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University of Wisconsin
Taylor Hall, Room 202
427 Lorch Street
Madison, WI 53706

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**The Cost of Community Services
for Three Dane County Towns:
Dunn, Perry, and Westport**

By:

Mary Edwards
Douglas Jackson-Smith
Steve Ventura
Jill Bukovac

Program on Agricultural Technology Studies
College of Agricultural and Life Sciences
University of Wisconsin-Madison

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Executive Summary

Cost of Community Services (COCS) studies attempt to explain whether or not different types of land uses generate more (or less) revenue than they consume in public services. The technique uses detailed information about how much revenue is generated from each particular type of land use, and then allocates all local government spending to the various land use categories. The results provide a community with a set of ratios of the *net fiscal impact* of various land use types at a given point in time.

Under the auspices of the Wisconsin Land Use Research Program at the UW-Madison, a series of COCS studies have been conducted throughout the state. This report details the results of three COCS analyses that were conducted in the Dane County Towns of Dunn, Westport and Perry. The ratios were calculated using relevant town and school district data for fiscal year 1996 in each of the towns. They represent the perspective of a town resident property owner, who pays taxes to and receives services from both the town government and a local school district.

Technically, a COCS ratio of *greater* than 1 indicates that a particular land use type cost more than it provides in revenues. A ratio *less* than 1 indicates that the land use type provides more in revenue to the community than it requires in costs of public services.

In our study, we divided real property into six distinct categories: Non-Farm Residences, Agricultural Residences, Agricultural land, Swamp/Forest land, and Commercial/Industrial property, based on the Wisconsin Department of Revenue land classification system. The COCS ratios for FY96 for the three Dane County towns are summarized in Table 1 below.

Table 1: Summary of Findings: 1996 Cost of Service Ratios

Town	Residential	Ag-Residential	Commercial/ Industrial	Ag-Land	Swamp/ Forest
Dunn	\$1 : 1.02	\$1 : 1.09	\$1 : 0.55	\$1 : 0.16	\$1 : 0.10
Perry	\$1 : 1.20	\$1 : 1.21	\$1 : 1.04	\$1 : 0.09	\$1 : 0.04
Westport	\$1 : 1.11	\$1 : 1.23	\$1 : 0.27	\$1 : 0.13	\$1 : 0.08

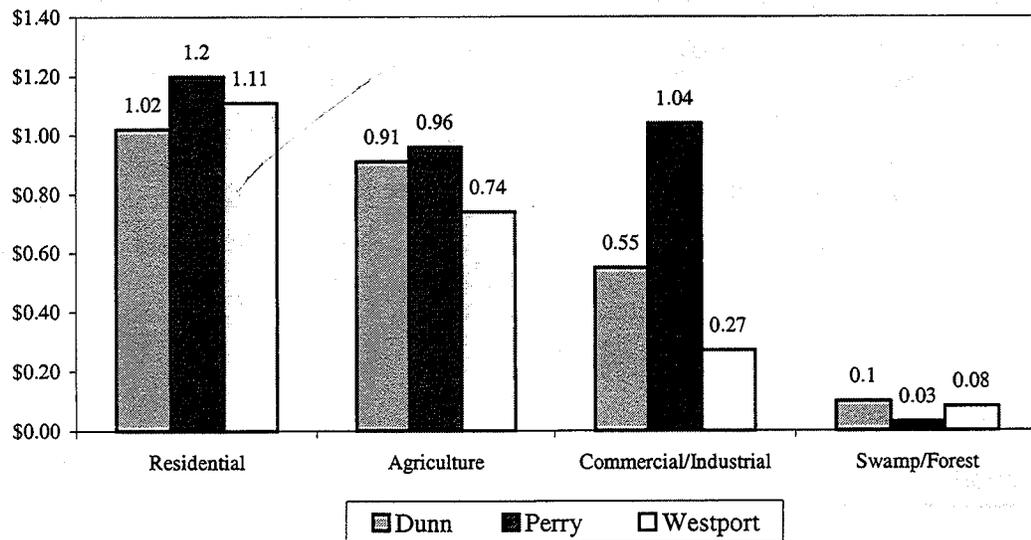
The ratios show that services provided to residential properties in all three towns consistently cost more than the revenue generated by them. These services include spending on schools as well as typical town services, such as police and fire protection, refuse collection, and street lighting. Revenues include all local taxes, intergovernmental aids, and other license and fee revenue.

For example, in the town of Dunn, for every dollar of revenue generated by residential land, about \$1.02 was spent on town and school services to these lands. Similarly, for every dollar generated by agricultural land, \$0.16 was spent to serve these lands. In the town of Perry, for every dollar of revenue generated by residential uses, \$1.20 was spent to serve residences. All other land uses – agricultural lands, swamp/forest lands, and commercial/industrial properties typically generate more revenue for town governments and school districts than they demand in public services.

It is worth noting that we chose to distinguish agricultural residences from non-farm residences. In previous COCS studies, the buildings and homes on farms have been typically included in the residential category of land use. We feel that lumping together farm and non-farm residences provides a distorted picture of the fiscal impacts of residential development versus agricultural land uses.

To estimate a more accurate picture of the net fiscal impact of agriculture – which should include both productive farmland as well as farm buildings and residences – we combined the categories of agricultural residences and agricultural land into a single land use class. The results are illustrated in Figure 1. These ratios show that agriculture still represents a net financial contribution to the towns, but the ratio is not as dramatic as when farmland alone is examined. For every dollar of revenue generated, it costs 91 cents in the town of Dunn, 96 cents in the town of Perry and 74 cents in the town of Westport, to provide services to agricultural land uses.

Figure 1
1996 COCS Ratios for the Towns of Dunn, Perry and Westport



Overall, the cost of service ratios found in our study are typical of previous COCS studies conducted throughout the nation. Residential land uses typically cost more to

local communities in town and school services than they provide in local revenues. This is offset by farmland, swamp and forest lands, industrial and commercial lands, which generally provide more in revenue to a town than they require in public services.

Our treatment of agriculture differs significantly from previous studies in that we combined farm residences and farmland into a single class of land use. We also separated agricultural lands from other forms of rural open space (swamp and forest lands). By doing this, we found far less striking differences between agricultural and residential land uses in our three study communities than have been reported elsewhere.

In the past, some have used COCS studies to argue that any new housing development will cost a rural community more than it will generate in revenues. Most scholars agree that this is not a legitimate interpretation of the results. In fact, COCS studies simply provide the community with information about the fiscal effects of *current* types of land use and do not distinguish between types of densities of residential uses. New developments will not necessarily have the same fiscal impact as a similar class of property does today. The results do suggest that local governments should critically examine new developments to see what the likely impacts will be on town government and school district finances.

