



# Costs and Revenues of Residential Development: A Workbook for Local Officials and Citizens



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PENNSSTATE



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**T**he impact of residential development on public services often is of major interest to local government and school district officials, and to local residents. By bringing new residents into the community, residential development can affect the demand for public schools, road construction and maintenance, police, and other public services. Local officials need to understand and predict these impacts when planning for future service demands and budget needs, as well as when discussing subdivision plans and proposals with developers.

Planners and economists have devised a variety of methods to estimate the impacts of development. One of the most common, called the Per Capita Multiplier method, is relatively easy to learn and use. Even though it is less sophisticated than some other methods, it is useful for better understanding complicated issues. The Per Capita Multiplier method assumes that new residents will demand services and provide revenues in the same way that existing residents do, and that the community's current experience is a good indicator of what will happen as a result of the development.

This workbook is intended to help you conduct an economic analysis of a specific proposed residential development in your own community, using the Per Capita Multiplier method of analysis to predict the impacts on your school district and township or borough government. Because it is an economic analysis, the workbook focuses only on the potential economic impacts of development, ignoring other considerations such as the environment, traffic or commuting

patterns, historical or cultural sites, and quality of life. Workbook results are intended to be part of a larger discussion about the overall impact of the development. The discussion questions throughout the workbook are an integral part of the study process and are necessary to help interpret and put the results into proper context.

The steps in this workbook are intended to be performed sequentially, using numbers estimated in previous steps. Data for the calculations should be available from your school district and municipal government, and from the developer proposing the residential development (see Table 1 for a list of the information you'll need to complete the workbook). School district and municipal data are also available at <http://cax.aers.psu.edu/residentialimpact/>, but are a year or so older than what you can get directly from your school district and local government.

Available on-line at <http://cax.aers.psu.edu/residentialimpact/>

- Data
- Interactive workbook

Table 1. What You Will Need to Complete the Workbook

**Time: About 2 hours**

**Data:**

- Number of units in the development, grouped by number of bedrooms. (e.g., 20 three-bedroom homes and 25 four-bedroom homes)
- Expected average sales price of the new units, by number of bedrooms (e.g., \$100,000 each for the three-bedroom homes and \$120,000 each for the four-bedroom homes)
- Current number of students in your school district
- Current number of residents in your township or borough
- School district budget for the previous year
- Township or borough budget for the previous year (including all funds)
- School district real property equalized tax rate (measured in terms of market values)
- School district earned income tax rate
- Township or borough real property equalized tax rate (measured in terms of market values)
- Township or borough earned income tax rate

## What is the Per Capita Multiplier Method?

The Per Capita Multiplier method is based on the idea that local governments and school districts spend much of their money and collect much of their revenue in direct proportion to the size of the local population. As the population increases, revenues and expenditures are expected to increase by the same proportion. Current spending and revenues in the community thus are good indicators of what may happen in the future.

This approach makes several major assumptions, including (1) that the level of public services will remain unchanged (in other words, that new residents will not demand a greater level of a service than is currently provided, such as increased police patrols or different types of courses in the public school); (2) that new public service needs can be accommodated with existing public infrastructure, without requiring major capital investment (in other words, that existing school buildings can accommodate the new children in the development, or that existing roads can handle the increased traffic resulting from the development); and (3) that each additional resident will generate the same level of costs to the jurisdiction as each existing resident currently generates (in other words, if it currently costs the municipal government \$85 per person to provide police services, providing police services to new residents will cost about the same amount). This latter assumption clearly would be inappropriate if existing public infrastructure could not accommodate the development, and new school buildings, roads,

sewer or water lines, or other infrastructure would have to be built.

The Per Capita Multiplier method is a two-step process. The first step involves determining how much the local government spends and collects per person. This is simply the total budget for a service divided by the number of local residents. For example, if a community of 1,000 people were to spend \$100,000 on police protection, then the expenditures on police would be \$100 per person ( $\$100,000 \div 1,000 \text{ people} = \$100$ ).

