

I-90/Irene Road Interchange Economic Impact Analysis

FINAL REPORT
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For Boone County, IL

Table of Contents

Definition of Key Terms	ii
Introduction and Purpose	1
Proposed Interchange	2
Will Development Occur?.....	3
Method of Analysis.....	3
Assumptions and Limitations.....	5
Assumed Development	
Non-Commuter Rail Land Use Scenario.....	6
Commuter Rail Land Use Scenario	7
Results and Commentary	
Impact of Construction – Boone and Winnebago County	8
Low End Scenario – Boone County Only.....	8
Non-Commuter Rail Land Use – Boone County Only	9
Non-Commuter Rail Land Use – Boone and Winnebago County	9
Commuter Rail Land Use – Boone County Only	10
Commuter Rail Land Use – Boone and Winnebago County	10
Summary and Conclusion	11

Definition of Key Terms^{1, 2}

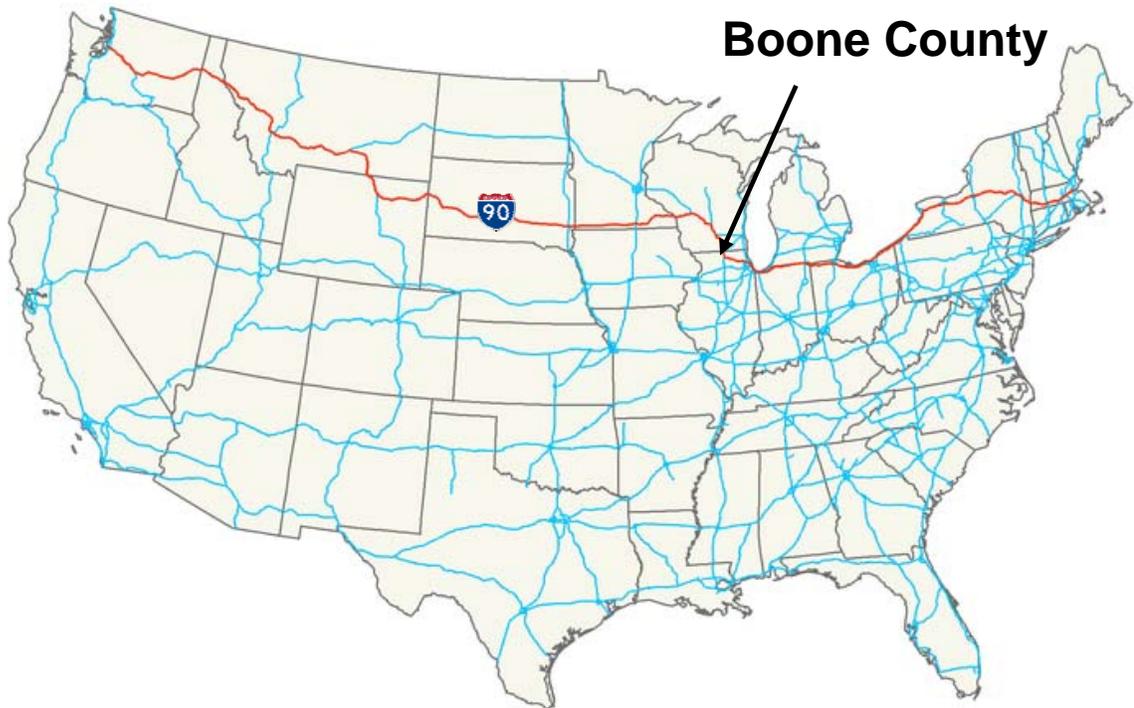
Livability -	Land-use planning concepts that bring about control over sprawl, efficient transportation, and greater quality of life for residents.
IMPLAN -	Software and data developed by the Minnesota IMPLAN Group for the purpose of economic impact analysis. IMPLAN is one of the tools most often utilized by professionals, Universities, and state and federal government entities.
Direct Effects -	Represents the impacts to industries (e.g. change in employment) for the expenditures and/or production values specified as changes in demand
Indirect Effects -	Represents the impacts (e.g. change in employment) caused by the iteration of industries purchasing from industries resulting from changes in direct final demand. Represents the changes in inter-industry purchases as they respond to the new demands of the directly affected industries
Induced Effects -	Represents the impacts (e.g. change in employment) on all local industries caused by the expenditures of new household income generated by the direct and indirect effects of direct final demand changes
Labor Income -	All forms of employment income, including Employee Compensation (wages and benefits) and Proprietor Income
Value Added -	The difference between an industry or an establishment's total output and the cost of its intermediate inputs. It equals gross output (sales or receipts and other operating income, plus inventory change) minus intermediate inputs (consumption of goods and services purchased from other industries or imported). Value added consists of compensation of employees, taxes on production and imports less subsidies (formerly indirect business taxes and nontax payments), and gross operating surplus
Output -	Represents the value of industry production. In IMPLAN these are annual production estimates for the year of the data set and are in producer prices. For manufacturers this would be sales plus/minus change in inventory. For service sectors production = sales. For Retail and wholesale trade, output = gross margin and not gross sales

¹ IMPLAN Pro™ User's Guide, Analysis Guide, Data Guide, V2

² <http://implan.com/v3/index.php>

Introduction and Purpose

Located in the northern tier of the state, Boone County, Illinois is part of the Rockford metropolitan area. The county is situated midway along the I-90 logistics corridor providing easy access to the I-90 tollway, a major interstate and intrastate transportation route. A region anchored by the cities of Chicago, Milwaukee, Madison, and Rockford, the regional area is the fourth largest urban constellation in the US, home to 17 million people³.



