Case Study in Land Use and Parking Regulations in Support of Campus Transit Services: Development of CY–RIDE in Ames, Iowa

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The continued successful provision of fixed-route and demand-responsive transit service on the Iowa State University campus and throughout the city of Ames has been the result of cooperation between the city of Ames, the university administration, and the university students. These three groups have recognized the relationship between land use, parking, and transit. In 1981, when CY–RIDE was in its formative stage, they agreed to reduce available parking and increase available transit services. Although no master development plan spells out a formal policy of substituting transit service for parking, through innovative parking policies and aggressive (high-density) land use the transit service has become indispensable for the mobility of Ames citizens and especially Iowa State University students. The development of the transit service is traced from a political standpoint and the creation of innovative parking policies is emphasized as the operational key to a strong transit service. The strength of the CY–RIDE service is demonstrated by excellent operating statistics such as 36.5 passengers per revenue-hour, 3.1 passengers per revenue-mile, and 53 rides per capita per year. Aggressive land use and innovative parking policies are only partial factors in building a strong transit service; the actual management and approach to operations (which involves students) are the final links in a successful campus transit service.

The Ames Transit Agency (operating as CY–RIDE) is the municipally owned bus system that provides transit service in Ames, Iowa. It is an agency of the city that has members of the Iowa State University (ISU) administration and the government of the student body (GSB), as well as city representatives, on the transit board. The original CY–RIDE service was created in 1975, following the termination of privately owned bus service in Ames. CY–RIDE is an abbreviation of Cyclone-Ride. Cy is also the name of the ISU mascot, and ISU athletic teams are known as “Cyclones.” The Ames Transit Agency was created in 1981 to improve transit services.

A need for an expanded and improved bus service was apparent in the late 1970s. CY–RIDE was started, reluctantly, by the city of Ames to provide a minimal level of transit service. The original service in 1975 was solely a dial-a-ride system that gradually evolved to a hybrid system of fixed routes in certain parts of town and dial-a-ride in other parts of town.

During the time that the fledgling transit system was struggling, ISU enrollment was increasing. As the enrollment increased, complaints regarding parking on campus became a chronic problem. Complaints from students who did not own cars centered around the poor service provided by CY–RIDE and the lack of evening and Sunday service. The ISU administration was interested in finding alternatives to the cost of constructing and maintaining parking spaces, whereas the students were primarily concerned about poor transit service. The city’s primary concern was the escalating cost of transit service and the negative comments that the city had received about the existing service.

The spark that ignited and expanded CY–RIDE service was the widely held belief by students that improved mobility was required for a full and complete life on campus. The existing CY–RIDE system did not meet that need. The ISU administration was approached by and cooperated with the students in exploring other student-run or student-supported transit systems in the Midwest.

From this spark of interest, the mayor of Ames formed a citizen’s committee in 1979 to investigate alternatives and improvements to the CY–RIDE service. Although the city of Ames and ISU had had successful joint projects such as water, electric, and fire services, there was concern about the possible changes and directions of a transit authority. Both parties were concerned about who would establish routes, fares, and the structure of the board of trustees of any organization that would control the operations and finances of the transit service. The city was concerned about the total cost of an expanded level of service. Concerns about the joint project were further complicated by student interest as represented by the GSB. The GSB was particularly concerned about the day-to-day operations of expanded service and the decision-making (management) structure. Service levels were a primary concern of the student body in general, as well as routes, fares, and the structure of the board of trustees.

After 18 months of negotiations between the city, ISU, the GSB, and several concerned citizens, the Ames Transit Agency was formed. The purpose of the agency was to undertake the establishment, acquisition, operation, management, control, and governance of transit services in and for the city of Ames.

The creation of the agency in 1981 alleviated some of the city’s concerns about escalating costs of service, because the financial contribution from the university and the students...
was substantial. The agency immediately planned to provide more service for students, thus resolving many of the GSB concerns. ISU was cautiously optimistic about the agency and hoped that in the long term it would help resolve some of the parking issues on campus. The cooperation between these three diverse groups—students, university, and city—was remarkable. It was so remarkable that the resultant transit agency was the basis of the city of Ames' receiving the all-American city award in 1983 from the National League of Cities.

