# Calculating a Cost of Community Services Ratio for Your Pennsylvania Community


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Land use in your community affects your taxes and your quality of life. It affects the size of the local government, the types of services it offers, the type of equipment it must purchase, and the taxes and tax rates it must levy. It also affects the number of students in the local school district, the size and number of school buildings, the number of teachers, and the taxes and rates the school district levies.

Some communities in Pennsylvania have found that a measure of the impacts of different land uses is helpful for understanding this issue. The measure, developed by the American Farmland Trust and called the Cost of Community Services (COCS) ratio, compares the tax and nontax revenues coming from different land uses to the cost of providing services to those land uses. The COCS ratio typically looks at four land types: residential, commercial, industrial, and farm and open land (see Table 1). In some communities with many camps and large amounts of forestland, those land uses are considered a fifth land type.

Studies in Pennsylvania and in other states fairly consistently have found that residential land typically costs more than what it provides back in revenues. Commercial, industrial, and farm and open land, in contrast, provide more than they require in services. These studies are useful for demonstrating that the mix of land uses in a community is important.

This bulletin is intended to help you understand COCS studies and teach you how to conduct a COCS study in your own community. It reviews the results from several Pennsylvania COCS studies and then details the steps involved in conducting such a study. The steps are illustrated using information from one Pennsylvania township. Finally, the bulletin discusses how to interpret the results.

Note that despite a popular misconception about their purpose, COCS studies do *not* provide a measure of the costs of development. Instead, they compare the outlay and influx of money to and from several general types of already-developed (or undeveloped) land. Other approaches must be used to estimate development costs, and they must consider the specific development itself.

# Results in Selected Pennsylvania Communities

The overall fiscal impact of a land use depends on both its revenue and its expenditure impacts. A land use may generate a lot of revenue for the local government and school district, but if the services it requires cost the municipality and school district even more, it will end up costing the local taxpayers. Only by considering both the revenues and expenditures associated with a land type can you identify its overall impact.

The experiences of eleven Pennsylvania townships (see Table 1) illustrate the potential fiscal impact of land uses. Among these are five townships from the southcentral part of Pennsylvania: a township with several large agricultural processing firms (Bethel Township, Lebanon County), an agricultural township that increasingly is becoming a bedroom community for Harrisburg (Carroll Township, Perry County), and a rural township with a large commercial area (Straban Township, Adams County). Studies also were done in two neighboring rural townships in Berks County, both located just north of Reading. Maiden Creek Township has been experiencing residential growth pressures, while neighboring Richmond Township has had a fairly active agricultural zoning program.

Two townships are located just outside Philadelphia, in Bucks County. These are an agricultural township of 4,602 residents that is facing development pressures (Bedminster Township) and a township of 9,364 residents that already has experienced significant residential development (Buckingham Township). One township is located in Westmoreland County, in western Pennsylvania (Allegheny Township).

Finally, three of the townships, all from Potter County in the northcentral part of Pennsylvania, include a growing township with 581 residents (Sweden Township), the most agricultural township in the county (Bingham Township), and a township with only 66 residents and in which the state owns almost 96 percent of the land (Stewardson Township).

The fiscal impacts of different land uses in these eleven townships appear in Table 1. The ratios, which compare revenues to expenditures, were calculated using the townships' and school districts' budgets. Note that homes on farms were considered residential properties in these ratios, and that farm and open land included just the land itself, without the buildings.

In these townships, residential land contributed less, on average, to the local municipality and school district than it required back in expenditures. In Bethel Township, for example, for every dollar in revenue that was received from residential land, $1.08 was spent on services for that land (see Table 1). In all the townships, residential land required more from the school district and township government than it contributed. Much of this negative fiscal impact occurred because of school expenses.

By contrast, commercial, industrial, and farm and open land provided more than they required back in expenditures. In Bethel Township, for example, for every dollar of revenue that was received from commercial land, only $0.07 was spent on services for that land. Commercial, industrial, and farm and open land contributed more to the local municipality and school district than they took, thus helping subsidize the needs of residential land.

In other words, residential land generally costs local taxpayers, whereas commercial, industrial, and farm and open lands help taxpayers by paying more than they require back in services. These results are consistent with other states' experiences.

Note that these estimated fiscal impacts represent an average of all of the land in a community. The mix of local services required by different populations within a certain land type varies greatly, with subsequent effect on the impacts. Residential housing populated by the elderly, for example, will have a fiscal impact much different from that of similar housing units occupied by families with school-aged children. If a specific housing development or shopping center were examined, the ratio of revenue to cost for that specific parcel of land may differ widely from the COCS ratio. For this reason, the COCS ratios should not be interpreted as the "costs of development." Other more appropriate and better methods exist for estimating the likely costs of building a specific development or making a specific land use change.

**Table 1. Cost of community service ratios by land use.**

| Township | Residential[1] | Commercial[2] | Industrial[3] | Farm and Open Land[4] | Camps and Forestland[5] |
|---|---|---|---|---|---|
| **Southcentral** | | | | | |
| Bethel Township (Lebanon County) | 1 : 1.08 | 1 : 0.07 | 1 : 0.27 | 1 : 0.06 | — |
| Carroll Township (Perry County) | 1 : 1.03 | 1 : 0.06 | — | 1 : 0.02 | — |
| Maiden Creek Township (Berks County) | 1 : 1.28 | 1 : 0.14 | 1 : 0.07 | 1 : 0.06 | — |
| Richmond Township (Berks County) | 1 : 1.24 | 1 : 0.11 | 1 : 0.06 | 1 : 0.04 | — |
| Straban Township (Adams County) | 1 : 1.10 | 1 : 0.17 | 1 : 0.05 | 1 : 0.06 | — |
| **Philadelphia Area** | | | | | |
| Bedminster Township (Bucks County) | 1 : 1.12 | 1 : 0.06 | 1 : 0.04 | 1 : 0.04 | — |
| Buckingham Township (Bucks County) | 1 : 1.04 | 1 : 0.16 | 1 : 0.12 | 1 : 0.08 | — |
| **Northcentral** | | | | | |
| Bingham Township (Potter County) | 1 : 1.56 | 1 : 0.26 | — | 1 : 0.15 | 1 : 0.15 |
| Stewardson Township (Potter County) | 1 : 2.11 | 1 : 0.37 | — | 1 : 0.12 | 1 : 0.31 |
| Sweden Township (Potter County) | 1 : 1.38 | 1 : 0.07 | — | 1 : 0.07 | 1 : 0.08 |
| **Western** | | | | | |
| Allegheny Township (Westmoreland County) | 1 : 1.06 | 1 : 0.15 | 1 : 0.14 | 1 : 0.13 | — |

1. Residential land: contains dwelling units (single-family houses, apartments, townhouses, mobile homes, etc.).
2. Commercial land: used for commercial purposes (typically retailing, such as stores, gas stations, and offices).
3. Industrial land: used for industrial purposes (typically wholesaling and factories).
4. Farm and open land: agricultural property with 10 or more acres.
5. Camps and forestland: forest acreage of 10 acres or more. Any buildings on the property are not year-round residences.

# How to Conduct a COCS Study

The general process of calculating COCS ratios involves analyzing the finances and land uses of a specific municipality, including finance information from that municipality's school district. Revenues and expenditures are broken down among the different types of land uses that provide or require them. Obtaining this information usually requires a detailed interview with the study municipality's secretary, manager, or treasurer (depending upon who keeps the finance books), interviews with other local municipal officials if needed (such as the zoning officer or the person in charge of the municipal water system), and an interview with the business manager or superintendent of the local school district. Detailed budget information is collected and related to land uses for both the municipality and the school district. The municipal and school district information is combined, and the final ratios are calculated.

