Analysis of Infill and Greenfield Development in the City of Davenport, Iowa

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Department of Community and Economic Development

Matt Brown • Ben Goldsworthy • Lindsay Haas • Sarah Smith

Under Supervision of Kelly Clifton and Paul Hanley

Field Problems in Planning
102:210
Graduate Program in Urban and Regional Planning
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EXECUTIVE SUMMARY

Current development patterns in the City of Davenport have occurred in a leapfrog manner and have created “service islands,” or small nodes of development surrounded by vacant land. Public officials have indicated that cost restraints could become a burden to the City if these growth patterns continue. Thus, the City would like to channel new residential development into “infill” areas, which are adjacent to existing development and infrastructure, rather than in “greenfield,” or predominantly agricultural, areas. In order to uncover the extent of potential cost restraints, as well as the reasons for current development patterns, this study evaluated the extent of potential costs and reasons for current development patterns.

Analysis of Developer Perspective

Since City officials feel that the views and opinions of local developers have a great bearing on current development trends, as well as the location of future development, a questionnaire of these attitudes was conducted.

The results of this questionnaire indicate that residential developers are largely satisfied with the current development review process in the City. The questionnaire respondents stated that the City’s rezoning and approval processes are not major barriers to infill development. The developers felt that neighborhood opposition was an obstacle to constructing infill residential developments. Several developers also indicated that they were unclear as to the City’s plans for infrastructure improvements. Market forces were perceived to be the most significant obstacle to channeling development into infill areas of the City. Developers contended that the market for residential development in the City favored greenfield developments to infill developments.

Fiscal Impact Analysis

In order to assess the specific costs incurred and revenues generated by potential development in various locations in the City, a fiscal impact analysis was conducted. This analysis revealed that greenfield residential development places a significantly greater fiscal burden on the City than infill residential development.

Recommendations

In response to the conclusions of the developer questionnaire, as well as the empirical evidence provided by the fiscal impact analysis, a series of policy recommendations has been devised. These recommendations offer a means by which public officials can work
with developers, City residents, and community activists to encourage infill residential
development.

1. *The City should encourage public participation by facilitating informal meetings
   involving developers, neighbors of proposed developments, and other community
   activists.*

2. *The City should strongly encourage developers to consult long-range
   infrastructure improvement plans and capital improvement program plans.*

3. *The City should require developers of greenfield residential developments to
   share public service costs with the City.*

4. *The City should extensively market themselves as a safe community with an
   exemplary school system.*

5. *The City should work more closely with developers to creating more affordable housing.*
I. PROJECT OVERVIEW

Project Statement

The City of Davenport, Iowa is the largest of the Iowa-Illinois Quad Cities. The City covers 62 square miles and has a population of just over 98,000. The City contains a wide variety of land uses. Although a large amount of commercial and industrial land exists in Davenport, residential uses and undeveloped agricultural land comprise most of the City’s land area. Figure 1 illustrates the land uses within the City.

Over the past forty years, the City of Davenport has annexed a large amount of agricultural land. Most of this land is located on the City’s north and west sides, near the Interstate 80 and 280 corridors. This land consists largely of undeveloped greenfields with some development scattered throughout. The needs of this dispersed residential and commercial development varies from typical urban development. The trend of permitting development in outlying areas has led to the creation of “service islands,” or small nodes of developed land surrounded by vacant land. Thus, pockets of undeveloped land have been created between service islands and the contiguous sections of Davenport.

Map 1 illustrates the large amount of undeveloped land in the City of Davenport. Yellow regions denote areas of the City that are undeveloped or zoned agricultural. “Service islands,” or small nodes of development surrounded by vacant land are also apparent.

Currently, city officials are interested in promoting "infill development" by directing development into these pockets of undeveloped land. To date, the City has experienced numerous obstacles to this goal. Existing residents of the service islands do not want the new developments to encroach upon their residence because they believe that the new development will increase density, decrease open space, and lead to an increase in traffic (Lloyd, 2002a). Also, because infill development can incur additional time and costs through the development process, it is perceived that such development is unattractive to developers (Lloyd, 2002a). Contrary to this notion, the developer questionnaire suggested that the City’s development review process is not a major barrier to infill development. City officials have expressed concern that if the existing development trends continue, the City will be burdened with substantial costs to adequately provide urban services, including sewer, roads, trash collection, and police and fire protection, into these areas. Thus, the City’s Department of Community and Economic Development has sought information regarding contiguous development as well as policy recommendations that encourage cost-effective development in the future.

At the request of the Department of Community and Economic Development, this study examines current patterns of development, taking into account the costs of and barriers to developing particular areas, as well as the preferences of local developers. The study contains three primary objectives:
Figure 1: Zoned Land Uses, City of Davenport, October 2001

Source: City of Davenport Department of Community and Economic Development
1. Analyze the perspective of residential land developers regarding current development patterns;
2. Determine the fiscal impacts on the City of proposed infill and greenfield residential developments;
3. Utilize these findings to devise specific policy recommendations for the City.

Definition of Terms

This study analyzes two distinct development patterns in the City: infill development and greenfield development. Infill development is developable land that is adjacent to existing development and connected to City infrastructure and services. In contrast, greenfield development refers to development on ex-urban, predominantly agricultural land that is not contiguous to existing development in the City in which new infrastructure must be built in order to accommodate it.
II. DEVELOPER PERSPECTIVES

Introduction

Developers have a considerable influence on development patterns. By understanding the developers' perspective, the City of Davenport can better address what drives the market. It is imperative that the City grasps the actual and perceived preferences, perspectives, and obstacles experienced by developers to guide future growth. The views of local residential land developers provide insight as to the barriers of infill development. These impediments are currently driving land development into non-contiguous parcels rather than infill parcels. Knowledge of the developers' perspective is essential for the City to become proactive in future land development.

Literature

The infill and non-contiguous land development and management discussed within this project is land development and management discussed within this project is predominant in Smart Growth literature. Current perspectives of Smart Growth were reviewed through the attitude of real estate interests, specifically residential developers and homebuilders. The common components defining Smart Growth include efficient use of land resources, better use of existing urban services and infrastructure, designing a detailed, human scale livable community, presenting a variety of transportation options, and lastly implementing mixed use zoning, rather than the current separation of uses found in most municipalities (Ernico, 2001).

Many obstacles have prevented developers from implementing Smart Growth guidelines. Essentially, both the demand (market interests) and supply (lending institutions) sides of the equation support traditional suburban development. Often, there is little pressure from consumers for these alternative types of alternative development; however, there are many successful examples throughout the country. Many consumers are satisfied with current suburban development (National Association of Realtors, 2001). This is enforced by the lending and financial institutions that more readily supply loans for traditional suburban development (Downs, 2001a). Lending institutions tend to specialize in particular areas, such as commercial or single family residential. Smart Growth developments often do not fit into these categories, and therefore are not supplied loans at the predictable rate given to traditional development.

Other development barriers include regulatory obstacles such as rezoning, community opposition, fragmented government, homeowner dominance, building and design codes, and alternative designs (Downs, 2001a). Smart Growth developments often require more time and costs investments to gain approval than traditional development (Downs, 2001b). Developers also believe that mandatory growth restrictions may have many adverse effects. These include exacerbating sprawl by encouraging leapfrog development beyond the boundaries; raising costs of development by increasing land values, design standards, and
others that may price people out of the market possibly resulting in displacement and affordable housing issues; limiting supply and encouraging consumers to locate elsewhere; and lastly, placing restrictions on development areas, design guidelines, and etc. (Downs, 2001c). Mandatory Smart Growth is not perceived by many developers as an effective means of guiding land management, as Smart Growth does need to accommodate future growth and choices (Downs, 2001b).

Various public surveys have been conducted that provide evidence that development is driven by consumer desires. The National Association of Home Builders conducted a Consumer Survey on Growth Issues in 1999 that reiterate the developers' perspective on development and growth management. The survey provides evidence that the majority of people do support growth, but believe that government has done a poor job of managing it. This survey indicated that a major concern of growth is increased traffic (National Association of Home Builders 1999). Another poll was conducted by the National Association of Realtors and an independent polling firm, Public Opinion Strategies, to determine how voters feel about growth. The voters indicated that growth is widely accepted. The most telling statistic was that 68 percent of those surveyed said that market forces, not governments, should regulate factors concerning growth (National Association of Realtors, 2001).

**Purpose**

When applied to Davenport's situation, it appears that there are many local issues that must be addressed if the city attempts to better guide future growth. The developers' perspective on the development process and market consequences can be used to direct future regulatory actions and procedures in Davenport. Local effects cannot completely be generalized from national information and opinion, though. Sparse literature was found that directly addresses the perspectives, preferences and obstacles of developing in these ex-urban infill and greenfield areas specifically. In addition, there are particular attributes that Davenport must contend with, such as a stable population and the competitive effects of being one municipality within the multiple municipalities that make up the Quad Cities. Generally, developers believe that demand, not regulatory barriers, should drive the market, and any constraints may be detrimental to Davenport if not implemented on a regional scale (Downs, 2001b).

**Methodology**

A questionnaire was administered to local residential land developers to gauge their perspective of the review process and the barriers to development in Davenport. Appendices A and B of this report contain a sample letter and questionnaire. An attitude questionnaire was developed and administered to assess the opinions of Davenport’s developers regarding what influences development in particular areas, as well as the direction of development and the possible effects. The purpose of the questionnaire is to obtain the attitudes of Davenport's developers regarding the current obstacles, perspectives and perceptions of the development
process for traditional residential development, as well as infill, greenfield, and alternative development.

The questionnaire identifies the developers' views of the current development review process. It is necessary to compare their perspectives for both traditional development and specific types of development (i.e. infill or greenfield development). The questionnaire evaluates the stages of the review process for zoning, subdivision and platting proposals for both traditional residential and infill residential developments, as seen by land developers. It also attempts to differentiate the review process for Davenport compared to the other Quad Cities municipalities. The analysis is principally interested in the areas that Davenport has direct influence over and, hence, will have the capacity to modify. The questionnaire information and analysis aid the specific policy recommendations made to the City of Davenport. The information is intended to be useful by representing the development perspective to the City of Davenport and assisting in crafting policy recommendations to encourage infill development that are favorable for both the developer and the City.

**Study Population**

The questionnaire population involves land developers who are currently or have recently proposed development plans in the City of Davenport. These developers were identified by the City as having gone through the city's development review process and are familiar with the city's regulations and standards. We interviewed five land developers actively participating in the development review process.

