had increased to about 21,000, with CAGID companies in downtown Boulder alone accounting for around 2,000 employees.

Approximately 25,000 students from the University of Colorado at Boulder receive a CU student bus pass at registration time. The University guessed that 12 to 15 percent of the students (3,000 to 4,000 individuals) use it regularly. Key 5 data from RTD show that during its first year, CU student bus pass program boardings represented about 16.7 percent of all boardings on Boulder local and regional bus routes. On average there were about 64,000 boardings per month under the CU student bus pass program. Comparisons of data from September through December show an increase of 5.1 percent in CU student bus pass boardings from 1991 to 1992. At the same time, the student population declined approximately three percent, showing pass usage is increasing significantly among the students.

Market Share - From its inception through May 1992, Boulder Eco Pass boardings represented 5.9 percent of all Boulder boardings (S5). Outside Boulder, Eco Pass boardings represented 0.4 percent of all boardings. Systemwide, Eco Pass boardings represented 1.0 percent of all boardings during that period. It is evident from these numbers that, at least initially, Eco Pass accounted for a greater proportion of boardings in Boulder than in other parts of the Denver region. This agrees with RTD information on the number of companies subscribing to the program, which reveals that of the 350 companies enrolled by September 1992, 225 were located in Boulder and its vicinity. Although a greater portion of Denver Eco Pass holders are commuting on transit than their counterparts in Boulder, they account for a smaller market share of all boardings. This is because a smaller portion of companies and employees are enrolled in the program.

For calendar year 1992, Eco Pass boardings represented about 1.7 percent of all system boardings. This shows an increase over the September 1991 through May 1992 period share of 0.7 percent. Even more significantly, Eco Pass boardings as a percentage of all Boulder boardings rose to 7.7 percent from 5.9 percent of the initial period. The figures indicate that during 1992 Eco Pass continued to enjoy a greater market share in Boulder than in other parts of the Denver region.

The 21,276 employees of participating Eco Pass companies represent about 2.5 percent of the 918,000 nonagricultural wage and salary employees working in the RTD area of coverage. A comparative size distribution of employers enrolled in Eco Pass and those not enrolled would have been helpful in understanding where Eco Pass' strength is at present and where to concentrate RTD's future marketing efforts. It appears there are major employment centers in the region, such as the Denver Tech Center, Greenwood Plaza, and Inverness southeast of Denver, that are effectively excluded from participation in Eco Pass or are restricted to limited participation, because RTD offers little or no regularly scheduled bus service to these areas.

Modal Split - A travel diary study conducted in the Boulder Valley in 1990 and 1992, essentially before and after implementation of Eco Pass, showed a slight increase in transit usage, 0.6 percent of all trips, and a significant decrease in single occupancy vehicle usage, 2.2 percent of all trips (S4). The largest gain, however, was shown in bicycle trips, which increased 2.7 percent, reflecting the area's extensive bicycle path network. Comparative data are shown in Table 4-4 below.² No such data exist for the Denver region as a whole.

²The 1992 data are preliminary results of the 1992 Diary Study of the Boulder Valley.

The majority of negative comments applied to RTD bus service, rather than to Eco Pass itself. The most frequent complaints were that the bus takes too long (16 percent), and bus service was lacking (12 percent). Several people said the drivers were not initially aware of the program.

Frequency of Usage - The degree of user acceptance is evident from the frequency of pass usage by participants. In CAGID, 89 percent of the employees with Eco Passes maintained or increased their level of bus usage by an average of 6.4 trips per month, or 1.6 trips per week (S2). In medium to large companies subscribing to Eco Pass throughout the service area, at least 96 percent of employees with Eco Passes maintained or increased their level of bus usage by approximately two trips per week (S1). These percentages, however, include those pass holders who have never used the pass, even though they have it.

4.2.2.3 Financial Impacts - The costs of a program are useful for assessing whether the changes or improvements achieved are worthwhile. Specifically, they may be used to compare the benefits of increased ridership or reduced air pollutants with the costs of implementing the program.

Costs - Although it does not track Eco Pass expenditures separately, RTD estimates that it currently devotes up to two and one-half labor years to the marketing, administrative and financial tasks associated with the Eco Pass program. As RTD gains experience in administering the program, the required number of labor years will decrease to about one and one-half by the end of Eco Pass' second year of operation.

RTD pays RideArrangers, the DRCOG program responsible for administering the guaranteed ride home program, a fixed annual fee of \$2 per employee of the participating companies.

GO Boulder incurs the costs attributable to Eco Pass in marketing alternative transportation in Boulder Valley, and in the downtown area in particular. The expenses take the form of personnel salaries, and subsidies. Although GO Boulder's accounting does not track Eco Pass resources separately from resources applied to other alternative modes of transportation, they do estimate that about one-half labor year is spent on promoting and marketing the Eco Pass program in Boulder. First-year participation subsidies amounted to approximately \$35,000 for 1991 and for 1992, and are projected at \$70,000 for 1993. This projection includes about \$25,000 for first-year subsidies for companies outside CAGID, and \$45,000 for the planned demonstration project that provides a free Eco Pass for every employee working in the CAGID. In addition, CAGID will contribute approximately \$110,000 from its transportation fund for the demonstration project.

Revenues - In 1992, RTD received \$1,222,146 in revenues from contracts established with participating companies, and has received \$1,766,000 in revenues, as of January 1993,

4.2.2.5 Traffic Congestion and Parking Availability - It is doubtful that general traffic, speed, or travel time/flow rate studies in the Denver region would reveal any measurable effects of Eco Pass, since the number of vehicles removed from the highways due to Eco Pass is insignificant when compared to overall traffic levels. Nevertheless, surveys have revealed that within the population of Eco Pass users employed in Boulder, the effects of the pass on traffic congestion and parking availability are at least in the desired direction.