In some ways, conducting a COCS study can involve more art than science; careful consideration of land uses is required, and difficult decisions must be made about budget items that do not fit easy categorization. In cases in which revenues and expenditures cannot be allocated, a system of default allocations is used to avoid biasing the results. These defaults will be outlined below.

A COCS study typically involves nine steps. These include:

**Preliminary Step**

1. Collect data from the municipality, school district, and county tax assessment office.

**Municipal Steps**

2. Allocate municipal tax revenues by land uses.
3. Allocate municipal nontax revenues by land uses.
4. Allocate municipal expenditures by land uses.

**School District Steps**

5. Allocate school district tax revenues by land uses.
6. Allocate school district nontax revenues by land uses.
7. Allocate school district expenditures by land uses.

**Final Steps**

8. Calculate the COCS ratios from these allocations.
9. Interpret the results.

It is extremely helpful to use a computer spreadsheet during steps 2 through 8. The spreadsheet should be formatted as shown below, with formulas that automatically calculate the dollar totals by land use when a percentage is entered. When using the spreadsheet, add a row for each budget item in the step you are working on. Type in the total spending or revenue for that budget item, and then the percent of that item going to each land use. The spreadsheet calculates the total dollars for each land use. Calculate each specific land use total when you have finished with all the allocations in the step. The spreadsheet dramatically speeds calculations and reduces the chance of making errors.

**Spreadsheet setup.**

| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Item** | **$ Total** | **% Residential** | **$ Residential** | **% Commercial** | **$ Commercial** | **% Industrial** | **$ Industrial** | **% Agricultural** | **$ Agricultural** | **Unity** |
| **5** | Real property tax | 0.00 | 0% | C5*B5 | 0% | E5*B5 | 0% | G5*B5 | 0% | I5*B5 | C5+E5+G5+I5 |
| **6** | Real estate transfer tax | 0.00 | 0% | C6*B6 | 0% | E6*B6 | 0% | G6*B6 | 0% | I6*B6 | C6+E6+G6+I6 |
| **7** | Earned income tax | 0.00 | 0% | C7*B7 | 0% | E7*B7 | 0% | G7*B7 | 0% | I7*B7 | C7+E7+G7+I7 |
| **8** | **Total Taxes** | **SUM(B5...B7)** | **D8/B8** | **SUM(D5...D7)** | **F8/B8** | **SUM(F5...F7)** | **H8/B8** | **SUM(H5...H7)** | **J8/B8** | **SUM(J5...J7)** | **C8+E8+G8+I8** |

# Steps in a COCS Study

The following section describes in greater detail the nine steps involved in conducting a COCS study.

## 1. Collecting Required Data

Collect the following types of data from the sources indicated.

**Municipal Budget Information—from the municipal secretary**

The law requires that some of the revenues that local governments receive be spent only on specific items. Revenues received from the state for road maintenance, for example, can be spent only on roads and cannot be used for other purposes such as libraries, recreation, or police salaries. To make accounting easier and to ensure that these monies are not misspent, local governments typically keep these revenues in entirely separate accounts called "funds." Most Pennsylvania local governments will have at least two distinct funds: a General Fund that is used for most revenues and expenditures, and a Liquid Fuels Fund that can be used only for roads. This fund, so called because the revenues originate from the state's gas tax, sometimes is called the Highway Fund. Governments also may have other funds for restricted revenues or expenditures, such as sewerage or water systems.

Be sure to obtain expenditure and revenue information for *all* the funds used by the local government, or you will get an incomplete picture of the local government's finances. Also make sure that you have *actual* revenue and spending information for the previous year, not *projected* figures. Obtain the following information:

- All revenues, by budget category, from the General Fund
- All expenditures, by budget category, from the General Fund
- All revenues, by budget category, from the Liquid Fuels Fund (sometimes called the Highway Fund)
- All expenditures, by budget category, from the Liquid Fuels Fund
- All revenues and expenditures, by budget categories, from any other funds used in the municipality

**School District Finance Information—from the school district business manager or superintendent**

As you did when you collected the municipal budget data, make sure that you receive *actual* revenue and spending information for the previous year, not *projected* figures. Obtain the following information:

- School district taxes collected from the study municipality
- Total school district taxes collected from throughout the school district
- Number of students who live in the study municipality
- Number of students who live throughout the school district
- Total of other revenue for the school district
- Total expenditures for the school district

**Municipal Tax Base Information—from the county tax assessment office**

County tax assessment offices keep track of the assessed value of properties in each of their municipalities, and categorize them by land use classification. Most classifications are obvious, but several require a little more discussion:

"Lots" are parcels of open land of less than 10 acres. These should be considered residential.

"Open space" or "farmland" includes parcels of open land of 10 or more acres.

"Exempt" properties include churches, government buildings, charities, and other properties exempt from the real property tax. Because you want to know percent breakdowns of *taxable* land only, be sure to exclude these properties from your percentage calculations.

Most tax assessment offices keep a book near the counter that summarizes property tax records for each municipality. Sometimes each municipality appears in a separate book. Near the back of the municipal tax records, a summary page typically appears, giving the total assessed values by land type. This is the information needed for the COCS study. Be sure to find the *assessed* values in this summary, and not the *market* values. Collect the following information:

- Total assessed value of real property in the study municipality, by land type

Because the COCS ratio considers the buildings on farms to be residential properties, it is necessary to adjust the information you obtain from the tax assessment office. Subtract the value of the buildings on farm properties from the farm total and add it to the residential total. Because the tax rolls typically include a breakdown showing the separate values of the land and of the buildings on every property, the value of farm buildings should be readily available.

Once you have transferred the value of all farm buildings to the residential total and have calculated the residential, commercial, industrial, and farm totals, sum these categories to calculate the total size of the taxable assessed valuation in the township. Then, use this total to calculate each land use's share of the total assessed valuation. These numbers are the "tax base percentages," which will be used to allocate real property taxes and several other items. See the Step 1 Example.

**Step 1 Example:**
**Tax Base Information**

Bedminster Township is a rural township in Bucks County, undergoing development pressure. Its population of 4,602 increased almost 42 percent between 1970 and 1990. The tax base information from the Bucks County Tax Assessment Office breaks land uses down into a variety of subcategories. The total value of the buildings on the farmland was added to the residential totals. See Figure 1.

