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ABSTRACT

A do-it-yourself workbook, this guide is designed to help small, rural communities estimate the impact of new industry on the local economy. Included in this workbook are: (1) an introductory section presenting impact analysis rationale, workbook directions, an exemplary analysis, and explanations re: computer analysis; (2) a list of the 45 variables to be examined from the following information sources: Chamber of Commerce; City or County Assessor; City Treasurer; Public Utilities Departments; Superintendent of Schools; Realtors; and Data from Workbook Tables; (3) data input summary sheets; (4) tables for computation of net gains (private sector impacts, municipal government impacts, and school district impacts); (5) impact on individual taxes (change in municipal property tax mill rate, change in school district mill rate, and change in taxes on average properties); (6) estimated economic impacts on new industry (benefits, costs, and net gain to the private sector, the city government, and the school district and impacts on property taxes); (7) appendices (propensity to consume locally: survey form; propensity to consume locally: research results; amortization table; state aid to education; county income multipliers; and population of communities over 1,000). (JC)

# INDUSTRIAL DEVELOPMENT:

# CITIZEN'S WORKBOOK

for

# ASSESSING ECONOMIC AND PUBLIC FINANCE IMPACTS



EMC 715

Developed pursuant to the objectives of Title V of the Rural Development Act of 1972



by

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TABLE OF CONTENTS

SECTION 1

# ASSESSING THE FUTURE IMPACT OF INDUSTRIAL DEVELOPMENT UPON A COMMUNITY

Communities in South Dakota have shown an interest in diversifying their local economy by promoting industrial development. The objectives of diversification are to help to stabilize migration patterns, increase local income and reduce tax burdens. If these objectives are to be achieved it is necessary for local citizens to assess both the feasibility and future impact of specific industries before promoting diversification. Just as certain types of industries are more feasible within the region, different types of industries may have a different economic impact upon the local economy. Although it is generally thought that industrial development is beneficial to a community and that industrial development should be promoted, certain sectors of the community may benefit at a cost to other sectors of the community.

## Small Towns Beware: Industry Can Be Costly

An article with this title appeared in the May 1976 issue of Planning.[1] The article reports research results on the impact on local economies and also on local governments of industrialization efforts in rural areas. The report on which the article is based summarized the results of research evaluating the effects of more than 700 manufacturing plants in 245 communities within 34 states, all of which located in rural areas between 1945 and 1975.[2]

The results of this research suggests that many communities over-estimate the additional revenues available from new plants while under-estimating the additional public expenditures. Public tax revenues were lower than expected because: (1) some of the payroll leaked out of the community through commuters or sales, (2) the multiplier effects were smaller than expected, (3) local government was unable to convert growth in retail sales or property valuation into tax revenues, and (4) local government gave too many concessions to new industry. The author summarizes the research results as follows:

> "In sum, then, despite sizable contributions new industry could have made to the public sector, the net gain was relatively small. In several communities, the town lost out by bringing in new industry. In contrast, there were large gains in the private sector. Judging by the experience of these 245 communities, one must question the commonly held belief that new industry will substantially relieve the fiscal burden of non-metropolitan communities."[3]

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[1] Summers, Gene, "Small Towns Beware: Industry Can Be Costly," Planning, May 1976, Vol. 42, No. 4, pp. 20-21.

[2] Summers, Gene, Sharon D. Evans, Frank Clemente, E.M. Buck, and Jon Minkoff, Industrial Invasion of Nonmetropolitan America: A Quarter Center of Experience," Praeger Publishers, New York, 1976.

[3] Summers, Planning, May 1976, p. 21.

## Why This Workbook Was Developed

While the conclusions from the above study suggest that communities should be careful to promote the right types of industrial growth and to use appropriate incentives, the results show that there are no pat answers. The impact of a firm depends on a number of characteristics of the firm and also of the community.

To estimate the impact on the local economy we need to have information on the size of the firm, the residential location of its employees, the annual income from jobs created, local spending patterns, and income multipliers. For the impact of a new firm on local government and school district, information is also needed on the local tax structure, expenditures on schools and other public services, utility costs and rates.

The model presented in this workbook is adapted from the model used by Ron E. Schaffer and Luther G. Tweeten in Economic Changes from Industrial Development in Eastern Oklahoma, Oklahoma State University, Bul. B-715, July 1974.

Since the impacts of a new firm depend on all of these variables, each firm in a given community must be analyzed individually. Data on the local community must be used. Due to the volume of data required a small research staff cannot handle more than a limited number of analyses.

This workbook provides local citizens with a method for "do-it-yourself" impact analysis. The step-by-step process that can be followed to conduct this analysis is described on page 5. Next we will show an example of the results obtained from such an analysis.

## What the Workbook Results Can Tell the Community

Table I shows the results of this type of analysis for the 3M plant in Brookings, South Dakota. This study was done in 1973 when the employment at 3M was 360 persons, by Dwight Uhrich, graduate student in the Economics Department of South Dakota State University.

### 3M's Impact on Local Economy

The net impact of 3-M on the Brookings economy was estimated to be $2,982,138 annually. The primary benefits ($1,837,112) are simply the payroll of the firm that remains in the Brookings community.

The secondary benefits were estimated to be $1,157,668. These are the result of the multiplier effect of the primary benefits. This estimate is based on a community multiplier of .630. Since some readers may not be familiar with this concept, a brief explanation follows.

A multiplier effect is the result of a chain reaction of increased spending brought about by the initial spending of the employees of the firm. The primary effect of an increased payroll in a community is the spending by the recipients of the payroll. This added spending of these consumers increases the income of the community. This process will continue and increase the income of the community although the effects of each additional expenditure will become smaller until additional effects are unnoticeable.

For example, if the payroll of a new industrial plant is $100,000 and the employees spend 60 percent or $60,000 of that within their local community, then the income of the community will increase by $60,000. If the recipients of the $60,000 spent locally by employees of the new firm also spend 60 percent

of their income locally, the income of the community will increase by an additional $36,000. Another spending cycle will increase income by an additional $21,600. Additional spending cycles will become smaller and add smaller amounts to the income of the community.

The addition of all of these increased spending increments will be some multiple of the initial payroll of the industrial plant. This multiple is called the income multiplier. Multipliers in South Dakota range between .17 and 1.23 (see pages 46 and 47). Although, theoretically the multiplier effect originates as just discussed, the actual process is more complex and involves leakages from the spending stream.

Primary income lost because the 3-M plant came to Brookings ($7,755) measures the lost income due to jobs vacated, and not refilled as a result of the new employment opportunities at 3-M. The secondary income lost ($4,887) incorporates the multiplier effect of the primary income lost.

Thus the annual net gain to the local private economy was $2,982,138 ($2,994,780 in benefits minus $12,642 in costs).

3M's Impact on Municipal Government and Schools

The increases in municipal property tax revenues from the plant and new homes built as a result of expanded employment were $45,430 and $5,681 respectively. Other revenues of $107,548 include revenues from local taxes and user fees other than utilities, and real property taxes.

The utility bills for 3M and new residents are not included as additional revenues since these were off-set by the same level of costs to the city. If these had not been the same it would have been necessary to include them.

These changes resulted in a net annual gain to city government of $45,905.

Changes in the school district's tax revenue and state and federal aid are also shown in Table 1. They exceeded the additional costs by $94,678.

If the net gains to the local economy, the municipal government and school district are summed the annual net gain totals $3,122,721.

## Ballpark Estimates

The above estimates for the 3M plant are only ballpark estimates. In using this procedure to project the impact of prospective firms it is necessary to use several estimates for some variables. The most crucial ones for handling in this fashion are described in Section II.

Secondary impacts on municipal government and school districts are not included in this model. For example, property taxes might increase for existing homes as new firms move in. This can stem from increased competition for housing driving home values upward or from improvements in existing homes due to higher personal incomes. On the expenditure side there may be demands to upgrade the quality of public services as income levels increase. While both of these may be important factors the estimation procedures available are too crude to allow their inclusion.

Estimates of the additional costs to local government and school districts are made on the assumption that the additional costs of providing services to a new resident are equal to the average cost of providing services to a current resident. In some cases there may be excess capacity in the school system or public service so that no additional costs will be incurred. In others the additional cost will exceed the average costs. Short of extremely detailed studies of each service there is no alternative but to use the average costs as an estimate of the additional costs.

Occasionally the results of this model will differ from what you feel is correct or what you had hoped to see. In this case there are three options: (1) accept the results, (2) ignore this analysis completely, or (3) investigate the reason for the results and see if improvements can be made on the data used.

While there are aspects of this model which are simplifications of the real world and thus yield only ballpark answers, this is the best available unless additional work is done to improve the estimates. We strongly encourage you to make improvements if you are dissatisfied.