Auto trip reduction - It is estimated that in CAGID, bus usage increased after Eco Pass an average of 6.4 trips per month per pass holder (S2). The annualized number of monthly uses may be greater, since the data, collected during the summer, reflect the practice of some pass holders to ride their bicycles to work rather than take the bus at this time of year. About 82 percent of these trips would have otherwise been made by single-occupancy vehicles. However, since some of these trips might not have been taken if the pass holders did not have the pass, they would not all contribute to a reduction in automobile travel.

Parking spaces freed - It is estimated that in CAGID, for every employee shifting from a single-occupancy vehicle, 7.8 daily parking spaces were saved per month (S2). Extrapolated to the population of pass holders shifting from single-occupancy vehicles, the estimated number of daily freed-up spaces per month would be 4,468, or 150 spaces per day.

Vehicle miles traveled - A rough estimate of the reduction in vehicle miles traveled due to Eco Pass in CAGID can be made using the estimates from the CAGID study (S2). The reduction in vehicle trips due to Eco Pass would be equal to 82 percent of the 6.4 additional bus trips that otherwise would have been made in single occupancy vehicles per month, or 5.24 trips per Eco Pass holder per month. Given that the average distance traveled to work in Boulder by bus riders is 15.7 miles, the 5.24 trips would represent about 82.4 miles saved per pass holder. As of August 1992, about 69 percent of the 2,000 eligible CAGID employees, or 1,380, had obtained a pass. They would have saved about 114,000 miles per month, and would have reduced auto emissions and improved air quality accordingly. A corresponding estimate for the entire Denver region cannot be calculated from the available data. (The above estimate assumes that the increase in bus trips is due to the Eco Pass and that the trips would have been taken with or without Eco Pass.)

4.2.2.6 External Impacts - Energy consumption - A rough estimate of the amount of fuel saved by Eco Pass usage in Boulder is derived by taking the number of vehicle miles saved from above, and applying a fleet average of 22 miles per gallon. Approximately 5,200 gallons of fuel per month would have been saved by Eco Pass holders in Boulder as of the August 1992 survey date. With increasing numbers of participants, the fuel savings would also increase. Not all of this fuel may be "savings" attributable to Eco Pass, however, since some Eco Pass holders may take trips with the pass that they would not have taken otherwise.

Air quality - Although a reduction in auto emissions due to Eco Pass would result from a reduction in vehicle miles traveled, it is doubtful that any changes in air quality measurements between pre- and post- Eco Pass implementation could be definitively attributed to Eco Pass, due to the small proportion of regional vehicle miles traveled that are affected by pass usage.

**TABLE 4-5.
SUMMARY OF EVALUATION MEASURES**

MEASURE	RTD	BOULDER
Number of Eco Pass boardings in December 1992	87,071 boardings	36,882 boardings
Eco Pass boardings as percent of total in December 1992	2.3%	9.1%
Number of companies enrolled in Eco Pass as of April 1993	498 companies	278 companies in CAGID
Number of employees in Eco Pass companies as of April 1993	21,276 people	2,020 people in CAGID
Monthly increase in bus trips by Eco Pass holders as of August 1992		6.4 trips in CAGID
Reduction in monthly single occupancy vehicle miles traveled as of August 1992		114,000 miles in CAGID
Parking spaces freed per month as of August 1992		4,468 spaces in CAGID
Monthly fuel savings as of August 1992		5,200 gallons in CAGID
Change in transit trips as percent of all trips from 1990 to 1992		+0.6% (a 40% increase)
Ratio of total revenue to total boardings for 1992	\$1.57	

However, Boulder, and the CAGID in particular, are not truly representative of the entire Denver region. This is because of GO Boulder's subsidy program and additional promotional efforts, the more homogeneous nature of employers (mainly small businesses) in the CAGID, and CAGID's ambition to reduce parking demand. Eco Pass seems to have produced impacts in the desired direction, but more information is needed to quantify the impacts throughout the Denver region and to determine which factors are critical in producing positive impacts.

Although limited data are available, indications are that the CU student bus pass program has been successful in attracting students to transit. It would seem a logical next step to offer a similar program to the students at the Auraria Campus in downtown Denver, which houses the University of Colorado at Denver, Metropolitan State College, and the Community College of Denver. Other colleges in the Denver region, such as the University of Denver, may also be candidates, depending on the frequency of service in the area and the interest of the students and administrators.

5. RECOMMENDATIONS

5.1 GRANTS

Both RTD and GO Boulder have applied for Regional Mobility Program grants to expand and study the Eco Pass program in the Denver region and in Boulder, respectively. Their proposals are outlined below.

5.1.1 GO Boulder Grant Application

GO Boulder intends to use its grant to expand and analyse its Eco Pass and CU student bus pass programs. Features of its proposal include the following:

1. Give every CAGID employee a free Eco Pass. There are approximately 3,000 employees in the CAGID area. The FTA grant would be applied to funding the passes and to performing an objective and thorough analysis of the program's impact on vehicle miles traveled.
2. Add unlimited regional service to the CU student bus pass program. (Currently, students are allowed unlimited service in the Boulder area only.)
3. Implement an education and information program.
4. Study the effects of the program, and collect and analyse before/after data on each program element.
5. Cover administration costs (staff, office space, computer, telephone, etc.).
6. Develop a training program and manual to help other communities replicate the Eco Pass program.

In light of the recent increase in air pollution in the Denver region⁴, a GO Boulder type of subsidy may be a key feature of a regional plan to reduce driving. Other features of such a plan might include limiting parking downtown and increasing the number of car-pool lanes. Denver may extend the light rail train to the inner city and build a train to the new airport.