I. Introduction

Over the past decade, the population of Dane County has grown by about 13 percent, adding approximately 46,000 new residents and making it the 9th fastest growing county in the state. In 1998, more than 4,000 housing units were built in the county, the largest number of units built since 1993.¹ Population is projected to continue growing by a total of about 33 percent between 1990 and 2020². Population, housing and employment growth has created pressure for development and its necessary infrastructure investments. As growth has intensified across the county, citizens and policy makers have become increasingly aware of the consequences associated with growth and development.

These concerns have prompted a number of policy initiatives on the part of local governments in Dane County. Last year, the County embarked on a planning process which culminated in *Design Dane*, a comprehensive set of actions meant to improve the way the county grows in the future. The Town of Dunn recently became the first municipality in the state to pass a local levy to provide funding for purchasing the development rights of property in the Town. The Village of Oregon instituted a growth moratorium out of a need to step back and evaluate how to grow responsibly in the future. In 1995, the Town of Oregon adopted strict zoning ordinances that make it difficult for farmers to divide and sell their lots for housing development. The Town of Bristol has made an effort to keep development concentrated in one area so as to preserve productive farmland in other areas. Recently, the town board of Blooming Grove voted to put a moratorium on all land divisions in the town until they have developed and approved a land use plan. These initiatives are illustrative of local land use activities occurring throughout the county.

Of particular concern to both citizens and policy makers in thinking about growth and development is the "bottom line", or more specifically, the impacts on community costs, revenues, tax base and tax rates. A number of studies have emerged that attempt to shed some light on how different types of land use affect a community's fiscal position. These studies, known as *Cost of Community Services (COCS)* studies, are typically undertaken to examine the impacts of open space and farmland versus other types of land uses on a community's fiscal balance sheet. They provide a community with a set of ratios that compare total revenue generated by each land use to total costs related to the land use.

The following report provides such an analysis of three communities in Dane County and quantifies the net fiscal impact of different types of land uses in the communities. An understanding of the fiscal costs and revenues generated by different types of land is important as policy makers grapple with issues of sprawl and increasing rates of farmland conversion. The costs of community services method detailed below allows a community to assess their fiscal position at one point in time in terms of the demands placed on the locality by different land use categories. This procedure has been replicated, with some modification, for three towns in Dane County--Dunn, Perry and Westport.

The towns were selected to represent different types of communities. The Town of Dunn, though close to the urban fringe, has a history of a strong commitment to preserve

farmland. The Town of Westport is experiencing strong development pressure, as it lies close to the City of Madison and to the growing Village of Waunakee. Finally, the Town of Perry is a rural and agricultural town experiencing only scattered development pressure at this point in time.

The report is organized into six sections. Section II below includes a discussion of previous research on the COCS methodology. Section III describes the research steps involved in conducting a COCS. The next section focuses specifically on the three Dane County case studies and details the research steps and the process for calculating the fiscal ratios. COCS ratios have been calculated from three different perspectives: the taxpayer (who is interested in the fiscal impact of land uses in the town and school district); the town itself; and the school districts serving the town. Section V discusses the findings and compares the town ratios. Finally, the last section includes a discussion of the implications of the findings. An Appendix is provided which includes fiscal profiles of each of the towns and the methods used to allocate costs and revenues across land use categories.

II. Previous Research

The American Farmland Trust (AFT) developed the COCS method and has conducted a series of studies across the nation. Many of the early studies were either conducted or sponsored by the AFT, but in more recent years, a number of studies have emerged that were conducted by local governments and other researchers.

COCS studies are undertaken to examine the impacts of farmland, residential land, commercial land, industrial land and open space and forest land on a community's fiscal balance sheet in a single year. The studies are snapshots of the net fiscal costs of different land uses. They are snapshots because they measure one year in time and do not make projections into the future.

The COCS approach compares annual revenues to annual expenses of public services for various land use categories. Local revenues and expenditures are apportioned to major categories of land use, and the result is a set of ratios showing the proportional relationship of revenues and expenditures for different land uses at one point in time. A ratio greater than one indicates that for every dollar of revenue collected for a type of land use, more than one dollar is spent to serve that land use. When the net fiscal impact of a land use is neutral, expenditures are equal to revenues and the ratio is \$1.00 : \$1.00. For every dollar of revenue generated, a dollar is spent to provide services to the land use type.

COCS studies typically show that for residential land, the cost of service ratio is greater than one. The average ratios of previous studies range from about \$1.05 to \$1.50 for residential development for every dollar of revenue generated. COCS ratios for commercial and industrial properties are typically below one. For commercial and industrial properties, studies have found it costs between 30 and 65 cents to provide public services to these properties. For agricultural land and open space, ratios are typically slightly smaller, ranging from 10 to 50 cents for every dollar of revenue generated. COCS studies across the board have concluded that farmland and

open space provides more revenue to a community that is incurred in expenditures, resulting in a net fiscal benefit to a community. The table below provides a summary of some of the COCS studies that have been undertaken across the nation.

Table 3: Summary of Previous Research

State/Town- Year of Study	Residential	Commercial Industrial	Farm/ Forest/Open	Source
Connecticut				
Durham-1995	\$1: 1.07	\$1: 0.27	\$1: 0.23	S. New England Forest Consortium
Farmington-1995	1: 1.33	1: 0.32	1: 0.31	S. New England Forest Consortium
Litchfield-1995	1: 1.11	1: 0.34	1: 0.34	S. New England Forest Consortium
Pomfret-1995	1: 1.06	1: 0.27	1: 0.86	S. New England Forest Consortium
Maine				
Bethel-1994	1: 1.29	1: 0.25	1: 0.06	Thomas Good, Antioch N. E. Grad School
Maryland				
Carroll County-1994	1: 1.15	1: 0.48	1: 0.45	Carroll Co. Dept. Of Mgt. & Budget
Frederick County-1997	1: 1.05	1: 0.39	1: 0.48	American Farmland Trust
Massachusetts				
Becket-1995	1: 1.02	1: 0.83	1: 0.72	S. N.E. Forest Consortium
Franklin-1995	1: 1.02	1: 0.58	1: 0.40	S. N.E. Forest Consortium
Leverett-1995	1: 1.15	1: 0.29	1: 0.25	S. N.E. Forest Consortium
Westford-1995	1: 1.15	1: 0.53	1: 0.39	S. N.E. Forest Consortium
Minnesota				
Farmington-1994	1: 1.02	1: 0.18	1: 0.48	American Farmland Trust
Lake Elmo-1994	1: 1.07	1: 0.20	1: 0.27	American Farmland Trust
Independence-1994	1: 1.04	1: 0.19	1: 0.47	American Farmland Trust
New York				
Kinderhook-1996	1: 1.05	1: 0.21	1: 0.17	Concerned Citizens of Kinderhook
Montour-1992	1: 1.50	1: 0.28	1: 0.29	Schuyler Co. League of Women Voters
Reading-1992	1: 1.08	1: 0.26	1: 0.32	Schuyler Co. League of Women Voters
Ohio				
Madison Village-1993	1: 1.67	1: 0.20	1: 0.38	American Farmland Trust
Madison Township-1993	1: 1.40	1: 0.25	1: 0.30	American Farmland Trust
Pennsylvania				
Bethel Township-1992	1: 1.08	1: 0.17	1: 0.06	Tim Kelsey
Carroll Township-1992	1: 1.03	1: 0.03	1: 0.02	Tim Kelsey
Staban Township-1992	1: 1.10	1: 0.11	1: 0.06	Tim Kelsey
Rhode Island				
Hopkinton-1995	1: 1.08	1: 0.31	1: 0.31	S. N.E. Forest Consortium
Little Compton-1995	1: 1.05	1: 0.56	1: 0.37	S. N.E. Forest Consortium
West Greenwich-1995	1: 1.46	1: 0.40	1: 0.46	S. N.E. Forest Consortium
Virginia				
Clarke County-1994	1: 1.26	1: 0.21	1: 0.15	Piedmont Environmental Council
Wisconsin				
Dunn-1994	1: 1.06	1: 0.29	1: 0.18	Town of Dunn