## Once You Know, So What?

Once the analysis is completed what difference does it make? South Dakota communities have several means of encouraging industry to select their community. Some of these are:

1. Erection of speculative buildings.
2. Establishment of municipally owned industrial sites.
3. Five year discretionary taxation on new structures or additions.

Each of these either requires funds from local tax revenues or reduces the taxes which could be collected (provided, of course, that the firm moves into the area).

By knowing the approximate impact of a firm on your local economy, city government, and school district you can determine the degree to which it is wise to give a firm a tax break or other assistance. Undoubtedly many communities are not using these tools aggressively enough while others have gone overboard. What's the case in your community?

## How To Use The Workbook

In section II the information needed to compute industrial impacts are described. After you've read this chapter carefully visit the appropriate local officials to obtain the information needed. This information should be filled out in the data input summary sheets found in Section III. These data are then used in the Computation Tables in Section IV. Assuming the quality of governmental service remains unchanged Section V shows how property tax rates will be affected. Finally, the results can be summarized in Section VI.

Training programs can be provided to local leaders wishing to use this workbook. Contact Industrial Impact Project, Economics Department, South Dakota State University, Brookings, S.D. 57006.

## Computerized Analysis

Some communities may wish to consider several estimates for variables such as the residential location of employees, percentage of payroll spent locally, or others. To facilitate the examination of these impacts under alternative

assumptions a computerized analysis is available by sending your impact summary sheets to Industrial Impact Project, Economics Department, South Dakota State University, Brookings, S.D. 57006.

Currently this service is provided without charge.

## SECTION II

## SOURCES OF INFORMATION AND DESCRIPTION OF DATA NEEDED

In this section the agencies providing the information needed for an analysis of the economic impacts of a new firm are listed. Read the description of the data needed carefully before contacting the appropriate agency. Record the data on the data input summary sheets. Once all the data have been collected the impacts can be estimated as shown in Section III.

Forty-five pieces of information are needed to estimate the impacts of a new firm. The magnitude of each of these pieces of information may vary under different conditions. Consequently each piece of information is labeled as a "variable." While the information (or data) will be constant for a given firm or city it will be variable from one firm to another. At times you may not have precise information (or data) for a variable and may wish to estimate the results using two or more reasonable estimates.

### Data from Chamber of Commerce

The following information (for firms which are considering the community) is usually known by the local chamber of commerce or local industrial development corporations.

### VARIABLE 1 - New Plant Investment

New plant investment is the amount of new investment that will be added by the firm. If the firm will move into a vacant building, only the improvements and equipment may be considered investment since the original building is already part of the tax base. This is the full and true value of the new investment that is added to the tax base. Note that the value of both real property and personal property are included in this variable.

### VARIABLE 2 - Number of New Jobs Created

If a new firm is being studied, the total number of employees should be counted. However, if a firm already in the community is expanding, only the number of new jobs should be counted.

### VARIABLES 3, 4, & 5 - Residential Location of the Employees

Local employees are persons who were living in the community at the time of the creation of the new jobs.

In-migrants are employees who move into the community because of the new employment opportunities at the firm.

Commuters are employees living outside the community where the firm is located.

The residential location of a plant's new employees is extremely difficult to determine prior to establishment of the plant. Educated guesses are necessary, however, if an estimate of the impact of the plant is to be made. Knowledge of the skills required by the firm and detailed information about the community's local labor force may help a community estimate these data. The local chamber of commerce, industrial development corporations, or rural electrification companies may be able to provide information helpful in making these estimates.

Use Several Estimates

Regardless of the procedure utilized, several estimates should be made to calculate the impacts under high and low rates of in-migration and commuters from outside the community.

| | Alternative Estimates A | B | C |
|---|---|---|---|
| VARIABLE 3 - LOCAL EMPLOYEES | | 0 | |
| VARIABLE 4 - IN-MIGRANT EMPLOYEES | 0 | | |
| VARIABLE 5 - COMMUTING EMPLOYEES | | | |
| TOTAL | | | |

For example, estimate A assumes that none of the plant's new employees moved into the community due to the plant. But estimate B assumes that all of the plant' new employment goes to either in-migrants or commuters. Generally the actual situation will be between these two extremes. Even when in-migrants to the area fill many of the jobs, not all of these persons will live in the community where the plant is located. Thus some of the new in-migrants to the area will add to the number of commuters rather than becoming in-migrants to the community.

VARIABLE 6 - Annual Income from the New Jobs

The annual income from new jobs is the average take-home wages (after taxes and other deductions) paid to employees in the new plant or the average wages of new employees at an expanded plant.

The management of the prospective plant may be willing to supply this information. The Industrial Division of the South Dakota Department of Economic and Tourism Development may also be able to assist with this data.

VARIABLE 7 - Resident's Propensity to Consume Locally

A resident's propensity to consume locally is the proportion of a local resident's annual take-home income which he will spend within the community. For example, if on the average, resident employees typically spend 72% of their annual income in the community and spend the other 28% in neighboring communities in the retail trade centers, then the average propensity to consume locally is .72. The most accurate measure of the resident's propensity to consume locally can be obtained by a local survey. A questionnaire for such a survey is included in Appendix 1. The use of questionnaires requires knowledge of sampling techniques and data processing, so appropriate specialists should be consulted before a questionnaire is mailed out.

If it is not possible to utilize a survey approach for determining the average propensity to consume locally, estimates should be obtained from informed individuals such as community merchants, and chamber of commerce. Additionally, several different calculations should be made using the high, low, and medium estimates of the propensity to consume locally.

If the local propensity to consume locally is 72%, enter the variable as 0.72. The value of this variable must always be less than one. In Brookings, in 1973, the resident's propensity to consume locally was estimated to be 0.76.

VARIABLE 8 - Commuter's Propensity to Consume Locally

A commuter's propensity to consume locally is the proportion of his annual take home income which he spends in the community where he is employed. Naturally employees living further from the community would be expected to spend a smaller percentage of their income in that community. However, the commuter's distance to alternative trade centers must also be considered. In many cases the closest location for commuters to shop is the community in which the plant is located. Like Variable 7, the value of this variable should always be less than 1. Commuters to Brookings in 1973 spent between 34 and 38 percent of their take home income in Brookings.

VARIABLE 9 - Number of Local Jobs Not Refilled

This is the total number of job positions which are left vacant as a result of the employment shift to the new or expanded industry. There are several factors which may result in a job not being refilled. If a local firm can handle their current work load with a slight reduction in employees, it may not refill some of the vacancies resulting by their current employees shifting to the new firm

If this is not the case but labor is in short supply, it may result in some reduction in the work force of current firms. Naturally the greater the unemployment in the area the less of a problem this will be. Since there are no systematic means of estimating this data it is best to use several estimates ranging from 0 to 5% of the total new employment at the new firm.

VARIABLE 10 - Number of County Jobs Not Refilled

This is the number of jobs outside of the community, but in the county, which remain vacant as a result of individual changing employment and commuting to the new firm located in the community. Again, there is no systematic means of estimating this prior to the firm locating in the community and several estimates ranging from 0 to 5% of the total new employment should be made.

VARIABLE 11 - Annual Wage of Vacant Positions

This is the average take-home income (after taxes and other deductions) from the jobs which were not refilled. This can be estimated from the average wages currently being paid by employers in the community. We would expect it to be somewhat lower than the annual income from the new firm. Otherwise it is doubtful that the original position would be vacated.

VARIABLES 12 through 15 - Industrial Development Costs

The costs to the private sector of attracting a firm to the community should be entered here. These include the cost of hosting prospective firms, feasibility studies and other costs incurred by the chamber of commerce or industrial development corporations to attract a specific firm. Since the cost of attracting

a firm is a one-time expense and not an annual cost, the cost should be spread over a period of years. If, for example, the cost is spread over five years at 10% interest, the annual cost will be equal to .2637 x the total expense shown in line I-11. If the cost is to be amortized over a different length of time or at a different interest rate, check the appropriate amortization factor in Appendix III.

VARIABLE 16 - The Number of New Housing Units Stemming from Expanded Employment

The number of new housing units that will need to be constructed and therefore added to the tax base depends on the number of new employees moving into the community, as well as present housing conditions in the community.

Prior to having specific knowledge on the composition of the labor force only rough approximations can be made for this variable. Assuming that only one member of an in-migrant family will be working with the firm the number of new housing units will equal the number of new in-migrant employees.

To estimate number of houses which must be built subtract the number of suitable vacant housing units in the community from the number of new units required.