**Questionnaire Design**

The questionnaire is structured into three sections that will lead to policy recommendations of the review process. It is imperative to evaluate the aspects of the review process that the City has direct control over and the ability to modify. For this reason other typical barriers were ignored.

The first section of the questionnaire addresses the basic activities of the developer. In the second part of the questionnaire, the respondent is asked to evaluate the four stages of the development review process -- rezoning, pre-application, preliminary platting, and final platting. Developers are then asked how each stage could be improved to make infill development more attractive. Third, respondents are asked to evaluate the review process for both alternative and traditional developments. Together these inquiries are intended to isolate the barriers to infill development, and hence, provide useful directions for policy recommendations that will ultimately streamline the development process and encourage growth in the planned areas.
Limitations

The methodology has limitations that may influence the analysis. The primary constraints of the project include limited time and money. The direct effect of this constraint is a limited study population. The timeframe of the project did not allow for a thorough identification of all possible participants, and therefore, the study population was tailored to identify the most active land developers as recognized by the City. It is possible that particular developers were neglected, including those who are no longer active in the market or those who may become interested and active in the Davenport market if certain conditions were changed. The questionnaire needed to be available and administered in a variety of mediums (phone, mail, and email) to be convenient for the respondent. Most respondents first viewed the questionnaire via mail and then answered via phone. However, using a variety of mediums can lead to misunderstanding, especially regarding vocabulary. In addition, the length of the questionnaire may have been a deterrent for some respondents. While the questionnaire needed to be long enough to gain the necessary information, the numerous and open-ended questions may have been a hindrance for a phone interview.

Due to the time limits, it was deemed that a phone questionnaire would best accomplish the objective. This allowed for greater control over the respondents, responses and deadlines. However, this method results in a smaller study population. The developers were often neither available nor able to designate time to be interviewed. The timeframe of the project also limits the number of responses due to the short amount of time to establish a relationship with the respondents.

Developers may also have been hesitant to participate in the study due to possible reactions by the City. Although the Community and Economic Development Department provided the contact names of development firms, every attempt has been made to keep the respondents, their companies, and their specific responses confidential. This project is intended to benefit both the developer and the City, and all information disclosed during the study will remain confidential, however, this affiliation may have been an impediment.

Another limitation includes the level of experience and knowledge available to design and administer the questionnaire. Despite ample preparation, the lack of actual experience of submitting a proposal for review may have influenced our ability to create a questionnaire that effectively identifies the information necessary to analyze the obstacles and recommend policy changes.

Results

In March 2002, the questionnaire was administered to residential developers that practice within the City of Davenport. A total of fifteen developers were contacted, of which five participated in the questionnaire. The objective of the questionnaire was to identify the developer’s perspective of the current development approval process and the obstacles to
developing in the infill sites. These conclusions have provided the basis for our project's recommendations to the City of Davenport.

In summary, the developers are quite satisfied with the City's development approval process. They stated that the rezoning, subdivision, and plat approval processes are not barriers to development, and that infill development could not be further encouraged by amending these current processes. They stated that the processes are currently enacted in a timely manner, are predictable and include proper notification. However, they did express a need for more communication between the developer and public, especially for infill development, as well as a general need for further internal communication between City departments. Also, developers found the pre-submission phase discussions for Davenport’s subdivision review to be extremely helpful in identifying possible obstacles.

While all developers agreed that public participation is necessary and desired, they did say it could be improved. They identified public opposition as a hindrance for both general development and infill development but perceived it to be more of an impediment for infill development. This was attributed to the public being unclear of the proposals, and poor communication between the developer and the public. Developers suggested ways of easing this barrier. This will be discussed in the following recommendation section.

Throughout the questionnaire, the respondents discussed the provision of infrastructure, specifically the sewer system. This was perceived as the largest obstacle to developing on non-contiguous parcels of land. Although this would contribute to non-contiguous development, the developers suggested that the City should bear part of the economic burden that the developers are shouldering, particularly on the west side of the City. It was suggested that the City could issue a bond to pay for sewer line extensions in order to make residential development more profitable, and hence draw more people to Davenport through City investment.

The questionnaire also revealed that the developers see no market interest for alternative designs. The developers would be interested in pursuing these types of developments, however they currently do not perceive market conditions to be conducive to anything other than traditional development. The developers also believe that although Davenport may need other alternatives, they stress that it will not be successful in current market conditions.

It was very clear that the developers are influenced primarily by market demand, and hence, obstacles of both greenfield and infill development can be attributed to the market. Since lack of market interest was the chief barrier to infill development, there are few process recommendations that will change the result of land development. However, the questionnaire did provide beneficial perceptions and preferences that the City of Davenport can use to influence future development decisions. For example, it was stated that the City has a negative image due to the perception of the school system, especially when directly compared to Bettendorf. The Davenport community was also perceived to be less safe than Bettendorf.
Although there was no differences brought out between Davenport and Bettendorf’s development processes, it was stated that there are many differences between the residential housing markets in the two communities. Developers identified a lack of market interest for single-family residential developments in the infill areas of Davenport. It was also noted that the market for residential properties in Davenport differs from the market in the neighboring City of Bettendorf. One developer estimated that the average value for a home in Bettendorf is $250,000 while the average value in Davenport is $80,000. Given these margins, it is perceived as less profitable for developers to work in Davenport. The Bi-State Planning Commission stated that the average home sale value in Davenport is $109,300 while in Bettendorf it is $174,400. Although these cost comparisons differ, they both indicate that the two cities are functioning in different residential housing markets. The developers’ estimation may be indicative of the perceived differences between the two municipalities. It is also acknowledged that the developers’ figures may be estimating the costs of new construction, which undoubtedly would differ from average home sale figures. The households that are willing to spend the money are looking to Bettendorf due to the many new amenities that it can provide, including the perception of a better school system and safer neighborhoods. It was suggested by a developer that the City of Davenport has an opportunity to take advantage of an underserved market by serving the families who need more affordable housing. The City could work with developers to achieve ways in which to supply more affordable housing to meet current demand in a profitable manner.

In conclusion, the City's development review process presents no obstacle to developers in developing in the infill areas. It is most influenced by the market, which currently does not include interest in infill development or alternative developments.
III. FISCAL IMPACT ANALYSIS

Description and Purpose

As previously mentioned, City officials maintain that greenfield residential developments are more burdensome on the City’s fiscal resources than infill developments. In order to provide empirical evidence of the extent of this perceived fiscal disparity, a fiscal impact analysis has been conducted for hypothetical infill and greenfield residential developments. The analysis compares the differences between public costs of and public revenues generated by both a proposed infill residential development and a proposed greenfield residential development. Identical developments were selected for this analysis in order to ensure that the differences in fiscal impacts are entirely attributable to location, and not to other factors, such as differences in the density of the development or property values. The results of this analysis demonstrate how development in different locations can affect the City’s fiscal resources.

The costs considered in this fiscal impact analysis included only direct monetary costs to the City of Davenport. Indirect social and environmental costs were not included. In addition, costs of providing public services provided by entities other than the City, such water service and schools, were not considered in the analysis. Furthermore, costs of providing infrastructure within the development were not considered because developers absorb these costs. Thus, public costs considered in the analysis include the following:

- Trash removal
- Recyclable collection
- Yard waste removal
- Sewer services
- Road paving
- Snow removal
- Police and fire protection

Public revenues generated by a development include all sources of income for the municipality. These include the following:

- Property taxes
- Residential sewer connection fees
- Residential sewer charges
- Subdivision review fees
- Building permit fees
- Reforestation fees

After determining the costs and revenues, a cost-revenue ratio is then calculated in order to signify the fiscal impact of the development on the municipality. Ratios for different types of development can then be compared to determine the fiscal disparities of different types of development.
Methodology and Data Sources

In order to determine the fiscal impacts of potential infill and greenfield residential development in the City of Davenport, three analyses were conducted: one for a hypothetical infill development, and two others for comparable developments located in greenfield areas. The time horizon utilized was the first ten years of the development’s existence, beginning in fiscal year 2002. A discount rate of 5.5 percent was utilized. This is the typical borrowing rate for general obligation bonds. The characteristics of these prototype developments are based on an actual development proposed in the City in 2001. The two developments are identical in terms of number of dwelling units, type of dwelling units, and lot sizes. Identical developments were selected in order to ensure that the differences in fiscal impacts are entirely attributable to location, and not to other factors, such as differences in the density of the development or property values.

Figure 1: Characteristics of Prototype Residential Developments

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of development</td>
<td>12.5 acres</td>
</tr>
<tr>
<td>Miles of streets</td>
<td>0.34 mile</td>
</tr>
<tr>
<td>Number of single-family dwelling units</td>
<td>63</td>
</tr>
<tr>
<td>Average value of dwelling units</td>
<td>$129,500</td>
</tr>
<tr>
<td>Average number of bedrooms per dwelling unit</td>
<td>3</td>
</tr>
</tbody>
</table>

Figure 1 illustrates the characteristics of the prototype infill and greenfield developments used in this study. A detailed plat of this development is included in Appendix C.

Development A: Development A, the prototype infill development is situated in a location where it can utilize existing trunk sewer lines and existing arterial streets.

Development B: Development B, the first prototype greenfield development is not situated along existing sewer lines. In addition, the prototype development would require paving a one-half-mile stretch of a gravel road with concrete in order to provide adequate access. The City of Davenport uses concrete for its roadway material and pours the concrete 7” thick.

Development C: Development C, the prototype greenfield development is also not situated along existing sewer lines. In addition, the prototype development would require paving a one-mile stretch of a gravel road with concrete in order to provide adequate access. The City of Davenport uses concrete for its roadway material and pours the concrete 7” thick.

Because the three developments are identical in terms of number of dwelling units, type of dwelling units, and lot sizes, the amount of public revenue generated by them is quite similar. Several differences, however, exist between the public costs of the three developments. For instance, because the proposed greenfield development is located farther from existing...
infrastructure, the cost of providing sewer services and roads is greater than that of the proposed infill development. The two analyses were then compared to determine the differences between the fiscal impacts of the three scenarios. Chapter V of this report discusses these calculations in detail.

Upon completion of these calculations, the costs incurred by the development were compared to the revenues generated and a ratio was calculated. The cost-revenue ratios for both the proposed infill development and the proposed greenfield development were analyzed and conclusions were drawn regarding the costs to the City of providing services to development in different locations.

