

# Tioga County NY Housing Study: December 2017



Tioga County Industrial Development Agency

Tioga County Economic Development  
and Planning Department

Tioga Opportunities, Inc.

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## Economic Impact Analysis: Tioga County, NY Housing Study: December 2017

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## Introduction.

The rationale for economic impact analysis is to project and understand the potential the quantitative benefit that results as a consequence of new economic activity in a specific region – in this case, as a result of the completion of housing-related projects recommended by the **Tioga County Housing Study**. The analytic models described below utilize accepted formulas for estimating the direct, indirect and induced economic impact of a given project.

**Direct Impact** ≡ expenditures associated with construction (one-time) and operations (permanent)

**Indirect Impact** ≡ project supplier expenditures associated with purchase of goods and services and labor that would not occur if not for the new project

**Induced Impact** ≡ expenditures on goods and services done at the household level by residents new to the impact area

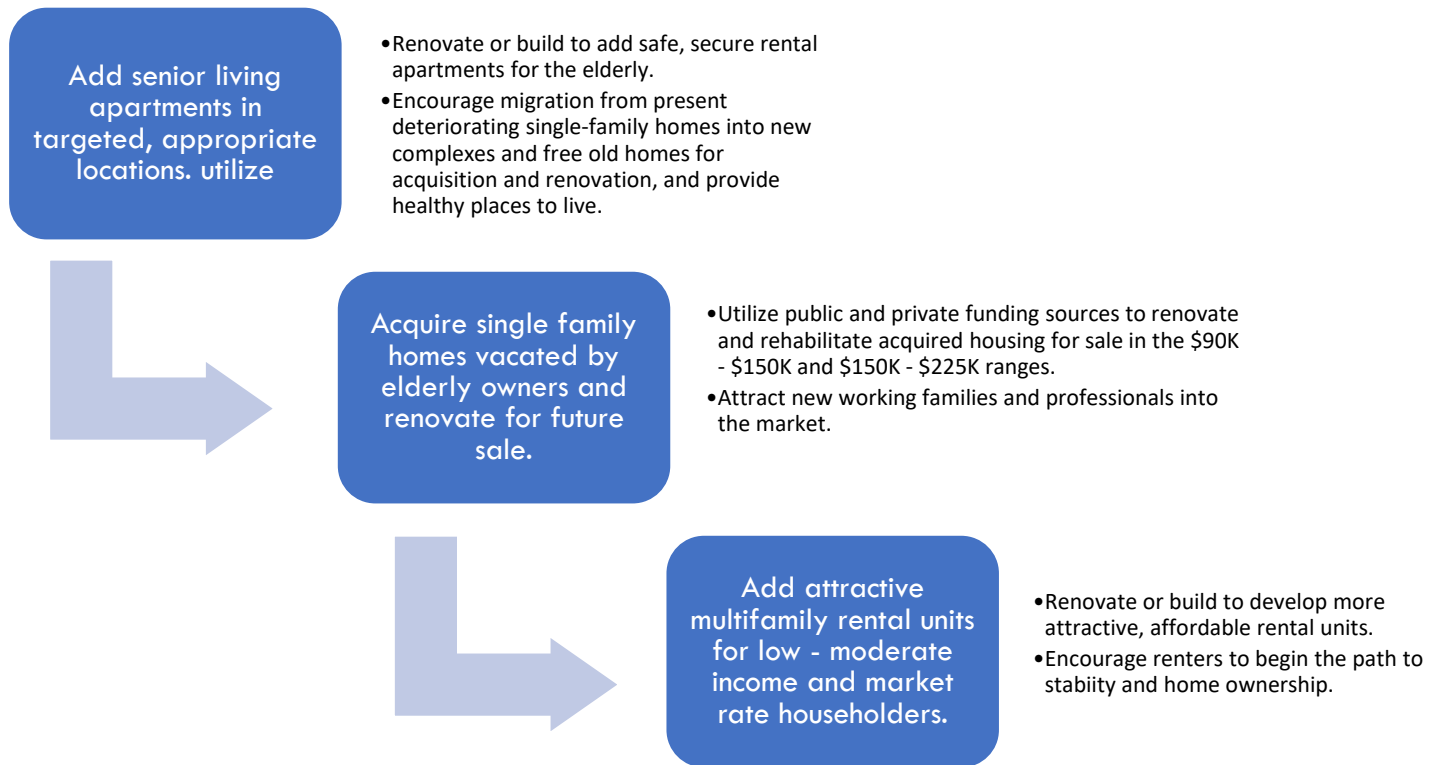
Each model yields 100% of the total potential impact in each selected sector. The actual impacts will vary with conditions, especially with the percentage of new residents who migrate into the county rather than within it. The higher that percentage is, the greater the total economic activity and impact.

The recently completed Study suggests a compelling shortage of attractive single-family residences in the \$90K-\$225K price range for prospective homebuyers, sufficient affordable rental housing for moderate income households, safe, secure senior rental housing to accommodate aging homeowners and market rate rental housing to accommodate and retain working professionals and families. Conceivably these gaps could be eased by progressing along the following continuum, a dynamic that would also yield financial benefit to the county.

### Assumptions:

- Much of housing development in Tioga County will be accomplished via redevelopment, renovation and/or rehabilitation of existing structures in all demand categories.
- Most all householders who will occupy redeveloped new homes whether single-family, multi-family, owner-occupied or renter occupied will originate within Tioga County. Because these “new” residents already reside in the county, much of the recurring benefit calculated below must be removed from any permanent impact analysis. A recent market analysis commissioned prior to construction of Muldoon Gardens in Waverly confirmed that a very small proportion of anticipated senior renters were expected to move into the county from neighboring zip codes in Chemung County NY and Bradford County PA. The opportunity comes with the future resale of their renovated homes.
- The base inputs for all models are derived from proformas for an actual housing redevelopment projects that was developed within the past five years in the Southern Tier for senior housing and state and federal local models.

The following schematic illustrates the anticipated housing continuum referenced above:



The major demand conclusions and recommendations presented in the **Tioga County Housing Study** predict housing need based on conservative, moderate and aggressive approaches for addressing housing shortages within Tioga County housing over the next five years. The study recommends addition of 35-80 single-family housing units in the \$150,000-\$225,000 range, 20-80 in the \$75,000-\$150,000 range, 45-150 in the \$50,000-\$75,000 range and 20-50 in the \$40,000-\$65,000 range, 35-75 additional units of senior housing, 150-300 additional units of affordable rental housing for moderate income households and 45-125 units of market rate rental housing.<sup>1</sup>

To reiterate, single-family housing is expected not to involve new construction, but rather would be expanded via renovation and rehabilitation of existing homes, thus incrementally raising their market value and attendant inflows to governments, schools and downtown hubs. This would include restoring those structures that were once single-family homes but converted into multi-family units to their original status.

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<sup>1</sup> Pp. 43ff.

The senior housing gap would be closed via construction or rehabilitation and renovation of existing structures, thus freeing a proportion of dated single-family homes for acquisition, renovation and resale, creating new value and inflows tied to resale of real estate once “frozen” by senior home owners.

Additional units of affordable middle and moderate-income housing would meet the demand of the largest target market group with the greatest need in Tioga County. With a mutual objective of meeting demand through new construction, positioning moderate income families on a trajectory for home ownership, and returning single-family rental units to their original home ownership status. Addition of low-mod rental units and market rate units to meet demand could be achieved via renovation of existing structures or construction of new units.<sup>2</sup>

Many factors will help in determining the aggressiveness of approach, among them in- and out-migration of county employers, fluctuations in job availabilities and wage-salary structures, emerging growth opportunities, and governmental regulation, among which is the most recent alteration of the federal tax code and its provision for mortgage deductibility. There are a multiplicity of other factors which may inflect decision-making going forward.

#### **Methodologies and Impact Analysis.**

The economic impact can be estimated by utilizing accepted economic impact formulas such as

- Local market prototype models developed for the New York State Association for Affordable Housing
- Models developed by the National Association of Home Builders’ Housing Policy Development group
- Regional input-output multipliers developed the US Commerce Department (RIMS II),

Actual proformas prepared in advance of recently constructed senior and affordable housing complexes recently built in Tioga County and the Southern Tier, which predict the short and long-term impacts on the economic landscape of Tioga County NY, can also be used to validate assumptions. This analysis will also include proformas for a subsidized senior housing complex of 30 units and an affordable housing complex of 100 units based on proprietary local proforma documents, which appears at the conclusion of this document.

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<sup>2</sup> Tioga County Housing Study, December 2017. P. 11.

## Economic Impact Analysis Models.

### New York State Association for Affordable Housing (NSAFAH), HR & A Advisors Model<sup>3</sup>

Self-described as the statewide trade association for New York’s affordable housing industry, the NSAFAH commissioned an economic impact study to fully understand the impacts of construction and operation of affordable housing units within New York State. The analysis was completed by H R & A, a real estate advisory, economic development and public policy consulting firm with offices in four major US cities, including New York.<sup>4</sup>

This report confirms that the major housing challenges prevailing in Tioga County NY, are also affecting the entire upstate region, and argues in favor of additional affordable housing as a solution set.

- “(1). There is a growing financial burden on both renters and owners across the state;  
(2). The age of housing stock creates significant problems. . . . Many units may be priced at a level that id affordable to a high percentage of households, but are aging and of low quality. . . .  
(3) New York exhibits substantial regional variation in affordability and significantly higher unaffordability downstate; . . . and  
(4) New York State faces barriers to meeting the need for development of additional affordable housing.
- High taxes
  - High land acquisition costs
  - High infrastructure costs
  - ‘Not in my back yard’ (NIMBY) opposition . . .”<sup>5</sup>

The report includes the following analysis of the economic impact of a prototypical 50-unit project in New York State, quoted directly below from the H R & A analysis<sup>6</sup>:

#### Assumptions:

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<sup>3</sup> *Economic Impacts of Affordable Housing on New York State’s Economy*. Prepared by H R & A Advisors for the New York State Association for Affordable Housing (NYSAFHA), February 10, 2017.

<sup>4</sup> *Economic Impacts of Affordable Housing on New York State’s Economy*. H R & A Advisors. Prepared for the New York State Association for Affordable Housing (NYSAFHA), February 10, 2017. P.4.

<sup>5</sup> *Ibid.* Pp. 7-8.

<sup>6</sup> *Ibid.* Pp. 17-18.

- Ongoing impacts in these models (induced) assume that new occupants will be drawn in from outside of the impact area and add new spending locally. In the case of senior housing designed to move seniors from aging single-family homes into rentals in complexes, induced impacts are likely to be less, as most are likely of local origination and simply moving within the impact area.
- Ongoing impacts also include maintaining employed staff to maintain and operate new facilities.
- Redevelopment of deteriorating single-family homes has the potential to spur a larger proportion of downstream permanent spending, for positive economic impact, while also adding value, increasing the tax base.
- Land and acquisition costs are excluded from all models.

*Prototypical 50-Unit Affordable Housing Project.  
One-Time Construction Impacts.*

**“The development of 50 units of affordable housing in New York State would generate the following economic impacts, as detailed in Figure 10.<sup>7</sup>**

- **\$16.6 million in total economic spending.** This includes the \$9.4 million in investment, which is reflected . . . as direct economic spending. The investment would stimulate an additional \$3.9 million in indirect economic spending and an additional \$3.3 million in induced economic spending.
- **100 total one-time jobs.** This includes 46 direct jobs in construction-related sectors, 30 indirect jobs in industries supporting construction, and 24 induced jobs from their household spending in a range of industries, including construction, architecture and engineering, professional services, restaurants, retail, etc.
- **\$6.43 million in total employee compensation.** This figure includes \$3.8 million in direct compensation in construction-related industries. The spinoff activity would support \$1.5 million in indirect employee compensation and \$1.1 million in induced employee compensation. The overall average compensation across all industries (including spinoff effects from indirect and induced spending) would be approximately \$63,400 per year.

**Figure 10: One-Time Construction Impacts from 50 Units of Affordable Housing Development**

	Jobs	Compensation (Millions)	Economic Spending (Millions)
Direct	46	\$3.8	\$9.4
Indirect	30	\$1.5	\$3.9
Induced	24	\$1.1	\$3.3
<b>Total</b>	<b>100</b>	<b>\$6.4</b>	<b>\$16.6</b>

Source: HR&A Advisors, Inc.

<sup>7</sup> Idem.

## Ongoing Annual Impacts<sup>8</sup>

In addition to temporary impacts during the construction period, the 50 occupied affordable housing units would have a permanent impact on local and neighborhood economies.

The total ongoing impacts from 50 households could be expected to generate the following economic impacts, as detailed in Figure 11.

- **\$2.0 million in annual economic spending.** This total includes \$1.2 million in direct spending on local goods and services and building operations and maintenance. This direct spending is expected to generate an additional \$0.4 million in indirect spending and \$0.4 million in induced spending.
- **14 total jobs.** This figure includes 10 direct jobs (approximately 8 jobs in a range of industries supported by local consumer spending and 2 in building operation and maintenance positions). In addition, local spending would generate 2 indirect jobs and 2 induced jobs.
- **\$0.7 million in total annual compensation.** This includes \$0.4 million in direct compensation. Spinoff activity would generate \$0.1 million in indirect compensation and \$0.1 million in induced compensation annually. The overall average compensation across all industries (including spinoff effects from indirect and induced spending) would be approximately \$46,500 per year.

**Figure 11: Ongoing Impacts from 50 Units of Affordable Housing**

	Jobs	Compensation (Millions)	Economic Spending (Millions)
Direct	10	\$0.4	\$1.2
Indirect	2	\$0.1	\$0.4
Induced	2	\$0.1	\$0.4
<b>Total</b>	<b>14</b>	<b>\$0.7</b>	<b>\$2.0</b>

Source: HR&A Advisors, Inc.

As stated above, a small proportion of direct impact will vary with the residence of persons employed during the construction phase of the project. These estimates would need to be adjusted for both indirect and induced economic impact, based upon the estimated percentage of persons in-migrating into the county to reside in the units, and will vary based on the type of project. Presumably the greatest impact would occur with moderately priced single-family and rental housing units, and the least with senior housing projects which are more likely to draw residents locally, with little net effect.

<sup>8</sup> Ibid. P. 18. Quoted directly from the H R & A report.