Source: American Farmland Trust

In a recent COCS study conducted in Pennsylvania, the author found that in one township, for every dollar of revenue generated by residential land, \$2.11 was spent on services for that land. In that same township, for every dollar of revenue generated by agricultural land, \$.31 was spent on services³. Again, findings such as these are typical and they have been used to dispel allegations that residential development increases property tax revenue and that conservation is too expensive to achieve at the local level.⁴

Here in Wisconsin, the Town of Dunn conducted a cost of community services study based on 1993 fiscal data. Consistent with the findings of the AFT, the town analysis showed that agricultural and open space was the least costly type of land use to serve. For every dollar of revenue generated by agricultural and open space lands, 18 cents was spent to serve them. In contrast, for every dollar of revenue generated by residential uses, \$1.06 was spent by the town to serve them. The table below illustrates the town summary of ratios.

Table 4: Town of Dunn- Revenue: Cost Ratios, 1993

Land Use	Ratio
Residential	\$1: 1.06
Commercial	\$1: 0.29
Agriculture/Open Space/Forest	\$1: 0.18

The Town of Dunn basically followed the standard methodology put forth by the American Farmland Trust. Costs and revenues were allocated using a variety of approaches. For example, police expenses were allocated by reviewing police records detailing the location of police calls. Road costs and highway aids were allocated across land uses based on the number of trips generated by land use type. A default percentage was used for those costs and revenues that could not be readily assigned to a particular land use. These percentages were based on relative property value.

Critics of COCS studies often discount them because of the many underlying assumptions. Most notably, the studies often fail to acknowledge that the residential category includes the homes of most people who farm or work on farms in the study area. This means that the costs associated with servicing farmers, resident agricultural workers, and their families are apportioned to the residential category, and many kinds of costs – such as street maintenance, garbage collection or protective services are not assigned to any agricultural uses. As a result of this approach, the overall costs associated with agriculture and other natural resource industries will necessarily be low or nonexistent. Since the traditional AFT methods discount the human service costs associated with agricultural activities, conventional COCS ratios may not provide a clear picture of the different fiscal impacts associated with farming versus residential land uses.

A different criticism is that many COCS studies do not differentiate between different types of open space – farmland versus forest versus vacant lots for example. These different

types of land uses may have different costs and revenues associated with them. Hence, policies designed to preserve economically active rural lands (like farmland or timber lands) may have different consequences than open space oriented policies that might encourage undeveloped grasslands or forested tracts that are no longer used for agriculture or forestry.

Finally, and perhaps most important, it has been noted that the results of COCS studies are often interpreted incorrectly. For example, although a general class of land use may be associated with a net fiscal benefit or loss, it is also true that any individual piece of property may have an impact that can be significantly different from the overall averages. The residential category includes very diverse types of residential properties, ranging from single family homes on large lots to densely settled subdivisions. The COCS ratio for residential property does not provide information about which of these sub-categories of housing might have better or worse fiscal impacts on a local community.

Similarly, a COCS study does not provide a community with a measure of the fiscal impact of a specific *proposed development* – one residential development may result in a fiscal benefit to a community, and another, a fiscal deficit – depending on a variety of factors from the location of the development, its design, and the value of the property in relation to its public service requirements. A more detailed fiscal impact analysis must be conducted to ascertain the impact of a specific development proposal.

Overall, it should be noted that COCS studies are not intended to prescribe a course of action. Rather, they are intended to provide an assessment of a community's fiscal situation with regard to different types of land use at a particular point in time. Using this information as a starting point, we would hope that communities would embark on a more careful analysis of the fiscal impacts of all types of land use changes that they might be considering.

III. COCS Methodology

The basic steps to conducting a COCS study are as follows:

1. Define land use categories
2. Collect local data
3. Calculate a default percentage for allocation of various costs and revenues
4. Allocate expenditures by land use category
5. Allocate revenues by land use category
6. Compute the cost of community service ratios for each land use type

Land use categories are typically defined in COCS studies as they are defined by the tax assessor for property tax purposes—agricultural, commercial, residential, industrial, etc. Local data is collected from the local municipalities and from the state government. The default percentage, used as a last resort to allocate costs and revenues, is based on relative assessed property value. The allocation of costs and revenues across land use types involves a series of approaches depending on the availability and completeness of local records and the accessibility

of local staff and officials. Finally, the COCS cost of service ratios for each land use type are estimated by dividing total costs by total revenues in each land use type.

The studies undertaken in Dane County follow the basic steps outlined above; however, there is some deviation from the standard methods put forth by the American Farmland Trust. Typical COCS studies include agricultural residences in the residential land use category. The ratios provided below illustrate separate ratios for agricultural land and agricultural residences. This is intended to provide a better financial picture of the total impact of farms and their residents and workers. Typical COCS studies also often combine commercial and industrial land uses. These land use categories are examined individually in this study.

IV. Cost of Community Services for Dane County Towns: Profile and Methods

The three towns chosen for these studies--the towns of Dunn, Perry and Westport--were chosen, in part, due to their differences.