SERVICE PRODUCTIVITY AND OPERATING CHARACTERISTICS

During the first years of the Ames Transit Agency, ridership grew rapidly. The fare for students was lowered from $0.50 to $0.25. The dial-a-ride fare was increased from $0.75 to $1.25. Two new routes were added in August 1981, and evening and Sunday service was initiated on a limited basis. The response to these service changes was excellent. Ridership increased from 331,365 to 902,711 passengers in 1 year and continued to increase in following years. In 1982–1983, ridership increased to 1,212,800 and in 1983–1984, ridership totaled 2,100,029. By 1988–1989, it had stabilized at 2,456,000 (Figure 1).

As the service improved, demand increased and the service was increased proportionally. Ridership standards were adopted to determine when service should be added or reduced. In 1983–1984, service on the three primary routes was increased from a 30-min interval to a 20-min interval. This made service extremely convenient for students going to and from classes. (With a 20-min interval, buses are able to arrive on campus a few minutes before classes start and also a few minutes after classes end. This convenience makes it possible for students to make several trips per day to and from campus, such as when they have a 2- or 3-hour break between classes.)

To secure a strong financial base, the three local funders—city, university, and students—attempted to provide adequate local funding in an effort to remain as independent of state and federal funds for operations as possible. During the early 1980s, the continuous message from UMTA and other administration officials was that transit subsidies would be substantially reduced or eliminated. However, the reality was that federal operating assistance increased from $54,639 in 1981–1982 to $219,812 in FY 1989. Operating assistance from the Iowa Department of Transportation was relatively stable during that time, fluctuating between $70,050 and $101,255, but it increased to $154,461 in FY 1989. Local contributions in the form of farebox revenue from the passengers, city tax levy, a mandatory student fee assessment from the GSB, and an ISU administration contribution provided adequate funding for operations. Local funding as a percent of operating costs varied from 129 percent in 1981–1982 to 88.2 percent in 1989–1990. Figure 2 shows the percentage of local funding to operating expenses. Figure 3 shows the sources and percentage of all revenue.

Productivity also increased during this time of expansion. In FY 1981 (Figure 4), productivity on the city-run CY-RIDE service was 15.9 passengers per revenue-hour. This increased to a maximum of 39.8 in FY 1985 and then stabilized at 36.5 passengers per revenue-hour in FY 1989. The reduction in passengers per revenue-hour is a reflection of the additional services that have been added.

The CY-RIDE service concept is to provide a convenient alternative to the automobile while maintaining control of service costs. Service is provided from 6:00 a.m. until approximately 12:45 a.m. on weekdays. Saturday service starts at 7:00 a.m., and Sunday service starts at 9:00 a.m. Friday and Saturday evening fixed-route service ends at 10:45 p.m. This is supplemented by Night Ride, which is a demand-responsive service that operates until approximately 2:30 a.m. The primary purpose of this service is to return inebriated students
to their residences. Sunday fixed-route service ends at 11:45 p.m.

Service is convenient, frequent, and reliable. The spatial development pattern of Ames lends itself to relatively long travel distances for a small community along a few major corridors. This pattern makes a bus service extremely attractive, because many of the outlying apartment buildings are beyond a comfortable walking distance from the ISU central campus. By providing frequent service during the day at 20-min intervals and a reasonable evening service at 40-min intervals, CY-RIDE is competitive with walking and bicycling. It is also more time-efficient than driving, because of the lack of parking spaces on campus.

UNIVERSITY PARKING POLICIES AND LAND USE

As CY-RIDE became established and became an effective and dependable component of the community, ISU made several critical decisions regarding land use on its central campus that impacted the transit service. First, it had been the desire of the ISU administration to keep the central campus free of automobiles. Traffic gates were installed in 1976 to regulate the flow of traffic through campus. Second, as a result of the early successes of the system and the need to construct additional buildings on campus, the ISU administration consciously began to reduce the number of available parking spaces.

