Ann Arbor Parking Study

School of Public Policy, University of Michigan
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Foreword

The enclosed report was authored by graduate students from the University of Michigan School of Public Policy. The project was supervised by Professors John R. Chamberlin and Edward M. Gramlich, and Research Investigator Marlowe J. Greenberg. A list of the authors follows:

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Executive Summary

We were requested by the City of Ann Arbor and the Downtown Development Authority (DDA) to assess the finances of the parking system in terms of both long-term financial solvency and privatization options. We were also asked to undertake a survey to assess the demographics of parking customers in DDA structures and lots and to examine the parking operations of cities similar to Ann Arbor. This report provides the results of our analysis, and aims to inform the City and the DDA in setting future parking policy.

Demographic Survey

The demographic survey suggests many interesting characteristics about the market for parking in Ann Arbor. Notably, survey responses suggest that small changes in price will not greatly change the demand for parking. In addition, over three-fourths of survey respondents report that they never travel to downtown using means other than the automobile. Slightly more than half of the respondents are residents of Ann Arbor.

Parking Systems in Other Cities

Research on other cities' parking systems reveals that the financial status of a city's parking system is dependent in part upon the way in which a city structures its accounts, specifically if the system includes street meter and/or ticket revenues. Of the eleven cities examined, seven reported that they breakeven or operate at a surplus. In addition, pricing information suggests that current Ann Arbor parking rates are not excessive compared to these other communities.

Other cities utilize many innovative policies that Ann Arbor may wish to consider for its parking system. Some of these include: permit pricing disparities for residents and non-residents; hourly pricing that varies depending on location of parking facility; and utilization of ticket revenue from parking violations to support the parking system.

Breakeven Analysis

The combination of age and deferred maintenance on the seven downtown structures presents the City with significant capital expenditures required in the near future. For the parking system as a whole to meet these increased costs, revenues must be increased. An analysis of Ann Arbor's parking finances indicates that there are multiple options for raising the increased revenues needed by the system. We find that the system, when considered in its entirety, could meet its costs with only moderate price increases.

When the system is broken down into its components, however, including structures, lots, and city meters, the price increases required to cover costs vary dramatically. The capital expenditures required in the structures are so large that if the structures must pay for these expenses out of operating revenues, prices must be raised significantly. If revenues from the parking meters (including revenues from both parking fees and fines) were considered, the parking system could sustain the increased costs. Other options for meeting the structures' high costs include continuing the current practice of the system, using business tax revenues to offset price increases.

Privatization of Structures

Finally, although our analysis of the finances of the parking system indicates a number of options for future financial solvency, the City may still want to consider privatization of the structures. Our findings suggest a lower-bound market valuation for each of the parking structures, and describe the methods utilized by private investors for valuing such properties. We also indicate issues for further consideration, should the City decide to pursue privatization.

Introduction

Ann Arbor, a city of approximately 110,000, maintains a public parking system that consists of 6,619 parking spaces in structures, surface lots, and on-street meters. Current repair and construction has rendered 416 of these spaces unusable. In addition, the combination of age and deferred maintenance on the seven downtown structures necessitates that the City/DDA will need to make significant capital expenditures in the near future. Various options might alleviate these concerns for the system, including privatizing structures, altering the pricing schedule, and collaborating with the University of Michigan and the Ann Arbor Transportation Authority (AATA).

Specifically, this study examines the Ann Arbor parking system and explores several options for achieving its financial solvency. We introduce a model to assess the revenue impacts of pricing policy changes, conduct a valuation of the parking structures to assess the possibility of privatization, and describe the experiences of other cities' parking policies to inform our analysis. To enhance our understanding of the parking customer population, we also carry out a demographic survey of the DDA structures and surface lots.

The organization of the report is as follows:

Chapter 1 provides demographic information on Ann Arbor's parking customers. The section describes the aggregate findings from a demographic survey administered over two days in early November 1997, and important implications are discussed. Detailed information from the survey is included in Appendix 1.

Chapter 2 describes the parking policies and financial status of numerous cities that compare to Ann Arbor. Specifically, it presents information on demographics, system size, and pricing structure.

Chapter 3 presents a breakeven analysis for the Ann Arbor parking system. Through a pricing model, we examine the costs and revenues of the parking system over the next 20 years and test pricing options for the system. Specifically, the pricing model determines at what price level(s) each of the three components of the system will break even, or generate sufficient revenues to cover their costs. This section concludes with three pricing options and the conditions under which they hold.

Chapter 4 examines the possibility of privatization as an option for achieving financial solvency. A valuation of the parking structures is conducted, including a description of the methodology used, and the qualifications to our findings.

Chapter 5 explores options for further study. To assist in making future parking policy decisions, this section outlines interesting aspects of other cities' parking policies, as well as potential avenues for collaboration with the University of Michigan and the AATA.

Background

Management of the parking system is shared by the City of Ann Arbor and the Downtown Development Authority (DDA). The City operates and controls approximately 2,000 spaces in the parking system, while the DDA is responsible for the management of the remaining 4,606 downtown parking spaces. Of the City-controlled spaces, approximately 1,500 are on-street metered spots, while the remainder are located in surface lots. The City is responsible for revenue collection and maintenance of these spaces. Displayed below are the City-controlled surface lots and the number of spaces at each location (see Table 1, below).

Table 1. Lots controlled by the City of Ann Arbor[1]

City Lots	*Number of Spaces*
Church Street	5
Main/William	23
Depot	35
Ann/Main	44
Farmer's Market	73
City Hall	31
Kerrytown	24
Fourth and Catherine	48
Community High	87
Zina Pitcher	13
South First*	96

* *Permit parking only*

The 4,606 downtown parking spaces that the DDA leases from the City are distributed among seven structures and four surface lots. Of these DDA spaces 4,190 are in usable condition. Currently the Fourth and Washington structure is closed, and a temporary lot at Fifth and Huron has opened.[2] The DDA contracts with National Garages, Inc. for operations, revenue collection, and non-capital maintenance. In addition to the operating revenues it receives from these structures and lots, the DDA receives tax revenues from downtown businesses (TIFA revenues), a large portion of which service existing debt on the structures. The locations of the structures and lots and the number of spaces and monthly permits is displayed below (see Table 2, page 4).

[1] Figures provided by DDA.

[2] Parking customers from the Fifth and Huron lot are not considered in this study. We make the assumption that the Fourth and Washington structure will be re-opened per existing plans.

Table 2. DDA structures and lots, number of spaces, and number of permits[3]

DDA Structures/Lots	*Current Usable Spaces*	*1997 Monthly Permits*
First-Washington structure	149	214
Maynard structure	786	308
Forest structure	368	101
Fourth-William structure	883	1108
Liberty Square structure	590	398
Ann-Ashley structure	837	1113
Fifth-Liberty (Library) lot	213	0
S. Ashley/Kline lot	144	9
First-Huron lot	165	34
Fifth-Huron lot	55	n.a.

Note that the Fourth and Washington structure is currently closed.

In total, the Ann Arbor public parking system consists of 4,669 usable off-street spaces in structures and surface lots, in addition to 1,534 on-street meters.

Current status of the parking system:
At present, the structures utilize a linear pricing strategy in the structures, i.e., the charge for each hour of parking is the same regardless of the total number of hours parked. In fiscal year 1998, the flat rate for hourly parkers is $.70. The lots use a nonlinear (progressive up) pricing schedule for hourly rates, charging $.80 per hour for the first three hours and $1.00 per hour for more than three hours. Monthly permits in both the structures and lots cost $70.00, with a discount price of $65.00 for large group permit holders (groups of 50 or more).[4]

The combination of age and deferred maintenance on the seven downtown structures presents the City with significant capital expenditures required in the near future. For the parking system as a whole to meet these increased costs, revenues must be increased. The results of this study show that the projected surplus from the City's on-street parking meters, from both parking fees and fines, may be more than enough to meet the future increased costs of the structures. This study also examines other options for meeting the increased costs, including price increases and privatization.

[3] Figures for usable spaces provided by the DDA. Monthly permit figures as of mid-1997 as reported in BRW study.
[4] Special pricing agreements exist outside of these parameters that are not detailed here.

Chapter 1. Demographic Survey

To better understand the characteristics of parking consumers in Ann Arbor, we carried out a demographic survey of patrons of the DDA structures and lots. Findings may serve to assist in setting future parking policy. This section of the report describes the methodology of the survey process and presents survey findings. Additional information is presented in Appendix 1.

Methodology

Survey instrument

A survey instrument was drafted to obtain information regarding a number of topics, including general demographics, demand for parking, and demand elasticity with respect to price. It was designed to be easy to administer and easy to understand, bearing in mind the necessity of brevity, and is twelve questions in length. The instrument was subjected to pre-testing prior to administration, and alterations were made accordingly. A copy of the instrument is provided in Appendix 1.

Administration

The survey was administered on Wednesday, November 12, 1997 and Saturday, November 15, 1997.[5] A Wednesday was selected to represent midweek traffic; a non-UM football game day was selected to represent weekend traffic. It is likely that traffic is significantly increased on game days, though there are only six home games per year. Parking is free on Sundays. The survey was administered over four periods each day: 8-10am; 11am-1pm; 2-3pm; 5-7pm.

Weather might impact parking demand; conditions for the relevant survey days are displayed below (see Table 1.1, below).

Table 1.1. Weather on days of administration

Weather	*12 Nov. 1997 (Wed.)*	*15 Nov. 1997 (Sat.)*	*19 Nov. 1997 (Wed.)*	*13 Dec. 1997 (Sat.)*
Low (°F)	21	29	24	25
High (°F)	35	32	36	28
Conditions	overcast; trace rain	sleet; snow	overcast	overcast

Source: Ann Arbor News

Surveys were administered verbally to respondents. Administrators were placed by exits to encounter respondents on foot after they had just parked. Administrators surveyed each possible exit route, moving from exit to exit throughout each shift. In situations with many people arriving in the same car, only one person from each carload was surveyed. Administrators were requested to question every other carload (every other willing carload-participant) for reasons of randomization.

[5] Missed shifts were made up on Wednesday, 19 November 1997 and Saturday, 13 December 1997.

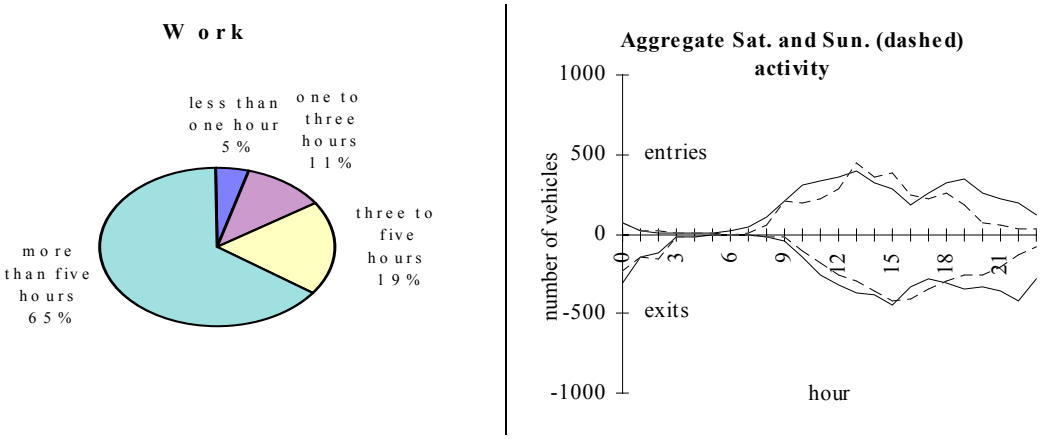
Population data

We surveyed on a Wednesday and Saturday in November.[6] Prior to an analysis of data, it is helpful to know and to bear in mind how the choice of days of administration might have affected findings. To illustrate daily and seasonal usage trends, population data were requested for the days of administration.[7] Usage data on each facility were provided by National Garages, Inc. and were supplemented by information presented in a report commissioned by the DDA prepared in 1997 by BRW, Inc.

Daily usage and variation

Information maintained on each facility includes the number of cars entering and exiting, by hour.[8] Wednesday traffic (incoming or outgoing) appears heaviest during four distinct periods: morning (entrances); lunch-hour (entrances and exits); exodus from work (exits); dinnertime (entrances and exits). Furthermore, most monthly permit entrances and exits, not surprisingly, occur in the morning and late afternoon, respectively, while commuters come and go from work. An analysis of parking data by BRW, Inc., suggests that weekday traffic increases throughout the course of the week, with the highest number of transactions occurring on Friday.[9]

Figure 1.1. Aggregate activity, Wednesday 12 Nov., Saturday 15 Nov., and Sunday 16 Nov.[10]



Saturday activity is lower relative to Wednesday (see Figure 1.1, above). Rush-hour spikes (i.e., morning entries and late afternoon exits) are nearly non-existent; activity remains relatively constant throughout the day. While parking is free on Sundays, the structures and lots maintained by National Garages, Inc. each are outfitted with triggers monitoring entrance

[6] Including make-up days, technically we surveyed on two Wednesdays and a Saturday in November, and a Saturday in December.

[7] Population data include the number of cars entering and exiting each structure or lot; these data are distinct from usage data presented in Chapter 3.

[8] National Garages, Inc., system database.

[9] BRW, Inc., *Ann Arbor Downtown Parking Study* (July 1997), p. 6.

[10] National Garages, Inc., system database; figures do not include data for Maynard structure and S. Ashley-Kline surface lot, which were unavailable.

and exit activity. Usage appears to be similar to that of Saturday. Structures or lots which are used primarily for workday commuters exhibit reduced demand on the weekend, especially the Ann-Ashley structure.

Seasonal usage and variation

Usage varies throughout the course of the year. An analysis of the average number of hourly parking transactions per day, by month, suggests that hourly activity slows slightly for the summer months and picks up in September.[11] An analysis of the average number of open spaces available in the structures and lots per day, by month, suggests that overall activity again slows slightly for the summer months and picks up in September. Readers of this report should bear in mind the November timing of the survey when interpreting results.[12]

Survey data

In all, 1040 persons responded to the survey over the course of 65 shifts.[13] Administrators recorded the number of persons who declined participation; the refusal rate (i.e., the percentage of people asked to participate who declined) ranges from zero to 75.9 percent, with a mean of 42.2 percent (see Table 1.2, page 8).[14] Because of variations in usage levels throughout the course of each day, certain shifts were under-sampled while others were over-sampled; the number of vehicles entering each location and the number of survey respondents are presented in Table 1.3 (page 8).[15] Moreover, the timing of survey shifts cannot help but influence findings (e.g., by surveying from 8-10am on a Wednesday, the sample contains numerous responses from monthly permit holders and persons parking for the reason of work). In the analysis reported below, data have not been weighted to take into account these differences.

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[11] National Garages, Inc. *Parking Analysis 1997, Ann Arbor, MI* (unpublished monthly statistics by lot). Data were not available for October-December 1997.

[12] Locations were surveyed on the 12, 15, 19 November and 13 December; the level of economic activity, most notably shopping, may be high relative to other months.

[13] Data were unavailable for seven shifts: Wednesday, 8-10am and 11am-1pm, S. Ashley-Kline surface lot; Saturday, 8-10am and 2-3pm, 4th & William structure; Saturday, 8-10am, 2-3pm, and 5-7pm, Ann-Ashley structure.

[14] Refusal rate is defined as follows: $\text{Refusal rate} = 100 * \left| \frac{\text{Refusals}}{\text{Refusals} + \text{Responses}} \right|$.

[15] Administrators reported that during extremely slow shifts, the suggested *every-other-willing-carload-participant* rule was abandoned, resulting in over-sampling. The ramifications of the resulting weakening of randomization – a decrease in the generalizability of findings – must be recognized.

Table 1. 2. Refusal rate by location, day, and shift time (percent)

		Shift			
Location	***Day***	***8-10am***	***11am-1pm***	***2-3pm***	***5-7pm***
Ann-Ashley structure	Wed.	57.7	63.6	50.0	0.0
	Sat.	*n.d.*	30.0	*n.d.*	*n.d.*
Forest structure	Wed.	50.0	41.7	70.0	47.6
	Sat.	16.7	43.8	22.2	28.6
Liberty Square structure	Wed.	67.2	52.4	61.1	67.6
	Sat.	75.0	54.5	66.7	13.8
Maynard structure	Wed.	73.1	75.9	72.0	61.3
	Sat.	43.8	63.9	42.3	63.3
4th-William structure	Wed.	29.8	4.0	17.7	64.4
	Sat.	*n.d.*	48.8	*n.d.*	62.2
1st-Wash. Structure	Wed.	28.6	20.0	∅	30.8
	Sat.	38.5	62.2	33.3	36.0
5th-Liberty surface	Wed.	11.8	24.0	26.3	7.4
	Sat.	25.0	45.3	46.8	75.0
1st-Huron surface	Wed.	32.3	40.9	41.7	50.0
	Sat.	15.0	63.6	31.8	0.0
S. Ashley-Kline surf.	Wed.	*n.d.*	*n.d.*	16.7	35.7
	Sat.	19.0	62.3	46.2	31.0

n=1040 responses; 983 refusals; n.d.=no data; ∅=undefined (division by zero)

Table 1. 3. Numbers of vehicles entering and survey respondents, by location, day, and shift time

		Shift							
		8-10am		***11am-1pm***		***2-3pm***		***5-7pm***	
Location	***Day***	***#V***	***#R***	***#V***	***#R***	***#V***	***#R***	***#V***	***#R***
Ann-Ashley structure	Wed.	510	30	105	8	57	3	8	3
	Sat.	26	*n.d.*	34	7	8	*n.d.*	18	*n.d.*
Forest structure	Wed.	180	28	77	14	42	3	93	11
	Sat.	35	20	117	18	80	14	53	20
Liberty Square structure	Wed.	315	21	88	20	38	7	52	11
	Sat.	47	3	66	10	36	4	86	25
Maynard structure	Wed.	*n.d.*	21	*n.d.*	20	*n.d.*	7	*n.d.*	29
	Sat.	*n.d.*	18	*n.d.*	26	*n.d.*	15	*n.d.*	29
4th-William structure	Wed.	136	33	95	24	22	14	112	16
	Sat.	19	*n.d.*	55	21	21	*n.d.*	99	42
1st-Wash. structure	Wed.	92	15	28	8	17	0	68	9
	Sat.	27	8	43	14	16	16	71	16
5th-Liberty surface	Wed.	138	30	215	19	87	14	217	25
	Sat.	108	15	265	29	123	25	99	5
1st-Huron surface	Wed.	75	21	102	26	31	7	151	6
	Sat.	50	17	114	4	43	15	151	7
S. Ashley-Kline surf.	Wed.	*n.d.*	*n.d.*	*n.d.*	*n.d.*	*n.d.*	5	*n.d.*	9
	Sat.	*n.d.*	17	*n.d.*	20	*n.d.*	14	*n.d.*	29

#V=number of vehicles entering; #R=number of respondents; n.d.=no data

Findings

Findings are presented in the tables and figures that follow, and are discussed below. Findings are presented by survey question variable, in their order of appearance on the survey instrument (the discussion of monthly permit holder status, however, precedes the discussion of other variables). Findings are discussed in aggregate in Figure 1.4 (below), controlling for day (i.e., Wednesday, 12 November 1997; Saturday, 15 November 1997) and controlling for monthly permit holder status; both day and permit holder status appear to be strong predictors of certain behaviors (e.g., duration of visit in structure/lot; percentage parking for reason of work). Differences in findings by location are discussed when relevant; figures by location are presented in Appendix 1. Please note that while the survey consisted of questions with a predetermined set of responses, several administrators noted on the survey instrument invaluable open-ended editorial comments of respondents. We draw attention to such comments as appropriate.

Table 1.4. Survey responses in aggregate

Respondent gender:			M *52%*	F *48%*
1. How long do you plan on parking here today?	Less than 1 hr. *26%*	between 1-3 hrs. *41%*		
	between 3-5 hrs. *14%*	more than 5 hrs. *19%*		
2a. Is (are) your reason(s) for being here related to the University of Michigan (are you attending a ***UM*** conference or concert or something)?			Yes *18%*	No *82%*
2b. What is your reason for being here?	Shopping *19%*	business *10%*	work *21%*	
	classes *6%*	conference *1%*	residence *0%*	
	entertainment *10%*	visiting friends *3%*	dining/drinking *19%*	
	other *11%*			
3. How many times per week do you use city parking facilities?	Once/twice *55%*	3-5 times *36%*	6/more *9%*	
4. Parking rates have just increased. How will this increase affect how much you park here? Not at all? Somewhat? A lot?	Not at all *68%*	somewhat *20%*	a lot *12%*	
5. How often do you use means *other than the car* to get to this location? Never? Sometimes? A lot?	Never *77%*	sometimes *19%*	a lot *4%*	
6. Do you have a monthly permit for this structure/lot?			Yes *14%*	No *86%*
7. Would you have preferred to park on the street?			Yes *42%*	No *58%*
8. Would you have preferred to park in a different structure/lot?			Yes *15%*	No *85%*
9. Are you a student?			Yes *21%*	No *79%*
10a. Do you live in Ann Arbor?			Yes *55%*	No *45%*

n=1040

Gender

Administrators recorded respondent gender; roughly half of the respondents were male. This figure may not be entirely meaningful, as neither the number of passengers per surveyed automobile nor their gender was recorded. Often, the passenger/driver responding was simply the person in closest physical proximity to the administrator.

Some administrators reported that comments were made about the safety of structures and the need for more lighting and security. One female respondent stated that she no longer parks in structures after dark because she feels unsafe.

Controlling for day or permit holder status does not have a significant effect on the percentage breakdown of gender. Likewise, there appears to be little difference in the gender ratio when disaggregated by lot.