Data for this analysis was derived from several sources. These include conversations with various public officials, the City’s budget, facilities construction manuals, and existing quantitative studies.

**Calculation of Public Revenues**

First, the revenue gained by the City as a result of the prototype residential development was calculated. The appropriate costs for the prototypical residential developments are discussed in the next section. Public revenues include all sources of income for the City directly resulting from the construction of the prototype development. These revenue sources include the following:

- Property taxes
- Residential sewer connection fees
- Residential sewer charges
- Subdivision review fees
- Building permit fees
- Reforestation fees

Because water service, electricity, and gas service are not provided by the City of Davenport, revenue generated by the provision of these services was not included in the analysis.

The primary source for these data was *The City of Davenport, Iowa FY2002 Operating Budget*. Because the City does not assess different fees to properties in different locations, it is assumed that the revenues generated by the prototype infill development and the prototype greenfield developments are the same. Identical developments were selected for this analysis in order to ensure that the differences in fiscal impacts are entirely attributable to location, and not to other factors, such as differences in the density of the development or property values. It is also assumed that the development was constructed during FY 2002.
Figure 2: Sources of Municipal Revenue and Rates

<table>
<thead>
<tr>
<th>Property/Charges</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property taxes</td>
<td>City of Davenport receives $14.29 per $1,000 assessed value per year; residential assessed values are subject to a rollback of 51.6676%</td>
</tr>
<tr>
<td>Residential recyclable collection charges</td>
<td>$35.64 per residence per year</td>
</tr>
<tr>
<td>Residential sewer connection fees</td>
<td>$100.00 per bedroom</td>
</tr>
<tr>
<td>Residential sewer charges</td>
<td>$23.00 service charge per year + $1.48 per 100 cubic feet of water usage</td>
</tr>
<tr>
<td>Subdivision review fee</td>
<td>$400 + $5 per lot for subdivisions with more than 25 lots</td>
</tr>
<tr>
<td>Building permit fees</td>
<td>$433 for dwelling units valued between $99,001 and $100,000 + $2.50 for each additional $1,000 or fraction thereof</td>
</tr>
<tr>
<td>Reforestation fees</td>
<td>$150 per 50 lineal feet of lot frontage</td>
</tr>
</tbody>
</table>

Figure 2 summarizes the various sources of revenue generated and the rates assessed to them in the study.

**Property taxes:** Residential property taxes comprise the major source of revenue for the City. The property tax rate used was that used in the City of Davenport in FY 2002, $14.29 per $1,000 assessed value. In addition, residential assessed values are subject to a rollback of 51.6676 percent. Thus, the City taxes on only 51.6676 percent of the assessed value (City of Davenport, 2001). Because real estate taxes are not charged until approximately the third year of a property's existence, it was assumed that only eight years of property taxes were collected for each dwelling unit.

**Residential recyclable collection charges:** In FY2002, the City charged each single-family residence $2.97 per month (or $35.64 per year) for the collection of recyclables (City of Davenport, 2001).

**Residential sewer connection fees:** In FY2002, the City charged $100.00 per bedroom for residential sewer connection (Bruemmer, 2002).

**Residential sewer charges:** In FY2002, the City charged $5.75 per quarter (or $23.00 per year) for residential sewer plus $1.48 for every 100 cubic feet of water usage (Bruemmer, 2002). It was assumed that each residential customer produces 6,800 cubic feet (51,000 gallons) of sewage per year, which is the average amount of usage.

**Subdivision review fees:** The City’s fee for review of plats is based on the number of lots. For either preliminary or final plats, the fee is $400 plus $5 per lot for subdivisions of more than 25 lots (Lloyd, 2002b).
Building permit fees: The City assesses building permit fees based on the value of a property. For properties valued between $99,001 and $100,000, the fee is $433. For each additional $1,000 over $100,000 or fraction thereof, a fee of $2.50 is assessed.

Reforestation fees: These fees provide a pool of funds from which the City Forester can draw to plant trees in the public right-of-way after the home construction is completed. In FY 2002, the fee was $150 per 50 lineal feet of lot frontage, excluding the frontage on bulb at the end of a cul-de-sac (Lloyd, 2002b). The City assesses this fee regardless of the amount of reforestation needed.

Figure 3: Municipal Revenues Generated by Prototype Developments A, B, and C for Ten Years Beginning in FY 2002

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Property taxes</td>
<td>$381,573.11</td>
</tr>
<tr>
<td>Residential recyclable collection charges</td>
<td>$16,924.38</td>
</tr>
<tr>
<td>Residential sewer connection fees</td>
<td>$18,900.00</td>
</tr>
<tr>
<td>Residential sewer charges</td>
<td>$58,712.99</td>
</tr>
<tr>
<td>Subdivision review fee</td>
<td>$715.00</td>
</tr>
<tr>
<td>Building permit fees</td>
<td>$32,004.00</td>
</tr>
<tr>
<td>Reforestation fees</td>
<td>$10,500.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$519,329.48</strong></td>
</tr>
</tbody>
</table>

Figure 3 summarizes the municipal revenues generated by the prototype development described in Chapter IV of this report. The figures shown are the projected revenues produced during the first ten years of the development’s existence, beginning in fiscal year 2002. As previously mentioned, these figures remain the same for both the prototype infill and greenfield development. Detailed explanation of the calculation of these figures is included in Appendix D.

It is projected that the City would receive $519,329.48 in revenue during FY 2002 as a result of the construction of the prototype subdivision. This amount would remain the same regardless of the subdivision’s location. Over two-thirds of this amount, or $381,573.11 is derived from property taxes.

Overview of Public Expenditures

In addition to calculating the public revenues generated by development, public expenditures must also be considered in the fiscal impact analysis. Calculating these costs assists in determining the extent of the cost differential between infill and greenfield development. This
section will explore the costs that could be measured monetarily, as well as discuss the social costs that are difficult to assign a monetary value.

The costs included in the analysis are only those incurred directly upon the City of Davenport. Several services received by the residents of Davenport are not actually administered by the City. Rather, these services are administered by separate entities and are therefore not applicable to the fiscal impact analysis. For example, the Iowa-American Water Company provides water service, Mid American Energy Corporation provides electricity and gas, and schools are operated by the Davenport Community School District, North Scott School District, and Bettendorf School District.

Thus, the public costs considered in this study include trash and recycling collection, sewer services, road construction, maintenance, and snow removal, and fire and police protection. Costs that are directly covered by the developer of the subdivision, such as provision of sewer lines and streets within the subdivision, are not included in the analysis. Figure 4 summarizes the public expenditures that will be incurred as the result of the construction of the prototype residential development in both infill and greenfield locations.

![Figure 4: Public Expenditures and Rates](image)

<table>
<thead>
<tr>
<th>Service</th>
<th>Development A</th>
<th>Development B</th>
<th>Development C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trash Removal</td>
<td>$21.84 per household per year</td>
<td>$22.88 per household per year</td>
<td>$22.88 per household per year</td>
</tr>
<tr>
<td>Recycling</td>
<td>$8.32 per household per year</td>
<td>$8.84 per household per year</td>
<td>$8.84 per household per year</td>
</tr>
<tr>
<td>Yard Waste</td>
<td>$41.60 per household per year</td>
<td>$41.60 per household per year</td>
<td>$41.60 per household per year</td>
</tr>
<tr>
<td>Residential Sewer Connection</td>
<td>$1,310 per household</td>
<td>$1,760 per household</td>
<td>$1,760 per household</td>
</tr>
<tr>
<td>Residential Sewer Usage</td>
<td>$2,810 per household</td>
<td>$3,520 per household</td>
<td>$3,520 per household</td>
</tr>
<tr>
<td>Road paving</td>
<td>No paving necessary</td>
<td>$464,640 for a half-mile stretch of concrete road (7&quot; thickness)</td>
<td>$929,280 for a one-mile stretch of concrete road (7&quot; thickness)</td>
</tr>
<tr>
<td>Snow removal</td>
<td>0.54 miles of road at $2,347 per foot of snow per mile of road</td>
<td>0.84 miles of road at $2,347 per foot of snow per mile of road</td>
<td>1.34 miles of road at $2,347 per foot of snow per mile of road</td>
</tr>
</tbody>
</table>

**Trash and Recyclable Collection:** Trash and recyclable collection is a cost to Davenport that varies between infill and greenfield developments. Greater distances need to be traveled and route schedules will need to be rearranged as more and more non-contiguous development occurs. More importantly, with additional areas to service, new trucks may need to be purchased to service these areas (Kitzhaber, 1999).

The City of Davenport’s Solid Waste Division of the Public Works Department is responsible for the collection and disposal of garbage for the city’s approximately 32,000 households. Garbage collection service is available to single family through 3-plex multi-family
households using rear-loading and side-loading packer trucks and manual loading of containers and bags. This service occurs on Mondays through Fridays and the areas covered each day can be viewed in Figure 5. Also, in 2001, the average rear loader garbage route consisted of approximately 956 households per route and the average side loader garbage route consisted of approximately 669 households per route.

One of the key costs of solid waste removal is at what point does the city have to add new routes and drivers as the present routes become more populated. According to Tom Bylund, Davenport’s Solid Waste Superintendent, there is no clear-cut rule for adding new routes. Several criteria are used to determine the size of routes. These include the number of households, average tonnage, collection time, route mileage, setout rate, participation rate, traffic conditions, commercial/business density, and employee suggestions. Bylund also noted that the size of Davenport’s garbage routes is comparable to cities with similar solid waste collection system (Bylund, 2002).

*Trash Collection Costs:* In 1995, a set of cost figures for the collection of garbage, yard waste, and recyclables was developed. These costs looked at the differences in cost for these collections in outlying areas of the city as opposed to areas that were considered “in-town”. Through determining the average wage for the necessary staff, the number of stops made on each route, and determining how many of the routes were in-town or outlying area routes, the City was able to achieve a cost of garbage collection for these distinct areas. The in-town garbage collection rate was calculated to be $0.42 per week per house ($21.84 per year) in 1995 and the outlying area rate was $0.44 per week per house ($22.88 per year). In determining these costs, only personnel costs were analyzed and costs do not include equipment costs. However, the 1995 study found the equipment cost difference between the two types of routes to be insignificant and they were not included in the analysis (Kohlurst, 1995).

*Recyclable collection costs:* Based on the same 1995 study, recyclable collection costs were determined to be $0.16 per household per week ($8.32 per year) for in-town routes and $0.17 per household per week ($8.84 per year) for outlying routes (Kohlurst, 1995).