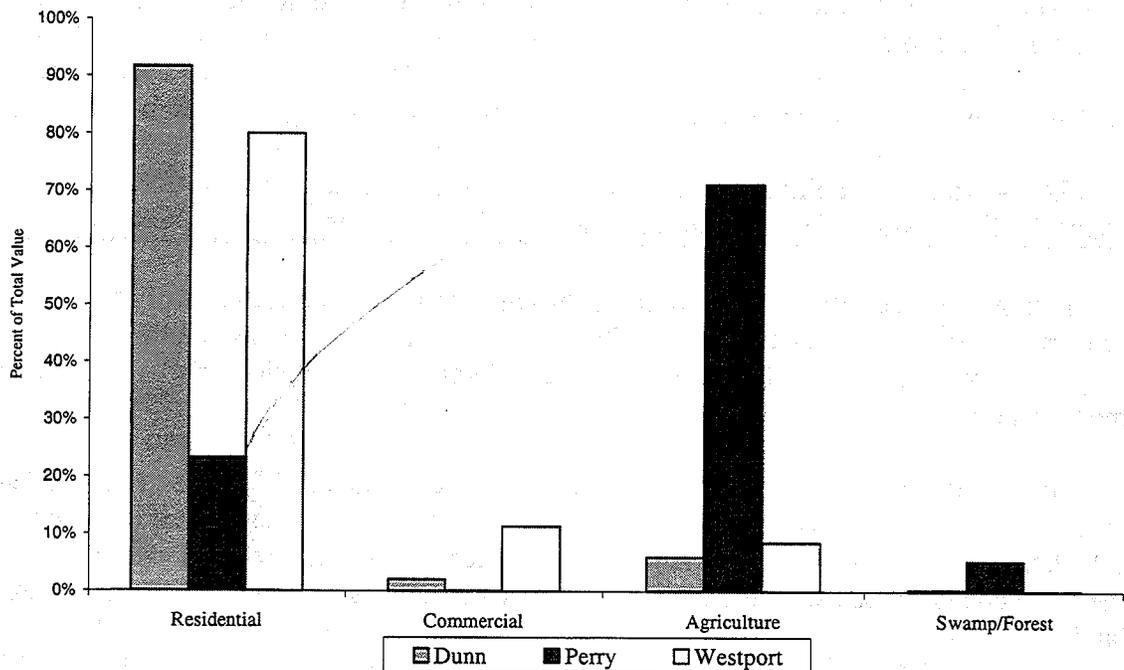
The town of Dunn, located directly south of the city of Madison is surrounded by the cities of Fitchburg and Stoughton, the village of McFarland, the village and town of Oregon and the towns of Blooming Grove, Pleasant Springs and Rutland. (See map in Appendix). The 1999 population estimate is 5,504 residents, an increase of about 4.4 percent since 1990.⁵ In 1997, the town had about 8,500 acres of farmland from a total land base of about 18,350.⁶ The town has historically been an agricultural town; however, both the number of farms and the amount of farmland has decreased in recent decades. In 1990, only about 2 percent of its population was living on a farm.⁷ Nevertheless, the town is well known in the county for its efforts to preserve agricultural lands and open space. The Dunn Town Land Use Plan (dating back to 1979) calls for preserving agriculture and allows only limited residential development in specified areas, and the town has drawn nationwide attention by adopting and funding a Purchase of Development Rights program designed to protect important farmland.⁸

The town of Perry, a rural township located in the southwestern corner of Dane County, is one of the county's least developed towns. Agriculture is Perry's major land use. In 1997, the town had approximately 17,000 acres of farmland, out of a total land base of about 23,100.⁹ The geography and steep unglaciated topography of the town limit it somewhat from development--extensive areas of soils are not capable of supporting septic systems. Perry has also maintained a tradition of trying to preserve its rural character. The town adopted exclusive agricultural zoning in 1979 and created policies for controlled development in certain areas of the town.¹⁰ These policies have continued to the present. Although agriculture dominates the landscape, the town has experienced a slight shift from its dependence on farming. The proportion of the town population that lives on farms decreased from 56.3 percent in 1980 to 41.4 percent in 1990. Roughly a third of adults were employed in farming in 1990.¹¹ Perry's population increased by 8.4 percent between 1990 and 1999, to 700 residents.¹² The total number of homes in the town also increased from 222 in 1990 to 262 in 1995.¹³

The Town of Westport, located just north of Madison, is facing strong development pressure. Town population increased by 35 percent between 1990 and 1999, to 3,692 residents.¹⁴ In 1997 alone, 143 new homes were built in the town, compared with 65 in 1990 and 20 in 1991.¹⁵ Annexation pressure is also intense in the town, although it recently developed an intergovernmental agreement with the neighboring village of Waunakee, which will lessen some of the annexation pressure. While the town retains over 8,000 acres of farmland, and has a strong agricultural heritage in decades past, its population is now largely non-agricultural.¹⁶ Only 1.6 percent of town residents lived on a farm in 1990, and less than 1 percent of adults work in agriculture.¹⁷

The table below illustrates the mix of land use types in each of the towns. Based on 1995 Department of Revenue assessment data, over 90 percent of the total property value in the town of Dunn is comprised of residential value. Similarly, nearly 80 percent of the value in the town of Westport is residential value. In the town of Perry, residences represent about 23 percent of total value and agriculture represents about 70 percent of total property value.¹⁸

1995 Assesed Property Value by Land Use Type



COCS APPROACH USED IN DANE COUNTY TOWNS

STEP 1) IDENTIFYING LAND USE CATEGORIES

Our COCS study in Dane County began by dividing up most taxable property in each town into the following categories, which are based on the seven classes of real property used in the state of Wisconsin for assessment purposes:

1. Residential: Property used as a dwelling, including homes, mobile homes and apartment buildings of three units or less.
2. Commercial: All land and improvements devoted to buying and reselling goods for profit, including apartments of four or more units, stores with apartments above, and golf courses.
3. Manufacturing: Properties used in manufacturing, assembling, processing, fabricating, making or milling tangible personal property for profit, including warehouses, storage facilities and offices that support manufacturing.
4. Agricultural: Land devoted primarily to farming.
5. Swamp and Waste: Includes bog, marsh, lowland brush and other nonproductive land not classified elsewhere.
6. Forest Lands: Land which is producing or capable of producing commercial forest products.
7. Other: Agricultural buildings and improvements and the land necessary for their location and convenience, including farm residences, silos, sheds and barns.¹⁹

In addition, we used information available through each town clerk to identify the residential properties that were associated with the homes of farm families and agricultural workers. These properties were used to create a category we call "Agricultural Residences" (refer to endnotes for more detail).

It should be noted that each town also contains tax-exempt lands. These lands generated some local revenue, such as "payment in lieu of taxes," and these revenues are not included in the calculation of ratios for the above land use categories. However, the service costs generated by the lands could not be estimated in an accurate manner, so no costs were allocated to exempt lands.