The second step, estimating the overall economic impact of the residential development, involves multiplying these per capita estimates by the number of new residents. For example, if the same 1,000-person community were to gain 100 additional residents from the new residential development, total local expenditures on police services would be predicted to increase by \$10,000 ( $\$100 \text{ per person} \times 100 \text{ persons} = \$10,000$ ).

Because the Per Capita Multiplier method is so simple, it has some limitations. First, because the multipliers are based on current averages, they do not reflect the capacity of existing facilities to accept new users. For example, the average Pennsylvania school district currently spends about \$7,600 each year to educate one student. Based on this average, the Per Capita Multiplier method suggests that a 100-student increase would raise an average school district's expenditures by \$760,000 per year. But if existing schools do not have the capacity to accept the additional students, then new facilities must be built, generating costs much greater than those reported by this simple method.

A second shortcoming of the method is that it fails to capture the importance of change over time. For example, estimates based on past averages may not capture recent technological changes that allow local governments to provide services more efficiently.

The method also assumes that new residents will have the same tastes and needs as current residents. This may or may not be true. For example, a new retirement development that brings many elderly to the region may increase the need for special services such as transportation or "meals on wheels." A luxury housing development might bring to the area a number of high-income families with great expectations for after-school activities and other community services. In these cases of unique development, special needs must be considered.

Finally, the Per Capita Multiplier method examines only economic impacts of development. It does not account for non-monetary impacts of change, such as environmental impacts, social impacts, and the like. Because of these shortcomings, it is important to consider factors beyond this simple measure when trying to fully understand the local changes brought about by residential development. Thus, communities must recognize that while the Per Capita Multiplier method can provide useful information, it should not be the only tool used when making policy decisions.

**Number of New Residents**

The impacts of residential development depend upon the number of new residents who will move into the community as a result of the development. In general, the more residents, the greater the overall impact. To do an economic impact study, you must estimate the increase in new residents and the associated increase in the number of students in local schools.

A developer typically can tell you how many units (such as single-family homes or apartments) of different sizes will be in the development, but may be unable to say how many people of different ages will live in those units. A good way of predicting the number of new residents is to consider the number of bedrooms in the units; in general, the more bedrooms in a house or apartment, the more people who will live there. Steps 1 and 2 use U.S. Census averages for new homes in Pennsylvania to suggest how many new residents you can expect from a development. Note that these estimates include normal time that units are vacant. If you have more precise information about the proposed development (it may be a retirement community or specifically targeted toward young families with children), adjust the averages as appropriate.

**Step 1. Number of New Residents**  
 Write in the number of new units of each size, then multiply those numbers by the average number of residents in that unit. Add the totals from the various unit sizes to calculate the total expected number of new residents in the development.



**Step 1. Calculate Number of New Residents**

Number of Bedrooms	Number of New Units of that Size	Average Number of Residents Per Unit*	New Residents
1		x 1.01	=
2		x 1.58	=
3		x 2.46	=
4		x 3.25	=
5 or more		x 3.08	=
<b>Total New Residents:</b>			(add all above, copy to steps 6–9, 17b, 18, and 19b)

\* Averages were calculated from 1990 Pennsylvania Census data.

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## Step 2. Number of New School-Aged Residents (Pupils)

Use the same process to calculate the number of school-aged residents your community can expect from the development. The numbers in the “Average Number of School-Aged Residents per Unit” column are based on Pennsylvania averages of new homes. Adjust these numbers downward if the development includes age-restricted housing for senior citizens, who will not have school-aged children.

### Step 2. Calculate Number of New School-Aged Residents

Number of Bedrooms	Number of New Units of that Size	Average Number of School-Aged Residents Per Unit*	New School-Aged Residents
1		x 0.03	=
2		x 0.153	=
3		x 0.47	=
4		x 0.89	=
5 or more		x 1.23	=
<b>Total New School-Aged Residents (Pupils):</b>			(add all above, copy to Steps 5, 17a, and 19a)

\* Averages were calculated from 1990 Pennsylvania Census data.