*Yard waste collection costs:* Due to the limited number of yard waste collection routes, Davenport is unable to differentiate between the costs of in town and outlying area routes. Thus, the cost of yard waste collection is $.80 per house per week ($41.60 per year) (Kohlurst, 1995).

*Sewer Services:* From our analysis, sewer lines were found to cost more to build and maintain to non-contiguous development than it costs to service contiguous development. If the City pays for the extension of this infrastructure, it encourages development in these scattered areas. Also, the farther away new development is from the current sewer or water infrastructure, the greater the cost to connect the new development to the main system (Knapp et al., 1999). Often these scattered development sites are served by private wells and septic tanks. However, cities must keep in mind that eventually these locations will need public services. In response to this, the cost for sewer service will be different depending upon if the residence is built in a developed or undeveloped area.
Sewer demand is a function of the number of gallons of occupant driven water consumption that remains in the system and ultimately must be disposed of. As development occurs farther out from a city's core, sewer mains must be extended at an increased cost to the city. It has also been documented that the sewer consumption rate for a single-family housing unit has been calculated at 257 gallons per day (TRB, 2002).

The total sewer cost to new development is made up of two components. The first is the sewer connection, otherwise known as the lateral. The lateral connects the household to the sewer main. The other cost that is associated with sewer service is the tap-in fee. This fee is assessed to new users as a shared cost of the entire system at full capacity. In older urban areas, the tap-in cost also reflects the increased replacement costs of aging infrastructure.

**Sewer connection cost:** The lateral cost, or cost of physically connecting a dwelling unit to the sewer, for a single-family detached household in a developed urban area is $1,310 per household. The lateral cost for the same household in an undeveloped part of the city is $1,760 per household (TRB, 2002).

**Sewer usage cost:** Sewer services are provided to the vast majority of new users as a shared cost of the entire system at full capacity. This is usually referred to as the tap-in, or usage, fee. The tap-in sewer cost for a single-family detached household in a developed urban area is $2,810 per household. The cost for the same household in an undeveloped area of the city is $3,520 per household.

**Road Construction and Maintenance:** The costs of road construction and maintenance are integral factors in the difference in costs to the City between infill and greenfield developments. Non-contiguous development often falls short of paying to maintain the roads leading to and through their residences in subdivisions (Esseks, Sorenson, 1999). In Davenport, the main source of revenue for road maintenance is motor fuel tax revenues. This maintenance of roadways includes repairing road surfaces, clearing debris, and mowing rights-of-way, among other duties. The tax that the scattered residences pay does not compensate the municipality adequately enough to perform these duties on extended stretches of road that serve these developments.

In terms of maintenance, the City of Davenport has determined that the Asphalt Crew, Cracksealing Crew, Street Sweeping, Sealcoat Crew, and Creek Clearing Crew would be unaffected by the type of development that occurred. Utility backfills and the concrete crew would be affected by non-contiguous development. Costs for these services would increase due to increased driving times around the city (Doi, 2002).

Accurate costs for how much it would cost to build a mile of roadway were difficult to formulate. The City of Davenport's Streets Division of the Public Works Department was unable to provide us with the cost of building a mile of roadway. Cost was determined for the pouring and finishing of the concrete as determine by the Means Costs Handbook.

**Road paving costs:** The construction of one mile of a concrete road (7" thickness) costs the City $929,280.00 per mile for a 24' roadway. (Means, 1998) These are the specifications
Davenport uses for the concrete pouring for its roadways. This is only the cost of laying the concrete pavement and includes joints, finishing, and curing. It should be noted that there are other costs that go into road building that were not able to be obtained for this study. These costs include grading, clearing the land and road markings, among other costs.

**Snow Removal:** Snow removal is an important cost that differentiates between infill and greenfield developments. Currently, it is the duty of the Street Division of the Public Works Department of the City of Davenport to keep streets drivable during times of snow according to the City of Davenport snow policy. Standard procedure is that only emergency routes, arterial streets or the streets that have the most traffic are plowed when snow accumulation is less than 2”. When the snowfall is greater than 2”, emergency routes are plowed first, followed by all residential routes.

Currently, existing emergency routes are set up in Davenport so that everyone in the city is within four blocks of an emergency route. Depending on the size and location of a new development, the adjacent main roads servicing the development may become designated as emergency routes. Roadways that are located in the outlying areas of the city away from emergency routes are checked after the plowing of the emergency routes has been completed.

One problem that greenfield development may cause is that as new roads are built and current roads are expanded to service these outlying areas, more resources will be needed to plow these roads. As outlying areas become built up, roads serving these areas could become part of the emergency route network. Adding additional emergency routes would strain the current resources of the plowing outfit and would lead to additional time needed to complete routes as well as having the capacity to add to safety problems during snowstorms. The expansion of the City’s roadway system will result in more time, manpower, equipment, and supplies needed to clear the streets. Non-contiguous development would force the City to obtain needed resources sooner than expected.

**Snow removal costs:** The City of Davenport does not have a cost figure pertaining to how much it costs to plow a mile of roadway. Through further research a cost for snow removal was determined. The cost of snow removal for 1’ of snowfall is $2,347.00 per mile. The cost of snow removal lacks an economy of scale. For example, the cost of snow removal for 2’ of snow is $4,694.00 per mile and for 3’ of snow the cost is $7,041 (City of Broomfield, CO). Thus it is not any more or less expensive to plow per mile as the amount of snow becomes larger. Also, the city of Davenport has similar snow removal methods to those in Broomfield. This provides the snow removal costs with validity. The City of Davenport receives an average of 34.7” of snow per year.

**Police and Fire Protection:** Another concern regarding greenfield developments is their distance from public safety facilities, such as a police station or fire station, and the costs associated with building new facilities to serve these developments. Police, fire, and ambulance response times will all be increased when responding to calls located in non-contiguous development areas. Many of these areas in the City of Davenport are located outside of acceptable distances from the nearest facility. It is estimated that homes located less than five miles from the nearest fire station are adequately served (Richert, 1997). Over time
as more and more people build residences in the fringe areas, Davenport eventually must provide safety facilities for these residences. As more people move into these fringe areas from other parts of the city, there arises a need for new facilities and equipment to serve this population, as well as more police officers and fire fighters needed for this population (Esseks, Sorenson, 1999).

**Fire Protection:** Currently, the Davenport Fire Department consists of eight engine companies, three ladder companies, plus several specialized and reserve equipment with a force of 144 uniformed personnel. The Davenport Fire Department currently has seven fire stations with the most recent stations being built in 1994. One of those stations, Station #8, was erected in the Northeast sector of Davenport. Northeast Davenport is the fastest growing area of the city and this was the primary reason for the need for better fire protection in that area of the city. According to the Davenport Fire Department, in 1995, station #8 had approximately 300 service calls, but by 2000, that number had increased to 1,069 calls.

Response time is large factor that is taken into account in determining when and where a new fire station should be located. According to the Davenport Fire Department, most of the city, 85 percent, is within a response time of 3.8 minutes from a fire station. Recently, the National Fire Protection Association (NFPA) adopted a response time standard that requires a 4-minute response time 90 percent of the time. Davenport is currently studying this recommendation. If it is determined that the adoption of this standard is in the best interest of the city, resources need to be identified to pay for more personnel or the revamping of the current response strategies.

It should be noted that while response times are a main consideration in regards to the relocation of a fire station, there are several other important criteria. Factors such as proximity to such land uses as hospitals, schools, and occupancies that have the potential for large losses of life play a large role in determining where a fire station should be located. Industrial areas and large commercial areas also play an important role in determining the location of a fire station because of the potential impacts of fire to these locations.

In terms of the need for a new fire station, non-contiguous growth does not necessarily signal the need for a new fire station. However, as growth continues to occur in a non-contiguous area, a station would eventually need to be constructed. The Davenport Fire Department believes that a non-contiguous area would be more likely to be scrutinized before a contiguous area. In Davenport’s situation, based on population projections from the Community and Economic Development Department, the current fire stations will serve the city adequately over the next 20 years (Frese 2002).

Based on this information, cost differentials between a greenfield development and an infill development were not determined. Current cost differentials were viewed to be minimal. The cost of driving the extra distance to the greenfield development as opposed to the infill development will be minimal. It is also difficult to assess a cost of building a new fire station to new development based on the many factors that go into the decision of when and where to build a new fire station. Davenport’s newest fire stations, which were built in 1994, cost approximately $780,000 each to build. This figure is just for the cost of the building and does.
not include new fire equipment and personnel needed to staff the building. Using the federal government’s Gross Domestic Price Deflator Inflation calculator, this is equivalent to approximately $895,000 in 2002 terms. This figure provides a base figure for how much a new fire station in Davenport may cost.

**Police Protection:** The Davenport Police Department is comprised of over 220 employees who work to ensure the safety and well being of the Citizens of Davenport. The Patrol Division of the Davenport Police Department is responsible for patrolling approximately 66 square miles including 500 miles of City. The city has been divided into East and West districts and each district has been broken down further into four patrol beat sections. Each beat has statistical data on criminal activities and community service needs in order to determine the manpower needed for each area of the city.

The department uses random patrols and provides focused enforcement on an as-needed basis. If a large development were built, it would probably not receive as many patrols as a more established neighborhood. This is due to the fact that newer neighborhoods usually have fewer calls for service than older, densely populated areas of the city (Bladel, 2002).

Much as in the same way as fire protection, it is difficult to differentiate between the current cost differences between infill and greenfield development. As more and more households are developed on the fringe area of the city, a need for a new police station will arise. At this point however, it is difficult to assess cost to the new developments.