## National Association of Home Builders Model<sup>9</sup>

The National Association of Home Builders models were initially developed in 1996. Based on national averages that are adjusted to local areas, the models draw from a base of aggregated local government revenue for some 89,000 local governments and the US Census Bureau's most recent Census of Governments. The result is a top-side prediction of economic development impacts for three different project prototypes that would be typical for a local area. "For purposes of the NAHB model, a local area must be large enough to include the places where construction workers live and spend their money, as well as the places where the new home occupants are likely to work, shop, and go for recreation. In practice, this usually means a Metropolitan Statistical Area (MSA) or Metropolitan Division, as defined by the U.S. Office of Management and Budget (OMB) based on local commuting patterns. Outside of an MSA, many counties are relatively self-contained areas that will satisfy the above criteria for a local area. . . . The NAHB model produces impacts on income and employment in 16 industries and local government, as well as detailed information about taxes and other types of local government revenue."<sup>10</sup>

Published aggregates follow for the three different prototypes are quoted directly from the report<sup>11</sup>:

### *Single-family Construction.*

"The **estimated one-year impacts of building 100 single-family homes in a typical local area** include

- **\$28.7 million** in local income,
- **\$3.6 million** in taxes and other revenue for local governments, and
- **394** local jobs.

These are local impacts, representing income and jobs for residents of an average metropolitan area or nonmetropolitan county, and other sources of revenue, including permit fees) for all local jurisdictions within the local area. They are also one-year impacts that include both the direct and indirect impact of the construction activity itself, and the impact of local residents who earn money from the construction activity spending part of it in the local area.

"The **additional, annually recurring impacts of building 100 single-family homes** in a typical local area include

- **\$4.1 million** in local income,
- **\$1.0 million** in taxes and other revenue for local governments, and
- **69** local jobs.

"These are ongoing, annual local impacts that result from the new homes becoming occupied, and the occupants paying taxes and otherwise participating in the local economy year after year. The ongoing impacts also include the effect of increased property taxes, based on the difference between the value of raw land and the value of a completed housing unit on a finished lot, assuming that raw land would be taxed at the same rate as the completed housing unit.

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<sup>9</sup> *The Economic Impact of Home Building in a Typical Local Area: Income, Jobs and Taxes Generated.* National Association of Home Builders, Housing Policy Department, April 2015.

<sup>10</sup> Ibid. P.1.

<sup>11</sup> *The Economic Impact of Home Building in a Typical Local Area: Income, Jobs and Taxes Generated.* National Association of Home Builders, Housing Policy Department, April 2015. Pp. 1-4.

### *Multi-family Construction.*

“The **estimated one-year impacts of building 100 rental apartments in a typical local area** include

- **\$11.7 million** in local income,
- **\$2.2 million** in taxes and other revenue for local governments, and
- **161** local jobs.

“These are local impacts, representing income and jobs for residents of the typical metropolitan area or nonmetropolitan county, and revenue for all jurisdictions within the local area. They are also one-year impacts that include both the direct and indirect impact of the construction activity itself, and the impact of local residents who earn money from the construction activity spending part of it within the local area’s economy.

“The **additional, annually recurring impacts of building 100 rental apartments in a typical local area** include

- **\$2.6** million in local income,
- **\$503,000** in taxes and other revenue for local governments, and
- **44** local jobs.

These are ongoing, annual local impacts that result from the new apartments becoming occupied, and the occupants paying taxes and otherwise participating in the local economy year after year. They also represent impacts that have been reduced to account for the natural vacancy rate that tends to prevail in multifamily properties.”

### *Residential Remodeling.*

“The estimated one-year local impacts of \$1 million spent on residential remodeling in a typical local area include

- **\$841,000** in local income,
- **\$71,000** in taxes and other revenue for local governments, and
- **11 and a half** local jobs.

“Again, these represent local, one-year impacts occurring within a metropolitan area or nonmetropolitan county.

“Although certain remodeling jobs may be extensive enough to render otherwise uninhabitable units fit for occupancy (thereby allowing the local area to retain extra households and trigger ongoing impacts analogous to the ones for new construction), the NAHB local impact model uses a conservative default assumption that this is not the case. The ongoing, annual economic benefits to the local economy are therefore limited to \$11,000 in residential property taxes.”

Please See Appendix A for detailed NAHB impact tables. These may be of use as references in future planning and forecasting, with adjustments to localize them.

### Caveats and Assumptions:<sup>12</sup>

- **The single-family home** aggregate assumes new single-family homes built in a typical metropolitan area or nonmetropolitan county have an average price of \$378,000; which includes \$48,000 in raw land value and \$13,672 in permit, hook-up, impact and other fees paid to local governments; and incur an average property tax of \$4,239 per year; these values may be twice those specific to Tioga County, and would need adjustment.
- The house price and raw land value are based on a blended average of prices of new homes built for sale and contract prices for custom homes built on the homeowner's land, from the Census Bureau's Survey of Construction (along with assumptions about raw land and other factors the Census Bureau uses when processing construction value in the survey).<sup>13</sup> The impact fees are based on a national average percentage estimated by NAHB in a 2011 article.<sup>14</sup> The property tax payment is based on a national average computed from the Census Bureau's American Community Survey summary files.
- Construction of **100 rental units** impact was calculated assuming that new multifamily units built in the typical local area have an average market value of \$145,000; which includes \$14,000 in raw land value and \$13,672 in permit, hook-up, impact and other fees paid to local governments; and incur an average annual property tax of \$1,626 per unit. Application of this model for Tioga County, again might require an adjustment of 50% at least in market value.
- In addition to the treatment of property taxes, the estimated **remodeling impacts** assume that 1.25 percent of the value of the remodeling job is paid to a jurisdiction in the local area in the form of permit fees, a percentage NAHB Remodelers have reported as typical for projects undertaken by professional remodeling companies.

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<sup>12</sup> Ibid. Pp. 2-3.

<sup>13</sup> For more detail, see "Impact of Home Building and Remodeling on the U.S. Economy" published by NAHB in *HousingEconomics.com*, May 2014.

<sup>14</sup> "How Government Regulation Affects the Price of a New Home," *HousingEconomics.com*, July 2011.

## US Commerce Department Bureau of Economic Analysis RIMS II Type I & II Model<sup>15</sup>

According to the US Department of Commerce, “RIMS II is based on an accounting framework called an I-O [Input-Output] table. For each industry, an I-O table shows the distribution of the inputs purchased and the outputs sold. A typical I-O table in RIMS II is derived mainly from two data sources: [the] BEA’s [Bureau of Economic Analysis]’ national I-O table, which shows the input and output structure of nearly 500 U.S. industries, and BEA’s regional economic accounts, which are used to adjust the national I-O table in order to reflect a region’s industrial structure and trading patterns.”<sup>16</sup> RIMS I & II multipliers can be generated for any region of one county or more based on prevailing local transaction chains and characteristics.

The tables below were generated specifically for Tioga County NY to produce the projected direct, indirect and induced economic impact of two project scenarios – a senior housing project completed by renovating and restoring an existing structure to yield 30-40 units and an affordable housing complex of 100 units also completed by renovating and restoring an existing structure. The latter could be used as a reference for the economic impact associated with development of moderately or market priced rental housing with the caveat that higher median household income levels would produce greater indirect and induced outputs.

The Bureau of Economic Analysis explains the difference between Type I and Type II multipliers as follows: “Both Type I and Type II multipliers measure the industry impact of a change in final demand [direct and indirect impacts]; however, **Type II multipliers also include the induced impact, known as the household spending impact.** While both types of multipliers provide estimates of the total economic impact, they provide different measures of the final-demand change. When using these multipliers, one should multiply them by different estimates to ensure they are utilized correctly. Final-demand multipliers are ratios of a total change in economic activity (gross output, value added, earnings, and employment) to a dollar or million-dollar change in final demand. An estimate of the change in final demand (sales) should be applied to these multipliers.”<sup>17</sup> One new dollar of invested project input will produce a corresponding output of the multiplier \* \$1.00 for each sector chosen below. The nature of each project will determine which multipliers are selected for inclusion. Direct-effect earnings and employment have not been calculated separately or included. These calculations would be used to separate direct, indirect and induced impact.

Final Demand Estimates utilizing RIMS II Type I and II multipliers predict the following economic impact by selected sector, reflecting the total change in economic activity (gross output, value added, earnings, and employment). The base to which multipliers are applied equals the total project cost, less the cost of site acquisition, or as anticipated in the senior housing proforma presented on page 14 and following, \$9,396,000.

The totals by sector represent 100% of the anticipated potential impact of the project and will vary with the buying behavior of project operators and occupants. In the case of a senior housing project, it is anticipated the potentials may be much lower in categories such truck transportation, warehousing and storage, and wholesale trade as compared with ambulatory health services, nursing and residential care facilities and social assistance. The full listing of Type II multipliers can be found in Appendix C. These must be carefully selected by relevance of the category/sector for any given project before any projections are calculated and totaled. Totals do not exist in the analysis that follows, because the projections by category have not been adjusted to a presumed 62+ population base. The table does give a sense of how the first step in this I-O analysis is completed.

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<sup>15</sup> *Regional Multipliers for Tioga County NY.* US Commerce Department Bureau of Economic Analysis. Downloaded 12-19-2017 for

<sup>16</sup> *Regional Models, User Handbook for the Regional Input-Output Modeling System (RIMS II), Third Edition.* US Department of Commerce. Bureau of Economic Analysis.

<sup>17</sup> US Commerce Department Bureau of Economic Analysis. <https://www.bea.gov/regional/rims/rimsii/faq.aspx>, Accessed 12-21-2017.

Total One-Time Project Cost less site acquisition \$ 9,396,000

All manufacturing, mining, media and select transportation sub categories have been removed from impact totals.	Final Demand RIMS II Type I		Final Demand RIMS II Type II	
	Multiplier		Multiplier	
INDUSTRY	Output/ (dollars)	Project Output - Direct + Indirect	Output/ (dollars)	Project Output - Direct + Indirect + Induced
Utilities	1.0864	\$ 811,814	1.1348	\$1,266,581
Construction	1.1907	\$ 1,791,817	1.2657	\$2,496,517
Wholesale trade	1.0984	\$ 924,566	1.1643	\$1,543,763
Motor vehicle and parts dealers	1.0701	\$ 658,660	1.1554	\$1,460,138
Food and beverage stores	1.1155	\$ 1,085,238	1.1943	\$1,825,643
General merchandise stores	1.1335	\$ 1,254,366	1.2052	\$1,928,059
Other retail	1.1081	\$ 1,015,708	1.1800	\$1,691,280
Truck transportation	1.1705	\$ 1,602,018	1.2356	\$2,213,698
Transit and ground passenger transportation*	1.1165	\$ 1,094,634	1.1996	\$1,875,442
Other transportation and support activities*	1.0803	\$ 754,499	1.1844	\$1,732,622
Warehousing and storage	1.1508	\$ 1,416,917	1.2522	\$2,369,671
Federal Reserve banks, credit intermediation, and related activities	1.1066	\$ 1,001,614	1.1421	\$1,335,172
Securities, commodity contracts, and investments	1.0885	\$ 831,546	1.1505	\$1,414,098
Insurance carriers and related activities	1.1173	\$ 1,102,151	1.1564	\$1,469,534
Real estate	1.0992	\$ 932,083	1.1412	\$1,326,715
Rental and leasing services and lessors of intangible assets	1.0994	\$ 933,962	1.1643	\$1,543,763
Professional, scientific, and technical services	1.089	\$ 836,244	1.1600	\$1,503,360
Administrative and support services	1.0909	\$ 854,096	1.1558	\$1,463,897
Waste management and remediation services	1.1286	\$ 1,208,326	1.1663	\$1,562,555
Educational services	1.097	\$ 911,412	1.2044	\$1,920,542
Ambulatory health care services	1.0834	\$ 783,626	1.1649	\$1,549,400
Nursing and residential care facilities	1.0876	\$ 823,090	1.1713	\$1,609,535
Social assistance	1.1023	\$ 961,211	1.1814	\$1,704,434
Performing arts, spectator sports, museums, and related activities	1.0978	\$ 918,929	1.1881	\$1,767,388
Amusements, gambling, and recreation industries	1.109	\$ 1,024,164	1.1581	\$1,485,508

**Total One-Time Project Cost less site acquisition**      \$    9,396,000

All manufacturing, mining, media and select transportation sub categories have been removed from impact totals.	Final Demand RIMS II Type I		Final Demand RIMS II Type II	
	Multiplier		Multiplier	
<b>Accommodation</b>	1.0993	\$    933,023	1.1686	\$1,584,166
<b>Food services and drinking places</b>	1.1269	\$    1,192,352	1.2067	\$1,942,153
<b>Other services*</b>	1.0926	\$    870,070	1.1700	\$1,597,320

## Model Proforma. Senior Housing Complex.<sup>18</sup>

The following proforma was developed to provide a model that predicts approximated sources and uses as well as cash flow for a typical 30-unit senior housing project targeting seniors with incomes at 50% or less of the market area's median household income, which is consistent with the actual mean annual income estimates in Tioga County among seniors, as published by the US Census Bureau for the 5-year period 2011 – 2015. This proforma models acquisition of an existing under- or unutilized dated facility and redevelopment of that property into primarily one-bedroom apartments, common areas and site updates for safe, secure senior living accessible to nearby transportation and services. The income profile for which this project was designed would also fit that of a low-moderate rental project for low- to moderate income families or a mixed income project of similar size.

It is based on the actual proforma for a local project completed within the past five years. Total project cost was estimated at approximately \$10 million.

Potential exists to realize new inflows, local and regional, as project costs are funded, contributing to the local economy immediately during the construction phase of the project. Construction and permanent sources might include a combination of inflows from construction loans, investor equity, and funding from the Federal Home Loan Bank, the New York State Housing Trust Fund (NYSHTF), additional HTF sources and other sources. Local and regional benefits are understood to be one-time gains associated with site acquisition, construction costs, professional services and carrying, financing and other charges as detailed below. They are direct, but one-time, impacts.

### SOURCES AND USES

1. SITE ACQUISITION	\$	325,000
2. CONSTRUCTION COST		
A. Residential	\$	7,000,000
B. Commercial	\$	-
	Subtotal	\$ 7,325,000
3. PROFESSIONAL SERVICES		
A. Architecture	\$	350,000
B. Engineering	\$	75,000
C. Survey & soils	\$	20,000
D. Legal Fees	\$	80,000
E. Accounting	\$	17,000
F. Appraisal	\$	8,000
G. Environmental audit	\$	20,000
H. Miscellaneous	\$	12,000
	Subtotal	\$ 582,000

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<sup>18</sup> Source of actual source proforma: Arbor Housing and Development, Corning NY, 12-12-2017.