**Figure 1. Calculating "tax base percentages" from assessment totals in the community.**

| | $ Land Total | $ Buildings Total | $ Combined Total | Tax Base Percentage |
|---|---|---|---|---|
| Residential | | | $14,308,790.00 | |
| Residential-vacant/misc | | | 702,480.00 | |
| Residential-apartment | | | 22,100.00 | |
| Residential-mobile home park | | | 9,830.00 | |
| Residential-buildings on farm *(calculated below)* | | | 17,880.00 | |
| Residential Total | | | 15,061,080.00 | 89.90% |
| Commercial-motels | | | $16,770.00 | |
| Commercial-mom & pop stores | | | 138,500.00 | |
| Commercial | | | 317,110.00 | |
| Commercial-office buildings | | | 27,900.00 | |
| Commercial-shopping centers | | | 61,200.00 | |
| Commercial-misc | | | 800.00 | |
| Commercial-church | | | 100.00 | |
| Commercial Total | | | 562,380.00 | 3.40% |
| Industrial-not in park | | | $246,630.00 | |
| Industrial-in industrial park | | | 486,540.00 | |
| Industrial-misc | | | 450.00 | |
| Industrial Total | | | 733,620.00 | 4.40% |
| Farmland *(from below)* | | | $388,550.00 | 2.30% |
| **Total** | | | **$16,745,630.00** | **100.00%** |

**Farmland calculations**

| | $ Land Total | $ Buildings Total | $ Total |
|---|---|---|---|
| Misc-under Act 515 | $9,330.00 | $640.00 | $9,970.00 |
| Misc-misc | 0.00 | 0.00 | 0.00 |
| Misc-10 acre | 16,980.00 | 7,950.00 | 24,930.00 |
| Misc-20 acre + | 10,990.00 | 2,310.00 | 13,300.00 |
| Misc-under 319 | 5,320.00 | 3,850.00 | 9,170.00 |
| Farm 10- | 144,480.00 | 60.00 | 144,540.00 |
| Farm 20+ | 141,430.00 | 0.00 | 141,430.00 |
| Farm under 515 | 44,700.00 | 0.00 | 44,700.00 |
| Farm under 319 | 15,320.00 | 3,070.00 | 18,390.00 |
| **Total** | **$388,550.00** | **$17,880.00** | **$416,320.00** |

## 2. Allocating Municipal Tax Revenues

Use the computer spreadsheet to allocate municipal tax revenues across land types. Depending upon which figure you know, enter the actual dollar amount or the percentage of each type of revenue received from each specific land use. Repeat this process for each municipal fund. Using the municipal budget information you have, talk with the municipal secretary, manager, or treasurer to help you decide which land uses provided the revenues. The following general guidelines can help.

### Real Property Tax

Allocate real property tax revenues proportionally to each land use's share of the real property tax base. This share is the tax base percentage you calculated in Step 1 using the county tax assessment office data. If commercial land accounts for 13 percent of the tax base, for example, then attribute 13 percent of real property tax revenues to commercial land.

### Earned Income Tax

The earned income tax generally is paid by residents, though in a few communities it also is paid by people who work in the township but live in a municipality that does not levy the earned income tax. In general, allocate this tax entirely to residential land unless your municipality is one of the few that receives earned income tax from nonresidents.

### Real Estate Transfer Tax

This is a tax on the sale/transfer of real estate and is a flat percentage of the sale price. Unless you have better information on sales, allocate this using the tax base percentage. This allocation assumes that real estate is sold in proportion to its total share in the tax base.

### Per Capita Tax

This is the "head tax" paid solely by residents. Allocate it to residential land.

### Occupation Tax

The occupation tax is paid solely by residents. Allocate it to residential land.

### Occupational Privilege Tax

The occupational privilege tax sometimes is confused with the occupation tax. The occupational privilege tax is a tax on people who work in the jurisdiction, ostensibly for the "privilege" of working there, regardless of where they live. Allocate the occupational privilege tax in proportion to the mix of commercial and industrial employment in the township; if 80 percent of jobs in the community are in commercial establishments and the rest in industrial, for example, allocate 80 percent of the occupational privilege tax revenues to commercial land and the rest to industrial.

### Business Privilege/Mercantile Tax

This tax is paid by retail and wholesale businesses ostensibly for the "privilege" of being located and operating in the municipality. Allocate it by the percentage of total business activity in the municipality.

### Utility Tax

This tax is paid by electric companies and other utilities on the value of the land/easements they use. Allocate it to industrial land.

### Amusement Taxes

Amusement taxes are paid by patrons at places of amusement, such as amusement parks, ski resorts, and golf courses. These are commercial land uses, so allocate the amusement tax to commercial land.

When you have finished allocating all the tax revenues, calculate the total tax revenue contributed by each land type by adding each type's tax revenues. Use these totals to calculate the percentage of total taxes contributed by each land type. These percentages are the "tax defaults," which will be used later in allocating some of the nontax revenues. See the Step 2 Example. *Note that these "tax defaults" are not the same as the "tax base percentages" calculated in the previous step. Do not confuse the two figures.*

**Step 2 Example: Allocating Municipal Tax Revenues**

According to its budget, Bedminster Township used three taxes for its general fund: the real property tax, the real property transfer tax, and the earned income tax. Allocate real property tax revenues using the tax base percentages calculated in Step 1 from the county tax assessment office information. Allocate real estate transfer tax revenues similarly, using the tax base percentages. Because the earned income tax is paid primarily by residents, allocate all earned income tax revenue to residential land.

Calculate the "tax default" values by summing the total tax revenues for each land type, and then calculating the percentage of total tax revenues that came from each land type. See Figure 2.

**Figure 2. Allocating municipal tax revenues and calculating “tax default” values.**

**General Fund Revenues**

| Item | $ Total | % Residential | $ Residential | % Commercial | $ Commercial | % Industrial | $ Industrial | % Agricultural | $ Agricultural | Unity |
|---|---|---|---|---|---|---|---|---|---|---|
| Real property tax | $48,727.63 | 90% | $43,806.14 | 3% | $1,656.74 | 4% | $2,144.02 | 2% | $1,120.74 | 100% |
| Real estate transfer tax | 69,456.69 | 90 | 62,441.56 | 3 | 2,361.53 | 4 | 3,056.09 | 2 | 1,597.50 | 100 |
| Earned income tax | 404,339.37 | 100 | 404,339.37 | 0 | — | 0 | — | 0 | — | 100 |
| **Total Taxes and Municipal “Tax Default” Percentages** | **$522,523.69** | **98%** | **$510,587.07** | **1%** | **$4,018.27** | **1%** | **$5,200.11** | **1%** | **$2,718.24** | **100%** |

## 3. Allocating Municipal Nontax Revenues

Nontax revenues similarly are allocated by land use(s), item by item. Many revenues are related to the general operation of local government and benefit all land types. These include fines, interest, and many state and federal transfers. When an item cannot be allocated to a specific land use or uses, allocate it according to the "tax default" percentages calculated in Step 2. Certain items *are* related to specific land uses. These are listed in Table 2.

When you have finished allocating all nontax revenues (see the Step 3 Example), calculate the total tax and nontax revenues each land type contributes to the municipality. Use these sums to calculate the percentage breakdown of the contributions to total revenues made by each individual land use. These percentages will be the "revenue defaults" used later in allocating some expenditures.

**Table 2. Miscellaneous municipal nontax revenue allocations.**

| Revenue Source | Allocation |
|---|---|
| Alcohol Licenses | To commercial land |
| Junkyard and Other Business Licenses | To commercial land |
| Cable TV Franchise Fees | By the distribution of cable TV in the community; typically almost all to residential land, but some to commercial land if appropriate |
| Zoning Fees | By zoning activity |
| Building Permits | By building activity |
| Sewer Fees | By distribution of total receipts |
| Water Fees | By distribution of total receipts |

**Step 3 Example: Allocating Municipal Nontax Revenues**

The majority of Bedminster Township's General Fund nontax revenues are from general sources that cannot be linked to specific land uses. These include fines, intergovernmental grants, fireman's relief, public utility taxes, interest income, general government, and public safety. Allocate these revenues across land types by using the "tax default" values calculated in Step 2.

Other revenues can be attributed directly to specific land types. Licenses for waste hauling, junkyards, and beverages result from commercial land. Building permit revenues are allocated based on the Bedminster Township manager's report that 99 percent of this revenue comes from residential land, and only 1 percent comes from commercial land. See Figure 3.