Monthly permit holder

Roughly 14 percent of respondents reported that they were monthly permit holders. Monthly permit holder status is a strong predictor variable, as expected. Permit-holding respondents exhibit the following characteristics, in general: park for a longer duration; park for purpose not related to UM; park for the reason of work; use the system at least 3-5 times per week; are less affected by changes in price, don't have as strong a preference for on-street parking; are less likely to be students (see Table 1.5, below).

Given that monthly permit holders report parking primarily for the reason of work, it is not surprising that findings differ by day; 23 percent of Wednesday respondents are permit holders, while 5 percent of Saturday respondents are permit holders. Specific findings with regard to monthly permit holder status are noted in the subsections on each respective variable, and will not be described in further detail here. Please note that we refer to patrons *without* monthly permits as "hourly" customers.

Table 1.5. General characteristics of responding monthly permit holders

Reported characteristic	*monthly permit holder*	*no monthly permit (i.e., hourly)*
Park for more than 5 hours	73%	10%
Don't park for UM-related purpose	94%	71%
Park for reason of work	81%	14%
Use the system at least 3-5 times/week	99%	35%
Behavior won't be affected by price change at all	86%	66%
Don't prefer on-street parking	87%	54%
Not student	92%	77%

Length of stay

Participants were asked how long they planned on parking. Roughly 41 percent of respondents stated that they were planning to park for between one to three hours, the most popular response. The majority of respondents appear to have been parking for a relatively short term, as only 33 percent of respondents reported that they were parking for more than three hours.

When we control for day, we see that on Saturday fewer respondents park for more than five hours, while more respondents park for one to three hours (see Table 1.6, below). Regarding permit holder status, the majority of permit holders report parking for more than five hours; a smaller majority of hourly customers park for one to three hours.

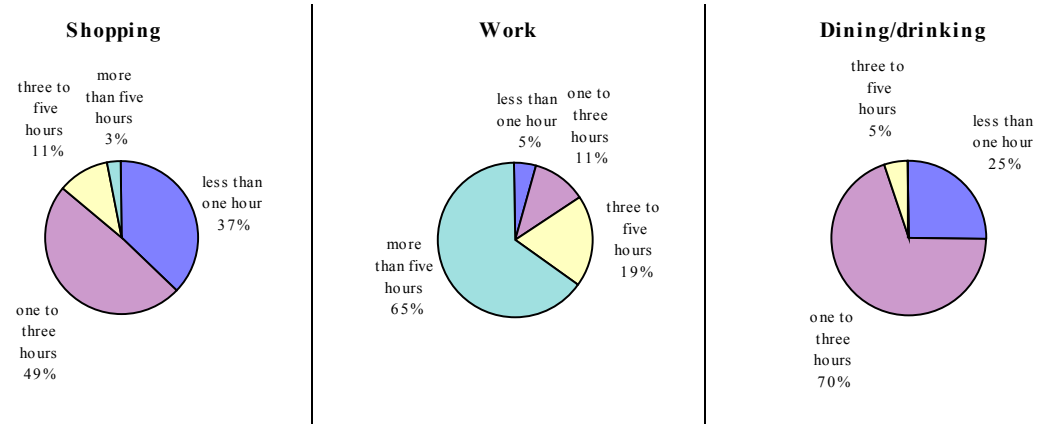
Table 1.6. Duration of visit, in aggregate, by day, and by permit holder status (percentage of respondents)

		Day		*Monthly permit holder status*	
Purpose	***Aggregate***	***Wednesday***	***Saturday***	***Permit***	***Hourly***
less than 1 hour	26%	25%	27%	3%	30%
1-3 hours	**41%**	**31%**	**50%**	10%	**46%**
3-5 hours	14%	15%	14%	14%	14%
more than 5 hrs.	19%	29%	9%	**73%**	10%

Numbers in bold indicate high scores

The duration of visit of respondents differs by their reported reason for parking (see Figure 1.2, below). For reasons of both shopping and dining/drinking, the majority of respondents reported that they would be parking for less than three hours (86 and 95 percent of respondents, respectively). Alternatively, the vast majority of respondents parking for the reason of work reported that they would be parking for more than three hours (84 percent).

Figure 1.2. Duration of visit by reported reason for visit



UM-related purpose

Roughly 18 percent of respondents stated that they were in their present location so as to attend a University of Michigan-related concert, conference, or event. This figure is

independent of respondents who stated that they were students (see "Students," page 15), as some students were parking for reasons of dining or shopping, etc. (i.e., and were *not* parking in their present location directly for a UM-related purpose).

When controlling for day, a higher percentage of respondents was parking for a UM-related purpose on Wednesday than on Saturday (20 percent and 15 percent, respectively). Furthermore, a higher percentage of respondents was parking for a UM-related purpose without a monthly permit than with a permit (19 and 6 percent, respectively). Controlling for lot does appear to have a significant impact on findings in this case: the Forest, Liberty Square, and Maynard structures all exhibit high percentages of respondents parking for a UM-related purpose (45, 32, and 31 percent, respectively; less than ten percent of respondents in the each of remaining locations report parking for a UM-related purpose).

Reason for visit

Participants were asked what was/were the reason/s for their visit; participants were given the option of selecting more than one answer choice. Of the 1183 total answers selected, work, shopping, and dining/drinking were the most popular responses (21, 19, and 19 percent, respectively). Of the 112 respondents reporting two reasons for their visit, just under half reported a reason of dining/drinking primarily in conjunction with shopping or entertainment; some 13 percent of the 112 respondents reported a visiting reason of business primarily in conjunction with work. Seventeen participants reported three reasons for their visit; the majority of these respondents reported a combination of reasons of shopping, dining/drinking, and entertainment. No participants reported four or more reasons for their visit.

Not surprisingly, the most popular reported reason for visiting on Wednesday was work, and for Saturday was shopping (see Table 1.7, below). Perhaps even more predictably, more than four out of five monthly permit holders reported work as the reason for their visit. Nearly a quarter of hourly customers reported shopping as the reason for their visit.

Table 1.7. Reason for visit, in aggregate, by day, and by permit holder status (percentage of respondents)

		Day		*Monthly permit holder status*	
Purpose	***Aggregate***	***Wednesday***	***Saturday***	***Permit***	***Hourly***
shopping	19%	10%	**33%**	4%	**24%**
business	10%	17%	5%	5%	12%
work	**21%**	**38%**	9%	**81%**	14%
classes	6%	9%	5%	4%	7%
conference	1%	1%	0%	0%	1%
residence	0%	0%	0%	1%	0%
entertainment	10%	4%	15%	1%	11%
visiting friends	3%	1%	3%	1%	2%
dining/drinking	19%	12%	20%	2%	18%
other	11%	8%	10%	1%	11%

Numbers in bold indicate high scores

Frequency of system usage

Roughly 55 percent of respondents reported using the Ann Arbor parking system only once or twice per week. Please note that this figure includes those respondents who use the system as little as once per month or even once per year. Persons responding to the survey on Wednesday were almost as likely to park once or twice as they were to park three to five times per week (42 and 48 percent, respectively); persons responding on Saturday, however, were more likely to use the system only once or twice per week (69 percent). Respondents with monthly permits were more likely to park three to five times per week (70 percent), while respondents without permits were more likely to park once or twice (65 percent).

Change in behavior due to increase in price (price elasticity of demand)

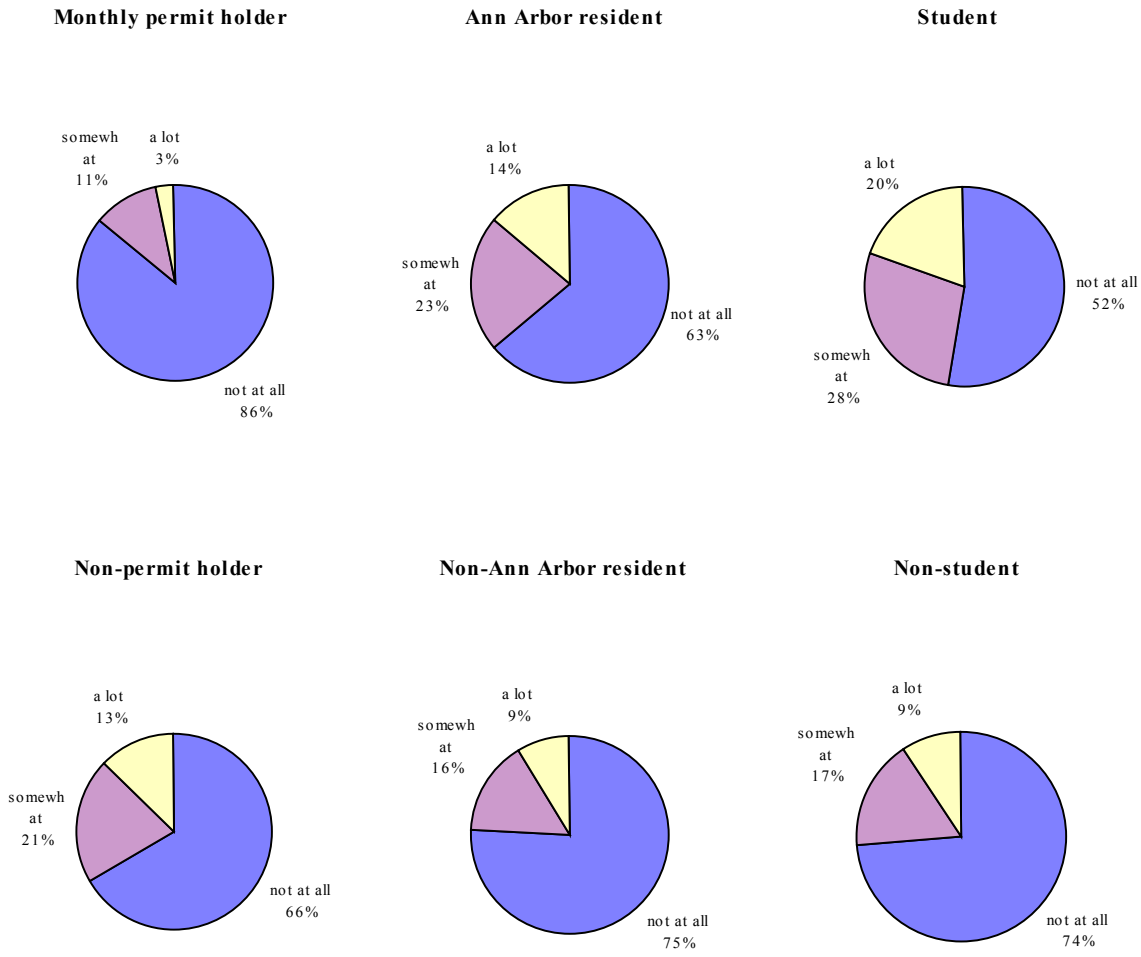
An increase in the hourly rate of parking was put into effect on November 3, 1997, providing an opportunity to probe for expected changes in the behavior of patrons due to a change in price (i.e., price elasticity of demand). More than two-thirds of all respondents noted that their demand for parking would not be affected by the price increase; roughly 20 percent of respondents reported that their behavior would be "somewhat" affected; and 12 percent reported that behavior would be affected "a lot."

Administrators reported that many respondents did, however, note that they didn't *like* the increases; perhaps respondents feared that if they did not voice at least some opposition to the increase, more increases would follow. Of those persons who noted that they would, on the other hand, change their use of parking "a lot," administrators reported that such persons appeared extremely upset.

We see only marginal changes in the percentage breakdown of responses when we control for day. When we control for monthly permit holder status, permit holders appear to be even less sensitive to changes in price than hourly customers (see Figure 1.3, page 14). This is not surprising for two reasons: permit holders do not pay hourly fees for parking and are therefore not affected by changes in the hourly pricing schedule; and permit holders likely don't have the option, in the short run, of rerouting their activity to an alternate location (i.e., their purpose for parking is primarily work, and employers may cover the cost).

Respondents claiming Ann Arbor as their home appear to be somewhat more likely to change their behavior due to the price increase than non-residents; respondents claiming student status are also more likely than non-students to change heir behavior due to the price increase (see Figure 1.3).

Figure 1.3. Reported change in behavior due to increase in price, controlling for monthly permit holder status, for Ann Arbor resident status, and for student status



Note: A non-permit holder is an hourly customer.

Use of means other than the car

Roughly 77 percent of respondents stated that they "never" use means other than the car to get to their present location. Controlling for day has virtually no effect on reported use of means other than the car. Roughly 82 percent of monthly permit holding respondents never use means other than the car, while 76 percent of hourly customers likewise never use of means other than the car.

It should be recognized that season may have had an impact on responses, as it may not have occurred to respondents that they do, in fact, walk, bike, or take the bus when the weather is cooperative.

Prefer on-street parking

Roughly 42 percent of respondents reported that they would have preferred to park on the street, suggesting that on-street demand exceeds supply (otherwise these respondents would not have parked in a structure/lot). Several administrators reported that respondents said they would have parked on the street "had they found a space."

Controlling for day has little effect on the percentage breakdown of respondents preferring on-street parking. As noted earlier, a lower percentage of respondents with a monthly permit would have preferred to park on the street than without a permit (13 and 46 percent, respectively); parking for these patrons is, for all intents and purposes, already paid for.

Prefer different structure/lot

This question was intended to discover whether or not consumers of parking were indifferent about their parking location. It was hypothesized that certain respondents might prefer specific locations, only to find them at capacity or closed for repairs. Only 15 percent of respondents would have preferred to park in a different location. Controlling for day or monthly permit holder status has only a marginal effect on reported preferences. This question was confusing to many respondents, especially those parking at off-peak times (and who were not faced with structures/lots filled to capacity). Some respondents in locations near to the closed 4th-Washington structure reported feelings of inconvenience.

Student

Roughly 21 percent of the respondents are students. A slightly higher percentage of Saturday respondents than Wednesday respondents reported student status (23 percent for Saturday respondents; 19 percent for Wednesday respondents). A slightly lower percentage of monthly permit holders reported student status (23 percent for permit holders; 8 percent for hourly customers). An examination of data illustrates that the greater concentration of student respondents may be found in the Forest structure (47 percent of Forest respondents report student status); the lowest such concentration may be found in the Ann-Ashley structure (6 percent of Ann-Ashley respondents reported student status).

Residence

Roughly 55 percent of the respondents live in Ann Arbor. A slightly higher percentage of Saturday respondents than Wednesday respondents reported Ann Arbor resident status (57 percent for Saturday respondents; 52 percent for Wednesday respondents). A slightly lower percentage of monthly permit holders claimed Ann Arbor as their home (48 percent for permit holders; 56 percent for hourly customers). For the most part, resident-status does not vary enormously by lot, (excluding the 5th-Liberty surface lot); the highest percentage of Ann Arbor residents appears to be the 5th-Liberty (Library) surface lot, likely because of its proximity to downtown businesses, the Federal building, post office, public library, and the YMCA.

Of the 441 nonresidents reporting their hometown, no more than 20 percent live in the same location. Ypsilanti is the most popular place of residence after Ann Arbor (see Table 1.8, page 16).

Table 1.8. Percent and number of responses indicating residence outside of Ann Arbor

Non-Ann Arbor location	*Percent of non-resident response by location*	*Number of responses for each location*
Ypsilanti	20.0	88
Saline	6.8	30
Dexter	5.4	24
Detroit	3.9	17
Brighton	3.4	15
Livonia	2.9	13
Chelsea	2.9	13
Pinckney	2.9	13
Plymouth	2.7	12
Jackson	2.7	12
Other	46.3	237

n=441

Findings by location

Findings are presented by location in Appendix 1. Six figures are presented for each location (Figures A.1.A-F). Figures A.1.A-E provide information regarding duration of stay; reason for visit; weekly usage frequency; change in behavior (i.e., parking demand) due to the recent increase in price; and frequency of use of means other than the car. Figure A.1.F. provides information regarding six different yes/no questions, presented on a common percent scale.

Chapter 2. Parking Systems in Other Cities

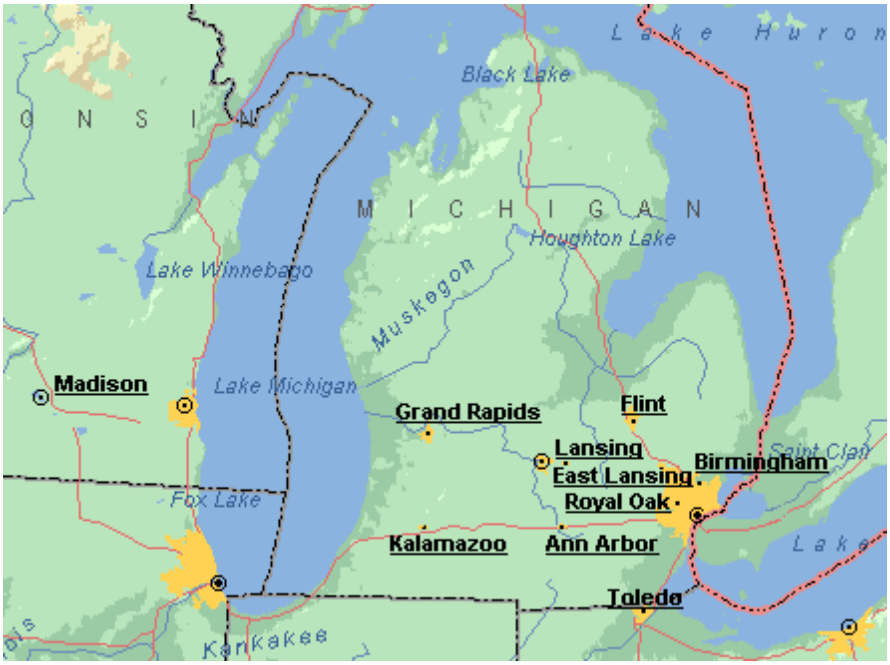
This section is an examination of the public parking systems of other communities. Its purpose is to provide a basic description of other city parking systems so as to enable better decisions regarding Ann Arbor parking policy.

Methodology

Eleven cities were surveyed (see Figure 2.1). Data were gathered via phone interviews and supplemented with additional documents provided by the cities when available. In most cases, the city official in charge of administering parking policy was interviewed. Follow-up interviews were conducted when possible to confirm and expand the information collected. Basic descriptive measures of each city were also compiled from various published sources.

Seven Michigan cities plus Toledo were chosen because of their proximity to Ann Arbor. The three additional cities surveyed were selected because they are typically thought of as university towns, with a major university abutting or geographically located close to the downtown area. With the exception of Toledo, all of these communities have been employed as comparables for Ann Arbor in the past. The Michigan cities are Birmingham, East Lansing, Flint, Grand Rapids, Kalamazoo, Lansing, and Royal Oak. The cities outside the state are Toledo (Ohio), Boulder (Colorado), Iowa City (Iowa), and Madison (Wisconsin).

Figure 2.1 Map of other locations examined



Note: map does not include Boulder, CO or Iowa City, IA

The data collected from our survey of cities are presented in six tables, below.[16] This information is repeated in individual city descriptions which appear in Appendix 2. The descriptions of each city's parking system also include additional information collected from the interviews.[17]

City characteristics

As is obvious from the information presented in Table 2.1 (below), the eleven cities surveyed vary considerably in size, population, the presence of a major university, and economic health. All of these measures, however, are intended only to provide a rough picture of how the cities compare both to themselves as well as Ann Arbor. Many important similarities are not contained within the numbers. Table 2.1 does not, for example, reflect the similarities between Birmingham or Royal Oak and Ann Arbor with respect to downtown shopping or entertainment opportunities. As a second example, the figures also fail to capture the large number of professionals who commute into downtown Lansing and Kalamazoo for work during the week. Table 2.1 simply illustrates that perfect comparables do not exist. While there are certainly significant differences between these cities and Ann Arbor, all have public parking systems which attempt to address local needs and concerns.

Table 2.1. City descriptive measures

City	*1990 size (sq. miles)*	*1994 population*	*Major university?*	*1989 median household income*	*1996 unemployment rate*
Ann Arbor	**25.9**	**108,817**	**Yes**	**$33,344**	**2.0%**
Birmingham	n.a.	20,167	No	$57,573	n.a.
East Lansing	9.5	50,322	Yes	$24,716	4.4%
Flint	33.8	138,164	No	$20,176	10.9%
Grand Rapids	44.2	190,395	No	$26,809	5.6%
Kalamazoo	24.6	81,644	No	$23,207	5.3%
Lansing	33.9	119,590	No	$26,398	4.9%
Royal Oak	11.8	68,431	No	$36,835	2.7%
Toledo	80.6	322,550	No	$24,819	6.0%
Boulder	22.6	85,613	Yes	$29,407	4.1%
Iowa City	22.0	60,655	Yes	$24,565	3.0%
Madison	57.8	194,586	Yes	$29,420	1.8%

Sources: Population and household income (except Birmingham) - 1997 County and City Extra; unemployment rate - Bureau of Labor Statistics; Birmingham population - Southeast Michigan Council of Governments; Birmingham household income - 1990 Census.

[16] Chapter 5 discusses interesting aspect of the city systems and notes some general observations apparent across the systems surveyed.

[17] Specifically, the city descriptions contain data on system size and composition, pricing, organization, finances, and when available utilization and miscellaneous additional information. The primary person interviewed is always provided as a contact, including title and phone number.

Parking system size

Table 2.2 (below) provides information on the size of each city's parking system. The numbers include only those facilities controlled by the city. Structures and lots open to the public that are owned by the state, county, or large private companies are not included, although these alternate providers are noted in the individual city descriptions when they were mentioned in the interviews. Structure and surface lot spaces are listed individually and then summed to give the total number of off-street spaces included in each city system. As can be seen, these communities have parking systems of dramatically different sizes: total off-street spaces operated by the cities surveyed vary from a low of 1,313 in Flint to a high of 7,195 in Grand Rapids.