<b>4. CARRYING &amp; FINANCING CHARGES</b>			
A. Real estate tax		\$	43,000
B. Financing Fees		\$	240,000
C. Construction interest		\$	190,000
D. Insurance		\$	45,000
E. Title & recording		\$	45,000
F. Marketing		\$	-
G. Administrative fees		\$	-
H. Miscellaneous	Subtotal	\$	95,000
		\$	658,000
<b>5. ESTIMATED DEVELOPMENT COST</b>			<b>\$ 8,565,000</b>
6. CONSTRUCTION CONTINGENCY		\$	-
7. DEVELOPMENT FEE		\$	1,000,000
8. WORKING CAPITAL		\$	76,000
9. DEBT SERVICE RESERVE		\$	-
10. REPLACEMENT RESERVE		\$	-
11. OPERATING RESERVE		\$	80,000
<b>TOTAL PROJECT COST</b>			<b>\$ 9,721,000</b>

The total project cost identified in this model, with modifications for accurate outputs can be used as the base for localized government and housing development economic impact models.

The model proforma predicts sustainability, showing increasingly positive cash flow over a 12-month period. This estimate is also based on the same actual project, operating successfully in the region today.



## CASH FLOW PROJECTION

Months in 1st year: 12

<b>INCOME</b>	1	2	3	4	5	6	7	8	9	10	11	12
Residential rent	\$210,000	\$215,460	\$221,062		\$232,707	\$238,757	\$244,965	\$251,334	\$257,868	\$264,573	\$271,452	\$278,510
Vacancy	\$(10,414)	\$(10,685)	\$(10,963)	\$226,810 \$(11,248)	\$(11,540)	\$(11,840)	\$(12,148)	\$(12,464)	\$(12,788)	\$(13,120)	\$(13,461)	\$(13,811)
Other Income	\$3,000	\$3,078	\$3,158	\$3,240	\$3,324	\$3,411	\$3,499	\$3,590	\$3,684	\$3,780	\$3,878	\$3,979
<b>Total Income</b>	<b>\$202,586</b>	<b>\$207,853</b>	<b>\$213,257</b>	<b>\$218,802</b>	<b>\$224,491</b>	<b>\$230,328</b>	<b>\$236,316</b>	<b>\$242,460</b>	<b>\$248,764</b>	<b>\$255,232</b>	<b>\$261,868</b>	<b>\$268,677</b>
<b>EXPENSES</b>												
Operating costs	\$140,000	\$142,100	\$146,505	\$150,900	\$155,427	\$160,090	\$164,893	\$169,840	\$174,935	\$180,183	\$185,588	\$191,156
Real estate tax/charges	\$10,500	\$10,815	\$11,031	\$11,252	\$11,477	\$11,707	\$11,941	\$12,179	\$12,423	\$12,671	\$12,925	\$13,183
Replacement reserve	\$12,500	\$12,775	\$13,158	\$13,553	\$13,960	\$14,378	\$14,810	\$15,254	\$15,712	\$16,183	\$16,668	\$17,169
Operating reserve	\$6,300	\$6,300	\$6,300	\$6,300	\$6,300	\$6,300	\$6,300	\$6,300	\$6,300	\$6,300	\$6,300	\$6,300
Total Expenses	\$167,000	\$172,010	\$176,826	\$181,954 \$187,231	\$192,661	\$198,248	\$203,997	\$209,913	\$216,000	\$222,264	\$228,710	
<b>NET OPERATING INCOME</b>	<b>\$35,586</b>	<b>\$35,843</b>	<b>\$36,431</b>	<b>\$36,848</b>	<b>\$37,260</b>	<b>\$37,667</b>	<b>\$38,068</b>	<b>\$38,464</b>	<b>\$38,852</b>	<b>\$39,232</b>	<b>\$39,604</b>	<b>\$39,967</b>
<b>DEBT SERVICE</b>												
NYSHCR*	\$17,533	\$17,533	\$17,533	\$17,533	\$17,533	\$17,533	\$17,533	\$17,533	\$17,533	\$17,533	\$17,533	\$17,533
Credit enhancer fees	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-
Total Debt Service	\$17,533	\$17,533	\$17,533	\$17,533	\$17,533	\$17,533	\$17,533	\$17,533	\$17,533	\$17,533	\$17,533	\$17,533
<b>CASH FLOW FROM OPERATIONS</b>	<b>\$ 18,053</b>	<b>\$18,310</b>	<b>\$18,898</b>	<b>\$19,315</b>	<b>\$19,727</b>	<b>\$20,134</b>	<b>\$20,535</b>	<b>\$20,931</b>	<b>\$21,319</b>	<b>\$21,699</b>	<b>\$22,071</b>	<b>\$22,434</b>

\*New York State Homes & Community Renewal

### Assumptions:

The following assumptions are made in the original proforma documents:

- Residential rent totals, rents lost to vacancy, and miscellaneous income increase at an annual rate of 2.6% year over year.
- Operating costs rise by 1.5% in Year 2, by 2.9% in Year 3 and stabilize at 3.0% in Year 4 and thereafter.
- Real estate taxes and charges rise by 3.0% in Year 2, then stabilize at an annual increase of 2.0% thereafter. If a PILOT agreement is in place for new redevelopment projects, these values will vary with the detail of the agreement.
- Replacement reserve rises by 2.2% in Year 2, then stabilizes at an annual rate of 3.0% per year thereafter.
- Total Expenses rise by 3.0% in Year 2, fall to 2.8% in Year 3 and then rise annually at a steady rate of 2.9%.
- Based on this model, cash flow from operations grows at a rate of about 2% annually.

A total increase of 2,300 senior residents 65+ is anticipated over the period 2015-2030 followed by population contraction of some 1200 residents in the cohort during the next decade, from 2031 through 2040. As stated in the 2017 Tioga County Housing Study, a conservative demand for affordable senior housing is anticipated to be in the range of 30-35 units. Direct, indirect and induced impact would be significant during the construction phase, presuming that Tioga County can accommodate associated jobs and contracts locally. These benefits would at the very least be shared with the immediate region.

Because new senior residents would be relocating from rented or owned homes within Tioga County, there would be minimal new revenues associated with the project, excepting perhaps new property management and maintenance positions and associated spending.

The real new benefits to the county come with the acquisition and rehabilitation of senior housing now frozen by owners reluctant to sell their family homes, but unable to afford the cost of operating costs such as taxes and ongoing repair and maintenance. The net effect is housing stock that is deteriorating and declining in value, and a lack of available attractive homes for first-time buyers and householders looking to upgrade. If a good proportion of senior householders living under those conditions currently sell their homes and relocate to a safe, affordable housing complex, the following impacts could be realized:

- Acquisition of deteriorated single-family homes by developers, the land trust or other **local** investors.
- Rehabilitation of each single-family home by partner investors at an average cost of \$30,000 per home.<sup>19</sup>
- Selling renovated structures at market value, whether formerly former senior single-family homes or multi-unit structures that have been restored to single family status, raising the property value of formerly deteriorating homes, and the real estate tax and school tax revenue derived from each.
- Availability of attractive single-family homes priced in the \$90,000 - \$225,000 price range has the potential to attract first-time home-buyers and move-up buyers from other counties, if coupled with redevelopment of neighborhood cores. These households might include professional workers presently living outside the county who are employed by Tioga County worksites.

Barriers to this positive dynamic may include the new tax law which limits the deductibility of state and local taxes, adding burden to perceived high expense associated with living in New York State. Outmigration and a negative impact on housing sales in New York could be consequences. On the positive side, the tax law does preserve Private Activity Bonds (PABs), New Market Tax Credits, and Historic Tax Credits, considered to be important economic development tools in the state. On a statewide level, economic development setbacks include the Governor's veto of legislation that would have allowed assessed property under a Payment In Lieu of Tax agreement (PILOT) to be factored into the calculation for determining the Tax Levy Growth Factor, which governs how much a local taxing jurisdiction can increase its tax levy.<sup>20</sup>

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<sup>19</sup> A similar project underway in Corning NY is currently rehabilitating blighted houses at a cost range of \$20,000 - \$40,000 per home, with the goal of restoring neighborhoods and reselling properties where indicated.

<sup>20</sup> New York State Economic Development Council. *Updates on Legislation, December 21, 2017.*

## Appendices. Models and Methodologies.

### Appendix A. New York State Association for Affordable Housing (NYSFAFH), H R & A Methodology.

NYSFAFH's consultants, HR&A utilized a proprietary application (IMPLAN) based on RIMS II multipliers to output its analysis of the economic impact of affordable housing projects in the state of New York. Published methodology for the economic impact projections cited in this analysis is as follows:

"HR&A entered direct spending into the nationally recognized input-output model "Impact analysis for PLANning" (IMPLAN) to estimate economic impacts. The model produces estimates of:

- **Economic spending**, which is defined as the total value of industry production that results from an activity. It includes both gross domestic product and spending to produce intermediate goods.
- **Employee Compensation**, which is defined as the total payroll cost paid by an employer, including wages, all benefits, and employer paid payroll taxes.
- **Jobs**, which are defined differently for one-time construction and ongoing activities. One-time construction jobs represent the amount of work completed by one person in one year. Ongoing jobs represent full-time equivalent employees on an annual basis.

"The following provides an overview of the types of impacts estimated and a description of the IMPLAN model.

#### One-Time Construction Impacts

"HR&A estimated the economic impacts of construction using total project cost data provided by State and City agencies. Land and acquisition costs, which do not contribute to new economic impacts were excluded from total development costs. For the purposes of this analysis, HR&A assumed the industry average of 70 percent of total development cost as hard costs and 30 percent as soft costs. Each cost item was entered into the IMPLAN input-output model and classified as either a residential construction cost or soft cost (architecture and engineering) category. The number of jobs generated during construction represents the number of total annual full-time equivalents (FTEs) that worked over the construction period. The actual number of people employed on an annual basis varied based on the amount of spending in a particular year and phase of each project.

#### Ongoing Impacts

"HR&A conducted a two-pronged analysis of the ongoing impacts of affordable housing on local economies. The first component of ongoing economic impact is consumer spending by residents living in the newly constructed or rehabilitated units. The second component of ongoing economic impact is on-site employment to operate and maintain the affordable units.

"Consumer spending by households living in affordable units is included in the economic impact analysis based on the assumption that were it not for the development of the affordable housing units, the households would either migrate to other parts of the country, spend more of their household income on rent, leaving them with less money to spend, or live in substandard housing. HR&A analyzed spending data from the *2010 Consumer Expenditure Survey* conducted by the U.S. Department of Labor (inflated to current dollars) and estimated that consumers spend approximately 50 percent of household incomes on goods, including groceries, restaurants, apparel, healthcare services, utilities, and transportation within New York State. HR&A used a conservative assumption and discounted the household spending estimate to 40 percent of household income. This estimate is also consistent with those used in affordable housing economic impact studies, including a series by the National Association of Homebuyers.

“For the purposes of estimating the amount of household income that would be spent locally, HR&A assumed household income of 80 percent of the Median Household Income<sup>21</sup> for New York City Metro area residents (\$50,960) and 80 percent of the statewide median income (\$46,950) for residents in other parts of the State. This percentage was selected because it represents the typical low- to moderate-income household that may reside in privately developed affordable housing units, and excludes very-low income households that tend to be served by government owned and operated units. Using the percentage of local spending and MFI parameters, HR&A estimates that, on average, households residing in affordable units spend between \$18,800 and \$22,000 per year on locally available goods and services.

“The second component of ongoing economic impact concerns employment generated to support the operation and maintenance of affordable units. HR&A estimated that 3.5 full-time employees are required to operate and maintain 100 affordable housing units. This estimate includes a building manager, but excludes leasing or other real estate industry personnel that market or place people in the building. HR&A multiplied this ratio by the number of units to estimate the jobs associated with operations and management.

### **Economic Impact Model**

“HR&A used the input-output model Impact analysis for PLAnning (IMPLAN) to estimate the economic impacts of affordable housing development, operation, and occupation on New York State’s economy. Direct economic spending and employment during construction and ongoing spending related to affordable housing development produces spinoff effects throughout the State economy. For all analyses, HR&A estimated the spinoff effects on New York State using the IMPLAN input-output model. The model generates estimates of direct economic impacts as well as spinoff activities based on a series of inputs.

“The IMPLAN model is used to conduct economic impact analyses by leading public and private sector organizations across the United States, including the New York State Department of Labor, the New York State Assembly, and the New York State Division of Budget. It also has been used to monitor job creation for a range of Federal government initiatives including the economic impacts of the American Recovery and Reinvestment Act of 2009 on state economies.

“IMPLAN traces the pattern of commodity purchases and sales between industries that are associated with each dollar’s worth of a product or service sold to a customer, analyzing interactions among 440 industrial sectors for New York State, with assumptions about spending that takes place outside of the State. HR&A conducted its analysis with 2014 multipliers<sup>22</sup> for the New York State economy, the most recent data available, and inflated the results to 2016 dollars.”<sup>23</sup>

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<sup>21</sup> The affordable housing industry uses a range of income measures that generate slightly different numbers. For the purposes of estimating ongoing impacts in this study, HR&A uses the 2015 HUD Median Household Income, which is used to determine eligibility for many affordable housing programs.

<sup>22</sup> Multipliers are the total production requirements in New York State for all goods and services consumed by final users in 2014.

<sup>23</sup> New York State Association for Affordable Housing (NYSFAFH), Economic Impacts of Affordable Housing on New York State’s Economy, February 10, 2017. Appendix A: Methodology, Pp. 21-23.

## Appendix B. NAHB. The Economic Impact of Home Building in a Typical Local Area: Methodology and Detailed Tables.

The information provided below and in Appendix C has been included in this analysis to provide Tioga County with tools that may be used to approximate associated economic impact of projects, once the scope and type of construction and rehabilitation projects going forward are determined. Once scaled and refined, each can yield models designed for local areas.

From **The Impact of Home Building in a Typical Local Area. Income, Jobs and Taxes Generated<sup>24</sup>**:

“This report presents separate estimates of the local area impacts of building 100 single-family homes, 100 rental apartments and \$1 million worth of spending on residential remodeling. As described more fully below, most of the key inputs (such as value of the homes being built, and impact fees and property taxes per dollar of new construction) are based on national averages. Other than construction-related fees and residential property taxes, local government revenue is determined by on aggregating line items for all 89,000-plus local governments in the U.S. in the latest Census of Governments.

“For purposes of the NAHB model, a local area must be large enough to include the places where construction workers live and spend their money, as well as the places where the new home occupants are likely to work, shop, and go for recreation. In practice, this usually means a Metropolitan Statistical Area (MSA) or Metropolitan Division, as defined by the U.S. Office of Management and Budget (OMB) based on local commuting patterns. Outside of an MSA, many counties are relatively self-contained areas that will satisfy the above criteria for a local area.

