

---

---

# DEVELOPMENT IMPACT FEES IN MICHIGAN:

*A Tool to Stop Sprawl Subsidies and  
Promote Efficient Growth*

Brian Imus  
William Coyne

**PIRGIM Education Fund**

July 2003

# ACKNOWLEDGMENTS

This report was made possible by the generous support of the Beldon Fund.

The PIRGIM Education Fund gratefully acknowledges Bill Anderson of the Michigan Townships Association and Jim Townsend of the Michigan Suburbs Alliance for providing thoughtful review of the report.

Additionally, PIRGIM would like to thank Jill Schwartz of the American Farmland Trust and Robert Burchell of the Center for Urban Policy Research at Rutgers University for providing information and guidance.

PIRGIM would also like to thank the Environmental Law and Policy Center for the photos used in this report.

Finally, PIRGIM recognizes Tony Dutzik for editorial support and To the Point Publications for layout work.

The authors alone bear responsibility for any factual errors. The recommendations are those of the PIRGIM Education Fund. The views expressed in this report are those of the authors and do not necessarily reflect the views of our funders.

© 2003 PIRGIM Education Fund

For additional copies of this report, send \$10 (including shipping) to:

**PIRGIM Education Fund  
122 S. Main Street, Suite 370  
Ann Arbor, MI 48104**

The Public Interest Research Group in Michigan (PIRGIM) Education Fund is a 501(c)(3) organization working on environmental protection, consumer rights, and good government in Michigan. For more information about the PIRGIM Education Fund, please call 734-662-6597 or visit the PIRGIM web site at [www.pirgim.org](http://www.pirgim.org).

# TABLE OF CONTENTS

Executive Summary	4
Introduction	6
Michigan Communities are Subsidizing Sprawl	7
Residential Development Does Not Pay its Own Way in Michigan	7
Sprawl Development Has a Greater Fiscal Impact than Efficient Development	9
Impact Fees	13
Impact Fees and Excise Taxes Can Halt Sprawl Subsidies and Promote Efficient Growth	13
Key Components of Impact Fees and Excise Taxes	14
Michigan Examples	15
Findings	18
Appendix A: Limits on Impact Fees	20
Appendix B: Methodology	23
Notes	24

# EXECUTIVE SUMMARY

**M**ichigan communities are subsidizing urban sprawl by paying for sprawl's higher infrastructure costs compared to compact development.

***Residential development does not provide enough tax revenue to pay for itself.***

While residential development may enhance a community's tax base, it demands even more in public services than it generates in tax revenue. In contrast, farmland, open space, and some commercial/industrial development generate much more in tax revenue than they require in services and thus subsidize residential development. A series of cost of community service studies conducted using methodology developed by the American Farmland Trust showed:

- Newton Township spent 120% of the revenue it generated in taxes from residential development on infrastructure and services for that development. At the same time, the township spent only 24% of the revenue generated by agricultural land on infrastructure and services for agricultural land.
- Marshall Township spent 147% of the revenue it generated in taxes from residential development on infrastructure and services for that residential development. The township spent only 27% of the revenue generated by agricultural land on infrastructure and services for that land.

***This problem is magnified by sprawling development patterns. Low-density sprawl development imposes greater infrastructure costs than compact***

***growth and jeopardizes the fiscal stability of Michigan's communities.***

Sprawling and "leapfrog" developments (those built far away from the current urban fringe) tend to be dispersed across the land, requiring longer public roads and water and sewer lines to provide service. In addition, such developments often impose increased costs on police and fire departments and schools.

In southeast Michigan, planners have estimated that low-density development will increase the need for roads and highways by nearly 200 lane-miles over an alternative compact growth alternative. Between 1997 and 2020, roads to service sprawl will cost state and local governments an extra \$53.2 million.

A survey of 18 townships in Michigan suggests that those communities will spend \$742 million on road, water and sewer infrastructure to support new development by 2020, putting a strain on local budgets.

According to a study by the Federal Transit Administration, building new neighborhoods with smart growth development patterns can result in savings of 20 to 50% on the costs of new roads and utilities.

***Development fees and taxes can halt sprawl subsidies while helping to encourage compact growth.***

Impact fees are one-time charges applied to new development to cover the cost of new or expanded public services that will benefit the development. Impact fees are assessed principally for the provision of additional facilities such as roads, schools, libraries, police and fire facilities, and equipment, parks, and recreation facilities.

Excise taxes can be applied with greater flexibility than impact fees. Whereas impact fees are collected to

cover specific public costs associated with a private development, an excise tax can be charged on existing development.

When structured correctly, impact fees and excise taxes guide efficient growth by charging the full cost of infrastructure to service an individual house, which will be higher for sprawling growth. Additionally, development fees will strengthen the fiscal stability of local governments in Michigan.

An analysis of future infrastructure costs in Michigan communities demonstrates that impact fees or excise taxes that recover the full infrastructure costs will make sprawling development more expensive. Two townships provide examples:

#### *The City of Kentwood*

- Impact fees or excise taxes for a unit of development in fringe areas of the township would have to be \$14,300 by 2020 in order to recover the full cost of required infrastructure. The fees would be 147% higher than fees charged for development near existing development.

#### *Macomb Charter Township*

- To recover the full infrastructure cost of sprawling development, impact fees or excise taxes for a unit of development in fringe areas of the township would have to be \$35,200 by 2020, at current rates of growth. The fees would be 168% more than fees charged for development near existing population centers.

#### **Recommendations**

The State of Michigan should authorize counties to pass comprehensive impact fees and/or excise taxes.

- All impact fees ordinances should be crafted so that sprawling development pays the full marginal cost of required infrastructure. This will make low-density or remote development more expensive—and thus less attractive—than high-density or infill projects.
- County, city and township governments can further encourage compact or infill development efforts by exempting such projects from paying impact fees.
- Widespread adoption of impact fee and excise tax ordinances will make them more effective at controlling sprawl. If two neighboring counties have very different impact fees, development may shift away from undeveloped land in the county with fees to undeveloped land in the county without fees. The result would be a sprawl-control victory for the county with fees, but at the expense of the neighboring county.
- Additionally, regional cooperation in assessing impact fees should be a priority. Often infrastructure costs are shared by groups of communities, and/or subsidized by the state or federal governments. Thus, the fiscal impact of providing infrastructure for sprawling development may be shared by several townships or cities, counties, or the state or federal government. Impact fees assessed should be distributed amongst the different governments who are paying the actual infrastructure costs of a given project.

