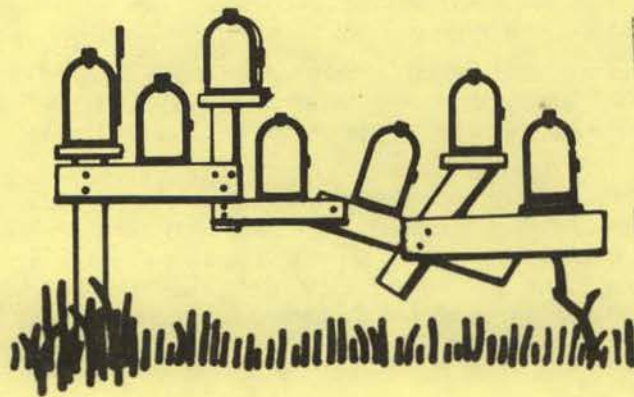


# Residential Growth

## Its Benefits and Costs to the Local Community



LIBRARY

JUN 17 1983

UNIVERSITY OF IDAHO



*Cooperative Extension Service*

UNIVERSITY OF IDAHO

*College of Agriculture*

## Contents

Introduction .....	3
Information Sources .....	5
Calculating Community Income — Private Sector .....	6
Calculating Municipal Government Revenue (Excluding Schools) .....	7
Calculating County Government Revenue (Excluding Schools) .....	8
Calculating School District Revenue .....	9
Calculating Costs to Municipal Government (Excluding Schools) .....	10
Calculating Costs to County Government .....	12
Calculating Costs to School District .....	14
Summarizing Community Revenues and Costs .....	15
References .....	15

This is one of eight bulletins supported by Title V of the Rural Development Act of 1972 on estimating costs of public services in various size Idaho communities. Services covered in the series are:

- Education
- Fire Protection
- Police Protection
- Sewage Collection and Treatment
- Sheriff Protection
- Solid Waste Disposal
- Water Supply

This publication outlines a method of estimating your community's costs and revenues caused by population growth.

A worksheet for estimating costs of each service area is designed to facilitate citizen use. The standards are usually expressed in terms of state averages and may be used as given to derive cost estimates for the services or changed to reflect a particular community's situation.

Please note that cost figures derived through this procedure are estimates of actual costs. Differences between estimated and actual costs can be caused by the use of average cost figures, differences between the assumed and actual situations, topography, community development pattern, etc. Thus, the concerned citizen should use the formats listed in the bulletins but should substitute local costs and population figures whenever possible.

### About the Authors

N. L. Meyer is Extension economist in the Department of Agricultural Economics and Applied Statistics, University of Idaho, Moscow. N. R. Rimbey is Extension range economist in the University of Idaho Cooperative Extension Service district office at Boise.

# Residential Growth

## Its Benefits and Costs to the Local Community

N. L. Meyer and N. R. Rimbey

This publication outlines a method for estimating public and private sector revenues and required public sector expenditures resulting from new residential construction in a community or county. Revenue is estimated for the private sector, municipal government, county government and school district. Expenditures are estimated for the municipal government, the county government and the school district.

Using this method, a net balance is estimated for governments of municipalities, counties and school districts. These net balance estimates can help pinpoint policy changes needed to adjust the local net balance. Then taxes, tax rates and/or service fees can be adjusted to redistribute the costs and revenues to fit the community's goals.

With the estimates of costs and revenues, local government officials and concerned citizens can see the economic and fiscal implications of decisions concerning growth.

### Introduction

Community leaders, elected officials and members of planning and zoning boards are often required to recommend approval or disapproval of a proposed development plan. Such persons must decide whether the proposed development makes the best use of the land from the community's point of view.

While the transformation of rural land into urban and suburban use means new revenue sources, it also means new demands for community facilities and services. The per unit cost of providing services to new dwellings will vary according to building density and types of services. For example, it costs more to provide single family detached housing units with roads, utilities and school services than to provide the same services to an equal number of units arranged in clusters of walk-up apartments.

Distribution of costs can be measured directly by who pays for the services. Revenues can be measured directly by who receives income from the services and indirectly through changes in tax burden and who gets the new income which resulted from growth.

While the economic impact of new development on a community is not the only factor in determining whether a proposed development should be encouraged or discouraged, it is the major one. Decision makers must also assess their community's public school capacities; their sewer treatment and water supply facilities; their police, sheriff and fire protection capabilities; and growth impacts on other public facilities and services. Officials need information when considering if the community can afford to extend water and sewer lines, build parks and expand police or fire protection in conjunction with new development.

### Economic Multipliers

Sales made outside the community or county, employment created by these sales and personal income generated by new dollars all create interaction within the economy. The concept of economic multipliers arises out of this interaction between local businesses, local government agencies and households (local labor force). A multiplier is a single number representing the total effect of a change in the local economy resulting from a one unit change within a given business sector.