VARIABLE 17 - Number of New Students

This is the number of new school children which will come into the community with new employees. If data are not available from the firm coming to the community, the number of new students can be estimated by use of the following procedure.

| Age of Employer | Number of In-migrant Employees | | Average Number of School age Children | | |
|---|---|---|---|---|---|
| 14-24 | _____ | x | .68 | = | _____ |
| 25-34 | _____ | x | 1.78 | = | _____ |
| 35-44 | _____ | x | 2.03 | = | _____ |
| 45-54 | _____ | x | 1.08 | = | _____ |
| 55-64 | _____ | x | .27 | = | _____ |
| Total New Children | | | | | |

*Source: Derived from Statistical Abstract of U.S. - 1974, p. 43.

VARIABLE 18 - In-migrant Residents

In-migrant residents refer to the total additional number of residents moving into the community because of the industry. Thus, it will consist of employees who move into the area because of employment at the plant, plus their school age children, plus other family members.

Naturally this will vary depending on the availability of labor locally.

Data from City or County Assessor

The following information can be obtained from the City Assessor.

VARIABLE 19 - Assessment Sales Ratio for the Industrial Plant

The assessment sales ratio is the ratio of the plant's assessed value to its full and true value. The ratio is usually reported as a percentage. Thus an

assessment sales ratio of 37.32 means that 37.32 percent of the plant's total investment is used for tax purposes. For the calculations in Table II, you must divide the ratio by 100. In this case you would use .3732.

VARIABLE 20 - Discretionary Tax Formula

Ask the City Assessor if the new firm will probably be granted the discretionary tax formula during the first five years. If so, the supplemental equations shown in Table II should be used. In this case the impact needs to be calculated for the first, second, third, and following years.

VARIABLE 21 - Assessment Sales Ratio for Residential Property

VARIABLE 22 - Municipal Mill Tax Rate

A mill rate of 24.38 indicates that $24.38 of taxes will be levied per each $1,000 of assessed value. The equations in Table II require the mill rate be divided by 1,000. So in this example you'd enter .02438.

VARIABLE 23 - Municipal Assessed Valuation

This variable is the total assessed valuation of private property within the city before the new industry is added to the tax base.

VARIABLE 24 - Municipal Property Tax Levy

The total property tax levy for the city is the variable used here.

This information is used to calculate the additional cost of new residents to local government. The procedure used is to divide municipal expenditures by the city's population to get the average expenditure per person. This is multiplied by the number of new residents in the city due to the firm.

A more satisfactory procedure would be to identify all of the changes required in major services such as roads, police, fire protection, public sewer and water. Then the costs of these changes could be computed. If this procedure is used enter the result in II-17 in Table II on page 22.

Data from City Treasurer

VARIABLE 25 - Miscellaneous Other Municipal Revenues

Other municipal revenues refers to all revenues except those stemming from property tax, utilities, and state and federal aid. The easiest way to calculate it is to deduct from total municipal revenue the revenues stemming from property taxes, municipal utilities, and state and federal aid.

VARIABLE 26 - Municipal Sales Tax Rate

There are numerous rates which apply to particular items. An approximation of the sales tax revenue can be obtained by using the rate used for general merchandise.

Data from Realtors

VARIABLE 16 - Double check the variable on new housing units with the Realtor (see description on page 9).

VARIABLE 27 - Housing Factor

The housing factor is the ratio of the house values to the annual incomes of the owners. It is used to estimate the value of the houses which will be constructed given the increase in local employment and income. Values of this ratio normally range from 2 to 3. Local banks or savings and loan associatio in your community can also provide the rule of thumb which they utilize to finance n housing in the community.

Data from Public Utilities Departments

If the water, sewer, electricity, or telephone systems are publicly owned then it is necessary to gather information on the charges and costs for provision of these services.

VARIABLE 28 - Revenue from Industrial Utilities

Revenue from industrial utilities is the revenue derived from publicly owned utility services to the industrial plant. An estimate of these revenues for a specific type of industry can be given by the public utilities department. If the cost of providing these services is equal to the charge this blank will be zero.

VARIABLE 29 - Industrial Utility Cost

If the charges for industrial utilities equal the cost, then this variable is zero, as is the case in Variable 28. However, if this is not the case, an estimate of the additional industrial utility cost can be obtained from the public utilities department.

VARIABLE 30 - Utility Charge Per Housing Unit

If utility charges for homes are equal to the cost of providing the services, then this variable is equal to zero. Otherwise an estimate is needed.

VARIABLE 31 - Utility Cost Per Housing Unit

If the marginal cost per housing unit for utilities is equal to the marginal revenue from these services this variable is equal to zero as the case with Variable 30. However, if the cost per house exceeds the utility charge per housing unit, it must be estimated using data obtained from the public utilities department.

VARIABLE 32 - Industrial Development Site Costs

Include here the development costs for any of the following capital improvements being built by the city for the firm:

| | | |
|---|---|---|
| Railroad spur | _____ | |
| Sanitary sewer | _____ | See Appendix III |
| Roads | _____ | for the amortization |
| Curb and gutter | _____ | factor. |
| Gas line | _____ | |

Others _____
Sum _____

Annual costs = Sum _____ x Amortization factor = _____ (Variable 31)

Data from Superintendent of School District

VARIABLE 33 - School District Enrollment

As for the number of students in average daily membership.

VARIABLE 34 - Annual School Operating Expenses

This is the total operating expense for all schools in the school district.

VARIABLE 35 - Annual Average Current Capital Outlay/Student

There are a number of ways to estimate this cost. If the average per pupil capital costs in the district for the past year or even past several years are used, the estimate is subject to cycles in this type of expenditure. Detailed studies may reveal that no capital expenditures are required for only 10 or 20 new students. But if new students are also being added due to other new firms or for other reasons the combined effect may require capital expenditures.

To avoid these problems it is suggested that the state's average capital expenditure per pupil in average daily membership be used. In 1974-75 this was $114.81.

VARIABLE 36 - Change in State Aid to Education

State aid to education is composed of transportation aid, permanent school fund appropriation and the minimum foundation grant. The minimum foundation grant consists of both a flat grant per classroom unit and an equalization portion The method of computing additional aid from the minimum foundation program is complicated and requires considerable data. In many cases, the state aid may actually decrease because the additional number of students is offset by the increase in local property valuations. It is suggested that you check with local school officials to estimate the increase in state aid given the projected increases in numbers of students and the increase in property valuations expected from the industrialization. Appendix IV describes the method of computing state aid if local school officials do not have this information. It would be necessary to estimate the state aid received in the year without the change for comparison with the state aid that would be received with the increased number of students and property valuation. In some cases, there will be a decrease in state aid and so a negative value must be entered for Variable 33.

VARIABLE 37 - School District Mill Rate

Again, the mill rate must be divided by 1,000.

VARIABLE 38 - Agricultural Assessment Sales Ratio

VARIABLE 39 - Additional Federal Aid

Include only additional federal aid received because of more students coming into the school system as a result of the plant being examined. Do not include increases in federal aid that may occur anyway, regardless of whether or not the plant is built. In most cases Federal aid is not directly related to the number of students and this variable will be zero.

Data from Tables in Workbook

VARIABLE 40 - School District Assessed Valuation

This variable is the total assessed valuation in the district for both agricultural and nonagricultural properties prior to the industry's addition to the tax base.

VARIABLE 41 - School District's Tax Levy

The total property tax levy of the school district prior to the addition of the firm is entered here.

VARIABLE 42 - County Income Multiplier

The county income multiplier shows the amount of additional income generated in other sectors of the local economy by the introduction of new employment in the plant being considered. For example, an income multiplier equal to .96 indicates that for every dollar of primary benefits stemming from the new firm, there is a total of 96¢ of additional income generated in the rest of the local economy. The manner in which these county multipliers are estimated is described in Appendix V.

Consider Underemployment

The county multipliers listed in Appendix V may need to be reduced because of the underemployment. Full employment is a basic assumption underlying the calculation of county multipliers. It is assumed that when the new industry locates in the community, new workers must be hired in the nonexport sector to support the new workers in the export sector. This is necessary because not only do all the local workers hold jobs, but it is assumed that each one is working at his maximum capacity. Thus, in order to provide the additional services, say in a barber shop, for individuals working in the basic industry, it is necessary to hire an additional barber, rather than for the local barber to simply spend more of his time cutting hair. If the community's present barbers could cut more hair without working any more hours, they are underemployed. The existence of underemployment in any of the service industries reduces the basic industry's impact on a number of new jobs created. When a community suffers from underemployment, it is necessary to reduce the county multiplier.

Use Two Estimates

A second factor which reduces the county income multiplier is the purchasing of production inputs by the new industry from suppliers outside of the community. If the new firm purchases nearly all of its raw materials and equipment from outside the community, its multiplier effect on employment and income within the community will be very small. For these two reasons it is desirable to estimate the primary impacts with a multiplier effect and also without one.

