

**THE ECONOMIC IMPACTS
OF RESIDENTIAL CONSTRUCTION
IN UNION COUNTY,
NORTH CAROLINA**

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**PREPARED FOR
The Real Estate and Building Industry Coalition
(REBIC)**

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EXECUTIVE SUMMARY

THE ECONOMIC IMPACTS OF RESIDENTIAL CONSTRUCTION IN UNION COUNTY, NORTH CAROLINA

The Following study of the Economic Impacts of Residential Construction was conducted for the Real Estate and Building Industry Coalition (REBIC) by Dr. John Connaughton and Dr. Ronald Madsen, professors with the University of North Carolina at Charlotte in the Belk College of Business Administration. The results of the study are based on data gathered for Union County including the number of building permits issued for single and multi family construction, permit and impact fees, raw land cost and taxes.

Residential construction has a significant economic impact on local and regional economies. This study presents estimates of the economic impact of residential construction on the local economy of Union County, North Carolina. These impacts are measured in terms of changes in the county's annual output, employment, tax revenue, and public costs.

The methodology used in this study analyzes two residential construction projects undertaken in Union County in the year 2000. The first project involves the construction, sale, and subsequent occupancy of 100 single family homes. The second project involves the construction, sale, and occupancy of a 100 unit multi-family (multi-family unit) development. The advantage of estimating the economic impacts for 100 unit projects is the ease of adjusting the estimates to fit newly announced or proposed residential developments in the county.

The following estimates were made for each phase of impacts:

Construction Phase Impacts:

100 New Single Family Homes are estimated to:

- Increase County Output by \$20,142,453
- Increase County Employment by 246 Jobs
- Increase Total Local Tax Revenue by \$493,813
- Increase Total Local Public Sector Costs by \$54,985

100 New Multi-Family Units are estimated to:

- Increase County Output by \$7,550,385
- Increase County Employment by 92 Jobs
- Increase Total Local Tax Revenue by \$393,236
- Increase Total Local Public Sector Costs by \$20,611

Ongoing Occupancy Phase Impacts:

100 New Single Family Homes are estimated to:

- Increase County Output by \$2,752,471
- Increase County Employment by 39 Jobs

- Increase Total Local Tax Revenue by \$187,705
 - Increase Total Local Public Sector Costs by \$129,632
- 100 New Multi-Family Units are estimated to:
- Increase County Output by \$1,519,408
 - Increase County Employment by 21 Jobs
 - Increase Total Local Tax Revenue by \$76,850
 - Increase Total Local Public Sector Costs by \$122,652

During the Construction phase both single family and multi family construction provide a one-year net positive source of revenue for county and local government. The increase in local revenue is \$493,813 per 100 single family homes, while the increase in local public sector costs is \$54,985. This produces a net positive source of revenue of \$438,828 for one year. The construction phase of the multi family units provides a one-year net positive source of revenue of \$372,625 for county and local government.

During the ongoing occupancy phase the single family homes provide a net revenue stream for county and local government. The increase in local revenue is \$187,705 per 100 units, while the increase in local public sector costs is \$129,632 per 100 units. This produces a net positive revenue stream of \$58,073 per 100 units. The multi-family unit ongoing revenue impacts produce a net negative revenue stream of \$45,802 per 100 units. From a public policy stand point these two revenue streams should be viewed jointly. It would be incorrect to conclude that because single family homes produce a net positive ongoing revenue stream while the multi family unit produce a net negative ongoing net revenue stream, that public policy should promote single family development and discourage multi-family unit development.

Public policy should provide a range of housing alternatives for residents. In Union County the 1999 positive net revenue stream for single family houses is 1.26 times the size of the negative net revenue stream for multi-family units. As long as Union County continues to build more single family than multi-family units then the overall ongoing net revenue stream from residential construction will be positive.

Estimates for any size project can be readily made simply by making the appropriate proportional adjustment. For example if a new development of 255 single family homes was announced the estimated impact would be 2.55 (or 255.0%) times the estimated impacts of the 100 single family development found in this study. The impacts of a smaller project with for example 65 multi-family units would be estimated by multiplying the multi-family unit impacts provided in this study by .65 (or 65%). The results presented in this study are intended to help measure the economic impact of residential construction on the economy of Union County. The broader impacts of local residential construction on the MSA and State economy would be greater than those provided for the county alone.

THE ECONOMIC IMPACTS OF RESIDENTIAL CONSTRUCTION IN UNION COUNTY, NORTH CAROLINA

I. Introduction and Overview of Union County

Residential construction has a significant economic impact on local and regional economies. This study presents estimates of the economic impact of residential construction on the local economy of Union County, North Carolina. These impacts are measured in terms of changes in the county's annual output, employment, tax revenue, and public costs. Environmental and other related impacts are beyond the scope of this study.

Union County has a total area of 639.6 square miles and is located in the south central portion of the state. It had a 1998 population of 109,995 and a population density of 132.19 per square mile. The county's population grew at a rate of over 3.8% per year during the 1990's. Union County is one of seven counties that make-up the rapidly growing Charlotte-Gastonia-Rock Hill MSA. The county had a Median Family Income in 1999 of \$53,332 and a September 1999 unemployment rate of 1.8%. Monroe is the county's largest town and is also the county seat. The employed county workforce numbered 42,970 in the first quarter of 1999 and the manufacturing sector provided 31.8% of this total.¹

The following sections provide an overview of the study methodology and the estimated economic impacts for both residential single family construction and multi-family unit construction. The last section provides a summary of conclusions and an explanation of how the results of this study can be applied to future residential construction activity in Union County.

II. Methodology

The methodology used in this study assumes two residential construction projects are to be undertaken in Union County in the year 2000. The first project involves the construction, sale, and subsequent occupancy of 100 single family homes. The second project involves the construction, sale, and occupancy of a 100 multi-family unit development. The advantage of estimating the economic impacts for 100 unit projects is the ease of adjusting the estimates to fit newly announced or proposed residential developments in the county. Estimates for any size project can be readily made simply by making the appropriate proportional adjustment. For example if a new development of 255 single family homes was announced the estimated impact would be 2.55 (or 255.0%) times the estimated impacts of the 100 unit development used in this study.

The most important measures of an economic project are typically measured in terms of resulting dollars of output and number of jobs. Using a standard approach to measuring these impacts requires an assessment of the *direct* and *indirect* impacts of the project and then an

assessment of *induced* impacts that result from local responding generated by direct and indirect impacts.² The *total* output and employment impacts are then estimated by summing the direct, indirect, and induced impacts. The methodology used in this study measures the direct impact of building 100 single family homes, or a 100 unit multi-family unit project, and then utilizes a standard and widely used model to estimate the indirect and induced impacts. This model used was IMPLAN Professional. In this study the IMPLAN 322 industry by 322 industry input-output model for Union County was used to obtain multipliers (per dollar of direct impact) for indirect and induced impacts.³ These multipliers were used in conjunction with the most recent information available on residential construction in Union County.

Local tax revenue and local public cost impacts were then estimated based on the estimated output and employment impacts and using the most current local and state data available. In most cases, data were from 1999 and where this was not the case endnotes are provided. An explanation for estimating first a construction phase impact and then an ongoing occupancy phase impact is provided in the following section.