5.1.2 Denver RTD Grant Application

RTD proposes a two-stage study. The first stage is to perform an evaluation of the impacts of Eco Pass in the Denver region to date, and the second is to develop marketing

⁴"To Denver's Dismay, Its Smog is Back." Wall Street Journal 10 January 1993: B1.

It is recommended that, considering the apparent, though limited, achievements of Eco Pass during its first year and one half of operation, a grant be awarded to both RTD and GO Boulder for evaluation of their programs. The data collected in the additional period of operation will allow RTD to evaluate more thoroughly and quantitatively the impacts of Eco Pass, determine if increased transit usage is merely a short-term phenomenon or represents long-term conversions to transit, and identify factors that insure a successful implementation of this type of pass program. RTD should also look into expanding the student bus pass program to other campuses in the region. FTA should include with the grant award a requirement that it review the evaluation plans of both RTD and GO Boulder before they undertake their evaluations.

5.2 ESTABLISHMENT OF A STATISTICAL PROGRAM

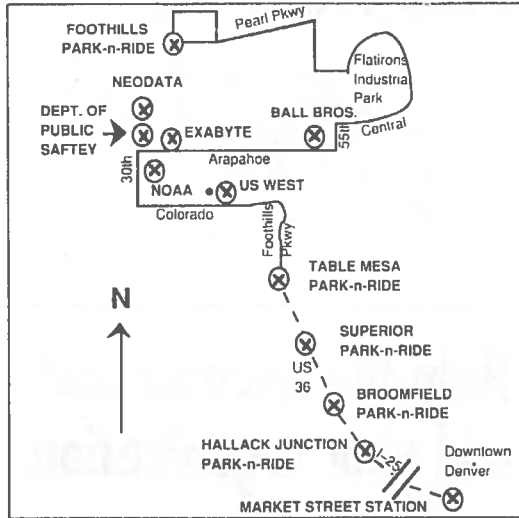
The grant should stipulate that RTD collect the data necessary for a comprehensive evaluation of Eco Pass. Specific data requirements include the following.

1. RTD should track the number of employees that actually obtain a pass, their places of employment, the dates on which they receive the passes, and whether they renew the pass in successive years.
2. RTD should conduct a sample survey of all Eco Pass holders as soon as possible to obtain estimates of the current level of bus usage. The survey should be stratified by service level and company size (the same categories as the pricing structure), so that the information may also be used to reevaluate the pricing structure. If possible, RTD should conduct the survey both before and after any major changes or improvements to the Eco Pass system in order to gauge the effects of the change. The "after" survey should not be conducted immediately following the introduction of a change, but only after as long a period as possible has elapsed. This delay will allow for its more lasting effects, as opposed to short-lived phenomena, to be measured. RTD may want to conduct the survey annually to track trends in transit usage and program participation. The survey should be designed to produce estimates of the following variables:

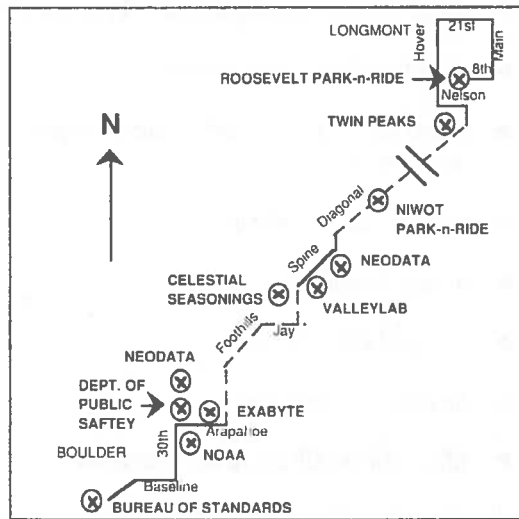
For established bus users who are Eco Pass holders, and separately for pass holders who were not previously bus users;

- the number, types, and distances of bus trips (commuting, noncommuting) taken both before and after obtaining Eco Pass, separating revenue-generating bus trips from trips on the free downtown Denver mall shuttle
- the increase in bus trips due to Eco Pass, and the modes of transportation that would have been used for these trips without Eco Pass

APPENDIX A. GO BOULDER PROMOTIONAL LITERATURE ON ALTERNATIVE TRANSPORTATION

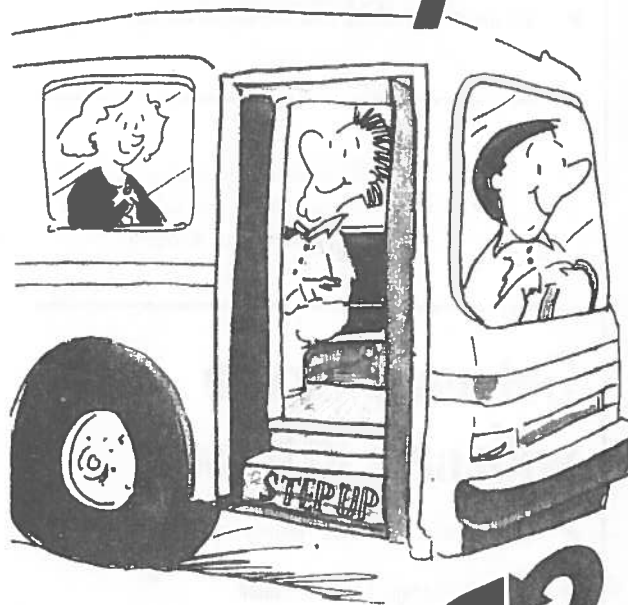


RTD Route S
Denver/East Boulder



RTD Route J
Longmont/East Boulder

Test drive a new company vehicle today.