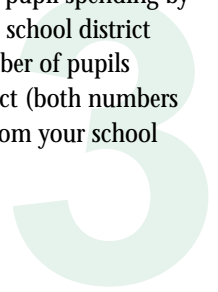
### Increased Costs From the Development

An increase in the number of residents in your community will increase the demand for services from your school district and municipal government. The amount each institution currently spends, per student or per resident, often is a good indicator of how its costs will increase. The

- following steps use your estimates of the
- number of new residents (from Steps 1
- and 2) and existing per student or per
- capita spending (which will be calculated
- in Steps 3 and 4) to estimate the new
- public spending that may result from the
- residential development. The increases in
- each major budget category are then
- summed to calculate the total cost impact.

### Step 3. Per Pupil School District Spending

- Calculate current per pupil spending by
- dividing total current school district
- spending by the number of pupils
- currently in the district (both numbers
- should be available from your school
- district).



#### Step 3. Calculate Per Pupil School District Spending

Expense Category	Current Spending	Current Number of Pupils in District	Current Per Pupil Cost
Instructional Spending in District	\$	÷	= \$ (copy to Step 5)

### Step 4. Per Capita Municipal Government Spending

In the table below, a variety of common and major local government services are listed. For each, divide the total amount your local government spends by the number of current residents to calculate

- the cost per resident (these numbers
- should be available from your township or
- borough). Calculate the total All Other
- Spending by subtracting Roads, Police
- Services, and Government Administration
- from the Total Municipal Spending.



#### Step 4. Calculate Per Capita Municipal Government Spending

Expense Category	Current Total Spending	Current Number of Residents in Municipality	Current Per Capita Cost
Total Municipal Spending	\$		
1. Roads	– \$	÷	= \$ (copy to Step 6)
2. Police Services	– \$	÷	= \$ (copy to Step 7)
3. Government Administration	– \$	÷	= \$ (copy to Step 8)
4. All Other Spending	\$ (subtract lines 1, 2, and 3 from Total Municipal Spending)	÷	= \$ (copy to Step 9)

### Step 5. School Cost Increases

School expenses are the largest local public expenditure in most Pennsylvania communities. Educating children is expensive, so the impact of new development on schools is one of the most important issues for you to consider. The following table assumes that there is room in your community's existing schools to

- accommodate any school-aged children in
- the new development, and that major new
- expenditures (such as building new
- schools or expanding an existing school)
- will not be necessary. In Step 5, multiply
- the number of new pupils (estimated in
- Step 2) by the current cost per pupil in
- your school district (estimated in Step 3).
- Copy the result to the table in Step 10.



#### Step 5. Calculate School Cost Increases

	x \$	= \$
Number of New Pupils (copy from Step 2)	Cost Per Pupil (copy from Step 3)	Increased Cost (copy to Step 10)

### Step 6. Road Cost Increases

For many Pennsylvania township governments, roads are the largest expense. Costs include routine maintenance, plowing, filling potholes, and repaving. New residents will increase the number of vehicles driving on municipal roads, increasing the need for maintenance and repairs on existing roads. Also, additional road mileage created by the development may need to be plowed and maintained during the winter. The potential economic cost of road impacts is estimated in Step 6. Note that these calculations assume that existing roads will not need to be expanded, nor will new roads be built at taxpayer expense.

- Another common way of considering the
- impact of development on roads is to
- estimate the increased number of vehicles
- driving on them. This can help you better
- understand whether existing roads will
- need to be expanded and whether the
- increased traffic will have a major impact
- on existing traffic patterns. Even though
- such an estimate is not essential for
- calculating the potential economic impact
- of the residential development, it can be
- very useful when interpreting the results.
- A worksheet for these calculations appears
- in Appendix A.



#### Step 6. Calculate Road Cost Increases

	x \$	= \$
Number of New Residents (copy from Step 1)	Cost per Resident (copy from Step 4, line 1)	Increased Cost (copy to Step 10)





### Step 9. All Other Cost Increases

The impact on all other municipal expenditures also should be calculated in a similar way. Use Step 9 to calculate the expected increase in all other township or borough costs.