III. Economic Impacts of Single Family Construction

A. Construction Phase

1. Output Impacts. The construction phase of residential construction generates economic impacts based on the size of the residential project. For the estimates to be made in this study it was assumed that the 100 unit project would reflect the average price of single family homes built in 1999. Thus each house was assigned a value of \$157,724 with a raw land value of \$15,000 per lot.⁴ In calculating the direct economic impacts of construction the raw land value was subtracted from the average house price since the raw land value was not attributable to the construction of the house. Thus the direct output impact of the construction phase was:

$$\text{Direct Output Impact} \quad \$142,724 \times 100 \text{ homes} = \$14,272,400$$

This residential project of 100 single family homes has a direct output impact on Union County of \$14,272,400. Additionally there are indirect and induced output effects. Using the IMPLAN Output Multipliers for New Residential Construction yields the following overall model:

$$\begin{aligned} \text{Direct Output Impact} \times \text{Indirect Effect Multiplier} &= \text{Indirect Output Impact} \\ \$14,272,400 \times 0.246054 &= \$3,511,781 \end{aligned}$$

$$\begin{aligned} \text{Direct Output Impact} \times \text{Induced Effect Multiplier} &= \text{Induced Output Impact} \\ \$14,272,400 \times 0.165234 &= \$2,358,286 \end{aligned}$$

$$\begin{aligned} \text{Direct Output Impact} + \text{Indirect Output Impact} + \text{Induced Output Impact} &= \text{Total Output Impact} \\ \$14,272,400 + \$3,511,781 + \$2,358,286 &= \$20,142,453 \end{aligned}$$

Thus, it is estimated that a 100 single family homeresidential construction project in Union County will increase year 2000 county output by \$20,142,453.

2. Employment Impacts. Increasing output will be accompanied by an increase in county employment. IMPLAN provides direct, indirect, and induced employment multipliers per million dollars of output.⁷ For Union County these employment multipliers per million dollars of output for New Residential Construction are:

	<u>Employment Multiplier</u>	x	<u>(Output Impact/1,000,000)</u>	=	<u>Employment Impact</u>
Direct	11.4680	x	14.272 million	=	164 jobs
Indirect	3.4492	x	3.512 million	=	49 jobs
Induced	2.3184	x	4.271 million	=	<u>33 jobs</u>
Total Employment Impact				=	246 jobs

Thus, it is estimated that a 100 single family homeresidential construction project in Union County will increase year 2000 county employment by a total of 246 jobs. Table 1 gives a breakdown of

TABLE 1
UNION COUNTY
JOB IMPACTS BY INDUSTRY SECTOR
Per 100 Single Residential Units: Construction Phase

IMPLAN Industry Sector	Number of Jobs
New Residential Construction	164
Food Stores	9
Automotive Dealers and Service Stations	7
General Merchandise Stores	5
Miscellaneous Retail	5
Wholesale Trade	5
Eating and Drinking Establishments	5
Millwork	4
All Others	42
Total Jobs Impact: Construction Phase	246 Jobs

the sectors where these 246 jobs are expected to be created. Not surprisingly the major impact is on the construction industry itself where the estimate is that 164 jobs will be created.

3. Local Tax Revenue Impacts. There will be a large amount of local tax revenue generated by the construction of 100 single family homes in Union County. These revenues are tied to the construction phase and are allocated to the fiscal year in which the project is completed. (If the project overlaps a fiscal year the local tax revenues indicated would still be received over an assumed 12 month period that begins with the month in which construction begins.)

a. Residential Permit and Impact Fees

The average level of residential permit and impact fees for single family homes in Union County in 1999 was \$3,518 per unit.⁶ Thus 100 new homes yield direct fees of:

$$\text{Residential Permit and Impact Fees} = 100 \times \$3,518 = \$351,800$$

b. Local Sales and Use Tax

The local share of sales tax collected in North Carolina is 2%. Half of this goes to the county where the tax was collected and the other half is allocated to counties based on their relative share of state population. Sales tax does not apply to the sale of houses and thus these local revenues will arise only from the indirect and induced impacts on which the tax is applied. Using IMPLAN and given the level of indirect and induced impacts specified above for the construction phase it was estimated that North Carolina sales tax would apply to \$3,179,919 of new local spending. Using this estimate the county share of sales tax is:

$$\text{Local Sales Tax Revenue} = (\text{Taxable Expenditures} \times .01) + (\text{Taxable Expenditures} \times .01 \times \text{county population} / \text{state population})$$

$$\begin{aligned} \text{Local Sales Tax Revenue} &= (\$3,179,919 \times .01) + (\$3,179,919 \times .01 \times (110,110 / 7,545,828)) \\ &= \$32,263.21 \end{aligned}$$

c. Property Tax Revenue

A limited amount of direct property tax will be generated during the construction phase of building 100 single family homes. Counties apply their property tax to the value of real and personal property on the tax rolls on January 1 of the tax year. The assumption is made that single family home residential construction takes an average of six months to complete and that the units are started at an even rate during the year. This leads to the conclusion that during the year of construction 25% of the net sales value of 100 units will be on the county tax rolls.⁷ A weighted average county wide property tax rate was computed. This rate reflects county and city property tax rates and the relative populations in each tax jurisdiction. The weighted average

property tax rate for Union County in 1999 was \$.836998 per \$100 of valuation. Combining these two elements provides an estimate of the direct effect of the construction phase on property taxes:

$$\text{Direct Property Tax Revenue} = ((\text{Net Sales Value of 100 New Homes}) \times 0.25 \times (\text{Weighted Average Tax Rate per } \$100)) / 100$$

$$\begin{aligned} \text{Direct Property Tax Revenue} &= (\$14,272,400 \times 0.25 \times .836998) / 100 \\ &= \$29,864.92 \end{aligned}$$

In addition to the direct property tax revenue, the indirect and induced output impacts will generate personal income which in turn will result in an increase in real property to which the local property tax rate will apply. This additional property tax is referred to in this study as Spinoff Property Tax Revenue. To calculate this the ratio of real property per dollar of personal income was calculated based on data available from the Annual Financial Information Reports from the North Carolina Department of State Treasurer. In 1999 Union County had \$4,230,534,580 of real property on the tax rolls which was supported by \$1,567,910,000 of personal income. Thus for each dollar of personal income there was \$2.70 of real property in the county. It was assumed this ratio would be constant as personal income in the county expanded. From IMPLAN it was determined that the local multiplier for indirect and induced personal income is .147512. Then Spinoff Property Tax Revenue could be calculated as:

$$\text{Spinoff Property Tax Revenue} = ((\text{Net Sales Value of 100 New Homes}) \times (\text{Indirect and Induced Personal Income Multiplier}) \times (\text{Ratio of Real Property to Personal Income}) \times (\text{Weighted Average Tax Rate per } \$100)) / 100$$

$$\begin{aligned} \text{Spinoff Property Tax Revenue} &= ((\$14,272,400) \times (.147512) \times (\$2.70) \times (.836998)) / 100 \\ &= \$47,546.98 \end{aligned}$$

Additionally there will be personal property tax revenue arising from the indirect and induced impacts of the construction phase. IMPLAN provides the indirect and induced personal income multiplier, and the ratio of personal property to personal income uses information from the Annual Financial Information Reports from the North Carolina Department of State Treasurer.

$$\text{Personal Property Tax Revenue} = ((\text{Net Sales Value of 100 New Homes}) \times (\text{Indirect and Induced Personal Income Multiplier}) \times (\text{Ratio of Personal Property to Personal Income}) \times (\text{Weighted Average Tax Rate per } \$100)) / 100$$

$$\begin{aligned} \text{Personal Property Tax Revenue} &= ((\$14,272,400) \times (.147512) \times (\$.922) \times (.836998)) / 100 \\ &= \$16,250.62 \end{aligned}$$

Total local property tax revenue for the construction of 100 single family homes is then the sum of direct property tax revenue, spinoff property tax revenue, and personal property tax revenue:

Direct Property Tax Revenue	\$29,864.92
Spinoff Property Tax Revenue	\$47,546.98
Personal Property Tax Revenue	<u>\$16,250.62</u>
Total Local Property Tax Revenue	\$93,662.52

d. Utility Excise Tax

A state tax rate of 3.09% is assigned to expenditures on gas, power, light, and telephone service and distributed to the municipalities in which the expenditure was made. The IMPLAN model for the construction phase indicates an increase in expenditures for these services of \$19,761. The local utility tax revenue is then generated using the proportion of total county population living in municipalities.