**Sales Multipliers** — measure the amount of business activity generated by a \$1.00 change in sales to nonarea residents. This \$1.00 change is a “new” dollar brought into the local economy by the sale of goods and services to a person or business who is not a resident of the community or county.

For example, a visitor spends \$100 at a local motel/restaurant. Part of that \$100 goes to the local grocer to buy additional food for the restaurant, some goes to the local gas and electric companies to pay utility bills, part goes to local residents for wage and salary payments, some goes to local government for taxes and, hopefully, some will be retained as profit. The individuals and firms receiving this \$100 spend part of their share on purchases from other local businesses and for wage and salary payments for their employees. These individual wage earners, in turn, spend their money on food, clothing, recreation and household items. This cycle continues until all the original \$100 has left the local economy. The end result is that **total sales** in the local economy are **greater than** the initial \$100 — hence the sales multiplier.

To derive the maximum benefit from these “new” dollars, they must be kept circulating among local businesses and households. The numerical size of a sales multiplier depends chiefly upon the rate that dollars are spent outside or “leak” from the local economy.

**Employment Multipliers** — result because a given number of employees are required to transact a given volume of sales. This employment/sales ratio varies by type of business activity. Additional sales in one sector will stimulate additional sales and consequently additional employment throughout the economy. The size of each employment multiplier is dependent on trade patterns, the importance of labor in the productive process and the relative productivity of labor with respect to the rest of the economy’s labor force.

**Personal Income Multipliers** — As with employment multipliers, personal income multipliers are correlated with sales patterns within the community. Personal income multipliers indicate the change in total community personal income that results from a \$1.00 change in personal income within a given sector. However, one must remember that additional personal income can only be generated through additional sales.

Local multiplier size depends on use of local inputs, labor productivity and trade patterns. A rule of thumb is to be suspicious of any multiplier in excess of 2. Another rule of thumb is that the more inputs from local sources, the larger the multiplier.

This publication takes special note of the personal income multiplier because it is most likely to be spent in the community of residence.

## Local Consumption

Some portion of total individual income is spent within the community. This proportion is called the propensity to consume locally (PCL). Income spent locally provides new jobs and supports local services, directly or indirectly. PCL is generally about 50 percent of income.<sup>1</sup> PCL depends on the availability of desired goods and services and individual or business tastes and preferences.

Normally, the local economy loses about 20 percent of total income through federal and state taxes and insurance premiums (Darling 1976). Other income can leak out because of a lack of a competitive retail sector and/or through noncommunity purchasing of production factors for local firms. Thus, leakages occur whenever a portion of total income is spent outside the community. PCL decreases as a larger percentage of total income is spent outside the community.

## Residential Development

Growth’s effects on a community, in addition to the impact on new payrolls and people, can be divided into three broad categories: (1) impacts of the housing development, (2) socio-economic impacts of the people who move into the new housing units and (3) impacts on the community in which the new development is to be built.

**Housing** — The characteristics of a new housing development are the most obvious concern to city officials. The market value of each dwelling unit affects future property tax revenue. The proximity of the proposed site to existing streets, water and sewage lines affects initial construction costs as well as future maintenance and operation costs. New development may also affect existing road capacity to carry higher traffic volumes. The cost per living unit, for example, is usually much lower for mobile home subdivisions, high rise apartments and other high density sites than for single family detached dwellings. Another consideration is whether the developer and new homeowners provide improved roads, utilities and other services or whether these are to be jurisdictional expenses.

**Population** — Characteristics of people moving into new housing units greatly influence service costs. Young children of new residents increase the school population. The new residents’ spending

<sup>1</sup>Studies indicate PCL varies from 30 to 76 percent, with the majority in the 40 to 60 percent range (Gordon and Mulkey 1978).

patterns affect business volume and services purchased. The public sector is impacted through services demanded (water, sewer, solid waste, police and fire protection) and revenues generated (gasoline, sales and property taxes and service fees).

Decision makers must assess the capacities of schools, water and sewage systems, fire fighting and police services, the park system and of other needed services and facilities. If excess capacities exist, the new development should look more attractive than if major investment for expansion of facilities or services is required.

**Community** — The characteristics of the community in which the new development is proposed must be considered. A residential or bedroom community will be affected differently than a community with a large commercial, industrial or business base where more resources are available to cover costs. A community which acts as the main market and shopping center for a region retains more of the new residents' spendable income than a community on the fringe of a large metropolitan area (PCL is higher in the main market center).