#### Step 9. Calculate All Other Cost Increases

	x \$	= \$
Number of New Residents (copy from Step 1)	Cost per Resident (copy from Step 4, line 4)	Increased Cost (copy to Step 10)

### Step 10. Total Cost Increases

Calculate the total estimated increased costs from the residential development you are analyzing by adding up the information you calculated in the previous steps. In Step 10, copy the “Increased Costs” you estimated from Steps 5 through 9. Then, add all the numbers to calculate the total estimated cost increase in your community.



#### Step 10. Calculate Total Cost Increases

Expense Category	Increased Cost
School District	
1. School Costs (from Step 5)	\$ (copy to Step 21, line 2)
Township or Borough	
2. Roads (from Step 6)	\$
3. Police Services (from Step 7)	+ \$
4. Government Administration (from Step 8)	+ \$
5. All Other Costs (from Step 9)	+ \$
6. Total Township or Borough Increased Costs	\$ (add lines 2 through 5, copy to Step 21, line 5)

**Increased Revenues From the Development**

Many of the revenue impacts are estimated in the same way as the cost impacts. The number of new residents (from Step 1) is multiplied by current per person revenues to estimate how much new revenue will result from the residential development.

- **Step 11. Per Pupil School District Revenues**
- In Step 11, calculate total school district tax revenues *other than real property and earned income taxes*, and total nontax revenue. Because the real property tax and earned income tax impacts of the development will be analyzed separately in Steps 13–16, subtract both of these tax revenues

from All Tax Revenue in Step 11 to calculate total taxes from other local sources. Use information from the school district budget to complete the Step 11 calculations.

**Step 11. Calculate Per Pupil School District Revenues**

Revenue Category	Current Total Revenues	Current Number of Pupils in School District	Current Per Pupil Revenues
All Tax Revenue	\$		
Real Property Tax Revenue	– \$		
Earned Income Tax Revenue	– \$		
All Taxes EXCEPT the Real Property and Earned Income Taxes	\$ (subtract Real Property and Earned Income Tax Revenue from All Tax Revenue)	÷	= \$ (copy to Step 17a)
All Nontax Revenue	\$	÷	= \$ (copy to Step 19a)

## Step 12. Per Capita Municipal Government Revenues

As with the school district calculations, new revenues from the real property tax and earned income tax will be estimated using a different method, so subtract them in your calculations in Step 12. Use information from the municipal budget to complete the calculations in Step 12.

# 12

### Step 12. Calculate Per Capita Municipal Government Revenues

Revenue Category	Current Total Revenues	Current Number of Residents in Municipality	Current Per Capita Revenues
All Tax Revenue	\$		
Real Property Tax Revenue	– \$		
Earned Income Tax Revenue	– \$		
All Taxes EXCEPT the Real Property and Earned Income Taxes	\$ (subtract Real Property and Earned Income Tax Revenue from All Tax Revenue)	÷	= \$ (copy to Step 17b)
All Nontax Revenue	\$		
State Aid for Roads (“Liquid Fuels”)	– \$		
Other Revenue	\$ (subtract State Aid for Roads from All Nontax Revenue)	÷	= \$ (copy to Step 19b)

### Step 13. Real Property Tax Base Increases

By adding new buildings to the school district and municipality, the residential development will also add to the real property tax base, increasing real property tax revenues. To estimate the impact on real property tax revenues, you must first calculate how much the tax base will increase because of the development.

In Step 13, multiply the number of units of different sizes by the average expected sale price of those units (this information should be available from the developer). If the development will have ten three-bedroom homes, each with an expected average sale price of \$100,000, for example, the increase in the tax base will be \$1,000,000 (10 X \$100,000 = \$1,000,000). Then, add the totals across all unit sizes.