Utility Excise Tax Revenue = (Taxable Expenditures) x (Utility Excise Tax Rate) x (Proportion of County Population in Municipalities)

$$\begin{aligned} \text{Utility Excise Tax Revenue} &= (\$19,761) \times .0309 \times .515348 \\ &= \$ 314.68 \end{aligned}$$

e. Excise Stamp Tax on Conveyances

North Carolina levies a conveyance tax of \$1 per \$500 of property value and half the revenue goes to the local government. This tax is levied on the full selling price including land value. Thus for the 100 single family homes this tax is:

Excise Stamp Tax Revenue = ((Total Sales Value of 100 New Homes) x (\$1/\$500) x .5)

$$\begin{aligned} \text{Excise Stamp Tax Revenue} &= ((\$15,772,400) \times (\$1/\$500) \times .5) \\ &= \$15,772.40 \end{aligned}$$

The total of amount of local tax revenue generated by the construction of 100 single family homes in Union County is then estimated to be the sum of:

Residential Permit and Impact Fees	= \$351,800.00
Local Sales Tax Revenue	= 32,263.21
Total Local Property Tax Revenue	= 93,662.52
Utility Excise Tax Revenue	= 314.68
Excise Stamp Tax Revenue	= <u>15,772.40</u>
Total Local Tax Revenue-Construction Phase	= \$493,812.81

4. Local Public Cost Impacts. During the single family homeresidential construction phase the increase in local public sector costs in the areas of inspection costs and public safety costs are estimated.

a. Inspection Costs

Ongoing inspection is required of all construction in a municipality or county, and these cost are directly impacted by the number of units being constructed and the dollar value (size) of the project. To estimate the cost of inspecting 100 single family houses the total 1999 inspection budgets of Union County and each municipality within the county were summed, and an inspection cost per dollar of residential construction in 1999 was estimated.⁸ This inspection cost per dollar of residential construction was then multiplied by the net sales value in of 100 single family homes to find the total inspection costs.

Total Inspection Costs = (Net Sales Value of 100 New Homes) x (Inspection Cost per Dollar of Residential Construction)

$$\text{Total Inspection Costs} = (\$14,272,400) \times (0.002280493) = \$32,548.11$$

b. Public Safety Costs

There will be police and fire protection provided for residential construction as the construction project is completed. The 1999 public safety expenditures of Union County and each municipality within the county were summed. This number was then divided by the total assessed value of real property within the county to get a public safety cost per dollar of assessed value.⁹ Again it was assumed that single family homeresidential construction takes an average of six months to complete and that the units are started at an even rate during the year. This led to the conclusion that during the year of construction 25% of the net sales value of 100 units will be on the county tax rolls. Total public safety costs were then estimated as:

Total Public Safety Costs = ((Net Sales Value of 100 New Homes) x 0.25 x (Public Safety Expenditures per Dollar of Assessed Value))

$$\text{Total Public Safety Costs} = (\$14,272,400) \times 0.25 \times (.006288) = \$22,436.79$$

Total local public sector costs are the sum of total inspection costs and total public safety costs.

Total Inspection Costs	= \$32,548.11
Total Public Safety Costs	= <u>22,436.79</u>
Total Local Public Sector Costs-Construction Phase	= \$54,984.90

Once construction is completed there is a set of ongoing economic impacts that are tied to the economic activity of 100 new households in the county. The following section provides estimates of these ongoing impacts.

B. Annual Occupancy Phase Impacts

1. Output Impacts. The annual occupancy phase of the economic impact of residential construction is based on the assumption that in the absence of new residential construction population would flow to the other counties in the MSA. Thus there is a level of spending that will occur in Union County that would not occur if new residents do not locate there.¹⁰ In this study the assumption is made that the 100 new residential units will be occupied by either residents new to the county or existing residents whose previous dwelling was sold to a new resident. This assumption is based on the ongoing rapid growth in the population of the county and MSA.¹¹ The median household income of Union County homeowners was estimated to be \$61,641.¹²

Given this median household income level the 100 new households will have a combined household income of \$6,164,100 ($\$61,641 \times 100$). Given this level of household income the amount of income available to be spent within the county will be reduced by the percentage of household income paid in federal and state taxes, Social Security taxes, and pension contributions. The Consumer Expenditure Survey indicates that these leakages from household income total 19.91%. This means the median household income level of the 100 new households should be adjusted downward to \$4,936,828 ($80.09\% \times \$6,164,100$). The IMPLAN output multipliers for the adjusted household income are then used to estimate the ongoing impact of the 100 new homes on the level of county output.

Type of Impact	IMPLAN Output Multiplier	Adjusted Household Income	Estimated Output Impact
Direct	0.4043	\$4,936,828	\$2,016,355
Indirect	0.0743	\$4,936,828	\$370,414
Induced	0.0733	\$4,936,828	\$365,726
Total	0.5520	\$4,936,828	\$2,752,471

The relatively small size of the output multipliers reflects the substantial portion of household income expected to be spent outside the county. The ongoing impact of building 100 new single family homes is to increase county output by \$2,752,471.

2. Employment Impacts. Using the IMPLAN employment multipliers (per million dollars of output) this level of increased output will support the following number of new jobs in the county:

	<u>Employment Multiplier</u>	x	<u>(Output Impact/1,000,000)</u>	=	<u>Employment Impact</u>
Direct	5.9460	x	2.752471 million	=	30 jobs
Indirect	0.8233	x	2.752471 million	=	4 jobs
Induced	1.0062	x	2.752471 million	=	<u>5 jobs</u>
Total Employment Impact				=	39 jobs

Thus it is estimated that the ongoing employment impact of 100 new single residential units occupied by new residents to Union County will be to increase county employment by a total of 39 jobs. The distribution of these jobs would be assumed to reflect the overall county employment pattern.