Since 1983, six new or expanded buildings have added 869,566 ft² of building space on ISU’s central campus (Figure 5). More than 500 parking spaces have been eliminated from the central campus because of the new buildings. The additional work and education activities generated by this construction boom have created a demand for more than 1,000 additional parking spaces. However, these 1,000 spaces were not constructed. Some additional peripheral parking was constructed on the west edge of campus, but many people who choose to drive must walk more than 1 mi to their worksite. The elimination of parking combined with the building additions further aggravated the parking problem.

At the same time that parking was being eliminated, the ISU administration, through the parking systems office, began funding a shuttle bus from the parking lots located between the football and basketball stadiums. This is a 5,000-stall surface parking lot. It is used primarily for events at the Iowa State Center and during home football games. This lot covers a large area and is only used to capacity approximately 30 days per year for football and basketball games and rock concerts. The university felt that this was an inefficient use of the space and provided a free shuttle bus. Many of the off-campus students, as well as faculty and staff, used the shuttle bus to get to their classes or workplaces and thereby satisfied the desire of the university for more efficient use of the lot.

The shuttle provides a 6- to 10-min ride to most of the on-campus classroom buildings and operates at a 7-min interval during rush hours and at 15-min intervals during the midday. Approximately 1,700 passengers per day are carried on the

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**FIGURE 2** Local revenue/operating expenses for FY 1977–1988.

**FIGURE 3** Sources of all revenue for FY 1990.

FIGURE 5  Iowa State University main campus.
shuttle service, thus eliminating the need for approximately 850 parking spaces on the central campus. The cost of this service is approximately $44,000 per year. Although the university established the shuttle service and was eliminating parking spaces, fees for parking were also increased. The public ramp at the Memorial Union Building gradually increased its fees, and the university increased the fees for reserved parking. Fees that were only $30 per semester in 1983 are now $120 per semester.

The rapid growth of the system in the first 2 years proved to the ISU administration that CY-RIDE was capable of moving large numbers of people to the central campus safely and efficiently. The university had taken a conservative, watchful approach to the new transit system. Following its initial successes, the university made several additional changes in parking regulations.

In 1983, additional restrictions were placed on students who lived in Ames and owned an automobile. They had been permitted to hunt for parking spaces on campus. That is, more permits were issued than parking spaces were available. The university assumed that there would be a turnover of spaces so that the maximum number of spaces needed would always be less than the number of spaces available. This caused many complaints, as students would often spend 15 to 20 min looking for a space. To correct this complaint, the parking shuttle from the 5,000-stall Iowa State Center parking lot to the central campus provides an adequate number of spaces with a minimal amount of time spent looking for a space. (Minimal time is spent if drivers are wise enough to make the voluntary decision of parking in the 5,000-stall parking lot.)

On-campus parking permits were further linked to the bus service in a unique way. If a student lived in an apartment or house near (within four blocks of) a CY-RIDE fixed route, they were not eligible to receive a parking permit for the central campus. Only students living in surrounding towns or in the few apartment units that were not served by CY-RIDE fixed-route service were able to receive parking permits. This policy increased the demand for CY-RIDE service, and ridership continued to increase to 2,427,124 by 1985–1986. Following this change in parking regulations, apartment owners became extremely concerned about the proximity of their units to CY-RIDE service. CY-RIDE has become a major selling point for rental units and is advertised in most newspaper ads for units that are near a CY-RIDE route. (Several owners are offering a discounted or free semester pass to encourage use of CY-RIDE and to maximize their unit rental.)

The physical land-use changes that the university implemented and the more restrictive parking policies were further complemented by a more aggressive enforcement of parking regulations. Parking violation fees were increased, chronic violators were towed, and in 1987 over 66,000 parking violations were issued by the parking system office. In 1988, 88,000 parking violations were issued. The increase in parking fees, as well as the increase in ticket revenue and the reduction in parking spaces, have made the parking system at ISU self-sufficient, because the fees and penalties generate enough revenue to cover the cost of parking maintenance and capitalization.

