Also to be decided are who will collect data in particular areas and how will they be collected. System internal information can be supplied directly by the system, but often the external information might better be gathered by an independent organization, under ground rules that ensure similar collection methods throughout the country. The various standards that require public opinion (equipment comfort and appearance, information processes, passenger amenities) might best be handled by having the general public submit an annual "report card" on how they think the system is performing, grading different elements from A to F.

Is there a real need for such a body of measurements, considering the amount of work and money that would be entailed? To me, as a consultant, the answer is yes! So that I can discharge my responsibility to my clients, I must know exactly how well a given system is performing. I must know, when making recommendations on routes, schedules, internal practices, public relations, or whatever, what must be done to meet desirable standards.

To me, as a member of the public, the answer is yes! I must know how well the system serving me performs so that I can judge how worthy it is of my continued support at the fare box, at the polls and, increasingly, in the type and amount of taxes that I pay.

The establishment and use of fair standards are even more necessary now that most of the larger systems are publicly owned and fare stabilization programs make the old operating ratios less and less useful as measuring sticks for system efficiency (if indeed they ever were). Taxpayers want to know what they are getting per dollar expended; and, basically, what they are getting is determined by how well the system serving them compares to similar systems.

REFERENCE

1. Better Transportation for Your City. Public Administrative Service, 1958.

Joseph F. Rice
Wilbur Smith and Associates

When I was asked to prepare this paper, I was secretary of the newly formed Central New York Regional Transportation Authority and the only public employee—and engineer—on the board. Our task, very simply, was the take-over of a local bus company that had had declining ridership for many years. This paper discusses some of the problems we faced.

First, some questions and suggested answers relating to standards or criteria of transit service.

Why does bus transportation exist?

1. As a business, to make a profit on moving people and provide a reasonable return on the investors' money.
2. As a service, to meet the transportation needs of people who cannot, will not, or are not able to provide other means of transportation.
3. To meet special transportation needs such as school busing, movement of industrial employees, shuttle operation between parking lots and jobs, and circulation in CBD's, college campuses, and large hospital centers.
4. As a public utility, to reduce the number of cars in a specific area because of public policy, insufficient parking, pollution and air quality, inadequate capacity of

streets and highways, and insufficient investment capital to provide added facilities.

5. As a public or private effort, to induce more people to use a specific area or business.
6. To meet specific peak demands as a result of special events.
7. To satisfy economic needs of riders because of car operating costs, parking fees, or commuting time.
8. As a contract operation, to provide reasonably good service (time) between "bedroom" communities and downtown.
9. To serve as a necessary adjunct to a more profitable interstate or contract hauling business.
10. To provide service from some other transportation mode terminal such as an airport, a railroad station, or a transportation center.

What determines whether the service is good?

1. Elapsed time for the journey
   a. Home to stop (weather problems)
   b. Wait for bus (in Syracuse, an unknown quantity!)
   c. The ride itself—bus moving (very rough pavement, low drop inlet) and bus stopped
   d. Travel to destination
2. Fare and its collection
   a. Amount
   b. Special inducements (5-day pass)
   c. Class fares (elderly and under 12)
   d. Collection procedure (exact fare)
3. Frequency during the time of need
   a. Headway
   b. All-day service
   c. Late night service
   d. Specialized service
4. Ready access to information about schedules and routes
5. Personal safety and comfort of the user
   a. Bus shelters (safe and clean)
   b. Ease of boarding and alighting (platforms)
   c. Lighting at stops

How can an adequate level of service be achieved?

1. Preemptive rights over traffic control signals in areas such as the CBD where the average running speed is low (TOPICS, light emitters, sound emitters).
2. Mobility to respond to "personalized" needs of customers (Model Cities, elderly, very young, mothers).
3. Preferential treatment including reserved or exclusive lanes and busway treatments for all or parts of a day (1 bus = 44 seats, 3 cars = 12 seats; 1 bus = 35.2 people, 3 cars = 4.5 people).
4. Clearly defined stops, routes, and facilities oriented to constantly exhibit the image of bus transportation through shelters, lights, and communications (UMTA, TOPICS).
5. Maximum use of the entire network of streets and highways (bus lanes, busways, counterflow lanes, ramp bypasses).
6. Special considerations such as color, shape, and marking that will define the preferential status of bus areas uniformly for all users on a nationwide basis.

CRITERIA FOR PAST STANDARDS

The criteria for past standards appear to be developed around operating costs, revision and consolidation of routes, high patronage locations, minimum investment, and passenger comfort and safety.

Operating Costs

Concern with operating costs had to enter into transit services for the buses to keep running. Accountability to the stockholder is a powerful incentive. However, raises in fare and the predictable loss in ridership, which somehow never seemed to bottom out, made necessary economics that affected route analysis and development, supervision, and modernization of equipment. Thus, operating costs greatly influenced transit service.

Many transit companies in the past have "retired the job with the man" in functions such as route analyses, research, and supervision. Effective public relations almost became a thing of the past on many transit properties. The bus company name on the side of a bus was believed to be adequate advertising for new customers. Supervision declined to key corner, fixed posts; roving supervision was accomplished by senior executives, whose time and talents could really not be spared for this service, except there was no one else to do the checking.

Revision and Consolidation of Routes

As patronage continued to decline and good equipment became more scarce, fewer routes could be served at a break-even, let alone a profitable, operation. Longer routes with fewer buses operating at larger headways were the inevitable result. Patronage declined further.