# INTRODUCTION

Many people choose to visit and reside in Michigan because of its open prairies, meandering trout streams, pristine lakes, colorful forests, and rich agricultural land.

The state is blessed with 51,438 miles of rivers and streams, 1,390 square miles of inland lakes, 6.2 million acres of wetlands, and 3,250 miles of Great Lakes shoreline.<sup>1</sup> More than half of the state is still covered by forest land, providing year-round recreational opportunities, wildlife habitat, clean air and water, and natural beauty.<sup>2</sup> Working farms outside of Grand Rapids provide food for people across the country and represent one of Michigan's most valuable industries.

However, sprawling low-density growth is rapidly altering Michigan's landscape. By 2040, built land could increase by 4.1 million acres across the state, more than tripling the amount of urban area in the state and spreading out across an area of land equal to all of the development that has happened in Michigan since 1800.<sup>3</sup> Current development patterns are squandering our natural heritage, with land loss outpacing population growth by nearly 3 to 1.

Today there are thousands of local, regional, and state regulations in place that govern development. While the majority of these policies are working to guide growth in the direction of the desires of the community, most can still be overshadowed by the bottom line economic motivator—money. If, after all zoning and planning laws are considered, it is more cost effective to build large, sprawling, single family residences in open space than to build in interior areas of a city or town, then open space is where development will occur.

Michigan's development industry records millions of dollars in profits each year by building low-density sprawling residential and commercial developments without paying for required public infrastructure. One effective way to get the development community to think critically about land use and favor efficient compact growth is to end public subsidies for sprawling growth.

A developer poised to build a large subdivision will likely think harder about where to build if he or she is required to pay all of the costs to construct roads, water lines, schools, and police stations. Projects in the interior of the city will look more appealing when the lower infrastructure costs of building there are considered.

With the help of the state government, counties, cities and townships in Michigan would have a strong tool at their disposal to erase these subsidies and encourage compact growth: development impact fees. Development impact fees require developers to pay the costs of new public infrastructure to service each unit of development. Combined with effective coordinated planning efforts, development fees provide an effective economic motivator for more sustainable, compact development.



©2002 Environmental Law and Policy Center

*A parking lot in Grand Rapids.*

# MICHIGAN COMMUNITIES ARE SUBSIDIZING SPRAWL

**S**prawling growth is rapidly altering the Michigan landscape. As more and more Michiganders move further out from decaying urban centers, valuable forests and farmland face the prospect of transformation into lakes of pavement, rows of strip malls, and fields of tract housing. Michigan has lost more than one million acres of farmland since 1982, and will lose two million more by 2020 if current trends continue.<sup>4</sup>

Michigan communities are subsidizing this low-density sprawling growth. While developers and new home owners already pay some initial fees for infrastructure, every new subdivision brings additional public infrastructure costs - to provide roads, water and sewer lines, schools, parks, fire and police protection, libraries, etc.

It is a common misconception that residential development betters the financial state of local governments. Generally, residentially developed land has a higher appraised value than open space and therefore generates more tax revenue. Hence, many people assume that because it generates more tax revenue, residential development is beneficial to the local government budget.

In fact, quite the opposite is true. While residential development may increase a community's tax base, it demands even more than it pays in public services, and ends up being subsidized by open space, farmland, and commercial/industrial development.

And sprawling, low-density development costs even more. In a low-density peripheral development, the cost of roads and water and sewer lines are more expensive than for infill development because they require more miles of infrastructure. At the same time, low-density development requires more police and fire service for fewer people, thus

driving up the cost.

In Michigan, communities are subsidizing urban sprawl by paying most of the infrastructure costs to service new development.

## **Residential Development Does Not Pay its Own Way in Michigan**

Studies in Michigan have shown that residential development receives more in public services than it pays for in taxes, whereas farms and privately-owned open space consistently contribute more money than they receive in services.

A series of cost of community service studies, conducted using methodology developed by the American Farmland Trust, illustrate the high costs of residential development by outlining the costs associated with providing public services to different land-use types in three Michigan townships. The studies found that residential development in the three communities consumed between 20% and 47% more in expenditures for services than it contributed in added tax base.

### *Marshall Township, Calhoun County*

Marshall Township is located in Calhoun County between Kalamazoo and Jackson. The township is 10 miles east of Battle Creek at the crossroads of two major trucking routes, I-94 and I-69. Marshall Township surrounds the city of Marshall and had a population of 3,000 in 2000.<sup>5</sup> Historically an agricultural community, growth is rapidly transforming the area.

In Marshall Township, residential properties generated only 68% of the cost of the public services they required. Agricultural and open space generated 370% of the cost of the services required

**Table 1. Costs of Community Services by Land-Use Types, Marshall Township<sup>6</sup>**

Land Use	Revenue	Expenditure	Ratio
Agricultural	\$443,883	\$119,804	0.27
Commercial/Industrial	678,191	136,066	0.2
Residential	1,793,470	2,640,986	1.47
<b>Total</b>	<b>\$2,915,544</b>	<b>\$2,896,856</b>	

and commercial and industrial land uses generated 498% of the cost of services required.

In terms of the expenditure/revenue ratio, residential land spent \$1.47 for every \$1 raised in taxes. On the other hand, agricultural land costs only \$0.27 in public service costs for every dollar generated in taxes and commercial/industrial land costs only \$0.20 in public service costs for every dollar generated in taxes.

*Newton Township, Calhoun County*

Newton is a small township with just 2,500 people in 2000. The community is mostly rural with little commercial or industrial development, and borders Marshall Township to the southwest, near Battle Creek.

Newton has experienced far less of a transition in land use than Marshall Township in recent years. The agricultural sector is fairly stable with little decline in farm acreage. Corn, soybean, hogs, and dairy products are the main agricultural outputs in the area.

In Newton Township, residential properties generated only 83% of the money needed for the public services they required. However, agricultural and open space generated 420% of the cost

of the services required and commercial and industrial land uses generated 400% of the cost of services required.

Expressed in terms of the expenditure/revenue ratio, residential land spent \$1.20 for every \$1 generated in taxes. On the other hand, agricultural land costs only \$0.24 for every dollar generated in taxes and commercial/industrial land costs only \$0.25 in public service costs for every dollar generated in taxes.

