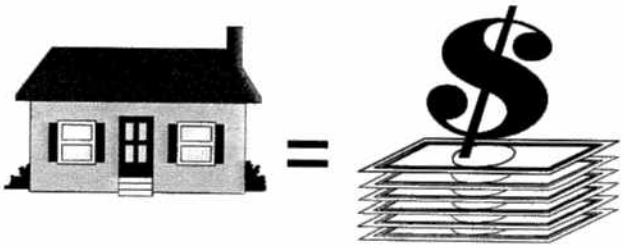
NAHB

THE ECONOMIC IMPACT OF SINGLE FAMILY HOME BUILDING IN MICHIGAN

INCOME, JOBS, AND TAXES GENERATED



Prepared by the Housing Policy Department

May 2006

National Association of Home Builders
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202-266-8398

NAHB

NATIONAL ASSOCIATION OF HOME BUILDERS

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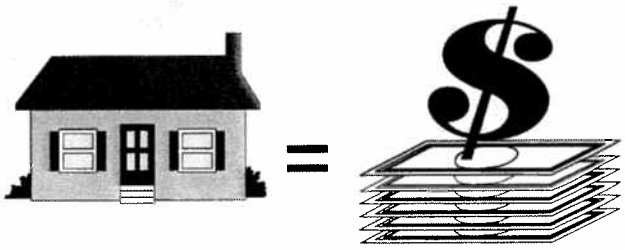

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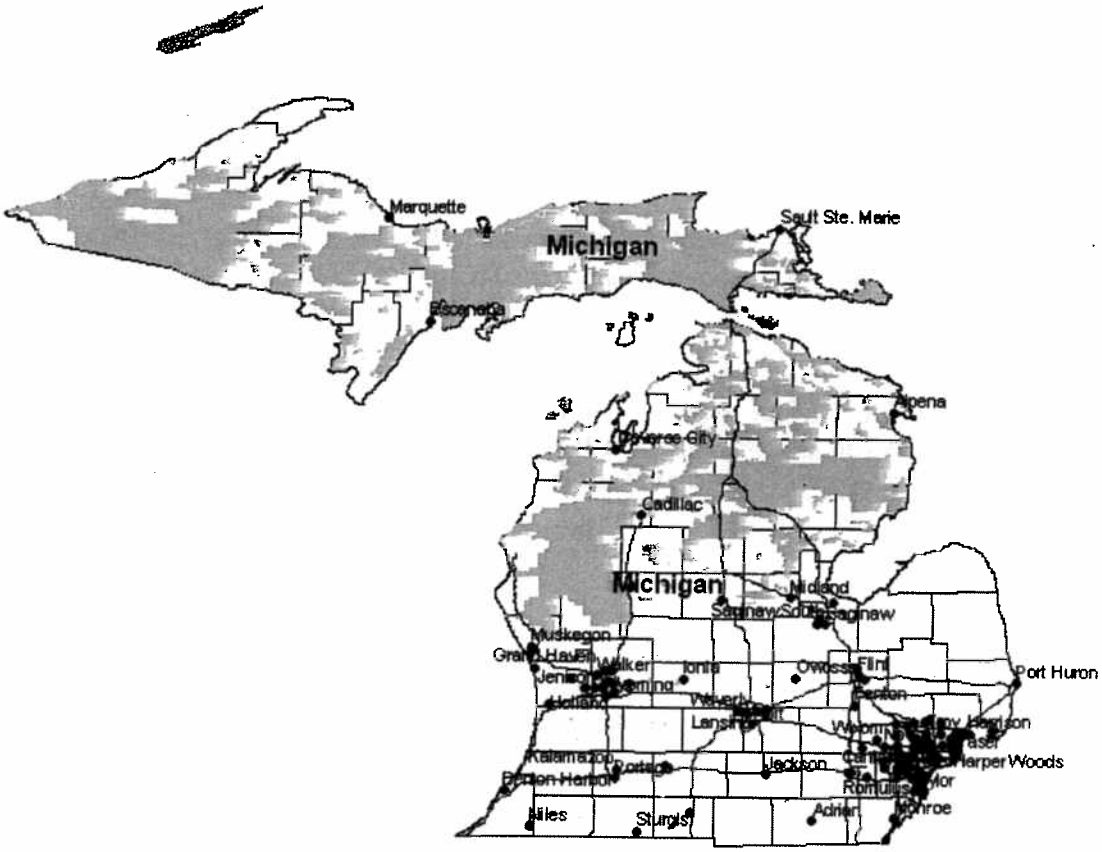
EXECUTIVE SUMMARY