441-4260



©1992 GO BOULDER

2018 11TH STREET, BOULDER, CO 80302

GO BOULDER is offering a 25% rebate on the first year cost of an



25%

annual **ECO PASS** for your business.

**ECO PASS
REBATE**

To be eligible your business must

turn in a copy of their signed RTD **ECO PASS** contract

along with this coupon to GO BOULDER, PO Box 791,

Boulder, CO 80306 Attn: Tracy Winfree. For additional information call 441-4260.

Expires December 31, 1992

25%
**ECO PASS
REBATE**

The **ECO PASS** enables employers to economically offer all of their employees an annual bus pass that will allow their employees to ride RTD anywhere at any time and it includes the "Guaranteed Ride Home". In addition, your business will be helping

to create a cleaner environment for everyone. Company Name _____ Contact Name _____

Address _____ City _____ Zip _____ Phone _____ No. of Employees _____

Reason for participating in **ECO PASS** program _____

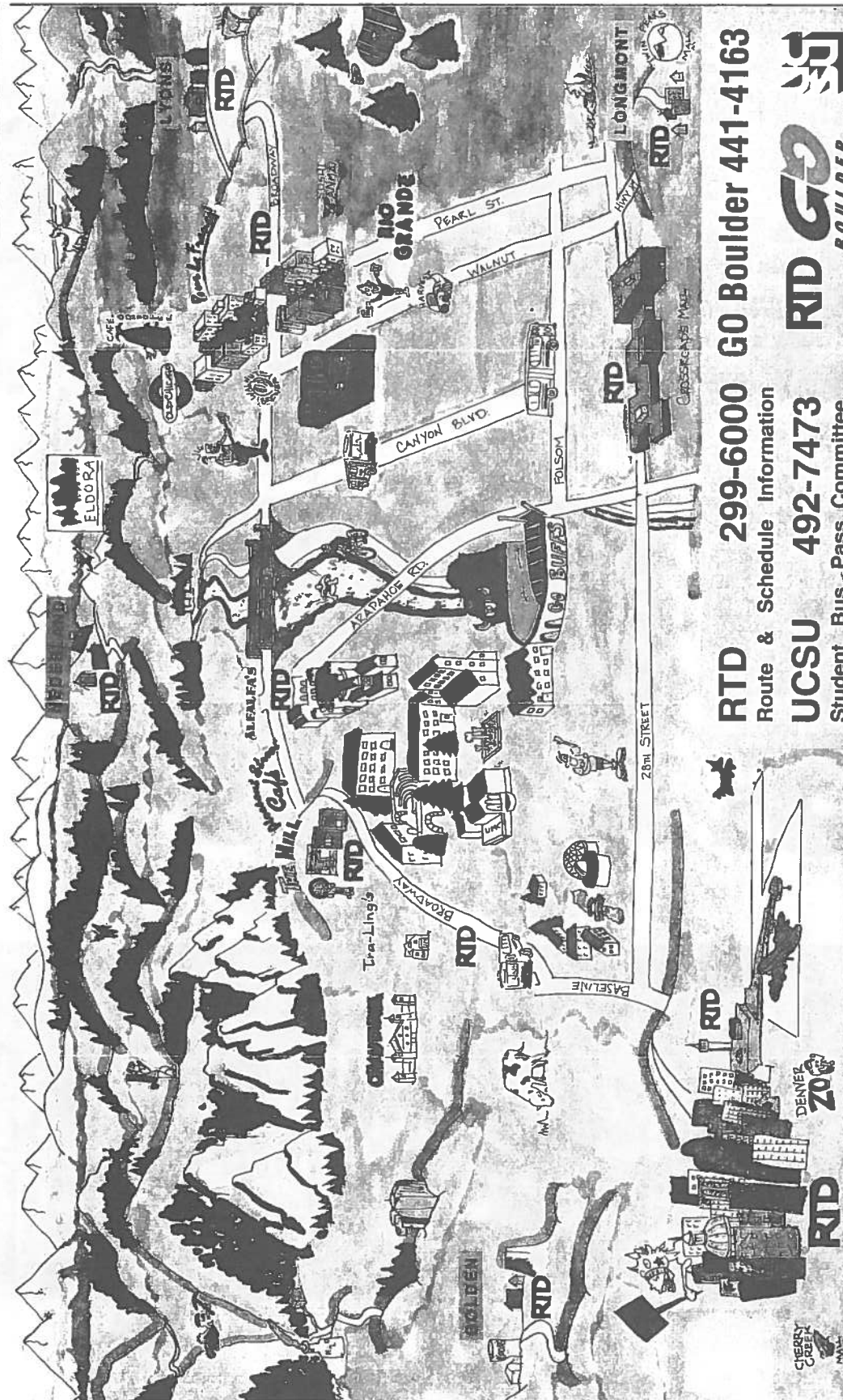
Would you like to receive additional information on:

• The **ECO PASS** Yes ___ No ___

• Other GO BOULDER alternative transportation programs Yes ___ No ___



© 1991 GO BOULDER



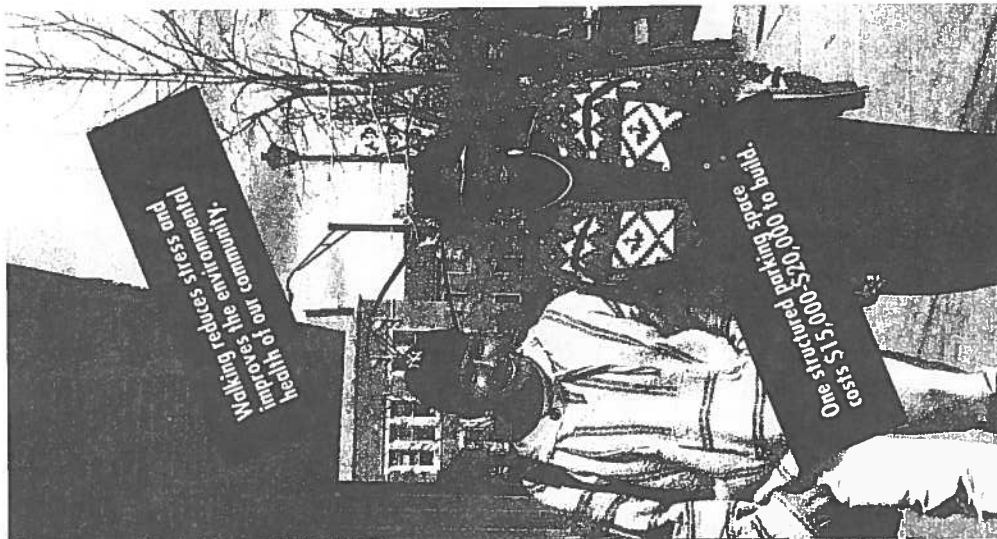
RTD 299-6000 GO Boulder 441-4163

Route & Schedule Information

UCSU 492-7473

Student Bus Pass Committee





Walking reduces stress and improves the environmental health of our community.

One structured parking space costs \$1,000-\$20,000 to build.

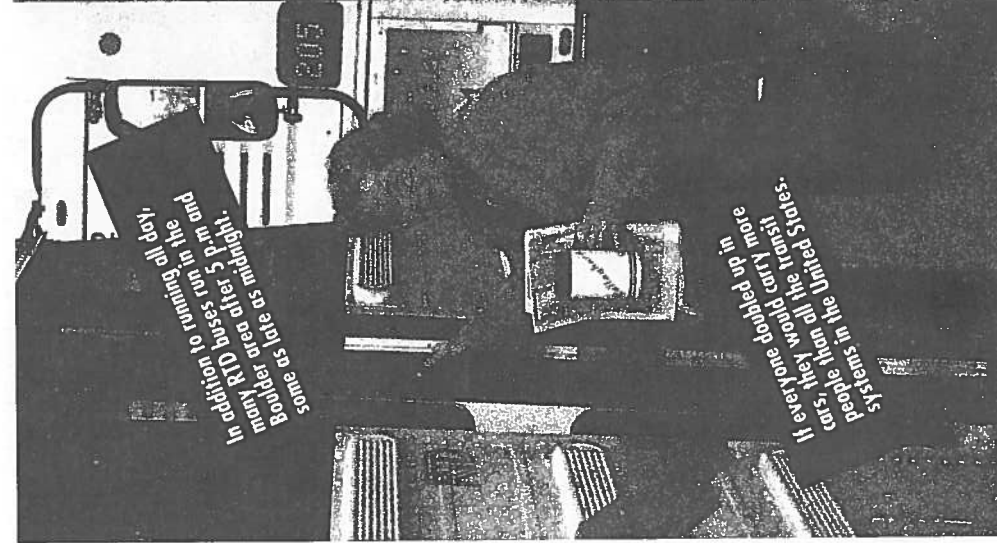
TRANSIT PROGRAMS



The Boulder bikeway network totals over 70 miles of safe, modern trails for cyclists and pedestrians.

Look for a bike painted on the street at traffic lights; stop your bike on it, and the light will change.

BICYCLE AND PEDESTRIAN PROGRAMS



In addition to running all day, many RTD buses run in the Boulder area after 5 pm and some as late as midnight.

If everyone doubled up in cars, they would carry more people than all the transit systems in the United States.

VOLUNTEER PROGRAMS

APPENDIX B. RTD MARKETING LITERATURE ON COMMUTER TRANSIT PROGRAMS

**Alternative
Transportation
Programs for Business**

RTD

Ride Arrangers JRCOG

Making the Right Choice

The Regional Transportation District and RideArrangers,



the commuter assistance program operated by the

Denver Regional Council of Governments,

have teamed up to offer a number of alter-

native transportation services. Our trans-



portation professionals will consult with you to analyze

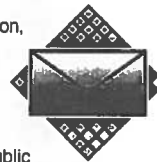
employee commuting patterns, work schedules,



current transportation modes and average

trip length - all **free** of charge! In addition,

we examine your company's parking



availability, work environment, access to public

transit, and other information critical to recom-



mending the best alternative transportation

package to suit both your company and

your employees.



Commuter Check

You can help your employees who use RTD by

picking up the check – Commuter Check.

This fare subsidy program uses

special transit vouchers which

allow your company to pay for a

portion of the employees' bus pass or

ticketbook. And when your company uses Commuter

Checks, it provides this employee benefit tax-free. The

program is easy to administer. Using a simple mail-

in order form, your company can purchase Commuter

Checks and provide them monthly, quarterly or whenever

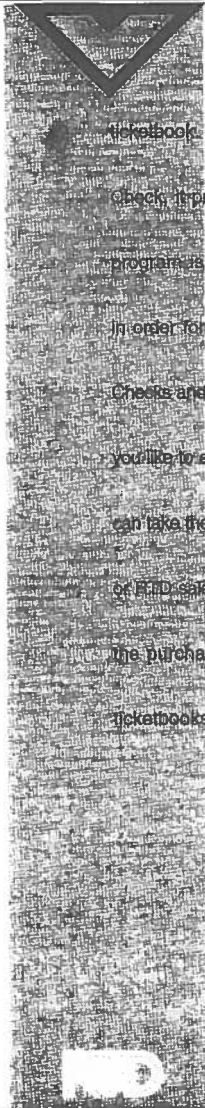
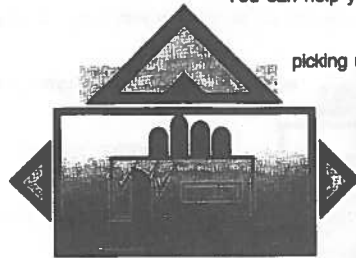
you like to employees who ride the bus. Your employees