*Scio Township, Washtenaw County*

Scio Township, historically an agricultural community just east of Ann Arbor, has seen rapid transition in the last few decades. In the mid-1980s, 22% of the township's 22,000 acres were used for farming.<sup>8</sup> But by 1990 the sprawling suburbs of Ann Arbor had transformed much of that agricultural land into subdivisions. The population of Scio Township increased 47% between 1980 and 1990, and the number of housing units rose 62% over the same period.<sup>9</sup>

Scio Township has had to respond to

**Table 2. Costs of Community Services by Land-Use Types, Newton Township<sup>7</sup>**

Land Use	Revenue	Expenditure	Ratio
Agricultural	\$257,055	\$61,171	0.24
Commercial/Industrial	133,422	33,742	0.25
Residential	1,640,182	1,967,754	1.2
<b>Total</b>	<b>\$2,030,659</b>	<b>\$2,062,667</b>	



**Table 3. Costs of Community Services by Land-Use Types, Scio Township<sup>10</sup>**

Land Use	Revenue	Expenditure	Ratio
Agricultural	\$203,532	\$126,520	0.62
Commercial / Industrial	4,995,636	1,297,031	0.26
Residential	9,067,355	12,690,333	1.4
<b>Total</b>	<b>\$14,226,522</b>	<b>\$14,113,883</b>	

these enormous increases in people and houses by adding additional services. The township has built additional water and sewer systems, widened roads, built new fire and police stations, and built several new schools to accommodate the additional development.

In the 1994-1995 fiscal year, residential development received many more dollars worth of public service than it generated in revenue. Those extra services provided to residential development were subsidized by both agricultural and commercial/industrial land use types.

## **Sprawl Development Has a Greater Fiscal Impact than Efficient Development**

While as a whole residential land incurs higher infrastructure costs to local governments than other land use types, low-density sprawling development has an even greater fiscal impact on local governments than compact residential development.

All new development requires investments in infrastructure—the “publicly owned and maintained land, hardware, or structures” that enable delivery of public services.<sup>11</sup> For a variety of reasons, sprawling development tends to require more costly investments in infrastructure than new compact development patterns.

- Sprawling and “leapfrog” developments (those built far away from the current urban fringe) tend to be dispersed across the land, requiring longer public roads and water and sewer lines to provide service. In addition, such developments often impose costs on police and fire departments and schools.
- Automobile-dependent sprawl also typically drives the expansion of existing roads and leads to private investments—such as large paved parking areas—that can impose greater public-sector costs for stormwater management and water pollution abatement.
- Smart growth—and particularly compact development patterns and infill development—can substantially reduce local infrastructure needs as compared to low-density sprawl. By taking advantage of existing infrastructure, or reducing the need for extensions of road, water, and sewer networks, compact forms of development reduce the demand for costly public infrastructure investments.

The cost of the initial construction of infrastructure is not the only impact of sprawling development. Once new infrastructure is built, it has to be operated

and maintained. A 1992 study of New Jersey found that modest smart growth measures could save 2% annually on operating costs—which, for example, is equivalent to 95% of education expenditures.<sup>12</sup>

### **Road Construction**

All new subdivisions require roads, but those with larger lot sizes, more convoluted layouts, and those located farther

from existing development require more paving. While many subdivision and some local roads are paid for by the developer in Michigan, often subdivisions require some combination of new state, county or local roads, or widening of existing roads to accommodate new growth. These differences can translate into huge costs for local, county and state governments, as well as for taxpayers. For example, a Maine community spent \$400,000 to construct just five miles of new roadway to serve new development.<sup>13</sup> In general, the cost of building local roads is estimated to be 25 percent lower in compactly developed areas than in sprawling areas,<sup>14</sup> and clustering units can create a 50 percent to 75 percent reduction in road length and thus cost.<sup>15</sup> In southeast Michigan, planners have estimated that higher density development would reduce the need for roads and highways by nearly 200 lane-miles.<sup>16</sup>

### **Compact vs. Sprawling Growth in Michigan**

An analysis by the Southeast Michigan Council of Governments demonstrates that sprawl growth costs more in road infrastructure costs, water utility costs, and overall housing costs.

The study surveyed eighteen different communities and projected infrastructure costs for development through 2020 under two different growth scenarios, compact and current (sprawling). The study found that in those eighteen communities:

- Compact growth saves \$44.3 million in local road costs and \$8.9 million dollars in state road costs.
- Compact growth saves \$17.8 million in water capital costs and \$15.1 million in sewer capital costs.
- Compact growth diverts 12,578 housing units from peripheral or rural areas to sites near existing development.
- Compact growth results in 6.4 percent overall lower housing costs than current development trends.
- Compact growth saves 3.2 percent in annual local public-sector service costs.

### **Water and Sewer Lines**

Depending on the municipality and the development, the cost of constructing water and sewer lines is assumed by the public, the developer, or a combination of the two. In some cases, the developer pays for and installs new lines, and presumably passes the costs on to new homebuyers. In other cases, the water district pays and charges all residents in the district a share of the cost. In many instances, local governments pay the entire cost of installing water and sewer lines to service new development.

Whether the developer, the new home buyer, or the local government pay the costs for new sewer and water hookups, water and sewer services comprise a large portion of the capital costs of new communities. Sprawl can inflate the cost of this infrastructure by 20 to 40 percent. Low density, single family development

means longer sewer and water lines and infrastructure to service.

In addition, new development drives demand for additional wastewater treatment capacity. Thus, whether developers pay water and sewer hook-up fees or not, new development creates new costs for local governments.

### **Emergency Services and Public Safety**

Communities also need ambulance service and police and fire protection. Response time—the time from when an emergency call is made to when help arrives—is key.<sup>17</sup> In sprawling developments, fewer houses are within the acceptable response time of four to six minutes of the fire station than would be the case in a more compactly developed area. As a result, sprawling communities often require more fire and police stations per capita than those in more compactly developed areas.

Communities establish service standards that determine the placement of fire stations according to response time. For instance, a community decides a single station cannot serve more than seven square miles and maintain a five and a half minute response time. However, a station needs to receive at least 450 calls per year, which requires a service-area population of at least 9,000 people, or one house for every 1.6 acres. Theoretically, one station could serve 30,000 people, but more a more realistic population base would be 12,000 people.<sup>18</sup> The cost of a new station with one engine and the necessary equipment is \$1.5 million.<sup>19</sup> Thus, a town of 50,000 developed at the minimum density of one home per 1.6 acres would need six fire stations, for a total capital cost of \$9 million. Living in a town developed more compactly, that total same population



©2002 Environmental Law and Policy Center

*Subdivision near Petosky.*

could be served by just three or four stations, for a capital cost of \$6 million to \$7.5 million.