VARIABLE 43 - Population of Communities over 1,000

See Appendix VI.

VARIABLE 44 - Estimation of Increased Sale Tax Base

$$\text{Primary Benefits } \frac{\quad}{(I\text{-}4)} \times \frac{\quad}{(1+\text{Variable 38})} \times \left(\frac{\quad}{\text{Var. 7}} - .25\right) = \frac{\quad}{(44)}$$

VARIABLE 45 - Additions to Assessed Valuation

$$\frac{\text{New Plant Investment}}{(1)} \times \frac{\text{Industrial Assessment} \div 100}{(19)} = \frac{\text{New Industrial Assessed Valuation}}{(A)}$$

$$\frac{\text{New Homes}}{(16)} \times \frac{\text{Annual Income}}{(6)} \times \frac{\text{Housing Factor}}{(7)} \times \frac{\text{Residential Assessment Sales Ratio} \div 100}{(21)} = \frac{\text{New Resdentia Assessed Valuation}}{(B)}$$

$$\frac{\quad}{(A)} + \frac{\quad}{(B)} = \frac{\text{Additions to Assessed Valuation}}{(45)}$$

## SECTION III

## DATA INPUT SUMMARY SHEETS

Now you are ready to go to work. Fill out these input summary sheets following the instructions in Section II. The definitions in this publication may be different than those commonly used in your area. Without reviewing Section II the data you collect might not be correct.

Additional Data Input Summary Sheets can be obtained by writing: Industrial Impact Project, Economics Department, South Dakota State University, Brookings, S.D. 57006.

Once the data input summary sheets are completely filled out, calculate the impacts in the Tables in Sections IV and V.

Community _____ Date _____

Type of Firm _____

Data from Chamber of Commerce (see pages 6 to 9)

Variable 1 New Plant Investment _____

Variable 2 New Jobs Created _____

Residential Location of Plant Employees
(Give Alternative Estimates)

| | | A | B | C |
|---|---|---|---|---|
| Variable 3 | Local Employees | _____ | _____ | _____ |
| Variable 4 | In-migrant Employees | _____ | _____ | _____ |
| Variable 5 | Commuting Employees | _____ | _____ | _____ |

Variable 6 Annual Income Per Employee from New Jobs _____

Variable 7 Residents' Propensity to Consume Locally
- Low estimate _____
- Medium estimate _____
- High estimate _____
- Survey results _____

Variable 8 Commuters' Propensity to Consume Locally
- Low estimate _____
- Medium estimate _____
- High estimate _____
- Survey results _____

Variable 9 Number of Local Jobs Not Refilled _____

Variable 10 Number of County Jobs Not Refilled _____

Variable 11 Annual Income Per Employee of Vacant Position _____

Variable 12 Hosting Expenditures _____

Variable 13 Feasibility Studies Costs _____

Variable 14 Other Private Sector Expenses _____

Variable 15 Total Private Sector Costs - See Table I.

Variable 16 Number of New Housing Units _____

Alternative Estimates

Variable 17 Number of New Students A_____ B_____ C_____

Variable 18 In-migrant Residents A_____ B_____ C_____

Data from City Assessor (see pages 9 and 10)

Variable 19 Industrial Assessment Sales Ratio _____

Variable 20 Tax Moratorium May Be Used? _____ Yes _____ No

Variable 21 Residential Assessment Sales Ratio _____

Variable 22 Municipal Mill Rate _____

Variable 23 Municipal Assessed Valuation Before New Plant _____

Data from City Treasurer (see page 10)

Variable 24 Municipal Property Tax Levy _____

Variable 25 Misc. Other Municipal Revenues Before New Plant _____

Total Municipal Revenue = _____
Deduct the following:
Property Tax Revenue _____
Utility Revenue _____
State Aid _____
Federal Aid _____
Misc. Other Revenues = _____

Variable 26 - Municipal Sales Tax Rate _____

Data from Realtors (see page 11)

Variable 27 Housing Factor _____

Variable 16 (Double check) - New Houses _____

Data from Public Utilities Department (see pages 11 and 12)

Variable 28 Revenue from Industrial Utilities _____

Variable 29 Industrial Utility Costs _____

Variable 30 Utility Charge Per Housing Unit _____

Variable 31 Utility Cost Per Housing Unit _____

Variable 32 Industrial Site Development Costs _____

Data from School District Superintendent (see pages 12 and 13)

Variable 33 School District Enrollment _____

Variable 34 Annual School Operating Expenses _____

Variable 35 Annual Average Capital Expenses/Student _____

Variable 36 Change in State Aid _____

Variable 37 School District Mill Rate _____

Variable 38 Agricultural Assessment Sales Ratio _____

Variable 39 Additional Federal Aid _____

Variable 40 School District Assessed Valuation Before Firm _____

Variable 41 School District Tax Levy Before New Firm _____

Data from Tables in Workbook (see pages 13 and 14)

Variable 42 County Income Multiplier _____

Variable 43 Population of Community _____

Variable 44 Increase in Sale Tax Base _____

Variable 45 Additions to Assessed Valuation with New Firm _____

## SECTION IV

## TABLES FOR COMPUTATION OF NET GAINS



To calculate the net gains to each sector, enter the data from Section III. The numbers in parenthese under the blanks following each variable refer to the variable number on the input summary sheet.

Each calculation reads from left to right with the results labeled with the table numbers. For example the first result in Table I is (I-1). The arithmetic calculations required are indicated by the following symbols:

- x for multiplication
- ÷ for division
- + for addition
- - for subtraction

If you wish to use alternative values for several variables a computerized analysis identical to these tables is available by sending your input summary sheets to: Industrial Impact Project, Economics Department, South Dakota State University, Brookings, S.D. 57006.

TABLE I: NET GAINS TO THE PRIVATE SECTOR

Benefits to the Private Sector

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Number of New Jobs Created | _____ (2) | | | | | | | | |
| Local Employees | _____ (3) | X | Annual Salary | _____ (6) | X | Resident's Propensity to Consume Locally | _____ (7) | = | _____ (I-1) |
| In-migrants to Community | _____ (4) | X | Annual Salary | _____ (6) | X | Resident's Propensity to Consume Locally | _____ (7) | = | _____ (I-2) |
| Commuters from outside the Community | _____ (5) | X | Annual Salary | _____ (6) | X | Commuter's Propensity to Consume Locally | _____ (8) | = | _____ (I-3) |
| Total Primary Benefits . . . . . | | | | | | Add (I-1), (I-2), (I-3) | | = | _____ (I-4) |

Secondary Benefits (Multiplier Effect)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Primary Benefits | _____ (from I-4) | X | County Income Multiplier | _____ (42) | X | Propensity to Consume Locally | _____ (7) | = | _____ (I-5) |
| Total Private Sector Benefits . . . . . | | | | | | Add (I-4) & (I-5) for Total Private Sector Benefits | | = | _____ (I-6) |

TABLE I: Continued

Costs to the Private Sector

Primary Income Lost

Number of Local Jobs Not Refilled in the Community _____ (9) X Annual Salary _____ (11) X Propensity to Consume Locally _____ (7) = _____ (I-7)

Number of Jobs Not Refilled Outside the Community but in the County _____ (10) X Annual Salary _____ (11) X Propensity to Consume Locally _____ (8) = _____ (I-8)

Total Primary Income Lost . . . . . Add (I-7) & (I-8) = _____ (I-9)

Secondary Incor. Lost (Multiplier Effect)

Primary Income Lost _____ (I-9) X County Income Multiplier _____ (42) X Propensity to Consume Locally _____ (7) = _____ (I-10)

Private Sector Industrial Development Costs (If Any)

Hosting Expenditures . . . . . _____ (12)

Feasibility Studies . . . . . _____ (13)

Other . . . . . _____ (14)

Total . . . . . _____ (15)
(sum of 12 to 14)

Annual Costs at 10% interest spread over 5 years = .2637 X _____ (15) = _____ (I-11)

TABLE I: Continued

Total Private Sector Costs

Add (I-9), (I-10) & (I-11) . . . . . _____ (I-12)

Net Gains to Private Sector

Total Private Sector Benefits _____ (I-6) - Total Private Sector Costs _____ (I-12) = $_____ (I-13)

TABLE II: NET GAINS TO THE MUNICIPAL GOVERNMENT SECTOR

Benefits: Additional Tax Revenues

Industrial Property Tax

Plant Investment _____ (1) X Assessment-Sales Ratio ÷ 100 _____ (19) X Municipal Tax Mill Rate ÷ 1,000 _____ (22) = _____ (II-1)

If a Tax Moratorium is to be granted, use these equations:

Year 1: Tax Shown in II-1 _____ X .25 = City Tax Year 1 _____ (II-2)

Year 2: _____ X .50 = City Tax Year 2 _____ (II-3)

Year 3: _____ X .75 = City Tax Year 3 _____ (II-4)

Year 4 and Year 5 same as year 3

Year 6 same as II-1

TABLE II: Continued

Residential Property Tax

Number of New Housing Units _____ (16) X Average Wage _____ (6) X Housing Factor _____ (27) X

Assessment Sales Ratio ÷ 100 _____ (21) X Municipal Tax Rate ÷ 1000 _____ (22) = _____ (II-6)

Misc. Tax Revenue from New Residents

In-migrants Residents _____ (18) X [Misc. Other Municipal Revenue (Excluding Property Tax, Utilities, and Shared Taxes) _____ (25) ÷ Community Population before _____ (43)] = _____ (II-7).