This report presents estimates of the economic impacts of single family home building in Michigan. In general, new single family construction generates substantial economic activity in the state where the building takes place. This economic activity includes income and jobs for state residents, as well as revenue for state and local governments. The National Association of Home Builders has developed a model to estimate the economic benefits. The model captures the effect of the construction activity itself, the ripple impact that occurs when income earned from construction activity is spent and recycled in the state, and the ongoing impact that results from the new homes becoming occupied by residents who pay taxes and buy goods and services produced in the state. In order to fully appreciate the positive impact residential construction has on a state economy, it is important to include the ripple effects and the ongoing benefits. Since the NAHB model was initially developed in 1996, it has been successfully applied to construction in over 350 projects, local jurisdictions, metropolitan areas, non-metropolitan counties, and states across the country.

The report presents estimates of the impacts of building 54,721 single family homes, based on the level of production in the state of Michigan in 2005.



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. The key results are summarized below. Additional details are contained in subsequent sections.

- The estimated one-year metro area impacts of building 54,721 single family homes in Michigan include
  - $9.9 billion in income,
  - $3.3 billion in taxes for the state and local governments, and
  - 153,541 jobs.

  These are **local impacts**, representing income and jobs for residents of Michigan, and taxes (and other sources of revenue, including permit fees) for all local jurisdictions within the state 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 state.

- The additional, annually recurring impacts of building 54,721 single family homes in Michigan include
  - $1.9 billion in income,
  - $1.1 billion in taxes for the state and local governments, and
  - 31,221 jobs.

  These are **ongoing**, **annual local impacts** that result from the new homes being occupied, and the occupants paying taxes and otherwise participating in Michigan's economy year after year. In order to fully understand the impact residential construction has on a state, it's important to consider the ongoing benefits as well as the one-time effects.

- The single family impacts were calculated assuming that new single family homes built in Michigan have an average price of $257,000; are built on a lot for which the average value of the raw land is $47,000; require the builder and developer to pay an average of $5,200 in impact, permit, and other fees to local governments; and incur an average property tax of $3,234 per year. This information was provided by the Southeast Michigan Council of Governments, the Michigan Department of the Treasury, the Michigan Department of Labor and Economic Growth, and the United States Census Bureau.

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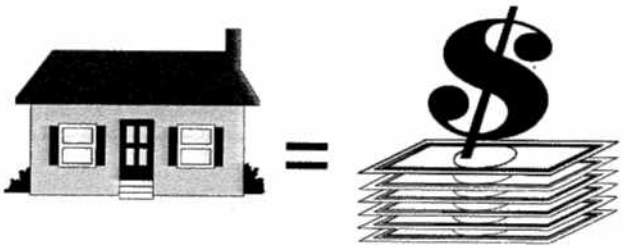

DETAILED TABLES ON INCOME, JOBS, AND TAXES

IMPACT OF BUILDING 54,721 SINGLE FAMILY HOMES IN MICHIGAN

SUMMARY

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

State Income	State Business Owners' Income	State Wages and Salaries	State and Local Taxes[1]	State Jobs Supported
$9,911,415,000	$2,463,277,000	$7,448,138,000	$3,272,161,000	153,541

Phase I: Direct and Indirect Impact of Construction Activity:

State Income	Business Owners' Income	State Wages and Salaries	State and Local Taxes[1]	State Jobs Supported
$5,082,789,000	$1,418,709,000	$3,664,080,000	$1,146,790,000	74,759

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

State Income	Business Owners' Income	State Wages and Salaries	State and Local Taxes[1]	State Jobs Supported
$4,828,626,000	$1,044,568,000	$3,784,058,000	$2,125,371,000	78,782

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

State Income	State Business Owners' Income	State Wages and Salaries	State and Local Taxes[1]	State Jobs Supported
$1,859,811,000	$373,848,000	$1,485,963,000	$1,082,956,000	31,221

[1] 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 54,721 SINGLE FAMILY HOMES IN . MICHIGAN
PHASE I--DIRECT AND INDIRECT IMPACT OF CONSTRUCTION ACTIVITY