“The NAHB model produces impacts on income and employment in 16 industries and local government, as well as detailed information about taxes and other types of local government revenue. Aggregate results are summarized below. Subsequent sections of the report show detail by industry and type of tax or fee revenue generated.”

### Single-family Home Construction.

#### Summary.<sup>25</sup>

*Total One-Year Impact: Sum of Phase I and Phase II:*

Local Income	Local Business Owners' Income	Local Wages and Salaries	Local Taxes <sup>1</sup>	Local Jobs Supported
\$28,670,800	\$8,606,200	\$20,064,700	\$3,358,600	394

Phase I: Direct and Indirect Impact of Construction Activity:

<sup>24</sup> National Association of Home Builders, Housing Policy Department. April 2015. P. 1.

<sup>25</sup> Ibid, Pp. 4-17.

Local Income	Business Owners' Income	Local Wages and Salaries	Local Taxes <sup>3</sup>	Local Jobs Supported
\$19,204,100	\$6,526,800	\$12,677,400	\$2,152,500	237

Phase II: Induced (Ripple) Effect of Spending the Income and Taxes from Phase I:

Local Income	Business Owners' Income	Local Wages and Salaries	Local Taxes <sup>1</sup>	Local Jobs Supported
\$9,466,700	\$2,079,400	\$7,387,300	\$1,206,100	157

Phase III: Ongoing, Annual Effect that Occurs When New Homes are Occupied:

Local Income	Local Business Owners' Income	Local Wages and Salaries	Local Taxes <sup>1</sup>	Local Jobs Supported
\$4,091,900	\$922,400	\$3,169,900	\$1,014,800	69

<sup>3</sup>The term 'local taxes' is used as a shorthand for local government revenue from all sources: taxes, fees, fines, revenue from government-owned enterprises, etc.

Impact of Building 100 Single-Family Homes in a Typical Local Area Phase I—Direct and Indirect Impact of Construction Activity

A. Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	\$14,804,600	\$5,048,300	\$9,756,300	\$55,000	176
Manufacturing	\$1,500	\$100	\$1,500	\$54,000	0
Transportation	\$800	\$400	\$400	\$29,000	0
Communications	\$123,700	\$43,200	\$80,500	\$78,000	1
Utilities	\$27,300	\$5,900	\$21,400	\$97,000	0
Wholesale and Retail Trade	\$1,535,500	\$338,600	\$1,196,900	\$35,000	34
Finance and Insurance	\$276,900	\$10,400	\$266,500	\$120,000	2
Real Estate	\$760,400	\$654,700	\$105,600	\$55,000	2
Personal & Repair Services	\$76,000	\$18,100	\$57,900	\$40,000	1
Services to Dwellings / Buildings	\$52,100	\$20,100	\$32,000	\$37,000	1
Business & Professional Services	\$1,217,500	\$283,300	\$934,300	\$66,000	14
Eating and Drinking Places	\$43,800	\$7,200	\$36,600	\$29,000	1
Automobile Repair & Service	\$16,200	\$4,900	\$11,300	\$40,000	0
Entertainment Services	\$9,500	\$900	\$8,600	\$33,000	0
Health, Educ. & Social Services	\$1,700	\$100	\$1,700	\$51,000	0
Local Government	\$63,700	\$0	\$63,700	\$74,000	1
Other	\$192,900	\$90,600	\$102,200	\$48,000	2
<b>Total</b>	<b>\$19,204,100</b>	<b>\$6,526,800</b>	<b>\$12,677,400</b>	<b>\$53,000</b>	<b>237</b>

**B. Local Government General Revenue by Type**

TAXES:		USER FEES & CHARGES:	
Business Property Taxes	\$55,200	Residential Permit / Impact Fees	\$1,367,200
Residential Property Taxes	\$0	Utilities & Other Govt. Enterprises	\$200,000
General Sales Taxes	\$190,500	Hospital Charges	\$92,600
Specific Excise Taxes	\$8,200	Transportation Charges	\$36,300
Income Taxes	\$40,200	Education Charges	\$37,700
License Taxes	\$6,900	Other Fees and Charges	\$113,200
Other Taxes	\$4,600	<b>TOTAL FEES &amp; CHARGES</b>	<b>\$1,847,000</b>
<b>TOTAL TAXES</b>	<b>\$305,500</b>	<b>TOTAL GENERAL REVENUE</b>	<b>\$2,152,500</b>



Impact of Building 100 Single-Family Homes in a Typical Local Area Phase II—Induced Effect of Spending Income and Tax Revenue from Phase I

A. Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	\$554,600	\$203,900	\$350,600	\$55,000	6
Manufacturing	\$1,900	\$100	\$1,800	\$52,000	0
Transportation	\$21,300	\$10,300	\$11,000	\$29,000	0
Communications	\$498,300	\$206,300	\$292,000	\$81,000	4
Utilities	\$171,900	\$36,400	\$135,600	\$97,000	1
Wholesale and Retail Trade	\$1,343,000	\$226,000	\$1,116,900	\$31,000	36
Finance and Insurance	\$289,100	\$11,400	\$277,800	\$90,000	3
Real Estate	\$919,000	\$380,900	\$538,100	\$55,000	10
Personal & Repair Services	\$342,200	\$124,800	\$217,400	\$40,000	5
Services to Dwellings / Buildings	\$121,900	\$47,000	\$74,800	\$37,000	2
Business & Professional Services	\$1,241,500	\$359,300	\$882,300	\$58,000	15
Eating and Drinking Places	\$615,900	\$120,400	\$495,600	\$27,000	18
Automobile Repair & Service	\$272,500	\$82,000	\$190,500	\$40,000	5
Entertainment Services	\$74,800	\$14,200	\$60,500	\$30,000	2
Health, Educ. & Social Services	\$1,467,600	\$163,200	\$1,304,400	\$55,000	24
Local Government	\$1,341,600	\$0	\$1,341,600	\$60,000	22
Other	\$189,600	\$93,200	\$96,400	\$43,000	2
<b>Total</b>	<b>\$9,466,700</b>	<b>\$2,079,400</b>	<b>\$7,387,300</b>	<b>\$47,000</b>	<b>157</b>

B. Local Government General Revenue by Type

TAXES:		USER FEES & CHARGES:	
Business Property Taxes	\$299,400	Residential Permit / Impact Fees	\$0
Residential Property Taxes	\$0	Utilities & Other Govt. Enterprises	\$421,800
General Sales Taxes	\$105,600	Hospital Charges	\$89,300
Specific Excise Taxes	\$44,400	Transportation Charges	\$17,900
Income Taxes	\$31,900	Education Charges	\$18,600
License Taxes	\$28,500	Other Fees and Charges	\$125,900
Other Taxes	\$22,900	<b>TOTAL FEES &amp; CHARGES</b>	<b>\$673,400</b>
<b>TOTAL TAXES</b>	<b>\$532,700</b>	<b>TOTAL GENERAL REVENUE</b>	<b>\$1,206,100</b>

*Impact of Building 100 Single-Family Homes in a Typical Local Area Phase III—Ongoing, Annual Effect That Occurs Because Units Are Occupied*

A. Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	\$232,500	\$85,600	\$147,000	\$55,000	3
Manufacturing	\$800	\$0	\$800	\$53,000	0
Transportation	\$6,500	\$3,200	\$3,400	\$29,000	0
Communications	\$230,800	\$96,100	\$134,800	\$81,000	2
Utilities	\$81,800	\$17,300	\$64,500	\$97,000	1
Wholesale and Retail Trade	\$639,700	\$104,500	\$535,200	\$31,000	17
Finance and Insurance	\$151,400	\$5,600	\$145,900	\$88,000	2
Real Estate	\$283,900	\$117,700	\$166,300	\$55,000	3
Personal & Repair Services	\$145,100	\$57,100	\$88,000	\$40,000	2
Services to Dwellings / Buildings	\$55,900	\$21,600	\$34,300	\$37,000	1
Business & Professional Services	\$617,400	\$190,300	\$427,100	\$60,000	7
Eating and Drinking Places	\$306,100	\$57,900	\$248,300	\$27,000	9
Automobile Repair & Service	\$123,800	\$37,200	\$86,500	\$40,000	2
Entertainment Services	\$47,400	\$8,100	\$39,300	\$29,000	1
Health, Educ. & Social Services	\$606,600	\$70,200	\$536,400	\$55,000	10
Local Government	\$460,000	\$0	\$460,000	\$60,000	8
Other	\$102,200	\$50,000	\$52,100	\$42,000	1
<b>Total</b>	<b>\$4,091,900</b>	<b>\$922,400</b>	<b>\$3,169,900</b>	<b>\$46,000</b>	<b>69</b>

B. Local Government General Revenue by Type

TAXES:		USER FEES & CHARGES:	
Business Property Taxes	\$143,800	Residential Permit / Impact Fees	\$0
Residential Property Taxes	\$370,100	Utilities & Other Govt. Enterprises	\$230,700
General Sales Taxes	\$50,700	Hospital Charges	\$85,300
Specific Excise Taxes	\$21,300	Transportation Charges	\$7,700
Income Taxes	\$14,400	Education Charges	\$8,000
License Taxes	\$13,600	Other Fees and Charges	\$58,100
Other Taxes	\$11,000	<b>TOTAL FEES &amp; CHARGES</b>	<b>\$389,900</b>
<b>TOTAL TAXES</b>	<b>\$624,900</b>	<b>TOTAL GENERAL REVENUE</b>	<b>\$1,014,800</b>

*Multi-family Home Construction.*

Impact of Building 100 Rental Apartments in a Typical Local Area Summary.

Total One-Year Impact: Sum of Phase I and Phase II:

Local Income	Local Business Owners' Income	Local Wages and Salaries	Local Taxes <sup>1</sup>	Local Jobs Supported
\$11,693,000	\$3,620,500	\$8,072,300	\$2,211,200	161

Phase I: Direct and Indirect Impact of Construction Activity:

Local Income	Business Owners' Income	Local Wages and Salaries	Local Taxes <sup>1</sup>	Local Jobs Supported
\$7,403,300	\$2,750,500	\$4,652,700	\$1,699,600	90

Phase II: Induced (Ripple) Effect of Spending the Income and Taxes from Phase I:

Local Income	Business Owners' Income	Local Wages and Salaries	Local Taxes <sup>1</sup>	Local Jobs Supported
\$4,289,700	\$870,000	\$3,419,600	\$511,600	71

Phase III: Ongoing, Annual Effect that Occurs When New Homes are Occupied:

Local Income	Local Business Owners' Income	Local Wages and Salaries	Local Taxes <sup>1</sup>	Local Jobs Supported
\$2,640,600	\$623,200	\$2,016,900	\$503,500	44

<sup>1</sup> The term 'local taxes' is used as a shorthand for local government revenue from all sources: taxes, fees, fines, revenue from government-owned enterprises, etc.

Impact of Building 100 Rental Apartments in a Typical Local Area Phase I—Direct and Indirect Impact of Construction Activity

A. Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	\$6,100,800	\$2,346,500	\$3,754,300	\$55,000	68
Manufacturing	\$400	\$0	\$400	\$54,000	0
Transportation	\$200	\$100	\$100	\$29,000	0
Communications	\$39,500	\$13,600	\$25,900	\$77,000	0
Utilities	\$9,300	\$2,000	\$7,300	\$97,000	0
Wholesale and Retail Trade	\$674,400	\$148,800	\$525,600	\$33,000	16
Finance and Insurance	\$36,000	\$1,400	\$34,600	\$102,000	0
Real Estate	\$152,500	\$131,300	\$21,200	\$55,000	0
Personal & Repair Services	\$24,900	\$5,900	\$19,000	\$40,000	0
Services to Dwellings / Buildings	\$15,000	\$5,800	\$9,200	\$37,000	0
Business & Professional Services	\$272,500	\$66,600	\$205,900	\$63,000	3
Eating and Drinking Places	\$7,800	\$1,200	\$6,500	\$29,000	0
Automobile Repair & Service	\$5,600	\$1,700	\$3,900	\$40,000	0
Entertainment Services	\$2,400	\$200	\$2,200	\$33,000	0
Health, Educ. & Social Services	\$700	\$0	\$700	\$51,000	0
Local Government	\$18,000	\$0	\$18,000	\$78,000	0
Other	\$43,300	\$25,400	\$17,900	\$47,000	0
<b>Total</b>	<b>\$7,403,300</b>	<b>\$2,750,500</b>	<b>\$4,652,700</b>	<b>\$52,000</b>	<b>90</b>

B. Local Government General Revenue by Type

TAXES:		USER FEES & CHARGES:	
Business Property Taxes	\$35,300	Residential Permit / Impact Fees	\$1,367,200
Residential Property Taxes	\$0	Utilities & Other Govt. Enterprises	\$77,100
General Sales Taxes	\$80,400	Hospital Charges	\$35,700
Specific Excise Taxes	\$5,200	Transportation Charges	\$14,000
Income Taxes	\$16,100	Education Charges	\$14,500
License Taxes	\$3,900	Other Fees and Charges	\$47,200
Other Taxes	\$2,800	TOTAL FEES & CHARGES	\$1,555,800
TOTAL TAXES	\$143,800	TOTAL GENERAL REVENUE	\$1,699,600

Impact of Building 100 Rental Apartments in a Typical Local Area Phase II—Induced Effect of Spending Income and Tax Revenue from Phase I

A. Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	\$231,600	\$85,300	\$146,300	\$55,000	3
Manufacturing	\$900	\$0	\$900	\$52,000	0
Transportation	\$10,500	\$5,100	\$5,400	\$29,000	0
Communications	\$210,600	\$87,000	\$123,600	\$81,000	2
Utilities	\$71,500	\$15,100	\$56,400	\$97,000	1
Wholesale and Retail Trade	\$554,000	\$93,600	\$460,300	\$31,000	15
Finance and Insurance	\$121,100	\$4,700	\$116,300	\$90,000	1
Real Estate	\$380,400	\$157,700	\$222,700	\$55,000	4
Personal & Repair Services	\$145,400	\$52,200	\$93,200	\$40,000	2
Services to Dwellings / Buildings	\$53,000	\$20,500	\$32,500	\$37,000	1
Business & Professional Services	\$533,000	\$153,200	\$379,900	\$58,000	7
Eating and Drinking Places	\$254,900	\$50,000	\$204,900	\$27,000	8
Automobile Repair & Service	\$111,700	\$33,600	\$78,100	\$40,000	2
Entertainment Services	\$30,800	\$5,800	\$25,000	\$30,000	1
Health, Educ. & Social Services	\$599,800	\$66,700	\$533,100	\$55,000	10
Local Government	\$900,400	\$0	\$900,400	\$60,000	15
Other	\$80,100	\$39,500	\$40,600	\$43,000	1
<b>Total</b>	<b>\$4,289,700</b>	<b>\$870,000</b>	<b>\$3,419,600</b>	<b>\$48,000</b>	<b>71</b>