STEP 2) COLLECTION OF LOCAL DATA

All local revenue and expenditure data were collected for fiscal year 1996. Property value data was collected for 1995. All of the data necessary were located in town offices and in the State Department of Revenue. Much of the data can be found in the local budgets, the tax assessment rolls and the statements of assessment. It was also necessary to gather some

demographic data on the communities, including population and number of farm and non-farm dwelling units. Data were supplemented by extensive interviews with local officials and staff.

The studies also included estimates of school costs and revenues associated with the different land use categories. School district fiscal data were obtained from the Department of Public Instruction (DPI).²⁰

STEP 3) CALCULATE THE DEFAULT PERCENTAGE

The default percentage is based on the relative property value of each land use category. It represents an approach to allocate revenues and expenditures across land use categories when there is no other appropriate approach. For example, often general government expenditures, which include town staff and government operations expenses, are allocated based on this default percentage due to the difficulty in identifying exactly where general government expenses are spent across land uses. However, this method should be used to allocate costs and revenues as seldom as possible, as it does assume that property value is an appropriate proxy for local spending patterns.

STEP 4) ALLOCATE EXPENDITURES BY LAND USE CATEGORY

The allocation of expenditures is the crux of the COCS approach to estimating the fiscal impacts of different land uses. It is extremely important to try to be as precise as possible in allocating across land use categories. This typically entails extensive interviews with local officials who are familiar with services provided by the community, as well as an examination of local records for items such as police and fire calls. In our study, we began the allocation procedure by reviewing all town expenditures (reported in their annual budget) with the town clerk, and then deriving sensible allocation rules for assigning each town expense to particular land use categories.

It is important to remember that COCS studies are measuring *demand* for services and not the *benefit* derived from the public services. Expenditures such as health and human services are demanded by citizens and allocated to residential uses, even though the entire community may benefit from a healthy population. It is also important to investigate anomolous and one-time expenses.

Public works and public safety generally represent the two largest expenses in municipal budgets. In the towns of Westport and Perry, 56 percent of the total budget was spent on public works. In the town of Dunn, 35 percent of the total expenditures was spent on public works. Public safety, which includes law enforcement, fire protection and ambulance services, represented 16 percent of Dunn's total town budget, 9 percent of Perry's and 14 percent of Westport's. Please refer to the Appendix for a precise breakdown of town expenditures. It is important to obtain detailed information on the categories of expense within these broad public services. Interviews with police and fire personnel and public works personnel are crucial to an accurate analysis of costs across categories.

The precise methods used in allocating expenditures across land use categories for each of the three towns are found in the Appendix. A number of techniques were used. Most expenditures were allocated based on information in local records and information elicited from town clerks and staff. For example, road construction costs in the Town of Westport were allocated based on examination of the actual expense reports from 1996 road construction projects. Staff assisted in noting where these construction sites were located in the town and how to allocate particular expenses to specific land use categories.

Road maintenance expenses were more difficult to allocate, as there was no precise breakdown or maintenance records available in any of the towns. To allocate road maintenance expenses, a method commonly used in traffic impact analysis was borrowed. Trip generation rates, based on estimates from the Institute of Transportation Engineers, *Trip Generation Manual*, were calculated for each structure in the town. For example, the Institute estimates that each household generates about 10 trips per day and a gas station generates about 73 trips per pump per day. Once all trips were estimated on an annual basis, the relative number of trips generated by each land use category was used to allocate road maintenance costs across land use categories. In the Town of Westport, for example, 47 percent of all trips are generated by residences, and so 47 percent of the road maintenance expenses were applied to the residential land use category.

Educational expenses were somewhat problematic due to the fact that one town may be served by several different public school districts. The town of Dunn is served by three school districts, as is the town of Perry. Westport is served by two main school districts. To estimate total school spending within a town, per pupil expenditures were estimated using DPI data and a share of each school district's budget was allocated to the town based on the number of pupils in the school district living within the town limits. Pupil counts were obtained from representatives of the school districts.

School district expenditures in each town were then allocated across land use categories. All school district expenses were allocated to residences and agricultural residences, based on the relative number of dwelling units in each category of land use. No school district expenses were assigned to the agricultural lands, commercial/industrial properties or forest/swampland land use categories.

STEP 5) ALLOCATE REVENUES BY LAND USE CATEGORY

Revenues were allocated across land use categories, similar to expenditures. Again, local interviews and local records provide much of the information necessary to allocate revenues. Most local revenues come from a clearly identifiable source, which can be discerned through the examination of local records. Building permits, for example, can be tracked back to the source of the permit.

Local governments in Wisconsin rely predominantly on taxes and intergovernmental revenues to fund their services. Property taxes and state shared revenues represent the two

largest revenue sources within these broader categories of revenue. Total taxes, of which the bulk is property tax revenue, represented about 46 percent of all revenue raised in Westport in 1996, 48 percent in Perry and 36 percent in the town of Dunn. The precise methods for the allocation of revenues are also found in the Appendix, as is a breakdown of revenue sources for each town.

School funding is derived from four main revenue sources: state school aids; local property taxes; other local revenues; and federal aids. Estimating school district property taxes generated by each land use category presented a challenge due to the fact that neither the school district nor the local government maintains information on property values by land use by school district. We utilized a geographically-referenced parcel database that includes tax records and overlaid this map with school district boundaries. The program was then able to estimate the proportionate value of town property in each land use category that fell into each school district, and using information about school district mill rates, we were able to estimate the total property tax revenue generated for schools by each land use class.

Because they are usually distributed based on population estimates, other types of local revenues, and state and federal shared-revenues were assumed to be generated by residences and agricultural residences. This means they were allocated based on number of dwelling units in each land use category.

STEP 6) CALCULATE REVENUE-COST RATIOS FOR EACH LAND USE TYPE

Finally, COCS ratios were calculated by dividing total expenditures by total revenues in each category of land use. The tables in the next section illustrate the ratios for each of the towns.

V. Cost of Community Services for Dane County Towns: Findings

A. Town of Dunn

The following tables illustrate the set of revenue-cost ratios for the three towns. COCS ratios are provided from three perspectives. First, the perspective of the resident of the town who pays taxes to both the town and the school district is illustrated. These ratios include all revenues and expenditures associated with both the town government and each of the school districts. We then examine the COCS ratios separately for town government and school districts.²¹

Table 5 shows that the ratios for the Town of Dunn are generally consistent with those found back in the town's own 1993 COCS study, referenced earlier. Our analysis found that the cost of town and school services provided to all types of residences slightly exceeds the revenue generated by those residences. Interestingly, those residences associated with agriculture actually have a slightly higher ratio of revenues to costs than other residences, due to the lower values associated with agricultural residences and the accompanying lower amounts of property tax revenue generated by them. Ratios for commercial properties in our study are slightly higher than Dunn found in 1993.