### **Schools**

Sprawling development can impact school costs in two ways. First, because many sprawling developments on the urban fringe are located in communities that had been sparsely populated, the developments often require the construction of entirely new school facilities. Second, the spread-out nature of sprawl imposes significant transportation costs on school districts.

The construction of new schools in outlying areas has often occurred even when existing schools in more densely populated areas have sufficient available capacity. For example, Minneapolis-St. Paul had to build 78 new suburban schools between 1970 and 1990. In the same period, the cities closed 162 urban schools that were in good condition.<sup>20</sup> The state of Maine spent \$334 million constructing and expanding schools in fast growing areas from 1970 to 1995, even though in that same time frame the total number of students dropped by 27,000.<sup>21</sup>

In the Denver area, a new 600-student elementary school costs approximately \$9.4 million. This does not include the cost of fees, permits, or interior furnishings and equipment, which can add \$4 million. Land acquisition costs are an additional expense.<sup>22</sup> The alternative to building a school is to bus children to an existing school. Operating a bus twice a day, once to carry 60 grade school children and once to carry 40 high school students to and from school, costs \$35,000 per year.<sup>23</sup> This does not include

capital costs of purchasing the bus, which range from \$92,000 for a new diesel bus to \$120,000 for a compressed natural gas school bus.<sup>24</sup>

Infill and compact development can reduce these costs. In infill development, children may have the option of attending existing or expanded schools, while more compact forms of development can reduce transportation costs or eliminate the need for busing of some students altogether.

# IMPACT FEES AND EXCISE TAXES CAN HALT SPRAWL SUBSIDIES AND PROMOTE EFFICIENT GROWTH

Impact fees and excise taxes force developers to pay the cost of providing public infrastructure to a development. Infrastructure fees, when structured correctly, encourage efficient growth near the urban core by making development at the fringe more expensive.

## Impact Fees

Development impact fees are one-time charges applied to new development to cover the cost of new or expanded public services that will benefit the development. Impact fees are assessed principally for the provision of additional facilities such as roads, schools, libraries, police and fire facilities and equipment, parks, and recreation facilities. The premise behind impact fees is that development should pay the full marginal cost of providing facilities necessary to accommodate the development. Sprawling development, because it requires more extensive supporting infrastructure, should cost more.

There are multiple limitations on the collection and expenditure of impact fees. Impact fees generally face a two-part legal test before being assessed.

The first test is three-pronged. Fees must first pass a substantive due process test, where the local government has the authority to assess, collect, and spend impact fees for a determined facility. The manner of assessment must clearly qualify the payment as a fee and not a tax.<sup>25</sup> Fees that are sanctioned by a state enabling law are more likely to withstand claims that they violate due process protections. Second, fees must pass the equal protection test. Fees must be applied equally to all parties on the same basis. All new development must be assessed the same kind of fees unless there is a compelling government interest, although fees may vary by the magnitude of impacts. There also must be a rational relationship between the need for new facilities to accommodate growth and the fees new development pays to finance that development.<sup>26</sup>

**Table 4. Types of facilities that can be financed by impact fees<sup>27</sup>**

Transportation: streets, traffic control devices, bridges, street lighting, street landscaping  
Mass transit facilities and equipment  
Parks and recreation facilities  
Public facilities: city hall, civic center, library, municipal buildings  
Public safety: law enforcement and fire protection facilities, equipment, training  
Solid-waste collection equipment and disposal facilities  
Historical preservation  
Harbors, ports, and airports  
Public art, museums, and cultural resources  
Day care facilities  
Water treatment and distribution facilities  
Sewer and storm drainage collection and treatment facilities  
Reclaimed water treatment and distribution facilities  
Electric generation and distribution facilities

Finally, fees must pass the “takings” test. This test must ensure that there is a clearly articulated local objective that is appropriate to the payment method chosen and that property is not “taken” without just compensation.

The second main legal test also consists of three parts and evaluates whether a development actually creates a need for new infrastructure. Courts look for a “rational nexus” which is demonstrated when a local government:

- Shows that the development creates the need for the infrastructure.
- Identifies the cost of the infrastructure.
- Bases the amount of the fee per unit of development on the extent to which that unit of development benefits from the infrastructure.

(See Appendix A for more information on the limitations of impact fees)

## Excise Taxes

Excise taxes can be applied with greater flexibility than impact fees. Whereas impact fees are collected to cover specific public costs associated with a private development, an excise tax can be charged on existing development.<sup>28</sup> Excise tax rates do not have to be clearly linked to the costs imposed by a particular development. If a development two miles out of town on farmland has costs twice those of a new project in the interior of present development, the impact fee charged to the rural development could be only twice as much. With an excise fee, however, the local government could charge five times as much to the outlying development to cover its costs and to discour-

age growth in areas it wishes to preserve.

Collected revenues can be deposited in a city or county’s general fund and used for any purpose.<sup>29</sup> This allows a local government in Michigan to collect money from a development anywhere in the county, for example, and then spend it on maintaining existing infrastructure, constructing new infrastructure, or buying open space. In this way, excise taxes can support current smart growth policies.

Furthermore, because there is no time limit on spending excise tax money, local government does not face the use-it-or-lose-it conundrum that can force infrastructure construction—and undermine sprawl-control efforts—even when there is not demand for an entire new facility.

## Key Components of Impact Fees and Excise Taxes

As discussed in the previous section, impact fees or excise taxes can recover many of the costs incurred by municipalities to service new development. At the same time, if structured correctly, impact fees and excise taxes can also help guide efficient growth.

For development impact fees to guide efficient, compact growth they should:

**Charge sprawling development its full cost.** Development impact fees should be structured to reflect the higher cost of public infrastructure for outlying or sprawling development. To widen five miles of road so that it can carry increased traffic from a new subdivision five miles from the edge of current development costs more than to improve roads to serve a development immediately adjacent to existing development.

Providing fire protection to 20 homes built on previously empty lots in the middle of an urban area costs less than extending fire coverage to 20 homes built several miles away from the nearest fire station.

**Include all infrastructure costs.** Growth is supported by roads, public transportation, schools, sewer and water service, parks and recreation opportunities, libraries, fire and police protection, local government, and other facilities. The cost of each of these should be captured in an impact fee or excise tax so that general revenues do not subsidize undesirable growth. Incorporating all costs will provide more ways in which the cost difference between sprawling and compact development will be felt.

**Exempt non-sprawling projects.** Provide exemptions for infill or transit-oriented development and for affordable housing. To further encourage compact development in priority areas and to promote projects that do not require residents to drive everywhere or governments to build more roads, local governments should offer impact fee or excise tax exemptions to desirable developments. Excusing affordable housing projects from paying fees will help maintain a mix of housing options and sustain livable communities.