**Calculation of Public Expenditures**

The prototype developments used in this study consist of 63 single-family detached residences. Based on the cost figures that were obtained, the cost differential between the infill and a greenfield development were determined as noted in Figure 6. Detailed explanation of the calculation of these figures is included in Appendix E.
Figure 6: Municipal Expenditures for Prototype Developments for Ten Years Beginning in FY2002

<table>
<thead>
<tr>
<th></th>
<th>Development A</th>
<th>Development B</th>
<th>Development C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trash removal</td>
<td>$10,371.17</td>
<td>$10,865.04</td>
<td>$10,865.04</td>
</tr>
<tr>
<td>Recycling</td>
<td>$3,950.92</td>
<td>$4,197.85</td>
<td>$4,197.85</td>
</tr>
<tr>
<td>Yard waste</td>
<td>$19,754.61</td>
<td>$19,754.61</td>
<td>$19,754.61</td>
</tr>
<tr>
<td>Residential Sewer Connection</td>
<td>$82,530.00</td>
<td>$110,880.00</td>
<td>$110,880.00</td>
</tr>
<tr>
<td>Residential Sewer Usage</td>
<td>$1,334,386.20</td>
<td>$1,671,544.20</td>
<td>$1,671,544.20</td>
</tr>
<tr>
<td>Road paving</td>
<td>$0.00</td>
<td>$464,640.00</td>
<td>$929,280.00</td>
</tr>
<tr>
<td>Snow removal</td>
<td>$17,393.00</td>
<td>$42,970.90</td>
<td>$68,548.91</td>
</tr>
<tr>
<td>Total</td>
<td>$1,468,385.90</td>
<td>$2,324,852.66</td>
<td>$2,815,070.61</td>
</tr>
</tbody>
</table>

From the analysis, road paving and snow removal are the largest factors in determining the cost difference between infill and greenfield development. These costs are based on distance, and the farther out a greenfield development is located, the more expensive the city’s cost will be. Thus, if the Davenport is to allow greenfield development, the City should attempt to keep it as close to the current built infrastructure as possible.

Public Revenue/Expenditure Balance and Findings of the Analysis

In order to better understand the fiscal disparities between infill and greenfield development, the total amount of public revenues generated by each prototype development was compared to the public expenditures.

Figure 7: Fiscal Disparities Between Infill and Greenfield Development

<table>
<thead>
<tr>
<th></th>
<th>Total Revenues</th>
<th>Total Expenditures</th>
<th>Difference</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development A</td>
<td>$519,329.48</td>
<td>$1,468,385.90</td>
<td>-$949,056.42</td>
<td>0.35</td>
</tr>
<tr>
<td>Development B</td>
<td>$519,329.48</td>
<td>$2,324,852.66</td>
<td>-$1,805,523.18</td>
<td>0.22</td>
</tr>
<tr>
<td>Development C</td>
<td>$519,329.48</td>
<td>$2,815,070.61</td>
<td>-$2,295,741.13</td>
<td>0.18</td>
</tr>
</tbody>
</table>

Figure 7 illustrates the fiscal impacts of the prototype infill and greenfield developments. It is projected that Development A, the infill subdivision, would cost the City approximately $1,468,386. Development B, the subdivision 0.5 mile from the edge of development would cost approximately $2,324,853. Development C, the greenfield subdivision 1 mile from the edge of development will cost approximately $2,815,071. Each development would generate about $519,329 in revenue. The amount of revenue generated Development A is expected to cover about 35 percent of the costs incurred. The revenue generated by Development B is
only expected to cover about 22 percent of the costs and revenue generated by Development C is projected to cover 18 percent of the costs. Thus, greenfield development is considerably more costly to the City than infill development. The most significant differences in fiscal impacts exist in provision of roads, snow removal, and sewer services. For further information regarding the calculations of these figures, please see Appendices D and E.

The City of Davenport can address the fiscal burdens associated with greenfield development by implementing cost-sharing strategies. More specifically, if a developer wishes to develop in areas that would require the City to extend its service area, the developer should bear a portion of the cost of providing public facilities. For example, if sewer lines must be extended or upgraded to accommodate for increased usage, the developer should absorb a portion of the cost of the actual capital improvement. Although the City currently assesses a sewer connection fee for new residences, this fee is not correlated with the actual construction of additional facilities. Requiring developers to share the cost of specific capital improvements would better coordinate the construction of additional facilities with increases in system usage. It would also shift fiscal burdens from the City and its taxpayers to the users of the additional facilities.
IV. RECOMMENDATIONS

In response to the conclusions of the developer questionnaire, as well as the empirical evidence provided by the fiscal impact analysis, a series of policy recommendations has been devised.

Results of the developer questionnaire indicated that residential developers are largely satisfied with the current development review process in the City. The questionnaire respondents stated that the City's rezoning and approval processes are not major barriers to infill development. Respondents felt that neighborhood opposition was an obstacle to constructing infill residential developments. Several developers also indicated that they were unclear as to the City's plans for infrastructure improvements. Market forces were perceived to be the most significant obstacle to channeling development into infill areas of the City. Developers contended that the market for residential development in the City favored greenfield developments to infill developments.

The fiscal impact analysis revealed that greenfield residential development places a significantly greater fiscal burden on the City than infill residential development.

The following recommendations offer a means by which public officials can work with developers, City residents, and community activists to encourage infill residential development.

1. The City should encourage public participation by facilitating informal public meetings involving developers, neighbors of proposed developments, and other community activists.

The first recommendation addresses the concern of public participation. Respondents of the questionnaire made it clear that public opposition to development projects often hinders the timeliness of the review process and the potential approval of a proposal. While the review process was regarded in high esteem, public opposition was often perceived as a barrier, especially for infill development. Public opposition is a result of the public being misinformed of the proposals, the public becoming involved too late in the process, and the poor communication between the developer and the public. It was suggested that the City facilitate informal community meetings with the affected neighbors. Although neither the developers nor the survey distinguished between City staff and elected officials, the City staff may be able to facilitate communication. This meeting will provide an opportunity for the developer to present the proposal and answer any questions. The City would need to provide a place for the meeting to occur and would need to act as an impartial moderator. This meeting should occur before the public hearing required in the existing review process. The informal meeting would attempt to consolidate public opposition and provide answers before the public hearing. To provide a supportive environment conducive to communication, the City is encouraged to make every attempt to provide transportation, day care, and convenient meeting times.
In the event that there is significant public opposition to a proposal, an alternative informal public forum could involve neighborhood representatives and a City Council or Commission member. In Lee County, Florida, the County Commissioner arranges a meeting between the spokesperson(s) representing the effected property owners. Either the Board of County Commissioners or residents of the effected neighborhood identify the neighborhood spokesperson(s). The forum provides an outlet for residents to express their concerns to the spokesperson(s), who in turn, bring forth the concerns to the Commissioner(s) at the public forum. The meeting is also an opportunity for the Commissioners to become further informed about the concerns expressed by the neighborhood, which then are then relayed back to other members of the Commission.

Other communities have also stressed the importance of defining the agenda and the sequence of events at the onset of each public forum (Stein, 2000). This enables the City Council or Commission to set boundaries regarding when someone speaks, what will be discussed, and the time limits that will be imposed. By reiterating these guidelines before each meeting, the public may better understand that they are not being manipulated, ignored, insulted or dismissed due to arbitrary actions.

2. The City should encourage developers to consult the long-range infrastructure plans and the capital improvement program plans.

In response to developer statements regarding infrastructure improvements and construction, the City could better inform developers of their future plans for patterns and location of growth in Davenport by encouraging consultation with the infrastructure plan and the Capital Improvement Program plans (CIP). City future growth plans are included with the infrastructure plans and the CIP, and these should be brought to attention of the developers. These plans must also be made more accessible to developers and the public.

Infrastructure, specifically the sewer system, was raised as both a barrier and a frustration to developers. For the City to encourage infill development, it is suggested that the City make clearer and more accessible their plans of repairing and installing new sewer lines to developers.

3. The City should require developers of greenfield residential developments to share public service costs with the City.

The results of the fiscal impact analysis indicate that greenfield developments place a much more significant fiscal burden on the City than infill developments. Although the City requires developers to pay for some off-site infrastructure improvements on a case-by-case basis, a greater effort should be made to correlate infrastructure improvements with new development. In order to encourage infill development and reduce the fiscal burdens associated with greenfield development, measures should be taken to encourage cost-sharing. Specifically, if a developer wishes to develop in areas that would require the City to expand its service area, the developer should bear a portion of the cost of providing public facilities.
For example, if sewer lines must be extended or upgraded to accommodate for increased usage, the developer should absorb a portion of the cost of the actual capital improvement. Although the City currently assesses a sewer connection fee for new residences, this fee is not adequately coordinated with the actual construction of additional facilities. The fiscal impact analysis conducted for this study quantifies this notion. Requiring developers to share the cost of specific capital improvements would better complement the construction of additional facilities with increases in system usage. It would also shift fiscal burdens from the City and its taxpayers to the users of the additional facilities.

4. *The City should extensively market themselves as a safe community with an exemplary school system.*

Another recommendation is based on the developer's perception of the market. The City of Davenport should define itself as a more attractive community. Specifically, the City should change its negative market perception to meet the market preferences for a safe community with a good school system. These market perceptions directly influence the demand for housing in the area and may further directly influence the type of development, specifically the desire for infill development. It is clear that the City of Davenport is not competing in the same residential market as Bettendorf. Although a significant part of northeast Davenport is in the Bettendorf school system, there may be negative impact on land development if the school systems are not perceived as comparable. Although the City of Davenport provides many advantages when compared to communities throughout the nation, when directly compared to the Bettendorf it is perceived as lacking necessities. Focusing on changing the community's image is likely to stimulate compounding benefits, which may allow the City to better direct future growth. For this reason, marketing the benefits of the Davenport community is strongly recommended.

5. *The City should work closely with developers to create more affordable housing.*

It is apparent that Davenport and Bettendorf are operating in different residential housing market. Questionnaire respondents suggested that the market value for newly constructed homes in Davenport is considerably lower than those in Bettendorf. The Bi-State Planning Commission stated that the average home sale value for Davenport is $109,300 and Bettendorf is $174,400. Although the developer is likely to be discussing newly constructed homes whereas the Bi-State figures represent both old and new construction, both reinforce the disparity between the two markets. Given the highly competitive and expensive residential housing market in Bettendorf, there appears to be a need for more affordable housing, as suggested by developers. It was suggested that the City attempt to work more with developers who are attempting to create more affordable housing. Bettendorf is perceived to be capturing the higher end of the housing market. While poor perceptions of school systems and safety may negatively influence the housing market in Davenport, many households cannot afford to purchase the types of homes currently being built in Bettendorf. The City of Davenport has the opportunity to work with developers who are attempting to meet the desire of this segment.
of the market with more affordable housing. It is highly recommended for the City to undertake a market analysis to determine to what extent there is a need for affordable housing.