Table 2.2. Size of system

	Structures		*Surface lots*		*Off-street spaces*		
City	*Number*	*Spaces*	*Number*	*Spaces*	*Total*	*Per 100 Residents*	*Street Meters*
Ann Arbor	**7**	**3,613**	**15**	**1,056**	**4,669**	**4.29**	**1,534**
Birmingham	5	3,680	3	500	4,180	20.73	1,200
East Lansing	4	1,600	5	400	2,000	3.97	220
Flint	1	600	6	713	1,313	0.95	860
Grand Rapids	6	3,820	16	3,375	7,195	3.78	1,956
Kalamazoo	4	2,989	15	1,549	4,538	5.56	1,148
Lansing	4	3,635	20	2,258	5,893	4.93	2,327
Royal Oak	2	1,041	9	1,036	2,077	3.04	672
Toledo	3	2,350	2	222	2,572	0.80	760
Boulder	3	967	5	774	1,741	2.03	1,636
Iowa City	3	1,925	8	522	2,447	4.03	1,250
Madison	6	3,732	11	677	4,409	2.27	1,314

The second-to-last column in the table provides a measure of each system's size relative to city population. *Off-street spaces per100 residents* is simply total off-street spaces divided by each city's reported population and then multiplied by 100.[18] Larger numbers represent bigger relative systems. Ann Arbor has 4.29 off-street spaces per 100 residents, while the eleven cities surveyed range widely on this measure, from 0.80 in Toledo to 20.73 in Birmingham. Extreme values are illustrative of atypical situations. Toledo and Flint both have less than 1 space per 100 city residents, but these two communities have far less healthy downtown areas than the other cities surveyed. In addition, a significant amount of parking is offered by other providers in Toledo and Flint. Birmingham, on the other hand, has over three times as many off-street spaces per resident than do any of the other communities. This is a result of the city's small size relative to its downtown coupled with the vitality of the downtown itself.

[18] This figure is useful for general comparisons. It should, however, be employed with care: it recognizes neither that the systems serve users from outside city borders, nor that the different downtown areas have different drawing power for non-residents.

Hourly price structure

The two left-most columns in Table 2.3 (below) indicate the first-hour cost of parking in the structures and surface lots of each city system. Some cities charge different amounts at different structures or lots based upon consumer demand: prices are not always uniform across all structures or all lots. To simplify the table, however, only the most common rate for each is listed. This does not seriously distort the comparison between cities, as the variation across any city's structures or lots is generally small. Complete pricing information is given in the individual city descriptions (see Appendix 2).

Table 2.3. Hourly price structure

	First-hour cost of parking			
City	*Structures*	*Lots*	*CBD meters*	*Price structure**
Ann Arbor	**$0.70**	**$0.80**	**$0.60**	**S - Linear , no max** **L - Progressive up, no max**
Birmingham	free	$0.75	$1.00	S - Progressive up , $5 max L - Meters (linear, no max)
East Lansing	$0.60	$0.80	$1.00	S - Progressive up, $7 max L - Progressive up, no max
Flint	$1.25	$0.50	$0.25	S - Progressive down, $6 max L - Linear, $4 max
Grand Rapids	$1.60	$1.60	$1.20	S - Linear, $6.75 max L - Linear, no max
Kalamazoo	$0.60	$0.60	$0.75	S - Linear, $5.50 max L - Honor box (linear, no max)
Lansing	$1.00	$1.00	$1.00	S - Linear, $6 max L - Meters (linear, no max)
Royal Oak	$0.25	$0.50	$0.50	S - Progressive down, no max L - Meters (linear, no max)
Toledo	$1.50	n.a.	$1.50	S - Linear, $3.50 max L - Almost no public parking **
Boulder	$0.75	$0.75	$0.75	S - Progressive up, no max L - Meters (linear, no max)
Iowa City	$0.50	$0.50	$0.60	S - Linear, no max L - Linear, no max
Madison	$0.75	$0.75	$0.75	S - Linear, no max L - Meters (linear, no max)

**S denotes structures, L denotes lots. See text for further explanation.*
***There are only 26 surface lot spaces available for public parking in the Toledo city system; the small lot in which these are located is scheduled to soon be built over in a redevelopment project.*

The last column in Table 2.3 generalizes the price structure employed by each city in its parking structures and lots; it also indicates the predominant maximum fee present in both. The top line for each city in this column describes the structures, while the bottom line describes the surface lots. A linear structure is one in which each hour of parking is of a uniform cost. In a progressive price structure, the price is not uniform: the hourly cost

varies. With upwardly progressive pricing ("progressive up"), the hourly fee increases at some point after the first hour parked, thus charging a premium for longer-term parking. In downward progressive pricing ("progressive down"), the hourly fee decreases below the first hour cost, theoretically providing an incentive for longer-term parking in the facility.[19] Some cities also use maximum fee limits to cap the cost of long-term parking in some or all of their structures. When such caps are uniform across all a city's structures, their use may be motivated by equity concerns and/or a desire not to price long-term parkers out of the system. Variations in these limits *within* a city system are often employed to steer longer-term parkers to specific facilities, thus preserving short-term parking in premium locations. (This can be seen in Birmingham, Grand Rapids, and Iowa City.) The complete pricing policy employed by each city is given in the individual city parking system descriptions. Each system's price structure is also summarized in a table which appears at the end of Appendix 2.

Monthly permit rates

Table 2.4 (below) indicates the cost of monthly permits in each city. All cities surveyed offer parking permits, and most charge a range of prices based on location and therefore demand. As a result, the monthly price of both structure and lot permits varies greatly across the cities. In addition, the difference in cost *within* each system between the structure and lot permits is largely a result of the structures being more centrally located than the surface lots which offer permit parking.

Table 2.4. Monthly permit rates

City	*Structures*	*Lots*
Ann Arbor	**$70**	**$70**
Birmingham	$30-50	$40
East Lansing	$44-70	$44-55
Flint	$50	$20-45
Grand Rapids	$55-108	$15-40
Kalamazoo	$40-64	$17-40
Lansing	$46-85	$20-56
Royal Oak	$23-25	none
Toledo	$60-80	n.a.
Boulder	$58	$37
Iowa City	$40-55	$40
Madison	$75-115	$23-62

Two facts are obscured by the numbers as reported. First, Kalamazoo, Lansing, and Toledo sell some permits for reserved spaces in their structures, while all surface lot permits in East Lansing are for reserved spaces. As the prices for these permits include a premium for the convenience and certainty of always getting the same spot, the high figure in the permit cost range for each indicates the cost of these reserved space permits. Second, Madison has a two-

[19] Whether or not such an incentive truly exists depends upon the availability and price of other parking options.

tier price structure for its permits. The city charges non-residents $5 to $10 more per month than it does residents for lot permits, and $15-$20 more for structure permits. The top-end rates listed for Madison thus reflect this additional charge.

Expired meter fines

Table 2.5 (below) lists the expired meter fine in each of the surveyed cities. The price of an expired meter varies from a low of $3 up to a high of $15. Of the communities examined, Iowa City charges the least amount, while four cities (Flint, Lansing, Boulder, and Madison) charge $15 for an expired meter. Only four of the cities surveyed offer a reduced fee for immediate payment. This information is given in the second column of the table.

Table 2.5. Expired meter fines

City	*Expired meter fine*	*Reduced fee for quick payment*
Ann Arbor	**$5**	**$3 w/in 1 hour**
Birmingham	$7	none
East Lansing	$10	$5 w/in 4 hours
Flint	$15	$2 w/in 2 hours
Grand Rapids	$7	none
Kalamazoo	$6	$1 w/in 1 hour
Lansing	$15	$5 w/in 2 hours
Royal Oak	$5	none
Toledo	$7	none
Boulder	$15	none
Iowa City	$3	none
Madison	$15	none

Financial status

Organization

Table 2.6 (see page 23) summarizes information regarding the organization and financial status of each city's parking system. The first column of the table indicates how each city controls its parking assets. For eight of the eleven parking systems surveyed, both off-street facilities and on-street meters are all controlled by the city department, division, or unit which is the parking system. This is indicated by the sole listing of "City" in the column. All eight of these parking systems except Boulder are set up as enterprise funds within the city's accounts. For information regarding Boulder, see Appendix 2.[20]

[20] Parking enforcement is not directly indicated in the first column of Table 6 as enforcement operations are sometimes housed within the parking system and sometimes handled by the city Police Department. The flow of funds from enforcement activities, however, is indirectly identified in the final column of the table in so far as it impacts each city's assessment of its financial status.

Table 2.6. Financial status

City	*Control: off-street /on-street*	*Reported financial status*	*Included in reported status*
Ann Arbor	**DDA / City**	**Large Deficit**	**Off-street**
Birmingham	City	Large Surplus	Off-street, Street meters
East Lansing	City	Small Deficit	Off-street, Street meters
Flint	DDA / City	Deficit	Off-street
Grand Rapids	City	Large Surplus	Off-street, Street meters, Tickets
Kalamazoo	DDA	Large Deficit	Off-street, Street meters, Tickets
Lansing	City	Breaks Even	Off-street, Street meters, Tickets
Royal Oak	City	Small Surplus*	Off-street, Street meters, Ticket costs
Toledo	Parking Authority	Large Surplus	Off-street, Street meters, Tickets
Boulder	City	Deficit	Off-street**
Iowa City	City	Surplus	Off-street, Street meters, Ticket costs
Madison	City	Breaks Even	Off-street, Street meters, Ticket costs

Note: Financial status is as self-reported. If specific figures were provided by the city official interviewed, these numbers are given in Appendix 2.
**See footnote 21.*
***See footnote 22.*

In the other three communities surveyed (Flint, Kalamazoo, and Toledo), some or all of the cities' parking assets are controlled by other entities. In Flint, the DDA owns and operates the city off-street facilities, while the city itself handles on-street meter operations and enforcement. In Kalamazoo, the DDA ultimately controls all aspects of the city's parking system: structures, lots, street meters, and enforcement in the downtown area. Downtown Kalamazoo Incorporated (DKI), a private non-profit organization focused on local economic development, actually manages the system via a sub-lease from the DDA. In Toledo, the city parking system is organized under a Parking Authority. The Toledo Parking Authority is a separate legal entity from the city, but it controls the three structures and two lots owned by the city as well as the downtown street meters and enforcement.

Reported outcomes

For each of the eleven cities, the municipal entity responsible for managing the city's off-street parking assets was queried about the financial solvency of its operations. The goal was to determine whether or not each city's system, as composed, is able to sustain itself via operations without any subsidy from the city's General Fund or TIF monies. Five of the cities surveyed reported their parking systems produce a surplus from operations; two indicated their systems break even; and four reported their parking systems operate at a deficit.[21]

Because each city structures its organization and accounts somewhat differently, it is important to identify which parking-related functions are included in these reported outcomes. To clarify the meaning of the reported financial status of each city, the final column of Table

[21] Royal Oak is one of the cities which reported operating at a surplus. It is unclear, however, if this actually is the case. A large portion of the system's annual debt service expense is paid by TIF monies and it is possible that the city official interviewed included these non-operating revenues in his assessment.

2.6 specifies which parking-related functions are included therein. "Off-street" indicates the operations of the city structures and surface lots are included. All eleven city assessments naturally include off-street operations. "Street meters" indicates on-street meter revenues and costs are reflected in the figures. With the exception of Flint and Boulder, the reported financial status of all other cities surveyed include these operations as well.[22] "Tickets" signifies that the system's budget includes the net revenues resulting from parking enforcement (Grand Rapids, Kalamazoo, and Toledo); while "Ticket Costs" indicates that the expenses related to enforcement are included, while the revenues are not (Royal Oak, Iowa City, and Madison).

Areas for further study

Although the above data serves to provide a rough picture of the eleven parking systems surveyed, there is a great deal of additional information which would be beneficial to know for further comparisons to be drawn. Measures particularly worthy of note are:

- some quantitative indicator of the economic health and nature of each city's downtown;
- shopping, dining, entertainment and office space available beyond the downtown;
- some consistent cost of living measure;
- the extent, efficiency and utilization of each city's bus system; and
- overall parking system utilization.

[22] It is unclear how the inclusion of meter and/or enforcement operations would alter the financial status of Flint and Boulder. With regard to Boulder, because of the city's accounting structure, the only financial assessment we are able to definitively discern is that the system's off-street facilities have not comprised a self-sustaining operation in the past. Thus, although the city system includes all off- and on-street assets and is responsible for enforcement, the financial status listed reflects only off-street operations. See Appendix 2 for a further discussion of both Boulder and Flint.

Chapter 3. Breakeven Analysis

In order to conduct a breakeven analysis for the Ann Arbor parking system, we develop a pricing model designed to accomplish the following:

- examine the costs and revenues of the parking system over the next 20 years;
- test pricing options for the system.

This model is intended to inform City/DDA decisions concerning pricing for the parking system. The pricing model determines at what price level(s) each of the three components of the system will break even. By "components" of the system, we refer to three parts considered discretely for purposes of this analysis:

- Structures: All seven structures leased by the DDA from the City
- Lots: Three DDA lots leased from the City in addition to the City-controlled lots
- Meters: All City-controlled street meters

By "breakeven" we refer to the operating revenues required for each component of the system to meet its costs over the 20-year period, independently of any financing revenues such as tax revenue or bond issues and examines the revenues and costs of each component from fiscal year 1998 - 2017.[23]

In this section, we first explain the rationale for conducting the breakeven analysis and our pricing strategy. Second, we discuss the assumptions behind the pricing model, and the variables it tests. Finally, we present an analysis of our findings – three breakeven pricing options and the conditions under which they hold.

Pricing model

Breakeven analysis

The results of the pricing model show how different pricing options meet one or both of the following criteria: (1) the system as a whole breaks even, and (2) each component of the system breaks even. The pricing model only analyzes operating revenues, not other financing sources such as tax revenue. The preliminary draft of the DDA proposed schedule of price increases[24] serves as a baseline for analysis of other pricing options. Following DDA

[23] Revenues for the system are based on operations, i.e., fees collected for parking or parking fines, and do not include revenues from financing, i.e., TIFA or bond revenue. Note, however, that operating revenues from parking validation and art fair parking fees are not included in the pricing model. Parking fines received for expired meters are considered to be operating revenues of the meters.

[24] Ann Arbor Downtown Development Authority Cash Flow Projections *Preliminary Draft*, 1997/98 - 2007/08, updated October 28, 1997. Price increases from this document are hereinafter referred to as "DDA proposed price increases."
Since the DDA only proposed price increases through FY 2008, price increases beyond that year are restricted to the rate of inflation. The proposed DDA schedule only estimates city meter and city lot increases, recognizing

proposed price increases, the parking system as a whole more than breaks even. Each component of the system, however, does not break even independently. Future prices would have to be raised considerably more than proposed by the DDA in order for the structures to break even.[25] On the other hand, the revenues generated by the meters—and particularly by the fines from tickets issued for expired meters and parking violations—are large enough to subsidize the entire system.

It is unlikely that the parking system will be viewed in its entirety for budgetary purposes. As in many other cities, Ann Arbor revenues from parking ticket fines are a revenue source for the General Fund. If these revenues of the parking system were budgeted to cover parking costs and not diverted to the General Fund, then the system as a whole would break even. Since these funds have been used historically as a General Fund revenue source, however, redirecting them seems unlikely without dramatic changes to the budget. As a result, we have focused on pricing options where each component breaks even independently of the rest of the system. Most pricing options considered, therefore, are set for the structures to break even, as the structures are the parking system component with the highest costs.

In the pricing model, breakeven occurs when projected revenues exceed projected costs in terms of *net present value*. Net present value measures the cash flows of the system and where these cash flows occur in time. Because $1.00 received today is more valuable than $1.00 received one year from now[26], net present value takes into account the time frame over which cash flows in and flows out. Net present value is a standard measure frequently used in government and corporate financing decisions.

Pricing strategy

As mentioned above, the pricing model utilizes a pricing strategy that enables each component of the system to generate revenues sufficient to cover its costs. If the City/ DDA determine that price increases, rather than other financing sources, (e.g., TIFA revenues -- tax revenues from businesses in the central business district) should finance the costs of the parking system, the following should be considered.

Prices between structures and lots

If the City/DDA seeks to have each component of the parking system break even, they might implement a pricing policy with dramatically different hourly rates between the structures and the lots. This policy is easily justified by the disparity in costs between the two components. Such a policy should be considered with caution, because currently most parking customers do not differentiate between structures and lots on the basis of price. Instead, as the

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that such increases are subject to approval by the City Council. The DDA schedule proposes a 3% inflation rate. We have adjusted the DDA schedule to reflect increases in the inflation rate as appropriate. Note that the DDA proposal uses permit prices of $65.00 in FY 1998, although actual prices increased to $70.00. See Appendix 3.1 for further detail.

[25] Because this breakeven analysis only considers operating revenues. If TIFA revenues are included as revenues of the system, the DDA proposed price increases appear to be sufficient to break even.

[26] Consider the fact that $1.00 received today could be invested in a riskless savings account and be worth $1.03 one year from now.

demographic survey in this study suggests, customers currently appear to choose the lot or structure that is closest to their destination. The survey shows that only 15% of respondents would have preferred to park in a different structure or lot (see page 15).

The pricing options we consider in the pricing model set prices similarly for structures and lots. This strategy was adopted for two reasons: it resembles the status quo, and the pricing model is not a good predictor of revenues otherwise. As the system currently functions, the small difference in the hourly rate in the structures and the lots allows the public to view the two components almost interchangeably. If prices in lots and structures differ significantly, so as to change consumer behavior, the demand for specific lots and structures would be altered, and the revenue projections in the pricing model would be less accurate predictors. For these reasons, we have tested several scenarios that maintain similar (if not identical) pricing schedules for lots and structures.

Prices for hourly rates and permits

The City/DDA must also determine whether to raise the parking prices for hourly rates and/or permits. Parking users can be separated into two groups: permit holders and hourly parkers. If hourly prices increase disproportionately to permit prices, hourly parkers bear more of the cost burden. The reverse is true if permit prices are increased disproportionately to hourly prices. The DDA proposed pricing schedule (our baseline) includes rate increases for both hourly parking and permits. The scenarios tested in the pricing model vary these price increases.

Linear and nonlinear pricing

Another option concerning pricing policy involves the question of linear and nonlinear (progressive-up or progressive-down) pricing. Linear pricing charges the same hourly rate regardless of the duration of use, while nonlinear pricing charges a different rate depending on the duration of use. For example, current rates in Ann Arbor employ a linear schedule in the structures, with a flat hourly rate of $.70. Lots in Ann Arbor have a nonlinear schedule, charging $.80 per hour for the first three hours and $1.00 per hour for more than three hours. In an effort to reinvigorate business and shopping activity near parking structures and lots, some cities have implemented aggressive pricing policies that benefit short-term parkers with a lower hourly rate.[27]

In addition to linear and nonlinear pricing in the structures and lots, the City/DDA might also investigate a nonlinear pricing schedule between the city meters and the structures/ lots. Raising the hourly prices for the on-street meters above the hourly rates in the structures might induce long-term parkers into the structures and lots and "open up" on-street spaces for short-

[27] See the section in this study on Parking Systems of Other Cities. This type of pricing policy is termed "progressive-up."

term users.[28] Prices of city meters would have to be raised dramatically higher than current rates, however, if the structures were to break even independently of the meters.[29]

Assumptions in the pricing model

Assumptions for revenues

The revenue side of the pricing model projects revenues for the parking system, separating each component of the system into 1) structures; 2) lots; and 3) meters. These revenues are then combined with the projected cash flows to determine if a specific pricing scenario meets projected costs. Revenues and costs are projected through FY 2017.

Prices

The revenue model uses the inputs of price and elasticity—how much the percentage of usage changes with each percentage increase in price—to project the estimated revenue for the parking system. As Table 3.1 (page 30) shows in the structures, separate prices can be set for the hourly rate for the first three hours of parking, for the hourly rate for parking for more than three hours, for the hourly rate for the meters in the structures, and for the monthly rate for permits.[30] The model allows prices to be set differently between structures, lots, and city meters in each fiscal year, but does not allow different pricing schemes among individual structures, lots, or city meters. For example, the prices could be set as they are in FY 1998, with a different hourly rate for structures and lots, but the model does not allow different prices for the First-Washington structure and the Maynard structure.

The model tests each pricing scenario according to whether each component breaks even independently of the others. It also tests whether pricing scenarios withstand adverse economic conditions.[31] The DDA's proposed pricing schedule was used as a baseline, and city meter prices are assumed to follow that schedule.[32] Hourly rates and permit prices in structures and lots are priced similarly (if not equally) due to reasons outlined above.

Elasticity

Using estimates for elasticity, the pricing model accounts for the anticipated decline in usage due to an increase in price. For example, in Table 3.1 (page 30), an elasticity of -.3% indicates that a 1.0% increase in price is expected to lead to a 0.3% decline in usage.[33] The

[28] The City Council must approve rate increases in city meters.

[29] See the pricing options later in this section for an example of the magnitude of the price change required for the structures to break evenly.

[30] Permit prices are separated into individual permit prices and large group permit prices. The large group rate is applied to those groups with 50 or more permits, based on 1996 usage data. The model *does not* incorporate any other pricing agreements into the pricing scheme, with the exception of the 226 police spaces which are priced at $0 in all years.

[31] Adverse economic conditions are tested by using higher inflation and discount rates.

[32] The DDA proposed prices increase at a 3% rate of inflation. We vary this rate in scenarios where the rate of inflation exceeds this amount.

[33] Note that an increase in price usually leads to an increase in revenues despite this drop in usage.

model was designed so that different rates of elasticity can be set for different users if more information is discovered about the sensitivity of parkers to changes in price.