can take these Commuter Checks to major supermarkets

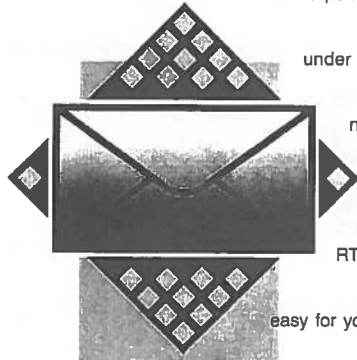
or RTD sales outlets where they are redeemable toward

the purchase of monthly bus passes and FareSaver

ticketbooks.



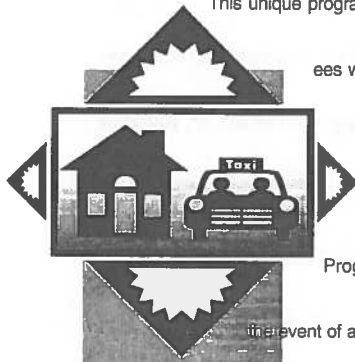
Pass-By-Mail



Here is the perfect program for organizations with under 100 employees which know the number and type of passes their employees will use. The RTD Pass-By-Mail program makes it easy for your company to purchase monthly passes and FareSaver ticketbooks for employees interested in using public transit. Orders for passes are placed monthly (before the 15th) using a convenient mail-in order form. These RTD passes are then mailed to your company, along with the next month's order form. With Pass-By-Mail, your company has the option of selling, discounting or providing passes to your employees as a benefit.

RTD

Guaranteed Ride Home Program



This unique program offers peace of mind to employees who use alternative modes of transportation to commute to work. The Guaranteed Ride Home Program provides free taxi service in the event of an emergency or unplanned change in schedule for employees who carpool, vanpool, bicycle, walk, use public transit or any form of transportation other than driving alone to get to work. Employees who need to leave work early due to personal illness or a family crisis, who have to work late unexpectedly or who can't take their usual form of alternative transportation are guaranteed a free ride home. This worry-free "insurance policy" from Ride Arrangers is the perfect addition to whatever program your company chooses.

Ride Arrangers 2000

D PASS

RTD 1

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Service Level	Estimated Ridership		Yearly Eco Pass Price per Employee
I	5% X \$406	=	\$20
II	9% X \$406	=	\$35
III	14% X \$406	=	\$55
IV	36% X \$406	=	\$145

ADJUSTED ESTIMATED RIDERSHIP				
Service Level	Estimated		Actual	
	Base	Adjusted	Large	Small
I	3%	5%	5%	24%
II	5%	9%	7%	30%
III	8%	14%	14%	44%
IV	23%	36%	50%	62%

Revised Pricing for Eco Pass (excerpted from RTD Board of Directors Report, September 1992)

It is recommended that the Board of Directors approve the following Eco Pass program modifications and fee schedule for 1993:

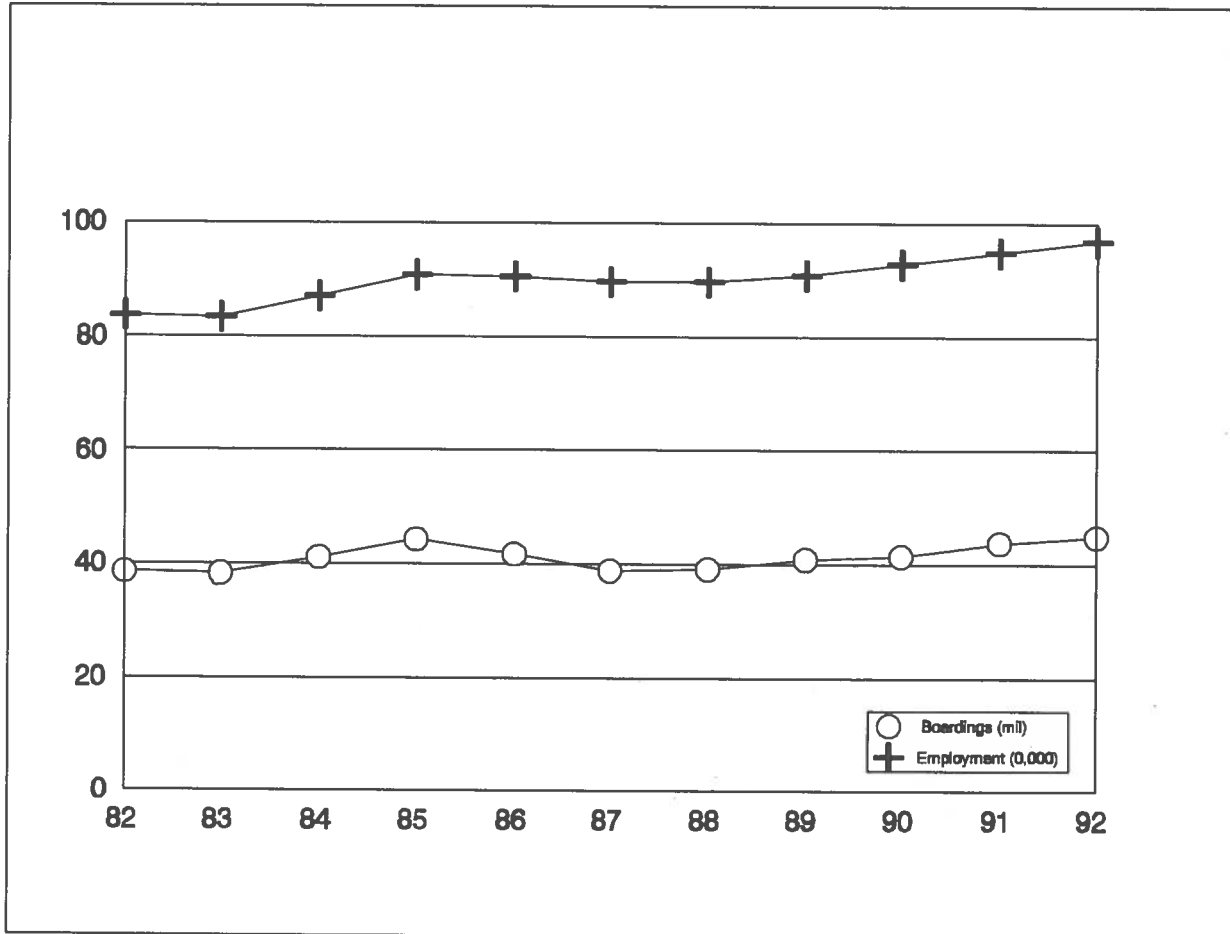
- 1) Adjust pricing to better represent actual ridership levels
- 2) Divide companies into three size categories
- 3) Introduce discount pricing breaks based on company size
- 4) Combine existing Service Levels I and II
- 5) Establish \$100 minimum contract level
- 6) Maintain fare-based pricing formula