## Information Sources

Most, if not all, the data needed to estimate development revenues and costs in your community are available from local sources. Some additional references are listed in this publication. Data on local government operations are, by law, open to public inspection in Idaho. The most important sources are:

- local banks and other financial institutions
- local businesses and industries
- county courthouse
- city clerk's office
- school district office

### Local Banks or Financial Institutions

Local financial institutions often finance part of the industrial development or handle the financing arrangements for residential construction. To do this, financial institutions need to know the value of construction, average income of new employees and the number of potential new jobs. They should also know a time sequence as to when each event, such as construction or operation, will begin and for how long the new activity will continue.

## Local Businesses

Local businesses are usually anxious to have their employees satisfied to increase worker productivity and to reduce employee turnover. To permit planning, community oriented businesses provide information on employee numbers, average pay-rolls and time frames for major changes.

## County Courthouse

The assessor's office is responsible for valuing property and identifying the boundaries of each code area within the county. Tax rates are established by budget demands of the taxing districts within the code area involved. Each code area has a number of special districts which receive revenue from property taxes. The rate for each of these entities shows where property tax revenues are presently being allocated.

The county budget shows proposed expenditures for various departments within county government. The financial report shows where revenues were expended. Dividing expenditures (or revenues) for the department or service under consideration by county population gives per capita expenditures (or revenues) for that service. Dividing expenditures (or revenues) by number of households gives per household expenditures (or revenues).

## City Clerk

The city clerk's office has budget and expenditure reports for each year. Dividing total expenditures or total revenue by total community population will give the average cost or revenue per person. Dividing total revenue or expenditures by the number of households gives the average revenue or average costs per household. Larger cities generally have budgets and revenue/expenditures for each service while smaller communities often combine several services in their budget reports.

## School District Office

Data for each Idaho school district on sources of revenue and expenditures and average daily attendance in schools are available from local school district offices and from *Financial Summaries — Idaho School Districts*, published annually by the Idaho Department of Education.

# Calculating Community Income — Private Sector

Population growth usually means more income to the private sector. People bring income from other areas through retirement payments, savings, Social Security and investment returns. New jobs expand payrolls and spending power by increasing income.

Use the following equations to estimate additional income to the business community from new development. (Remember, these estimates may be influenced by consumer purchasing patterns, producer purchasing patterns and factors such as distance to alternative spending locations.) Definitions of the terms follow the equations.

## New Revenue to the Community

$$A. \frac{\text{New household income to community}}{\text{Estimated average household income}} = \left( \frac{\text{Estimated average household income}}{\text{Number of new households}} \right)$$

$$B. \frac{\text{Total new income to the community}}{\text{(A) New household income to the community}} = \left( \frac{\text{(A) New household income to the community}}{\text{Community income multiplier}} \right)$$

## Definitions and Data Sources

**1. Estimated Average Household Income** — Major employers in the community may provide average income figures for new employees (Remember to include all wage earners when estimating household income). Also, mortgage departments of local banks or savings and loan institutions can provide an estimate of income needed to buy or rent differently priced housing. A rule of thumb for purchased homes is that 25 percent of the household's gross income (before taxes) can be used for loan payments, local taxes and insurance. If you know the value of the new residences, you can estimate the family incomes needed to pay for them.

**2. Number of New Families** — Contact employers and/or developers for estimates. Employers will know the number of employees they expect to hire and the expected annual salaries. This also helps to estimate the average new household income. Developers can also estimate, from past experience, what income levels will be for similar types of residential developments.

**3. Propensity To Consume Locally** — PCL is the proportion of each dollar of personal income spent in the community. Generally, smaller communities have a lower PCL than larger communities. This range is generally between .6 and .3. If no number is available, use .5, or conduct a survey of local citizens' purchase locations to determine the correct value. (Contact your local Cooperative Extension office if you need assistance.)

**4. Community Income Multiplier** — The total amount by which income in the community's economy will increase when one person's income increases by \$1.00 is usually between 1.0 and 2.5, depending on the portion of services and inputs purchased locally. A general rule of thumb is a community multiplier of 1.3 for a PCL of .5 for individuals and businesses.<sup>2</sup>

<sup>2</sup>Local household income multiplier is calculated as:

$$\text{Multiplier} = \frac{1}{1-(\text{PCL} \cdot \text{PSY})} = \frac{1}{1-(.5 \times .5)} = \frac{1}{.75} = 1.3$$

Where PCL is the propensity to consume locally and PSY is the total income in the community resulting from \$1.00 of local consumption expenditure (Gordon and Mulkey 1978).

## Calculating Municipal Government Revenue (Excluding Schools)

Revenue for municipal government comes from property tax,<sup>3</sup> federal and state revenue sharing

<sup>3</sup>For new construction in Idaho, an occupancy tax is prorated for the remainder of the first year of occupancy. This rate applies until residences are put on the tax rolls for normal property tax payment collection.

schemes, service charges, licenses and fees. Some revenue sources are controlled by the local government and are influenced by population growth.