## Michigan Examples

Governments in Michigan could halt subsidies to new sprawling development and recover millions of dollars in revenue by assessing development impact fees.

Using an analysis of future growth and infrastructure costs completed by the Southeast Michigan Council of Governments and the results of a survey of 206

local governments completed by David Callies of the American Institute of City Planning (AICP), we have modeled prospective development impact fees that would recover the full costs of a variety of public infrastructure for development in three Michigan locales.

The estimates for water, sewer, local roads, and state roads fees were derived from SEMCOG's estimates of the respective total infrastructure costs through 2020 divided by the number of expected units of development through 2020. Since SEMCOG did not analyze prospective costs of parks, public facilities, police, fire, library, or schools, we used a survey conducted by the AICP to estimate impact fees for each of those costs. However, it is important to understand that these calculations are nothing merely a rough guide, not a concrete estimate of what these fees would actually look like in each locale.

### *City of Kentwood, Kent County*

In Kentwood, impact fees or excise taxes would make development units in peripheral areas more expensive than units near existing development, encouraging more efficient growth. At the same time, impact fees or excise taxes would recoup millions of dollars spent by the township to build public infrastructure that benefits the new development.

Kentwood is a small urban community of 40,000 in the Grand Rapids metropolitan area. Once considered a suburban fringe area, today Kentwood is experiencing some of the same urban decay that threatens many larger Michigan cities.

Kentwood has little vacant land, limiting new commercial growth. Some infill development is occurring and the community plans to rezone existing non-residential land for residential growth. Over the last five years, development has fol-

**Table 5. Estimated Development Impact Fees, City of Kentwood<sup>30</sup>**

	<b>Development Near Existing Development</b>	<b>Outlying Areas</b>
<i>Total Development Units</i>	7,674	2,069
WATER	\$918	\$1,435
SEWER	\$1,237	\$0*
LOCAL ROADS	\$458	\$4,645
STATE ROADS	\$48	\$507
PARKS	\$633	\$1,567
PUBLIC FACILITIES	\$556	\$1,378
POLICE	\$73	\$181
FIRE	\$132	\$328
LIBRARY	\$79	\$196
SCHOOL	\$1,629	\$4,032
<b>Estimated Total Fee</b>	<b>\$5,766</b>	<b>\$14,274</b>

\*Under current development trends, many developments in outlying areas will use septic tanks.

**Table 6. Estimated Development Impact Fees, Macomb Township<sup>31</sup>**

	<b>Development Near Existing Development</b>	<b>Outlying Areas</b>
<i>Total Development Units</i>	9,535	10,289
WATER	\$2,155	\$2,517
SEWER	\$2,789	\$3,170
LOCAL ROADS	\$1,013	\$9,556
STATE ROADS	\$106	\$1,008
PARKS	\$1,443	\$3,867
PUBLIC FACILITIES	\$1,269	\$3,400
POLICE	\$167	\$448
FIRE	\$303	\$811
LIBRARY	\$181	\$486
SCHOOL	\$3,713	\$9,950
<b>Estimated Total Fee</b>	<b>\$13,140</b>	<b>\$35,216</b>

lowed the expansion of utility lines to the southeast of the city center.

Kentwood is expected to experience a 20% increase in households between 1995 and 2020. Kentwood updated its comprehensive growth plan in 1996 and rezoned several large tracts of agricultural and undeveloped land for residential and office development, for a total of 1,100 acres of developable land.

At current growth rates, by 2020 new development in Kentwood would consume 1,530 acres. If Kentwood follows an alternative plan for compact growth, development through 2020 would be redirected from peripheral rural and agricultural areas toward existing development while saving 571 acres.

According to growth estimates by the Southeast Michigan Council of Governments, an estimated development impact fee for Kentwood would be \$14,275 for sprawling development and only \$5,766 for development near existing development. Overall, by 2020 infrastructure costs for a unit of development in outlying areas will cost 148% more than a unit of development near existing development. (See Table 5.)

*Macomb Charter Township,  
Macomb County*

Macomb Township is an outer suburb community in Macomb County just north of Detroit. Despite its concentrated urban areas, the township retains much of its historic agricultural roots. Nearly two-thirds of the land is either agricultural or open space.

Between 1995 and 2020 Macomb expects a 164% expansion in the number of households in the township. If current development trends continue, agricultural and vacant lands in periph-



eral areas in Macomb will be converted to single-family homes at an average density of two to three dwelling units per acre, as compared to present density rates of three to six units per acre. However, according to SEMCOG, an alternate compact growth future would result in 65% of the township's housing in the existing area of development, up from 45%.

In Macomb Township, as in Kentwood, impact fees or excise taxes would encourage infill development to occur and help a more compact alternative growth pattern.

If current growth trends continue, by 2020 public infrastructure costs for a unit of development in fringe areas will be 168% more than for a unit of development near existing development. A development impact fee that recovers the full costs of infrastructure to service one unit of development will be \$35,216 for units in outlying areas and only \$13,140 for infill development. (See Table 6.)

*Garfield Township, Grand Traverse County*

Garfield Township, a historically agricultural area located just south of Traverse City, has seen major changes in recent years. Recent development has left several large farms as the only remaining large tracts of land left undeveloped in the township.

Most of Garfield's existing development is in the north-central part of the township in the vicinity of Traverse City. Recent development projects include a regional mall, rental apartments and condos, and single family houses.

**Table 7. Estimated Development Impact Fees, Garfield Township<sup>32</sup>**

	<b>Development Near Existing Development</b>	<b>Outlying Areas*</b>
<i>Total Development Units</i>	9,596	3,915
WATER	\$1,034	\$1,729
SEWER	\$1,381	\$113
LOCAL ROADS	\$2,208	\$5,301
STATE ROADS	\$231	\$721
PARKS	\$1,155	\$1,871
PUBLIC FACILITIES	\$1,015	\$1,645
POLICE	\$133	\$216
FIRE	\$242	\$392
LIBRARY	\$145	\$235
SCHOOL	\$2,971	\$4,815
<b>Estimated Total Fee</b>	<b>\$10,517</b>	<b>\$17,042</b>

\*Under current development trends, many developments in outlying areas will use septic tanks.

Under current growth trends, Garfield will increase its number of households by 120% between 1995 and 2020. Under current trends, by 2020 new development in the township would require 9,700 acres. SEMCOG predicts that a more compact growth trend could save 1,700 acres from development.