APPENDIX D. RTD BOARDING DATA

TABLE D-1. DETAILED ECO PASS, CU STUDENT PASS AND TOTAL RTD BOARDING DATA

Date	Boulder Eco Pass Boardings	All Eco Pass Boardings	CU Student Pass Boardings	Boulder Boardings	Total RTD Boardings
10/91	16,909	20,220	82,833	412,092	3,776,262
11/91	18,493	22,456	79,158	401,068	3,594,059
12/91	17,395	22,314	62,229	391,495	3,544,205
1/92	22,942	32,137	72,237	435,210	3,827,170
2/92	24,587	38,836	85,325	423,639	3,706,180
3/92	30,117	50,443	79,130	417,489	3,811,382
4/92	30,548	58,371	74,286	400,837	3,776,484
5/92	28,344	58,335	39,657	337,705	3,660,622
6/92	29,892	62,657	22,794	362,620	3,756,218
7/92	30,877	74,407	21,321	340,850	3,728,059
8/92	29,678	76,188	29,256	333,233	3,620,608
9/92	30,219	75,119	73,207	408,607	3,791,360
10/92	34,816	84,150	82,164	433,704	3,978,738
11/92	33,430	82,248	84,849	415,816	3,612,344
12/92	36,882	87,071	67,116	404,174	3,729,994

**APPENDIX E. RELATIONSHIP OF RTD BOARDINGS TO
DENVER EMPLOYMENT⁵**



**FIGURE E-1. COMPARISON OF ANNUAL SYSTEMWIDE BOARDINGS AND
DENVER EMPLOYMENT**

⁵Boarding data provided by RTD. Employment figures taken from BLS publication, Employment and Earnings, Table B-8, "Employees on Non-farm Payrolls in States."

APPENDIX F. RTD FARE STRUCTURE



Fares

Denver Metro
Boulder Local
Longmont Local
Regional
Special

Denver Metro Fares

Local Service

10-Ride Ticketbook	\$ 7.25
** Peak cash	\$ 1.00
** Off-Peak cash	\$.50
* Senior cash (65+)	\$.15
* Disabled cash	\$.25
Regular monthly pass	\$ 27.50
Student monthly pass	\$ 23.00
Senior/disabled monthly pass	\$ 19.00

Express Service

10-Ride Ticketbook	\$ 12.00
Cash	\$ 1.50
* Senior cash (65+)	\$.15
* Disabled cash	\$.25
Regular monthly pass	\$ 46.00
Student monthly pass	\$ 39.00
Senior/disabled monthly pass	\$ 27.50

Circulator Service

10-Ride Ticketbook	\$ 4.75
Cash	\$.50
* Senior cash (65+)	\$.15
* Disabled cash	\$.25
Regular monthly pass	\$ 18.50
Student monthly pass	\$ 15.75
Senior/disabled monthly pass	\$ 9.00

Boulder Local Fares

10-Ride Ticketbook	\$ 4.75
Cash	\$.60
* Senior cash (65+)	\$.15
* Disabled cash	\$.25
Regular monthly pass	\$ 18.50
Student monthly pass	\$ 15.75
Senior/disabled monthly pass	\$ 12.75

Longmont Local Fares

10-Ride Ticketbook	\$ 2.25
Cash	\$.35
* Senior cash (65+)	\$.15
* Disabled cash	\$.15
Regular monthly pass	\$ 9.25
Student monthly pass	\$ 8.00
Senior/disabled monthly pass	\$ 7.75

Regional Fares

10-Ride Ticketbook	\$ 19.50
Cash	\$ 2.50
* Senior cash (65+)	\$.15
* Disabled cash	\$.25
Regular monthly pass	\$ 74.00
Student monthly pass	\$ 63.00
Senior/disabled monthly pass	\$ 46.50

Special Fares

SeniorRide	\$.50
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HandyRide	\$ 1.00
------------------	---------

BroncoRide park-n-Ride (round trip)

park-n-Ride	\$ 4.00
Federal Shuttle	\$ 2.00
Auraria Shuttle	\$ 1.00
park-n-Ride Pass	\$ 25.00
Federal Shuttle Pass	\$ 13.00

* Seniors and Disabled cash fares apply to off-peak hours only.