Estimating elasticity is complex and should be approached with caution. The demographic survey suggests that parking demand in Ann Arbor is relatively inelastic, since only 12% of the respondents indicated that the recent price increases will affect their parking behavior "a lot" (see page 13). However, the recent increase was modest, and predicting reactions to more substantial increases is difficult. Elasticity changes over time, and can be dependent on the magnitude of the price change. For example, since parking demand depends somewhat on the demand for restaurants, shops, and downtown businesses, parking demand might change if economic conditions altered dramatically. Despite these complications, some estimate of elasticity must be incorporated into the model.

The shortage of parking spaces in Ann Arbor and the reliance on automobiles for transportation support the theory that demand for parking is relatively inelastic (might be close to zero). Several studies by the researcher Robert Bacon calculated the elasticity of parking demand for shoppers in any city to be close to -.3%.[34] While this research was performed in the United Kingdom, the studies implement a model for estimating the elasticity and therefore can be used as an estimate for elasticity in cities in the United States. Furthermore, there is evidence that the "fundamental motivation" of parkers should be consistent over time and between cities, so the -.3% calculation might be applied to the parkers in Ann Arbor as an estimate of shoppers' demand for parking.[35]

For these reasons, we employed an elasticity of demand of -.3% in the pricing model as an upper bound on elasticity. We also tested elasticities of -0.15% and 0.0% to determine the sensitivity of the analysis to this estimate. While different groups of parkers—long-term, short-term, permit holders, non-permit holders, shoppers, diners, etc.—most likely differ in sensitivity to price, the scenarios conducted in our analysis use the -.3% elasticity for all parkers, as a conservative estimate. If the demand for some groups of parkers is less elastic than -.3%, estimated revenues would be higher than projected by the model.[36]

Table 3.1 shows how the inputs (in italics) in the model—price and elasticity—calculate the outputs of the model—revenues.

[34] Robert Bacon, "The Travel to Shop Behavior of Consumers in Equilibrium Market Areas," *Journal of Transport Economics and Policy*, 1992; and "Model of Traveling to Shop with Congestion Costs," *Journal of Transport Economics and Policy*, 1993.

[35] Thomas A. Lambe, "Driver Choice of Parking in the City," *Socio-Economic Planning Sciences*, 1996.

[36] See Table 3.3, Matrix of Scenarios, Scenarios 1, 2, and 3.

Table 3.1. Inputs of price and elasticity and structure revenues[37]

Inputs	*1996*	*1997*	*1998*	*1999*	*... 2017*
Hourly price for first three hours	*$0.60*	*$0.60*	*$0.70*	*$0.80*	
Hourly price for more than three hours	*$0.60*	*$0.60*	*$0.70*	*$0.80*	
Meter Price in Structure	*$0.60*	*$0.60*	*$1.00*	*$1.00*	
Permit Price—Individual	*$60.00*	*$60.00*	*$65.00*	*$70.00*	
Permit Price--Large Group	*$55.00*	*$55.00*	*$60.00*	*$64.40*	
Elasticity for first three hours		*-0.003*	*-0.003*	*-0.003*	
Elasticity for more than three hours		*-0.003*	*-0.003*	*-0.003*	
Elasticity for Meters		*-0.003*	*-0.003*	*-0.003*	
Elasticity for Permits—Individual		*-0.003*	*-0.003*	*-0.003*	
Elasticity for Permits—Large Group		*-0.003*	*-0.003*	*-0.003*	

Outputs	*1996*	*1997*	*1998*	*1999*	*... 2017*
First-Washington structure	$184,801	$184,801	$193,460	$206,048	
Maynard structure	$776,454	$776,454	$855,753	$972,528	
Forest structure	$349,241	$349,241	$383,931	$436,963	
Fourth-William structure	$1,075,974	$1,075,974	$1,155,678	$1,272,845	
Liberty Square structure	$459,802	$459,802	$496,719	$551,444	
Ann-Ashley structure	$685,263	$685,263	$730,036	$794,403	
Fourth-Washington structure	$252,823	$252,823	$0	$0	
Total Revenues	**$3,784,357**	**$3,784,357**	**$3,815,577**	**$4,234,231**	

**Note that years with zero revenue reflect scheduled closure due to construction and repair.*
***Italics denote inputs to the model. The revenues change with changes to the inputs.*

Usage

Price and elasticity were combined with 1996 usage data in the model to calculate revenues.[38] Since individuals utilize the parking lots, structures, and meters for different periods of time, the number of individuals parking cannot simply be multiplied by the hourly price to determine revenues. Instead, the hourly price must be multiplied by the number of individuals parking for each length of time. For the Ann Arbor system, the number of people parking for 1 hour must be multiplied by the hourly rate, the number of people parking for two hours must be multiplied by the hourly rate times two, etc. It was assumed that usage patterns would remain roughly the same over time, i.e., that the proportions of individuals parking for one hour, two hours, etc. would remain the same also remain constant.[39]

Other assumptions

- *Structures*: The First and Washington structure operates according to a dollar-per-entry machine on each of its three levels. It was assumed that prices for these entry machines would increase at the same rate as that of the meters in the structures.

[37] Note that the DDA proposal uses $65.00 for the permit price in FY 1998, as an estimate of the average permit price paid. The actual permit price charged in FY 1998 is $70.00 for individual permits, and $65.00 for the group rate.

[38] Usage data used here differ from the population data referred to in Chapter 1.

[39] Since usage data were projected from 1996, the revenues-side of the model shows prices for FY 1996 and FY 1997, although the pricing model begins projections in the current fiscal year—FY 1998.

- *Lots*: DDA provided usage data for the structures and lots for 1996, but included usage information only for the three DDA lots: Library, Kline, and First and Huron. Since revenues from lots—when viewing the lots all together—includes the city-operated lots, it was assumed that the 1996 proportion of revenues from the city lots would remain constant in relationship to the revenues from the DDA lots in future years. Price changes for the city lots would require approval from the City Council. In FY 1996, 31% of the total revenue from the DDA and city lots stemmed from lots other than Library, Kline, and First and Huron. Thus, as price changes in the model increase the revenue from the three DDA lots, it was assumed that the total revenue from all the lots would also increase proportionally, with the proportion stemming from the city lots remaining constant at 31%.

- *City meters*: Revenues from the city meters (coins) and from ticket fines--collected from tickets issued for expired city meters--were combined to account for the "City meters" revenues. As noted above, usage patterns for the city meters were estimated to remain at 1996 levels, so that as prices change in the model, the new price is multiplied by the 1996 usage level. Since ticket revenues vary based on the number of tickets collected and the time at which the ticket is paid, we calculated a ratio between the revenue collected per ticket issued (the total ticket revenue divided by the number of tickets issued) and the price of a parking ticket.[40] Based on 1996 data, this ratio was estimated to be close to 2.3. Thus, the model multiplies the price of the ticket, by the number of tickets collected, then by the ratio, to determine ticket revenues.

$$\text{Revenue per Ticket Issued} = \frac{\text{Total Revenue Collected}}{\text{Tickets Issued}}$$

$$\text{RATIO} = \frac{\text{Revenue per Ticket Issued}}{\text{Price of Ticket}}$$

$$\text{Ticket Revenues} = (\text{Price of Ticket}) \times (\text{Number of Tickets Issued}) \times (\text{RATIO})$$

- The number of tickets issued was assumed to remain roughly constant to the 1996 figure, and the ticket enforcement policy was assumed to remain similar to that employed currently.

[40] In Ann Arbor, offenders paying a ticket within a certain number of hours receive a lower ticket price, while those delaying payment are required to pay a higher ticket fine.

Assumptions for costs

The pricing model includes costs of the parking system that are based on either historical data or future projections. The following cost categories are included in the pricing model:

- Operating Expenses (direct allocation)
- Operating & Administrative Expenses (indirect allocation)
- Municipal Service Charge (indirect allocation)
- Capital Outlay
- Interest Expense

Operating Expenses (direct allocation)

Operating expenses include such items as labor, electricity, and non-capital maintenance costs. Operating expenses were estimated based on four years' historical data for all expenses that were directly allocated to parking structures, lots, or meters. These four years of historical data, fiscal years ending 1993-97, represent the expenses of the parking system in its current state, with the DDA leasing seven structures and three lots from the City. These data were compiled from City accounting records for the DDA parking fund, the City parking fund, and the General Fund. Estimates for fiscal years 1998-2017 increase at the rate of inflation.

Operating & Administrative Expenses (indirect allocation)

Operating and administrative expenses in this category were also estimated based on four years' historical data from the funds noted above. These costs, however, were indirectly allocated to each parking structure, or to lots or meters combined. The indirect allocation was based on percentage expenditures, in keeping with standard City accounting practice for preparing parking system income statements.

Municipal Service Charge (indirect allocation)

Municipal service charges were also estimated based on four years' historical data from the funds noted above. The indirect allocation, again, was based on percentage expenditures, in keeping with standard City accounting practice for preparing parking system income statements. The total municipal service charge represents the parking system's share of the City's overhead expenses, and is calculated according to the system's usage of central service departments such as personnel and treasury.

Capital Outlay

Capital outlay estimates vary among the parking system components.

- For structures, capital outlay estimates for the first ten projected years' are based on DDA projections, and include construction of the Fourth & Washington structure, replacement and expansion of the Forest Structure, etc. See Appendix 3.2 for further detail. For the later ten years, detailed projections for capital outlay are not available. For the period

2008-17, therefore, capital outlay estimates are based on an annual capital charge per parking space in each structure.[41]

- For lots and meters, estimates for all twenty years are based on four years' historical data, projected out at the rate of inflation. Note, however, that capital expenditure for meters was zero for the four years' historical data.

Interest Expense

Interest expense estimates include both existing and future debt.

- Interest expense for existing debt includes the total debt service requirements (interest and principal) until the debt is paid off. These expenses are obligations of the parking system. They are included in the pricing model as a necessary expense of the parking system, and not true "interest expense," i.e., the cost of borrowing money.
- Interest expense for future debt includes only interest payments of DDA projected borrowing requirements for capital outlay during the period 1998-2008 (see Appendix 3.2). The principal for this future debt is included as an expense in capital outlay. The pricing model assumes that capital outlay for the period 2009-2017 can be met without issuing new debt.

Variables in the model

In determining the net present value of the parking system, the pricing model allows for many variables to change. These include variables related to economic conditions, demand for parking, and prices.

Discount rates

The discount rate is used to value dollars received (or paid) in future years in terms of today's dollars; the discount rate calculates the present value of those dollars. The discount rate accounts for both the time-value of money (i.e., a dollar in the future is worth less than a dollar today) and the risk of a project—the probability that projected cash flows will be realized. With the parking system, the risk of the system is very low since the City and the DDA have a large share of the parking market in Ann Arbor. Thus, the discount rate of 6.0% has been used for most scenarios. A 7.5% discount rate was used to represent poor economic conditions. Our range of rates (5.0-7.5%) was selected based on the magnitude of the municipality's debt rates, which can be considered a gauge to the risk level of all city investments.

Inflation

In the cost-side of the pricing model, expenditures are projected to increase by the rate of inflation over the next 20 years. In the revenue-side, some of the scenarios increase prices initially and then project a rise in prices equal to the rate of inflation. For most of these scenarios, an inflation rate of 4.5% was utilized as a midpoint estimate of the average inflation

[41] Walker Parking Consultants/Engineers, Inc., estimate an annual capital charge to be $75 per parking space in structures. (Parking Management Study for the Flint Downtown Development Authority, February 1997) As a conservative estimate, however, we apply a $100 annual charge in the pricing model.

rate expected until 2017. We tested the sensitivity of the pricing model to inflation by varying rates from 3.0 to 6.0%. A 6.0% inflation rate was used to represent poor economic conditions.

Elasticity

The elasticity of demand indicates the expected change in usage in response to a change in price. For the parking system in Ann Arbor, demand is estimated to be fairly inelastic, given the operation of the system at or near full capacity. The only estimate of elasticity found in the literature on parking—that of -0.3% for shoppers—was utilized as an upper-bound on elasticity in this analysis.[42] Elasticity rates of -0.15% and 0.0% were also tested to determine the sensitivity of the analysis to this estimate.

Linear and nonlinear pricing

Pricing for parking can be considered linear or nonlinear. Linear pricing charges the same hourly price without regard to the number of hours parked. Nonlinear pricing charges a different rate (either higher or lower) based on the number of hours parked. For example, charging $0.80 per hour for the first three hours and $1.00 per hour for every hour thereafter is nonlinear pricing.[43] A nonlinear pricing scheme might be utilized to encourage short-term or long-term parking. For instance, higher hourly charges after three hours might be imposed to encourage short-term parking. Currently, for hourly rates in the Ann Arbor parking system in FY 1998, a linear pricing scheme is used for structures, a nonlinear scheme is used for lots, and a linear pricing scheme is used for city meters.

In the pricing scenarios tested, a combination of linear and nonlinear pricing structures were tested. Some scenarios followed current practice and used a nonlinear structure for the lots and a linear scheme for the structures. Other scenarios employed linear pricing structures across the board, while still others tested nonlinear schemes in both lots and structures. Where nonlinear pricing was tested, it was always of the following form: one rate for the initial 3 hours, a second rate for any time thereafter.

Pricing

The pricing options we consider set prices similarly for structures and lots. This policy was adopted for two reasons: it resembles the status quo, and the pricing model is not a good predictor of revenues otherwise. As the system currently functions, the small difference in the hourly rate in the structures and the lots allows the public to view the two components almost interchangeably. Parking customers in general do not differentiate between structures and lots on the basis of price. Instead, as the demographic survey in this study seems to support, customers appear to choose the lot or structure that is closest to their destination. The survey shows that only **15%** of respondents would have preferred to park in a different structure or lot. If prices in lots and structures differ significantly, so as to change consumer behavior, the

[42] Robert Bacon, "The Travel to Shop Behavior of Consumers in Equilibrium Market Areas," *Journal of Transport Economics and Policy*, 1992; and "Model of Traveling to Shop with Congestion Costs," *Journal of Transport Economics and Policy*, 1993.

[43] In the terminology used in other sections of this study for describing other cities' pricing, this form of nonlinear pricing is "progressive up."

usage demand for specific lots and structures is altered, and the revenue projections in the pricing model are less accurate predictors. For these reasons, we have tested several scenarios that maintain similar (if not equal) pricing schedules for lots and structures.

Findings

Summary

We applied the pricing model to scenarios that present a variety of pricing changes, economic conditions, and demands for parking. Our breakeven analysis is focused on each component of the system achieving a positive net present value independently of the other components.[44] In all scenarios, the meters break even and earn a substantial surplus; the lots break even under most scenarios as well. Our pricing analysis, therefore, focuses almost exclusively on the prices needed to break even in the structures. As discussed earlier, similar (if not equal) prices in the structures and in the lots are used in the scenarios.

The system breaks even under a variety of pricing options. While each option raises prices higher than those proposed by the DDA, the type of price raised (e.g., permit prices, hourly price for first three hours of parking, hourly price for more than three hours of parking) determines who will bear the highest burden of the price increase. We test pricing scenarios that shift the burden among permit, long-term, and short-term parkers.

Following a description of the baseline, each of the three pricing scenarios below allows all of the components of the parking system to break even independently of one another.

Baseline: Prices are raised in lots and structures according to the DDA proposed price increases. The structures do not break even with these price increases[45]; therefore, all subsequent pricing is increased at some level above the DDA proposed prices.

Permit/Hourly: Permit prices are increased above the baseline, and lots and structure hourly prices are set equally, so that the structures break even. This change distributes the burden equally among permit holders and hourly parkers.[46]

Long-term: Hourly prices are increased so that the structures break even, with hourly prices for parking more than three hours higher than those for the initial three hours (nonlinear). This change increases the burden on hourly parkers relative to permit holders, and places a greater share of the burden on long-term parkers than on short-term parkers.

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[44] Breakeven occurs when projected revenues exceed projected costs in terms of *net present value*. See earlier discussion.

[45] When considered independently of other financing sources, such as TIFA revenues, and independent of lots and meters.

[46] Hourly prices in the structures are set equal to the baseline prices for lots (nonlinear). The baseline—the rates proposed by the DDA—already includes increases for hourly prices; this scenario increases prices for permits by approximately the same percentage as the baseline increases prices for hourly rates.

Short-term: Hourly prices are increased so that the structures break even, with a flat rate for parking at all times in both the structures and lots (linear). This change increases the burden on hourly parkers relative to permit holders, but distributes that burden equally among long- and short-term parkers.

Figure 3.1. Pricing model results: Net present value for structures, by scenario

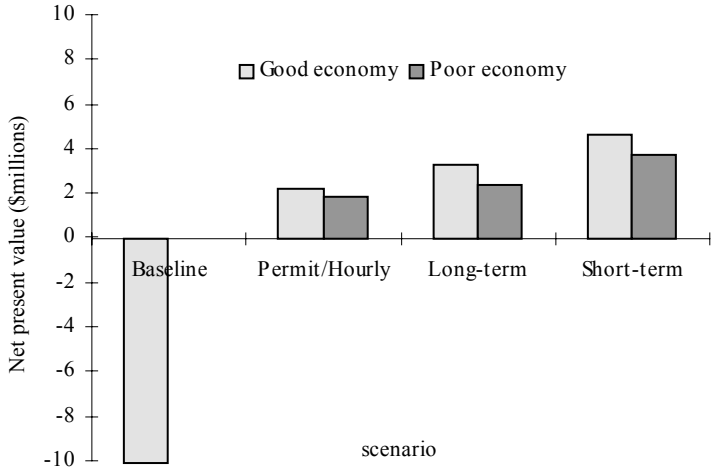


Figure 3.1 (above) presents the results for structures of the *Baseline* pricing and the three pricing scenarios *Permit/Hourly*, *Long-term*, and *Short-term*. In each of the three scenarios, the net present value of the structures is greater than zero. Additionally, the values remain positive even under poor economic conditions. Table 3.3, found at the end of this chapter, details the results for these scenarios in the lots and the meters. The lots and meters both have a positive net present value in these scenarios.

The results presented in Table 3.2 (page 37) show the price levels needed for each component of the system to break even independently of the other components. The three pricing scenarios (A) show that there is more than one way to achieve these results. Another method (B) to achieve these results is to offset the rise in parking prices by using taxes, or other financing sources, to meet the costs of the parking system. This is currently how part of the parking system is financed through TIFA revenues, i.e., tax revenues from businesses in the central business district. Yet another method (C) to achieve these results is to subsidize operations in one of the parking system components from revenues in another component. For example, the meters, including parking fees and fines, earn a significant surplus each year; this surplus could be redirected to fund the high costs of operating the structures. These breakeven options must be considered when determining prices for the system.

Table 3.2. Breakeven options

A. PRICING SCENARIOS FOR OPERATING REVENUES

Scenario	*FY 1999*	*FY 2000*	*FY 2001+*
Permit/Hourly	$80	$90	$90+inflation
Long-term	$1.10/$1.20	$1.20/$1.40	$1.20/$1.40+inflation
Short-term	$1.10	$1.30	$1.30+inflation

B. OTHER FINANCING SOURCES

C. SUBSIDIZATION FROM PARKING COMPONENTS

More details on pricing for these scenarios can be found in Appendix 3.3 in the Pricing Matrix.

Detailed findings

Table 3.3 (see page 40), the Matrix of Scenarios, presents the results for 18 scenarios tested in the pricing model. Each scenario refers to a different combination of variables, and the resulting net present value of the system over 20 years. In order to assess the sensitivity of the parking system to changes in the variables, we allowed one variable to change while holding the others constant. The following text summarizes the results of the sensitivity analyses presented in the Matrix of Scenarios. If pricing changes are not specified, the price increases utilized are based on the DDA's proposed price increases (see Appendix 3.1 & 3.3, DDA Proposed Price Increases and Pricing Matrix).

The Matrix of Scenarios is presented in order of changing variables. For example, first we test the elasticity over a range of options, next the inflation rate, etc. The *Baseline* and the three scenarios discussed earlier, *Permit/Hourly*, *Long-term*, and *Short-term*, are included in the matrix. Their corresponding numbers are as follows:

	Good economy	Poor economy[47]
Baseline	**Scenario 4**	**not included**
Permit/Hourly	**Scenarios 9**	**Scenario 9a**
Long-term	**Scenario 15**	**Scenario 15a**
Short-term	**Scenario 18**	**Scenario 18a**

[47] Conditions for a "good" economy are based on a 4.5% inflation rate and a 6.0% discount rate. Conditions for a "poor" economy are based on a 6.0% inflation rate and a 7.5% discount rate.

Detailed results for Scenarios 4, 9, 15, and 18 are found in Appendix 3.4-3.7. The following analysis serves as a guide for reading and interpreting the Matrix of Scenarios.

Scenarios 1-3
The elasticity of demand is varied. Results for all components of the parking system show that the net present value is not very sensitive to changes in elasticity. In other words, even if demand for parking decreases at the highest of our expected rates, the results for each component of the system change very little. Due to this result, a conservative elasticity of .3% is utilized for the remaining scenarios. Note, however, that this estimate may not be conservative for very large price increases.

***Baseline (*Scenario 4) and Scenario 5**
Inflation is increased from 3% (Scenario 1) first to 4.5% (Scenario 4-Baseline) and then to 6.0% (Scenario 5). Unlike with our results for elasticity, the parking system is sensitive to changes in inflation; the net present value differs considerably depending on the inflation rate. For the remaining analyses, therefore, we use the midpoint estimate for inflation, 4.5%, but test any recommended scenarios with a 6% inflation rate as well.[48]

Scenarios 6-7
The discount rate is varied. As with inflation, the parking system is quite sensitive to changes in the discount rate. For the remaining analyses, therefore, we utilize a midpoint discount rate of 6%, but test any recommended scenarios with a discount rate of 7.5%.