3. Local Tax Revenue Impacts. Like the construction phase there will be significant local revenue impacts during the occupancy phase. These revenue impacts are estimated below:

a. Local Sales and Use Tax

The local share of sales tax will be based on the combined income of the 100 new households and the proportion of their income spent in Union County on taxable goods and services and the taxable spending in the county that arises from indirect and induced impacts. Using IMPLAN and given the level of direct household income and the indirect and induced impacts specified above for the ongoing phase it was estimated that North Carolina sales tax would apply to \$1,383,888 of new local spending. Using this estimate the county share of sales tax is:

Local Sales Tax Revenue = (Taxable Expenditures x .01) + (Taxable Expenditures x .01 x county population/state population)

$$\text{Local Sales Tax Revenue} = (\$1,383,888 \times .01) + (\$1,383,888 \times .01 \times (110,110 / 7545828))$$

$$= \$14,040.81$$

b. Property Tax Revenue

Direct property tax will apply to the net sales value of the 100 single family homes. Combining this value and the weighted average tax rate on real property identified earlier leads to the estimated direct property tax revenue:

$$\text{Direct Property Tax Revenue} = ((\text{Net Sales Value of 100 New Homes}) \times (\text{Weighted Average Tax Rate per } \$100)) / 100$$

$$\begin{aligned} \text{Direct Property Tax Revenue} &= (\$14,272,400 \times 0.836998) / 100 \\ &= \$119,459.70 \end{aligned}$$

In addition to the direct property tax revenue, the ongoing indirect and induced output impacts will generate personal income which in turn will result in an increase in real property to which the local property tax rate will apply. This is the spinoff property tax revenue during the occupancy phase. The spinoff property tax during the occupancy phase was estimated using the same approach specified for the construction phase. From IMPLAN it was determined that the local multiplier for indirect and induced personal income is .049745. The Spinoff Property Tax Revenue could be calculated as:

$$\begin{aligned} \text{Spinoff Property Tax Revenue} &= ((\text{Total Personal Income of 100 New Households}) \times \\ &(\text{Indirect and Induced Personal Income Multiplier}) \times (\text{Ratio of Real Property to Personal Income}) \\ &\times (\text{Weighted Average Tax Rate per } \$100)) / 100 \end{aligned}$$

$$\begin{aligned} \text{Spinoff Property Tax Revenue} &= ((\$6,164,145) \times (.049745) \times (\$2.70) \times (0.836998)) / 100 \\ &= \$6,925.01 \end{aligned}$$

There will be personal property tax revenue arising from the direct, indirect, and induced impacts of the occupancy phase. The direct personal property tax was estimated using the estimated total personal income of the 100 new households and the ratio of personal property to personal income. IMPLAN provides the indirect and induced personal income multiplier for the occupancy phase.

$$\begin{aligned} \text{Personal Property Tax Revenue} &= ((\text{Total Personal Income of 100 New Households}) + \\ &(\text{Net Sales Value of 100 New Homes}) \times (\text{Indirect and Induced Personal Income Multiplier})) \times \\ &(\text{Ratio of Personal Property to Personal Income}) \times (\text{Weighted Average Tax Rate per } \$100) / 100 \end{aligned}$$

$$\begin{aligned} \text{Personal Property Tax Revenue} &= ((\$6,164,145) + (\$14,272,400) \times (.049745)) \times (\$.922) \times \\ &(0.836998) / 100 \\ &= \$43,195.81 \end{aligned}$$

Total local property tax revenue for the construction of 100 single family homes is then the sum of direct property tax revenue, spinoff property tax revenue, and personal property tax revenue:

Direct Property Tax Revenue	\$119,459.70
Spinoff Property Tax Revenue	6,925.02
Personal Property Tax Revenue	<u>43,195.81</u>
Total Local Property Tax Revenue	\$169,580.53

c. Utility Excise Tax

The state tax rate of 3.09% is assigned to expenditures on gas, power, light, and telephone service and distributed to the municipalities in which the expenditure was made. The IMPLAN model for the ongoing phase indicates an increase in expenditures for these services of \$25,572. The local utility tax revenue is then generated using the proportion of total county population living in municipalities.

Utility Excise Tax Revenue = (Taxable Expenditures) x (Utility Excise Tax Rate) x (Proportion of County Population in Municipalities)

$$\text{Utility Excise Tax Revenue} = (\$25,572) \times .0309 \times .515300 = \$407.22$$

d. Other Revenue

There are a number of intergovernmental transfers that are based on population that will be an ongoing source of revenue for local government resulting from the 100 new households.¹³ This revenue was estimated as:

Total Other Revenue = (Other Intergovernmental Transfers per Person) x (Average Household Size) x 100

$$\text{Total Other Revenue} = (\$14.14) \times 2.60 \times 100 = \$3,676.67$$

The total amount of local tax revenue generated by the ongoing occupancy of 100 single family homes in Union County is then estimated to be the sum of:

Local Sales Tax Revenue	= \$ 14,040.81
Total Local Property Tax Revenue	= 169,580.53
Utility Excise Tax Revenue	= 407.22
Total Other Revenue	= <u>3,676.67</u>
Total Local Tax Revenue-Occupancy Phase	= \$187,705.23

4. Local Public Cost Impacts. During the ongoing occupancy phase of 100 single family homes the increase in local public sector costs will include local school costs, local highway expenditures, water and sewer capital construction, and other local operating costs (including public safety).

a. Local Public School Costs

Local expenditures on public schools include a contribution to the operating budgets of the school system and capital expenditures. The local public contribution is made on a per pupil basis. The 1999 per pupil contribution in Union County was \$859. The number of public school students per household was calculated using 1999 public school enrollment data and an average

household size for the new homes of 2.60.¹⁴ The ongoing impact on this education expenditure of 100 new single family homes was estimated as:

Total Local School Operating Costs = (Local Public Contribution per Pupil) x (Number of Public School Students per Household) x 100

$$\text{Total Local School Operating Costs} = \$859 \times .484156 \times 100 = \$41,588.99$$

There will also be local capital expenditures on public schools. This estimate was made using the five year average of school construction costs per public school student in the county and the number of public school students per household.¹⁵ This capital construction cost per student was then adjusted using the state average percentage of local contribution to school capital construction costs.¹⁶

Total School Capital Construction Costs = (Five Year Average of School Construction Costs per Public School Student) x (State Average % of Local Contribution to School Capital Construction Costs) x (Number of Public School Students per Household) x 100

$$\text{Total School Capital Construction Costs} = \$329.79 \times .5367 \times .484156 \times 100 = \$8,553.51$$

Total public school costs for 100 new single family homes is the sum of estimated operating and construction costs.

Total Local School Operating Costs	= \$41,588.99
Total School Capital Construction Costs	= <u>8,553.51</u>
Total Public School Costs	= \$50,142.50

b. Net Local Public Highway Costs

Local public highway costs are offset by intergovernmental transfers of public revenue that are designated for use on local highway costs. These transfers include money from (1) the Powell Bill that goes to municipalities based on population and miles of city maintained roads and (2) other transportation related transfers. The net impact of 100 new households on local public highway costs were judged to be zero in Union County since total 1999 transfers exceeded total local public highway costs.¹⁷

$$\text{Total Net Local Public Highway Costs} = 0$$

c. Local Capital Water and Sewer Costs

Total local capital water and sewer costs were estimated using the per person total 1999 capital expenditures in the county on water and sewer and the average household size of owner occupied residences.¹⁸

Total Local Capital Water and Sewer Costs = (Per Person Capital Expenditures on Water and Sewer) x (Average Household Size of Owner Occupied Residences) X 100

Total Local Capital Water and Sewer Costs = \$64.13 x 2.60 x 100 = \$16,674.59

d. Other Local Government Operating Costs

In addition to the ongoing costs of public safety, local governments will face increased costs that include parks and recreation and general administration costs. These costs were estimated based on 1999 per person total county and local expenditures on these other costs and expected household size.¹⁹