Table 5: Town of Dunn: Cost of Service Ratios (including education)

Land Use	Residential	Ag.-Residential	Commercial	Ag. Land	Swamp/Forest
Revenues	8,833,794	398,128	105,082	97,614	11,185
Expenditures	8,988,451	435,042	57,634	15,394	1,157
Ratio	\$1 : 1.02	\$1 : 1.09	\$1 : 0.55	\$1 : 0.16	\$1 : 0.10

The shortfall in residential land use revenues was offset by fiscal surpluses in commercial, agricultural and swamp and forest lands. For every dollar of revenue generated by farmland, it costs 16 cents to provide services to the land. While farmland represents a small percentage of total revenues and expenditures in the town, it did make a positive financial contribution to the Town. This result is consistent with previous COCS studies.

When agricultural land and agricultural residences are combined, as shown in Table 6, we find that they still generate more local revenue than they demand from local services. Put differently, for every dollar generated in revenue, it costs 91 cents to serve the land and residences of farmers. However, other residences cost more to serve than they generate in revenue. For every dollar they generate in revenue, it cost \$1.02 to provide services to them.

Table 6: Town of Dunn: Cost of Service Ratios (including education and combining Agricultural land and residences)

Land Use	Residential	Commercial	Agricultural (land and residences)	Swamp/Forest
Revenues	8,833,794	105,082	495,741	11,185
Expenditures	8,988,451	57,634	450,437	1,157
Ratio	\$1 : 1.02	\$1 : 0.55	\$1 : 0.91	\$1 : 0.10

Whereas the previous two tables illustrate ratios from the perspective of the taxpayer in the town of Dunn who pays taxes to the town and school district, the following tables illustrate cost of service ratios from the perspectives of the town and school district governments. Table 7 illustrates the cost of service ratios for the town government only. It is useful to calculate the ratios from different perspectives since land uses impact on governments differently. It also illustrates the significance of including school districts in the final calculation. From the perspective of the town government, residential development represented a fiscal shortfall, as it cost about \$1.04 to serve residences for every dollar of revenue generated by those residences. Agricultural uses nearly broke even at 96 cents. Commercial land uses cost \$1.22 to serve for every \$1 of revenue generated by them. Swamp and forest lands cost 61 cents to serve for every dollar of revenue generated.

Table 7: Town of Dunn Cost of Service Ratios (excluding education and combining agricultural land and residences)

Land Use	Residential	Commercial	Agricultural (land and residences)	Swamp/Forest
Revenues	1,082,377	47,118	56,997	1,888
Expenditures	1,126,618	57,634	54,849	1,157
Ratio	\$1: 1.04	\$1: 1.22	\$1: 0.96	\$1: 0.61

Table 8 below illustrates the fiscal impact of the different land uses on school districts serving the town of Dunn. The total revenues and expenditures represent portions of the three different school districts serving the town. The portions were allocated based on the number of town pupils attending each school district. The school district perspective looks different than the other perspectives because not all land uses demand local educational services (only residences do) but all land uses contribute to property taxes to fund schools. The results suggest that residential land uses had a negative fiscal impact in Dunn, while the remaining land uses had positive impacts.

Table 8: Town of Dunn: Cost of Service Ratios for Education

Land Use	Residential	Commercial	Agricultural (land and residences)	Swamp/Forest
Revenues	7,751,417	57,964	438,744	9,297
Expenditures	7,861,833	0	395,588	0
Ratio	\$1: 1.01	\$1: 0.00	\$1: 0.90	\$1: 0.00

B. Town of Westport

As was the case in the Town of Dunn, Table 9 shows how the cost of town and school services spent on residences in the Town of Westport slightly exceeds the revenues generated by those residences. Again, the shortfall was offset by the positive contributions of commercial and industrial land uses, agricultural land and swamps and forests. Agricultural land had slightly lower costs in the town of Westport, as compared to Dunn, at 13 cents for every dollar generated in revenue. Agricultural residences cost more per dollar of revenue generated than other residences. Again, this is due mainly to the lower property values associated with these residences and the lower property tax revenues associated with them.

Table 9: Town of Westport: Cost of Service Ratios (including education):

Land Use	Residential	Ag. Residential	Commercial	Industrial	Ag. Land	Swamp/Forest
Revenues	4,838,319	267,306	510,202	122,315	218,941	5,363
Expenditures	5,358,006	330,527	171,595	24,112	29,437	437
Ratio	\$1: 1.11	\$1: 1.23	\$1: 0.29	\$1: 0.20	\$1: 0.13	\$1: 0.08

Table 10 shows that agriculture, with residences and land combined, still provides a net positive fiscal impact and generates more in revenue than it cost the town and school district to serve. For every dollar of revenue generated by agriculture, 74 cents was spent to serve the land and its residents. This is slightly less than was the case in the town of Dunn.

Table 10: Town of Westport: Cost of Service Ratios (including education and combining agricultural land and residences)

Land Use	Residential	Commercial	Industrial	Agricultural (land and Residences)	Swamp/Forest
Revenues	4,838,319	510,202	122,315	486,248	5,363
Expenditures	5,358,006	171,595	24,112	359,964	437
Ratio	\$1: 1.11	\$1: 0.29	\$1: 0.20	\$1: 0.74	\$1: 0.08

Table 11 illustrates the ratios from the perspective of the town of Westport, excluding the school districts. The most dramatic change in excluding educational costs and revenues appears in the ratios for commercial and industrial land uses. From the town perspective, commercial and industrial uses still represent a positive net contribution; however, it is not as significant as it is when education is considered in the ratio. This is due to the fact that commercial and industrial uses generate revenues that support school districts, but these land uses are not demanding educational services (although they do benefit from them), so there are no educational costs allocated to commercial and industrial uses.

Table 11: Town of Westport: Cost of Service Ratios (excluding education and combining agricultural land and residences)

Land Use	Residential	Commercial	Industrial	Agriculture (land and residences)	Swamp/Forest
Revenues	825,781	184,049	26,534	71,511	907
Expenditures	793,015	149,385	24,112	65,876	437
Ratio ²²	\$1 : 0.96	\$1 : 0.81	\$1 : 0.91	\$1 : 0.92	\$1 : 0.48

Table 12 below illustrates the COCS ratios from the perspective of the school districts serving the town of Westport. Commercial and Industrial uses provide property taxes to the schools, but demand no services. These land uses subsidize the residential uses. The same is true of agriculture which provides more in revenue to the school districts than is demanded in public services.