Calculate the "revenue default" values by summing the total revenues (tax and nontax) for each land type, and then calculating the percentage of total tax and nontax revenues that came from each type.

**Figure 3. Allocating municipal nontax revenues and calculating "revenue default percentages."**

**General Fund Nontax Revenues**

| | $ Total | % Residential | $ Residential | % Commercial | $ Commercial | % Industrial | $ Industrial | % Agricultural | $ Agricultural | Unity |
|---|---|---|---|---|---|---|---|---|---|---|
| **Licenses** | | | | | | | | | | |
| Waste haulers | $500.00 | — | — | 100% | $500.00 | — | — | — | — | 100% |
| Junkyard licenses | 750.00 | — | — | 100 | 750.00 | — | — | — | — | 100 |
| Cable TV | 5,692.47 | 100% | $5692.47 | — | — | — | — | — | — | 100 |
| Street encroachment | $280.00 | 100% | $280.00 | — | — | — | — | — | — | 100% |
| Fines | 7,129.52 | 98 | 6,966.65 | 1% | $54.83 | 1% | $70.95 | 1% | $37.09 | 100 |
| Fines—court-ordered | 594.28 | 98 | 580.70 | 1 | 4.57 | 1 | 5.91 | 1 | 3.09 | - |
| Interest | 3,083.06 | 98 | 3,012.63 | 1 | 23.71 | 1 | 30.68 | 1 | 16.04 | 100 |
| **Intergovernmental** | | | | | | | | | | |
| County grants | $1,605.00 | 98% | $1,568.34 | 1% | $12.34 | 1% | $15.97 | 1% | $8.35 | 100% |
| Fireman's relief | 30,659.31 | 98 | 29,958.92 | 1 | 235.77 | 1 | 305.12 | 1 | 159.49 | 100 |
| State capital & operating | $28,889.87 | 98% | $28,229.91 | 1% | $222.17 | 1% | $287.51 | 1% | $150.29 | 100% |
| Public utility taxes | 6674.99 | 98 | 6,522.51 | 1 | 51.33 | 1 | 66.43 | 1 | 34.72 | - |
| Beverage licenses | 1,299.48 | 100 | 1,299.48 | — | — | — | — | — | — | 100 |
| **General government** | | | | | | | | | | |
| Zoning | $5,605.80 | 98% | $5493.68 | 2% | $112.12 | — | — | — | — | 100% |
| Subdivision/land fees | 16,050.00 | 98 | 15729.00 | 2 | 321.00 | — | — | — | — | 100 |
| Hearing fees | 2,500.00 | 98 | 2450.00 | 2 | 50.00 | — | — | — | — | 100 |
| Sale of publications | 1,301.25 | 98 | 1275.23 | 2 | 26.03 | — | — | — | — | 100 |
| **Public safety** | | | | | | | | | | |
| Sale of police reports | $650.00 | 98% | $635.15 | 1% | $5.00 | 1% | $6.47 | 1% | $3.38 | 100% |
| Building permits | 8,287.70 | 99 | 8204.82 | 1 | 82.88 | | — | — | — | 100 |
| Sale of recycled material | $1,112.00 | 98% | $1,086.60 | 1% | $8.55 | 1% | $11.07 | 1% | $5.78 | 100% |
| **Total Nontax Revenues** | **$122,664.73** | | **$118,986.09** | | **$2,460.28** | | **$800.11** | | **$418.24** | |
| **Total Tax Revenues (from Step 2)** | **$522,523.69** | | **$510,587.07** | | **$4,018.27** | | **$5,200.11** | | **$2,718.24** | |
| **Total Revenues and "Revenue Default Percentages"** | **$645,188.42** | **98%** | **$629,573.16** | **1%** | **$6,478.55** | **1%** | **$6,000.22** | **0.49%** | **$3,136.48** | **100%** |

## 4. Allocating Municipal Expenditures

Most municipal expenditures in Pennsylvania are general in nature and benefit all land uses; these include administrative expenses (such as supervisory and other office staff wages, costs of maintaining the municipal buildings, tax collection, and so forth). Allocate these General Fund expenditures using the "revenue defaults" calculated in Step 3.

The original American Farmland Trust methodology requires you to conduct interviews with the municipal police and fire chiefs to determine to which land uses police and fire calls were made within the past few years. If 90 percent of the police calls were made to residential land, for example, the original methodology allocates 90 percent of police expenses to residential land. Allocating police and fire costs this way, however, explicitly assumes that people benefit from police and fire protection only if they actually receive a visit from either department, even though it can be argued strongly that everyone benefits even if they never personally need to call such emergency services. The deterrent and public safety functions of police and fire departments benefit everyone.

To reflect this latter perspective, the Pennsylvania studies to date have allocated both services across all land types (using the "revenue default" values). For the same reasons, a similar assumption is made about roads. Other expenditures (see Table 3) clearly are related to specific land uses. If the land uses receiving the expense are unclear or general (and the expense benefits all land types), use the revenue default percentages to allocate that expenditure item. See the Step 4 Example.

**Table 3. Miscellaneous municipal expenditure allocations.**

| Expenditure | Allocation |
|---|---|
| Zoning | By zoning activity |
| Sewage Enforcement | By sewage enforcement activity |
| Street Lights | To the land types where they are located |
| Water System | By percentage use |
| Sewerage System | By percentage use |

**Step 4 Example:**
**Allocating Municipal Expenditures**

The vast majority of municipal expenditures in Bedminster Township are general in nature, not directly attributable to specific land types. These include salaries of elected officials, insurance and bonding, utilities for the municipal building, and so forth. Allocate these General Fund expenditures using the "revenue default" values calculated in Step 3.

Allocate police expenditures across all land types, under the assumption that all land types benefit from police services. Allocate zoning expenses using the manager's information that 99 percent of the township's zoning expenses are related to residential land. Allocate collection costs for the earned income tax to residential land because that land type provides this type of tax revenue. See Figure 4.

Bedminster Township operates two other funds, in addition to the General Fund (which was just analyzed). It has a Street Lighting Fund, which is used for lighting in a residential neighborhood, and a State Fund for liquid fuel monies and road maintenance. Revenue and expenditure allocations must be calculated for both funds. Because the Street Lighting Fund is dedicated to a residential neighborhood (and the taxes come from that neighborhood), both revenues and expenditures for it are allocated to residential land. The State Fund is dedicated to roads, which benefit all land uses. Use the "revenue default" values to allocate this fund's revenues and expenditures. See Figure 4A.