Total Other Local Government Operating Costs = (Per Person Total County and Municipal Expenditures on Other Government Costs) x (Average Household Size of Owner Occupied Residences) X 100

Total Other Local Government Operating Costs = \$241.60 x 2.60 x 100 = \$62,815.33

Total local public sector costs are the sum of each type of cost estimated above:

Total Local Capital Water and Sewer Costs	= \$ 16,674.59
Total Net Local Public Highway Costs	= 0
Total Public School Costs	= 50,142.50
Total Other Local Government Operating Costs	= <u>62,815.33</u>
Total Local Public Sector Costs-Occupancy Phase	= \$129,632.42

C. Summary

The economic impact of constructing 100 new single residential units valued at an average selling price of \$157,724 in Union County is estimated to have a significant impact on the local economy. These impacts were divided into impacts during the construction phase and impacts resulting from ongoing occupancy of the 100 new residential units. The following impacts were estimated:

Economic Impacts During the Construction Phase

- Increase County Output by \$20,142.453
- Increase County Employment by 246 Jobs
- Increase Total Local Tax Revenue by \$493,813
- Increase Total Local Public Sector Costs by \$54,985

Economic Impacts During the Occupancy Phase

- Increase County Output by \$2,752,471

- Increase County Employment by 39 Jobs
- Increase Total Local Tax Revenue by \$187,705
- Increase Total Local Public Sector Costs by \$129,632

IV. Economic Impacts of Multi-Family Unit Construction

A. Construction Phase

1. Output Impacts. The construction phase of a multi-family unit residential construction project will generate economic impacts based on the size of the multi-family unit project. For the estimates to be made in this study it was assumed that 100 units are included in this multi-family unit project. Further it was assumed these units would reflect the average sales price per unit of multi-family unit projects built in Union County in 1999. Thus each unit was assigned a value of \$58,500 with a raw land value of \$5,000 per unit.²⁰

As was the case for single family home residential construction in calculating the direct economic impacts of multi-family unit construction the raw land value was subtracted from the average sales price since the raw land value was not attributable to the construction of the unit. Thus for this multi-family unit project the direct output impact of the construction phase was:

$$\text{Direct Output Impact} \quad \$53,500 \times 100 \text{ units} = \$5,350,000$$

This multi-family unit residential project of 100 units has a direct output impact on Union County of \$5,350,000.

Using the IMPLAN Output Multipliers for New Residential Construction yields the following overall model:

$$\begin{array}{rcl} \text{Direct Output Impact} \times \text{Indirect Effect Multiplier} & = & \text{Indirect Output Impact} \\ \$5,350,000 \quad \times \quad 0.246054 & & = \quad \$1,316,383 \end{array}$$

$$\begin{array}{rcl} \text{Direct Output Impact} \times \text{Induced Effect Multiplier} & = & \text{Induced Output Impact} \\ \$5,350,000 \quad \times \quad 0.165234 & & = \quad \$884,002 \end{array}$$

$$\begin{array}{rcl} \text{Direct Output Impact} + \text{Indirect Output Impact} + \text{Induced Output Impact} & = & \text{Total Output Impact} \\ \$5,350,000 \quad + \quad \$1,316,383 \quad + \quad \$884,002 & & = \quad \$7,550,385 \end{array}$$

Thus it is estimated that a 100 multi-family unit residential construction project in Union County will increase year 2000 county output by \$7,550,385.

2. Employment Impacts. This increasing output will be accompanied by an increase in county employment. Again, IMPLAN provides direct, indirect, and induced employment multipliers per million dollars of output. For Union County these employment multipliers per million dollars of output for New Residential Construction are:

	<u>Employment Multiplier</u>	x	<u>(Output Impact/1,000,000)</u>	=	<u>Employment Impact</u>
Direct	11.4680	x	5.350000 million	=	61 jobs
Indirect	3.4492	x	1.316383 million	=	19 jobs
Induced	2.31384	x	.884002 million	=	12 jobs
Total Employment Impact				=	92 jobs

Thus it is estimated that a 100 multi-family unit residential construction project in Union County will increase year 2000 county employment by a total of 92 jobs. Table 2 gives a breakdown of the sectors where these 92 jobs are expected to be created. Again the major impact is on the construction industry itself where the estimate is that 62 jobs will be created.

**TABLE 2
UNION COUNTY
JOB IMPACTS BY INDUSTRY SECTOR
Per 100 Multi Residential Units: Construction Phase**

IMPLAN Industry Sector	Number of Jobs
New Residential Construction	62
Food Stores	4
Miscellaneous Retail	2
General Merchandise Stores	2
Automotive Dealers and Service Stations	2
Wholesale Trade	2
Eating and Drinking Establishments	2
Motor Freight Transport and Warehousing	1
All Others	15
Total Jobs Impact-Construction Phase	92 Jobs

3. Local Tax Revenue Impacts. There will be a large amount of local tax revenue generated by the construction of 100 multi-family units in Union County. These revenues are tied to the construction phase and are allocated to the fiscal year in which the project is completed. (If

the project overlaps a fiscal year the local tax revenues indicated would still be received over an assumed 12 month period that begins with the month in which construction begins.)

a. Residential Permit and Impact Fees

The average level of residential permit and impact fees per multi-family unit in Union County in 1999 was \$3,400 per unit. Thus 100 multi-family units yield direct fees of:

$$\text{Residential Permit and Impact Fees} = 100 \times \$3,400 = \$340,000$$

b. Local Sales and Use Tax

Using IMPLAN and given the level of indirect and induced impacts specified above for the construction phase it was estimated that North Carolina sales tax would apply to \$1,191,991 of new local spending. Using this estimate the county share of sales tax is:

$$\text{Local Sales Tax Revenue} = (\text{Taxable Expenditures} \times .01) + (\text{Taxable Expenditures} \times .01 \times \text{county population} / \text{state population})$$

$$\begin{aligned} \text{Local Sales Tax Revenue} &= (\$1,191,991 \times .01) + (\$1,191,991 \times .01 \times (110,110 / 7545828)) \\ &= \$12,093.84 \end{aligned}$$

c. Property Tax Revenue

A limited amount of direct property tax will be generated during the construction phase of building 100 multi-family units. Using the same approach specified above for single family homeconstruction:

$$\text{Direct Property Tax Revenue} = ((\text{Net Sales Value of 100 Multi-family units}) \times 0.25 \times (\text{Weighted Average Tax Rate per } \$100)) / 100$$

$$\begin{aligned} \text{Direct Property Tax Revenue} &= (\$5,350,000 \times 0.25 \times 0.836998) / 100 \\ &= \$11,194.85 \end{aligned}$$

In addition to the direct property tax revenue, the indirect and induced output impacts will generate personal income which in turn will result in an increase in real property to which the local property tax rate will apply. From IMPLAN it was determined that the local multiplier for indirect and induced personal income is .145729. Then Spinoff Property Tax Revenue was calculated as:

$$\text{Spinoff Property Tax Revenue} = ((\text{Net Sales Value of 100 Multi-Family Units}) \times (\text{Indirect and Induced Personal Income Multiplier}) \times (\text{Ratio of Real Property to Personal Income}) \times (\text{Weighted Average Tax Rate per } \$100)) / 100$$

$$\begin{aligned} \text{Spinoff Property Tax Revenue} &= ((\$5,350,000) \times (.145729) \times (\$2.70) \times (0.836998)) / 100 \\ &= \$17,822.95 \end{aligned}$$