In Garfield Township, impact fees or excise taxes could help make that compact growth scenario reality. Overall, under current growth trends, by 2020 public infrastructure costs for a unit of development in outlying areas will be 62% more than a unit of development near existing development. Infrastructure costs for each unit would be \$17,042.25 for units in outlying areas and only \$10,517.89 for infill development.

# FINDINGS

Michigan communities are subsidizing low-density sprawling growth by financing all or part of the road, school, sewer and water, public safety, and other infrastructure costs for new developments.

County, city and local governments have a powerful set of tools at their disposal that can halt the public subsidies for unwanted growth: impact fees and excise taxes. The State of Michigan should authorize counties and cities to pass comprehensive impact fees and/or excise taxes.

Structured correctly, impact fees and excise taxes have the potential to control sprawl and direct growth to priority areas. The mechanism by which both can control sprawl is to raise the cost of low-density development relative to compact development. The following elements help make impact fees and excise taxes more effective at controlling sprawl.

- Include all infrastructure costs. Growth is supported by roads, public transportation, schools, sewer and water service, parks and recreation opportunities, libraries, fire and police protection, local government, and other facilities. The cost of each of these should be captured in an impact fee or excise tax so that general revenues do not subsidize undesirable growth. Incorporating all costs will provide more ways in which the cost difference between sprawling and compact development will be felt.

Additionally, fees should be adjusted annually to ensure that they accurately reflect infrastructure costs even ten years after passage. The simplest adjustment occurs if the fee

rates rise annually according to the federal inflation index. This requires little work by the county and does not open the fee rates up to perpetual debate.

- Structure the fee rates to reflect the higher cost of public infrastructure for outlying or sprawling development. To construct 25 miles of water lines to service sprawling development in outlying areas is more expensive than to build hook-up homes to existing water lines within interior development. Providing police protection to 10 homes built on previously empty lots in the middle of an urban area costs less than extending coverage to 10 homes built several miles away from the nearest fire station.
- Include both residential and non-residential construction. Residential development is the most common image of sprawling growth but the form of non-residential construction is no less important for the success of planned growth policies. Offices and shops located in urban areas contribute to the vibrancy of existing communities and their proximity to housing improves the quality of life for residents. Warehouse-style stores surrounded by large parking lots and office complexes inaccessible except by car consume valuable open space and require greater public services—roads to carry customers and workers, water for large lawns, fire and police coverage of a larger area—than infill or compact development. These sprawling, non-residential developments should pay impact fees that reflect their infrastructure costs.

- Provide exemptions for infill or transit-oriented development, and for affordable housing. To further encourage compact development in priority areas and to promote projects that do not require residents to drive everywhere or governments to build more roads, local governments should offer impact fee or excise tax exemptions to desirable developments. Excusing affordable housing projects from paying fees will help maintain a mix of housing options and sustain livable communities.
- Spend collected monies in ways that are most supportive of larger planning goals. Longer-term growth goals include preserving open space, maintaining vibrant cities, and reducing dependence on automobiles. Using fire-protection impact fee funds to build a new fire station where it will serve just buildings outside priority growth areas does not make sense if the option is available to build that same fire station so that it can provide coverage to both the new rural development and future developments within the priority growth area. Building just roads rather than using transportation excise-tax monies to fund some transit options undermines other planned growth efforts. Impact fees and excise taxes are more powerful when supported by other growth-management tools, and in turn fees can buttress

those non-financial policies.

- Widespread adoption of impact fee and excise tax ordinances will make them more effective at controlling sprawl. If two neighboring counties have very different impact fees, development may shift away from undeveloped land in the county with fees to undeveloped land in the county without fees. The result would be a sprawl-control victory for the county with fees, but at the expense of the neighboring county.
- Regional cooperation between governments in assessing impact fees and excise taxes should be a priority. Often infrastructure costs are shared by several governmental bodies, and/or subsidized by the state or federal governments. Thus, the fiscal impact of providing infrastructure for sprawling development may be shared by several counties, townships or cities, or the state or federal government. Impact fees or excise taxes assessed should be distributed amongst the different governments who are paying the actual infrastructure costs of a given project.



*A rural Wal Mart in Petoskey.*

©2002 Environmental Law and Policy Center

## APPENDIX A: LIMITS ON IMPACT FEES

Because of impact fees' legal history, governments face a number of restrictions in how fees can be applied. The following is a general explanation of the authority to assess impact fees and restrictions on timing, location, and amount of potential fees and how they are spent.

It should be noted that excise taxes do not face any of the same limitations as impact fees. Excise taxes are established through a different legal route.

### *Power to Levy Fees*

Courts will often uphold a local municipality's development impact fee as an extension of police power authority. However, they are more likely to uphold a fee ordinance if a state has passed specific enabling legislation. Typically these statutes tend to place limitations on the imposition of impact fees rather than extend additional authority beyond what can be implied from state planning statutes.

Today, at least 25 states have passed statutes that enable municipalities to impose fees on new development to help defray the costs of the public services they require. The number of states adopting impact fee enabling legislation grew from three in 1986 to 25 in 1998. Michigan does not have statewide enabling legislation for impact fees.<sup>33</sup>

Leitner and Schoettle (1993) conducted a review of enabling legislation in 20 states and found that legislation across states has been asymmetric and diverse, ranging from very specific, comprehensive, and restrictive, to very brief and general.

However, courts may strike down impact fees if the fees do not conform to the state enabling statutes. The Supreme Court of New Jersey struck down a fee implemented by Somerset County because the fees were used to fund town-

wide roadwork. It held that the enabling statutes limited the use of fees to roadwork necessitated by the specific development.<sup>34</sup>

Some courts have upheld development impact fees even though no statute explicitly authorized them. In these cases, the courts found the necessary authorization in municipal powers laws. For example, the Kansas Supreme Court held that a city could impose impact fees without an enabling act because the municipal powers statutes allowed cities to impose fees for any purpose.<sup>35</sup>

Governments also have the power to grant fee exemptions to specific developments. An infill development project, which has lower costs to start with, can be exempted to make compact growth more attractive. Construction of affordable housing or transit-friendly projects can also be encouraged through exemptions.

### *Timing and Purpose of Expenditure*

Court decisions have set parameters for how impact money should be managed. Courts have also struck down development impact fees when the jurisdiction had no plan to spend them.

In California, Hawaii, and many other states, local agencies are required to maintain suitable fund accounting to assure that impact fees are used for the uses intended. For example it would be illegal to use school impact fees to pay for road improvements.