# 13

#### Step 13. Calculate Real Property Tax Base Increases

Number of Bedrooms	Number of Units of that Size	Average Expected Sale Price of Units of that Size	Increase in Tax Base
1		x \$	= \$
2		x \$	= \$
3		x \$	= \$
4		x \$	= \$
5 or more		x \$	= \$
<b>Total Increase in Real Property Tax Base:</b>			\$  (add all above, copy to Steps 15a and 15b)

### Step 14. Household Earned Income Increases

By bringing more residents into the school district and municipality, the residential development will increase the total amount of earned income in the community, thereby increasing earned income tax revenues. Use Step 14 to estimate the increase in total earned income in your community that will result from the development. Multiply the

- number of units of each size by the
- average household earned income for
- units of that size, and then add across all
- unit types. The averages used in Step 14
- are based on Pennsylvania Census
- information about residents of new
- homes. If you have additional information
- about who is expected to purchase the
- new homes (upper-income families, for
- example), adjust these numbers upwards
- or downwards as appropriate.



#### Step 14. Calculate New Household Earned Income (1998 Dollars)

Number of Bedrooms	Number of New Units of that Size	Average Household Earned Income per Unit*	New Household Income
1		x \$17,049	= \$
2		x \$30,502	= \$
3		x \$45,212	= \$
4		x \$77,186	= \$
5 or more		x \$79,691	= \$
<b>Total New Household Income:</b>			\$  (add all above, copy to Steps 16a and 16b)

\*Average household earned income is based on Pennsylvania Census information.

## Step 15. Real Property Tax Revenue Increases

Real property tax revenues are one of the most important local taxes for school districts, townships, and boroughs.

Estimating the impact of the residential development on real property tax revenues involves multiplying the value of the new buildings (which is the increase in the tax base, calculated in Step 13) by the current real property tax rate.

Be aware that the real property tax can be described either in terms of assessed values (used by local officials), or in terms of market values. The amount of tax owed is the same, but discussing the tax on a property's market value basis (known as an "equalized rate") makes it easier to compare tax rates across county boundaries. Because the residential development information most likely will be in terms of market values (i.e., "for how much will these units sell?"), make sure you use equalized tax rates to calculate the real property tax increases. These should be available from your school district and township.

If the tax rate information you receive is in "mills" (one-tenth of a percent or one-thousandth of the actual value), you will need to convert these to decimal equivalents. If the equalized tax rate is 20 mills, for example, the decimal equivalent is 0.02 (20 mills ÷ 1,000 = 0.02).

In Step 15a and Step 15b, multiply the increase in the real property tax base by the school district's and municipality's equalized tax rate (expressed as a decimal).

### Step 15a. Calculate School District Real Property Tax Revenue Increases

<p>\$</p> <hr style="border: 0.5px solid black;"/> <p>Increase in Real Property Tax Base (copy from Step 13)</p>	x	<hr style="border: 0.5px solid black;"/> <p>School District Equalized Millage Rate (expressed as a decimal)</p>	=	<p>\$</p> <hr style="border: 0.5px solid black;"/> <p>Increased Real Property Tax Revenues (copy to Step 20)</p>
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### Step 15b. Calculate Increased Township or Borough Real Property Tax Revenues

<p>\$</p> <hr style="border: 0.5px solid black;"/> <p>Increase in Real Property Tax Base (copy from Step 13)</p>	x	<hr style="border: 0.5px solid black;"/> <p>Municipal Equalized Millage Rate (expressed as a decimal)</p>	=	<p>\$</p> <hr style="border: 0.5px solid black;"/> <p>Increased Real Property Tax Revenues (copy to Step 20)</p>
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## Step 16. Earned Income Tax Revenue Increases

The earned income tax is the second major tax for most Pennsylvania school districts, townships, and boroughs. More residents usually means more earned

- income in the jurisdiction, and thus more
- earned income tax collected.
- 
- In Step 16a and Step 16b, calculate the
- increase in earned income tax by multi-
- plying the increase in total household

- earned income (from Step 14) by the
- school district's and municipality's earned
- income tax rate. Make sure you write the
- tax rate as a decimal; a 1 percent earned
- income tax rate should be written as
- "0.01".