A. State Income and Jobs by Industry

Industry	State Income	State Business Owners' Income	State Wages and Salaries	Wages & Salaries per Full-time Job	Number of State Jobs Supported
Construction	$3,539,058,000	$914,686,000	$2,624,372,000	$50,000	52,496
Manufacturing	$9,983,000	$1,209,000	$8,774,000	$48,000	182
Transportation	$26,691,000	$3,039,000	$23,652,000	$31,000	753
Communications	$50,153,000	$17,687,000	$32,466,000	$74,000	440
Utilities	$28,667,000	$20,324,000	$8,342,000	$84,000	99
Wholesale and Retail Trade	$534,508,000	$81,724,000	$452,784,000	$40,000	11,274
Finance and Insurance	$96,698,000	$11,016,000	$85,682,000	$84,000	1,018
Real Estate	$86,936,000	$75,794,000	$11,142,000	$49,000	228
Personal & Repair Services	$45,199,000	$35,630,000	$9,569,000	$66,000	144
Services to Dwellings / Buildings	$23,210,000	$7,764,000	$15,446,000	$34,000	455
Business & Professional Services	$584,178,000	$224,794,000	$359,384,000	$55,000	6,568
Eating and Drinking Places	$10,441,000	($7,019,000)	$17,461,000	$21,000	833
Automobile Repair & Service	$13,669,000	$10,016,000	$3,653,000	$61,000	60
Entertainment Services	$3,379,000	$1,147,000	$2,232,000	$48,000	46
Health, Educ. & Social Services	$389,000	$146,000	$243,000	$41,000	6
State and Local Government	$1,378,000	$1,378,000	$0	$54,000	0
Other	$28,251,000	$19,374,000	$8,877,000	$57,000	156
Total	$5,082,789,000	$1,418,709,000	$3,664,080,000	$49,000	74,759

Note: Business & professional services include architectural and engineering services. The "other" category consists mostly of landscaping services, and the production of greenhouse and nursery products.

B. State Government General Revenue by Type

TAXES:		USER FEES & CHARGES:	
Business Property Taxes	$74,773,000	Residential Permit / Impact Fees	$284,549,000
Residential Property Taxes	$0	Utilities & Other Govt. Enterprises	$40,078,000
General Sales Taxes	$367,663,000	Hospital Charges	$30,924,000
Specific Excise Taxes	$38,430,000	Transportation Charges	$5,693,000
Income Taxes	$137,060,000	Education Charges	$57,872,000
License Taxes	$20,473,000	Other Fees and Charges	$79,201,000
Other Taxes	$10,073,000	TOTAL FEES & CHARGES	$498,318,000
TOTAL TAXES	$648,472,000	TOTAL GENERAL REVENUE	$1,146,790,000

IMPACT OF BUILDING 54,721 SINGLE FAMILY HOMES IN , MICHIGAN
PHASE II-INDUCED EFFECT OF SPENDING INCOME AND TAX REVENUE FROM PHASE I

A. State Income and Jobs by Industry

Industry	State Income	State Business Owners' Income	State Wages and Salaries	Wages & Salaries per Full-time Job	Number of State Jobs Supported
Construction	$47,900,000	$7,935,000	$39,964,000	$50,000	799
Manufacturing	$11,491,000	$1,411,000	$10,081,000	$48,000	209
Transportation	$35,111,000	$2,988,000	$32,123,000	$36,000	895
Communications	$182,033,000	$71,009,000	$111,024,000	$74,000	1,509
Utilities	$87,056,000	$40,884,000	$46,172,000	$85,000	542
Wholesale and Retail Trade	$442,435,000	$72,324,000	$370,111,000	$34,000	10,741
Finance and Insurance	$141,529,000	$18,581,000	$122,947,000	$73,000	1,692
Real Estate	$499,215,000	$435,232,000	$63,983,000	$49,000	1,309
Personal & Repair Services	$197,970,000	$104,190,000	$93,780,000	$37,000	2,533
Services to Dwellings / Buildings	$46,012,000	$15,392,000	$30,619,000	$34,000	903
Business & Professional Services	$291,690,000	$118,421,000	$173,269,000	$48,000	3,578
Eating and Drinking Places	$127,702,000	$25,313,000	$102,389,000	$21,000	4,884
Automobile Repair & Service	$92,168,000	$44,966,000	$47,202,000	$70,000	677
Entertainment Services	$57,471,000	$20,744,000	$36,727,000	$40,000	922
Health, Educ. & Social Services	$315,295,000	$59,717,000	$255,578,000	$50,000	5,129
State and Local Government	$2,142,406,000	$0	$2,142,406,000	$54,000	39,332
Other	$111,142,000	$5,459,000	$105,683,000	$34,000	3,128
Total	$4,828,626,000	$1,044,568,000	$3,784,058,000	$48,000	78,782