Scenario 8
The DDA proposed price increases in Scenarios 1-7 generate sufficient revenues in the lots and the meters to result in a net present value significantly greater than zero. The DDA proposed price increases do not, however, generate enough revenues in the structures to break even. In Scenario 8, therefore, we increase prices slightly by raising the structure prices to equal those of lots, including the nonlinear pricing arrangement where hourly costs increase after a three hour stay. This increase, however, still does not generate enough revenue in the structures to break even.

***Permit/Hourly* (Scenarios 9-9a)**
Leaving the hourly prices for Scenario 8 in place, the permit prices are increased for both lots and structures at a greater rate than proposed by the DDA. Implementing a monthly permit price of $80 in 1999 and $90 in 2000, combined with nonlinear pricing in the structures equivalent to the lots, generates break even results for the structures. Scenario 9a shows that these results are robust to poor economic conditions.

[48] Note that a change in the inflation rate can lead to either an increase or decrease in net present value. One reason for this result may be the varying debt levels associated with each parking component. For example, increasing the inflation rate yields an unexpected result in the structures; the net present value of the structures increases because an increase in the inflation rate reduces the relative cost of the structures' debt. The lots do not carry any debt, and thus the inflation rate yields the expected result of a decrease in net present value.

Scenarios 10-12
Hourly prices are increased, but permit prices return to DDA proposed rates. Linear pricing is once again applied in the structures, and therefore revenue in the structures decreases proportionately. The price increases proposed in these scenarios, however, either do not break even in the structures, or break even by a small margin and thus are not robust to poor economic conditions.

Scenarios 13-14
Hourly prices are increased even higher than in Scenarios 10-12. Nonlinear prices are implemented in the structures, leading to a large increase in structure revenues. The prices proposed in Scenario 13 result in a positive net present value for the structures, and the results in Scenario 14 show that these increases are robust to poor economic conditions. Because these results are significantly above a breakeven level, however, we test lower price increases.

Long-term **(Scenarios 15-15a)**
Price increases set between the levels of Scenarios 10-12 and Scenarios 13-14 result in the structures breaking even. Scenario 15 shows the results for these nonlinear prices: $1 and $1.20 per hour in 1999, $1.20 and $1.40 per hour in 2000, and increasing at the rate of inflation for years after 2000. Scenario 15a shows that these price increases maintain a positive net present value under poor economic conditions.

Scenarios 16-17
Prices in the structures are linear, as are prices in the lots. With equal pricing in the structures and the lots, price increases are tested. These price increase lead to results that are significantly above a breakeven level; therefore, we test a lower price increase.

Short-term **(Scenarios 18-18a)**
Price increases set lower than the levels in Scenarios 16-17 result in the structures breaking even. Scenario 18 shows the results for linear prices: $1.1 per hour in 1999, $1.30 per hour in 2000, and increasing at the rate of inflation for years after 2000. Scenario 18a shows that these price increases maintain a positive net present value under poor economic conditions.

Assumptions for Scenarios
- Elasticity is held constant at .3% for all users for all scenarios, as a conservative estimate.
- DDA projections for permit parking revenues are not changed (except in Scenarios 9-9a).

Table 3.3. Matrix of Scenarios

Chapter 4. Privatization of Structures

As discussed in the preceding chapter on Breakeven Analysis, there are a variety of options the City of Ann Arbor and the Downtown Development Authority can choose for the parking system to meet its future costs. These include raising prices, dedicating other financing sources, and subsidizing the high-cost structures with revenues from the low-cost meters. (see Table 3.2, page 37) Privatization is another option that could prevent future financial losses from the parking system.

We were requested by the City/DDA to study the potential for privatizing the seven parking structures. Specifically, the following questions were asked: Should the City privatize the structures? What is the market price for these structures? This section attempts to clarify these issues.

First, we conduct an analysis to determine if the structures are self sustaining from a market-perspective. Second, we discuss our methodology for valuing the structures, and we report results on the value of the structures. Finally, we discuss in detail the qualifications to our findings. We recommend that further research be undertaken before the City enters into serious negotiations for privatizing the structures.

The privatization decision

We conducted a cash flow analysis (CFA) to determine the financial viability of the parking structures. The determination of financial self-sufficiency informs the privatization decision. This question is a policy decision reflecting the financing structure of the parking facilities and the relative importance of the project to the community. Since revenue bonds were used to finance construction of the parking facilities self-sufficiency is considered necessary.

As in the breakeven analysis, the cash flow analysis calculates a net present value for each of the structures based on costs and revenues over the next twenty years. The revenue projections are based on the DDA's proposed price increases. The cost projections, however, are based on industry cost averages rather than the City/DDA's historical costs, and represent a target for operating the structures most efficiently. Given the self-sufficiency requirement, the Ann Arbor parking structures should clearly be privatized if the results of the cash flow analysis are negative, i.e., if they are operating at a loss. As shown in Appendix 4.1, however, the cash flow analysis is positive. This result, combined with the range of breakeven options presented in the previous chapter, indicates that the structures can be self-sufficient, and thus the choice for privatization is less clear. If the City/DDA wants to raise revenues as required in the previous chapter, or cut costs to the industry average as suggested in this cash flow analysis, they may not want to sell. But if not, privatization may be the right choice.

It should be noted, however, that the CFA, which calculates a present value cash flow for each of the structures based on costs and revenues over the next twenty years, does not fully capture the social costs or benefits that come from privatizing the parking facilities. At best, it covers the lower bound of the estimate for social costs and benefits. Even though a financial self-sufficiency rule indicates that dollar expenses are covered, it does not show that social

costs will be met. As a result, the City/DDA must also consider other costs and benefits of privatizing parking facilities.

Due to the possibility of a price increase by the private company that exceeds the City/DDA prices, other costs and benefits, such as the following, may result:

Other costs:
- Decrease in sales for City businesses as a result of people not wanting to drive to Ann Arbor because of the higher parking rate.
- Parking inconvenience due to people looking for on-street parking in order to save parking fees.
- Increased mass transit costs as a result of more people demanding mass transit since parking in Ann Arbor may be too expensive or inconvenient.

Other benefits:
- Increase in mass transit revenue as a result of people not wanting to drive to Ann Arbor because of the higher parking rate.
- Decrease in traffic congestion in the City due to increase use of mass transit.
- Decrease in air pollution resulting from the decrease in traffic.

Market valuation

This section presents the valuation steps that might be taken by an investor interested in the Ann Arbor parking structures. Different values can exist for the same property, e.g., assessed value, insurable value, etc. Investors, however, are most interested in *market value:*

> The highest price in terms of money which a property will bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller, each acting prudently, knowledgeably and assuming the price is not affected by undue stimulation.[49]

Valuation process

First, a pre-feasibility study was taken in order to determine the consistency and accuracy of the historical data. In this pre-feasibility study, we reviewed historical data on revenues and expenses from the City's accounting records. We also reviewed the income and expense statements for comparable parking companies. This was done to ensure the accuracy and completeness of the statements. The following steps were taken:

Income

1. We determined that the financial statements reflect the precise income for the past year, and are exact and not excessively rounded.
2. We determined that the statements reflected revenue from the actual parking price and not the full price that the market would bear. To closer approximate market price,

[49] McKinsey & Co., *Valuation*, 1996.

therefore, we adjusted the parking price to reflect the DDA proposed price increase (Appendix 4.1).

Expenses

1. We determined that the financial statements represent a complete list of expenses. In other words, it includes the essentials, e.g., amounts for service contracts, reserves, and repairs and maintenance.
2. We determined that the statements reflect a full 12 months of operation.
3. Because the City/DDA expenses exceed those of the industry wide average, we also applied the industry cost average to our analysis. Based on Moody's Investor Service, the industry operating expense is on average 37% of revenue versus the operating expense for the City parking structures which on average is 49% of revenue. We excluded depreciation and any other improper, e.g., non-cash items.

Following the pre-feasibility study, we calculated the market value for the parking structures. The calculation process is described below.

1. Based on the pre-feasibility study, we applied the structure revenues (that are based on DDA's proposed price increase) and expenses (that are based on both the City's operating expense and industry averages). We applied both the City's and the industry's average operating expense in order to determine the effect of operating expense on the valuation.
2. We applied the industry cost average based on analysis of comparables from Moody's Investors Service, Inc. and direct interviews with parking investors like the Central Parking Corporation in Nashville, Tennessee. Using Moody's data, the operating expense for this analysis is 37% of revenues. The City's average operating expense is 49% of revenue.
3. We forecasted the free cash flows of the structures. Forecasted free cash flows equal the net operating profit minus depreciation and minus increase in working capital.
4. We estimated terminal value, i.e., the value of the structures from 2018 to perpetuity, by discounting the cash flow from year 2017 to perpetuity.
5. We estimated a 12% cost of capital (also known as the discount rate) based on industry averages from Moody's Investors Service. The cost of capital represents the average investment return demanded in this industry.
6. We valued the structures by discounting the cash flows. Our findings present a sensitivity analysis, with valuation results based on a range of discount rates from 6% to 14%. The range of discount rates was chosen to ensure that it includes both the City and industry average cost of capital.

Valuation Results

Market valuation for each parking structure is included on the following pages. Note that these values represent lower bound estimates. The values represent a lower bound because they are based on revenues that would result from the DDA proposed price increases; they are not based on revenues that would result from a profit maximizing price.

Parking structure values

Lower bound estimate

Table 4.1. Total parking structure value[50]

Parking Structure Value at Industry Average Operating Expense (37%)					
	Discount rate				
	6%	*8%*	*10%*	*12%*	*14%*
FCF (1998-2017)	23,305,693	18,938,000	15,618,478	13,063,889	11,073,783
Residual Value	221,357,261	110,678,631	73,785,754	43,254,894	44,271,452
Total Value	**244,662,954**	**129,616,630**	**89,404,232**	**56,318,783**	**55,345,235**

Parking Structure Value at City's Average Operating Expense (49%)					
	Discount rate				
	6%	*8%*	*10%*	*12%*	*14%*
FCF (1998-2017)	15,030,797	12,011,857	9,740,860	8,012,122	6,680,745
Residual Value	169,878,497	84,939,249	56,626,166	33,163,188	33,975,699
Total Value	**184,909,294**	**96,951,106**	**66,367,026**	**41,175,310**	**40,656,444**

Table 4.2. First & Washington structure value

Parking Structure Value at Industry Average Operating Expense (37%)					
	Discount rate				
	6%	*8%*	*10%*	*12%*	*14%*
FCF (1998-2017)	1,030,402	854,216	718,196	611,815	527,565
Residual Value	7,393,409	3,696,704	2,464,470	1,848,352	1,478,682
Total Value	**8,423,810**	**4,550,920**	**3,182,665**	**2,460,168**	**2,006,246**

Parking Structure Value at City's Average Operating Expense (49%)					
	Discount rate				
	6%	*8%*	*10%*	*12%*	*14%*
FCF (1998-2017)	670,279	551,249	459,774	388,573	332,460
Residual Value	5,270,855	2,635,427	1,756,952	1,317,714	1,054,171
Total Value	**5,941,133**	**3,186,676**	**2,216,726**	**1,706,286**	**1,386,631**

[50] Please note that "FCF," found in Tables 4.1-4.8, refers to *Free Cash Flow.*

Table 4.3. Maynard structure value

Parking Structure Value at Industry Average Operating Expense (37%)					
	Discount rate				
	6%	*8%*	*10%*	*12%*	*14%*
FCF (1998-2017)	6,862,801	5,668,267	4,744,266	4,020,302	3,445,996
Residual Value	48,337,685	24,168,843	16,112,562	12,084,421	9,667,537
Total Value	**55,200,486**	**29,837,110**	**20,856,828**	**16,104,724**	**13,113,533**

Parking Structure Value at City's Average Operating Expense (49%)					
	Discount rate				
	6%	*8%*	*10%*	*12%*	*14%*
FCF (1998-2017)	2,841,330	2,252,998	1,817,964	1,492,713	1,246,844
Residual Value	37,225,745	18,612,873	12,408,582	9,306,436	7,445,149
Total Value	**40,067,075**	**20,865,871**	**14,226,546**	**10,799,149**	**8,691,993**

Table 4.4. Fourth & Washington structure value

Parking Structure Value at Industry Average Operating Expense (37%)					
	Discount rate				
	6%	*8%*	*10%*	*12%*	*14%*
FCF (1998-2017)	-1,622,803	-1,562,327	-1,496,512	-1,429,949	-1,365,274
Residual Value	9,551,735	4,775,868	3,183,912	2,387,934	1,910,347
Total Value	**7,928,932**	**3,213,541**	**1,687,399**	**957,985**	**545,073**

Parking Structure Value at City's Average Operating Expense (49%)					
	Discount rate				
	6%	*8%*	*10%*	*12%*	*14%*
FCF (1998-2017)	-2,784,142	-2,546,035	-2,339,850	-2,160,535	-2,003,866
Residual Value	5,827,595	2,913,798	1,942,532	1,456,899	1,165,519
Total Value	**3,043,453**	**367,762**	**-397,319**	**-703,637**	**-838,347**

Table 4.5. Forest structure value

Parking Structure Value at Industry Average Operating Expense (37%)					
	Discount rate				
	6%	*8%*	*10%*	*12%*	*14%*
FCF (1998-2017)	-3,933,972	-3,656,267	-3,371,006	-3,090,913	-2,823,368
Residual Value	18,838,599	9,419,300	6,279,533	4,709,650	3,767,720
Total Value	**14,904,627**	**5,763,033**	**2,908,527**	**1,618,737**	**944,352**

Parking Structure Value at City's Average Operating Expense (49%)					
	Discount rate				
	6%	*8%*	*10%*	*12%*	*14%*
FCF (1998-2017)	-2,693,282	-2,444,527	-2,224,084	-2,029,051	-1,856,497
Residual Value	11,165,473	5,582,737	3,721,824	2,791,368	2,233,095
Total Value	**8,472,191**	**3,138,210**	**1,497,741**	**762,317**	**376,598**

Table 4.6. Fourth & William structure value

Parking Structure Value at Industry Average Operating Expense (37%)					
	Discount rate				
	6%	*8%*	*10%*	*12%*	*14%*
FCF (1998-2017)	11,132,817	9,318,531	7,909,104	6,799,714	5,915,340
Residual Value	70,351,150	35,175,575	23,450,383	17,587,788	14,070,230
Total Value	**81,483,967**	**44,494,106**	**31,359,487**	**24,387,501**	**19,985,570**

Parking Structure Value at City's Average Operating Expense (49%)					
	Discount rate				
	6%	*8%*	*10%*	*12%*	*14%*
FCF (1998-2017)	8,793,806	7,356,561	6,240,444	5,362,255	4,662,454
Residual Value	55,998,550	27,999,275	18,666,183	13,999,638	11,199,710
Total Value	**64,792,356**	**35,355,836**	**24,906,628**	**19,361,893**	**15,862,164**

Table 4.7. Liberty Square structure value

Parking Structure Value at Industry Average Operating Expense (37%)					
	Discount rate				
	6%	*8%*	*10%*	*12%*	*14%*
FCF (1998-2017)	4,194,592	3,498,128	2,958,300	2,534,375	2,197,234
Residual Value	27,801,643	13,900,822	9,267,214	6,950,411	5,560,329
Total Value	**31,996,235**	**17,398,949**	**12,225,514**	**9,484,786**	**7,757,563**

Parking Structure Value at City's Average Operating Expense (49%)					
	Discount rate				
	6%	*8%*	*10%*	*12%*	*14%*
FCF (1998-2017)	3,177,148	2,644,806	2,232,651	1,909,362	1,652,558
Residual Value	21,553,711	10,776,856	7,184,570	5,388,428	4,310,742
Total Value	**24,730,859**	**13,421,661**	**9,417,221**	**7,297,790**	**5,963,301**

Table 4.8. Ann-Ashley structure value

Parking Structure Value at Industry Average Operating Expense (37%)					
	Discount rate				
	6%	*8%*	*10%*	*12%*	*14%*
FCF (1998-2017)	6,478,046	5,415,304	4,590,505	3,941,923	3,425,403
Residual Value	41,739,291	20,869,645	13,913,097	10,434,823	8,347,858
Total Value	**48,217,337**	**26,284,950**	**18,503,602**	**14,376,746**	**11,773,261**

Parking Structure Value at City's Average Operating Expense (49%)					
	Discount rate				
	6%	*8%*	*10%*	*12%*	*14%*
FCF (1998-2017)	5,025,658	4,196,806	3,553,960	3,048,805	2,646,791
Residual Value	32,836,569	16,418,284	10,945,523	8,209,142	6,567,314
Total Value	**37,862,226**	**20,615,090**	**14,499,483**	**11,257,948**	**9,214,104**

Based on our valuation, the lower bound value for all of the parking structures ranges between $41 million to $185 million when applying the City's operating expense (49%) and $55 million to $245 million when applying the industry average operating expense (37%) (see Table 4.1). The reasons for the wide discrepancy in this valuation are primarily attributed to the cost of capital, i.e., the discount rate used to discount the cash flows, and the operating expenses. In order for the City to maximize the value of its parking structures, therefore, it must minimize both cost of capital and operating expense prior to privatization. Currently, the City does have a low cost of capital; however, its operating expense is above industry average.

In addition to the discount rate and operating expense, there are many other issues that can contribute to the difference in value. These issues are discussed below. As a result of these concerns, if the City were to sell the parking structures it should use the above valuations only as a baseline, a rough estimate of the parking structure values.

It is common for companies and public organizations to do more than one valuation before selling/privatizing. Additionally, in order to guarantee fair market value, companies tend to place their organization up for public bidding.

Qualifications to market valuation

Since the value indicators are taken from historical market sales, the perfect working climate for their abstraction and application would require a market that bears a constant, non-fluctuating relationship between sale price and the corresponding income or physical units used in the comparison. If this were the case, only a single comparable would be needed. Unfortunately, a constant, non-fluctuating market does not exist.

Abstracting value indicators from comparable sales and then applying them to a specific property is a process based on surface figures: sale price and then the respective income or physical units. An inherent presumption made in using comparables is that the sale price and value maintain a direct relationship to the unit of comparisons—that can be estimated purely on income, parking space count, or some other similar basis. This presumption is erroneous because of the numerous considerations beyond the building's income or physical condition that the purchaser may have made in formulating what to pay for the property. Each transaction has impacts that are peculiar only to it, resulting in biased value indicators. Adjustments for these differences are often based on a "gut feeling" and are reflected in the final choice of the value indicator after close consideration of the impacts involved in each comparable sale and how each impact relates to the corresponding factor of the subject property.

Impacts that must be considered when abstracting or applying value indicators are as follows:[51]

1. *Expense Ratio.* Valuation methods assume that a constant portion of the gross income of each property is attributable to expenses. This is seldom the case since a number of expenses are involved, and each expense is in turn affected by its own influencing factors.

2. *Market Rents.* In order to achieve a proper valuation, rents for the subject and comparable sales must be at the market level or else bear a consistent relationship to it so that fair comparisons can be made. In this instance, "rents" refer to parking prices charged in the structures. The historic nature of the comparables may make it impossible to go back in time and adjust their rents to the historic level or even to tell whether their rents were at the market level to start with. If the comparable rents were below market value at the time of sale, a high sale price may have been paid based on the prospect of raising rents,

[51] McKinsey & Co., *Valuation*, 1996.

resulting in an artificially high value indicator. Adjusting the subject rents to the going market level and then applying an economic-based unit of comparison computed from comparables that may not have had their rents at the market level at the time of sale can be an error-prone process.

3. *Financing.* The sale price can fluctuate as the variations and importance of financing continues to grow. Indicators can carry misleading assumptions of similar interest rates, loan-to-value ratios, and equity investment. Also, abstracting indicators from transactions where tax deferred exchanges, assumptions, and installment sales were used is risky and sometimes not advisable unless the subject property financing is apt to be similarly structured.

4. *Time of Sale.* The time/value relationship is often considered self-adjusting in valuation due to the corresponding changes in income. This is true to a certain extent, although a steady relationship rarely exists. Some valuation methods (physical methods) do not take time into account at all, so some inflationary or deflationary adjustment of the indicator may be necessary.

5. *Condition.* Condition also is considered to be self-adjusting in the valuation. A premium may be paid by a purchaser for an especially clean property purely because of the appeal to pride of ownership. Condition differences are not considered in some valuation methods, so adjustments again may be necessary.

6. *Depreciation.* Valuation methods do not recognize depreciation tax advantages that occur with the varying land-to-improvement ratios.

7. *Buyer's Motivations.* The sale price of a particular property may be distorted because of influences such as the proximity to the buyer's other properties and residence.

8. *Seller's Motivations.* A price other than fair market value may be taken due to duress, nepotism, illness, and so forth.

9. *Lack of Market Knowledge.* A transaction in which the buyer or seller acts with insufficient sophistication or market information may result in sale prices not reflecting the market value of the property.

10. *Future Influences.* Possibilities of future condemnation, rent control, or encroaching influences are not always subject to equal consideration between sales.

11. *Age.* Older building are usually bought with lower value indicators compared to newer buildings in the same area.

12. *Size.* The value indicators tend to decrease as the property gets larger. Comparing properties of different sizes may well result in biased indicators.

This list demonstrates the vulnerability of valuation, but proper selection and research of the comparables minimizes these impacts. This coupled with good judgment serves to reinforce the reliability of the valuation approach we utilized in our analysis. It is common and recommended, however, for an organization to receive more than one valuation prior to privatizing.

Chapter 5. Policy Alternatives

The purpose of this section is to provide additional information and aims to inform the City/DDA in setting future parking policy. What follows is a number of interesting observations of other city parking systems and a discussion of the possible benefits from collaborative parking programs.

Individual city observations

As has been noted, the communities surveyed differ from each other in significant ways. As a result, the parking systems of these cities also have some unique and/or interesting characteristics. Some of these are highlighted below with the intent that future analyses of the Ann Arbor parking system be better informed by these experiences.