Additionally there will be personal property tax revenue arising from the indirect and induced impacts of the construction phase. IMPLAN provides the indirect and induced personal income multiplier, and the ratio of personal property to personal income is the same ratio calculated earlier for single family homeconstruction.

$$\text{Personal Property Tax Revenue} = ((\text{Net Sales Value of 100 Multi-Family Units}) \times (\text{Indirect and Induced Personal Income Multiplier}) \times (\text{Ratio of Personal Property to Personal Income}) \times (\text{Weighted Average Tax Rate per } \$100)) / 100$$

$$\begin{aligned} \text{Personal Property Tax Revenue} &= ((\$5,350,000) \times (.145729) \times (\$.922) \times (0.836998)) / 100 \\ &= \$6,091.54 \end{aligned}$$

Total local property tax revenue for the construction of 100 multi-family units is then the sum of direct property tax revenue, spinoff property tax revenue, and personal property tax revenue:

Direct Property Tax Revenue	\$ 11,194.85
Spinoff Property Tax Revenue	17,822.95
Personal Property Tax Revenue	<u>6,091.54</u>
Total Local Property Tax Revenue =	\$ 35,109.34

d. Utility Excise Tax

The IMPLAN model for the construction phase indicates an increase in expenditures for these services of \$11,477. The local utility tax revenue is then generated using the proportion of total county population living in municipalities.

$$\text{Utility Excise Tax Revenue} = (\text{Taxable Expenditures}) \times (\text{Utility Excise Tax Rate}) \times (\text{Proportion of County Population in Municipalities})$$

$$\begin{aligned} \text{Utility Excise Tax Revenue} &= (\$11,477) \times .0309 \times .5153 \\ &= \$ 182.76 \end{aligned}$$

e. Excise Stamp Tax on Conveyances

Again, North Carolina levies a conveyance tax of \$1 per \$500 of property value, and half the revenue goes to the local government. This tax is levied on the full selling price including land value. Thus for the 100 multi-family units this tax is:

$$\text{Excise Stamp Tax Revenue} = ((\text{Total Sales Value of 100 Multi-Family Units}) \times (\$1/\$500) \times .5)$$

$$\begin{aligned} \text{Excise Stamp Tax Revenue} &= ((\$5,850,000) \times (\$1/\$500) \times .5) \\ &= \$5,850 \end{aligned}$$

The total of amount of local tax revenue generated by the construction of 100 multi-family units in Union County is then estimated to be the sum of:

Residential Permit and Impact Fees	=	\$340,000.00
Local Sales Tax Revenue	=	12,093.84
Total Local Property Tax Revenue	=	35,109.34
Utility Excise Tax Revenue	=	182.76
Excise Stamp Tax Revenue	=	<u>5,850.00</u>
Total Local Tax Revenue-Construction Phase	=	\$393,235.94

4. Local Public Cost Impacts. During the multi-family unit residential construction phase the increase in local public sector costs in the areas of inspection costs and public safety costs are estimated using the same approach specified for single family homeconstruction.

a. Inspection Costs

Total Inspection Costs = (Net Sales Value of 100 Multi-family units) x (Inspection Cost per Dollar of Residential Construction)

$$\text{Total Inspection Costs} = (\$5,350,000) \times (0.002280) = \$12,200.64$$

b. Public Safety Costs

Again it was assumed that multi-family unit residential construction takes an average of six months to complete and that the units are started at an even rate during the year. This lead to the conclusion that during the year of construction 25% of the net sales value of 100 units will be on the county tax rolls. Total public safety costs were then estimated as:

Total Public Safety Costs = ((Net Sales Value of 100 Multi-family units) x 0.25 x (Public Safety Expenditures per Dollar of Assessed Value))

$$\text{Total Public Safety Costs} = (\$5,350,000) \times 0.25 \times (.006288) = \$8,410.42$$

Total local public sector costs are the sum of total inspection costs and total public safety costs.

Total Inspection Costs	=	\$12,200.64
Total Public Safety Costs	=	<u>\$8,410.42</u>
Total Local Public Sector Costs-Construction Phase	=	\$20,611.06

Once construction is completed there are a set of ongoing economic impacts that are tied to the economic activity of 100 new households in the county. The following section provides estimates of these ongoing impacts.

B. Annual Occupancy Phase Impacts

1. Output Impacts. As noted earlier the annual occupancy phase of the economic impact of residential construction is based on the assumption that in the absence of new residential construction population would flow to the other counties in the MSA. In this study the assumption is made that the 100 new multi-family units will be occupied by residents new to the county. The median household income of Union County renters was estimated to be \$34,027.²¹

Given this median household income level the 100 new households will have a combined household income of \$3,402,700 (\$34,027 x 100). This level of household income will be reduced by the percentage of household income paid in federal and state taxes, Social Security taxes, and pension contributions to determine the amount of income available to be spent within the county. As noted earlier The Consumer Expenditure Survey indicates that these leakages from household income total 19.91%. This means the median household income level of the 100 new households should be adjusted downward to \$2,752,790 (80.09% x \$3,402,700). The IMPLAN output multipliers for the adjusted household income are then used to estimate the ongoing impact of the 100 new multi-family units on the level of county output.

Type of Impact	IMPLAN Output Multiplier	Adjusted Household Income	Estimated Output Impact
Direct	0.4043	\$2,752,790	\$1,113,049
Indirect	0.0743	\$2,752,790	\$ 204,475
Induced	0.0733	\$2,752,790	\$ 201,884
Total	0.5519	\$2,752,790	\$1,519,408

The ongoing impact of building a new 100 multi-family unit residential project is to increase county output by \$1,519,408 per year.

2. Employment Impacts. Using the IMPLAN employment multipliers (per million dollars of output) this level of increased output will support the following number of new jobs in the county:

	<u>Employment Multiplier</u>	x	<u>(Output Impact/1,000,000)</u>	=	<u>Employment Impact</u>
Direct	5.9460	x	2.752790 million	=	16 jobs
Indirect	0.8233	x	2.752790 million	=	2 jobs
Induced	1.0062	x	2.752790 million	=	3 jobs
Total Employment Impact				=	21 jobs

Thus it is estimated that the ongoing employment impact of a new 100 multi-family unit residential project occupied by new residents to Union County will be to increase county employment by a total of 21 jobs. The distribution of these jobs would again be assumed to reflect the overall county employment pattern.