**Figure 4. Allocating municipal General Fund expenditures.**

| Item | $ Total | % Residential | $ Residential | % Commercial | $ Commercial | % Industrial | $ Industrial | % Agricultural | $ Agricultural | Unity |
|---|---|---|---|---|---|---|---|---|---|---|
| Salary of elected | $4,375.00 | 98% | $4,269.11 | 1% | $43.93 | 1% | $40.69 | 0.49% | $21.27 | 100% |
| Auditor's salaries | 180.00 | 98 | 175.64 | 1 | 1.81 | 1 | 1.67 | 0.49 | 0.88 | 100 |
| Tax collection | 3,925.70 | 98 | 3,830.69 | 1 | 39.42 | 1 | 36.51 | 0.49 | 19.08 | 100 |
| Tax collection supplies | 426.84 | 98 | 416.51 | 1 | 4.29 | 1 | 3.97 | 0.49 | 2.08 | 100 |
| Insurance & bond | 250.00 | 98 | 243.95 | 1 | 2.51 | 1 | 2.32 | 0.49 | 1.22 | 100 |
| EIT commission | 10,108.48 | 100 | 10,108.48 | 0 | — | 0 | — | 0.49 | — | 100 |
| Solicitors | 22,707.14 | 98 | 22,157.57 | 1 | 228.01 | 1 | 211.18 | 0.49 | 110.39 | 100 |
| Salary of secretary | 39,632.94 | 98 | 38,673.72 | 1 | 397.97 | 1 | 368.58 | 0.49 | 192.67 | 100 |
| Convention fees | 1,858.20 | 98 | 1,813.23 | 1 | 18.66 | 1 | 17.28 | 0.49 | 9.03 | 100 |
| Secretarial supplies | 2,414.11 | 98 | 2,355.68 | 1 | 24.24 | 1 | 22.45 | 0.49 | 11.74 | 100 |
| Supplies—small | 901.39 | 98 | 879.57 | 1 | 9.05 | 1 | 8.38 | 0.49 | 4.38 | 100 |
| Other services | 1,743.69 | 98 | 1,701.49 | 1 | 17.51 | 1 | 16.22 | 0.49 | 8.48 | 100 |
| Communication | 1,257.75 | 98 | 1,227.31 | 1 | 12.63 | 1 | 11.70 | 0.49 | 6.11 | 100 |
| Advertising | 1,659.25 | 98 | 1,619.09 | 1 | 16.66 | 1 | 15.43 | 0.49 | 8.07 | 100 |
| Insurance & bonding | 385.00 | 98 | 375.68 | 1 | 3.87 | 1 | 3.58 | 0.49 | 1.87 | 100 |
| Engineer | 28,876.18 | 99 | 28,587.42 | 1 | 288.76 | | — | | — | 100 |
| Supplies | 321.28 | 98 | 313.50 | 1 | 3.23 | 1 | 2.99 | 0.49 | 1.56 | 100 |
| Heating oil | 1,224.13 | 98 | 1,194.50 | 1 | 12.29 | 1 | 11.38 | 0.49 | 5.95 | 100 |
| Supplies—repairs | 435.05 | 98 | 424.52 | 1 | 4.37 | 1 | 4.05 | 0.49 | 2.11 | 100 |
| Supplies—small | — | 98 | — | 1 | — | 1 | — | 0.49 | — | 100 |
| Other services | 139.18 | 98 | 135.81 | 1 | 1.40 | 1 | 1.29 | 0.49 | 0.68 | 100 |
| Electric service | 1,911.77 | 98 | 1,865.50 | 1 | 19.20 | 1 | 17.78 | 0.49 | 9.29 | 100 |
| Repairs & maintenance | 696.95 | 98 | 680.08 | 1 | 7.00 | 1 | 6.48 | 0.49 | 3.39 | 100 |
| Other services—rentals | — | 98 | — | 1 | — | 1 | — | 0.49 | — | 100 |
| Capital construction | — | 98 | — | 1 | — | 1 | — | 0.49 | — | 100 |
| **Police** | | | | | | | | | | |
| Uniform | $4,244.35 | 98% | $4,141.63 | 1% | $42.62 | 1% | $39.47 | 0.49% | $20.63 | 100% |
| Salaries | 201,878.99 | 98 | 196,992.99 | 1 | 2,027.14 | 1 | 1,877.47 | 0.49 | 981.40 | 100 |
| Act 205 pension | 14,247.00 | 98 | 13,902.19 | 1 | 143.06 | 1 | 132.50 | 0.49 | 69.26 | 100 |
| Holiday wages | 5,984.80 | 98 | 5,839.95 | 1 | 60.10 | 1 | 55.66 | 0.49 | 29.09 | 100 |
| Longevity allowance | 1,920.00 | 98 | 1,873.53 | 1 | 19.28 | 1 | 17.86 | 0.49 | 9.33 | 100 |
| Court appearance | 3,437.82 | 98 | 3,354.62 | 1 | 34.52 | 1 | 31.97 | 0.49 | 16.71 | 100 |
| Police supplies | 2,055.25 | 98 | 2,005.51 | 1 | 20.64 | 1 | 19.11 | 0.49 | 9.99 | 100 |
| Operating supplies | 7,243.49 | 98 | 7,068.18 | 1 | 72.73 | 1 | 67.36 | 0.49 | 35.21 | 100 |
| Police vehicle | 3,293.87 | 98 | 3,214.15 | 1 | 33.07 | 1 | 30.63 | 0.49 | 16.01 | 100 |
| Other services | 2,192.47 | 98 | 2,139.41 | 1 | 22.02 | 1 | 20.39 | 0.49 | 10.66 | 100 |
| Police dept legal | 2,424.00 | 98 | 2,365.33 | 1 | 24.34 | 1 | 22.54 | 0.49 | 11.78 | 100 |
| Communication | 2,617.08 | 98 | 2,553.74 | 1 | 26.28 | 1 | 24.34 | 0.49 | 12.72 | 100 |
| Officer training | 1,129.88 | 98 | 1,102.53 | 1 | 11.35 | 1 | 10.51 | 0.49 | 5.49 | 100 |
| Police prof. liability | 2,075.00 | 98 | 2,024.78 | 1 | 20.84 | 1 | 19.30 | 0.49 | 10.09 | 100 |
| Police vehicle repairs | 4,692.33 | 98 | 4,578.76 | 1 | 47.12 | 1 | 43.64 | 0.49 | 22.81 | 100 |
| Capital purchases | 26,889.21 | 98 | 26,238.42 | 1 | 270.00 | 1 | 250.07 | 0.49 | 130.72 | 100 |