By implementing these policy recommendations, City officials can work with residents and community activists to encourage infill residential development, while taking into account the perspectives of local developers.
V. SOURCES


*Analysis of Infill and Greenfield Development, City of Davenport, Iowa* • 26


APPENDIX A: SAMPLE LETTER TO DEVELOPERS

1 March 2002

Developer Address
Address
Address

Dear Respondent:

We are soliciting your input for a study of the strengths and weaknesses of Davenport’s residential development review process. We have partnered with the City of Davenport’s Community and Economic Development Department to work on a project that identifies the obstacles of developing particular parcels of land. Enclosed you will find a questionnaire that will be used to assess the land developer’s perspective of the review process and the barriers to development.

We are requesting your participation with this phone questionnaire. It should take about 20 minutes to complete. I have made an appointment with you to complete this questionnaire on (date of appointment). If this time is no longer convenient for you please contact me and I will happily reschedule. In an effort to make this as easy as possible for you, we have emailed you this questionnaire so you can read the questions ahead of time and hence speed up the process. The information that you provide is confidential and no names of individuals and companies will be disclosed in the study.

This information will be used to make specific policy recommendations to the City of Davenport. We are principally interested in the areas that Davenport has direct influence over, and hence, will have the capacity to modify. Your participation will provide useful information to the City of Davenport by representing the development perspective and assist us in crafting policy recommendations that are favorable for both the developer and the City.

Thank you very much for your time and cooperation. We appreciate your involvement with this questionnaire and value your opinion, suggestions and recommendations. If you have any questions or comments, please direct inquiries to Lindsay Haas at 319.335.0044 or lindsay-haas@uiowa.edu or Paul Hanley at 319.335-0043. Again, thank you and have a nice day!

Sincerely,

Lindsay Haas
University of Iowa,
Graduate Program in Urban and Regional Planning
347 Jessup Hall
Iowa City, IA 52242
APPENDIX B: SAMPLE QUESTIONNAIRE

This questionnaire is concerned with evaluating the development process in the City of Davenport. We are specifically addressing the strengths and weaknesses of the process as it relates to particular types of residential development, for example infill and noncontiguous development. This questionnaire is confidential and no names of individuals and companies will be disclosed in the study. It should take about 20 minutes to complete. If you would rather not answer a question, please feel free to pass over it. Thank you very much for your time and cooperation. Have a nice day!

1. What types of residential development are you involved with: (check all that apply)
   __ single family
   __ multifamily
   __ other:

2. On average, how many units (or lots) do you develop a year?

3. Is your firm involved in: (check all that apply)
   __ Selecting parcels of land
   __ Rezoning parcels
   __ Subdividing parcels
   __ Building on parcels

4. Which cities do you develop residential in and for how many years...
   __ yr Davenport, IA
   __ yr Bettendorf, IA
   __ yr Moline, IL
   __ yr Rock Island, IL
   __ yr Unincorporated Scott County
   __ yr Other communities within the Quad Cities area, please specify: ___

5. If you do not develop in the other Quad City municipalities, why?

6. What are your two primary factors in selecting a particular parcel to develop?
   __ Parcel size
   __ Location
   __ Price
   __ Surrounding uses
   __ Current Zoning
   __ Familiarity with neighborhood attitude and regulations
   __ Other: ___
Development Process

The City of Davenport has developed in a pattern that has allowed noncontiguous development around the north and west sides of the City. These greenfields were permitted to develop and City services were extended out to them in some cases. Currently, they exist as service islands. Through this pattern of development, vacant, undeveloped pockets have been created. We will refer to these potential development areas as infill development.

7. Have you ever attempted to develop in one of these infill areas in Davenport? (check all that apply)
   - Yes, development approved
   - Yes, development denied
   - Pending
   - No, never attempted
   - If not, why? ____________________________

8. Do you believe that Davenport's rezoning process generally: (check all that apply)
   - Is enacted in a timely manner
   - Includes proper notification and public involvement
   - Includes consistency amongst planning staff, planning commission, community development committee and city council
   - Needs to include more communication between developer and City
   - Needs to include more internal communication between City departments
   - Is predictable
   - Is consistent with the comprehensive plan
   - Other: ____________________________

9. How could the rezoning process be changed to make infill development more attractive? (check all that apply)
   - Should involve more City staff
   - Should involve City staff earlier
   - Should include more public involvement
   - Other: ____________________________
   - It would not change the outcome

10. How does Davenport's rezoning process compare to other Quad Cities' rezoning processes?

The pre-submission phase of the development process includes any discussions with City staff or information from the City regarding the process and future development plans prior to an application being submitted. Prior to the submission of the preliminary plat the developer is encouraged to confer with city officials to become familiar with the city plan and any regulations.
11. **Generally**, do you believe that the **pre-submission** discussions for Davenport's subdivision review:
(check all that apply)

___ Are extremely helpful in identifying possible obstacles
___ Involve all pertinent City departments (department staff are available to discuss)
___ Need to include more communication between developer and City
___ Need to include more internal communication between City departments
___ Are inconsistent with later decisions by planning staff and city council
___ Are not allocated sufficient time by City planning staff
___ Should include more public notification and involvement
___ Other: ____________________________________________
   ___ Unfamiliar with this phase
   ___ Not applicable

12. How could the **pre-submission** phase be modified to make **infill** development more attractive? (check all that apply)

___ More City staff should be available for discussion
___ More departments should be willing to discuss prior to preliminary plat
___ More public involvement at this phase
___ Other: ____________________________________________
   ___ It would not change the outcome

13. How does Davenport's **pre-submission** phase compare to other Quad Cities' pre-submission process?

________________________________________________________________________

14. **Generally**, do you believe that Davenport's **preliminary** plat process:
(check all that apply)

___ Is enacted in a timely manner
___ Includes proper notification and public involvement
___ Includes consistency amongst planning staff, planning commission, community
development committee and city council
___ Needs to include more communication between developer and City
___ Needs to include more internal communication between City departments
___ Is predictable
___ Is consistent with comprehensive plan
___ Other: ____________________________________________

15. How could the **preliminary** plat process be modified to make **infill** development more attractive? (check all that apply)

___ Should involve more City staff
___ Should involve city staff earlier
___ Should include more public involvement
___ Other: ____________________________________________
   ___ It would not change the outcome

16. How does Davenport's **preliminary** plat process compare to other Quad Cities' preliminary plat process?

________________________________________________________________________
17. **Generally**, do you believe that Davenport's **final** plat process: (check all that apply)

- Is enacted in a timely manner
- Includes proper notification and public involvement
- Includes consistency amongst planning staff, planning commission, community development committee and city council
- Needs to include more communication between developer and City
- Needs to include more internal communication between City departments
- Is predictable
- Is consistent with the comprehensive plan
- Other: __________________________________________

18. How could the **final** plat process be modified to make **infill** development more attractive?

- Should involve more City staff
- Should involve City staff earlier
- Should involve more public involvement
- Other: __________________________________________
- It would not change the outcome

19. How does Davenport's **final** plat process compare to **other Quad Cities**' **final** plat process?

________________________________________________

**Barriers to Development**

20. Generally, a **lack of market interest** is a barrier in developing residential when there is a: (check all that apply)

- Higher than usual density design
- Mix of land uses
- Variety of housing types in close proximity
- Pedestrian or transit oriented design
- Lack of transportation modes
- Range of transportation modes
- Significant price differential from existing developments
- Specific location selected for development, where: __________________________________________
- Other: __________________________________________
- Lack of market interest is not a barrier

21. **Generally**, **public opposition** is a barrier because: (check all that apply)

- There is **little direct action** between the public and developer in early stages of development review
- The public is required to be involved in **too many aspects** of the proposal
- The public is involved **too late** in the development proposal process
- Approval is more sensitive to public opposition at **varying stages** of review process
- Other: __________________________________________
- Public opposition is not a barrier

________________________________________________
22. **Generally**, what is the single most significant barrier to residential development? (check only one)

- Lack of market interest
- Local regulations make it difficult
- Securing financing is difficult
- Public opposition makes it difficult
- Other: 

23. What obstacles are involved with developing an infill parcel (i.e. why would you avoid it?): (check all that apply)

- Lack of market interest
- Local regulations make it difficult
  (check all that apply)
  - Current zoning regulations
  - Timely approval by City staff
  - Density requirements are too low
  - Difficult to receive approval for increased densities
  - Subdivision regulations
  - Communication with City staff insufficient
  - Building regulations
- Securing financing is difficult
- Public opposition makes it difficult
  (check all that apply)
  - Public is unclear of proposal
  - Public opposition is too late
  - Public opposition is too early
  - Public is not involved enough
  - Public is too involved
  - Poor notification by the City
  - Poor communication between the developer and the public
- Other: 
  - No obstacles exist

Noncontiguous and Alternative Development

*Noncontiguous* development has occurred along the north and west sides of the City of Davenport. These developments are permitted to develop on greenfields, and City services are extended out to them in some cases. For some developments, municipal services may include only public safety and garbage pickup if they are permitted to use private water and sewerage service.

24. Have you ever attempted to develop a noncontiguous parcel?

- Yes, development approved
- Yes, development denied what stage did if fail to gain approval, why:
  
- Pending
- No, why not?
25. What obstacles are involved with developing a noncontiguous parcel (i.e. why would you avoid it): (check all that apply)

- Public opposition
- Rezoning approval
- Plat approval
- Amount of time involved in approval
- City provides services at lower level of immediacy
- City will not provide all city services, particularly water and sewerage
- Other: _______________________________________
- No obstacles exist

Alternative development varies from traditional, conventional, low-density, automobile-oriented, suburban development. Examples include New Urbanist development, transit villages, clustered designs, Traditional Neighborhood designs, ecological designs, attached or multifamily housing, and others.

26. Do you believe that there are enough alternatives available in new and existing residential developments to satisfy demand? (check only one)

- There are enough alternatives in existing housing and new construction to satisfy current demand for purchasing housing
- There are enough alternatives in existing housing and new construction to satisfy current demand for rental housing
- There are enough alternatives in existing housing and new construction to satisfy current demand, but not necessarily at the right locations
- There are too few of these alternatives available to satisfy current demand for purchasing housing
- There are too few of these alternatives available to satisfy current demand for rental Housing

27. Have you ever attempted an alternative residential development?

- Yes, development approved and built
- Yes, development approved but has not progressed, why? ______________________________________
- Yes, approval denied, what stage, why? ______________________________________
- Pending
- No, why not? ______________________________________

28. If yes, what type of alternative developments, what aspects were altered, and what obstacles were encountered?

____________________________________________________

Thank you very much for taking the time to complete this questionnaire. If you have any questions regarding this questionnaire, please feel free to contact us:

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APPENDIX D: CALCULATION OF MUNICIPAL REVENUES

First, the total amount of revenue generated by each source in the first year of the prototype development’s existence was calculated. Because the City does not assess different fees to properties in different locations, it is assumed that the revenues generated by the prototype developments A, B, and C are the same. Identical developments were selected for this analysis in order to ensure that the differences in fiscal impacts are entirely attributable to location, and not to other factors, such as differences in the density of the development or property values. These amounts were then summed in order to calculate the total amount of revenue generated by the development during its first year of existence.