The net result of CY-RIDE service has been an intensive academic use of the existing central campus. The central campus is primarily a pedestrian campus, open only to CY-RIDE buses or ISU maintenance vehicles. Academic interaction, which is one of the primary functions of the university, has been enhanced by the close spacing of buildings allowed by minimized central campus parking. Finally, the visual attractiveness of the central campus is enhanced by the lack of automobiles, traffic congestion, and large expanses of parking lots.

There has also been a change in attitude toward automobile use and ownership. Students have a heightened awareness that the transit service is affordable and efficient and meets their mobility needs to and from campus, as well as circulating through the city of Ames. Many students realize that they do not need a car. This point is especially important to those who are on limited budgets. Promotional efforts and advertising aimed at students and their parents emphasize that a car is not necessary while attending ISU.

**FINANCIAL BENEFITS**

The city has been satisfied with the service provided by CY-RIDE and the changes that have occurred. Complaints about poor public transit service have been eliminated. With the capitalization of the service through the purchase of new buses and construction of a maintenance facility, service reliability has improved and been noted by city officials, riders, and nonriders. The city has been able to fund CY-RIDE within the $0.54 per $1,000 limit of assessed valuation imposed by Iowa law. Figure 6 shows the city tax rate during the history of CY-RIDE operations.

In many respects, ISU has been the principal financial beneficiary of the CY-RIDE service. On-campus parking spaces and the concurrent maintenance costs have been reduced. The university has also been able to implement an aggressive land-use policy that allows higher-density activity on the central campus. The university is using its existing parking lot more fully than would be possible without a bus service. Academic interaction is enhanced by the proximity of buildings while an extremely attractive central campus is maintained in a parklike setting.

The ISU contribution has been less than the cost of additional parking by a factor of almost five to one. A total of 500 spaces have been eliminated, and the construction of 1,000 has been avoided. ISU calculates a $500 maintenance and capitalization cost per parking space per year. At $500 per space, ISU has saved $750,000 per year while contributing $160,000 to the transit agency, a net savings of $590,000. The university is also able to use the bus service as an inducement for students who may need financial relief and cannot afford the cost of operating an automobile.

The students also benefit financially from a low-fare ($0.25) bus system. Their satisfaction with the service can be inferred from the lack of complaints about the level of service. It is estimated that 85 percent of the students living in off-campus housing and 25 percent of the students living on campus have ridden CY-RIDE at some time during their college career and with few complaints. On the basis of ridership analysis, 25 percent of the student body depends on CY-RIDE for daily transportation. To ensure that the students’ needs are voiced, two student transit board members, who are appointed yearly, have been an effective force in improving service and
negotiating additional local funding through the university, the city, and student fees. Their participation has been one of the cornerstones of the success of CY-RIDE service and has created a strong financial base through student fee assessment.

CONCLUSION

CY-RIDE service in Ames has allowed more changes in land use than are typical in an automobile-based environment. ISU has been able to change the land-use patterns on its central campus and maintain a high quality of campus life for its nearly 25,000 students. Travel patterns have changed accordingly, and mobility is excellent despite the high-density activity level of the central campus.

There is a marriage between land use and the management of the transit system. The success of the system stems from the consumer-based service that CY-RIDE provides. The ISU administration waited cautiously for 2 years to see if CY-RIDE would be successful before deciding to assist with the changes that transit managers desired in the physical makeup of the campus and parking regulations. University officials implemented aggressive building and parking policies only when they became confident that CY RIDE could deliver the service needed. The positive political support from the city, the university, and the students, through the effective composition of the transit board, has provided the necessary goodwill from each entity to make the service a strong community asset. The staff of CY-RIDE recognizes the mandate to provide high-quality service that is demanded from the three parties represented on the transit board. The high-quality service provided by the staff then influences the decisions made by the three parties for actions that encourage transit use, thereby completing the cycle of a model land-use and parking program that supports transit.

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