Birmingham's price structure

As is apparent in Table 2.3 (see page 20), Birmingham employs an unusual hourly price structure in its structures which directly caters to shoppers, diners, and other short-term parkers. In all five of these facilities, the first two hours of parking is free. As street meters in the central downtown area are priced at $1 per hour, this price structure offers a large incentive for short-term parkers to use the city structures. Downtown visitors who require longer-term parking are also steered towards these facilities via time limits on both the street and lot meters as well as by the $5 maximum fee present in four of the five structures.[52]

The complete price structure of Birmingham's structures is as follows. The first two hours of parking is free, and hours three through seven are $1 per hour in all five facilities. In four of the five structures there is a $5 maximum fee which effectively makes additional time parked free. However, at the fifth and most centrally located structure (the Pierce Street ramp), the total charge for parking between seven and eight hours is $7.50; eight or more hours costs a total of $10.

This price structure is interesting for a number of reasons. First, it is responsive to local needs and conditions. Birmingham is considered to have a pedestrian-friendly downtown dominated by unique retail and dining establishments. At the same time, however, it is also home to a considerable number of professional business tenants. Significantly, this pricing system seems to address the needs of visitors to both types of establishments. Assuming that most shoppers/diners are shorter-term parkers, the front-end free parking addresses their needs; and assuming that business visitors often park for the majority of the day, the maximum fee cap limits their cost. Second, despite the large amount of free parking provided in the structures, the system as a whole is financially solvent. According to Paul O'Mear, the Birmingham city official who oversees parking policy, 65% of all cars are in and out of the city structures within two hours. It is impressive that the parking system operates at a surplus given this fact. Third, the higher maximum fee at the Pierce Street structure offers an example of how simple pricing policies can be employed in an attempt to alter parkers' behavior. By charging a huge

[52] All of Birmingham's surface lots are metered.

premium for the seventh and eighth hours of parking, long-term parkers are provided a large incentive to use one of the other four structures, freeing up spaces in the prime Pierce Street location for shorter-term users.

The final point illustrated by this example is how a coordinated pricing policy between the different components of a system can be used to alter parking behavior. Although Birmingham has had an aggressive upwardly progressive price structure in its structures for several years, the current first-two-hours-free policy was instituted in the fall of 1996. Before that time, the hourly cost of parking was $.25 per hour for the first two hours. Furthermore, in January 1997, the city also modified all of its meter rates from a uniform $.50 per hour to $.75 per hour in its downtown metered lot and $1 per hour for its prime on-street meters. According to Mr. O'Mear, these changes were done in large part to increase meter turnover and steer downtown employees into the structures. From his account, these changes appear to have had their intended effect.

Grand Rapids' price setting system

In Grand Rapids, the parking system has a method for setting rates that Director Theodore Perez believes to be unique. Each year, the Parking Department reviews all rates and recommends increases based upon changes in the Consumer Price Index (CPI). These recommendations are presented to the Parking Commission, a nine member advisory board appointed by the Mayor that advises the department on policy. (The Mayor also sits on the board.) The Parking Commission then sends a resolution to City Council proposing rates for the upcoming year. According to Mr. Perez, the Commission usually sticks with the CPI-based changes recommended by the Department. Importantly, the rates proposed by the Commission are automatically placed into effect on July 1st of each year unless the Council specifically votes against them.

This price setting system has three obvious advantages. First, it insures the annual review of both hourly and permit rates, which allows the Department and Commission to regularly assess not only the finances of the parking system, but also the overall goals and policies of it as well. Second, by formally tying parking rates to inflation increases, a steady growth in (nominal) revenues is guaranteed. Similarly, the system results in small, regular, "bite-sized," price hikes, which Mr. Perez feels consumers come to expect and accept. He reports no complaints from the public as a result of these regular increases.

Kalamazoo's customer-friendly ticket policy

One of the most prominent aspects of Kalamazoo's parking system is its customer-friendly ticket policy. This policy appears to be part of the city’s effort to promote downtown economic development and is evident both in its fee structure as well as from the city's enforcement record.

As can be seen in Table 2.5 (see page 22), the fee for an expired street meter in Kalamazoo is $6; and, if the ticket is paid within one hour, this is reduced to only $1. Not reflected in the table, however, is the policy that if a person has not received another violation within the past

60 days, the ticket fee is waived completely. None of the other cities surveyed had such a policy.

A similar fee structure is employed in Kalamazoo's lots. All but one of the system's surface lots which offer hourly parking use central pay boxes. Citations in these facilities are effectively $1. If a patron's time has expired, the charge is $1.60, which is equivalent to one hour of parking plus a $1 fee. Some of these lots also offer $2 all-day parking spaces: if a person fails to deposit this amount, the fee is $3, which again is equivalent to the cost of parking plus a $1 fee.

In addition to the low fees Kalamazoo charges for parking violations, the city has drastically reduced the total number of tickets it issues. Prior to 1992, the city wrote over 70,000 parking tickets annually. It now issues only about 30,000 per year. This reduction has been the result of a fundamental shift in policy, as expressed in DKI's October 1996 Parking Implementation Plan: "Patrons are always given the benefit of doubt. As a matter of policy, many more tickets are now being rescinded…However, handicap violations, chronic offenders and safety-related violations will continue to be fully enforced."

Although interesting in and of itself, Kalamazoo's customer-friendly enforcement policy also illustrates the city's on-going commitment to redevelop its downtown retail sector. There is a general perception that Kalamazoo's remaining downtown shopping establishments are in direct competition with those located in area shopping malls. By purposefully not maximizing ticket revenues, it seems clear one of the things the city is attempting to do is eliminate parking as a factor considered by customers in their shopping decisions.

Boulder's neighborhood permit and *Eco Pass* programs

As can be seen in Table 2.2 (see page 19), Boulder has a relatively small parking system compared to the other cities surveyed. As a result of this and the high demand which exists in the city, there is a major shortage of long-term parking in downtown Boulder. The city has a number of initiatives designed to address this problem. Two of these are the neighborhood permit and *Eco Pass* programs.[53]

Because commuters were causing on-street parking problems for residents, in 1993 the city began a resident parking permit system in two neighborhoods abutting downtown. By August 1996, five neighborhoods were participating. Then, in July 1997, after conducting car counts so as to ensure adequate parking space for residents, the city began selling commuter permits in these neighborhoods. Commuter permits allow non-residents to park on the street in a specified neighborhood. According to Katherine McOwen, the Boulder Parking Services official in charge of the program, a total of about 400 permits were made available. To date, however, demand has not been great, and commuter permits are still available in all five areas. Although Boulder's neighborhood parking program was never envisioned as a way to

[53] In addition, the city is building a fourth structure downtown which will be used in large part for permit parking; it also runs two park and ride shuttle busses.

completely alleviate the downtown parking shortage, it is still an example of an innovative effort to balance the needs of different city residents and users.

Boulder also has an extensive program which provides workers with free bus passes. According to Michael Penny, Coordinator of Parking Services, the city has a highly developed metro transit system; and, through the *Eco Pass* program, all city, county, University of Colorado, and downtown business employees receive free, unlimited-use bus passes. This program has been in existence for a long time and is administered by the Alternate Mode Division within the City Transportation Department. It is unclear where all of the funding for the *Eco Pass* program is derived, however the parking system supports it as all revenues from downtown meters located in the Central Area General Improvement District (CAGID) are earmarked for the *Eco Pass* program. These monies are used to provide private sector downtown employees with free bus passes. Boulder has thus made a major commitment to support mass transit and city parking funds are used in part to do this.

Iowa City's ticket surcharge idea

Iowa City's expired meter fee is the lowest among the cities surveyed. The $3 price there is the result of a state law capping the fee for any municipal parking ticket, except parking in a handicapped spot, to only $5.

Spurred both by this statutory limit as well as the system's plan to build two additional structures in the next five years, Joe Fowler, Director of Parking and Transit in Iowa City, is investigating the possibility of attaching a surcharge to city parking tickets. This additional fee would be dedicated to new building, and thus would both increase the deterrent effect of such tickets as well as help to raise funds for these upcoming expenditures. Regardless of whether or not this surcharge idea is realized, the concept is an intriguing one. Such a surcharge is appealing primarily because it would create a dedicated revenue stream specifically for construction. The surcharge -- identified on the ticket -- would also forcefully remind parkers who get expired meter violations that the system's structures are the most desirable option for longer-term parking.

There are additional considerations, however, that arise because of the organization of Iowa City's parking system. All ticket revenues are currently transferred to the city's General Fund. The surcharge would thus effectively split these monies. Although the higher overall cost of an expired meter ticket would increase parking system funding (1) via the surcharge, and (2) through increased meter-paying compliance, it would also decrease General Fund revenues to some degree because fewer tickets would be written. This might be viewed as problematic.[54]

Lansing's *VIP* card

The cost of parking in downtown Lansing is uniformly $1 per hour in the city's structures and surface lots, as well as at its on-street meters. Although the Lansing system employs a linear

[54] Iowa City currently issues approximately 120,000 total parking tickets annually; these result in about $450,000 per year for the General Fund.

price policy, long-term parkers are steered toward the structures via their $6 maximum fee, as well as by the time limits on both the street and lot meters.

In addition to these factors, Lansing also offers a discount on hourly parking in its structures through its *VIP* card. This *VIP* card is basically a debit card which provides a 50% discount on the hourly cost of parking in the city's structures. They can be purchased by anyone and are then used to pay for structure parking at the rate of $.50 per hour. According to Pat Ingle, Parking Superintendent for the City of Lansing, these *VIP* cards are very popular, although he was unable to offer any figures indicating the amount of discounted parking resulting from their use. Nevertheless, Mr. Ingle believes the *VIP* program may actually make the system money. It brings in new users by drawing people from free side street spaces just beyond the downtown. More importantly, Mr. Ingle reports it also increases vacancies at downtown on-street meters by luring longer-term parkers into the structures at the reduced rate. The *VIP* cards thus provide an incentive for structure use, reduce the cost of parking for frequent users, and in so doing improve on-street meter turnover in prime parking locations.[55]

Cross-city observations

- All eleven of the cities are different from each other in significant ways (both measured and unmeasured, above). None are perfect comparables, either for each other or Ann Arbor. Nevertheless, except for Flint and Toledo, they all share multiple characteristics with Ann Arbor. With this in mind, it is important to note that **current parking rates in Ann Arbor are not excessive compared to the other communities surveyed.** This is particularly true given the high relative income of households in Ann Arbor.

- **The financial status of a city's parking system is dependent upon** factors not only related to the community and the system, but also on **the structure of the city's accounts**, itself. Although Ann Arbor's off-street system operates at a deficit (as reported in Table 2.6), when the system is defined as both on-street meters and off-street facilities, it operates at a surplus. When defined in this manner -- on- and off-street operations excluding enforcement -- only five of the systems surveyed unambiguously break even (Birmingham, Grand Rapids, Toledo, Iowa City, and Madison), while two others might (Royal Oak and Boulder). When ticket revenues are added, it appears as if all of the cities except Kalamazoo and Flint probably have self-sustaining parking systems. Of the eleven cities, it is unclear how many have off-street segments which are self-sustaining as stand-alone operations.

- In the words of Mr. Perez (of Grand Rapids), "it is important to always remember that parking is not a primary business." He contends that **parking demand is determined by**

[55] Lansing's VIP card should not be confused with the cash keys it offers for on-street meters. Although both function as debit cards, the meter keys do not offer any price discount -- they are provided simply for user convenience

the strength of the underlying attraction: if it is strong, demand will be very inelastic. Without a doubt, this is true.[56]

- **Price level increases do not necessarily decrease parking system usage.** For example, a year ago Madison instituted an across the board rate increase of about 25%. According to Duane Hinz, the parking system manager there, although demand fell somewhat for the first two weeks following the price hike, it quickly recovered to prior levels: there has been no long-term drop in usage.[57] A second example of this may exist in Boulder.

- **Price level changes within a system can alter parking choices.** Prices within a system do matter, at least in some instances and to some consumers. The Birmingham example cited earlier illustrates this. By decreasing the cost of short-term structure parking and raising the price of on-street meters, utilization of the city's structures increased. In addition, the percentage of structure users who park for less than two hours rose significantly, from 50% up to 65%. This strongly implies the relative price level change between Birmingham's structures and meters motivated downtown visitors to change their parking patterns and utilize the city's structures more.[58]

- **None of the cities surveyed with a major university located near downtown have established any significant collaborative parking programs with the university.** In East Lansing, Boulder, Iowa City and Madison, the university and city parking systems are completely segregated.

- **None of the eleven cities surveyed have sold any of their parking assets to for-profit parking companies.** Also, none of the cities mentioned that they had been approached by for-profit providers.

- **None of the parking systems examined employ a graduated fine structure based upon the number of tickets received.** An upwardly progressive ticket fine structure which penalizes chronic offenders but also offers infrequent violators a break could theoretically improve meter payment compliance while at the same time keeping ticket

[56] This holds for a parking system as a whole, as well as with regard to specific assets within each system. The overall vitality of a downtown drives system demand, while the proximity of an individual structure or lot relative to its users' desired destination primarily determines the level of utilization of a facility (given some price). Thus, price, location, and strength of attraction are the key factors determining the demand for parking.

[57] A second example may exist in Boulder. Rates were scheduled to be raised significantly in January 1998; when interviewed late last year, officials there were confident demand would not be affected by the increase. (Note: this price hike is already reflected in the Table 2.3 figures.)

[58] It is important to note that relative price level changes within a system do not always motivate behavior changes. In Royal Oak for instance, downtown on-street meter prices were doubled (from $.25 to $.50 per hour) in 1995 while none of the other hourly rates were changed. Mike Kondek, City Treasurer, reports that this did not change on-street meter use at all.

revenues constant. It is unclear if most of the cities have just not considered such an option, or if they have contemplated and rejected the idea.[59]

- **None of the cities surveyed offer any price reductions or other incentives to multi-occupant cars.** This could be done to encourage car-pooling and reduce pressure on the system, as lower demand obviously means less need for additional capacity. According to a study of the Iowa City system, such pricing breaks are "not uncommon" in larger cities and do exist in some communities the size of Iowa City.

Collaboration

Parking in the City of Ann Arbor is predominantly controlled by the City/DDA and the University of Michigan parking systems. Given their size and proximity to one another, and a blurry distinction between the City and U-M parking customers, it may be beneficial for the two systems to work together to create a more cohesive parking strategy. We suggest that the City/DDA explore options for promoting cooperation and joint participation with the AATA, University of Michigan, and local merchants in the provision and management of public parking programs.

There are several arguments that form the basis for an integrated parking system. One is the opportunity to garner economies of scale. That is, both systems may be able to provide the same services for less money. This potential cost savings could be generated by establishing joint responsibility for tasks common to both systems. Another benefit might the creation of greater flexibility for parking customers. The availability of sufficient parking to meet peak customer demand is a problem in certain areas of the city. Coordination of parking availability may simultaneously attract more people to city businesses and institutions and ease some of the problems associated with the parking shortage. Lastly, a coordinated parking policy that includes the input of all local public and private interests ensures a parking paradigm that represents the interests of those who have a stake and is the most effective way of serving customer needs.

Options

As reported in the "Ann Arbor Downtown Parking Study" by BRW Inc.[60], the City/DDA, University and AATA currently work together on a number of collaborative programs. This section will outline the programs that exist and propose ideas for collaborative efforts in the future.

Park and Ride: Currently, AATA has four "Park and Ride" locations that serve downtown Ann Arbor and the U-M campus. This service is beneficial to downtown employees and shoppers who either find it cost prohibitive or impractical to park in the city. The

[59] The only reference to a graduated fine structure encountered was in a 1995 study of the Royal Oak system which recommended one. Obviously, the city did not enact the suggestion. In order to assess the viability of such a ticket fee structure in Ann Arbor (or any other community), a thorough examination of parking violation dynamics within the city would need to be undertaken. This was beyond the scope of our study.

[60] BRW, Inc. *Ann Arbor Downtown Parking Study* (July 1997), pp. 10-12.

arrangement is mutually beneficial because it simultaneously increases AATA ridership and reduces the demand for downtown parking.

Public transit incentives: To extend the "Park and Ride" program, the City/DDA could develop a plan with city businesses and their employees to subsidize bus passes for employees. This incentive may further decrease the demand on downtown parking while providing cost savings for businesses in the form of fewer required monthly permits.

Carpool incentives: The City/DDA could develop a program that provides carpooling incentives to long-term parking customers. In a number of cities, reserved, preferred or subsidized spaces are available for multi-occupant vehicles. These spaces could be located in structures or lots with less demand, and coordinated with shuttle services provided by AATA or the University of Michigan. This program may have the effect of reducing parking demand during peak hours.

Shared parking: The DDA could institute a practice of leasing available University of Michigan parking spaces for non-U-M parkers. A plan could be developed that would allow downtown employees to be shuttled from U-M fringe lots. Similarly, given the large number of students using parking facilities near campus, the U-M may have an interest in leasing available DDA spaces to accommodate demand. Priority, of course, should be given to primary customers, but where possible, it may alleviate parking shortages in certain areas.

Shared operational expenses: A strategy to combine regular maintenance costs could be developed between the City/DDA and the U-M. Combining the responsibilities of snow removal, cleaning and minor repair, for example, into one entity may be more cost effective than handling them alone. This plan could be developed incrementally over time in order to thoroughly assess its benefits.

A parking plan which is integrated with mass transit and cognizant of user needs will play a role in the vitality of downtown Ann Arbor. We suggest that the City/DDA work with those that have interests in the parking system, parking customers, citizens of Ann Arbor, the University of Michigan and downtown merchants, to develop a more integrated parking policy. We believe there might be benefits to be had from collaborative efforts, and they should be explored further.

Appendix 1. Demographic Survey

Survey instrument

Administrator: _____ Lot: _____

Shift: 8-10am ☐ 11am-1pm ☐ 2-3pm ☐ 5-7pm ☐ Respondent gender: M ☐ F ☐

Pardon me. May I ask you a few questions? My name is _____. I'm working for the University of Michigan School of Public Policy. We're doing a survey for the Downtown Development Authority of Ann Arbor. May I ask you ten quick questions? This will take less than a minute.

1. How long do you plan on parking here today?	Less than 1 hr. ☐ between 3-5 hrs. ☐		between 1-3 hrs. ☐ more than 5 hrs. ☐
2a. Is (are) your reason(s) for being here related to the University of Michigan (are you attending a ***UM*** conference or concert or something)?	Yes ☐	No ☐	
2b. What is your reason for being here? *[Administrator: check **all** that apply]*	Shopping ☐ classes ☐ entertainment ☐ other ☐	business ☐ conference ☐ visiting friends ☐	work ☐ residence ☐ dining/drinking ☐
3. How many times per week do you use city parking facilities?	Once/twice ☐	3-5 times ☐	6 or more ☐
4. Parking rates have just increased. How will this increase affect how much you park here? Not at all? Somewhat? A lot?	Not at all ☐	somewhat ☐	a lot ☐
5. How often do you use means *other than the car* to get to this location? Never? Sometimes? A lot?	Never ☐	sometimes ☐	a lot ☐
6. Do you have a monthly permit for this structure/lot?	Yes ☐	No ☐	
7. Would you have preferred to park on the street?	Yes ☐	No ☐	
8. Would you have preferred to park in a different structure/lot?	Yes ☐	No ☐	
9. Are you a student? If yes, full-time or part-time?	Yes ☐ No ☐	full-time ☐	part-time ☐
10a. Do you live in Ann Arbor?	Yes ☐	No ☐	
10b. If not, where do you live?	_____		

Well, that's it. I'd like to thank you very much for your time.
[Administrator: please remember to fill out the information on shift-time and lot above]

Appendix 2. Parking Systems in Other Cities

Birmingham

Size

The public parking system in Birmingham consists of 5 structures, 4 surface lots, plus on-street meters. The structures contain a total of 3,680 spaces, and the lots about 500. There are approximately 500 street meters in the central downtown area. Additional meters line Woodward beyond the downtown. Birmingham thus has approximately 4,180 off-street spaces in its parking system, which equates to 20.73 spaces per 100 city residents

This 20.73 figure is three times higher than any of the other cities surveyed: Birmingham has an extremely large public parking system relative to its population. That it is necessary and utilized reflects the good health of the city's downtown and the attractiveness of its component businesses.

Pricing

The city employs a pricing structure which caters directly to shoppers and diners. In all five structures, the first two hours of parking are free of charge. The next five hours cost $1 per hour. At four of the structures, the maximum fee is $5, so additional time is free. At the fifth and most popular structure, the total charge for parking between seven and eight hours is $7.50; eight or more hours cost a total of $10. The cost of hourly parking also varies between the surface lots. One lot is attended; it has approximately 200 spaces, is physically adjacent to one of the structures, and is priced identically to it. The other two lots are metered. Both contain about 150 spaces each. The one located in the heart of downtown is priced at $.75 per hour. Despite the aggressive progressive up price structure in the structures, long term parkers are steered towards them via the time limits on both the street and lot meters, as well as by the $5 maximum fee in four of the structures. (This price structure is further discussed in the body of the report.)

Permit parking is available in all five of the structures. The price of these permits varies by structure and ranges from $30 to $50 per month. The number of permits sold is based on experience, but generally is limited to 90% of total structure spaces; the city has found that only about 60% of its permit holders ever attempt to park at a time. The one metered surface lot on the edge of downtown also offers permit parking. The price of these permits is $40 per month. The city sells 120 permits for this lot plus 30 which can be used on the street around it.

The cost of one hour of parking at a street meter in the city core is $1. An expired meter ticket in Birmingham costs $7; there is no discount for quick payment.