3. Local Tax Revenue Impacts. Like the construction phase there will be significant local revenue impacts during the occupancy phase. These revenue impacts are estimated using the approach developed above for single family homeconstruction.

a. Local Sales and Use Tax

Using IMPLAN and given the level of direct household income and the indirect and induced impacts specified above for the ongoing phase it was estimated that North Carolina sales tax would apply to \$763,928 of new local spending. Using this estimate the county share of sales tax is:

Local Sales Tax Revenue = (Taxable Expenditures x .01) + (Taxable Expenditures x .01 x county population/state population)

$$\text{Local Sales Tax Revenue} = (\$763,928 \times .01) + (\$763,928 \times .01 \times (110,110 / 7545828)) \\ = \$7,750.76$$

b. Property Tax Revenue

Direct property tax will apply to the net sales value of the 100 multi-family units. Combining this value and the weighted average tax rate on real property identified earlier leads to the estimated direct property tax revenue:

Direct Property Tax Revenue = ((Net Sales Value of 100 Multi-Family Units) x (Weighted Average Tax Rate per \$100)) / 100

$$\text{Direct Property Tax Revenue} = (\$5,350,000 \times 0.0836998) / 100 \\ = \$44,779.39$$

The spinoff property tax was estimated using the same approach specified for the construction phase. From IMPLAN it was determined that the local multiplier for indirect and induced personal income is .049745. Then Spinoff Property Tax Revenue could be calculated as:

$$\text{Spinoff Property Tax Revenue} = ((\text{Total Personal Income of 100 New Households}) \times (\text{Indirect and Induced Personal Income Multiplier}) \times (\text{Ratio of Real Property to Personal Income}) \times (\text{Weighted Average Tax Rate per } \$100)) / 100$$

$$\begin{aligned} \text{Spinoff Property Tax Revenue} &= ((\$3,402,707) \times (.049745) \times (\$2.12) \times (0.836998)) / 100 \\ &= \$3,822.72 \end{aligned}$$

There will be personal property tax revenue arising from the direct, indirect, and induced impacts of the occupancy phase. The direct personal property tax was again estimated using the estimated total personal income of the 100 new multi-family unit households and the ratio of personal property to personal income. IMPLAN provides the indirect and induced personal income multiplier for the occupancy phase.

$$\text{Personal Property Tax Revenue} = ((\text{Total Personal Income of 100 New Households}) + (\text{Net Sales Value of 100 New Homes}) \times (\text{Indirect and Induced Personal Income Multiplier})) \times ((\text{Ratio of Personal Property to Personal Income}) \times (\text{Weighted Average Tax Rate per } \$100)) / 100$$

$$\text{Personal Property Tax Revenue} = ((\$3,402,707) + (\$5,350,000) \times (.049745)) \times ((\$.922) \times (0.836998)) / 100 = \$24,654.67$$

Total local property tax revenue for the construction of 100 single family homes is then the sum of direct property tax revenue, spinoff property tax revenue, and personal property tax revenue:

Direct Property Tax Revenue	\$ 44,799.39
Spinoff Property Tax Revenue	3,822.72
Personal Property Tax Revenue	<u>16,611.25</u>
Total Local Property Tax Revenue	\$ 65,213.36

c. Utility Excise Tax

The state tax rate of 3.09% is assigned to expenditures on gas, power, light, and telephone service and distributed to the municipalities in which the expenditure was made. The IMPLAN model for the occupancy phase indicates an increase in expenditures for these services of \$25,572. The local utility tax revenue is then generated using the proportion of total county population living in municipalities.

$$\text{Utility Excise Tax Revenue} = (\text{Taxable Expenditures}) \times (\text{Utility Excise Tax Rate}) \times (\text{Proportion of County Population in Municipalities})$$

$$\text{Utility Excise Tax Revenue} = (\$25,572) \times .0309 \times .5153 = \$407.22$$

d. Other Revenue

There are a number of intergovernmental transfers that are based on population that will be an ongoing source of revenue for local government based on the 100 new households.¹³ This revenue was estimated as:

$$\text{Total Other Revenue} = (\text{Other Intergovernmental Transfers per Person}) \times (\text{Average Household Size}) \times 100$$

$$\text{Total Other Revenue} = (\$14.14) \times 2.46 \times 100 = \$3,478.70$$

The total of amount of local tax revenue generated by the ongoing occupancy of 100 multi-family units in Union County is then estimated to be the sum of:

Local Sales Tax Revenue	= \$ 7,780.76
Total Local Property Tax Revenue	= 65,213.36
Utility Excise Tax Revenue	= 407.22
Total Other Revenue	= <u>3,478.70</u>
Total Local Tax Revenue-Occupancy Phase	= \$ 76,850.04

4. Local Public Cost Impacts. During the ongoing occupancy phase of 100 multi-family units the increase in local public sector costs will include local school costs, local highway expenditures, water and sewer capital construction costs, and other local operating costs (including public safety costs).

a. Local Public School Costs

Again, the 1999 per pupil contribution in Union County was \$859. The number of public school students per household was calculated using 1999 public school enrollment data and an average household size for the multi-family units of 2.46. The ongoing impact on this education expenditure of 100 new multi-family units was estimated as:

$$\text{Total Local School Operating Costs} = (\text{Local Public Contribution per Pupil}) \times (\text{Number of Public School Students per Household}) \times 100$$

$$\text{Total Local School Operating Costs} = \$859 \times .458086 \times 100 = \$39,349.58$$

There will also be local capital expenditures on public schools. This estimate was made using the five year average of school construction costs per public school student in the county and the number of public school students per household for renters in Union County.

Total School Capital Construction Costs = (Five Year Average of School Construction Costs per Public School Student) x (State Average % of Local Contribution to School Capital Construction Costs) x (Number of Public School Students per Household) x 100

$$\text{Total School Capital Construction Costs} = \$329.79 \times .5367 \times .458086 \times 100 = \$8,092.94$$

Total public school costs for 100 new multi-family units is the sum of estimated operating and construction costs.

Total Local School Operating Costs	= \$39,349.58
Total School Capital Construction Costs	= <u>8,092.94</u>
Total Public School Costs	= \$47,442.52

b. Net Local Public Highway Costs

Local public highway costs are offset by intergovernmental transfers of public revenue that are designated for use on local highway costs. The net impact of 100 new households on local public highway costs were judged to be zero in Union County since total 1999 transfers exceeded total local public highway costs.¹⁷

$$\text{Total Net Local Public Highway Costs} = 0$$

c. Local Capital Water and Sewer Costs

Total local capital water and sewer costs were estimated using the same approach specified above for single family homeconstruction.

Total Local Capital Water and Sewer Costs = (Per Person Capital Expenditures on Water and Sewer) x (Average Household Size of Owner Occupied Residences) X 100

$$\text{Total Local Capital Water and Sewer Costs} = \$64.13 \times 2.46 \times 100 = \$15,776.73$$

d. Other Local Government Operating Costs

Again, these costs were estimated based on 1999 per person total county and local expenditures on these other costs and expected household size.

Total Other Local Government Operating Costs = (Per Person Total County and Municipal Expenditures on Other Government Costs) x (Average Household Size of Multi-Family Unit Residences) X 100

$$\text{Total Other Local Government Operating Costs} = \$341.60 \times 2.46 \times 100 = \$59,432.96$$

Total local public sector costs are the sum of each type of cost estimated above:

Total Local Capital Water and Sewer Costs	= \$ 15,776.73
Total Net Local Public Highway Costs	= 0
Total Public School Costs	= 47,442.52
Total Other Local Government Operating Costs	= <u>59,432.96</u>
Total Local Public Sector Costs-Occupancy Phase	= \$122,652.21

C. Summary

The economic impact of constructing 100 new multi residential units valued at an average selling price of \$58,500 in Union County is estimated to have a major impact on the local economy. These estimated impacts were divided into impacts during the construction phase and impacts resulting from ongoing occupancy of the 100 new residential units. The following impacts were estimated:

Economic Impacts During the Construction Phase

- Increase County Output by \$7,550,385
- Increase County Employment by 92 Jobs
- Increase Total Local Tax Revenue by \$393,236
- Increase Total Local Public Sector Costs by \$20,611

Economic Impacts During the Occupancy Phase

- Increase County Output by \$1,519,408
- Increase County Employment by 21 Jobs
- Increase Total Local Tax Revenue by \$76,850
- Increase Total Local Public Sector Costs by \$122,652

V. Conclusions and Applications

Residential construction has a significant economic impact on local and regional economies. This study presents estimates of the economic impact of residential construction on the local economy of Union County, North Carolina. These impacts are measured in terms of changes in the county's annual output, employment, tax revenue, and public costs.