** Peak hours are 6-9am and 4-6pm weekdays, off-peak hours are all other times.



Regional Transportation District
1600 Blake Street
Denver, Colorado 80202
303/299-6700 or 303/299-6000

Effective September 1989

534-2 1/92

APPENDIX G. GUARANTEED RIDE HOME PROGRAM INFORMATION

Denver Regional Council of Governments
2480 West 26th Avenue, Suite 200B
Denver, Colorado 80211
(303) 455-1000



The Guaranteed Ride Home Program

The idea of a Guaranteed Ride Home Program for alternative modes patrons is not new; programs have been offered by both governmental agencies and private employers in some areas of the country for at least five years now. However, most of those programs operate on a very small scale, either covering just the employees of a single company or perhaps including alternative mode patrons from a geographic area as large as a county. The Guaranteed Ride Home program offered by RideArrangers, the commuter assistance program of the Denver Regional Council of Governments, is offered to employers on a region-wide, eight county basis, with a taxi ride home guaranteed up to 100 miles one way.

While the regional application represents one difference between this and other programs, certainly it is not the only difference. The RideArrangers' Guaranteed Ride Home program is not available to individual employees, but must be purchased by an employer for all full-time employees by company location, whether or not those employees are currently patronizing an alternate mode of transportation. This allows an occasional carpooler or bus rider to use the program as well as those who commute by alternate mode regularly. It also provides a "safety net" for the first-time rider without requiring a long-term commitment. Whether it actually influences people to try an alternate mode has not been determined, but it may well deter fall-out from alternate mode patrons who have had one bad experience of being stranded, getting sick at work, or having some other unexpected emergency arise. The major advantages of offering such a program are two-fold: (1) it addresses a perceived drawback to alternative modes, e.g., being left stranded and, (2) it provides an excellent marketing tool for a commuter assistance program. The fact that it is self supporting also adds to the attractiveness of such a program.

The RideArrangers' Guaranteed Ride Home program is sold to employers on a stand-alone basis or as part of a unique bus pass program offered by the Regional Transportation District serving metro Denver. The bus pass program, known as the "Eco Pass," is available only through employers and like the Guaranteed Ride Home, must be purchased for all employees at any company location whether or not they currently ride the bus. With the photo I.D. which represents the Eco Pass, patrons have unlimited rides on RTD for the life of the pass, which is usually a year.

RTD contracted for the Guaranteed Ride Home for Eco Pass holders in the fall of 1991 just before announcing the availability of the pass on a region-wide basis. Program concepts, including the idea of offering the two together, had been tested in Boulder County the previous year and appeared to offer considerable potential. Under the initial contract between RTD and RideArrangers, RTD paid RideArrangers a flat rate of \$2 per employee per year for the Guaranteed Ride Home program regardless of the size and location of the participating

downtown, are more likely to need the service than those with little alternate mode usage. Other variables could also influence use, but no data has been gathered to support such a theory.

During the test phase of this program, no limit was set on the number of miles a Guaranteed Ride Home might require. However, while this appeared to be quite liberal, it seemed to go unnoticed in marketing the program. To increase the awareness of this element, a limit of 100 miles one-way was applied when the program went region-wide. This limit has had the desired affect of bringing attention to the generous benefits of the program.

Some have asked about abuse, given the lack of limitations and policing. While a complete analysis is yet to come, it appears that inappropriate usage has been held to a minimum. With some 29,000 employees currently enrolled in the program, about 91 cab trips are taken each month with an average trip length of 12.6 miles and an average fare of \$16.31. The longest trip taken to date was about 65 miles, with the highest fare being \$97. On the other hand, many trips are less than 2 miles in length costing under \$5. Repeat usage is minimal and apparent, as the cab company records the name and address of the user, the destination, the time and date, and the cost. Therefore, irregularities can be noted and, if abuse continues, the contract with employers indicates that costs can be recovered and the contract cancelled. No such action has been required thus far, however.

One final difference between this program and others around the country is that no advance payment or co-payment is required of the user. A cab is called and given the time and place to arrive and the destination. The rider simply shows the Eco Pass or other photo I.D. to confirm the identity of the passenger and signs a voucher at the end of the trip. Full payment is made by RideArrangers, excluding the tip. While some consideration has been given to including the tip in future years, the taxicab company has advised that drivers like the program well enough to forego the tip, because carpool/vanpool trips are generally longer and, thus, produce higher fares than average cab trips.

Experience to Date

The program has been in place for approximately a year now, as has the Eco Pass. Together, RideArrangers and RTD have enrolled some 363 companies with 19,030 employees in the Eco Pass/Guaranteed Ride Home program, and another five companies with a little over 10,300 employees in the Guaranteed Ride Home program on a stand-alone basis. A cost analysis performed after nine months, when only 311 companies and 21,708 employees were enrolled in combined programs, indicated that the average cost of taxi service per enrolled employee was 76¢ per year. This excludes both marketing and administration costs, but basically covers outside contract services, e.g., cab fares, which represent the greatest risk. While costs vary widely by employment size and alternative mode usage, only in the case of medium-sized companies (25 - 249 employees) located downtown did cost exceed the \$2 per employee charged for the program.

When taking only employment size into consideration, the cost per employee per year ranged from a high of \$1.54 each for employees of medium-sized companies to a low of 49¢ each for employees of large companies. Please note that this analysis was based on less than a full year of experience, and therefore should be considered preliminary.