Industrial Utilities Revenues

_____ (Data from 28) _____ (II-8)

Residential Utilities

Number of New Housing Units _____ (16) X Utility Charge per Housing Unit _____ (30) = _____ (II-9)

Sales Tax Revenues

Increase in Sales Tax Base _____ (44) X Local Sales Tax Rate _____ (26) = _____ (II-10)

Subtotal . . . . Add (II-6), (II-7), (II-8), (II-9), (II-10) = _____ (II-10 A)

Total Additional Municipal Gov't Revenues . . . . Add (II-1), and (II-10 A) _____ (II-11)

TABLE II: Continued

If Tax Moratorium Available, Use the Following Calculations Rather than the Above:

First Year: Add (II-2), and (II-10A) _____ (II-12)

Second Year: Add (II-3), and (II-10A) _____ (II-13)

Third Year: Add (II-4), and (II-10A) _____ (II-14)

Fourth Year: Same as third year _____ (II-14)

Fifth Year: Same as fourth year _____ (II-14)

Sixth Year: Add (II-1 and II-10A) _____ (II-11)

Costs: Additional Public Expenditures

Industrial Utilities Costs (Variable 29) . . . . . _____ (29)

Industrial Site Development Costs . . . . . _____ (32)

Residential Utilities

Number of New Housing Units _____ (16) X Utility Cost per Housing unit _____ (31) = _____ (II-16)

New Resident Services

Municipal Property Taxes _____ (24) ÷ Community Population _____ (43) X In-migrant Residents _____ (18) = _____ (II-17)

TABLE II: Continued

Total Additional Municipal Costs . . . . . Add (29), (32), (II-16), and (II-17) = _____ (II-19)

Net Gains to Municipal Government

Additional Municipal Government Revenues _____ (II-11) - Additional Municipal Government Expenses _____ (II-19) = _____ (II-20)

If Tax Moratorium Used:

First year: _____ (II-12) minus _____ (II-19) = _____ (II-21)

Second year: _____ (II-13) minus _____ (II-19) = _____ (II-22)

Third year: _____ (II-14) minus _____ (II-19) = _____ (II-23)

Fourth year: Same as third year = _____ (II-24)

Fifth year: Same as third year = _____ (II-25)

Sixth year: _____ (II-11) minus _____ (II-19) = _____ (II-26)

TABLE III: NET GAINS TO THE SCHOOL DISTRICT

Benefits: Additional Tax Revenues

Industrial Property Tax

| Plant Investment | | Assessment Sales Ratio ÷ 100 | | School Tax Mill Rate ÷ 1,000 | | |
|---|---|---|---|---|---|---|
| _____ (1) | X | _____ (19) | X | _____ (37) | = | _____ (III-1) |

If Tax Moratorium Available, Use these Equations

| | Tax Shown in III-1 | | School Tax |
|---|---|---|---|
| Year 1: | _____ | X .25 | _____ (III-2) |
| Year 2: | _____ (III-1) | X .50 | _____ (III-3) |
| Year 3: | _____ (III-1) | X .75 | _____ (III-4) |

Year 4 and 5 are the same as Year 3

Year 6 is the same as III-1

TABLE III: Continued

Residential Property Tax

Number of New Housing Units _____ (16) X Average Annual Wage _____ (6) X Housing Factor _____ (27) X

Assessment Ratio ÷ 100 _____ (21) X School Tax Mill Rate ÷ 1,000 _____ (37) = _____ (III-6)

Change State Aid for New Students . . . . . _____ (36)

Review the discussion in Section II on this variable.

Additional Federal Aid . . . . . _____ (Variable 39) = _____ (III-14)

Total Additional School District Revenues . . . Add (III-1), (III-6), (36) and (III-14) = _____ (III-15)

If Tax Moratorium Available, Use the Following Calculations Rather Than (III-15)

Year 1: Add (III-2), (III-6), (36) and (III-14) = _____ (III-16)

Year 2: Add (III-3), (III-6), (36) and (III-14) = _____ (III-17)

Year 3: Add (III-4), (III-6), (36) and (III-14) = _____ (III-18)

Year 4 and Year 5 are same as year 3

Year 6 is the same as III-15

TABLE III: Continued

Costs: Additional School Expenses

Operating Costs for New Students

Number of New Students _____ (17) X Annual School Operating Expense _____ (34) ÷ Average Daily Membership _____ (33) = _____ (III-19)

Capital Outlay for New Students

Number of New Students _____ (17) X Annual Average Current Capital Outlay/Student _____ (35) = _____ (III-20)

Total Additional School District Costs . . . . . Add (III-19) and (III-20) = _____ (III-21)

Net Gains to the School District . . . . . Additional Tax Revenues _____ (III-15) minus Additional Expenditures _____ (III-21) =

_____ (III-22)

If Tax Moratorium available, Use the following Calculations Rather than (III-22)

Year 1: Additional Tax Revenue _____ (III-16) minus Additional Expenditures _____ (III-21) = _____ (III-23)

Year 2: Additional Tax Revenue _____ (III-17) minus Additional Expenditures _____ (III-21) = _____ (III-24)

Year 3: Additional Tax Revenue _____ (III-18) minus Additional Expenditures _____ (III-21) = _____ (III-25)

Year 4: Same as year 3 . . . . . = _____ (III-26)

Year 5: Same as year 3 . . . . . = _____ (III-27)

Year 6: Additional Tax Revenue _____ (III-15) minus Additional Expenditures _____ (III-21) = _____ (III-28)

## SECTION V

## IMPACT ON INDIVIDUAL TAXES

The surplus or deficits shown for city government or school districts assume that local citizens wish the quality of service to remain unchanged. If this is true, a surplus may lead to reductions in individual taxes. In contrast a deficit will lead to increases in taxes.

Taxes paid equal the product of the mill rate, the assessment sales ratio and the full and true property value. More governmental revenue can be raised by increasing either of the first two items. Constitutional limits restrict the level of mill rates for general fund school expenditures to 24 mills for agricultural properties and 40 mills for non-agricultural properties. However, most counties could generate more tax revenue by increasing the assessment sales ratio.

The reaction to a deficit in local government can take the following lines:

1. Raise the mill rates to the constitutional limits to generate sufficient additional revenue to maintain quality of services.

2. Raise the assessment sales ratios to generate sufficient additional revenue to maintain quality of services. Generally this is not an acceptable procedure for that purpose alone.

3. Use a combination of increased mill rates and assessment sales ratios to maintain quality of services.

4. Maintain both mill levies and assessment sales ratios at current levels and reduce the quality of services available.

5. Use a combination of one through four.

Likewise, a net gain for local government can be handled by reductions in taxes or expansion in the quality or quantity of services.

In this section we will assume service quality is maintained and that taxes are increased if the net gain was negative but decreased if the net gain was positive. Since either assessment sales or mill rates may be changed a average tax rate is calculated. This is not the same as the mill rate actually used by local government. Rather it approximates the effective tax rate which is the mill rate times the assessment sales ratio. In school districts this average rate is higher than the effective mill rate for agricultural properties and lower than the effective mill rate for nonagricultural properties.

Change in Municipal Property Tax Mill Rate

$$\frac{\text{Municipal Assessed Valuation Before New Firm}}{\text{(Variable 23)}} + \frac{\text{Addition to Assessed Valuation New Firm \& Homes}}{\text{(Variable 45)}} = \frac{\text{Adjusted Assessed Valuation}}{\text{(V-3)}}$$

$$-1 \left[ \frac{\text{Net Gain to Municipality}}{\text{(II-20)*}} \div \frac{\text{Adjusted Assessed Valuation}}{\text{(V-3)}} \right] \div 1000 = \frac{\text{Change in Mill Rate for the City}}{\text{(V-5)**}}$$

The change in mill rate shown in V-5 is the amount that the mill rate would need to change to exactly compensate for changes in net revenue gain (or losses) to the municipality. If the city has a positive net gain, the mill rate could decline if all the additional revenue was used for property tax relief. In contrast if the city experiences a deficit in variable II-20 then the mill rate would need to increase in order to maintain services at the same quality as before the firm is established.