B. Local Government General Revenue byType

TAXES:		USER FEES & CHARGES:	
Business Property Taxes	\$124,400	Residential Permit / Impact Fees	\$0
Residential Property Taxes	\$0	Utilities & Other Govt. Enterprises	\$178,800
General Sales Taxes	\$43,900	Hospital Charges	\$40,100
Specific Excise Taxes	\$18,400	Transportation Charges	\$8,100
Income Taxes	\$14,000	Education Charges	\$8,400
License Taxes	\$11,900	Other Fees and Charges	\$54,100
Other Taxes	\$9,500	TOTAL FEES & CHARGES	\$289,500
TOTAL TAXES	\$222,100	TOTAL GENERAL REVENUE	\$511,600

Impact of Building 100 Rental Apartments in a Typical Local Area Phase III—Ongoing, Annual Effect That Occurs Because Units Are Occupied

A. Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	\$86,900	\$32,900	\$53,900	\$55,000	1
Manufacturing	\$600	\$0	\$500	\$52,000	0
Transportation	\$5,900	\$2,800	\$3,000	\$29,000	0
Communications	\$146,800	\$60,800	\$85,900	\$81,000	1
Utilities	\$29,300	\$6,200	\$23,100	\$97,000	0
Wholesale and Retail Trade	\$436,800	\$65,200	\$371,600	\$34,000	11
Finance and Insurance	\$80,500	\$3,100	\$77,400	\$87,000	1
Real Estate	\$499,100	\$206,800	\$292,200	\$55,000	5
Personal & Repair Services	\$77,700	\$28,300	\$49,500	\$40,000	1
Services to Dwellings / Buildings	\$33,100	\$12,800	\$20,300	\$37,000	1
Business & Professional Services	\$271,300	\$76,300	\$194,900	\$53,000	4
Eating and Drinking Places	\$194,200	\$38,100	\$156,100	\$27,000	6
Automobile Repair & Service	\$94,200	\$28,300	\$65,800	\$40,000	2
Entertainment Services	\$35,400	\$4,800	\$30,600	\$29,000	1
Health, Educ. & Social Services	\$367,200	\$38,500	\$328,800	\$55,000	6
Local Government	\$243,800	\$0	\$243,800	\$60,000	4
Other	\$37,800	\$18,300	\$19,500	\$42,000	0
<b>Total</b>	<b>\$2,640,600</b>	<b>\$623,200</b>	<b>\$2,016,900</b>	<b>\$46,000</b>	<b>44</b>

B. Local Government General Revenue by Type

TAXES:		USER FEES & CHARGES:	
Business Property Taxes	\$91,100	Residential Permit / Impact Fees	\$0
Residential Property Taxes	\$146,900	Utilities & Other Govt. Enterprises	\$106,200
General Sales Taxes	\$32,100	Hospital Charges	\$41,500
Specific Excise Taxes	\$13,500	Transportation Charges	\$5,000
Income Taxes	\$9,200	Education Charges	\$5,200
License Taxes	\$8,700	Other Fees and Charges	\$37,100
Other Taxes	\$7,000	TOTAL FEES & CHARGES	\$194,900
TOTAL TAXES	\$308,500	TOTAL GENERAL REVENUE	\$503,500

*Residential Remodeling.*

Impact of \$1 Million Spent on Residential Remodeling in a Typical Local Area Summary.

Total One-Year Impact: Sum of Phase I and Phase II:

Local Income	Local Business Owners' Income	Local Wages and Salaries	Local Taxes <sup>1</sup>	Local Jobs Supported
\$840,800	\$254,800	\$585,500	\$70,700	11.5

Phase I: Direct and Indirect Impact of Construction Activity:

Local Income	Business Owners' Income	Local Wages and Salaries	Local Taxes <sup>5</sup>	Local Jobs Supported
\$577,200	\$194,500	\$382,400	\$36,000	7.2

Phase II: Induced (Ripple) Effect of Spending the Income and Taxes from Phase I:

Local Income	Business Owners' Income	Local Wages and Salaries	Local Taxes <sup>1</sup>	Local Jobs Supported
\$263,600	\$60,300	\$203,100	\$34,700	4.4

Phase III: Ongoing, Annual Effect that Occurs When New Homes are Occupied:

Residential Property Taxes
\$11,200

Impact of \$1 Million Spent on Residential Remodeling in a Typical Local Area Phase I—Direct and Indirect Impact of Construction Activity

A. Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	\$447,900	\$152,700	\$295,200	\$55,000	5.3
Manufacturing	\$0	\$0	\$0	\$54,000	0.0
Transportation	\$0	\$0	\$0	\$29,000	0.0
Communications	\$3,700	\$1,300	\$2,400	\$78,000	0.0
Utilities	\$800	\$200	\$600	\$97,000	0.0
Wholesale and Retail Trade	\$46,400	\$10,200	\$36,100	\$35,000	1.0
Finance and Insurance	\$8,100	\$300	\$7,900	\$120,000	0.1
Real Estate	\$20,100	\$17,300	\$2,800	\$55,000	0.1
Personal & Repair Services	\$2,300	\$500	\$1,700	\$40,000	0.0
Services to Dwellings / Buildings	\$1,500	\$600	\$900	\$37,000	0.0
Business & Professional Services	\$36,500	\$8,400	\$28,000	\$66,000	0.4
Eating and Drinking Places	\$1,300	\$200	\$1,100	\$29,000	0.0
Automobile Repair & Service	\$500	\$100	\$300	\$40,000	0.0
Entertainment Services	\$300	\$0	\$300	\$33,000	0.0
Health, Educ. & Social Services	\$100	\$0	\$100	\$51,000	0.0
Local Government	\$1,900	\$0	\$1,900	\$74,000	0.0
Other	\$5,800	\$2,700	\$3,100	\$48,000	0.1
<b>Total</b>	<b>\$577,200</b>	<b>\$194,500</b>	<b>\$382,400</b>	<b>\$53,000</b>	<b>7.2</b>

B. Local Government General Revenue by Type

TAXES:		USER FEES & CHARGES:	
Business Property Taxes	\$1,600	Residential Permit / Impact Fees	\$12,500
Residential Property Taxes	\$0	Utilities & Other Govt. Enterprises	\$6,000
General Sales Taxes	\$5,700	Hospital Charges	\$2,800
Specific Excise Taxes	\$200	Transportation Charges	\$1,100
Income Taxes	\$1,200	Education Charges	\$1,100
License Taxes	\$200	Other Fees and Charges	\$3,400
Other Taxes	\$100	<b>TOTAL FEES &amp; CHARGES</b>	<b>\$26,900</b>
<b>TOTAL TAXES</b>	<b>\$9,100</b>	<b>TOTAL GENERAL REVENUE</b>	<b>\$36,000</b>

Impact of \$1 Million Spent on Residential Remodeling in a Typical Local Area Phase II—Induced Effect of Spending Income and Tax Revenue from Phase I

A. Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	\$16,100	\$5,900	\$10,200	\$55,000	0.2
Manufacturing	\$0	\$0	\$0	\$53,000	0.0
Transportation	\$600	\$300	\$300	\$29,000	0.0
Communications	\$14,400	\$6,000	\$8,400	\$81,000	0.1
Utilities	\$5,000	\$1,100	\$3,900	\$97,000	0.0
Wholesale and Retail Trade	\$39,200	\$6,600	\$32,600	\$31,000	1.1
Finance and Insurance	\$8,400	\$300	\$8,000	\$89,000	0.1
Real Estate	\$26,800	\$11,100	\$15,700	\$55,000	0.3
Personal & Repair Services	\$9,800	\$3,600	\$6,200	\$40,000	0.2
Services to Dwellings / Buildings	\$3,500	\$1,300	\$2,100	\$37,000	0.1
Business & Professional Services	\$35,500	\$10,300	\$25,200	\$58,000	0.4
Eating and Drinking Places	\$17,900	\$3,500	\$14,400	\$27,000	0.5
Automobile Repair & Service	\$8,000	\$2,400	\$5,600	\$40,000	0.1
Entertainment Services	\$2,200	\$400	\$1,800	\$30,000	0.1
Health, Educ. & Social Services	\$43,000	\$4,800	\$38,200	\$55,000	0.7
Local Government	\$27,700	\$0	\$27,700	\$60,000	0.5
Other	\$5,500	\$2,700	\$2,800	\$43,000	0.1
<b>Total</b>	<b>\$263,600</b>	<b>\$60,300</b>	<b>\$203,100</b>	<b>\$46,000</b>	<b>4.4</b>

B. Local Government General Revenue by Type

TAXES:		USER FEES & CHARGES:	
Business Property Taxes	\$8,700	Residential Permit / Impact Fees	\$0
Residential Property Taxes	\$0	Utilities & Other Govt. Enterprises	\$12,100
General Sales Taxes	\$3,100	Hospital Charges	\$2,500
Specific Excise Taxes	\$1,300	Transportation Charges	\$500
Income Taxes	\$900	Education Charges	\$500
License Taxes	\$800	Other Fees and Charges	\$3,600
Other Taxes	\$700	TOTAL FEES & CHARGES	\$19,300
TOTAL TAXES	\$15,500	TOTAL GENERAL REVENUE	\$34,700

**Additional methodology detail:**<sup>26</sup>

“In 1996, the Housing Policy Department of the National Association of Home Builders (NAHB) developed an economic model to estimate the local economic benefits of home building.

Although at first calibrated to a typical metropolitan area using national averages, the model could be adapted to a specific local economy by replacing national averages with specific local data for key housing market variables. The initial version of the model could be applied to single-family construction, multifamily construction, or a combination of the two.

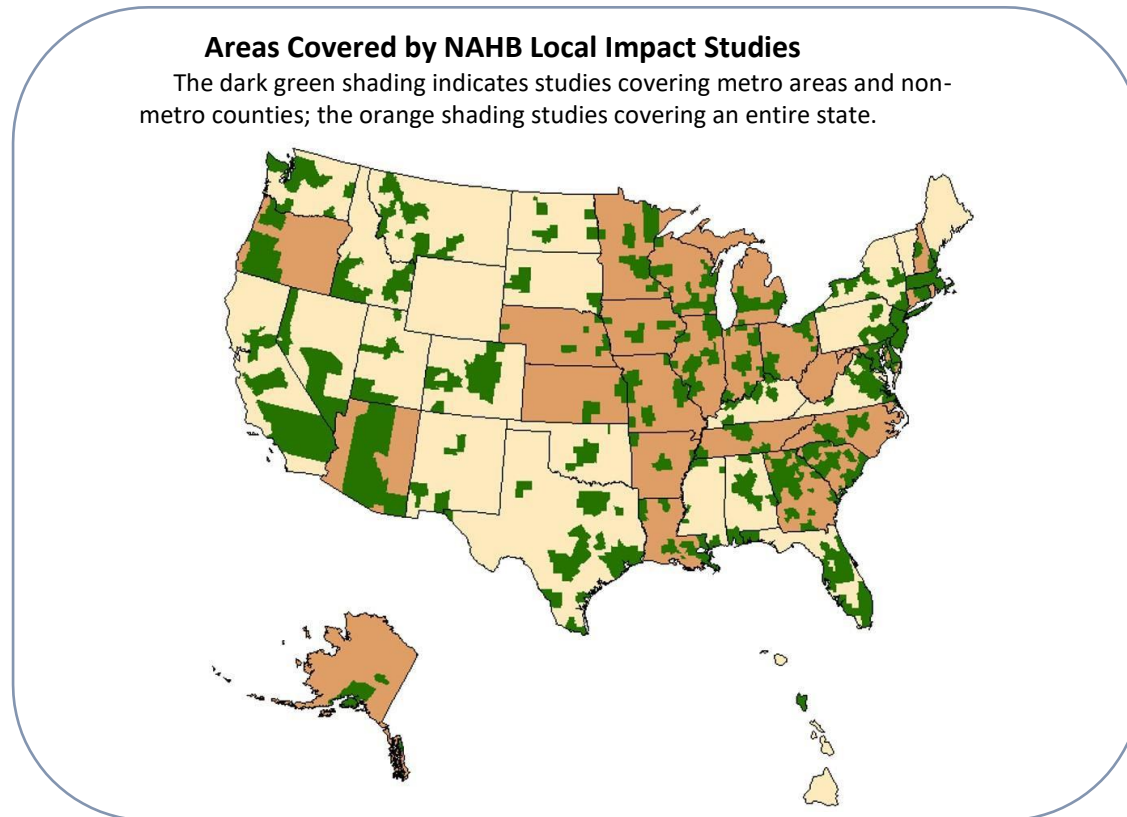
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<sup>26</sup> Ibid. Pp. 19-25. Direct quotation



“Since 1997, NAHB has used the model to produce customized reports on the impact of home building in various parts of the country. As of February 2012, NAHB has produced over 800 of these customized reports, analyzing residential construction in various metropolitan areas, non- metropolitan counties, and states (see map below).

**The reports have analyzed the impacts of specific housing projects, as well** as total home building in areas as large as entire states. In 2002, NAHB developed new versions of the model to analyze active adult housing projects and multifamily development financed with the Low- Income Housing Tax



Credit, then in 2005 a version of the model that analyzes remodeling.

The NAHB model is divided into three phases. Phases I and II are one-time effects. Phase I captures the effects that result directly from the construction activity itself and the local industries that contribute to it. Phase II captures the effects that occur as a result of the wages and profits from Phase I being spent in the local economy. Phase III is an ongoing, annual effect that includes property tax payments and the result of the completed unit being occupied.

Phase I:

**Local Industries Involved in Home Building**

**The jobs, wages, and local taxes (including permit, utility connection, and impact fees) generated by the actual development, construction, and sale of the home.** These jobs include on-site and off-site construction work as well as jobs generated in retail and wholesale sales of components, transportation to the site, and the professional services required to build a home and deliver it to its final customer.

**Phase II: Ripple Effect**

**The wages and profits for local area residents earned during the construction period are spent on other locally produced goods and services.** This generates additional income for local residents, which is spent on still more locally produced goods and services, and so on. This continuing recycling of income back into the community is usually called a *multiplier* or *ripple* effect.