### Step 16a. Calculate School District Earned Income Tax Revenue Increases

\$	x	= \$
_____	_____	_____
Increase in Total Household Earned Income (copy from Step 14)	School District Earned Income Tax Rate	Increased Earned Income Tax Revenues (copy to Step 20)

### Step 16b. Calculate Municipal Earned Income Tax Revenue Increases

\$	x	= \$
_____	_____	_____
Increase in Total Household Earned Income (copy from Step 14)	Municipal Earned Income Tax Rate	Increased Earned Income Tax Revenues (copy to Step 20)

## Step 17. All Other Tax Revenue Increases

Other local tax collections will be affected by the residential development. In Step 17a and Step 17b, calculate the expected increase in all other tax revenues by multiplying all other tax revenues per capita (from Step 11 and Step 12) by the number of new residents expected.

# 17

### Step 17a. Calculate All Other School District Tax Revenue Increases

_____	x \$	= \$
_____	_____	_____
Number of New Pupils (copy from Step 2)	School District Revenue per Pupil (copy from Step 11)	Increased Revenue (copy to Step 20)

### Step 17b. Calculate All Other Municipal Tax Revenue Increases

_____	x \$	= \$
_____	_____	_____
Number of New Residents (copy from Step 1)	Municipal Revenue per Resident (copy from Step 12)	Increased Revenue (copy to Step 20)

### Step 18. State Aid for Roads (“Liquid Fuels”) Increases

A major source of revenue for many townships and boroughs is state aid for roads. These funds are originally collected by the state via the gasoline tax and are then distributed to municipalities and counties using a population- and road-mileage-based formula. The state aid is often called “Liquid Fuels,” because it results from the state tax on liquid fuels.

In Step 18, multiply the number of new residents from the development by the resident portion of the state formula, which in 1998 was \$10.08 per resident. Note that this is an approximation that ignores the road mileage portion of the formula.

# 18

#### Step 18. Calculate State Aid for Roads Increases

	x \$ 10.08	= \$
Number of New Residents (copy from Step 1)	(“Liquid Fuels” Revenue per Resident)	Increased Revenue (copy to Step 20)

### Step 19. All Other Revenue Increases

Other local revenues likely will increase due to the residential development. This includes revenues such as state aid for schools, departmental earnings, licenses and permits, and sewer and water fees. In Steps 19a and 19b, calculate the increase in all these other revenues by multiplying the number of new residents by the revenues per capita (from Step 11 and Step 12).

# 19

#### Step 19a. Calculate All Other School District Revenue Increases

	x \$	= \$
Number of New Pupils (copy from Step 2)	School District Revenue per Pupil (copy from Step 11)	Increased Revenue (copy to Step 20)

#### Step 19b. Calculate All Other Municipal Revenue Increases

	x \$	= \$
Number of New Residents (copy from Step 1)	Municipal Revenue per Resident (copy from Step 12)	Increased Revenue (copy to Step 20)



## Step 20. Total Revenue Increases

The total estimated revenue increase from the residential development can be calculated by adding up the information you calculated in the previous steps. In Step 20, copy the “Increased Revenues” you estimated from Steps 15 through 19. Then, add all the numbers to calculate the total estimated revenue increase for your school district and your township or borough resulting from the residential development.

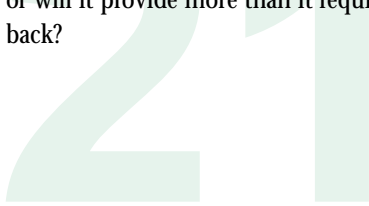
# 20

### Step 20. Calculate Total Revenue Increases

Revenue Category	Increased Revenues
<b>Schools</b>	
1. Real Property Tax (from Step 15a)	\$
2. Earned Income Tax (from Step 16a)	+ \$
3. All Other Taxes (from Step 17a)	+ \$
4. Other Revenue (from Step 19a)	+ \$
5. Total Increased School District Revenues	\$ (add lines 1 through 4, copy to Step 21)
<b>Township or Borough</b>	
6. Real Property Tax (from Step 15b)	+ \$
7. Earned Income Tax (from Step 16b)	+ \$
8. All Other Taxes (from Step 17b)	+ \$
9. State Aid for Roads (from Step 18)	+ \$
10. Other Revenue (from Step 19b)	+ \$
11. Total Increased Municipal Revenues	\$ (add lines 6 through 10, copy to Step 21)