By earmarking fees into separate accounts apart from general funds, and spending those funds quickly, local governments can avoid charges that fees are merely veiled attempts at taxation.<sup>36</sup>

### *Location of Expenditure*

The greatest restriction on how governments spend collected fee monies pertains to who benefits from the money

collected. Impact fees need to be spent to the direct benefit of the community that paid them: money collected from a new subdivision on the edge of town cannot be used to pay for a new school that no children from the subdivision will attend.<sup>37</sup>

Impact fees by their very nature invite legal challenges under the Fifth Amendment to the U.S. Constitution which forbids the taking of private property by the government without just compensation. Typically, such fees have been upheld when there is a clear and identifiable “nexus” or connection between the development in question and specific infrastructure improvements.

The Arkansas Supreme Court struck down a park impact fee because the plaintiff, a residential developer, could not determine if the city would spend fees to construct or improve parks that benefited his subdivision.<sup>38</sup>

The U.S. Supreme Court’s decisions in the *Nollan v. California Coastal Commission* and *Dolan v. City of Tigard* gave national uniformity on the power of common law with respect to the connection between the fee and the land development project which is subject to that fee.<sup>39</sup>

*Nollan v. California Coastal Commission* was decided in 1987 and clarified the need for a rational nexus. The plaintiffs had sought a permit from the California Coastal Commission to knock down an old beach house and put up a larger one. The Commission imposed a condition in their permit requiring them to permit the public to use one-third of the property on the beach side, citing the need “to protect public views of the beach and assist the public in overcoming the psychological barrier to the beach created by overdevelopment.” The California Court of Appeals held that this was a valid exercise of the commissions’ police powers under its statutory duty

to protect the California coast.<sup>40</sup>

The U.S. Supreme Court reversed, noting that the taking of such an access over private property by itself would require compensation. The Court held that land-use regulations do not affect takings if they substantially advance legitimate state interests and do not deny an owner economically viable use of his land. The Court held that they could not see that any nexus existed between these interests and the condition attached to the Nolan’s redevelopment.<sup>41</sup>

“It is quite impossible to understand how a requirement that people already on the public beaches be able to walk across the Nollan’s property reduces any obstacles to viewing the beach created by the new house. It is also impossible to understand how it lowers any ‘psychological barrier’ to using the public beaches.”

However, the Court made it clear that if there exists a rational nexus between the condition (impact fee) then the outcome would be quite different:

“The condition would be constitutional even if it consisted of the requirement that the Nollans provide a viewing spot on their property for passerby with whose sighting of the ocean their new house would interfere....The evident constitutional propriety disappears, however, if the condition substituted for the prohibition utterly fails to further the end advanced as the justification for the prohibition....the lack of nexus between the condition and the original purpose the building restriction converts that purpose into something other than what it was. The purpose then becomes, quite simply, the obtaining of an easement to serve some valid governmental purpose, but without payment of compensation. Whatever may be the outer limits of “legitimate state interests” in the takings and land use context, this is not one of them.”<sup>42</sup>

In *Dolan v. the City of Tigard*, the Supreme Court struck down a municipal building permit condition that required the Dolans to dedicate bike path and greenway easements to the city. The Court ruled that the local government may only pass on costs of public facilities to landowners that directly relate to the nature and extent of the impact of the proposed development.<sup>43</sup>

The search for a connection between the impact fees and the development and infrastructure improvements financed by the fee is the major legal issue facing impact fees.

There are several tests that the courts use to determine whether the proper nexus exists:

- 1) The “rational relationship” test looks for a reasonable connection between the fee imposed on the development and need for the infrastructure. The test is based on California fee practices.
- 2) The “specifically and uniquely attributable” test requires the fee imposed on the developer to be specifically and uniquely attributable to his or her development.
- 3) The “rational nexus” test requires:
  - a. Proof that the new development needs the infrastructure,
  - b. Identification of the infrastructure cost, and
  - c. A fee amount based on the extent to which the development will reasonably benefit from the infrastructure.

Most impact fees are not affected by the takings rule because they benefit the

community that generated them. But some fees have been struck down because the court could not see the link between a specific community’s fees and the benefits received (*Northern Illinois Home Builder’s Association, Inc. v. County of Du Page*).<sup>44</sup>

Courts have also ruled on whether development impact fees constituted unauthorized taxes, basing their decisions largely on who benefited from the improvements the fees funded. They generally invalidated fees used to fund improvements that were not necessitated by the development that paid them. Idaho’s Supreme Court struck down a capital improvements impact fee precisely because the city used the fees for citywide improvements.<sup>45</sup>

#### *Amount of Fee*

Impact fees should be just high enough to cover the marginal costs imposed on the community by the new development. Government cannot collect an impact fee from a new development to upgrade service above what the current community receives. Determining how much it costs to provide library service or recreation facilities or roads for current residents is an imprecise process. The resulting uncertainty about current costs means that planners must decide on an appropriate per capita or per building fee level to charge to new development. Fearing challenges if the rate is too high, planners err on the side of setting the fee low. This means that the impact fees paid by new development do not reflect the real marginal costs imposed on the community and that sprawling developments fail to pay for all the public infrastructure they require.

## APPENDIX B: METHODOLOGY

The calculations of estimated impact fees for the city of Kentwood and Macomb and Garfield Townships were derived from Southeast Michigan Council of Governments' (SEMCOG) estimated infrastructure costs for growth for each township and an additional survey of impact fees conducted by the American Institute of Certified Planners (AICP).<sup>46</sup> All estimates for development impact fees are equal to the expected infrastructure costs for a unit of development.

The estimates for water, sewer, local roads, and state roads fees were derived from SEMCOG's estimates of the respective total infrastructure costs through 2020 divided by the number of expected units of development through 2020. For example, Kentwood expects to incur \$7.047 million in water infrastructure costs through 2020 for development near existing development. With 7,674 development units expected in that time period, the cost of water infrastructure to service one unit of development near existing development, or the estimated water infrastructure impact fee would be \$918.30.

Since SEMCOG did not analyze prospective costs of parks, public facilities, police, fire, library, or schools, we used a survey conducted by the AICP to estimate impact fees for each of those costs. In AICP's analysis, water, sewer, local

roads, and state roads made up 46.16% of the amount of a comprehensive impact fee. Using that percentage, we were able to project what the full amount of a comprehensive impact fee would be using the numbers provided by SEMCOG for roads, water, and sewer. For example, in Kentwood, the impact fee for water, sewer, and roads would be \$2,661. If that total equals 46.16% of a comprehensive impact fee, that comprehensive total would be \$5,766.