Property Taxes

Residential property taxes comprise the major source of revenue for the City. The property tax rate used was that used in the City of Davenport in FY 2002, $14.29 per $1,000 assessed value. In addition, residential assessed values are subject to a rollback of 51.6676 percent. Thus, the City taxes on only 51.6676 percent of the assessed value (City of Davenport, 2001). Because real estate taxes are not charged until approximately the third year of a property’s existence, it was assumed that only eight years of property taxes were collected for each dwelling unit. The total revenue generated by the collection of property taxes in the 63-dwelling-unit prototype subdivision was calculated as follows:

\[ TR = R \times V \times P \times N \]

Where:

\[ TR = \text{total annual revenue from property taxes} \]
\[ R = \text{property tax rate per$1,000 assessed value} \]
\[ V = \text{average value of dwelling unit in development} \]
\[ P = \text{proportion of assessed value subject to taxation under rollback} \]
\[ N = \text{number of single-family dwelling units in development} \]

\[ TR = 14.29 \times 129.5 \times 0.516676 \times 63 \]

\[ TR = 60,236.65 \]

The net present value of the revenue generated by property taxes during the first ten years of the development’s existence using a 5.5 percent discount rate was calculated as follows:

\[ NPV = TR \left[ \frac{1 - \left( \frac{1}{1+i} \right)^n}{i} \right] \]
Where:

\[ NPV = \text{net present value of revenue for first ten years} \]
\[ TR = \text{total annual revenue from property taxes} \]
\[ i = \text{discount rate} \]
\[ n = \text{number of years} \]

\[
NPV = 60,236.65 \left[ \frac{1 - \left( \frac{1}{1 + 0.055} \right)^8}{0.055} \right]
\]

\[ NPV = 381,573.11 \]

**Residential Recyclable Collection Charges**

In FY2002, the City charged each single-family residence $2.97 per month (or $35.64 per year) for the collection of recyclables. The total revenue generated by residential recyclable collection charges in the prototype subdivision was calculated as follows:

\[ TR = C \times N \]

Where:

\[ TR = \text{total annual revenue from recyclable collection charges} \]
\[ C = \text{annual charge per household} \]
\[ N = \text{number of single-family dwelling units in development} \]

\[ TR = 35.64 \times 63 \]

\[ TR = 2,245.32 \]

The net present value of the revenue generated by recyclable collection charges during the first ten years of the development’s existence using a 5.5 percent discount rate was calculated as follows:
\[ NPV = TR \left[ \frac{1 - \left( \frac{1}{1+i} \right)^n}{i} \right] \]

Where:

\( NPV \) = net present value of revenue for first ten years  
\( TR \) = total annual revenue from recyclable collection charges  
\( i \) = discount rate  
\( n \) = number of years

\[ NPV = 2,245.32 \left[ \frac{1 - \left( \frac{1}{1+0.055} \right)^{10}}{0.055} \right] \]

\( NPV = $16,924.38 \)

**Residential Sewer Connection Charges**

In FY2002, the City charged $100.00 per bedroom for residential sewer connection. The average number of bedrooms per single-family dwelling in the prototype subdivision is 3. The total revenue generated by residential sewer connection charges in the prototype subdivision was calculated as follows:

\( TR = C \times B \times N \)

Where:

\( TR \) = total revenue from residential sewer connection charges  
\( C \) = charge per bedroom  
\( B \) = average number of bedrooms per dwelling unit  
\( N \) = number of single-family dwelling units in development

\( TR = 100 \times 3 \times 63 \)

\( TR = $18,900 \)
Residential Sewer Usage Charges

In FY2002, the City charged $5.75 per quarter (or $23.00 per year) for residential sewer plus $1.48 for every 100 cubic feet of water usage. It was assumed that each residential customer is attributable for 6,800 cubic feet (51,000 gallons) of usage per year, which is the average amount of usage. The total revenue generated by residential sewer usage charges in the prototype subdivision was calculated as follows:

\[ TR = [SC + (UC \times U)] \times N \]

Where:

\( TR \) = total revenue from residential sewer usage charges  
\( SC \) = service charge for residential sewer  
\( UC \) = usage charge per 1,000 cubic feet of sewer usage  
\( U \) = average household usage in 1,000s of cubic feet  
\( N \) = number of single-family dwelling units in development

\[ TR = [23 + (1.48 \times 68)] \times 63 \]

\[ TR = $7,789.32 \]

The net present value of the revenue generated by sewer usage charges during the first ten years of the development’s existence using a 5.5 percent discount rate was calculated as follows:

\[ NPV = TR \left[ \frac{1 - \left( \frac{1}{1+i} \right)^n}{i} \right] \]

Where:

\( NPV \) = net present value of revenue for first ten years  
\( TR \) = total annual revenue from residential sewer usage charges  
\( i \) = discount rate  
\( n \) = number of years
\[ NPV = \frac{7,789.32 \left[ 1 - \left( \frac{1}{1 + 0.055} \right)^{10} \right]}{0.055} \]

\[ NPV = $58,712.99 \]

**Subdivision Review Fees**

The City’s fee for review of plats is based on the number of lots. For either preliminary or final plats, the fee is $400 plus $5 per lot for subdivisions of more than 25 lots. The total revenue generated by the collection of subdivision review fees in the prototype subdivision was calculated as follows:

\[ TR = BF + (F \times N) \]

Where:

- \( TR \) = total revenue from subdivision review fees
- \( BF \) = base fee for subdivision
- \( F \) = fee per dwelling unit for subdivisions containing more than 25 units
- \( N \) = number of single-family dwelling units in development

\[ TR = 400 + (5 \times 63) \]

\[ TR = $715.00 \]

**Building Permit Fees**

The City assesses building permit fees based on the value of a property. For properties valued between $99,001 and $100,000, the fee is $433. For each additional $1,000 over $100,000 or fraction thereof, a fee of $2.50 is assessed. The average value of a single-family dwelling in the prototype subdivision is $129,500. The total revenue generated by the collection of building permit fees in the prototype subdivision was calculated as follows:

\[ TR = [BF + (F \times V)] \times N \]

Where:

- \( TR \) = total revenue from building permit fees
- \( BF \) = base fee for building permit
\[ F = \text{fee per dwelling unit per } $1,000 \text{ in value over } $100,000 \]
\[ V = \text{average value in } $1,000\text{s per dwelling unit over } $100,000 \]
\[ N = \text{number of single-family dwelling units in development} \]

\[ TR = [433 + (2.5 \times 30)] \times 63 \]

\[ TR = $32,004.00 \]

**Reforestation Fees**

These fees provide a pool of funds from which the City Forester can draw to plant trees in the public right-of-way after the home construction is completed. In FY 2002, the fee was $150 per 50 lineal feet of lot frontage, excluding the frontage on bulb at the end of a cul-de-sac. The prototype subdivision contains 3,500 lineal feet of lot frontage. The total revenue generated by the collection of reforestation fees in the prototype subdivision was calculated as follows:

\[ TR = F \times LF \]

Where:

\[ TR = \text{total revenue from reforestation fees} \]
\[ F = \text{fee per 50 lineal feet of lot frontage} \]
\[ LF = \text{lot frontage divided by 50} \]

\[ TR = 150 \times 70 \]

\[ TR = $10,500 \]
APPENDIX E: CALCULATION OF MUNICIPAL EXPENDITURES

First, the public expenditures incurred by each prototype development (A, B, and C) were calculated for the first year of the development’s existence. These figures were then added to determine the total municipal expenditures of each development.

Trash Removal

In 1995, a set of cost figures for the collection of garbage, yard waste, and recyclables was developed. These costs looked at the differences in cost for these collections in outlying areas of the city as opposed to areas that were considered “in-town”. Through determining the average wage for the required staff, the number of stops made on each route, and determining how many of the routes were in-town or outlying area routes, the City was able to achieve a cost of garbage collection for these distinct areas. The in-town garbage collection rate was calculated to be $0.42 per week per house in 1995 and the outlying area rate was $0.44 per week per house. In determining these costs, only personnel costs were analyzed and costs do not include equipment costs. However, the 1995 study found the equipment cost difference between the two types of routes to be insignificant and they were not included in the analysis. The total expenditures incurred by trash removal in prototype subdivisions A, B, and C were calculated as follows:

\[ TE = C \times N \]

Where:

\( TE \) = total expenditures for trash removal
\( C \) = annual cost of removing trash per household
\( N \) = number of single-family dwelling units in development

\[ TE_{(DevelopmentA)} = 21.84 \times 63 \]
\[ TE_{(DevelopmentA)} = $1,375.92 \]

\[ TE_{(DevelopmentB)} = 22.88 \times 63 \]
\[ TE_{(DevelopmentB)} = $1,441.44 \]

\[ TE_{(DevelopmentC)} = 22.88 \times 63 \]
\[ TE_{(DevelopmentC)} = $1,441.44 \]
\[ NPV = TR \left[ 1 - \left( \frac{1}{1+i} \right)^n \right] \]

Where:

\( NPV \) = net present value of revenue for first ten years
\( TR \) = total annual revenue from recyclable collection charges
\( i \) = discount rate
\( n \) = number of years

\[ NPV(\text{devA}) = 1,375.92 \left[ 1 - \left( \frac{1}{1+0.055} \right)^{10} \right] \]

\[ NPV = $10,371.17 \]

\[ NPV(\text{devB}) = 1,441.44 \left[ 1 - \left( \frac{1}{1+0.055} \right)^{10} \right] \]

\[ NPV = $10,865.04 \]

\[ NPV(\text{devC}) = 1,441.44 \left[ 1 - \left( \frac{1}{1+0.055} \right)^{10} \right] \]

\[ NPV = $10,865.04 \]
Recyclable Collection

Recyclable collection costs were determined to be $0.16 per house per week for in-town routes and $0.17 per house per week for outlying routes. The total expenditures incurred by recyclable collection in prototype subdivisions A, B, and C were calculated as follows:

TE = CN

Where:

TE = total expenditures for recyclable collection
C = annual cost of collecting recyclables per household
N = number of single-family dwelling units in development

\[ TE_{(DevelopmentA)} = 8.32 \times 63 \]
\[ TE_{(DevelopmentB)} = 8.84 \times 63 \]
\[ TE_{(DevelopmentC)} = 8.84 \times 63 \]
\[ TE_{(DevelopmentC)} = 556.92 \]

\[ NPV(devA) = 524.16 \left[ 1 - \left( \frac{1}{1 + 0.055} \right)^{10} \right] / 0.055 \]

NPV = $3,950.92

\[ NPV(devB) = 556.92 \left[ 1 - \left( \frac{1}{1 + 0.055} \right)^{10} \right] / 0.055 \]

NPV = $4,197.85
\[
NPV(devC) = 556.92 \left[ 1 - \left( \frac{1}{1 + 0.055} \right)^{10} \right] / 0.055
\]

\[
NPV = \$4,197.85
\]

**Yard Waste Collection**

Due to the limited number of yard waste collection routes, Davenport is unable to differentiate between the costs of in town and outlying area routes. Thus, the cost of yard waste collection is \$0.80 per house per week. The total expenditures incurred by yard waste collection in prototype subdivisions A, B, and C were calculated as follows:

\[
TE = C \times N
\]

Where:

\(TE\) = total expenditures for yard waste collection  
\(C\) = annual cost of collecting yard waste per household  
\(N\) = number of single-family dwelling units in development

\[
TE_{(AllDevelopments)} = 41.60 \times 63
\]

\[
TE_{(AllDevelopments)} = \$2,620.80
\]

\[
NPV(allDev) = 2,620.80 \left[ 1 - \left( \frac{1}{1 + 0.055} \right)^{10} \right] / 0.055
\]

\[
NPV = \$19,754.61
\]

**Residential Sewer Connection**

The lateral cost, or cost of physically connecting a dwelling unit to the sewer, for a single-family detached household in a developed urban area is \$1,310 per household. The lateral cost for the same household in an undeveloped part of the city is \$1,760 per household. The total
expenditures incurred by residential sewer connections in prototype subdivisions A, B, and C were calculated as follows:

\[ TE = C \times N \]

Where:

\( TE \) = total expenditures for residential sewer connection
\( C \) = cost of connecting household to sewer line
\( N \) = number of single-family dwelling units in development

\[ TE_{(DevelopmentA)} = 1,310 \times 63 \]
\[ TE_{(DevelopmentA)} = \$82,530.00 \]

\[ TE_{(DevelopmentB)} = 1,760 \times 63 \]
\[ TE_{(DevelopmentB)} = \$110,880.00 \]

\[ TE_{(DevelopmentC)} = 1,760 \times 63 \]
\[ TE_{(DevelopmentC)} = \$110,880.00 \]

**Residential Sewer Usage**

Sewer services are provided to the vast majority of new users as a shared cost of the entire system at full capacity. This is usually referred to as the tap-in, or usage, fee. The tap-in sewer cost for a single-family detached household in a developed urban area is $2,810 per household. The cost for the same household in an undeveloped area of the city is $3,520 per household. The total expenditures incurred by residential sewer usage in prototype subdivisions A, B, and C were calculated as follows:

\[ TE = C \times N \]

Where:

\( TE \) = total expenditures for residential sewer usage
\( C \) = cost of sewer usage per household
\( N \) = number of single-family dwelling units in development

\[ TE_{(DevelopmentA)} = 2,810 \times 63 \]
\[ TE_{(DevelopmentA)} = \$177,030.00 \]

\[ TE_{(DevelopmentB)} = 3,520 \times 63 \]
\[ TE_{(DevelopmentB)} = \$221,760.00 \]
\[ TE_{(DevelopmentC)} = 3,520 \times 63 \]
\[ TE_{(DevelopmentC)} = $221,760.00 \]

\[ NPV(devA) = 177,030.00 \left[ 1 - \left( \frac{1}{1+0.055} \right)^{10} \right] \]

\[ NPV = $1,334,386.20 \]

\[ NPV(devB) = 221,760.00 \left[ 1 - \left( \frac{1}{1+0.055} \right)^{10} \right] \]

\[ NPV = $1,671,544.20 \]

\[ NPV(devC) = 221,760.00 \left[ 1 - \left( \frac{1}{1+0.055} \right)^{10} \right] \]

\[ NPV = $1,671,544.20 \]

**Road Paving**

The construction of one mile of a concrete road (7” thickness) costs the City $929,280.00 per mile for a 24’ roadway. (Means, 1998) These are the specifications Davenport uses for the concrete pouring for its roadways. This is only the cost of laying the concrete pavement and includes joints, finishing, and curing. It should be noted that there are other costs that go into road building that were not able to be obtained for this study. These costs include grading, clearing the land and road markings, among other costs. The total expenditures incurred by road paving in prototype subdivisions A, B, and C were calculated as follows:

\[ TE = C \times RL \]
Where:

$TE = \text{total expenditures for road paving}$

$C = \text{cost of concrete paving per mile of road}$

$RL = \text{length of road to be paved}$

$TE_{\text{(DevelopmentA)}} = 929,280 \times 0$

$TE_{\text{(DevelopmentA)}} = 0.00$

$TE_{\text{(DevelopmentB)}} = 929,280 \times 0.5$

$TE_{\text{(DevelopmentB)}} = 464,640.00$

$TE_{\text{(DevelopmentC)}} = 929,280 \times 1$

$TE_{\text{(DevelopmentC)}} = 929,280.00$

**Snow Removal**

The cost of snow removal for 1’ of snowfall is $2,347.00 per mile. The cost of snow removal lacks an economy of scale. For example, the cost of snow removal for 2’ of snow is $4,694.00 per mile and for 3’of snow the cost is $7,041. Thus it is not any more or less expensive to plow per foot as the amount of snow becomes larger. Also, the city of Davenport has similar snow removal methods to those in Broomfield. This provides the snow removal costs with validity. The City of Davenport receives an average of 34.7” of snow per year. The total expenditures incurred by snow removal in prototype subdivisions A, B, and C were calculated as follows:

$TE = C \times S \times RL$

Where:

$TE = \text{total expenditures for snow removal}$

$C = \text{cost of removal of one inch of snow per mile of road}$

$S = \text{average annual snowfall in Davenport}$

$RL = \text{length of road to be cleared}$

$TE_{\text{(DevelopmentA)}} = 195.58 \times 34.7 \times 0.34$

$TE_{\text{(DevelopmentA)}} = 2,307.49.00$

$TE_{\text{(DevelopmentB)}} = 195.58 \times 34.7 \times 0.84$

$TE_{\text{(DevelopmentB)}} = 5,700.86$
\[ TE_{(DevelopmentC)} = 195.58 \times 34.7 \times 1.34 \]
\[ TE_{(DevelopmentC)} = $9,094.23 \]

\[ NPV_{(devA)} = 2,307.49 \frac{1 - \left( \frac{1}{1 + 0.055} \right)^{10}}{0.055} \]

\[ NPV = $17,393.00 \]

\[ NPV_{(devB)} = 5,700.86 \frac{1 - \left( \frac{1}{1 + 0.055} \right)^{10}}{0.055} \]

\[ NPV = $42,970.96 \]

\[ NPV_{(devC)} = 9,094.23 \frac{1 - \left( \frac{1}{1 + 0.055} \right)^{10}}{0.055} \]

\[ NPV = $68,548.91 \]
APPENDIX F: SUMMARY OF DAVENPORT REZONING REVIEW PROCESS

A rezoning is, at minimum, a three-month approval process as per the City’s process. The first step in the rezoning process requires submission of a petition for review by City land use staff members. In addition, a rezoning fee, determined on a per acre basis, must be paid in full prior to review and consideration. The petitioner must post signs on the subject property informing citizens of the proposed rezoning and publish a notice of the forthcoming public hearing. The City land use staff then begins review of the petition and notifies surrounding property owners within 200 to 300 feet from the rezoning site, dependent upon the size of the proposed rezoning, and makes note of a public hearing to be held one week after submission of the petition.

The following week the Planning staff makes a recommendation to the City Planning & Zoning Commission. If the Planning & Zoning Commission approves the rezoning proposal then materials are to be submitted for Council items generally on the following day. Prior to the City Council meeting, a second public hearing is held before the Committee of the Whole. Two days later the City of Davenport City Council meets to hear the first reading of the Ordinance Amendment and Council votes on the proposed rezoning. For a rezoning to be approved at Council there must be a majority approval from Council members. However, if at least the owners of 20 percent of the land area within a 200-foot radius of the subject property oppose the rezoning a 75 percent majority vote (8 of 10 Council members) is required for the rezoning to pass. If Council approves then the imminent rezoning is brought back to the following two City Council meetings.

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APPENDIX G: SUMMARY OF DAVENPORT SUBDIVISION REVIEW PROCESS

The City of Davenport Department of Community and Economic Development requires fees to be paid in full and for the proper documents to be submitted prior to review and consideration for subdivision. The fees are on a per plat basis and differ dependent upon the number of lots within the proposed subdivision.

Prior to plat submission, an optional preliminary discussion of the proposed subdivision may be held with land use staff members. Items for submission are dependent upon the stage of the plat approval process and differ for preliminary and final plats as noted in the Subdivision Reference File. In some cases, however, preliminary and final plat approval may be done at the same time, therefore all items for both stages must be submitted together. These items, for both preliminary and final plat review, must be submitted to both the Planning & Zoning Commission sixteen (16) days prior to the Commission meeting as specified on the 2002 Development Processing Calendar. The Subdivision Committee generally meets three (3) working days prior to the Commission meeting to review plats and earlier staff reports, and makes recommendations to the Planning & Zoning Commission. On the date of the Planning & Zoning Commission meeting, Commission members review plats and Staff/Committee reports, and make a recommendation to the City Council.

Generally one (1) day following the Planning & Zoning Commission meeting the land use staff prepares a draft Commission letter/recommendation to City Council for the Chair’s signature. Four (4) days prior to the City Council meeting, the Community Development Committee meets and forwards the plat to the Committee of the Whole. The Committee of the Whole will review the plat two (2) days prior to the scheduled City Council meeting and forward it to City Council. On the date of the City Council meeting, Council will approve, deny or return the plat to Planning & Zoning.