Organization

Parking operations in Birmingham are divided between the Engineering and Police Departments. It appears that the Police Department handles on-street meters and

enforcement; the Engineering Department is responsible for the structures and lots. The City contracts with National Garages to handle the day-to-day operations of its structures and attended lot.

The parking system as a whole is set up as an enterprise fund, including both on- and off-street parking operations, but not enforcement activities. (Parking ticket revenues go directly into the city's General Fund.) Paul O'Mear, Assistant Director of the Engineering Department, oversees the Birmingham parking system.

Finances

According to Mr. O'Mear, the system is self-sufficient. This year he anticipates revenues of approximately $3.3 million, and a surplus of $1 million. Mr. O'Mear was unable to provide the actual amount of debt service expense, although he explained the City is currently still paying off three of the structures. (Total principal on the system's debt stands at $10 million.) The interest payment on the biggest bond will be $417,000 this year, while another will be retired very shortly. The parking system does not reimburse the Police Department for any of its activities. Indeed, there are no transfers made by the parking system to any other department or fund, and the system receives no monies besides its operating revenues. Thus, the $1 million surplus is an accurate reflection of the system's financial health excluding net income resulting from parking tickets.

Given the fact that 65% of all structure users are in and out within two hours and as a result are able to park for free, it is impressive that the city parking system produces a significant surplus. Mr. O'Mear attributes the fiscal solvency of Birmingham's parking system primarily to a strong economy and the resultant solid demand. Although this is certainly true, it is not particularly illuminating. He also noted that the city has extended its hours of operations, as the downtown is drawing more people later into the evenings for dining and entertainment. Finally, Mr. O'Mear pointed out that permit income is important to the system, as it is responsible for about 40% of all revenues.

Utilization

With its current rates, Mr. O'Mear reports that one of the city structures is completely filled at peak hours of the day, while two others are very close and two are somewhat under used. In addition, two of the structures have waiting lists for monthly permits while the other three do not.

Contact Person: Paul O'Mear, Assistant Director of Engineering -- (248) 644-3869.

East Lansing

Size

The city parking system in East Lansing consists of 4 structures, 5 surface lots, and approximately 220 street meters. The structures contain around 1,600 spaces, and the lots about 400. The East Lansing off-street system thus provides about 2,000 parking spaces,

which is equivalent to 3.97 spaces per 100 city residents. There are no other significant providers of public parking in East Lansing.

Pricing

All four structures are attended, and the price structure is uniform between them. The hourly rate is $0.60 per hour for the first four hours, and $1 per hour thereafter, with a $7 maximum fee. Only one of the five surface lots is attended. This lot contains 145 spaces and charges $0.80 per hour for the first two hours, and $1 per hour thereafter with no maximum fee. The other four surface lots are metered and contain approximately 240 spaces in total. These lot meters are priced at $.75 per hour or $.50 per hour, depending upon location.

East Lansing's four structures and one attended lot thus employ an upwardly progressive price structure. These five facilities all offer a discount to the short-term transient parker, with the structures providing a larger and longer price break.

On street meters in the downtown core cost $1 per hour, while those on the periphery of the downtown area are priced at $.50 per hour.

Monthly permits are available in all of the structures and two of the metered surface lots. The cost of structure permits varies from structure to structure, ranging from $44 to $70 per month. (Approximately 200-250 permits are sold per structure. Permit spaces are not designated.) The lot permits are for reserved spaces, unlike the structure permits, and are priced at $44 and $55 based upon lot location.

The cost of an expired meter ticket is $10, however this fee is reduced to $5 if paid within four hours.

Organization

The City of East Lansing does not have a centralized parking department. Parking operations are overseen by Daniel O'Connor, Parking Administrator, in the City Manager's office. Parking is set up as an enterprise fund within the city accounts. Off-street facilities and street meter operations are included in the parking system, but enforcement activities are not. Enforcement is handled by the Police Department. (It is unclear in which city department, division or unit parking related personnel are actually employed.)

Finances

Mr. O'Connor reports the East Lansing parking system typically runs a $60,000 to $100,000 annual deficit. As noted above, this outcome includes all parking functions except enforcement. (No information regarding the net revenue generated from enforcement activities was collected.)

According to Mr. O'Connor, the parking system anticipates revenues of $2.2 million for this fiscal year. Debt service expense is budgeted at $1.2 million. Mr. O'Connor explains that the system has low maintenance and operating costs. Also, no transfers are made from the parking system to support other city programs: beyond interagency transfers based upon

services provided, all revenues stay within the fund. Total operating revenues have been constant for the last several years.

The system is currently not operating at capacity, though demand has been increasing. Mr. O'Connor credits this rising usage for the system's near financial solvency. The city has not had a price increase in the last five to seven years, which appears to be problematic. Costs are rising, and Mr. O'Connor explains additional revenues will soon be necessary. The system has a difficult time keeping up with necessary maintenance. Furthermore, a $1 million bond was just taken out for renovation work.

A rate increase was contemplated within the past few years, however concerns voiced by downtown merchants lead to it not being enacted. The city is now considering a tax on all downtown businesses which would then be credited back to them to use for parking validation. Mr. O'Connor explains this would probably be coupled with a small (5-10¢) hourly rate increase.

Additional Information

- Michigan State University is physically separated from downtown East Lansing, but the city does still get a large number of student parkers. In the structure located nearest the campus, Mr. O'Connor estimates 90% of all users to be students. This is a problem because it leads to pockets of parking shortages in the surrounding area and because these students are typically not visiting downtown businesses. As Mr. O'Connor explains, "the primary goal [of the parking system] is to serve the needs of businesses and downtown users." Students are using the city system because it is considerably less expensive than the MSU system , which charges $.55 per half hour. Mr. O'Connor also believes students purchase a significant number of monthly permits.

- The city and university in East Lansing have not undertaken any significant collaborative parking efforts.

- Mr. O'Connor describes East Lansing's downtown as a very healthy one, with numerous retail and entertainment establishments. He also explains that there is a "considerable" amount of professional office space located within the downtown.

Contact Person: Daniel O'Connor, Parking Administrator – (517) 337-1277.

Flint

Size

The City of Flint operates a relatively small public parking system composed of 1 structure, 6 lots, and 860 street meters. The structure has approximately 600 spaces, while the lots in total have 713. Hourly parking is available only in the structure and the largest of the lots, which is attended. The attended lot has about 330 spaces. Approximately 450 of the street meters are located in the central downtown area.

Summing the structure and lot spaces, the parking system offers only about 1,313 total off-street spaces. This is only 0.95 spaces per 100 city residents. This extremely low figure relative to the other cities surveyed is indicative of Flint's troubled downtown as well as, perhaps, the presence of other parking providers. (See below.)

Pricing

The first hour cost of parking is $1.25 in the city structure and 50¢ in the attended city lot. Downtown meters are priced at 25¢ per hour. Flint employs a progressive price structure in its structure, and a linear strategy in the lot. After the $1.25 first hour charge in the structure, the subsequent hourly rate is 75¢ with a $6 maximum. It thus charges a premium for short-term parkers. The lot simply costs 50¢ per hour up to a $4 maximum. Monthly permits are priced at $50 in the structure, and range from $20 to $45 dollars in the lots.

The fee for an expired meter is $15. If the ticket is paid within two hours, this fee is reduced to $5.

Organization and Finances

The Flint DDA owns and operates the city's off-street parking facilities, while the Police Department manages the on-street meters and all enforcement. This means DDA revenues include no meter or parking ticket-generated monies. According to DDA officials, the off-street system is unable to be financially self-sustaining and must be supported by city dollars. The off-street system receives approximately $100,000 annually from the General Fund. Surprisingly, the city's on-street system does not break even, either. In a 1997 study of the system done by Carl Walker Parking Consultants, the authors estimate the city lost almost $100,000 in 1995 as a result of its combined meter and parking enforcement operations. (The consultants suggested a greater emphasis on enforcement. It is unknown if the city embraced this recommendation, and if so what the results have been.)

Additional Information

- Information regarding utilization of the city's structure and lots was not collected. DDA personnel could not readily provide this data. It should be noted, however, that the Flint system is dominated by permits. Only about one-third of total off-street spaces are set aside for hourly parkers.

- There are five additional parking structures in the downtown Flint area which contain a total of approximately 2,850 spaces. One of these facilities serves county employees, while another is co-owned by the state and the University of Michigan - Flint. (Both of these are managed by the Ellis Parking Company.) It is unclear how much parking these two structures or the other three facilities offer the general public; it is quite likely, however, that the city structure and lots are not the only significant source of public parking in Flint.

Contact Person: Susan Smigiel, Administrative Assistant, Flint DDA -- (810) 767-2297. (The Director position at the DDA was vacant at the time data was collected. It has since been filled.)

Grand Rapids

Size

The public parking system in Grand Rapids consists of 6 structures, 16 lots, and 1,534 street meters. These structures provide 3,820 parking spaces, and surface lots 3,375. In sum, the system has 7,195 off-street spaces. This equates to 3.78 spaces per 100 city residents.

Of the 16 public lots, 11 are reserved for monthly permit parking only. Two of the remaining downtown lots are attended and offer only hourly parking, two others are metered, while the final one offers a mix of both permit and meter parking. The two attended lots contain approximately 220 spaces; the three metered lots have a total of 391 spaces. On-street downtown parking consists of 504 meters in the CBD, with approximately an additional 700 meters in the area surrounding this core. There are thus about 1,200 on-street metered spaces in the central downtown area. Grand Rapids also charges for on-street parking in some shopping and entertainment areas outside the immediate downtown area.

Pricing

The current price of parking in the city core is $.80 per half-hour in the city structures and lots. On-street meters cost $1.20 per hour, but this rate is scheduled to increase to $1.50 per hour in July 1998. (The meter rate was increased from $1 to $1.20 per hour in July of 1997.)

The city uses a linear pricing structure for its structures and lots, employing a $6.75 maximum fee in four of the structures. Two structures have no maximum, which is designed to free up needed spaces for short-term users in these premium locations. The two attended surface lots also have no maximum fee limit. Monthly permit prices for downtown parking range from $55 to $108 in the structures, and from $15 to $40 in the system's lots. These prices are set by location, and thus convenience and demand. (The city sells a total of approximately 2,700 structure permits and 1,800 lot permits.)

An expired meter ticket costs $7 in Grand Rapids; there is no discount for quick payment.

Organization

The Grand Rapids' parking system is set up as a department within the city government. The Parking Department controls all city parking assets, both off-street facilities and on-street meters. It also is responsible for enforcement in the downtown area. The parking system is set up as an enterprise fund within the city accounts.

Finances

The Grand Rapids parking system is in excellent financial condition. According to Director Theodore Perez, the Department will finish the fiscal year with about $7 million in revenues, resulting in approximately a $2 million surplus from its operations. The parking system retains all of these monies: ticket revenues are not transferred to the city's General Fund. These figures thus include all structure, surface lot, and street meter operations, as well as the ticket revenues generated from its enforcement activities. In addition, however, the Department also receives all revenues resulting from additional parking tickets written by the

Police Department throughout the city. (The Department receives no other fiscal transfers: thus it receives no General Fund or TIF subsidies.)

Mr. Perez attributes the system's solvency to the city's aggressive pricing policy, as well as to good planning and parking ticket revenue. (See the body of the report for a description of how Grand Rapids pegs price increases to the rate of inflation.) In total, the Parking and Police Departments write approximately $1.2 million in citations annually, of which Mr. Perez believes about 90% is collected. The parking system does not reimburse the Police Department for any expenses related to its ticket writing activities, although it does transfer approximately $150,000 - $200,000 annually to the city Treasury Department for doing all ticket collection work. The Parking Department also manages approximately 2,400 spaces in seven facilities owned by the Grand Rapids' DDA at a $250,000 loss per year. (These seven facilities are located at only two sites, with most of the spaces attached to a downtown sports arena.)

Additional Information

- Occupancy figures at current price levels were not gathered. However, the city recently constructed a new structure and a large lot, and with these facilities on line Mr. Perez stated he believes the current supply of downtown parking to be adequate to meet demand.

- One private company, Ellis Parking, also operates in Grand Rapids. According to Mr. Perez, Ellis runs some structures and surface lots open to the public in the downtown area. From his account, however, it does not sound as if the company's presence has any impact on the city's policies or operation. In addition, neither the County nor State operate parking facilities which primarily serve the general public.

Contact Person: Theodore Perez, Parking Department Director -- (616) 456-3290.

Kalamazoo

Size

The parking system in Kalamazoo consists of four structures, fifteen lots, and 1,148 on-street meters. The structures contain 2,989 stalls, while the surface lots have 1,549 spaces, yielding a total of 4,538 off-street parking spaces in the system. This equals 5.56 off-street spots per 100 city residents. Kalamazoo thus has the fourth largest off-street system of the cities surveyed in absolute terms, but the second largest relative to city population. Approximately 600 of Kalamazoo's on-street meters are located in the central downtown area.

Pricing

All four structures are attended and employ a linear pricing structure. The hourly cost of parking in each is $.60 with a $5.50 maximum. The top level of all four structures is used for "early bird" parking, through which users who arrive before 9:30 can park all day for a $2 flat fee. (This rate is scheduled to increase to $2.50 sometime in the near future.) Only one of the surface lots is attended; the other fourteen offer a mix of permit and hourly parking. Fee collection in these lots is achieved via central pay boxes: the cost is $.60 per hour for all time

parked. (This naturally results in a linear price structure.) Some lots also offer $2 all-day parking for specified spaces. Street meters in the central downtown area are priced at $.75 per hour.

Monthly permits are available in all structures and surface lots. Kalamazoo offers both reserved space and regular permits in its structures, the cost of which are $64 and $40, respectively. These prices are uniform across all four structures. Waiting lists currently exist in at least some of these facilities. Regular permit stalls are not differentiated from hourly parking spaces. In two of the structures, however, three hour time limits have been established on the lower levels in order to save these prime spots for short-term parkers. Surface lot permits are priced according to location/demand. These range in cost from $17 to $40 per month, with most lots priced at $30 or $40. Approximately half of all the system's surface lot spaces are used for permit parking.

The cost of an expired meter ticket is $6, however this fee is reduced to $1 if paid within one hour. In addition, if a person has received no other tickets in the past 60 days, the fee will be waived completely upon request. (See the body of the report for a discussion of Kalamazoo's customer-friendly ticket policy.)

Organization

The city parking system in Kalamazoo is managed by Downtown Kalamazoo Incorporated (DKI), a private non-profit organization focused on local economic development. This is accomplished through a sub-lease from the Kalamazoo DDA, which itself officially leases all public parking assets from the city. As a result of these arrangements, DKI controls all structures, surface lots, and street meters owned by the city. It also is responsible for parking enforcement in the greater downtown area. (Of all cities surveyed, Kalamazoo is the only one in which a non-city-affiliated non-profit organization is engendered to handle all city parking functions.) DKI contracts with a private management company (AMPCO) to actually perform all the day-to-day operations of the system.

Finances

According to Andrew Miller, Director of Downtown Development and Planning for DKI, the Kalamazoo parking system operates at a deficit. The system receives a subsidy of approximately $700,000 from the DDA in the form of TIF monies. This is used to help pay the huge annual debt service expense which the parking system has. In 1996, debt service was responsible for fully 50% of total expenses. Not surprisingly, Mr. Miller reports the Kalamazoo parking system would be able to support itself from operations alone if it did not have such a large debt burden. According to Mr. Clayton Johnson, former head of the Kalamazoo system (and current President of the Toledo Parking Authority), the Kalamazoo system took out substantial bonds in order to undertake major repairs and renovation, as well as to build its newest structure, the Arcadia Creek structure, which was completed in 1994.

Parking is very much used for economic development purposes in Kalamazoo. This can be seen in the city's parking enforcement philosophy, as well as in its siting of the Arcadia Creek parking structure. This facility is a component of a larger plan designed to redevelop the area

around this structure. Also, since 1991, the parking system has purposefully cut in half the number of parking violations it annually issues. Kalamazoo's parking enforcement philosophy is discussed in the body of the report. It is significant to note, however, that even had Kalamazoo sustained its previous level of ticket-writing activity, the parking system would still not break even given its current pricing policy, capital expenditures, and operating costs.

Utilization

According to DKI's Parking Implementation Plan compiled in late 1996, peak occupancy in the three older structures averaged about 80% at that time, while the new Arcadia Creek structure was only achieving about 50% peak utilization, yielding an overall 75% usage figure. (Mr. Miller, when interviewed, put current utilization for each of the four structures at between 75% and 85%.) This report also indicated average peak utilization of the system's surface lots taken in total to be 81%. It should be noted that the current rate structure is the same as it was in 1996.

Contact Person: Andrew Miller, DKI Director of Downtown Development and Planning -- (616) 344-0795.

Lansing

Size

The Lansing city parking system consists of 4 structures, 20 lots, and 2,321 street meters. The structures, all of which are attended, contain a total of 3,635 spaces; the surface lots have 2,258 spaces. (This yields an off-street system totaling 5,893 spaces, which equates to 4.93 spaces per 100 city residents.) Most of the lots are dedicated either entirely to permit parking or entirely to hourly parking. All lots which offer hourly parking are metered and contain a total of 366 meters. (One lot near Lansing Community College is attended for a few hours in the evening.) Of the 20 lots, about 12 are located in the immediate downtown area.

Pricing

The cost of the first hour of parking in Lansing is uniformly $1 across all of its structures, lots, and central downtown meters. The city uses a linear pricing system in its structures, charging $1 for each hour parked with a $6 maximum. All lots in which hourly parking is available are metered, which effectively results in a linear pricing system there, as well.

Lansing offers permit parking in all of its structures. Reserved space permits cost $85 per month, while regular permits range in price from $46 to $77. These prices vary based upon structure and level. Monthly lot permits cost $20 to $56, depending on location. Only regular permits are available in the lots.

The cost of an expired meter ticket is $15. This fee is reduced to $5 if paid within two hours.

Organization

All downtown on-street and off-street parking operations in Lansing are controlled by the parking system. The parking system is a unit of the Transportation Division of the City Public Service Department. It is structured as an enterprise fund within the city budget.

Finances

Patrick Ingle, Parking Superintendent, reports that the parking system breaks even from its operations. This includes revenues from all parking resources -- structures, lots and street meters, as well as monies resulting from the parking enforcement done by the system. (The parking system is responsible for daytime, downtown enforcement.) Revenues generated from enforcement are retained by the system. Furthermore, Mr. Ingle identified no major diversions from the system to support other city programs or services.

When questioned about how and why the Lansing parking system is able to break even, Mr. Ingle focused on the diversity of system users and the strong, consistent demand which results. He explained that downtown professionals, state workers, plus city and federal employees all heavily use the system. He also acknowledged that although the downtown is quite active during the day, there is currently not a great deal of evening usage, though this is slowly changing.

Utilization

Mr. Ingle reports that the system as structured has adequate capacity to meet demand. On average weekdays, the structures are not overloaded. Furthermore, although there are waiting lists for core downtown permits, outlying lots have capacity.

Additional Information

- Mr. Ingle explained the guiding principle of Lansing's parking policy is to get long term parkers into the structures. One of the ways the city accomplishes this is through their VIP card program. This is discussed within the body of the study.

- The system dedicates a large percentage of its off-street spaces to permit parking. Mr. Ingle stated that 2,424 of the 3,635 structure stalls are designated for permits; while we estimate almost 1,900 of the 2,258 surface lot spaces are used for permit parking.

- The State of Michigan has a parking system for its employees. Still, the city gets a large number of State workers because its permits are less expensive according to Mr. Ingle. In addition, Ellis Parking Company owns one structure and a few surface lots in Lansing. The company generally prices higher than the city, although it uses a different rate structure including an early bird special. Lansing Community College, which is located downtown, also operates a parking structure.

Contact Person: Patrick Ingle, Parking Superintendent – (517) 483-4240.

Royal Oak

Size

The public parking system in Royal Oak consists of 2 structures, 9 surface lots, and 672 downtown street meters. One of the structures is attended; it contains 502 spaces. The other is not attended and has 539 stalls. This structure offers 146 hourly metered spaces, with the remainder designated for permit parkers. All nine of the lots are metered. In total they contain 1,036 spaces. The parking system in sum then offers 2,077 off-street spaces, which is equivalent to 3.04 spaces per 100 city residents.

Pricing

Excluding the attended structure, the hourly cost of parking in downtown Royal Oak is uniformly $.50 per hour. (Downtown street and lot meters are both priced at $.50 per hour, as are the meters in the unattended structure.) The attended structure, however, charges $.25 per hour for the first hour parked, and $.20 for each subsequent hour. This downward progressive price structure seems to serve no real function other than to generate slightly more income than would a simple linear $.20 rate.

Royal Oak employs two interesting pricing policies which serve as exceptions to the above system. After 6 p.m. on weekends, both structures are attended and charge a flat $2 fee upon entry. Also, from 5-9 p.m. on weekdays, there is no charge for parking in the less centrally located structure. The purpose of this policy is to prompt restaurant employees to utilize the facility, freeing up the prime street parking spaces they had been using in the past.

Monthly permits are available only for the structures. These are priced at $23. The city also sells a $25 per month long-term parking meter permit. This is designed primarily for use in the metered structure, although it can be used at some street meters as well. Holders simply hang the permit from their mirror and then they can park at these meters at no further cost.

An expired meter ticket costs $5; there is no discount for quick payment.

Organization and Finances

The parking system in Royal Oak is a part of the City Public Works Department. Parking Services oversees off-street facilities, on-street meters, and parking enforcement operations. It is set up as an enterprise fund in the city accounts.