## Overall Impact

Now that you've calculated the new costs and revenues that could occur as a result of the residential development, you can estimate the overall economic impact of that development. Will it cost more than it provides financially to the community, or will it provide more than it requires back?



### Step 21. Comparing Costs and Revenues

- Estimate the net fiscal impact on your school district and on your township or borough by subtracting the total new costs you've estimated from the total new revenues. Sometimes a residential development affects school districts differently than it does municipalities, so do not be surprised if the results differ. For example, the development you're studying may prove costly to your school district while actually providing new revenues to your township or borough.

- On line 7, add the net impacts on the school district and on the municipality to estimate the overall fiscal impact of the residential development. This combination of school district and municipality impacts represents the perspective of local taxpayers, who generally pay taxes to both jurisdictions. From a local taxpayer viewpoint, a positive impact on the township or borough may be irrelevant if the same development also will cause a greater negative impact on their school district.

### Step 21. Compare New Costs to New Revenues

Category	Value
School District	
1. Total New Revenues (from Step 20, line 5)	\$
2. Total New Costs (from Step 10, line 1)	– \$
3. Net Impact on School District	\$ (subtract line 2 from line 1)
Township or Borough	
4. Total New Revenues (from Step 20, line 11)	\$
5. Total New Costs (from Step 10, line 6)	– \$
6. Net Impact on Township or Borough	\$ (subtract line 5 from line 4)
7. Net Fiscal Impact from the Development	\$ (add lines 3 and 6)

## Interpreting Your Results

When considering an economic impact analysis such as the one you've just conducted, it is essential that you place the results in context of other issues not directly included in the economic analysis, such as environmental impacts, cultural heritage, historical sites, amenity values, and quality of life. A development with low-income housing may have an overall negative fiscal impact, for example, but still might be very appropriate for the community if low-income residents are having a difficult time finding an affordable place to live. Conversely, if a proposed development would provide net revenue for your community, yet destroy a central historical site or your township's last remaining piece of open space, it might not be good overall for your community.

The Per Capita Multiplier method of fiscal impact analysis used in this workbook considers only the operating costs of a development and ignores possible major infrastructure costs such as new roads (or additional lanes to existing roads), school buildings, or upgrades in sewerage or water treatment facilities. Often, these infrastructure costs are the source of most local concern about development, so they require careful consideration. If the proposed residential development you are studying will have a major impact on local infrastructure, your results must be placed in context with these costs.

## Discussion Questions

1. What does your analysis suggest about how the residential development will affect your local school district and your township or borough?
2. The method of analysis in this workbook ignores major infrastructure costs. Can your community's existing infrastructure (such as public sewerage, water, roads, and schools) accommodate the increased usage resulting from the residential development, or will your community need to upgrade some of these services as a result?
3. If infrastructure will need to be upgraded due to the residential development, who will pay for the needed changes? What share will the developer or new residents pay for, and what will have to be paid by current residents?
4. If your analysis suggests that the residential development will have a negative fiscal impact (i.e., it will cost more than it provides back), who will bear the costs?
5. What non-economic benefits and costs may this development have that are not included in this economic impact analysis? How would these other factors affect your evaluation of the development? List these other important factors in Step 22.

## Step 22. Important Non-Economic Factors to be Considered

22

## References

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Shields, M., T.W. Kelsey, and S.M. Smith. *Using CIM-PSU to Understand the Effects of Change on Your Community*. Extension Circular. Department of Agricultural Economics and Rural Sociology. Cooperative Extension, The Pennsylvania State University. 1999. 20 pages.