Note: Business & professional services include architectural and engineering services. The "other" category consists mostly of landscaping services, and the production of greenhouse and nursery products.

B. State Government General Revenue by Type

TAXES:		USER FEES & CHARGES:	
Business Property Taxes	$425,957,000	Residential Permit / Impact Fees	$0
Residential Property Taxes	$0	Utilities & Other Govt. Enterprises	$60,177,000
General Sales Taxes	$694,542,000	Hospital Charges	$29,378,000
Specific Excise Taxes	$218,920,000	Transportation Charges	$5,506,000
Income Taxes	$285,553,000	Education Charges	$55,977,000
License Taxes	$63,832,000	Other Fees and Charges	$237,988,000
Other Taxes	$47,540,000	TOTAL FEES & CHARGES	$389,027,000
TOTAL TAXES	$1,736,344,000	TOTAL GENERAL REVENUE	$2,125,371,000

IMPACT OF BUILDING 54,721 SINGLE FAMILY HOMES IN . MICHIGAN
PHASE III--ONGOING, ANNUAL EFFECT THAT OCCURS BECAUSE UNITS ARE OCCUPIED

A. State Income and Jobs by Industry

Industry	State Income	State Business Owners' Income	State Wages and Salaries	Wages & Salaries per Full-time Job	Number of State Jobs Supported
Construction	$22,712,000	$3,897,000	$18,815,000	$50,000	376
Manufacturing	$4,780,000	$591,000	$4,190,000	$48,000	87
Transportation	$11,932,000	$1,061,000	$10,870,000	$35,000	307
Communications	$75,826,000	$29,634,000	$46,193,000	$74,000	628
Utilities	$39,485,000	$18,666,000	$20,819,000	$85,000	244
Wholesale and Retail Trade	$188,609,000	$30,838,000	$157,771,000	$34,000	4,581
Finance and Insurance	$66,383,000	$8,481,000	$57,902,000	$72,000	802
Real Estate	$134,785,000	$117,510,000	$17,275,000	$49,000	353
Personal & Repair Services	$67,846,000	$36,779,000	$31,066,000	$38,000	823
Services to Dwellings / Buildings	$20,664,000	$6,913,000	$13,751,000	$34,000	405
Business & Professional Services	$120,999,000	$49,524,000	$71,475,000	$49,000	1,451
Eating and Drinking Places	$53,258,000	$10,557,000	$42,701,000	$21,000	2,037
Automobile Repair & Service	$42,121,000	$20,886,000	$21,235,000	$67,000	319
Entertainment Services	$24,121,000	$8,557,000	$15,563,000	$39,000	400
Health, Educ. & Social Services	$133,415,000	$26,295,000	$107,119,000	$50,000	2,156
State and Local Government	$790,337,000	$0	$790,337,000	$54,000	14,510
Other	$62,538,000	$3,659,000	$58,880,000	$34,000	1,741
Total	$1,859,811,000	$373,848,000	$1,485,963,000	$48,000	31,221

Note: Business & professional services include architectural and engineering services. The "other" category consists mostly of landscaping services, and the production of greenhouse and nursery products.

B. State Government General Revenue by Type

TAXES:		USER FEES & CHARGES:	
Business Property Taxes	$185,159,000	Residential Permit / Impact Fees	$0
Residential Property Taxes	$144,619,000	Utilities & Other Govt. Enterprises	$41,241,000
General Sales Taxes	$301,911,000	Hospital Charges	$23,002,000
Specific Excise Taxes	$95,163,000	Transportation Charges	$2,121,000
Income Taxes	$119,111,000	Education Charges	$21,560,000
License Taxes	$27,212,000	Other Fees and Charges	$101,292,000
Other Taxes	$20,566,000	TOTAL FEES & CHARGES	$189,215,000
TOTAL TAXES	$893,741,000	TOTAL GENERAL REVENUE	$1,082,956,000