**continued on next page**

**Figure 4. continued**

| Item | $ Total | % Residential | $ Residential | % Commercial | $ Commercial | % Industrial | $ Industrial | % Agricultural | $ Agricultural | Unity |
|---|---|---|---|---|---|---|---|---|---|---|
| Zoning/plan salaries | $12,548.79 | 99% | $12,423.30 | 1% | $126.01 | | | | | 100% |
| Zoning/other services | 12,523.86 | 99 | 12,398.62 | 1 | 125.76 | | | | | 100 |
| Zoning ordinances update | 13,372.71 | 99 | 13,238.98 | 1 | 134.28 | | | | | 100 |
| Highway Act 205 | $4,287.00 | 98% | $4,183.24 | 1% | $43.05 | 1% | $39.87 | 0.49% | $20.84 | 100% |
| Supplies | 726.11 | 98 | 708.54 | 1 | 7.29 | 1 | 6.75 | 0.49 | 3.53 | 100 |
| Heating fuel-garage | 1,198.67 | 98 | 1,169.66 | 1 | 12.04 | 1 | 11.15 | 0.49 | 5.83 | 100 |
| Supplies | 388.18 | 98 | 378.79 | 1 | 3.90 | 1 | 3.61 | 0.49 | 1.89 | 100 |
| Other services | 1,244.25 | 98 | 1,214.14 | 1 | 12.49 | 1 | 11.57 | 0.49 | 6.05 | 100 |
| Communications | 1,376.37 | 98 | 1,343.06 | 1 | 13.82 | 1 | 12.80 | 0.49 | 6.69 | 100 |
| Gas/diesel | 2,833.38 | 98 | 2,764.80 | 1 | 28.45 | 1 | 26.35 | 0.49 | 13.77 | 100 |
| Electric services | 1,053.21 | 98 | 1,027.72 | 1 | 10.58 | 1 | 9.79 | 0.49 | 5.12 | 100 |
| Hazardous waste | 254.49 | 98 | 248.33 | 1 | 2.56 | 1 | 2.37 | 0.49 | 1.24 | 100 |
| Capital purchases | 13,457.80 | 98 | 13,132.09 | 1 | 135.13 | 1 | 125.16 | 0.49 | 65.42 | 100 |
| Cleaning streets | $367.50 | 98% | $358.61 | 1% | $3.69 | 1% | $3.42 | 0.49% | $1.79 | 100% |
| Snow & ice removal | $13,393.81 | 98% | $13,069.64 | 1% | $134.49 | 1% | $124.56 | 0.49% | $65.11 | 100% |
| Traffic signals | $455.30 | 98% | $444.28 | 1% | $4.57 | 1% | $4.23 | 0.49% | $2.21 | 100% |
| Equipment repair | $3,541.94 | 98% | $3,456.22 | 1% | $35.57 | 1% | $32.94 | 0.49% | $17.22 | 100% |
| Equipment repair-services | 15,774.35 | 98 | 15,392.57 | 1 | 158.40 | 1 | 146.70 | 0.49 | 76.68 | 100 |
| Road maintenance wages | $73,162.17 | 98% | $71,391.45 | 1% | $734.65 | 1% | $680.40 | 0.49% | $355.67 | 100% |
| Materials | 11,401.25 | 98 | 11,125.31 | 1 | 114.48 | 1 | 106.03 | 0.49 | 55.43 | 100 |
| Highway constructions | 3,133.00 | 98 | 3,057.17 | 1 | 31.46 | 1 | 29.14 | 0.49 | 15.23 | 100 |
| Firemen’s contribution | $200.00 | 98% | $195.16 | 1% | $2.01 | 1% | $1.86 | 0.49% | $0.97 | 100% |
| Firemen’s insurance | 30,659.31 | 98 | 29,917.27 | 1 | 307.86 | 1 | 285.13 | 0.49 | 149.05 | 100 |
| Workers compensation | $18,250.18 | 98% | $17,808.48 | 1% | $183.26 | 1% | $169.73 | 0.49% | $88.72 | 100% |
| Insurance | 2,371.00 | 98 | 2,313.62 | 1 | 23.81 | 1 | 22.05 | 0.49 | 11.53 | 100 |
| Hospital | $43,886.61 | 98% | $42,824.44 | 1% | $440.68 | 1% | $408.14 | 0.49% | $213.35 | 100% |
| Employee life insurance | 1,139.60 | 98 | 1,112.02 | 1 | 11.44 | 1 | 10.60 | 0.49 | 5.54 | 100 |
| FICA | 24,469.10 | 98 | 23,876.88 | 1 | 245.70 | 1 | 227.56 | 0.49 | 118.95 | 100 |
| Medicare | 2,410.16 | 98 | 2,351.83 | 1 | 24.20 | 1 | 22.41 | 0.49 | 11.72 | 100 |
| Fire & liability | $20,988.00 | 98% | $20,480.04 | 1% | $210.75 | 1% | $195.19 | 0.49% | $102.03 | 100% |
| Dental | 6,917.27 | 98 | 6,749.85 | 1 | 69.46 | 1 | 64.33 | 0.49 | 33.63 | 100 |
| **Total** | **$749,542.58** | **97.7%** | **$732,600.87** | **1.0%** | **$7,423.76** | **0.8%** | **$6,250.59** | **0.4%** | **$3,267.36** | **100%** |

**Figure 4A. Allocating other municipal expenditures.**

**Street Lighting Fund**

| Item | $ Total | % Residential | $ Residential | % Commercial | $ Commercial | % Industrial | $ Industrial | % Agricultural | $ Agricultural | Unity |
|---|---|---|---|---|---|---|---|---|---|---|
| **Revenues** | | | | | | | | | | |
| Tax | $4,094.22 | 100% | $4,094.22 | 0% | — | 0% | — | 0% | — | 100% |
| **Total Revenues** | **$4,094.22** | | **$4,094.22** | | **—** | | **—** | | **—** | |
| **Expenditures** | | | | | | | | | | |
| PECO | $4,143.63 | 100% | $4,143.63 | 0% | — | 0% | — | 0% | — | 100% |
| **Total Expenditures** | **$4,143.63** | | **$4,143.63** | | **—** | | **—** | | **—** | |

**State Fund**

| Item | $ Total | % Residential | $ Residential | % Commercial | $ Commercial | % Industrial | $ Industrial | % Agricultural | $ Agricultural | Unity |
|---|---|---|---|---|---|---|---|---|---|---|
| **Revenues** | | | | | | | | | | |
| Liquid fuels | $2,703.24 | 98% | $2,637.81 | 1% | $27.14 | 1% | $25.14 | 0.49% | $13.14 | 100% |
| Interest | 132,024.51 | 98 | 128,829.17 | 1 | 1,325.70 | 1 | 1,227.82 | 0.49 | 641.82 | 100 |
| **Total Revenues** | **$134,727.75** | | **$131,466.98** | | **$1,352.85** | | **$1,252.96** | | **$654.96** | |
| **Expenditures** | | | | | | | | | | |
| Expenditures | $163,676.76 | 98% | $159,715.35 | 1% | $1,643.53 | 1% | $1,522.19 | 0.49% | $795.69 | 100% |
| **Total Expenditures** | **$163,676.76** | | **$159,715.35** | | **$1,643.53** | | **$1,522.19** | | **$795.69** | |

## 5. Allocating School District Tax Revenues

Most school district finance offices will have information on the total tax revenues coming from each municipality in their jurisdiction. Use the same allocation methods on these taxes that you used for the municipal taxes (i.e., "real property tax by real property tax base," etc.). When calculating the total school district taxes by land use in each municipality, be sure to use only the school district tax revenue information from that municipality (and not from *all* the municipalities in the school district); otherwise, you will overestimate the costs and revenues. Use these municipality subtotals to calculate the percentage of these school district taxes contributed by each land use. These percentages are the "school district tax defaults." See the Step 5 Example.

**Step 5 Example: Allocating School District Tax Revenues**

Bedminster Township is located within the Pennridge School District. The school district was able to provide information about the taxes received specifically from Bedminster, as well as the total taxes collected from all of its member municipalities. Allocate school tax revenues using the same protocols that were used with municipal taxes: allocate real property, interim property, and realty transfer tax revenues using the "tax base percentages" calculated in Step 1. Allocate the per capita, occupation, and earned income taxes entirely to residential land because they are paid by residents. See Figure 5.