NOTES: *This must be reported for each year if a tax moratorium used. Substitute II-21 through II-26 for II-20 in this case.

**If a tax moratorium is used, the change in average tax rate (V-5) will be different in each of the first five years and stabilize in the sixth year to the level shown in (V-5).

Change in School District Mill Rate

$$\frac{\text{School District Valuation Before The New Firm}}{\text{(Variable 40)}} \div \frac{\text{Addition to the Assessed Valuation With New Firm \& Homes}}{\text{(Variable 45)}} = \frac{\text{Adjusted Assessed Valuation}}{\text{(V-8)}}$$

$$-1 \left[ \frac{\text{Net Gain to School District}}{\text{(III-22)*}} \div \frac{\text{Adjusted Assessed Valuation}}{\text{(V-8)}} \right] \div 1000 = \frac{\text{Change in Mill Rate for Schools}}{\text{(V-10)**}}$$

NOTES: *This must be reported for each year if a tax moratorium used. Substitute III-23 through III-28 for III-22 in this case.

**If a tax moratorium is used, the change in average tax rate (V-10) will be different in each of the first five years and stabilize in the sixth year to the level shown in (V-10)

Change in Taxes on Average Properties

For Residential Properties:

| Change in City Tax Rate | + | Change in School Tax Rate | = | Total Change in Tax Rate |
|---|---|---|---|---|
| (V-5) | | (V-10) | | (V-12) |

| Average Home Value | x | Assessment Sales Ratio ÷ 100 | x | Total Change in Tax Rate | = | Change in Taxes per Home |
|---|---|---|---|---|---|---|
| (your est.) | | (21) | | (V-12) | | (V-13) |

For Agricultural Properties:

| Farm Value | x | Assessment Sales Ratio ÷ 100 | x | Total Change Tax Rate | = | Change in Taxes Per Farm |
|---|---|---|---|---|---|---|
| (your est.) | | (38) | | (V-12) | | (V-14) |

SECTION VI

BENEFITS, COSTS, AND NET GAIN TO THE PRIVATE SECTOR

Addition of a _____ firm which employs

_____ persons in a community of _____.

Analysis conducted _____.

Benefits:

| | | | |
|---|---|---|---|
| Wages & Salaries | (I-4) | _____ | |
| Secondary Income | (I-5) | _____ | |
| TOTAL BENEFITS | (I-6) | | _____ |

Costs:

| | | | |
|---|---|---|---|
| Income Lost | (I- 9) | _____ | |
| Secondary Income Losses | (I-10) | _____ | |
| Private Sector Costs | (I-11) | _____ | |
| TOTAL COSTS | (I-12) | | _____ |

NET GAINS: (I-13) _____

## SECTION VI

## BENEFITS, COSTS, AND NET GAINS TO CITY GOVERNMENT

Addition of a _____ firm which employs

_____ persons in a community of _____.

Analysis conducted _____.
(Date)

Benefits:

Property Taxes, New Plant (II-1) _____

*Property Taxes, New Plant
Year 1 (II-2) _____
Year 2 (II-3) _____
Year 3 (II-4) _____
Year 4 (II-4) _____
Year 5 (II-4) _____
Year 6 (II-1) _____

| | | |
|---|---|---|
| Property Taxes, New Homes | (II-6) | _____ |
| Misc. Tax Revenues, New Residents | (II-7) | _____ |
| Industrial Utilities Revenues | (II-8) | _____ |
| Residential Utility Revenues | (II-9) | _____ |
| Sales Tax Revenues | (II-10) | _____ |
| TOTAL ADDITIONAL REVENUE | | (II-11) _____ |

*Total Additional Revenue
Year 1 (II-12) _____
Year 2 (II-13) _____
Year 3 (II-14) _____
Year 4 (II-14) _____
Year 5 (II-14) _____
Year 6 (II-11) _____

Costs: Additional City Expenditures

| | | |
|---|---|---|
| Industrial Utilities | (29) | _____ |
| Industrial Site Development Cost | (32) | _____ |
| Residential Utilities | (II-16) | _____ |
| New Resident Services | (II-17) | _____ |
| TOTAL ADDITIONAL COSTS | | (II-19) _____ |

NET GAINS: . . . . . (II-20) _____

*Year 1 (II-21) _____
Year 2 (II-22) _____
Year 3 (II-23) _____
Year 4 (II-24) _____
Year 5 (II-25) _____
Year 6 (II-26) _____



*Relevant only if tax moratorium used.

## SECTION VI

## BENEFITS, COSTS, AND NET GAINS TO SCHOOL DISTRICT

Addition of a _____ firm which employs

_____ persons in a community of _____.

Analysis conducted _____
(Date)

Benefits: Additional Tax Revenues

Property Taxes, New Plant (III-1) _____

*Property Taxes, New Plant
Year 1 (III-2) _____
Year 2 (III-3) _____
Year 3 (III-4) _____
Year 4 (III-4) _____
Year 5 (III-4) _____
Year 6 (III-1) _____

Property Taxes, New Housing (III-6) _____

State Aid for New Students (36) _____
Federal Aid for New Students (III-14) _____
TOTAL BENEFITS (III-15) _____

*Year 1 (III-16) _____
Year 2 (III-17) _____
Year 3 (III-18) _____
Year 4 (III-18) _____
Year 5 (III-18) _____
Year 6 (III-15) _____

Costs: Additional Expenditures for New Students

Operating Expenses: New Students (III-19) _____
Capital Expenses: New Students (III-20) _____
TOTAL ADDITIONAL COSTS (III-21) _____

NET GAINS . . . . . (III-22) _____

*Year 1 (III-23) _____
Year 2 (III-24) _____
Year 3 (III-25) _____
Year 4 (III-26) _____
Year 5 (III-27) _____
Year 6 (III-28) _____

*Relevant only if tax moratorium used.

## SECTION VI

## IMPACTS ON PROPERTY TAXES

Change in City's Average Tax Rate (V-5) _____

Change in School District's Average Tax Rate (V-10) _____

Change in Taxes Per Home (V-13) _____

Change in Taxes Per Farm (V-14) _____

# APPENDIX I

Propensity to Consume Locally: Survey Form

1. Your place of residence is

   _____ in (name of your city)

   _____ in (Name of your county) county but outside (name of your city)

   _____ outside (name of your county) county

2. Your percent of take-home salary spent

   _____ in (name of your city)

   _____ in (name of your county) county but not in (name of your city)

   _____ outside (name of your county) county

   _____ saved

   Equals 100 percent

APPENDIX II

Propensity to Consume Locally: Percent of Total Income Spent in the Community*

| | Local Employees | Commuters from County | Commuters from Outside the Community |
|---|---|---|---|
| Eastern Oklahoma[1/] | | | |
| Haskell | .55 | .59 | .65 |
| Muskogee | .60 | .62 | .45 |
| Sallisaw | .86 | -- | -- |
| Stilwell | .54 | -- | .16 |
| Tahlequah | .70 | .72 | .34 |
| South Dakota[2/] | | | |
| Brookings | .76 | .38 | .34 |
| Indiana[3/] | | | |
| Dale and Petersburg | .61 | -- | -- |

*Average proportion of the employee's income spent with the community.

[1/] Shaffer, Ron E., and Luther G. Tweeten, "Economic Changes from Industrial Development in Eastern Oklahoma." Agricultural Experiment Station Bulletin B-715, Oklahoma State University, July 1974.

[2/] Uhrich, Dwight G., "A Case Study of the Economic Impact of the 3-M Company on the Brookings Community", unpublished M.S. thesis, Economics Department, South Dakota State University, 1974.

[3/] Boehm, William T.; and Martin T. Pond, "Employment, Location and Local Retail Purchasing", Cooperative Extension Service Bulletin EC-422, Purdue University, West Lafayette, Indiana, 1972.