Each application to consolidate or drop routes really did affect service and was frequently bitterly resisted by a few who wanted to continue to ride the bus. However, these service waiting times often became so long that an automobile was substituted for the bus.

High Patronage Locations

The central business district has historically been the terminal for many trips. Other similar locations such as apartment complexes, airports, industrial sites, or governmental centers are also major trip points. Inasmuch as an eighth of all travel and 58 percent of all trips are 5 miles or less in length, transit should be ideally suited for this type of service. Unfortunately, bedroom communities have developed away from the traditional transit routes; and, although high patronage locations were present at one end of a trip, they were often not there at the other end. Thus, it was not possible to effectively capitalize on the high patronage locations of the past. The potential of fringe parking lots appeared not to have been exploited because of costs, except where joint use of shopping centers was possible.

Minimum Investment

Equipment must be replaced, even though it is maintained in excellent condition. The 15- to 22-year-old buses in Syracuse were marvels of ingenuity and maintenance magic. Some of the parts had to be made by hand, but they continued to function. New equipment, when it could be obtained, replaced from 2 to 5 of its older counterparts, thus lowering the inventory to a point where service could only be given to the high de-

mand routes. Management opportunity was limited, and young blood was hard to come by in such a situation. So service, based on investment, could not meet the diminishing demand in a cost-effective way.

Passenger Comfort and Safety

Transit service has been functional in the past. The PCC trolley car was probably the most comfortable car of its day. Provision of passenger-comfort items such as air-conditioning was a luxury that many systems just could not afford even when passengers were plentiful and competition from the automobile was hardly noticeable. Safety was no great problem, nor was having a bus stop 2 to 3 blocks from homes.

Thus, levels of service were determined by a society of another day, and those levels of service, set by a transit industry that each year lost more revenue riders, cannot be applied today.

CHANGES IN CRITERIA

Changes in criteria for standards came about because of technological advancement, a changing society, a critical need, and economics.

Technological Advancement

Improved equipment that can do more things better, faster, and safer always causes an impact on established services. Better brakes and tires, more visibility, reliable and less expensive air-conditioning, and longer lasting mechanical components are a few. But perhaps one of the most important potentials today is communication. It involves traffic signals, central computers, bus stops, and individuals in the homes and makes possible reduced or skip stops, automatic location information on bus-arrival time, and bus service to one's home as requested. These are items that necessitate change in criteria and design of bus service to take advantage of current capability. They provide the means to improve responsiveness, meet user needs, and provide a competitive edge.

A Changing Society

The concentrated city of a few years ago is now surrounded by a suburban complex containing new employment places, supermarkets, and shopping centers. To be responsive, new equipment (both large and small), shelters, information systems, and doorstep service for safety appear to be required. Platform loading for speed and efficiency—particularly for the elderly—can now be considered. This involves carefully stopping the vehicle at a point where a platform can be extended to the floor level of the bus, thus eliminating steps.

A Critical Need

The need for transit service as an alternative mode as well as an only mode of transportation must be given consideration. To provide a choice now is even more critical because of increasingly scarce parking space. New towns afford an opportunity to design for transit.

Economics

In the final analysis, economics and conservation of resources demand that new standards be set. Air quality, accident reduction, and land management are part of economics as is movement of more people per vehicle. Very little has been said to date about the economics of 40 to 50 buses compared with 1,200 to 1,400 cars in the context of accidents and loss to the community.

SUMMARY

In summary, change dictates new standards. If we do not make it work for us, it will work against us.

The remaining question then is, Are standards of design and operation of transit service satisfactory and applicable to today's conditions? I would have to say that they are not but that we know how to make them so, and we are working toward that end. The combined talents of the planner, engineer, sociologist, environmentalist, and psychologist can clearly identify the needs. We can then apply the necessary research and operative talent to solve the problem.

Standards should take into account customer desires, technical capability, land use and land planning, requirements of society now and in the future, implications of historical freedom of choice, and economics.

George Krambles
Chicago Transit Authority

I approach the topic "standards in transit service" with some trepidation. A standard can be quite useful as a broad guideline. And, of course, some standards must be absolutely literally followed to avoid catastrophic failure or malfunction. But there is also an ever-present danger that an unnecessarily rigid standard may wind up as an all-too-convenient weapon for killing off innovation and progress. Among a transit manager's tasks, a heavy burden is that of making judgments between the good and bad aspects of a standard.

Practically every aspect of transit service could be, and is, codified with standards. Actually, most standards are unwritten, but no less effective. Operations, maintenance, engineering, and planning are, of course, primary quadrants for transit standards; but, as one moves through that list, one finds the need for flexibility increasingly overtaking the need for rigidity. In a parallel way, the tasks to be performed are rather well structured at operating and maintenance levels but increasingly interact with ad hoc policy decisions at engineering and planning levels.

In the overall context of this conference, its primary orientation will be to standards applied at the planning level, but a few at the other levels might first be worth brief mention. A few of the more interesting standards that CTA uses in providing the second most extensive transit service in North America are discussed below.

EMPLOYEES

At operating levels, standards are applied to employee selection, training, and performance. Over the years one of the surprisingly difficult standards to define is that of employee appearance. Old photographs show that trainmen of the 1880s and 1890s commonly wore long sideburns, handlebar mustaches, and beards. The lack of heat in