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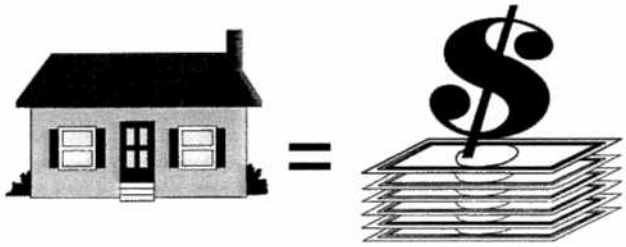
INCOME, JOBS, AND TAXES GENERATED

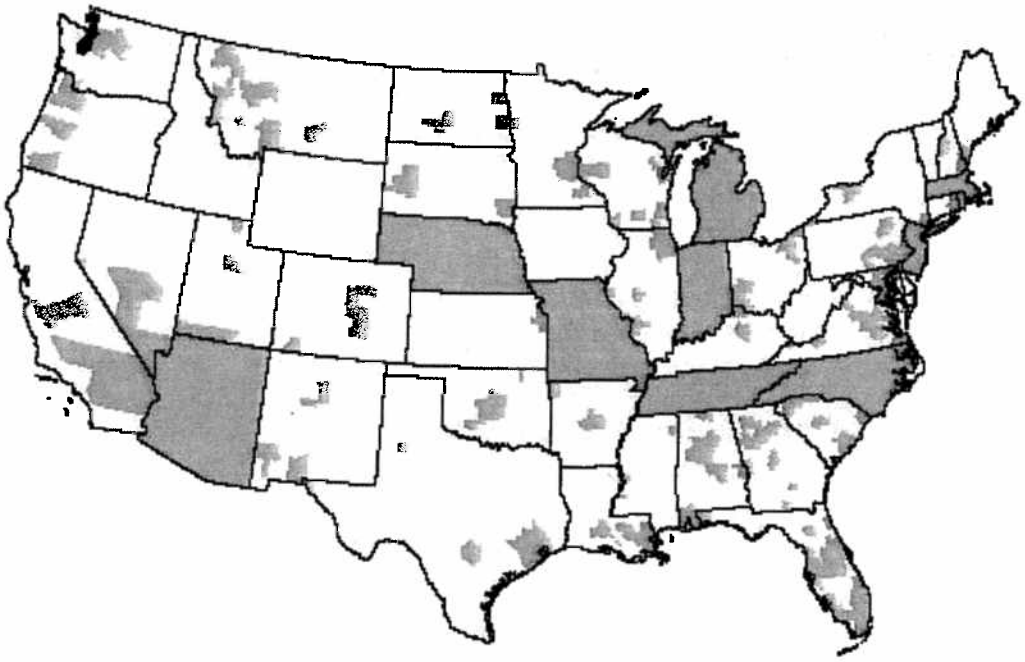


BACKGROUND AND A BRIEF DESCRIPTION OF THE MODEL USED TO ESTIMATE THE ECONOMIC BENEFITS

The Housing Policy Department of the National Association of Home Builders (NAHB) maintains an economic model that it uses to estimate the local economic benefits of home building. Originally developed in 1996, the model was at first calibrated to a typical metropolitan area using national averages, but from the beginning was capable of being adapted to a specific local economy by replacing 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.

In March of 1997, NAHB began customizing the model to various areas around the country on a routine basis, primarily at the request of its local affiliated associations. By February of 2006, the Housing Policy Department had produced over 350 of these customized reports analyzing residential construction in various metropolitan areas, non-metropolitan counties, and states across the country (darker shaded areas in the map below).

Areas Covered by Previous NAHB Local Impact Studies



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. In 2005 a version of the model that analyzes residential remodeling was added to the mix.