# APPENDIX III

## AMORTIZATION TABLE

| Years | Interest rate 4.0 | 4.5 | 5.0 | 5.5 | 6.0 | 7.0 | 8.0 |
|---|---|---|---|---|---|---|---|
| 1 | 1.0400 | 1.0450 | 1.0500 | 1.0550 | 1.0600 | 1.0700 | 1.0800 |
| 2 | .5302 | .5340 | .5378 | .5416 | .5454 | .5531 | .5608 |
| 3 | .3603 | .3638 | .3672 | .3707 | .3741 | .3811 | .3880 |
| 4 | .2755 | .2787 | .2820 | .2853 | .2886 | .2952 | .3019 |
| 5 | .2246 | .2278 | .2310 | .2342 | .2374 | .2439 | .2505 |
| 6 | .1908 | .1939 | .1970 | .2002 | .2034 | .2098 | .2163 |
| 7 | .1666 | .1697 | .1728 | .1760 | .1791 | .1856 | .1921 |
| 8 | .1485 | .1516 | .1547 | .1579 | .1610 | .1675 | .1740 |
| 9 | .1345 | .1376 | .1407 | .1438 | .1470 | .1535 | .1601 |
| 10 | .1233 | .1264 | .1295 | .1327 | .1359 | .1424 | .1490 |
| 15 | .0899 | .0931 | .0963 | .0996 | .1030 | .1098 | .1168 |
| 20 | .0736 | .0769 | .0802 | .0837 | .0872 | .0944 | .1019 |
| 25 | .0640 | .0674 | .0710 | .0745 | .0782 | .0858 | .0937 |
| 30 | .0578 | .0614 | .0651 | .0688 | .0726 | .0806 | .0888 |
| 35 | .0536 | .0573 | .0611 | .0650 | .0690 | .0772 | .0858 |
| 40 | .0505 | .0543 | .0583 | .0623 | .0665 | .0750 | .0839 |
| 45 | .0483 | .0522 | .0563 | .0604 | .0647 | .0735 | .0826 |
| 50 | .0466 | .0506 | .0548 | .0591 | .0634 | .0725 | .0817 |

# APPENDIX IV

## STATE AID TO PUBLIC ELEMENTARY AND SECONDARY EDUCATION*

The minimum Foundation Program is divided into two areas, the general support program (flat grant) and the equalization support program.

1. The General Support Provides $1,550 for Each Classroom Unit.

   A classroom unit is a group of students, weighed by use of a state formula, to allow the smaller populated school districts of the state to use fewer students to make a classroom unit than it does the larger populated school districts. In an independent district a 13% increase is allowed the school district for administration and supervision. You can contact your school superintendent for information on the school aid formula.

2. Equalization Support.

   Simply stated the formula says that the equalization support is to guarantee each district at least $11,250 to operate each of the weighed classroom units that they have. However, this has never been fully implemented because of the lack of funds. Putting the formula in its simplest form, it states that cost minus income equals the equalization support.

   The cost to each school district is the $11,250 figure times each classroom unit, plus any tuition expenditures.

   The income to each district would be the dollar amount that 13 mills will raise on the adjusted agricultural value plus 18 mills on the adjusted nonagricultural value, plus $1,550 for each weighed classroom unit (flat grant) plus all tuition receipts, plus the amount received for state apportionment (interest from the permanent school fund).

Use of the Estimation Procedure on Pages 41 to 44

Local school officials may be familiar with the estimation procedure for state aid. Alternatively, the instructions on page 41 can be followed both before and estimates made for after the new firm has moved to the area. The difference in these two estimates yields the impact for variable 36.

Note that state aid is based on the previous year so up-date these dates after 1976-77.

A data bank and computerized model are available at SDSU for making these estimates. Send the School Aid Input Summary Sheet to: Industrial Impact Model, Economics Department, South Dakota State University, Brookings, S.D. 57006.

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*State Minimum Foundation Program, Division of Education, Pierre, S.D.

The worksheet contains all the information necessary to compute a district's state aid, using the current formula.

This item-by-item explanation of the worksheet, hopefully, will be sufficient to assist all concerned individuals in computing state aid for their district.

It would be helpful if this entire explanation was read before attempting to work the computations.

Because 1976-77 state aid is based on the annual report and state aid applications covering the 1975-76 school year, some of the items must be estimated, if they are unknown figures.

A. Self-explanatory.
B. Self-explanatory.
C. Self-explanatory.
D. Self-explanatory.
E. Self-explanatory.

F-1, F-2, F-3, F-4 and F-5. This is the assessed valuation, as reported to the Division of Elementary and Secondary Education, for each category, on the 1975 taxes payable in 1976.

G-1a, G-1b, G-1c. These are the mill levies (G.F. & S.E.) as reported to the Division of Elementary and Secondary Education covering the 1975 taxes payable in 1976. (In some cases the general fund levies have had to be adjusted to reflect the true tax effort that a district is making due to the effects of reorganization adjustments.)

H-1, H-2 and H-3. These factors are determined by dividing the appropriate state weighted assessment percentage (for all real estate), by the appropriate county weighted (rural, urban and utilities) assessment percentages. (These are obtained from the Department of Revenue's 1975 Sales Ratio Study).

I-1a. Determined by multiplying F-1 by H-1 and adding F-2 to the result.
I-1b. Determined by multiplying F-3 by H-2, F-5 by H-3 and adding F-4 to the results.
J-1 Determined by multiplying I-1a by 13 mills, I-1b by 18 mills, and adding the results together.
J-2 Self-explanatory.
J-3 Self-explanatory.
K. J-1 plus J-2 plus J-3 plus R.
L. The total of F-1 plus F-2 times G-1a, F-3 plus F-4 plus F-5 times G-1b and the total of F-1 through F-5 times G-1c, adding the results together. (The only reason this is used is to determine if the district meets the minimum qualifying $ amount and therefore eligible for equalization aid. (Must be equal to or greater than J-1.)
M. Self-explanatory.
N. From Table 1, SDCL 1975, revised, page 323. (See next page)
O. From Table 2, SDCL 1975, revised, page 324. (See next page)
P. A times N (plus 13% for an independent district) (cannot be greater than C).
Q. B times O (plus 13% for an independent district) (cannot be greater than D).
R. P plus Q plus E times $1,550.00.
S-1 P plus Q plus E times $11,250.00 plus M.
S-2 The district's total general fund expenditures minus transportation expenditures.
T. S-1 or S-2 (whichever is less) minus K.
U. Prorate T at an estimated 72%. (This percentage must be updated annually.)
V. 50% of the following: Adjusted bus transportation cost (maximum payment of 25¢ per mile), plus mileage paid to parents, plus room and board paid.
W. Self-explanatory.



SOURCE: Gale Schlueter, Office of Infor. & Stat. Mgmt., Dept. of Educ. & Cult. Affairs

To estimate the classroom size needed in N., multiply the total elementary students in average daily membership by the relevant multiplicand in column 2 and add the constant in column 3.

TABLE 1

| 1. | 2. | 3. |
|---|---|---|
| Total average daily membership of lower grade school pupils in the school district | Multiplicand | Addition factor constant |
| 00.000 through 46.506 | +.012042 | +1.901461 |
| 46.507 through 181.534 | +.044834 | +0.376446 |
| 181.535 through 226.300 | +.014995 | +5.772454 |
| 226.301 and over | +.040503 | 0.000000 |

A one-teacher school shall be entitled to only one classroom unit.

Source: SL 1959, ch 67; SDCSupp 1960, § 15.2246 (4); SL 1961, ch 76, § 1; 1963, ch 77, § 1; 1968, ch 44, § 2; 1969, ch 44, § 13; 1975, ch 128, § 84.

To estimate the classroom size for variable O, multiply the total secondary students in average daily membership by the relevant multiplicand and add the constant in column 3.

TABLE 2

| 1. | 2. | 3. |
|---|---|---|
| Total average daily membership of upper grade school pupils in the school district | Multiplicand | Addition factor constant |
| 00.000 through 96.269 | +.042086 | +2.149407 |
| 96.270 through 299.077 | +.047712 | +1.607799 |
| 299.078 through 491.588 | +.033150 | +5.962965 |
| 491.589 and over | +.045280 | 0.000000 |

Source: SL 1959, ch 67; SDCSupp 1960, § 15.2246 (4); SL 1961, ch 76, § 1; 1963, ch 77, § 1; 1968, ch 44, § 2; 1969, ch 44, § 14.

Cross-Reference.

Minimum size of high school qualifying for general support foundation funds, § 13-13-16.