**Phase III: Ongoing, Annual Effect**

**The local jobs, income, and taxes generated as a result of the home being occupied.** A household moving into a new home generally spends about three-fifths of its income on goods and services sold in the local economy. A fraction of this will become income for local workers and local businesses proprietors. In a typical local area, the household will also pay 1.25 percent of its income to local governments in the form of taxes and user fees, and a fraction of this will become income for local government employees. This is the first step in another set of economic ripples that cause a permanent increase in the level of economic activity, jobs, wages, and local tax receipts.

## **Modeling a Local Economy**

The model defines a local economy as a collection of industries and commodities. These are selected from the detailed benchmark input-output tables produced by the U.S. Bureau of Economic Analysis. The idea is to choose goods and services that would typically be produced, sold, and consumed within a local market area. Laundry services would qualify, for example, while automobile manufacturing would not. Both business-to-business and business-to-consumer transactions are considered. In general, the model takes a conservative approach and retains a relatively small number of the available industries and commodities. Of the roughly 400 industries and commodities provided in the input-output files, the model uses only 97 commodities and 99 industries.

The design of the model implies that a local economy should include not only the places people live, but also the places where they work, shop, typically go for entertainment, etc. This corresponds reasonably well to the concepts of Metropolitan Statistical Areas and Metropolitan Divisions, areas defined by the U.S. Office of Management and Budget based on local commuting patterns. Outside of these officially defined metropolitan areas, NAHB has determined that a county will usually satisfy the model's requirements.

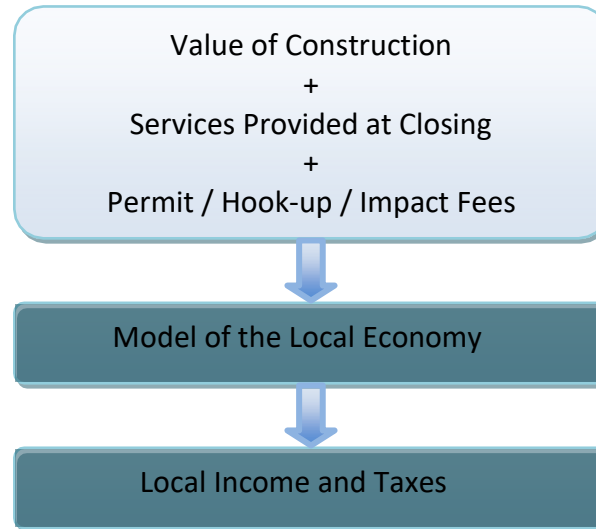
For a particular local area, the model adjusts the indirect business tax section of the national input-output accounts to account for the fiscal structure of local governments in the area. The information used to do this comes primarily from the U.S. Census Bureau's Census of Governments. Wages and salaries are extracted from the employee compensation section of the input-output accounts on an industry-by-industry basis. In order to relate wages and salaries to employment, the model incorporates data on local wages per job published by the Bureau of Economic Analysis.

### **Phase I: Construction**

"In order to estimate the local impacts generated by home building, it is necessary to know the sales price of the homes being built, how much raw land contributes to the final price, and how much the builder and developer pay to local area governments in the form of permit, utility connection, impact, and other fees. This information is not generally available from national sources and in most cases, must be provided by representatives from the area in question who have specialized knowledge of local conditions.

"The model subtracts raw land value from the price of new construction and converts the difference into local wages, salaries, business owners' income, and taxes. This is done separately for each of the local industries. In addition, the taxes and fees collected by local governments during the construction phase generate wages and salaries for local government employees. Finally, the number of full time jobs supported by the wages and salaries generated in each private local industry and the local government sector is estimated.

### Summary of Phase I



### Phase II: The Construction Ripple

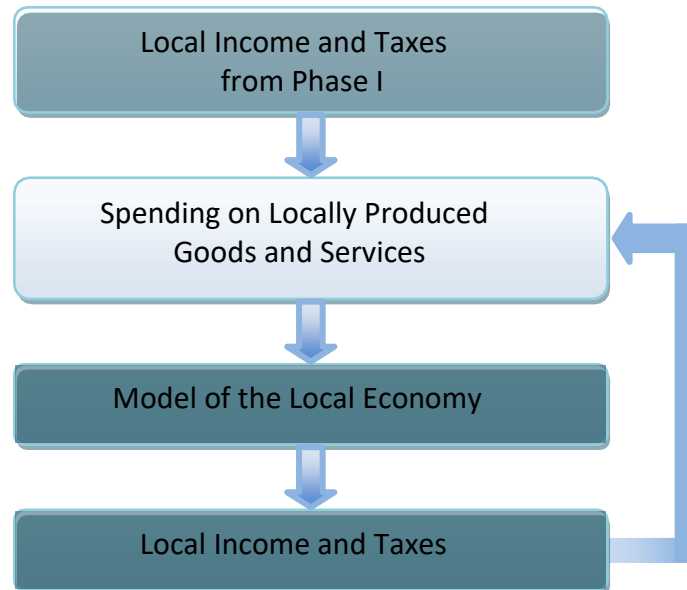
“Clearly, the local residents who earn income in Phase I will spend a share of it. Some of this will escape the local economy. A portion of the money used to buy a new car, for example, will become wages for autoworkers that are likely to live in another city, and increased profits for stockholders of an automobile manufacturing company who are also likely to live elsewhere. A portion of the spending, however, will remain within, and have an impact on, the local economy. The car is likely to be purchased from a local dealer and generate income for a salesperson that lives in the area, as well for local workers who provide cleaning, maintenance, and other services to the dealership. Consumers also are likely to purchase many services locally, as well as to pay taxes and fees to local governments.

This implies that the income and taxes generated in Phase I become the input for additional economic impacts analyzed in what we call Phase II of the model. Phase II begins by estimating how much of the added income households spend on each of the local commodities. This requires detailed analysis of data from the Consumer Expenditure (CE) Survey, which is conducted by the U.S. Bureau of Labor Statistics primarily for the purpose of determining the weights for the Consumer Price Index. The analysis produces household spending estimates for 52 local commodities. The remainder of the 97 local commodities enter the model only as business-to-business transactions.

“The model then translates the estimated local spending into local business owners’ income, wages and salaries, jobs, and taxes. This is essentially the same procedure applied to the homes sold to consumers in Phase I. In Phase II, however, the procedure is applied simultaneously to 56 locally produced and sold commodities.

In other words, the model converts the local income earned in Phase I into local spending, which then generates additional local income. But this in turn will lead to additional spending, which will generate more local income, leading to another round of spending, and so on. Calculating the end result of these economics is a straightforward exercise in mathematics.

### Summary of Phase II

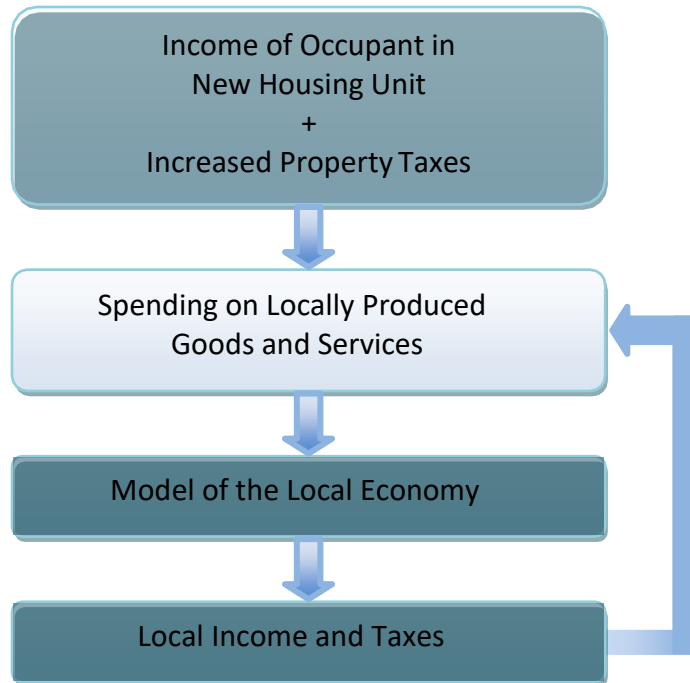


### **Phase III: Ongoing Impacts**

“Like Phase II, Phase III involves computing the sum of successive ripples of economic activity. In Phase III, however, the first ripple is generated by the income and spending of a new household (along with the additional property taxes local governments collect as a result of the new structure). This does not necessarily imply that all new homes must be occupied by households moving in from outside the local area. It may be that an average new-home household moves into the newly constructed unit from elsewhere in the same local area, while average existing-home household moves in from outside to occupy the unit vacated by the first household. Alternatively, it may be that the new home allows the local area to retain a household that would otherwise move out of the area for lack of suitable housing. In any of these cases, it is appropriate to treat a new, occupied housing unit as a net gain to the local economy of one household with average characteristics for a household that occupies a new home. This reasoning is often used, even if unconsciously, when it is assumed that a new home will be occupied by a household with average characteristics—for instance, an average number of children who will consume public education.

“To estimate the impact of the net additional households, Phase III of the model requires an estimate of the income of the households occupying the new homes. The information used to compute this estimate comes from several sources, but primarily from an NAHB statistical model based on decennial census data. Phase III of the local impact model then estimates the fraction of income these households spend on various local commodities. The spending tendencies are estimated with CE data in a fashion similar to that described under Phase II. The model also estimates the amount of local taxes the households pay each year. These estimates are based on Census of Governments data with the exception of residential property taxes, which are treated separately, most often with specific information obtained from a local source. Finally, a total ripple effect is computed in a way similar to the procedure outlined above under Phase II.”

### Summary of Phase III



## Appendix C. US Commerce Department Bureau of Economic Analysis. RIMS II Type I and II.

The national base year for the RIMS II tables utilized in this analysis is 2007, adjusted using regional values for 2015, specific to Tioga County NY.

From **Regional Multipliers: A User Handbook for Use of the Regional Input-Output Modelling System (RIMS II), Third Edition:**

“RIMS II is based on an accounting framework called an I-O table. For each industry, an I-O table shows the distribution of the inputs purchased and the outputs sold. A typical I-O table in RIMS II is derived mainly from two data sources: BEA’s national I-O table, which shows the input and output structure of nearly 500 U.S. industries, and BEA’s regional economic accounts, which are used to adjust the national I-O table in order to reflect a region’s industrial structure and trading patterns. Using RIMS II for impact analyses has several advantages. RIMS II multipliers can be estimated for any region composed of one or more counties and for any industry or group of industries in the national I-O table. The cost of estimating regional multipliers is relatively low because of the accessibility of the main data sources for RIMS II. According to empirical tests, the estimates based on RIMS II are similar in magnitude to the estimates based on relatively expensive surveys.”<sup>27</sup>

“The RIMS II model and its multipliers are prepared in three major steps. First, an adjusted national industry-by-industry direct requirements table is prepared. Second, the adjusted national table is used to prepare a regional industry-by-industry direct requirements table. Third, a regional industry-by-industry total requirements table is prepared, and the multipliers are derived from this table.

### The Adjusted National Direct Requirements Table

“The adjusted national industry-by-industry direct requirements table is derived from the make and use tables in BEA’s 1987 benchmark I-O accounts for the U.S. economy. The use table is adjusted so that it includes only the use of domestically produced commodities: The data in a use table for imported commodities are subtracted from the data in the total commodity use table.

“After this adjustment, a national industry-by-industry direct requirements table is prepared by means of standard I-O procedures. An industry-share matrix, which shows each industry’s share of the production of a commodity, is calculated by dividing each entry in each column of the make table by the respective column total. Next, a commodity-by-industry direct requirements matrix, which shows the dollar’s worth of each commodity that is required to produce a dollar’s worth of each industry’s output, is calculated by dividing each entry in each column of the use table by the respective column total. A national industry-by-industry direct requirements table is then estimated by multiplying the industry-share matrix by the commodity-by-industry direct requirements matrix.

“Unlike the national I-O accounts, RIMS II includes households as both suppliers of labor inputs to regional industries and as purchasers of regional output, because it is customary in regional impact analysis to account for the effects of changes in household earnings and expenditures. Thus, both a household row and a household column are added to the national direct requirements table before the table is regionalized.

### The Regional Direct Requirements Table

“The regional industry-by-industry direct requirements table is derived from the adjusted national industry-by industry direct requirements table. Location quotients (LQ’s) are used to “regionalize” the national data. The LQ is used as a measure of the extent to which regional supply of an industry’s output is sufficient to meet regional demand. If the LQ for a row industry in the regional direct requirements table is greater than, or equal to, one, it is assumed that the region’s demand for the

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<sup>27</sup> Pp.1-2.



output of the row industry is met entirely from regional production. In this instance, all row entries for the industry in the regional direct requirements table are set equal to the corresponding entries in the adjusted national direct requirements table.

“Conversely, if the LQ is less than one, it is assumed that regional supply of the industry’s output is not sufficient to meet regional demand. In this instance, all row entries for the industry in the regional direct requirements table are set equal to the product of the corresponding entries in the adjusted national direct requirements table and the LQ for the industry.

“The household row and the household column that were added to the national direct requirements table are also adjusted regionally. The household-row entries are adjusted downward, on the basis of commuting data from the Census of Population, in order to account for the purchases made outside the region by commuters working in the region. The household-column entries are adjusted downward, on the basis of tax data from the Internal Revenue Service, in order to account for the dampening effect of State and local taxes on household expenditures.

**The Regional Total Requirements Table and the Multipliers**

“A regional industry-by-industry total requirements table is prepared by calculating the Leontief inverse from the regional direct requirements table. The regional total requirements table shows the regional final-demand output multipliers. In I-O terminology, the multipliers account for the sum of the direct, indirect, and induced effects of a change in final demand. The final-demand, direct effect, and output-driven multipliers can be derived from the total requirements table.

**Final-demand earnings and employment multipliers**

Final-demand earnings multipliers are derived by multiplying each final-demand output multiplier in the total requirements table by the household-row entry in the direct requirements table that corresponds to the row industry for the output multiplier. Final-demand employment multipliers are derived by multiplying each entry in the final-demand earnings multiplier table by the employment-to-earnings ratio for each row industry.

**Direct-effect earnings and employment multipliers**

Direct-effect earnings multipliers are derived by dividing each household-row entry in the total requirements table by the corresponding household-row entry in the direct requirements table. Direct-effect employment multipliers are derived by dividing the final-demand employment multiplier for each industry by the product of the corresponding household row entry in the direct requirements table and the employment-to-earnings ratio for each column industry.