According to Michael Kondek, Treasurer of Royal Oak, the parking system supposedly generates a slight surplus from operations. This result includes enforcement expenses but not the monies generated therefrom as ticket revenues go into the city's General Fund. Upon closer inspection, it is not completely clear that the city's parking system does break even. TIF monies are used to pay a large portion of the system's debt service expense, and it is possible that Mr. Kondek included these funds in his assessment. There are numerous transfers into and out of the parking system which make it impossible for us to definitively ascertain if the Royal Oak system indeed is able to be self-sustaining at its current rate levels.

Other Information

- Royal Oak is the only city of those surveyed which predominantly employs meters for revenue collection. Such systems typically incur lower operating costs than do those dominated by attended facilities.

Contact Person: Michael Kondek, City Treasurer -- (248) 546-6300.

Toledo

Size

The City of Toledo parking system is composed of 3 structures, 2 lots, and on-street meters. The structures contain 2,350 spaces and the lots 222, for a total of 2,572 off-street spaces. This equates to only 0.80 off-street spaces per 100 city residents. Toledo's parking system is thus extremely small in relative terms compared to all of the other cities surveyed. This is reflective of the large number of other parking providers in the city, as well as probably the relative depressed nature of the city's downtown when measured against the other surveyed communities.

Pricing

Toledo employs a linear price structure in its structures. All three charge $.75 per half hour, but they also have low maximum fee limits. One of the structures has a $3 maximum; the other two have a $3.50 limit. Toledo sells both reserved and regular parking permits in its structures. Reserved permits are priced between $65 and $80 per month, while regular permits are offered for $60-$65. Prices for both are based on location.

The two lots owned by the city are not a significant source of public parking. One has only 26 spaces, and though it currently offers both hourly and permit parking, this lot is about to be built over in a re-development project. The second lot is leased to two private companies for their own use: no public parking is offered at this 196 space site.

Street meters in downtown Toledo are priced at $1.50 per hour. The cost of an expired meter ticket is $7. There is no discount for prompt payment.

Organization

All downtown parking assets owned by the city are controlled by the Toledo Parking Authority. The Parking Authority is a private non-profit corporation which was established in 1996 in order to centralize all parking assets and functions so that they could be more efficiently managed. The Parking Authority has a 13 member Board of Trustees which oversees its operation. All members are selected by the Mayor and approved by the City Council. The Parking Authority manages the city's off-street facilities and on-street meters as well as parking enforcement in the downtown area. It uses a private company (AMPCO) to handle the day to day operation of the system.

Finances

At current usage and price levels, the Toledo system produces a "significant surplus" from operations according to Clayton Johnson, President of the Toledo Parking Authority. Though there are numerous monetary transfers between the city and the Parking Authority, Mr. Johnson reports that all components of the system - off-street facilities, street meters and enforcement operations - all add to this surplus. Per contractual arrangements, the city is in the process of transferring $1.6 million over five years to the Parking Authority in order to repair and restore the system. At the same time, the Parking Authority transfers money to the city to pay the debt service expense of the structures. Mr. Johnson declined to share any specific figures regarding operating results of the system. He credits the strong economy, good operating procedures, and revenue accountability for the system's current financial health.

Other Providers

There are numerous private companies which offer parking to the public in Toledo. Mr. Johnson estimates there to be approximately 7,000 spaces controlled by private companies in downtown Toledo. It is unclear how many of these are actually available for public use via hourly or permit parking, however it seems likely that the 2,350 off-street spaces provided by the Parking Authority's structures constitute less than half of the entire supply of public parking in the downtown area. According to Mr. Johnson, these private companies typically charge significantly more than does the Parking Authority. In addition, the state, county, and city all have facilities for their employees and visitors as well.

Other Information

- Unsurprisingly, the goal of parking policy in Toledo is to help retain downtown businesses and facilitate economic redevelopment. As Mr. Johnson explains, their focus is to serve the downtown workforce.

- Two of the city's three structures are operating at capacity per Mr. Johnson. Also, although these are located in close geographic proximity to each other, he says they serve different clienteles. This is probably because both are physically attached to different office buildings.

- Except for special events, parking is free on weekends in Toledo.

Contact Person: Clayton Johnson, Toledo Parking Authority President -- (419) 243-8299.

Boulder

Size

The Boulder public parking system consists of 3 structures, 5 lots, and 1,636 street meters. The structures contain 967 spaces, while the lots have 774. There are thus 1,741 off-street spaces in the city system, which equates to only 2.03 spaces per 100 city residents. This is one of the smallest parking systems relative to city population of the communities surveyed. There are 1,006 street meters in the Central Area General Improvement District (CAGID),

which encompasses the primary downtown business district. 310 meters line the streets of the University Hill General Improvement District (UHGID) which encompasses the business area next to the University of Colorado. The UHGID is only four blocks from the core downtown. (It is unclear if the UHGID and CAGID abut one another.) All three of the city structures are located in the CAGID.

Pricing

All three structures employ the same upwardly progressive price structure. The cost of structure parking in Boulder is $.75 per hour for the first three hours, and $1.50 per hour thereafter. There is no maximum fee limit. Only one of the surface lots offers hourly parking. This lot has between 100 and 200 meters; these are priced at $.75 per hour. Street meters in the downtown area are also priced at $.75 per hour.[61]

Boulder sells quarterly permits for all of its structures and surface lots. Prior to January 1998, three-month structure permits cost $175, while three month lot permits were priced at $110. (This is equivalent to $58 and $37 per month, respectively.) Permit rates were scheduled to increase in January.

The cost of an expired meter ticket is $15. There is no discount for quick payment.

Organization

The parking system in Boulder is housed in the Parking Services unit of the Transportation Division of the Public Works Department. Parking Services is not set up as an enterprise fund. The parking system functions like a cost center within the city accounts, allocating costs and revenues to three main funds: the CAGID fund, UHGID fund, and the General Fund. According to Michael Penny, Coordinator of Parking Services, CAGID and UHGID are quasi-city entities similar to Downtown Development Agencies. These two organizations are controlled by their member merchants and oversee development policy in their districts. Parking is one of their functions, although the City Council has final say over major policy changes. In essence, CAGID and UHGID basically own the parking assets in their jurisdictions while Parking Services runs them. Parking services oversees the operations of all off-street facilities and on-street meters; it is also responsible for parking enforcement in the CAGID and UHGID (which is basically the downtown area). The Police Department handles enforcement throughout the rest of the city.

Finances

Because of this accounting structure, it is difficult to assess the financial status of Boulder's parking system. Although the Parking Services unit does have its own budget, it is unclear what exactly is included therein. As was stated above, revenues and expenses are all credited or billed to the two general improvement district organizations and the city General Fund. The General Fund receives all parking ticket revenues (which amount to $1.7 million annually), as well as the net revenues from the city's "out of bounds" meters (320 street

[61] These prices reflect a January 1998 rate hike. Prior to that time, the structure fee was $.50 per hour for the first three hours, $.75 per hour thereafter; the surface lot and street meter rates were $.50 per hour.

meters located beyond the downtown area). The CAGID and UHGID funds are credited the revenues and expenses resulting from the off-street facility operations in their districts, and UHGID also receives the net revenues from the street meters located there. Net revenues from the CAGID meters are used to support the Eco Pass program for non-governmental downtown employees. (See the body of the report for information on this program.) There are additional fiscal transfers which further complicate any system-wide financial assessment. For example, the city pays rent to the CAGID fund for the structures to cover their debt service expense; also, there is an annual transfer from the Transportation Department budget to Parking Services to help cover some costs.

Ultimately, the only assessment we can confidently make is that Boulder's off-street system was not self-sufficient before its most recent rate increase. Mr. Penny explained that revenues from off-street hourly patronage plus permits have historically been less than these facilities operating costs and debt service expense.

Additional Information

- Although specific information on utilization was not gathered, both parking officials interviewed expressed the opinion that there has historically been a significant shortage of commuter parking in Boulder which in turn has impacted short term parking availability. The waiting list for permits is currently 3-5 years long. This, in large part, prompted the city to build an additional 750 stall structure. The new facility is scheduled to open by the end of 1998. (Other city initiatives related to off-street system usage are discussed in the body of the report. Specifically, information on Boulder's Eco Pass and Neighborhood Permit programs is provided.)

- Mr. Penny believes current rates are still much lower than the market could bear. When interviewed in December, he anticipated no significant change in usage would result from the major price increases slated for January. There are no other providers of public parking in Boulder besides the city.

- In 1998, the parking system was scheduled to begin enforcing on-street meters on Saturdays, while structure parking will remain free of charge. The goal of this policy change is to raise some additional revenues and at the same time steer downtown employees into the structures, thus freeing up on-street spaces for downtown shoppers and other patrons.

- The University of Colorado has a large parking system of its own, but the city and university have pursued no significant collaborative parking projects together. This may be due in part to the generally poor relations which existed at all levels between the city and university until recently. Another important cause could be that students do not have a major impact on the core downtown area. Mr. Penny explained that the UHGID portion of the city parking system gets huge amounts of student usage, but that the CAGID facilities are not greatly stressed by student parkers.

- In Mr. Penny's opinion, Boulder's downtown is a diverse and vital one, with many different types of businesses as well as numerous unique retail establishments. In addition, per Mr. Penny, many shopping alternatives exist in Boulder beyond the greater downtown.

Contact Person: Michael Penny, Coordinator of Parking Services -- (303) 413-7300.

Iowa City

Size

The public parking system in Iowa City consists of 3 structures, 8 lots, plus on-street meters. The three structures contain 1,925 spaces, while the surface lots have 522 spaces. These off-street facilities thus offer a total of 2,447 spaces. This equates to 4.03 spaces per 100 city residents. There are 733 on-street meters in the downtown area.

Pricing

Two of the structures are situated in the heart of downtown. Both are attended and charge $.50 per hour. The most centrally located of these has no maximum fee, while the other has a $4 cap. The third structure is located on the edge of the downtown core. This facility is primarily used for permit parking. The hourly cost in this structure is $.40, which is collected via central pay boxes.

Hourly parking is available in all but one of the city's eight lots. Of these seven facilities, all but one is metered. The metered lots are priced according to location, with the one in the core CBD charging $.60 per hour. The other five metered lots charge $.40 per hour and are situated near shopping clusters on the periphery of the downtown core. The final surface lot is attended and is also within the CBD. The cost of parking in this facility is $.50 per hour with no maximum fee. Iowa City thus employs a linear pricing structure in both its structures and surface lots. The price of parking varies by location and only one of the structures has a maximum fee limit.

Permit parking is available in all of the structures and four of lots. Permit price in the structures is set by facility location: the cost is $40, $50, or $55 per month. The upper floors of the structures are used for permit parking, thus freeing up the more desirable lower levels for hourly users. The price of a monthly surface lot permit is $40.

The price of an expired meter ticket in Iowa City is only $3. Iowa state law limits the cost of all parking tickets except handicapped space violations to $5. (See the body of the report for further discussion.)

Organization and Finances

The city parking system in Iowa City is managed by the Department of Parking and Transit. The Department oversees all off-street facilities as well as street meters. It also provides enforcement for the system. (The Police Department is responsible for enforcement beyond the downtown area, although it does not have any dedicated staff to this function.) The other

primary responsibility of the Department is the city's bus system. The parking system is structured as an enterprise fund in the city accounts.

The parking system is in excellent financial health. Joe Fowler, Director of the Parking and Transit Department, predicts receipts will total over $3.1 million in fiscal year 1998, resulting in a surplus of about $1 million. Debt service payments will be approximately $1.1 million for the year. The parking system also transfers revenues from parking tickets to the General Fund totaling approximately $450,000 annually (while at the same time incurring the cost of enforcement, plus one-third the collection costs, as well.) Thus, this surplus includes only off-street operations and meter revenues. The only other transfer the system makes is $90,000 to the transit fund. Mr. Fowler attributes the solvency of the parking system to good planning and aggressive preventive maintenance. The city spends approximately $125,000 per year on such upkeep. The parking system places much of its annual surplus into its Renewal and Improvement Fund, the balance of which currently stands at approximately $2 million.

Utilization

Peak weekday utilization of the two primary structures in the Iowa City system run at between 70 and 75%; while Saturday usage results in the main "shopping" structure filling to capacity for most of the year, with the second one operating at 100% for portions of each year. The third structure, which is primarily used for permit parking, appears to operate at similar weekday capacity. Mr. Fowler explained that the city attempts to keep occupancy levels relatively low so that the system has capacity to absorb additional users during the end of year holiday season.

Additional Information

- Iowa City's parking system is greatly impacted by the University of Iowa, which is located adjacent to the downtown core. According to Mr. Fowler, the city is basically addressing the needs of full-time city residents, but the system's capacity is greatly stressed by the student population. Great swings in usage can be seen based upon the University's schedule. In addition, Mr. Fowler also believes the steady demand for monthly permits is driven by the student population. The city is planning on building two additional structures in the next five years, one of which will primarily serve University of Iowa students. The city is also attempting to reduce student demand via a shuttle bus which was put into service in November 1997. This bus service is free of charge and primarily caters to students. By the end of its first month of operation, it was already serving over four times its projected demand. As of the end of December, it was providing 1,000 rides per day, though there has yet to be a noticeable impact on parking demand. Its cost is $60,000 annually.

- The University of Iowa also maintains a large parking system (including 2,125 spaces on its East Campus which abuts the CBD). According to Mr. Fowler, the city is currently engaged in no major collaborative efforts with the university beyond coordinating operations such that there is no duplication of services between the two parking systems. (The city asked the University to either jointly build the structure cited above or alternatively to sell it the land to do so. The University declined both offers.)

- City officials are presently very concerned about a new regional shopping mall which is being built in a town near Iowa City. Except for the downtown walking mall, there are no major retail shopping centers in Iowa City: the nearest mall is currently over 30 miles away. City leaders are thus very sensitive to the idea of any parking rate increases as they fear higher prices might hurt downtown retail businesses. Mr. Fowler says no major rate hikes are currently planned.

- A final interesting idea being pursued by the city is a parking ticket surcharge. Iowa law limits the fine on any ticket besides parking in a handicapped zone to $5. Iowa city currently charges $3 for an expired meter, but is investigating the possibility of placing a surcharge on tickets which would be dedicated to new parking facility construction. (This is discussed in the body of the report.)

Contact Person: Joseph Fowler, Parking and Transit Department Director -- (319) 356-5156.

Madison

Size

The city parking system in Madison contains 6 structures, 11 surface lots, and 1,314 on-street meters. The structures have 3,732 stalls, while the lots have 677 spaces. This amounts to 4,409 total parking spaces in off-street facilities. Although this is equivalent to only 2.27 off-street spaces per 100 city residents, Madison sells very few monthly permits, which means the relative amount of hourly parking is larger than this figure implies. 1,157 of the system's street meters are located in the downtown core, while the remainder are in two outlying shopping areas.

Pricing

Madison employs a linear price structure with no maximum fee cap in all of its structures. The price of parking in each, however, is set based upon demand. The two most popular facilities charge $.75 per hour, while the others are priced at $.50, $.55, or $.60 per hour. These rates basically accrue 24-hours per day. (The city may charge only $1 per day on weekends.)

Three of the city's 11 surface lots are used solely for permit parking. Of the eight hourly lots, all but one are metered. These are priced based upon location, with those lots nearest the downtown core set at $.75 per hour. One lot next to the University of Wisconsin campus is attended and charges a graduated all-day rate. This 190 space facility charges $5 upon entry before 9:30 a.m., $4 between 9:30 and 4:00 p.m., and $1 after 4:00.

Permits are available in only three of the structures. The city currently limits the total number of structure permits to 366. It also charges non-residents more than residents: resident rates run from $75 to $95 per month based upon structure location; non-resident rates are $90-$115. Three surface lots provide permit parking, with permit prices set per location and demand.

Resident rates run from $23 to $52, with non-resident rates $28-$62. Only 187 of such permits are sold.

Downtown meters cost $.75 per hour; while the price of an expired meter ticket is $15. There is no reduced fee in Madison for the quick payment of a parking ticket. The price of an expired meter was increased by $5 on January 1, 1998.

Organization

Parking services in Madison are a division of the Transportation Department. The system is called the Parking Utility, and it is an enterprise agency. The Parking Utility is overseen by a nine member board, made up of three aldermen and six private citizens. The Parking Utility controls both off-street facilities as well as on-street meters. It does not have any official enforcement responsibilities. Parking enforcement throughout the city is handled by the Police Department.

Finances

The system in Madison as encompassed by the Parking Utility breaks even from its operations. The 1998 fiscal year budget anticipates $6.5 million in receipts. In addition to its operating costs, the Parking Utility is scheduled to spend $1.4 million in debt service payments. The system is charged for almost all city services used, and in FY98 this should result in $800,000 in interagency transfers to other segments of the city. (This $800,000 amount includes a $300,000 payment to the Police Department to cover parking enforcement costs.) Also, the Utility is "taxed" on the replacement value of its assets. For this fiscal year, its payment in lieu of taxes is budgeted to be approximately $600,000. Beyond these payments linked to services, the parking system makes no additional funding transfers. It does not specifically support any city programs. Furthermore, the parking system receives no funds beyond those produced from operations. Thus, as it is structured, the parking system breaks even. (Again, it should be noted that this includes parking enforcement costs but not ticket revenues.)

Mr. Duane Hinz, the Parking Utility Manager, attributes the financial solvency of the parking system to good management and planning, as well as to the willingness of city officials to raise rates when needed.

Utilization

Although no information was gathered regarding system utilization, Mr. Hinz reports there to be vacancies every day in all the city's structures and lots. There is a huge shortage of long term commuter parking in Madison, which has resulted in a large black market backyard parking system. (See discussion below.) At current price levels, however, it appears that there is sufficient hourly parking available in Madison.

Additional Information

- The University of Wisconsin has a large permit parking system of 12,000 to 13,000 spaces. According to Mr. Hinz, it does not, however, provide much student parking. As a result, the city system gets a fair amount of student usage. Mr. Hinz did not dwell on this

as a significant problem. Importantly, however there are no significant collaborative projects between the city and university parking systems.

- A new parking structure has recently opened which is attached to the downtown convention center. This structure is owned by the state and adds 350 hourly spaces to the public parking system. This is the only significant parking facility catering to the general public not controlled by the City Parking Utility. No private parking companies operate in Madison. Also, the county owns and operates a structure for its own employees, but this does not add any general purpose hourly parking to the system.

- According to Mr. Hinz, parking policy in Madison is purposefully designed to discourage single occupant commuters. The city has always taken the stance that short term parkers come first, which is the primary reason the parking system employs a linear price structure with no maximum fee and 24-hour per day collection in the structures. The city also sells only about 550 total parking permits.[62] As a result of this position, however, a large backyard parking system has developed. Residential neighborhoods ring the downtown area, and landowners (both residential and commercial) have converted their backyards and business lots into monthly permit parking space. Although this is prohibited by city ordinance, the law has not been regularly enforced since 1978. Mr. Hinz estimates there are approximately 1,500 such spaces on residential properties, and 1,000 on commercial ones. The City Council is once again debating whether or not to enforce the ordinance. If it chooses to do so, Mr. Hinz believes the city will need to build another parking structure; if it does not, he feels the current system has adequate capacity.

- When questioned about possible confusion felt by consumers resulting from there being different hourly rates at different parking structures, Mr. Hinz explained that he does not believe this to be a problem. Approximately seven years ago, Madison used a uniform progressive price structure in all of its structures: he reports this caused far more confusion than the current linear but non-uniform pricing policy employed by the city.

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[62] According to Mr. Hinz, Madison has a very good bus system and it attempts to encourage mass transit use. How this is done is unclear.

Table A.2.1. Summary of other city price structures

	First-Hour Cost			*Price Structure*
City	***Structures***	***Lots***	***CBD Meters***	***Parking Structures (top) / Surface Lots (bottom)***
Ann Arbor	$0.70	$0.80	$0.60	Structures = Linear, no max Lots = $.80 first 3 hrs, $1 thereafter, no max (DDA facilities only)
Birmingham	free	$0.75	$1.00	4 = free first 2 hrs, $1 per hr hrs 3-7; 1 = $7.50 8 hrs, >8 = $10 total Lots = meters
East Lansing	$0.60	$0.80	$1.00	$.60 per hr first 4 hrs, $1 thereafter, $7 max 1 = $.80 first 2 hrs, $1 thereafter, no max ; others = meters
Flint	$1.25	$0.50	$0.25	$1.25 first hr, $.75 per hour thereafter, $6 max Linear - $.50 per hr, $4 max
Grand Rapids	$1.60	$1.60	$1.20	Linear - $.80 per half hour, 4 = $6.75 max, 2 = no max Linear - 2 = $.80 per half hour, no max ; 2 = meters
Kalamazoo	$0.60	$0.60	$0.75	Linear - $.60 per hr, $5.50 max, (some $2 early bird) Most = honor box ($.60 linear); 1 = attended
Lansing	$1.00	$1.00	$1.00	Linear - $1 per hr, $6 max Linear - meters
Royal Oak	$0.25	$0.50	$0.50	1 = attended, $.25 first hr, $.20 after ; 1 = some $.50 meters Linear - meters
Toledo	$1.50	none	$1.50	$.75 per half hr, 2 = $3.50 max, 1 = $3 max Almost no hourly parking
Boulder	$0.75	$0.75	$0.75	$.75 per hr first 3 hrs, $1.50 thereafter, no max Linear = meters
Iowa City	$0.50	$0.50	$0.60	Linear - 1 = $.50/hr, no max ; 1 = $.50, $4 max ; 1=$.40/hr, no max Linear - Attended = $.50/hr, no max ; others = meters, $.60/$.40
Madison	$0.75	$0.75	$0.75	Linear - $.50 to $.75/hr, no max Attended = all day rate ($5, $4, $1) ; others = meters

The table is meant to summarize information presented within this Appendix. For further explanation, see individual city descriptions.

Appendix 3. Breakeven Analysis

Appendix 4. Cash Flow Analysis