Table 12: Town of Westport: Cost of Service Ratios for Education

Land Use	Residential	Commercial	Industrial	Agriculture (land and residences)	Swamp/Forest
Revenues	4,012,538	326,153	95,781	414,737	4,456
Expenditures	4,559,902	0	0	293,764	0
Ratio	\$1 : 1.14	\$1 : 0.00	\$1 : 0.00	\$1 : 0.71	\$1 : 0.00

C. Town of Perry

Table 13 shows the revenue-cost ratios for the town of Perry. In 1996, the town's residential expenditures exceeded the revenues generated by residences resulting in a revenue-cost ratio of \$1.00 to \$1.20. For every dollar generated by residences, \$1.20 is spent on services provided to those residences. Farmland and swamp and forest lands made positive financial contributions to the town. Agricultural residences and other residences cost about the same to serve for every dollar of revenue generated--about \$1.20. Farmland ratios indicated that for every dollar of revenue generated, it cost 9 cents to provide public services to the farmland. This result is generally consistent with those found in both Dunn and Westport. Behind swamp and forest lands, which generate virtually no costs, farmland remains the least costly type of land use for every dollar of revenue generated.

Table 13: Town of Perry: Cost of Service Ratios (including education)

Land Use	Residential	Ag.-Residential	Commercial	Ag. Land	Swamp/Forest
Revenues	396,734	610,408	4,489	45,239	335
Expenditures	474,863	739,584	4,662	17,033	1,706
Ratio	\$1 : 1.20	\$1 : 1.21	\$1 : 1.04	\$1 : 0.09	\$1 : 0.04

Table 14 shows that agriculture, including homes, had a positive fiscal impact on the town, but it is nearly at a break-even point.

Table 14: Town of Perry: Cost of Service Ratios (including education and combining agricultural land and residences)

Land Use	Residential	Commercial	Agriculture (land and Residences)	Swamp/Forest
Revenues	396,734	4,489	791,044	335
Expenditures	474,863	4,662	756,617	1,706
Ratio	\$1 : 1.20	\$1 : 1.04	\$1 : 0.96	\$1 : 0.04

Table 15 shows the revenue-cost ratios from the town perspective only. As was the case in Westport, the commercial land use ratio changed somewhat due to the exclusion of the revenues generated by these uses that fund school costs. Agriculture had a positive fiscal impact. It cost 92 cents to provide services to farmland and farm residences for every dollar of revenue generated from them.

Table 15: Town of Perry: Cost of Service Ratios (excluding education)

Land Use	Residential	Commercial	Agriculture (land and residences)	Swamp/ Forest
Revenues	82,565	3,912	156,977	8,545
Expenditures	101,143	4,662	144,830	1,706
Ratio	\$1.00:1.19	\$1.00: 1.19	\$1.00 : .92	\$1.00: .20

Table 16 illustrates the COCS ratios from the perspective of the school districts serving the town of Perry. Again, because school district expenses are attributed only to residences, although all land uses contribute revenues to schools, the fiscal impact of residential land uses in negative and the others are positive. As was the case in both Dunn and Westport, educational services provided to agriculture cost less than the revenue generated by the farms and their homes. Agriculture, commercial and swamp and forest land uses subsidize the residences.

Table 16: Town of Perry: Cost of Service Ratios for Education

Land Use	Residential	Commercial	Agriculture	Swamp/ Forest
Revenues	314,169	577	634,067	36,694
Expenditures	373,720	0	611,787	0
Ratio	\$1.00:1.19	\$1.00: 0	\$1.00 : .96	\$1.00: 0

VI. DISCUSSION AND IMPLICATIONS

Table 17 below shows a summary of the results for all towns. The ratios for all three towns are quite similar, with the exception of those for commercial properties. The few commercial properties that are located in the town of Perry are generally lower valued properties that do not generate as much in property taxes as do those in the Towns of Westport or Dunn. In every town, swamp and forest land represent the least costly type of land use for every dollar of revenue generated. Farmland and industrial lands are also net contributors to each of the towns. Across all three towns, farmland cost between 9 and 16 cents for every dollar of revenue generated. Farmland requires few town services and places little pressure on infrastructure, resulting in farmland generating more revenues than it costs to maintain. Residences and agricultural residences generate less in revenue than they cost the town and school district to serve. Again, the residences are the high demanders of public services. Although residential development may expand the tax base, according to these results, the tax revenue associated with the developments were offset by even larger increases in public services provided to the developments.

The ratios below represent a snapshot in time that provide a different perspective on the contributions of different land use types to communities. These results are not predictive and should not be used to predict the impact of future developments, as they represent revenue-cost ratios for 1996 only. They also represent average ratios within land use categories. In terms of residential land uses, the ratios do not distinguish between single family homes and apartment buildings, for example.

Table 17: Summary of Results (including education)

Town	Residential	Ag-Residential	Commercial/Industrial	Ag-Land	Swamp/Forest
Dunn	\$1 : 1.02	\$1 : 1.09	\$1 : 0.55	\$1 : 0.16	\$1 : 0.10
Perry	\$1 : 1.20	\$1 : 1.21	\$1 : 1.04	\$1 : 0.09	\$1 : 0.04
Westport	\$1 : 1.11	\$1 : 1.23	\$1 : 0.27	\$1 : 0.13	\$1 : 0.08

The ratios found in the three towns do fit the general pattern of previous COCS studies. Table 18 illustrates a summary of results when farmland is combined with its associated homes. The buildings and homesteads on farms are generally treated as residential properties in most COCS reports; so we feel our results provide a more accurate picture of the fiscal impact of agriculture. Despite this methodological innovation, agriculture still shows a positive fiscal impact on the three towns, but it is nearing the break-even point in both Dunn and Perry.

Table 18: Revenue-Cost Ratios (including education and combining farmland and residences)

Town	Residential	Commercial/ Industrial	Agriculture (land and residences)	Swamp/ Forest
Dunn	\$1 : 1.02	\$1 : 0.55	\$1 : 0.91	\$1 : 0.10
Perry	\$1 : 1.20	\$1 : 1.04	\$1 : 0.96	\$1 : 0.04
Westport	\$1 : 1.11	\$1 : 0.27	\$1 : 0.74	\$1 : 0.08

COCS studies do not suggest that any one type of land use is better or worse than another. They do not suggest that a town should follow a particular growth strategy. They simply provide the community with a baseline of information about the fiscal affects of different types of land use. They are meant to prompt discussion within communities on the role of different land use types in the planning process and to demonstrate the value of having a diverse tax base. A balance of land use types is necessary for the long-term health of any community as these ratios show how different land use types subsidize others. Although these ratios do not measure the costs of change, they do show that both revenues and costs are important in considering development. Of course, land use and development has consequences beyond fiscal, which these studies fail to address. Development poses challenges in terms of the impacts it may have on the environment, the social atmosphere of the town, and traffic patterns. A more complex study is needed to illustrate the comprehensive effects of different land use types.