You can estimate revenue for municipal government from added development by using the following equations:

### Municipal Government Revenue

$$\begin{aligned}
 \text{A. } & \frac{\text{Property tax revenue from new housing}}{\text{Average appraised value of new housing units}} = \left( \frac{\text{Local tax rate per \$1.00 assessed valuation for municipal government}^4}{\text{Number of new housing units}} \right) \\
 \text{B. } & \frac{\text{Utility revenue for new housing units}}{\text{Yearly average household utility bill}} = \left( \frac{\text{Number of new households}}{\text{Number of new households}} \right) \\
 \text{C. } & \frac{\text{Other revenue}}{\text{Per capita municipal revenue (excluding property and utility revenues)}} = \left( \frac{\text{Number of new residents}}{\text{Number of new residents}} \right) \\
 \text{D. } & \frac{\text{Total annual revenue to municipal government}}{\text{(A) Property tax revenue} + \text{(B) Utility revenue} + \text{(C) Other revenue}}
 \end{aligned}$$

<sup>4</sup>The State Tax Commission requires tax rates to be listed as cents per \$1.00 of assessed valuation.

### Definitions and Data Sources

**1. Appraised Value of New Housing Units** — Contact developers or financial institutions to determine the number and expected prices of new housing units. The local assessor estimates the value of the dwelling. The assessor's values should be based on actual values and should be within a reasonable range.

**2. Local Tax Rate** — Available from the local assessor or clerk at the courthouse and is given as cents per \$1.00 assessed valuation.

**3. Number of New Housing Units** — The local assessor or building inspector will know how many have been built, and local developers should be able to provide an estimate of the number they expect to build. The number of new sewer or water hookups is also a good estimate. Be sure to adjust for mobile home parks and apartment buildings which may have a number of households on one sewer or water hookup.

**4. Number of New Households** — Estimates should be based on what developers expect, land platted or previous experience. Unusual factors

such as a new industry locating in the vicinity should also be considered. A new industry can provide estimates of the number of employees expected to be hired and what proportion will be local residents.

**5. Annual Average Household Utility Bill** — The revenue estimate can be based on utility revenues from comparable households presently in the community. You can make a rough estimate of average revenue per household by dividing the total annual revenue from services (sewer, water, garbage, etc.) in the annual report by the number of hookups, stops or households.

**6. Number of New Residents** — The number of new households multiplied by the average number of persons in each household (average number of persons per household in Idaho for 1980 was 2.85 persons) provides an estimate of new residents in the community.

**7. Per Capita Municipal Revenue** — The city treasurer's financial report should have this information. This figure is calculated by taking the revenue accrued to the city each year, subtracting revenue from property taxes and utilities and then dividing the remainder by city population.

# Calculating County Government Revenue (Excluding Schools)

County government revenue comes from taxes, fees and fines, licenses, state liquor apportionments, federal entitlements, penalty and interest on taxes, earning on investments and other sources. Some revenues are controlled by county government and other by state or federal government.

You can estimate county government revenue from added development by using the following equations (specific definitions follow the equations). For items B, C, D, E, F, G and H, total revenue from each source is reported in the annual audit report. Per capita revenue for each item is calculated by dividing total revenue by total county population for the same period.

## County Government Revenue (Excluding Schools)

- A.  $\frac{\text{Property tax revenue from new housing}}{\text{Average appraised value of new housing units}} = \left( \frac{\text{Local tax rate per \$1.00 assessed valuation}}{\text{Number of new housing units}} \right)$
- B.  $\frac{\text{Fees and fines}}{\text{Revenue per capita}} = \left( \frac{\text{Number of new residents}}{\text{Revenue per capita}} \right)$
- C.  $\frac{\text{Licenses}}{\text{Revenue per capita}} = \left( \frac{\text{Number of new residents}}{\text{Revenue per capita}} \right)$
- D.  $\frac{\text{State liquor apportionments}}{\text{Revenue per capita}} = \left( \frac{\text{Number of new residents}}{\text{Revenue per capita}} \right)$
- E.  $\frac{\text{Federal entitlements}}{\text{Revenue per capita}} = \left( \frac{\text{Number of new residents}}{\text{Revenue per capita}} \right)$
- F.  $\frac{\text{Penalty and interest on taxes}}{\text{Revenue per capita}} = \left( \frac{\text{Number of new residents}}{\text{Revenue per capita}} \right)$
- G.  $\frac{\text{Earnings on investments}}{\text{Revenue per capita}} = \left( \frac{\text{Number of new residents}}{\text{Revenue per capita}} \right)$
- H.  $\frac{\text{Other revenue sources}}{\text{Revenue per capita}} = \left( \frac{\text{Number of new residents}}{\text{Revenue per capita}} \right)$
- I.  $\frac{\text{Total annual revenue to county government from new residents}}{\text{Revenue per capita}} = \frac{\text{(A) Property tax revenue}}{\text{Revenue per capita}} + \frac{\text{(B) Fees and fines}}{\text{Revenue per capita}} + \frac{\text{(C) Licenses}}{\text{Revenue per capita}} + \frac{\text{(D) State liquor apportionments}}{\text{Revenue per capita}} + \frac{\text{(E) Federal entitlements}}{\text{Revenue per capita}} + \frac{\text{(F) Penalty and interest on taxes}}{\text{Revenue per capita}} + \frac{\text{(G) Earnings on investments}}{\text{Revenue per capita}} + \frac{\text{(H) Other revenue sources}}{\text{Revenue per capita}}$