In addition to projecting the total amount of a comprehensive impact fee, we were able to project the individual fee levels for parks, public facilities, police, fire, library, or schools by multiplying the estimated total comprehensive fee by the average percentage makeup of each fee from the AICP survey. However, it is important to understand that these calculations are nothing merely a rough guide, not a concrete estimate of what these fees would actually look like in each locale.

The following were the percentages used to estimate each fee:

park	10.98%
public facility	9.66%
police	1.27%
fire	2.30%
library	1.38%
school	28.25%

# NOTES

1. Keith Schneider, Michigan Land Use Institute, *Protecting Michigan's Lifeblood: Take Care of Watersheds*, Great Lakes Bulletin, Winter 1999.
2. The Nature Conservancy, Michigan Chapter, *Forest Legacy Assessment of Need*, downloaded from the site [www.nature.org/wherework/northamerica/states/michigan/art8568.html](http://www.nature.org/wherework/northamerica/states/michigan/art8568.html) on 1 April 2003.
3. Hans Voss, Michigan Land Use Institute, *Small Talk*, Great Lakes Bulletin, 24 March 2003; Public Sector Consultants, Inc. and Michigan State University, *Michigan Land Resource Project*, November 2001.
4. Michigan Land Use Leadership Council, *Summary of Recent Data on Land Use and Related Trends and Conditions*, prepared by Public Sector Consultants, Inc., downloaded from [www.michiganlanduse.org](http://www.michiganlanduse.org) on 12 April 2003.
5. Calhoun County Community Development and Calhoun County Farm Bureau, *Cost of Community Services in Calhoun County Michigan*, 2001.
6. Ibid.
7. Ibid.
8. Crane, Marion, and Spiecker, Washentaw County Planning Commission, *A Cost of Community Services Study of Scio Township*, July 1996.
9. U.S. Census Bureau, *Census of Population and Housing*, 1990.
10. See note 8.
11. Southeast Michigan Council of Governments, *Fiscal Impacts of Alternative Land Development Patterns in Michigan: The Costs of Current Development Versus Compact Growth, Final Report*, June 1997.
12. Two percent on operating costs: Robert Burchell, *Impact Assessment of the New Jersey Interim State Development and Redevelopment Plan, Report II: Research Findings*, New Jersey Office of State Planning, 1992, as cited in Robert Burchell, et al, *Costs of Sprawl 2000*, Transit Cooperative Research Program, Federal Transportation Administration, 2002; 95% of education expenditures: Robert Burchell, et al, *Costs of Sprawl-Revisited*, Transit Cooperative Research Program, Federal Transportation Administration, 1997, 51.
13. Maine State Planning Office, *The Cost of Sprawl*, May 1997.
14. Robert Burchell, et al, *Costs of Sprawl-Revisited*, Transit Cooperative Research Program, Federal Transportation Administration, 1997.
15. Center for Watershed Protection, *Site Planning for Urban Stream Protection*, 1995.
16. See note 11.
17. Kevin Kline, Colorado State Fire Chiefs Association, personal communication, 6 March 2003.
18. Jim Drummond, Community Safety Services Chief, Parker Fire Protection District, personal communication, 10 March 2003; Population Division, U.S. Census Bureau, *Table HU-EST2001-08: Colorado Time Series of Housing Unit Estimates by County, April 1, 2000 to July 1, 2001*, and *Table ST-EST2002-01: State Population Estimates: April 1, 2000 to July 1, 2002*, 20 December 2002.
19. Jim Drummond, Community Safety Services Chief, Parker Fire Protection District, personal communication, 10 March 2003.
20. Sierra Club, *Sprawl Costs Us All: How Your Taxes Fuel Suburban Sprawl*, Spring 2000.
21. See note 13.
22. Richard Cosgrove, Director of Construction Services for Denver Public Schools, personal communication, 7 March 2003.
23. Ibid.
24. Earl Lamberg, California Air Resources Board, personal communication, 4 October 2002.
25. Arthur C. Nelson, *Development Impact Fees: Policy Rationale, Practice, Theory & Issues*, Planners Press, 1988.
26. Carrion and Libby, *Development Impact Fees: A Primer*, Ohio State University Extension, 2001.
27. Dennis Ross, Scott Ian Thorpe, *Impact Fees: Practical Guide for Calculation and Implementation*, Journal of Urban Planning and Development, September 1992.
28. Jonathan Coupal and Jack Cohen, Howard Jarvis Taxpayers Association, *Water Rates Under Proposition 218*, downloaded from [www.hjta.org/content/ARC000025D\\_Prop218.htm](http://www.hjta.org/content/ARC000025D_Prop218.htm), 7 April 2003.
29. Stanley Longhofer, Wichita State University, *The Economics of Development Impact Fees: An Analysis of the Derby Excise Tax*, Derby Chamber of Commerce, December 1999.
30. See Methodology section in Appendix B.
31. See Methodology section in Appendix B.
32. See Methodology section in Appendix B.
33. John G. Rappa, Connecticut Office of Legislative Research, *Comparison of State Development Impact Fee Statutes*, 1 November 2002.
34. John G. Rappa, Connecticut Office of Legislative Research, *Case Law Regarding Development Impact Fees*, 1 November 2002.
35. Ibid.
36. David L. Callies, Exactions, *Impact Fees and Other Land Development Conditions*, 1998.



37. John Rappa, Office of Legislative Research, Connecticut General Assembly, *Case Law Regarding Development Impact Fees*, 26 November 2002; Carmen Carrion and Lawrence W. Libby, Ohio State University Extension, *Development Impact Fees: A Primer*, Working Paper: AEDE-WP-0022-01.

38. Dennis Ross, ASCE, *Impact Fees: Practical Guide for Calculation and Implementation*, [http://www.revenuecost.com/imp\\_fees](http://www.revenuecost.com/imp_fees).

39. See note 36.

40. See note 36.

41. See note 36.

42. See note 36.

43. See note 36.

44. See note 34.

45. Ross, Dennis, ASCE, *Impact Fees: Practical Guide for Calculation and Implementation*, [http://www.revenuecost.com/imp\\_fees](http://www.revenuecost.com/imp_fees).

46. Southeast Michigan Council of Governments, *Fiscal Impacts of Alternative Land Development Patterns in Michigan: The Costs of Current Development Vs. Compact Growth*, June 1997; David L. Callies, AICP, *Exactions, Impact Fees And Other Land Development Conditions*, 1998.