Results from NAHB's local impact model have been used by outside organizations such as universities, state housing authorities and affordable housing agencies:

- The Shimburg Center for Affordable Housing at the University of Florida used results from the NAHB model to establish that "the real estate taxes paid year after year are the most obvious long-term economic benefit to the community. Probably the second most obvious long-term economic benefit is the purchases made by the family occupying the completed home." www.shimberg.ufl.edu/pdfs/Newslett-June02.pdf

- The Center for Applied Economic Research at Montana State University used "results from an input-output model developed by the National Association of Home Builders to assess the impacts to local areas from new home construction." The results show that "the construction industry contributes substantially to Montana's economy accounting for 5.5 percent of Gross State Product." www.msubillings.edu/caer/The%20Impact%20of%20Home%20Construction%20in%20Montana.pdf

- The Housing Education and Research Center at Michigan State University also adopted the NAHB approach: "The underlying basis for supporting the implementation of this [NAHB] model on Michigan communities is that it provides quantifiable results that link new residential development with commercial and other forms of development therefore illustrating the overall economic effects of residential growth." www.canr.msu.edu/cm/herc/h5over.html

- The Center for Economic Development at the University of Massachusetts found that "Home building generates substantial local economic activity, including income, jobs, and revenue for state and local governments. These far exceed the school costs-to-property-tax ratios. ...these factors were evaluated by means of a quantitative assessment of data from the National Association of Home Builder's Local Impact of Home Building model" www.donahue.umassp.edu/publications/housing/7-economicco.html

- Similarly, the Association of Oregon Community Development Organizations decided to base its analysis of affordable housing on the NAHB model, stating that "This model is widely respected and utilized in analyzing the economic impact of market rate housing development," and that, compared to alternatives, it "is considered the most comprehensive and is considered an improvement on most previous models." www.aocdo.org/docs/EcoDevoStudyFinal.pdf

- The Boone County Kentucky Planning Commission included results from the NAHB model in its 2005 Comprehensive Report. The Planning Commission used values from the impact model to quantify the increase in local income, taxes, revenue, jobs, and overall local economic impacts in the Metro Area as a result of new home construction. http://www.boonecountyky.org/pc/2005CompPlan.aspxv

A Brief Description of the Model

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

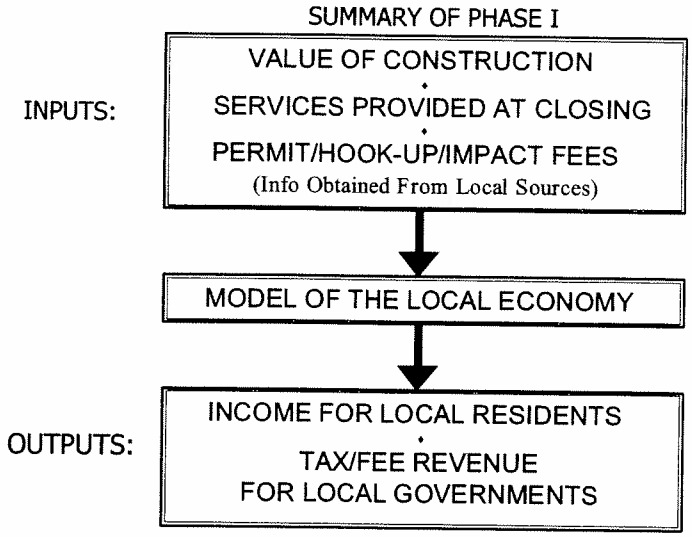
The model defines a local economy as a collection of industries and commodities. These are selected from the detailed benchmark input-output tables produced by the U.S. Bureau of Economic Analysis. The idea is to choose goods and services that would typically be produced, sold, and consumed within a 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 600 industries and commodities provided in the input-output files, the model uses only 93 commodities and 95 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 Primary Metropolitan Statistical Areas. These are areas defined by the U.S. Office of Management and Budget, based on local commuting patterns, and outside of the New England area are aggregations of counties. 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.