### Definitions

1. **Fees and Fines** — Revenue from traffic violations, weed control violations, services provided by county offices and title registrations.

2. **Licenses** — Permits to operate various types of businesses or services.

3. **State Liquor Apportionments** — Revenue to the county from liquor taxes.

4. **Federal Entitlements** — Timber sales revenue, federal payment in lieu of taxes, revenue sharing

and mineral extraction revenues.

5. **Penalty and Interest on Taxes** — Revenue from late payments of taxes and penalty fees for late payment of taxes.

6. **Earning on Investments** — Interest income from funds invested for various periods of time until needed.

7. **Other Revenue Sources** — Various other revenue sources such as state and federal programs, civil defense and insurance dividends.



## Calculating School District Revenue

Revenue for local school districts comes from property taxes, several state and federal programs and some local fees. Some amounts are based on

population, some are based on tax effort and others are competitively awarded.

You can estimate your local school district's revenue by using the following equations:

### School District Revenue

A.  $\frac{\text{Property tax revenue from new housing for schools}}{\text{Average appraised value of new housing units}} = \left( \frac{\text{Tax rate per \$1.00 of assessed valuation}}{\text{Number of new housing units}} \right)$

B.  $\frac{\text{State aid from new students}}{\text{Number of new students}} = \left( \frac{\text{State aid per average daily attendance}}{\text{Number of new students}} \right)$

C.  $\frac{\text{Federal aid from new students}}{\text{Number of new students}} = \left( \frac{\text{Federal aid per average daily attendance}}{\text{Number of new students}} \right)$

D.  $\frac{\text{Total annual revenue to school district}}{\text{(A) Property tax revenue}} + \frac{\text{(B) State aid for new students}}{\text{(C) Federal aid from new students}}$

### Definitions and Data Sources

1. **School Property Tax Rate** — Available from the local assessor or clerk or from *Tabulation of Tax Levies for School Purposes*, State Superintendent of Public Instruction.

2. **Number of New Students** — This estimate is based on expected characteristics of new resident households. For 1980, the average household was 2.85 persons, of which .65 person was a primary or secondary school student.

3. **State Aid Per Average Daily Attendance** —

Consult the official who does the school district's accounting. Average daily attendance is also available from the Idaho Department of Education, *State Summary of the Foundation Educational and Transportation Program*. Total state and federal aid to each school district can be calculated from information in *Financial Summaries — Idaho School Districts*, Idaho Department of Education.

4. **Federal Aid Per Average Daily Attendance** — Same sources as 3 above. Divide the total federal aid from all sources by the average daily attendance to get the federal aid per average daily attendance.

# Calculating Costs to Municipal Government (Excluding Schools)

Costs to local government arise from provision of general government administrative services plus specific services such as roads, solid waste disposal, sewer, fire and police or sheriff protection. Some services such as legal records, the judicial system, police protection and tax collection are mandated

by the state; others are provided at the discretion of the local governmental unit.

You can estimate costs to municipal government (excluding schools) by using the following equations:

## Costs to Municipal Government

- A.  $\frac{\text{Total sewage disposal costs to new households}}{\text{Annual sewage disposal cost per household}} = \left( \frac{\text{Annual sewage disposal cost per household}}{\text{Number of new households}} \right) + \frac{\text{Annual community cost of sewer line extension}}{\text{Number of new households}}$
- B.  $\frac{\text{Total water service costs to new households}}{\text{Annual water cost per household}} = \left( \frac{\text{Annual water cost per household}}{\text{Number of new households}} \right) + \frac{\text{Annual cost of water main extension}}{\text{Number of new households}}$
- C.  $\frac{\text{Total solid waste disposal costs to new households}}{\text{Annual cost for solid waste disposal per household}} = \left( \frac{\text{Annual cost for solid waste disposal per household}}{\text{Number of new households}} \right) + \frac{\text{Annual cost of solid waste system expansion}}{\text{Number of new households}}$
- D.  $\frac{\text{Total fire protection costs to new households}}{\text{Annual fire protection cost per household}} = \left( \frac{\text{Annual fire protection cost per household}}{\text{Number of new households}} \right) + \frac{\text{Annual cost of new equipment and facilities for expansion}}{\text{Number of new households}}$
- E.  $\frac{\text{Total police protection costs to new households}}{\text{Annual police protection cost per household}} = \left( \frac{\text{Annual police protection cost per household}}{\text{Number of new households}} \right) + \frac{\text{Annual cost of system expansion}}{\text{Number of new households}}$
- F.  $\frac{\text{Total annual new miles of road construction and maintenance costs}}{\text{Annual cost of road main tenance per capita}} = \left( \frac{\text{Annual cost of road main tenance per capita}}{\text{Number of new persons}} \right) + \left( \frac{\text{Annual cost per mile of road construction}}{\text{Number of new miles of road construction}} \right)$
- G.  $\frac{\text{Other general government cost}}{\text{Average cost of government per household}} = \left( \frac{\text{Average cost of government per household}}{\text{Number of new households}} \right)$
- H.  $\frac{\text{Total annual costs to local government}}{\text{Total annual costs to local government}} = \frac{\text{(A) sewer system}}{\text{Total annual costs to local government}} + \frac{\text{(B) Water system}}{\text{Total annual costs to local government}} + \frac{\text{(C) Solid waste system}}{\text{Total annual costs to local government}} + \frac{\text{(D) Fire protection}}{\text{Total annual costs to local government}} + \frac{\text{(E) Police protection}}{\text{Total annual costs to local government}} + \frac{\text{(F) Road construction and maintenance}}{\text{Total annual costs to local government}} + \frac{\text{(G) General government}}{\text{Total annual costs to local government}}$

## Definitions and Data Sources

### 1. Annual Sewage Cost Per New Household —

Based on costs for a comparable unit already existing in the community. You can calculate this by dividing the total cost of sewer plant operation by the number of household hookups.

### 2. Annual Cost of Sewer Water Line Extension

— Amortized rate at which expansion financing bonds are paid off. In cases where no line extension is necessary, this value would be zero. If line extension is necessary, the city engineer can estimate costs.

### 3. Annual Cost of Sewage Treatment Plant and Treatment Facility Expansion —

Amortized rate at which expansion financing bonds are paid off. In cases where no expansion is necessary, this value would be zero. If plant expansion is necessary, the city engineer can estimate costs.

### 4. Annual Water Cost Per Household —

Based on water costs for a comparable unit already existing in the community. Divide total cost of operation by the number of hookups to estimate the cost per household or hookup.

### 5. Annual Solid Waste Costs Per Household —

The cost per household of solid waste disposal, recycling programs, etc. The total cost of solid waste program divided by the number of stops or households will give the annual cost per household.

### 6. Annual Fire Protection Costs Per Household

— The total cost of operating and maintaining fire protection service divided by the number of households gives the cost per household. If new equipment is required, an amortization of investment cost needs to be added to the operating cost. Dividing by population provides the cost per capita.

### 7. Annual Police Protection Costs Per Household —

The total annual cost of labor, facilities and equipment divided by the number of households protected.

### 8. Annual Cost of Road Maintenance Per Capita

— You can calculate this by dividing the total annual expenditures for road maintenance by the number of persons in the local jurisdictional unit.

### 9. Annual Cost Per Mile of Road Construction

— Varies widely because of traffic types, geographical conditions and road construction standards. It is the amortized rate at which construction financing bonds are paid off. In cases where developers build roads to city or county standards, this would be zero.

### 10. Average General Government Costs Per Household (Excluding 1 through 9) —

You can calculate this by using the financial report of the local governmental unit. Subtract expenditures for 1 through 9 from the total expenditures and divide the remainder by the number of households.

## Calculating Costs to County Government

Costs to county government arise from the provision of general government plus specific services such as judicial, sheriff, detention and correction, fire protection, flood control, soil and water conservation, inspection and other protection, public ways and facilities, health and hospital care, sani-

tation, public assistance, education, recreation and others. Some services such as legal records, the judicial system, sheriff protection and tax collection are mandated by the state; others are provided at the discretion of the local governmental unit.

You can estimate costs to county government (excluding schools) by using the following equations:

### Costs to County Government

- A. \_\_\_\_\_ = ( \_\_\_\_\_ × \_\_\_\_\_ )  
 General government      Annual cost per capita      Number of new residents
- B. \_\_\_\_\_ = ( \_\_\_\_\_ × \_\_\_\_\_ ) + \_\_\_\_\_  
 Judicial      Annual cost per capita      Number of new residents      Annual cost of new facilities
- C. \_\_\_\_\_ = ( \_\_\_\_\_ × \_\_\_\_\_ ) + \_\_\_\_\_  
 Sheriff      Annual cost per capita      Number of new residents      Annual cost of new facilities
- D. \_\_\_\_\_ = ( \_\_\_\_\_ × \_\_\_\_\_ ) + \_\_\_\_\_  
 Detention and correction      Annual cost per capita      Number of new residents      Annual cost of new facilities
- E. \_\_\_\_\_ = ( \_\_\_\_\_ × \_\_\_\_\_ ) + \_\_\_\_\_  
 Fire protection      Annual cost per capita      Number of new residents      Annual cost of new facilities and equipment
- F. \_\_\_\_\_ = ( \_\_\_\_\_ × \_\_\_\_\_ ) + \_\_\_\_\_  
 Flood control, soil and water conservation      Annual cost per capita      Number of new residents      Annual cost of new facilities
- G. \_\_\_\_\_ = ( \_\_\_\_\_ × \_\_\_\_\_ )  
 Protective inspection      Annual cost per capita      Number of new residents
- H. \_\_\_\_\_ = ( \_\_\_\_\_ × \_\_\_\_\_ )  
 Other protection      Annual cost per capita      Number of new residents
- I. \_\_\_\_\_ = ( \_\_\_\_\_ × \_\_\_\_\_ )  
 Public ways and facilities      Annual cost per capita      Number of new residents
- + ( \_\_\_\_\_ × \_\_\_\_\_ )  
                                          Annual cost per unit of new facilities      Number of units in new facilities
- J. \_\_\_\_\_ = ( \_\_\_\_\_ × \_\_\_\_\_ )  
 Health and hospital care      Annual cost per capita      Number of new residents
- K. \_\_\_\_\_ = ( \_\_\_\_\_ × \_\_\_\_\_ ) + \_\_\_\_\_  
 Sanitation      Annual cost per capita      Number of new residents      Annual cost of new facilities and equipment
- L. \_\_\_\_\_ = ( \_\_\_\_\_ × \_\_\_\_\_ )  
 Public assistance      Annual cost per capita      Number of new residents
- M. \_\_\_\_\_ = ( \_\_\_\_\_ × \_\_\_\_\_ )  
 Education      Annual cost per capita      Number of new residents
- N. \_\_\_\_\_ = ( \_\_\_\_\_ × \_\_\_\_\_ )  
 Recreation      Annual cost per capita      Number of new residents
- O. \_\_\_\_\_ = ( \_\_\_\_\_ × \_\_\_\_\_ )  
 Other      Annual cost per capita      Number of new residents

P.	_____	=	_____	+	_____	+	_____
	Total cost to county government		(A) General government		(B) Judicial		(C) Sheriff
			_____		_____		_____
			(D) Detention and correction		(E) Fire protection		(F) Flood control
			_____		_____		_____
			(F) Soil and water conservation		(G) Protective inspection		(H) Other protection
			_____		_____		_____
			(I) Public ways and facilities		(J) Health and hospital care		(K) Sanitation
			_____		_____		_____
			(L) Public assistance		(M) Education		(N) Recreation
			_____		_____		_____
			(O) Other				

## Definitions and Data Sources

1. **General Government** — Expenses that cannot be allocated to specific categories. Total expenditure is divided by total population to calculate expenditure per capita.

2. **Judicial** — The cost of running the judicial and court system and other legal fees the county must expend. Total cost divided by total population gives expenditure per capita.

3. **Sheriff** — Total cost to run the sheriff's office divided by population gives cost per capita.

4. **Detention and Correction** — Includes parole counseling and work release privilege situations. Total cost is divided by county population to calculate cost per capita.

5. **Fire Protection** — Explained under municipal government.

6. **Flood Control** — Includes cost of prevention, facilities, cleanup and subsidies to encourage building practices. Total cost is divided by population to calculate cost per capita.

7. **Soil and Water Conservation** — Includes costs of soil mapping, establishing good management practices, etc. Total cost is divided by population to get cost per capita.

8. **Other Protection** — Includes building and

safety inspection, building lot enforcement, weed control and other services the county is called upon to provide.

9. **Public Ways and Facilities** — Includes roads, streets and bridges along with parks and other public buildings. Total cost is divided by population to give cost per capita.

10. **Health and Hospital Care** — Includes county's share of public health service, indigent care, payments to community hospital, etc. Total cost is divided by population to give cost per capita.

11. **Sanitation** — Can include food inspection, solid waste management, water testing and animal control. Total cost is divided by population to give cost per capita.

12. **Public Assistance** — Cost to county to provide various public assistance funds. Total cost is divided by population to give cost per capita.

13. **Education** — Includes special programs such as Planned Parenthood, Cooperative Extension and other programs. Total cost divided by total population gives cost per capita.

14. **Recreation** — Cost of actual programs, running parks or public facilities.

15. **Other** — Includes all costs not included in 1 through 14. Total is divided by population to give cost per capita.