**Output-driven multipliers**

Output-driven multipliers can be calculated from the total requirements table.”<sup>28</sup>

**RIMS II Type II Summary Table 25: Tioga County NY**

The following multipliers were purchased from the US Commerce Department Bureau of Economic Analysis for Tioga County NY, December 2017.

INDUSTRY	Multiplier					
	Final Demand				Direct Effect	
	Output/1/ (dollars)	Earnings/2/ (dollars)	Employment/3/ (jobs)	Value-added/4/ (dollars)	Earnings/5/ (dollars)	Employment/6/ (jobs)
1111C0 Oilseed and grain farming	1.2426	0.1499	5.9879	0.2728	1.4193	1.2150
111200 Vegetable and melon farming	1.1376	0.2140	11.2820	0.7487	1.1525	1.0720

<sup>28</sup> Pp. 21-23.

INDUSTRY	Multiplier					
	Final Demand				Direct Effect	
	Output/1/ (dollars)	Earnings/2/ (dollars)	Employment/3/ (jobs)	Value-added/4/ (dollars)	Earnings/5/ (dollars)	Employment/6/ (jobs)
111300 Fruit and tree nut farming	1.1322	0.2531	14.9191	0.7458	1.1212	1.0487
111400 Greenhouse, nursery, and floriculture production	1.2736	0.3346	15.6541	0.7424	1.2187	1.1526
111900 Other crop farming	1.1719	0.2197	10.2388	0.6140	1.1838	1.0991
1121A0 Beef cattle ranching and farming, including feedlots and dual-purpose ranching and farming	1.3628	0.1620	6.9022	0.4760	1.4965	1.3109
112120 Dairy cattle and milk production	1.4159	0.1931	8.1007	0.5338	1.4831	1.2333
112A00 Animal production, except cattle and poultry and eggs	1.1999	0.1748	6.2276	0.7790	1.2247	1.1508
112300 Poultry and egg production	1.5435	0.1896	6.3624	0.4341	1.5435	1.2840
113000 Forestry and logging	1.2390	0.2972	8.6830	0.6764	1.2095	1.1829
114000 Fishing, hunting and trapping	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
115000 Support activities for agriculture and forestry	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
211000 Oil and gas extraction	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
212100 Coal mining	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2122A0 Iron, gold, silver, and other metal ore mining	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
212230 Copper, nickel, lead, and zinc mining	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
212310 Stone mining and quarrying	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2123A0 Other nonmetallic mineral mining and quarrying	1.1347	0.1328	2.9978	0.6582	1.2590	1.2107
213111 Drilling oil and gas wells	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21311A Other support activities for mining	1.1235	0.1922	2.7191	0.7633	1.1605	1.3090
2211A0 Electric power generation, transmission, and distribution*	1.1282	0.1798	1.8857	0.6477	1.1756	1.5163
221200 Natural gas distribution	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
221300 Water, sewage and other systems	1.1706	0.2443	3.5285	0.7753	1.1782	1.3113
23030A Maintenance and repair	1.2622	0.2648	4.9093	0.7056	1.2292	1.3545
2332C0 Nonresidential structures	1.2249	0.3570	6.2039	0.7239	1.1339	1.1988
233293 Highways and streets	1.2297	0.2263	3.7276	0.6383	1.2122	1.3052
2334B0 Residential structures	1.3228	0.2534	4.6950	0.6345	1.3084	1.5004
321100 Sawmills and wood preservation	1.4725	0.1561	3.4423	0.4591	2.1837	2.3989
321200 Veneer, plywood, and engineered wood product manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
321910 Millwork	1.3963	0.1698	3.6245	0.4975	1.5990	1.6181
3219A0 All other wood product manufacturing	1.3468	0.1518	3.4741	0.4844	1.5556	1.5037
327100 Clay product and refractory manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
327200 Glass and glass product manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000

INDUSTRY	Multiplier					
	Final Demand				Direct Effect	
	Output/1/ (dollars)	Earnings/2/ (dollars)	Employment/3/ (jobs)	Value-added/4/ (dollars)	Earnings/5/ (dollars)	Employment/6/ (jobs)
327310 Cement manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
327320 Ready-mix concrete manufacturing	1.2704	0.1258	2.3421	0.4342	1.5950	1.7003
327330 Concrete pipe, brick, and block manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000

INDUSTRY	Multiplier					
	Final Demand				Direct Effect	
	Output/1/ (dollars)	Earnings/2/ (dollars)	Employment/3/ (jobs)	Value-added/4/ (dollars)	Earnings/5/ (dollars)	Employment/6/ (jobs)
327390 Other concrete product manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
327400 Lime and gypsum product manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
327910 Abrasive product manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
327991 Cut stone and stone product manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
327992 Ground or treated mineral and earth manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
327993 Mineral wool manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
327999 Miscellaneous nonmetallic mineral products	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
331110 Iron and steel mills and ferroalloy manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
331200 Steel product manufacturing from purchased steel	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33131A Alumina refining and primary aluminum production	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
331314 Secondary smelting and alloying of aluminum	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33131B Aluminum product manufacturing from purchased aluminum	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33141A Primary smelting and refining of nonferrous metal (except aluminum)	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
331420 Copper rolling, drawing, extruding, and alloying	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
331490 Nonferrous metal (except copper and aluminum) rolling, drawing, extruding, and alloying	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
331510 Ferrous metal foundries	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
331520 Nonferrous metal foundries	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33211A All other forging, stamping, and sintering	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
332114 Custom roll forming	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33211B Crown and closure manufacturing and metal stamping	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
332200 Cutlery and handtool manufacturing	1.1330	0.1481	3.0566	0.5608	1.2339	1.2443
332310 Plate work and fabricated structural product manufacturing	1.1459	0.1287	2.3468	0.4205	1.3055	1.3923
332320 Ornamental and architectural metal products manufacturing	1.1578	0.1350	2.6238	0.4285	1.3234	1.3550

INDUSTRY	Multiplier					
	Final Demand				Direct Effect	
	Output/1/ (dollars)	Earnings/2/ (dollars)	Employment/3/ (jobs)	Value-added/4/ (dollars)	Earnings/5/ (dollars)	Employment/6/ (jobs)
332410 Power boiler and heat exchanger manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
332420 Metal tank (heavy gauge) manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
332430 Metal can, box, and other metal container (light gauge) manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
332500 Hardware manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
332600 Spring and wire product manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
332710 Machine shops	1.1704	0.1887	3.6277	0.5805	1.2335	1.2755
332720 Turned product and screw, nut, and bolt manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
332800 Coating, engraving, heat treating and allied activities	1.1323	0.1283	2.5872	0.5144	1.2766	1.3063
33291A Valve and fitting (except plumbing) manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
332913 Plumbing fixture fitting and trim manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
332991 Ball and roller bearing manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33299A Ammunition, arms, ordnance, and accessories manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
332996 Fabricated pipe and pipe fitting manufacturing	1.1245	0.1211	1.8992	0.4906	1.2603	1.3779
33299B Other fabricated metal manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
333111 Farm machinery and equipment manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
333112 Lawn and garden equipment manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
333120 Construction machinery manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
333130 Mining and oil and gas field machinery manufacturing	1.1680	0.1437	2.3210	0.4532	1.3221	1.5032
3332A0 Industrial machinery (except semiconductor machinery) manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
333295 Semiconductor machinery manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33331B All other commercial and service industry machinery manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
333314 Optical instrument and lens manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
333315 Photographic and photocopying equipment manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33341A Air purification and ventilation equipment manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
333414 Heating equipment (except warm air furnaces) manufacturing	1.1870	0.1154	1.9533	0.5002	1.4287	1.5306
333415 Air conditioning, refrigeration, and warm air heating equipment manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
333511 Industrial mold manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000

INDUSTRY	Multiplier					
	Final Demand				Direct Effect	
	Output/1/ (dollars)	Earnings/2/ (dollars)	Employment/3/ (jobs)	Value-added/4/ (dollars)	Earnings/5/ (dollars)	Employment/6/ (jobs)
33351A Metal cutting and forming machine tool manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
333514 Special tool, die, jig, and fixture manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33351B Cutting and machine tool accessory, rolling mill, and other metalworking machinery manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
333611 Turbine and turbine generator set units manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
333612 Speed changer, industrial high-speed drive, and gear manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
333613 Mechanical power transmission equipment manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
333618 Other engine equipment manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33391A Pump and pumping equipment manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
333912 Air and gas compressor manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
333920 Material handling equipment manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
333991 Power-driven handtool manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33399A Other general purpose machinery manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
333993 Packaging machinery manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
333994 Industrial process furnace and oven manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33399B Fluid power process machinery	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
334111 Electronic computer manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
334112 Computer storage device manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33411A Computer terminals and other computer peripheral equipment manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
334210 Telephone apparatus manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
334220 Broadcast and wireless communications equipment	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
334290 Other communications equipment manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
334300 Audio and video equipment manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33441A Other electronic component manufacturing	1.1641	0.1803	2.9800	0.6307	1.2197	1.2909
334413 Semiconductor and related device manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
334418 Printed circuit assembly (electronic assembly) manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
334510 Electromedical and electrotherapeutic apparatus manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
334511 Search, detection, and navigation instruments manufacturing	1.1490	0.1570	1.7943	0.6367	1.2566	1.5686
334512 Automatic environmental control manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000

INDUSTRY	Multiplier					
	Final Demand				Direct Effect	
	Output/1/ (dollars)	Earnings/2/ (dollars)	Employment/3/ (jobs)	Value-added/4/ (dollars)	Earnings/5/ (dollars)	Employment/6/ (jobs)
334513 Industrial process variable instruments manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
334514 Totalizing fluid meter and counting device manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
334515 Electricity and signal testing instruments manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
334516 Analytical laboratory instrument manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
334517 Irradiation apparatus manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33451A Watch, clock, and other measuring and controlling device manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
334610 Manufacturing and reproducing magnetic and optical media	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
335110 Electric lamp bulb and part manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
335120 Lighting fixture manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
335210 Small electrical appliance manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
335221 Household cooking appliance manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
335222 Household refrigerator and home freezer manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
335224 Household laundry equipment manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
335228 Other major household appliance manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
335311 Power, distribution, and specialty transformer manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
335312 Motor and generator manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
335313 Switchgear and switchboard apparatus manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
335314 Relay and industrial control manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
335911 Storage battery manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
335912 Primary battery manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
335920 Communication and energy wire and cable manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
335930 Wiring device manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
335991 Carbon and graphite product manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
335999 All other miscellaneous electrical equipment and component manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336111 Automobile manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336112 Light truck and utility vehicle manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336120 Heavy duty truck manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000

INDUSTRY	Multiplier					
	Final Demand				Direct Effect	
	Output/1/ (dollars)	Earnings/2/ (dollars)	Employment/3/ (jobs)	Value-added/4/ (dollars)	Earnings/5/ (dollars)	Employment/6/ (jobs)
336211 Motor vehicle body manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336212 Truck trailer manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336213 Motor home manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336214 Travel trailer and camper manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336310 Motor vehicle gasoline engine and engine parts manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336320 Motor vehicle electrical and electronic equipment manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3363A0 Motor vehicle steering, suspension component (except spring), and brake systems manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336350 Motor vehicle transmission and power train parts manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336360 Motor vehicle seating and interior trim manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336370 Motor vehicle metal stamping	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336390 Other motor vehicle parts manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336411 Aircraft manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336412 Aircraft engine and engine parts manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336413 Other aircraft parts and auxiliary equipment manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336414 Guided missile and space vehicle manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33641A Propulsion units and parts for space vehicles and guided missiles	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336500 Railroad rolling stock manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336611 Ship building and repairing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336612 Boat building	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336991 Motorcycle, bicycle, and parts manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336992 Military armored vehicle, tank, and tank component manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
336999 All other transportation equipment manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
337110 Wood kitchen cabinet and countertop manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
337121 Upholstered household furniture manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
337122 Nonupholstered wood household furniture manufacturing	1.2338	0.1757	4.4285	0.5660	1.3100	1.2502
33712A Other household nonupholstered furniture	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
337127 Institutional furniture manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33721A Office furniture and custom architectural woodwork and millwork manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000

INDUSTRY	Multiplier					
	Final Demand				Direct Effect	
	Output/1/ (dollars)	Earnings/2/ (dollars)	Employment/3/ (jobs)	Value-added/4/ (dollars)	Earnings/5/ (dollars)	Employment/6/ (jobs)
337215 Showcase, partition, shelving, and locker manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
337900 Other furniture related product manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
339112 Surgical and medical instrument manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
339113 Surgical appliance and supplies manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
339114 Dental equipment and supplies manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
339115 Ophthalmic goods manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
339116 Dental laboratories	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
339910 Jewelry and silverware manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
339920 Sporting and athletic goods manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
339930 Doll, toy, and game manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
339940 Office supplies (except paper) manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
339950 Sign manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
339990 All other miscellaneous manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
311111 Dog and cat food manufacturing	1.1268	0.0801	1.3800	0.3865	1.4472	1.6101
311119 Other animal food manufacturing	1.2801	0.1038	2.1700	0.2637	1.8746	2.1016
311210 Flour milling and malt manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
311221 Wet corn milling	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
31122A Soybean and other oilseed processing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
311225 Fats and oils refining and blending	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
311230 Breakfast cereal manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
311300 Sugar and confectionery product manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
311410 Frozen food manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
311420 Fruit and vegetable canning, pickling, and drying	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
31151A Fluid milk and butter manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
311513 Cheese manufacturing	2.0784	0.2005	6.1880	0.5107	3.6215	5.7205
311514 Dry, condensed, and evaporated dairy product manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
311520 Ice cream and frozen dessert manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
31161A Animal (except poultry) slaughtering, rendering, and processing	1.2990	0.1006	2.6653	0.3002	1.8169	2.1847
311615 Poultry processing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
311700 Seafood product preparation and packaging	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
311810 Bread and bakery product manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3118A0 Cookie, cracker, pasta, and tortilla manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000