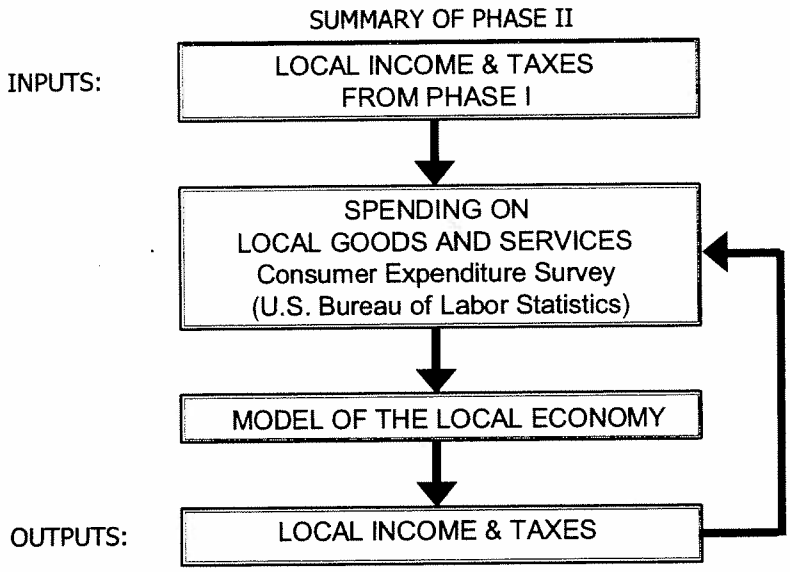


The model subtracts raw land value from the price of new construction and converts the difference into local wages, salaries, business owners' income, and taxes. This is done separately for all 95 local industries. In addition, the taxes and fees collected by local governments during the construction 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.

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 who 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 who 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 Survey (CES), 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 56 local commodities (the remainder of the 93 local commodities entering the model exclusively through 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 economic is a straightforward exercise in mathematics.

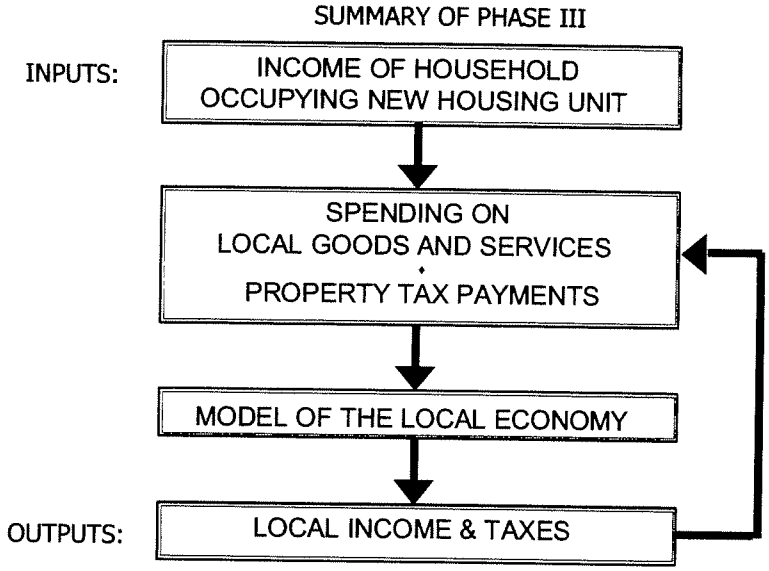
Phase III: The Ongoing Impacts

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. This is done with CES data and is similar to the procedure described under Phase II. The model also calculates the amount of local taxes the households pay each year. This is done with Census of Governments data except in the case of residential property taxes, which are treated separately, and for which specific information must usually be obtained from a local source. Finally, a total ripple effect is computed, using essentially the same procedure outlined above under Phase II.

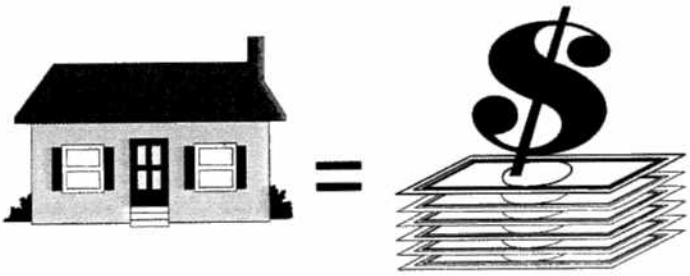


The details covered here provide only a brief description of the model NAHB uses to estimate the local economic benefits of home building. For a more complete description, see the technical documentation at the end of the report. For additional information about the model, or questions about applying it to a particular local area, contact one of the following in NAHB's Housing Policy Department:

- David Crowe, Senior Staff Vice President (202) 266-8383
- Paul Emrath, Assistant Staff Vice President (202) 266-8449
- Elliot Eisenberg, Senior Economist (202) 266-8398

NAHB

NAHB'S LOCAL IMPACT OF HOME BUILDING MODEL



TECHNICAL DOCUMENTATION

A Hard Copy of the Technical Documentation
is Available on Request from
NAHB's Housing Policy Department.