## Calculating Costs to School District

Costs to the school district include operation and maintenance, salaries, transportation, debt retirement and others. Costs depend on the number of students, options offered, student/faculty ratio and

population density. The local tax base partially determines the alternative programs offered.

You can estimate costs to the local school district by using the following equations:

### School District Costs

A.  $\frac{\text{Total operating expenses for new students}}{\text{Operating expenditure per average daily attendance}} = \left( \frac{\text{Operating expenditure per average daily attendance} \times \text{Number of new students}}{\text{Number of new students}} \right)$

B.  $\frac{\text{Total physical plant expansion cost required to serve new students}}{\text{Annual cost of amortizing a bond issue}}$

C.  $\frac{\text{Total annual cost to school district for new students}}{\text{(A) Annual operating expenses for new students} + \text{(B) Expansion expenses for new students}}$

### Definitions and Data Sources

1. **Operating Expenditures Per Average Daily Attendance** — School district business managers or superintendents can provide total operating expenditures for the school. See *Financial Summaries — Idaho School Districts* for the average daily attendance. Divide the total operating expenditures by the average daily attendance.

2. **Annual Cost of Amortizing Bond Issue** — Zero if expansion is not necessary. If expansion is required, superintendents can provide information on expansion cost and annual payments required to pay principal and interest.

## Summarizing Community Revenues and Costs

New revenue to the community generally increases local sales, personal income and employment. Communities often consider these increases as beneficial to the local area. Some of this income will go to the private sector; another part will go to the public sector for fees, taxes and services.

Net balances for municipal government, county government and schools are important in determining if policy changes are needed. If municipal and county government balances are zero or positive, new residential growth can be accommodated without subsidies from existing residents. If the balances are negative, present residents will have to share the costs of expanding the systems to accommodate the new residents. If county and municipal balances are negative and the community insists

that new residents pay their own way, policies will have to be changed or new policies developed to reduce public costs or generate more revenue from new residents.

Eliminating a negative balance for schools is much more difficult because of federal and state requirements for equal educational opportunities for all residents. Open discrimination against new students would create law suits and potential loss of state and federal school aid. The U.S. system of primary and secondary education was established for all persons to receive an education when young. In turn, all adults are expected to support the education system throughout their income earning and property tax paying lives.

### Community Revenues and Costs — Summary

1.  $\frac{\text{Total new income to the community}}{\text{Total new income to the community from new residents (page 6, equation B)}}$  =
2.  $\frac{\text{Net balance for municipal government (nonschool)}}{\text{Revenue to municipal government from new residents (page 7, equation D)} - \text{Cost to municipal government for new residents (page 10, equation H)}}$  =
3.  $\frac{\text{Net balance for county government}}{\text{Revenue to county government from new residents (page 8, equation I)} - \text{Costs to county government from new residents (page 13, equation P)}}$  =
4.  $\frac{\text{Net balances for school district}}{\text{Revenue to school district from new students (page 9, equation D)} - \text{Costs to school district for new students (page 14, equation C)}}$  =
5.  $\frac{\text{Balance to public sector for new residences}}{\text{Net balance to municipal government (nonschool) (2 above)} + \text{Net balance for county government (3 above)} + \text{Net balance to schools (4 above)}}$  =

### References

- Bureau of Census, U.S. Dept. of Commerce. 1972. City County Data Book. p. 119.
- Darling, David L. 1976. Fiscal impacts of new residential developments on communities. *J. of Community Development Society*. Vol. 7, No. 1.
- Gordon, John and David Mulkey. 1978. Income multipliers for community impact analysis — what size is reasonable? *J. of the Community Development Society*. Vol. 9, No. 2.
- Real Estate Research Corp. 1974. The cost of sprawl — detailed cost analysis. U.S. Gov't. Print. Of., Washington, DC.

**Residential Growth: Its Benefits and Costs to the Local Community** is the first in a series of bulletins on estimating costs of public services in various size Idaho communities. Other bulletins in that series available from the University of Idaho Agricultural Information Department are as follows:

- EXT 604 Cost of Public Service: Education .....25 cents
- EXT 605 Cost of Public Service: Fire Protection .....25 cents
- EXT 606 Cost of Public Service: Police Protection .....25 cents
- EXT 607 Cost of Public Service:  
Sewage Collection and Treatment .....25 cents
- EXT 608 Cost of Public Service: Sheriff Protection .....25 cents
- EXT 609 Cost of Public Service: Solid Waste Disposal .....25 cents
- EXT 610 Cost of Public Service: Water Supply .....25 cents

Issued in furtherance of cooperative extension service work in agriculture and home economics, Acts of May 8 and June 30, 1914, in cooperation with the U. S. Department of Agriculture, Fred E. Kohl, Acting Director of Cooperative Extension Service, University of Idaho, Moscow, Idaho 83843.  
We offer our programs and facilities to all people without regard to race, creed, color, sex or national origin.