VII. APPENDIX

A. Fiscal Profiles

Table A-1: Town of Dunn 1995 Assessed Value by Land Use Class

Real Estate Class	Value of Land	Value of Improvements	Total Value	Percent of Total
Residential	69,549,120	121,869,830	191,418,950	91.7%
Commercial	1,342,700	2,966,800	4,309,500	2.1%
Manufacturing				0.0%
Agricultural	7,138,400	5,337,700	12,476,100	6.0%
Swamp and Waste	195,500		195,500	0.1%
Forest Lands	381,600		381,600	0.2%
Total	78,607,320	130,174,330	208,781,650	100.0%

Table A-2: Town of Perry 1995 Assessed Value by Land Use Class

Real Estate Class	Value of Land	Value of Improvements	Total Value	Percent of Total
Residential	1,126,980	4,380,300	5,507,280	23.3%
Commercial	9,200	27,500	36,700	0.2%
Manufacturing				0.0%
Agricultural	9,283,100	7,579,100	16,862,200	71.2%
Swamp and Waste	12,900		12,900	0.1%
Forest Lands	1,248,700		1,248,700	5.3%
Total	11,680,880	11,986,900	23,667,780	100.0%

Table A-3: Town of Westport 1995 Assessed Value by Land use Class

Real Estate Class	Value of Land	Value of Improvements	Total Value	Percent of Total
Residential	75,042,800	99,522,700	174,565,500	80.0%
Commercial	5,125,300	14,592,600	19,717,900	9.0%
Manufacturing	790,300	4,174,400		0.0%
Agricultural	12,709,800	5,896,500	18,606,300	8.5%
Swamp and Waste	167,500		167,500	0.1%
Forest Lands	136,500		136,500	0.1%
Total	93,972,200	124,186,200	218,158,400	100.0%

Table A-4: Town of Dunn 1996 Revenues

Revenue Source	Percent of Total Revenue
Taxes	35.9%
Intergovernmental Revenue	30.5%
Licenses/Permits	2.7%
Fines	1.0%
Public Charges	13.5%
Intergovernmental Charges	0.0%
Other	16.4%
Total Revenues	100.0%

Table A-5: Town of Dunn 1996 Expenditures

Expenditure	Percent of Total Expenditures
General Government	16.9%
Public Safety	16.4%
Public Works	35.5%
Health/Human Services	3.8%
Culture/Education	1.2%
Conservation/Development	0.5%
Capital Outlay	20.6%
Debt Service	5.1%
Total Expenditures	100.0%

Table A-6: Town of Westport 1996 Revenues

Revenue Source	Percent of Total Revenue
Taxes	46.1%
Intergovernmental Revenue	24.8%
Licenses/Permits	5.5%
Fines	2.3%
Public Charges	10.8%
Intergovernmental Charges	2.6%
Other	7.8%
Total Revenues	100.0%

Table A-7: Town of Westport: 1996 Expenditures

Expenditure	Percent of Total Expenditures
General Government	19.2%
Public Safety	14.1%
Public Works	59.4%
Health/Human Services	0.2%
Culture/Education	0.7%
Conservation/Development	2.4%
Capital Outlay	1.4%
Debt Service	2.7%
Total Expenditures	100.0%

Table A-8: Town of Perry 1996 Revenues

Revenue Source	Percent of Total Revenue
Taxes	47.8%
Intergovernmental Revenue..	46.4%
Licenses/Permits	1.7%
Public Charges	0.9%
Intergovernmental Charges	0.1%
Other	3.1%
Total Revenues	100.0%

Table A-9: Town of Perry 1996 Expenditures

Expenditure	Percent of Total Expenditures
General Government	21.3%
Public Safety	8.7%
Public Works	55.8%
Health/Human Services	0.6%
Capital Outlay	0.4%
Debt Service	13.2%
Total Expenditures	100.0%

B. Methods of Allocation

Table A-10: Town of Dunn: Methods of Allocation of Expenditures Among Land Use Categories

Expenditure	Allocation Method
General Government	General default percentage
Public Safety:	
Law Enforcement	Police records; detail of police calls to different land use categories.
Fire Protection/Ambulance	Population and property value (based on nature of fire and ambulance contracts).
Inspection	Residential
Public Works:	
Street Maintenance	Road default based on trip generation rates
Street Lighting	Residential
Refuse/Garbage Collection	Local records detailing who receives these services among residences and ag residences.
Solid Waste Disposal	Residential
Recycling Program	Local records detailing who receives these services among residences and ag. residences.
Health/Human Services:	
Aging Services	Residences and ag. residences based on number of dwelling units in each category.
Cemetery	Residences and ag. residences based on number of dwelling units in each category.
Culture/Recreation:	
Culture	Residential
Parks	Residences and ag. residences based on number of dwelling units in each category.
Conservation/Development	General default percentage
Debt Service:	
Principal on Debt	Residential
Highway Interest	Road default based on trip generation rates
Storm Sewer Interest	Residential, ag. residential and commercial based on relative value.
Other fiscal charges	General default percentage

Table A-11: Town of Dunn: Methods of Allocation of Revenues Among Land Use Categories

Revenue Source	
Taxes:	
General Property Taxes	Value by land use category * town mill rate
Mobile Home Fees	Residential
Forest Crop Tax/Woodland Tax	Forest
Delinquent Taxes	Residential
Special Assessments	Residential
Intergovernmental Revenues:	
Federal Payments	General default percentage
State Shared Revenues	Residences and ag. residences based on number of dwelling units in each category
Fire Insurance Tax	General default percentage
Transportation Aids/Local Road Program	Road default based on trip generation rates
Payment for Municipal Services/PILT/Aids on State Lands	Exempt
Forest Cropland Aid	Forest
Highway/Bridge Aid	Road default based on trip generation rates
Licenses and Permits:	
Business Licenses	Commercial
Non-business Licenses	Residences and ag residences based on number of dwelling units in each category
Building Permits/Inspections/Other Permits	Residential, based on local records
Fines and Penalties:	
Law/Ordinance Violations	All land use categories, based on local police records
Highway/Property Damage	Road default based on trip generation rates
Public Charges:	
General Government Fees	General default percentage
Refuse Garbage Collection/Recycling Fees	Local records detailing who receives these services among residences and ag. residences.
Solid Waste Disposal/Cemetery/Park Fees	Residences and ag residences based on number of units
Intergovernmental Charges	General default percentage
Miscellaneous Revenue:	
Interest Income/Donations/Refunds	General default percentage
Sale of Equipment/Insurance Recoveries	Road default, based on trip generation rates
Sale of Recyclable Materials	General default percentage
Proceeds From Debt	General default Percentage