**Figure 5. Allocating school district tax revenues.**

**Tax Revenues from Bedminster**

| Item | $ Total | % Residential | $ Residential | % Commercial | $ Commercial | % Industrial | $ Industrial | % Agricultural | $ Agricultural | Unity |
|---|---|---|---|---|---|---|---|---|---|---|
| Real property tax | $3,539,726.07 | 90% | $3,182,213.74 | 3% | $120,350.69 | 4% | $155,747.95 | 2% | $81,413.70 | 100% |
| Interims | 26,138.25 | 90 | 23,498.29 | 3 | 888.70 | 4 | 1,150.08 | 2 | 601.18 | 100 |
| Per capita tax | 25,771.80 | 100 | 25,771.80 | 0 | — | 0 | — | 0 | — | 100 |
| Occupation tax | 298,539.54 | 100 | 298,539.54 | 0 | — | 0 | — | 0 | — | 100 |
| Transfer tax | 71,254.29 | 90 | 64,057.61 | 3 | 2,422.65 | 4 | 3,135.19 | 2 | 1,638.85 | 100 |
| Earned income tax | 257,707.46 | 100 | 257,707.46 | 0 | — | 0 | — | 0 | — | 100 |
| **Taxes from Bedminster and School District "Tax Default" Percentages** | **$4,219,137.41** | **91%** | **$3,851,788.43** | **3%** | **$123,662.03** | **4%** | **$160,033.22** | **2%** | **$83,653.73** | **100%** |

## 6. Allocating School District Nontax Revenues

Because most school districts in Pennsylvania include more than one municipality and typically do not keep separate financial records for each member municipality, allocating school nontax revenues and expenditures is one of the most difficult tasks in conducting a COCS study. Although most school districts have information on how much tax revenue they receive from each of their member municipalities, they typically do not have information about how many students actually come from each member municipality.

The school district usually will *not* be able to tell you how much nontax revenue came from each municipality, so you will have to estimate the municipality's share from the total nontax revenues. Choose one of the following two methods for doing this, based on your available data.

**a. If the school district knows how many students live in the study municipality:**

Use the following formula to calculate the percentage of all students in the school district who come from the municipality:

$$\text{Percentage of students from study municipality} = \frac{\text{Number of students from municipality}}{\text{Total number of students in school district}}$$

Multiply the total nontax revenues by this percentage to estimate the amount of nontax revenue attributable to the study municipality. This method assumes that revenues are proportional to where the school children live.

**b. If the school district does not know how many students live in the study municipality:**

Use the following formula to calculate the percentage of the total local school district taxes that came from the study municipality:

$$\text{Percentage of total school district taxes from study municipality} = \frac{\text{Total school district taxes from the municipality}}{\text{Total school district taxes from all municipalities}}$$

Multiply the total nontax revenues by this percentage to estimate the amount of nontax revenue attributable to the study municipality. This method assumes that nontax revenues are proportional to the origin of tax revenues.

When you have determined how much school district nontax revenue can be attributed to the study municipality, use the "school district tax defaults" to allocate it across land uses in the municipality. See the Step 6 Example.

**Step 6 Example: Allocating School District Nontax Revenues**

Because the school district does not know the number of students who actually live in Bedminster, allocate nontax revenues using Bedminster Township's share of the school district's total tax revenues. Bedminster contributes 13 percent of the Pennridge School District's tax revenue, so attribute 13 percent of total nontax revenues to Bedminster. Allocate these revenues across all land uses using the "school district tax default" values calculated in Step 5. See Figure 6.

**Figure 6. Allocating school district nontax revenues.**

**Calculate Bedminster Share of All Taxes**

| | |
|---|---|
| Total school district taxes from all municipalities | $32,454,903.00 |
| Total from Bedminster | $4,219,137.41 |
| **Bedminster as % of All School District Taxes** | **13%** |

**Nontax Revenues (across all municipalities)**

| | |
|---|---|
| Other local | $663,045.00 |
| State | 13,603,230.00 |
| Fed | 303,618.00 |
| Other financing | 9,786.00 |
| Refunds of prior year's expenditures | 1,944.00 |
| Operating transfers | 17,732.00 |
| *Total nontax revenues* | *14,599,355.00* |
| | x 0.13 |
| **Bedminster Share (13%)** | **$1,848,470.52** |

| | $ Total | % Residential | $ Residential | % Commercial | $ Commercial | % Industrial | $ Industrial | % Agricultural | $ Agricultural | Unity |
|---|---|---|---|---|---|---|---|---|---|---|
| Bedminster share of nontax revenues (13%) | $1,848,470.52 | 98% | $1,803,732.66 | 1% | $18,561.12 | 1% | $17,190.70 | 0% | $8,986.05 | 100% |
| Tax revenues from Bedminster (from Step 5) | 4,219,137.41 | — | 3,851,788.43 | — | 123,662.03 | — | 160,033.22 | — | 83,653.73 | — |
| **Total Revenues from Bedminster** | **$6,067,607.93** | **93%** | **$5,655,521.09** | **2%** | **$142,223.15** | **3%** | **$177,223.92** | **2%** | **$92,639.78** | |

## 7. Allocating School District Expenditures

Because all school students live on residential land, allocate all school expenditures to that type of property. (Remember that farmhouses are considered residential property.) This allocation assumes that nonresidential land uses receive no benefit from schools, even though it can be argued that they do benefit. Businesses, for example, require an educated workforce.

You must disaggregate the school expenditures so only those associated with the study municipality are used. Again, be sure not to use *total* expenditures for the school district, or you will be assuming that *all* of the school district's students live in your study municipality. Two methods of disaggregating these expenses, similar to the techniques used for estimating school district nontax revenue, are listed below. Choose the method for which you have the needed information.

**a. If the school district knows how many students live in the study municipality:**
To estimate the total school district expenditures that can be attributed to the study municipality, use the percentage of total students who live in the study municipality (calculated in Step 6, Allocating School District Nontax Revenues).

**b. If the school district does not know how many students live in the study municipality:**
Use the percentage of total tax revenues coming from the study municipality, also calculated in Step 6. See the Step 7 Example.

**Step 7 Example: Allocating School District Expenditures**

Estimate the total school district expenditures attributable to Bedminster Township by using the same 13 percent share used in allocating nontax revenues. Keeping in mind that farmhouses are considered residential property, allocate all school expenditures related to Bedminster Township to residential land. See Figure 7.

**Figure 7. Allocating school district expenditures.**

| **Total School District Expenditures (across all municipalities)** | |
|---|---|
| Expenditures | $49,537,410.00 |
| | x 0.13 |
| **Bedminster Share (13%)** | **$6,272,088.19** |

| Item | $ Total | % Residential | $ Residential | % Commercial | $ Commercial | % Industrial | $ Industrial | % Agricultural | $ Agricultural | Unity |
|---|---|---|---|---|---|---|---|---|---|---|
| Bedminster share of expenditures (13%) | $6,272,088.19 | 100% | $6,272,088.19 | 0% | — | 0% | — | 0% | — | 100% |
| **Total Expenditures** | **$6,272,088.19** | **100%** | **$6,272,088.19** | **0%** | **—** | **0%** | **—** | **0%** | **—** | **100%** |

## 8. Calculating Cost of Community Service Ratios

Using the analysis you have conducted, you now can calculate the COCS ratios. To calculate the total revenues from each land type, add the total General Fund, Liquid Fuels Fund, other local government funds, and school district revenues from that type. Do the same for the total expenditures, adding total expenditures from the General Fund, the Liquid Fuels Fund, other local government funds, and the school district.

Calculate the ratios by dividing the total spending for a land type (across all funds and the school district) by the total revenues from that land type. Do this for each land type. These figures are your final COCS ratios, relating expenditures to revenues. If the number you calculate for residential land is 1.08, for example, for every dollar of revenue that comes in from residential land, you've estimated that it costs $1.08 to provide services to that land type. See the Step 8 Example.

**Step 8 Example:**
**Calculating Cost of Community Service Ratios**

Sum the total revenues and expenditures by land use across the General Fund, the Street Lighting Fund, the State Fund, and the school district. See Figure 8. Then calculate the COCS ratios by dividing the total expenditures by the total revenues for each land type. See Figure 8A.