INDUSTRY	Multiplier					
	Final Demand				Direct Effect	
	Output/1/ (dollars)	Earnings/2/ (dollars)	Employment/3/ (jobs)	Value-added/4/ (dollars)	Earnings/5/ (dollars)	Employment/6/ (jobs)
311910 Snack food manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
311920 Coffee and tea manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
311930 Flavoring syrup and concentrate manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
311940 Seasoning and dressing manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
311990 All other food manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
312110 Soft drink and ice manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
312120 Breweries	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
312130 Wineries	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
312140 Distilleries	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
312200 Tobacco product manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
313100 Fiber, yarn, and thread mills	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
313200 Fabric mills	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
313300 Textile and fabric finishing and fabric coating mills	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
314110 Carpet and rug mills	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
314120 Curtain and linen mills	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
314900 Other textile product mills	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
315000 Apparel manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
316000 Leather and allied product manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
322110 Pulp mills	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
322120 Paper mills	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
322130 Paperboard mills	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
322210 Paperboard container manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
322220 Paper bag and coated and treated paper manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
322230 Stationery product manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
322291 Sanitary paper product manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
322299 All other converted paper product manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
323110 Printing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
323120 Support activities for printing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
324110 Petroleum refineries	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
324121 Asphalt paving mixture and block manufacturing	1.1357	0.0806	1.1096	0.4898	1.4559	1.7577
324122 Asphalt shingle and coating materials manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
324190 Other petroleum and coal products manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
325110 Petrochemical manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000

INDUSTRY	Multiplier					
	Final Demand				Direct Effect	
	Output/1/ (dollars)	Earnings/2/ (dollars)	Employment/3/ (jobs)	Value-added/4/ (dollars)	Earnings/5/ (dollars)	Employment/6/ (jobs)
325120 Industrial gas manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
325130 Synthetic dye and pigment manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
325180 Other basic inorganic chemical manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
325190 Other basic organic chemical manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
325211 Plastics material and resin manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3252A0 Synthetic rubber and artificial and synthetic fibers and filaments manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
325310 Fertilizer manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
325320 Pesticide and other agricultural chemical manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
325411 Medicinal and botanical manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
325412 Pharmaceutical preparation manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
325413 In-vitro diagnostic substance manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
325414 Biological product (except diagnostic) manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
325510 Paint and coating manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
325520 Adhesive manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
325610 Soap and cleaning compound manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
325620 Toilet preparation manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
325910 Printing ink manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3259A0 All other chemical product and preparation manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
326110 Plastics packaging materials and unlaminated film and sheet manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
326120 Plastics pipe, pipe fitting, and unlaminated profile shape manufacturing	1.1127	0.0955	1.6641	0.4105	1.3263	1.3875
326130 Laminated plastics plate, sheet (except packaging), and shape manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
326140 Polystyrene foam product manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
326150 Urethane and other foam product (except polystyrene) manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
326160 Plastics bottle manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
326190 Other plastics product manufacturing	1.1712	0.0889	1.8297	0.3773	1.5315	1.4952
326210 Tire manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
326220 Rubber and plastics hoses and belting manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
326290 Other rubber product manufacturing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
420000 Wholesale trade	1.1642	0.2597	3.7840	0.7802	1.1893	1.3314

INDUSTRY	Multiplier					
	Final Demand				Direct Effect	
	Output/1/ (dollars)	Earnings/2/ (dollars)	Employment/3/ (jobs)	Value-added/4/ (dollars)	Earnings/5/ (dollars)	Employment/6/ (jobs)
441000 Motor vehicle and parts dealers	1.1553	0.3351	6.5816	0.8690	1.1174	1.1639
445000 Food and beverage stores	1.1941	0.3096	11.5600	0.7847	1.1743	1.1104
452000 General merchandise stores	1.2052	0.2820	10.8563	0.7663	1.2444	1.1308
4A0000 Other retail	1.1800	0.2826	9.1562	0.7475	1.1778	1.1277
481000 Air transportation	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
482000 Rail transportation	1.1658	0.1784	2.4024	0.6174	1.2180	1.3952
483000 Water transportation	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
484000 Truck transportation	1.2366	0.2593	5.2882	0.5831	1.3259	1.3409
485A00 Transit and ground passenger transportation*	1.1996	0.3263	11.5822	0.5782	1.1533	1.0979
486000 Pipeline transportation	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
48A000 Scenic and sightseeing transportation and support activities for transportation	1.2577	0.2927	5.5538	0.6582	1.3534	1.4179
492000 Couriers and messengers	1.2394	0.3405	9.7717	0.6623	1.2148	1.1614
493000 Warehousing and storage	1.2521	0.3991	10.0622	0.7548	1.1887	1.1870
511110 Newspaper publishers	1.1838	0.2670	5.7046	0.6510	1.1965	1.2068
511120 Periodical publishers	1.1714	0.2024	3.2889	0.5750	1.2575	1.3916
511130 Book publishers	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5111A0 Directory, mailing list, and other publishers	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
511200 Software publishers	1.1454	0.2427	2.6644	0.7720	1.1566	1.4188
512100 Motion picture and video industries	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
512200 Sound recording industries	1.2035	0.1502	2.2968	0.6476	1.3102	1.4634
515100 Radio and television broadcasting	1.2600	0.4534	5.7206	0.7607	1.1742	1.3534
515200 Cable and other subscription programming	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
517110 Wired telecommunications carriers	1.1210	0.1361	1.9755	0.6851	1.1873	1.3052
517210 Wireless telecommunications carriers (except satellite)	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
517A00 Satellite, telecommunications resellers, and all other telecommunications	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
518200 Data processing, hosting, and related services	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5191A0 News syndicates, libraries, archives, and all other information services	1.1122	0.2354	4.3120	0.7207	1.1216	1.1766
519130 Internet publishing and broadcasting and Web search portals	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
52A000 Monetary authorities and depository credit intermediation	1.1419	0.1397	2.2693	0.6925	1.2550	1.4460

INDUSTRY	Multiplier					
	Final Demand				Direct Effect	
	Output/1/ (dollars)	Earnings/2/ (dollars)	Employment/3/ (jobs)	Value-added/4/ (dollars)	Earnings/5/ (dollars)	Employment/6/ (jobs)
522A00 Nondepository credit intermediation and related activities	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
523A00 Securities and commodity contracts intermediation and brokerage	1.1497	0.2458	4.1319	0.5669	1.1506	1.2404
523900 Other financial investment activities	1.1733	0.1702	2.9604	0.4248	1.3083	1.3894
524100 Insurance carriers	1.1335	0.1283	1.7478	0.6479	1.2412	1.4100
524200 Insurance agencies, brokerages, and related activities	1.2046	0.2075	3.2070	0.6296	1.2390	1.3752
525000 Funds, trusts, and other financial vehicles	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
531000 Real estate	1.1406	0.1645	5.8230	0.7907	1.2158	1.1484
532100 Automotive equipment rental and leasing	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
532A00 Consumer goods and general rental centers	1.2055	0.4331	7.1107	0.8368	1.1152	1.1868
532400 Commercial and industrial machinery and equipment rental and leasing	1.1561	0.2223	2.6513	0.8447	1.1924	1.4151
533000 Lessors of nonfinancial intangible assets	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
541100 Legal services	1.1252	0.2646	2.9750	0.8242	1.1183	1.3381
541511 Custom computer programming services	1.1611	0.3095	3.8659	0.8015	1.1423	1.3643
541512 Computer systems design services	1.1656	0.2769	3.5275	0.7376	1.1577	1.3995
54151A Other computer related services, including facilities management	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
541200 Accounting, tax preparation, bookkeeping, and payroll services	1.1233	0.2719	5.0377	0.8692	1.1222	1.1815
541300 Architectural, engineering, and related services	1.1757	0.2268	3.2963	0.6266	1.2067	1.4242
541400 Specialized design services	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
541610 Management consulting services	1.1766	0.2753	4.9241	0.7209	1.1779	1.2701
5416A0 Environmental and other technical consulting services	1.1680	0.2807	5.1949	0.7131	1.1582	1.2357
541700 Scientific research and development services	1.1557	0.1908	2.5196	0.5472	1.2150	1.4564
541800 Advertising, public relations, and related services	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5419A0 Marketing research and all other miscellaneous professional, scientific, and technical services	1.1267	0.2207	3.1885	0.7278	1.1465	1.2875
541920 Photographic services	1.1556	0.2355	7.3717	0.6323	1.1791	1.1437
541940 Veterinary services	1.1848	0.2310	6.3540	0.5937	1.2100	1.1887
550000 Management of companies and enterprises	1.1935	0.4631	4.7253	0.7218	1.1009	1.3020
561100 Office administrative services	1.1339	0.3223	4.5640	0.8697	1.1055	1.2181
561200 Facilities support services	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
561300 Employment services	1.1390	0.3142	9.1396	0.8758	1.1224	1.1102

INDUSTRY	Multiplier					
	Final Demand				Direct Effect	
	Output/1/ (dollars)	Earnings/2/ (dollars)	Employment/3/ (jobs)	Value-added/4/ (dollars)	Earnings/5/ (dollars)	Employment/6/ (jobs)
561400 Business support services	1.1663	0.2534	6.3449	0.7301	1.1938	1.1878
561500 Travel arrangement and reservation services	1.1577	0.1604	3.1841	0.5684	1.2877	1.3872
561600 Investigation and security services	1.1490	0.2839	9.8956	0.7939	1.1372	1.0970
561700 Services to buildings and dwellings	1.1382	0.1904	7.0932	0.7109	1.1965	1.1221
561900 Other support services	1.1792	0.2207	5.6898	0.6156	1.2271	1.2218
562000 Waste management and remediation services	1.1662	0.1488	2.9253	0.5683	1.3107	1.3664
611100 Elementary and secondary schools	1.2017	0.4187	14.0815	0.7883	1.1171	1.0915
611A00 Junior colleges, colleges, universities, and professional schools	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
611B00 Other educational services	1.2119	0.4301	15.4857	0.7128	1.1227	1.0876
621100 Offices of physicians	1.1821	0.3556	4.6332	0.7430	1.1326	1.2968
621200 Offices of dentists	1.1638	0.3124	6.2608	0.7340	1.1360	1.1703
621300 Offices of other health practitioners	1.1464	0.2999	7.1616	0.7681	1.1245	1.1351
621400 Outpatient care centers	1.1523	0.2310	4.2658	0.6317	1.1700	1.2416
621500 Medical and diagnostic laboratories	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
621600 Home health care services	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
621900 Other ambulatory health care services	1.1939	0.2836	6.2964	0.6735	1.1656	1.1756
622000 Hospitals	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
623A00 Nursing and community care facilities	1.1744	0.3172	9.6458	0.7148	1.1339	1.1155
623B00 Residential mental retardation, mental health, substance abuse and other facilities	1.1629	0.3623	10.8506	0.7858	1.1119	1.0974
624100 Individual and family services	1.1662	0.3513	13.4964	0.7370	1.1157	1.0768
624A00 Community food, housing, and other relief services, including rehabilitation services	1.1896	0.2902	9.4277	0.6216	1.1656	1.1243
624400 Child day care services	1.1735	0.3222	14.7307	0.7245	1.1240	1.0708
711100 Performing arts companies	1.1410	0.2099	9.2994	0.6360	1.1726	1.0911
711200 Spectator sports	1.1895	0.3618	6.8023	0.9187	1.1571	1.2033
711A00 Promoters of performing arts and sports and agents for public figures	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
711500 Independent artists, writers, and performers	1.1555	0.1709	3.6601	0.6667	1.2793	1.2882
712000 Museums, historical sites, zoos, and parks	1.1669	0.2075	6.1049	0.5672	1.2243	1.1829
713100 Amusement parks and arcades	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
713200 Gambling industries (except casino hotels)	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
713900 Other amusement and recreation industries	1.1586	0.1934	8.6658	0.6153	1.2110	1.1061
721000 Accommodation	1.1685	0.2725	7.5851	0.7329	1.1667	1.1414

INDUSTRY	Multiplier					
	Final Demand				Direct Effect	
	Output/1/ (dollars)	Earnings/2/ (dollars)	Employment/3/ (jobs)	Value-added/4/ (dollars)	Earnings/5/ (dollars)	Employment/6/ (jobs)
722110 Full-service restaurants	1.2238	0.3622	14.2739	0.6495	1.1620	1.0895
722211 Limited-service restaurants	1.1969	0.2910	14.8829	0.6614	1.1705	1.0742
722A00 All other food and drinking places	1.2234	0.1985	7.5433	0.4790	1.2878	1.1578
811100 Automotive repair and maintenance	1.2029	0.3417	8.5167	0.6990	1.1469	1.1445
811200 Electronic and precision equipment repair and maintenance	1.1918	0.3773	6.4478	0.7740	1.1313	1.2023
811300 Commercial and industrial machinery and equipment repair and maintenance	1.1601	0.4093	6.2144	0.8594	1.0962	1.1793
811400 Personal and household goods repair and maintenance	1.1352	0.2048	4.8046	0.7477	1.1727	1.1823
812100 Personal care services	1.1869	0.4126	15.3696	0.7590	1.1170	1.0827
812200 Death care services	1.1583	0.3583	8.1389	0.7499	1.1096	1.1213
812300 Dry-cleaning and laundry services	1.1975	0.3620	11.4671	0.7485	1.1497	1.1221
812900 Other personal services	1.1766	0.3056	10.6332	0.7050	1.1489	1.1046
813100 Religious organizations	1.1554	0.1342	3.3046	0.3931	1.3054	1.3092
813A00 Grantmaking, giving, and social advocacy organizations	1.1394	0.3328	7.0350	0.8029	1.1097	1.1520
813B00 Civic, social, professional, and similar organizations	1.1527	0.4248	10.4583	0.9001	1.0871	1.0979
491000 Postal service	1.1975	0.5573	8.4510	0.8991	1.0850	1.1729
S00A00 Other government enterprises	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
H00000 Households	0.2702	0.0628	1.8615	0.1666	0.0000	0.0000

1. Each entry in column 1 represents the total dollar change in output that occurs in all industries for each additional dollar of output delivered to final demand by the industry corresponding to the entry.
  2. Each entry in column 2 represents the total dollar change in earnings of households employed by all industries for each additional dollar of output delivered to final demand by the industry corresponding to the entry.
  3. Each entry in column 3 represents the total change in number of jobs that occurs in all industries for each additional 1 million dollars of output delivered to final demand by the industry corresponding to the entry. Because the employment multipliers are based on 2015 data, the output delivered to final demand should be in 2015 dollars.
  4. Each entry in column 4 represents the total dollar change in value added that occurs in all industries for each additional dollar of output delivered to final demand by the industry corresponding to the entry.
  5. Each entry in column 5 represents the total dollar change in earnings of households employed by all industries for each additional dollar of earnings paid directly to households employed by the industry corresponding to the entry.
  6. Each entry in column 6 represents the total change in number of jobs in all industries for each additional job in the industry corresponding to the entry.
- NOTE.--Multipliers are based on the 2007 Benchmark Input-Output Table for the Nation and 2015 regional data. Industry List B identifies the industries corresponding to the entries.  
SOURCE.--Regional Input-Output Modeling System (RIMS II), Regional Product Division, Bureau of Economic Analysis.