# WORKSHEET FOR IMPLEMENTING THE FORMULA FOR COMPUTING MINIMUM FOUNDATION AID FOR INDEPENDENT SCHOOL DISTRICTS FOR THE 1976-77 SCHOOL YEAR

A. ADM Elementary (Exclude 1 Tchr Schools) _____

B. ADM Secondary _____

C. Elementary Teachers (Exclude 1 Tchr Schools) _____

D. Secondary Teachers _____

E. One-Teacher Schools _____

F-1. Ag Real Estate/ Structures/TBDA _____

F-2. All Other Ag Property _____

F-3. Non-Ag Real Estate/Structures _____

F-4. Other Non-Ag Property _____

F-5. Utilities _____

G-1. General Fund Levy-Ag _____

G-1b. General Fund Levy Non-Ag _____

G-1c. Special Ed. Levy _____

H-1. Rural Ratio Factor _____

H-2. Urban Ratio Factor _____

H-3. Utilities Ratio Factor _____

I-1a. Ag Adjusted Valuation _____

I-1b. Non-Ag Adjusted Valuation _____

J-1. Qualifying Levy _____

J-2. Tuition (Except CHTF Surplus) _____

J-3. State Apportionment _____

K. Income _____

L. Local Tax Effort _____

M. Tuition Payments (1410.1 + 1420.1 + 1430) _____

N. Table I _____

O. Table II _____

P. CRU, Elementary _____

Q. CRU, Secondary _____

R. Flat Grant _____

S-1. Cost (CRU x $11,250 + M) _____

S-2. Cost (G.F. Expend. minus Transpo. Expend.) _____

T. Equalization Aid _____

U. Equalization Aid (Prorated) _____

V. Transportation Aid _____

W. Total State Aid ( R. + U. + V. ) _____

SOURCE: Gale Schlueter, Office of Infor. & Stat. Mgmt., Dept. of Educ. & Cult. Affairs

# WORKSHEET FOR IMPLEMENTING THE FORMULA FOR COMPUTING MINIMUM FOUNDATION AID FOR INDEPENDENT SCHOOL DISTRICTS FOR THE 1976-77 SCHOOL YEAR

A. ADM Elementary (Exclude 1 Tchr Schools) _____

B. ADM Secondary _____

C. Elementary Teachers (Exclude 1 Tchr Schools) _____

D. Secondary Teachers _____

E. One-Teacher Schools _____

F-1. Ag Real Estate/ Structures/TBDA _____

F-2. All Other Ag Property _____

F-3. Non-Ag Real Estate/Structures _____

F-4. Other Non-Ag Property _____

F-5. Utilities _____

G-1. General Fund Levy-Ag _____

G-1b. General Fund Levy Non-Ag _____

G-1c. Special Ed. Levy _____

H-1. Rural Ratio Factor _____

H-2. Urban Ratio Factor _____

H-3. Utilities Ratio Factor _____

I-1a. Ag Adjusted Valuation _____

I-1b. Non-Ag Adjusted Valuation _____

J-1. Qualifying Levy _____

J-2. Tuition (Except CHTF Surplus) _____

J-3. State Apportionment _____

K. Income _____

L. Local Tax Effort _____

M. Tuition Payments (1410.1 + 1420.1 + 1430) _____

N. Table I _____

O. Table II _____

P. CRU, Elementary _____

Q. CRU, Secondary _____

R. Flat Grant _____

S-1. Cost (CRU x $11,250 + M) _____

S-2. Cost (G.F. Expend. minus Transpo. Expend.) _____

T. Equalization Aid _____

U. Equalization Aid (Prorated) _____

V. Transportation Aid _____

W. Total State Aid ( R. + U. + V. ) _____

SOURCE: Gale Schlueter, Office of Infor. & Stat. Mgmt., Dept. of Educ. & Cult. Affairs

SCHOOL AID INPUT SUMMARY SHEET

Name of School District _____

Number of New Students (Variable 17)

Low estimate _____
Medium estimate _____
High estimate _____

New Plant Investment _____
(Variable 1)

Number of New Homes _____
(Variable 16)

Average Annual Income _____
(Variable 6)

Housing Factor _____
(Variable 27)

APPENDIX V

COUNTY INCOME MULTIPLIERS* FOR THE COUNTIES OF SOUTH DAKOTA

| County | 1972 Income* Multiplier | County | 1972 Income Multiplier |
|---|---|---|---|
| Aurora | .55 | Jackson | .91 |
| Beadle | 1.15 | Jerauld | .67 |
| Bennett | .40 | Jones | .64 |
| Bon Homme | .66 | Kingsbury | .82 |
| Brookings | .96 | Lake | .93 |
| Brown | 1.28 | Lawrence | .26 |
| Brule | .86 | Lincoln | .70 |
| Buffalo | .41 | Lyman | .56 |
| Butte | 1.07 | McCook | .79 |
| Campbell | .47 | McPherson | .67 |
| Charles Mix | .66 | Marshall | .60 |
| Clark | .77 | Meade | .58 |
| Clay | .71 | Mellette | .56 |
| Codington | 1.23 | Miner | .74 |
| Corson | .46 | Minnehaha | 1.22 |
| Custer | .79 | Moody | .69 |
| Davison | 1.15 | Pennington | 1.20 |
| Day | .88 | Perkins | 1.23 |
| Deuel | .73 | Potter | .76 |
| Dewey | .71 | Roberts | .76 |
| Douglas | .60 | Sanborn | .58 |
| Edmunds | .70 | Shannon | .33 |
| Fall River | .71 | Spink | .66 |
| Faulk | .59 | Stanley | .52 |
| Grant | .85 | Sully | .37 |
| Gregory | .69 | Todd | .43 |
| Haakon | .72 | Tripp | .80 |
| Hamlin | .74 | Turner | .70 |
| Hand | .45 | Union | .78 |
| Hanson | .67 | Walworth | 1.14 |
| Harding | .47 | Washabaugh | .12 |
| Hughes | 1.08 | Yankton | 1.10 |
| Hutchinson | .77 | Ziebach | .38 |
| Hyde | .56 | | |

*Secondary effects only. Add 1 to obtain both primary and secondary effects.

The dynamic county Income Multipliers were derived by taking 1967 and 1972 county personal income data by industry sector and dividing the income by sector into basic (export) or non-basic (service) generated income. The change in income from 1967 to 1972 was calculated for both the export sector and the total county. The income multipliers were then calculated by taking the ratio of change in total county income to the change in basic income.

The income data was from the Bureau of Economic Analysis and was separated into the following sectors.

Labor and Proprietors Earnings
- Farming
- Federal Civilian
- Military
- State and Local
- Manufacturing
- Mining
- Contract Construction
- Transportation, Communications, and Public Utilities
- Wholesale and Retail Trade
- Finance, Insurance, and Real Estate
- Services
- Other

Property Income

Transfer Payments

All of the farming, mining, and manufacturing income were considered basic income. For the other industry sectors location quotients were used to calculate basic income. Transfer payments were considered to be entirely basic income. Property income was considered to be 35 percent basic income since other studies have found that about 30 to 35 percent of property income has been generated outside the county. (See the source listed below.)

Since all basic income (export) was used to calculate the multiplier, the assumption is made that the impact (multiplier effect) of a dollar generated in any basic industry will be the same regardless of the basic industry.

## APPENDIX VI

COMMUNITY POPULATION FOR COMMUNITIES OVER 1,000 POPULATION, SOUTH DAKOTA

| City | 1973 Population |
|---|---|
| Aberdeen | 29,966 |
| Belle Fourche | 4,451 |
| Beresford | 1,743 |
| Brandon City | 1,758 |
| Britton | 1,475 |
| Brookings | 14,284 |
| Canton | 2,635 |
| Chamberlain | 2,661 |
| Clark | 1,447 |
| Clear Lake | 1,196 |
| Custer | 1,618 |
| Deadwood | 2,439 |
| Dell Rapids | 2,196 |
| De Smet | 1,336 |
| Edgemont | 1,365 |
| Elk Point | 1,444 |
| Eureka | 1,496 |
| Flandreau | 2,220 |
| Fort Pierre | 1,411 |
| Freeman | 1,354 |
| Gettysburg | 1,992 |
| Gregory | 1 744 |
| Groton | 1,127 |
| Highmore | 1,178 |
| Hot Springs | 4,701 |
| Howard | 1,125 |
| Huron | 14,131 |
| Ipswich | 1,255 |
| Lead | 5,153 |
| Lemmon | 1,927 |
| Lennox | 1,598 |
| Madison | 5,759 |
| Martin | 1,414 |
| Milbank | 3,836 |
| Miller | 2,054 |
| Mitchell | 13,496 |
| Mobridge | 4,791 |
| Parker | 1,004 |
| Parkston | 1,545 |
| Pierre | 10,647 |
| Platte | 1,410 |
| Rapid City | 47,210 |
| Redfield | 2,840 |
| Salem | 1,380 |
| Sioux Falls | 74,106 |

| City | 1973 Population |
|---|---|
| Sisseton | 3,140 |
| Spearfish | 4,146 |
| Springfield | 1,486 |
| Sturgis | 5,083 |
| Tyndall | 1,234 |
| Vermillion | 9,386 |
| Wagner | 1,729 |
| Watertown | 14,446 |
| Webster | 2,357 |
| Wessington Springs | 1,271 |
| Winner | 3,912 |
| Yankton | 12,095 |

The 1973 population estimates are from the Bureau of the Census publication, Current Population Reports, Series P-25, No. 586. 1972 Community Income estimates were obtained from the same source.