**Figure 8. Summing revenues and expenditures by land use.**

| | $ Total | $ Residential | $ Commercial | $ Industrial | $ Agricultural |
|---|---|---|---|---|---|
| **Revenues** | | | | | |
| General fund municipal tax revenues (from figure 2) | $522,523.69 | $510,587.07 | $4,018.27 | $5,200.11 | $2,718.24 |
| General fund municipal nontax revenues (from figure 3) | 122,664.73 | 118,986.09 | 2,460.28 | 800.11 | 418.24 |
| Street lighting fund municipal revenues (from figure 4A) | 4,094.22 | 4,094.22 | — | — | — |
| State fund municipal revenues (from figure 4A) | 134,727.75 | 131,466.98 | 1,352.85 | 1,252.96 | 654.96 |
| School district tax revenues (from figure 5) | 4,219,137.41 | 3,851,788.43 | 123,662.03 | 160,033.22 | 83,653.73 |
| Bedminster share of school district nontax revenues (from figure 6) | 1,848,470.52 | 1,803,732.66 | 18,561.12 | 17,190.70 | 8,986.05 |
| **Total Revenues** | **$6,851,618.32** | **$6,420,655.45** | **$150,054.55** | **$184,477.10** | **$96,431.22** |
| **Expenditures** | | | | | |
| General fund municipal expenditures (from figure 4) | $749,542.58 | $732,600.87 | $7,423.76 | $6,250.59 | $3,267.36 |
| Street lighting fund municipal expenditures (from figure 4A) | 4,143.63 | 4,143.63 | — | — | — |
| State fund municipal expenditures (from figure 4A) | 163,676.76 | 159,715.35 | 1,643.53 | 1,522.19 | 795.69 |
| School district expenditures (from figure 7) | 6,272,088.19 | 6,272,088.19 | — | — | — |
| **Total Expenditures** | **$7,189,451.16** | **$7,168,548.04** | **$9,067.29** | **$7,772.78** | **$4,063.05** |

**Figure 8A. Calculating the COCS ratios.**

| | $ Total | $ Residential | $ Commercial | $ Industrial | $ Agricultural |
|---|---|---|---|---|---|
| Total revenues | $6,851,618.32 | $6,420,655.45 | $150,054.55 | $184,477.10 | $96,431.22 |
| Total expenditures | $7,189,451.16 | $7,168,548.04 | $9,067.29 | $7,772.78 | $4,063.05 |
| **Ratios (expenditures divided by revenues)** | | **1.12** | **0.06** | **0.04** | **0.04** |

## 9. Interpreting the Results

### What do the numbers mean?

The COCS ratios demonstrate that the various types of land uses in a community have implications for taxes and the cost of local government services. How land is used in your community has an impact on what services are provided and where revenues come from.

Be aware that the actual size of individual ratios is less important than the general trends the ratios as a group illustrate. Questions that the ratios might help you answer include: Which land uses in the community generally provide more than they require back? Which generally require more than they provide? The answers will help you understand the role that different land uses play in your community.

### How do the ratios compare to those of other Pennsylvania communities?

Ratios for several Pennsylvania communities are listed in Table 1 on page 4. The sizes of the ratios in a community depend upon a variety of factors, including the type and amount of services provided by the local government and the relative importance (from a tax standpoint) of the different land uses. The high residential land ratio in Stewardson Township, for example, occurs because residential land is a relatively small part of the total tax base in the township. This means that residential land uses in Stewardson receive a larger subsidy from other land uses than they would if residential land provided a greater share of total local revenues.

### Why does residential land usually cost more?

Residential land usually costs more than it provides in revenue primarily because school-related revenues and expenditures typically far outweigh municipal revenues and expenditures. All land uses contribute revenue to the school district, even though all school district expenses are directly related only to residential land in the studies. In the first eleven Pennsylvania COCS studies discussed earlier, for example, schools accounted for 84 percent of all local spending, whereas the township governments spent the remaining 16 percent. From a local taxpayer's perspective, schools have a much greater impact on taxes.

### How can I determine the costs of development?

Because the COCS ratios represent an average of all of the land in the community, they are *not* direct measures of the costs of development. The types of local services required by different populations within a certain land type vary greatly, with subsequent effect on their impacts. Residential housing populated by the elderly, for example, will have a fiscal impact much different from that of similar housing units occupied by families with school-aged children. If a specific housing development or shopping center were examined, its ratio of revenue to cost may differ widely from the COCS ratio. The ratios do, however, suggest that careful examination be given to proposed land development.

The COCS ratio calculated for your community gives no insight into the costs to your community of future developments. These costs cannot be estimated accurately without carefully considering the specifics of the development proposal, the services already existing in the community, and the ability of those services to accommodate the new service demands resulting from the development. Some other analysis methods that consider these factors include the Per Capita Multiplier method, the Comparable Cities approach, and the Case Study approach (see Vaserstein, et al., forthcoming; and Burchell, R. W., D. Listokin, and W. R. Dolphin, 1985).

### What influences the cost of development?

Factors that influence the fiscal impacts of development include the type of development that will occur and the ability of existing public services to absorb that development. Different types of development have dissimilar impacts on local governments, school districts, and taxpayers. Developments that increase the tax base without increasing demands for services, such as some white-collar research office parks, can have positive impacts. Land developments that dramatically increase service demands without significantly increasing the tax base, such as inexpensive three- to four-bedroom townhouses (typically purchased by families with school-aged children), can have negative fiscal impacts. A listing of land uses, arranged by their usual fiscal impacts (see Table 4), illustrates these effects.

The ability of local governments and school districts to meet new service demands also has a critical effect on how a specific development will affect taxpayers. If existing services can meet new service demands, the fiscal effects will be less than if existing services need to be expanded. If the existing sewage treatment plant has enough surplus capacity to handle waste from a new development, for example, the impact will be much smaller than that created if the treatment plant already is at capacity and needs to be expanded. This "surplus capacity" principle can apply to classroom space, roads, police, water treatment, parks, and road maintenance, among other services.

**Table 4. Hierarchy of land uses and typical fiscal impacts.**

| Land Use | Fiscal Impact on: | |
|---|---|---|
| | Municipality | School District |
| Research Office Parks | + | + |
| Office Parks | + | + |
| Industrial Development | + | + |
| Highrise/Garden Apartments (Studio/1 Bedroom) | + | + |
| Age-Restricted Housing | + | + |
| Garden Condos (1–2 Bedrooms) | + | + |
| Open Space Lands | + | + |
| Retail Facilities | – | + |
| Townhouses (2–3 Bedrooms) | – | + |
| Expensive Single-Family Homes (3–4 Bedrooms) | – | + |
| Townhouses (3–4 Bedrooms) | – | – |
| Inexpensive Single-Family Homes (3–4 Bedrooms) | – | – |
| Garden Apartments (3+ Bedrooms) | – | – |
| Mobile Homes | – | – |

Note: This is a general listing and may not apply accurately to any one specific development. The fiscal effects always must be viewed in the context of the specific community and the existing surplus capacity of local services.

Source: Burchell and Listokin, 1993

**The Cost of Community Service Ratio has proven to be a useful measure of the impact of different land uses in a variety of Pennsylvania communities. The methodology is relatively uncomplicated, making it fairly easy for people to calculate ratios for their own communities. It helps local officials and residents understand that how land is used in their community does matter, and that land use change is worthy of careful consideration.**

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