The methodology used in this study assumes two residential construction projects are to be undertaken in Union County in the year 2000. The first project involves the construction, sale, and subsequent occupancy of 100 single family homes. The second project involves the construction, sale, and occupancy of a 100 multi-family unit development. The advantage of estimating the economic impacts for 100 unit projects is the ease of adjusting the estimates to fit newly announced or proposed residential developments in the county.

The following estimates were made for each phase of impacts:

Construction Phase Impacts:

100 New Single family Homes are estimated to:

- Increase County Output by \$20,142,453
- Increase County Employment by 246 Jobs
- Increase Total Local Tax Revenue by \$493,813
- Increase Total Local Public Sector Costs by \$54,985

100 New Multi-Family Units are estimated to:

- Increase County Output by \$7,550,385
- Increase County Employment by 92 Jobs
- Increase Total Local Tax Revenue by \$393,236
- Increase Total Local Public Sector Costs by \$20,611

Ongoing Occupancy Phase Impacts:

100 New Single Family Homes are estimated to:

- Increase County Output by \$2,752,471
- Increase County Employment by 39 Jobs
- Increase Total Local Tax Revenue by \$187,705
- Increase Total Local Public Sector Costs by \$129,632

100 New Multi-Family Units are estimated to:

- Increase County Output by \$1,519,408
- Increase County Employment by 21 Jobs
- Increase Total Local Tax Revenue by \$76,850
- Increase Total Local Public Sector Costs by \$122,652

During the Construction phase both single family and multi family construction provide a one-year net positive source of revenue for county and local government. The increase in local revenue is \$493,813 per 100 single family homes, while the increase in local public sector costs is \$54,985. This produces a net positive source of revenue of \$438,828 for one year. The construction phase of the multi family units provides a one-year net positive source of revenue of \$372,625 for county and local government.

During the ongoing occupancy phase the single family homes provide a net revenue stream for county and local government. The increase in local revenue is \$187,705 per 100 units, while the increase in local public sector costs is \$129,632 per 100 units. This produces a net positive revenue stream of \$58,073 per 100 units. The multi-family unit ongoing revenue impacts produce a net negative revenue stream of \$45,802 per 100 units. From a public policy stand point these two revenue streams should be viewed jointly. It would be incorrect to conclude that because

single family homes produce a net positive ongoing revenue stream while the multi family units produce a net negative ongoing net revenue stream, that public policy should promote single family development and discourage multi-family unit development.

Public policy should provide a range of housing alternatives for residents. In Union County the 1999 positive net revenue stream for single family houses is 1.26 times the size of the negative net revenue stream for multi-family units. As long as Union County continues to build more single family homes than multi-family units then the overall ongoing net revenue stream from residential construction will be positive.

Estimates for any size project can be readily made simply by making the appropriate proportional adjustment. For example if a new development of 255 single family homes was announced the estimated impact would be 2.55 (or 255.0%) times the estimated impacts of the 100 single family home development found in this study. The impacts of a smaller project with for example 65 multi-family units would be estimated by multiplying the multi-family unit impacts provided in this study by .65 (or 65%). The results presented in this study are intended to help measure the economic impact of residential construction on the economy of Union County. The broader impacts of local residential construction on the MSA and State economy would be greater than those provided for the county alone.

Endnotes

1. North Carolina Department of Commerce, Economic Policy and Research Division.
2. Direct impacts are those that result from activity on the construction site and are attributable to the construction activity. Indirect impacts are off-site activities that are attributable to the construction activity. Induced impacts result from responding in the county derived from the direct and indirect impacts.
3. IMPLAN Professional, Minnesota IMPLAN Group, Inc., Stillwater, Minnesota, 1997.
4. *The Metro Area Impact of Home Building in Union County*, North Carolina, Prepared by the Housing Policy Department, National Association of Home Builders, Washington, DC, March 2000.
5. All employment multipliers were adjusted in this study to reflect the inflation indicated in the CPI-U for 1999 versus the CPI-U in 1995 (the IMPLAN employment multipliers are based on outputs measured in 1995 dollars).
6. *The Metro Area Impact of Home Building in Union County*, North Carolina, Prepared by the Housing Policy Department, National Association of Home Builders, Washington, DC, March 2000.
7. The Net Sales Value of the 100 homes subtracts the average land value on which the houses are built since that land value existed on the tax rolls before construction began.
8. Total inspection costs for the county and municipalities were allocated 60% to residential construction and 40% to commercial construction. The inspection cost per dollar of residential construction was calculated based on the total dollar value of single family home and multi-family unit construction in 1999. These values were found in *The Metro Area Impact of Home Building in Union County* referenced earlier.
9. Total public safety costs for 1999 for the county and each municipality were data available from the Annual Financial Information Reports available from the North Carolina Department of State Treasurer. Total Assessed Value was adjusted to 1999 prices using CPI-U.
10. Note that the argument that there will be an ongoing economic impact of residential construction on a given county does not extend to the MSA as a whole. Since commuting patterns are clearly reflected in the composition of an MSA, a person with a job anywhere in the MSA will almost certainly live within the MSA. That individual or household's economic impact is in fact tied to the firm and industry in which they work or derive their income, not to where they live within the MSA. For a given county, however, residential construction will hold some

ongoing economic impacts reflecting the portion of household income that is spent in *that county* that would otherwise be spent somewhere else in the MSA.

11. This assumption also reflects the expectation that if current county residents move into the new homes the vacancies left by this move will be filled by residents new to the county.
12. This median income estimate is based on the 1999 median household income in the county and the ratio of the county median household income of homeowners in the 1990 Census to the overall county median household income in the 1990 Census.
13. The other intergovernmental transfers for 1999 were found in the Annual Financial Information Reports available from the North Carolina Department of State Treasurer. Household size for owner occupied households for the county was found in the 1990 Census.
14. The calculation made by dividing the number of public school children in Union County in 1999 by the number of Union households based on 1999 population and 1990 average household size for single family homes.
15. Average five year public school construction costs per pupil for the county was obtained from the Annual Financial Information Reports available from the North Carolina Department of State Treasurer.
16. This value was found in the Annual Financial Information Reports available from the North Carolina Department of State Treasurer.
17. These values were found in the Annual Financial Information Reports available from the North Carolina Department of State Treasurer.
18. These capital water and sewer expenditures were found in the Annual Financial Information Reports available from the North Carolina State Treasurers Office. The total expenditure was then divided by the county population to arrive at the per person value.
19. These other government expenditures were found in the Annual Financial Information Reports available from the North Carolina Department of State Treasurer. The total expenditure was then divided by the county population to arrive at the per person value.
20. *The Metro Area Impact of Home Building in Union County*, North Carolina, Prepared by the Housing Policy Department, National Association of Home Builders, Washington, DC, March 2000.
21. This median income estimate is based on the 1999 median household income in the county and the ratio of the county median household income of renters in the 1990 Census to the overall county median household income in the 1990 Census.