# Appendix A: Another Way of Considering Impacts on Roads

The residential development's estimated impact on road maintenance costs, calculated in Step 6, assumes that existing roads can handle the increased traffic without having to be widened or expanded. But how can you determine whether this is true? Traffic engineers often use a standard set of formulas to estimate the amount of increased road usage that can result from a residential development. The formulas calculate the number of new "trips" that will occur along the road. A "trip" means a vehicle traveling one way along the road; driving

- from one's home to the local grocery store
- and back involves two trips (one from home to the store, and the second from the store back to home). The number of new trips indicates how much additional traffic will be generated by the development.
- Use the numbers in the following table to estimate the number of new trips that may result from the residential development in your community. For each unit type, multiply the number of new dwelling units of that type by the average

- weekday trips from that dwelling type.
- Then add up the totals from each unit type to estimate the total increase in average weekday trips that could result from the development.
- When you consider this development, think carefully about where this increased traffic is likely to occur; on which roads will the new residents be driving to shop, to school, and to work, for example? Could these existing roads handle such an increase in traffic without becoming congested?

## Calculate Average Weekday Trips Resulting from the Development

Unit Type	Number of Dwelling Units	Average Weekday Trips per Dwelling Unit	Increase in Average Weekday Trips
Single-Family Detached		x 10.06	=
Low-Rise Apartment		x 6.60	=
High-Rise Apartment		x 4.20	=
Mobile Home Park		x 4.81	=
Retirement Community		x 3.30	=
<b>Total Increase in Average Weekday Trips</b>			(add all above)

Sources: Stanford M. Lembeck, and *Trip Generation*, 4th ed., Institute of Transportation Engineers, 1987.

# Appendix B: Other Local Impact Models Available from Penn State Cooperative Extension

Penn State Cooperative Extension offers a variety of local impact models. These are available through your county Penn State Cooperative Extension office or by contacting Martin Shields, assistant professor of agricultural economics, at (814) 865-0659 or mshields@psu.edu.

## 1. IMPLAN Input-Output Model

IMPLAN (Impact analysis for PLANning) is an input-output model of county economies, based on survey data of industry purchasing patterns. It was originally developed by the U.S. Forest Service and is now in use in hundreds of communities across the nation. IMPLAN estimates the local employment and income impacts of change in each of more than 525 industry sectors. It can be used to estimate the local job and income impacts of some change in the local economy, such as a plant closing, and the multiplier effects of that change. It is also useful for understanding the role and importance of different sectors of the local economy.

## 2. Community Impact Model—Penn State (CIM-PSU)


CIM-PSU (pronounced “Sim-PSU”) is a fiscal impact model of Pennsylvania county economies and is built around IMPLAN estimates of local employment and income impacts. To the IMPLAN analysis it adds estimates of changes in local commuting patterns, population size, school enrollments, government and school district revenues and expenditures, and employment and income. CIM-PSU is designed for examining the local impact of economic changes such as plant closings or openings and the economic importance of specific local business sectors (such as agriculture or manufacturing).

For more information on CIM-PSU, see *Using CIM-PSU to Understand the Effects of Change on Your Community*. Extension Circular. Penn State Cooperative Extension, University Park, PA. 1999.

## 3. Cost of Community Service Study

The American Farmland Trust has helped popularize a method of looking at revenues and costs resulting from different land uses, called Cost of Community Services (COCS) studies. The studies compare the revenues coming from a particular land use to the cost of providing public services to that land use. Because the method deals with broad definitions of land uses and looks at land uses at one point in time, the results cannot be used to infer the impacts of new development or land use change in your community. The studies are useful, however, because they help people understand that land uses do matter.

For more information or to view results from COCS studies in Pennsylvania, see *Fiscal Impacts of Different Land Uses*. Extension circular 410. Penn State Cooperative Extension, University Park, PA. 1997, or *Calculating a Cost of Community Services Ratio for Your Pennsylvania Community*. Extension Bulletin. Penn State Cooperative Extension, University Park, PA. 1998.



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