The County has experienced significant growth since its beginnings, with population increases of nearly 76%⁴ since 1990. With the growing industrial presence near the Belvidere Chrysler Plant, a full diamond interchange is being considered at I-90 and Irene Road in Belvidere, Illinois to accommodate and encourage growth and development and improve direct access to the auto plant and its suppliers.

In order to gauge the economic effect of the proposed interchange, Belvidere and Boone County officials accepted Hanson Professional Services Inc. offer to conduct an economic impact analysis to quantify the potential economic effect of the proposed project. A working group was formed from local agencies to discuss the potential development and determine assumptions from which to build the model scenarios. Those scenarios were then analyzed within economic impact models. The following report provides a description of the methodology and results of the various analyses.

³ Growth Dimensions

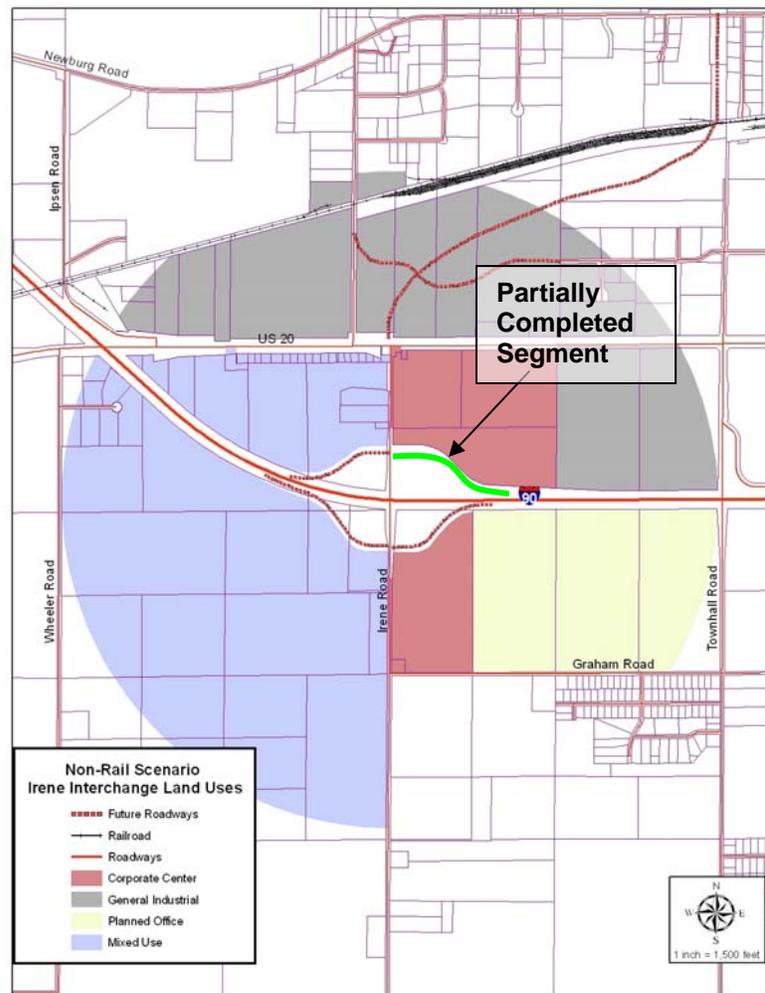
⁴ U.S. Census Bureau, 2008

Proposed Interchange

According to Growth Dimensions, the Belvidere-Rockford region has 340% more transportation equipment manufacturing output than the national average, ranking the area second in the State of Illinois after Chicago. There are over 500 companies in the Belvidere-Rockford region that supply products to the transportation equipment industry. The Chrysler-Belvidere plant has played a role in this growth. Located near Irene Road, the Plant underwent \$419 million in upgrades in 2005 initiating increased creativity and innovation, resulting in recognition as the industry benchmark for automotive plant productivity throughout North America in 2007 and 2008. This flagship operation drew supporting suppliers and additional jobs to the area. Though the economic downturn forced a temporary shutdown of plant operations in early 2009, the plant re-opened later that year and brought back 3,500 automotive jobs, including suppliers, to the area.

This surge in employment in 2009 along with other economic development initiatives has brought about renewed interest in the long sought after interchange project at Irene Road which has been publicized as playing an integral role in future growth opportunities to the area. The project reportedly will provide direct access to the Chrysler plant and its suppliers providing for a more efficient transportation route to improve area industries' competitiveness.

The proposed project is for a full diamond interchange at the junction of Irene Road and I-90 in Boone County, near Belvidere, Illinois. The diamond interchange, which is a common type of road junction used where a freeway crosses a minor road, has been conceptually designed and partially constructed. As indicated in the figure above, the I-90 westbound exit ramp to Irene Road is partially completed and is open for general use. The other three segments to this diamond interchange are designated as future roadways.



Will Development Occur?

This study does not attempt to answer the question of whether or not development will occur. Further, this is not a “build it and they will come” study. The study is based on the assumption that development will occur. Prior research widely recognizes that development of highways and highway interchanges can be an effective strategy for economic development. Highway interchanges alone are not a guarantee of success, but there are recognized factors that can have a positive effect on development. It is important to realize that highway access is a “*necessary* but not sufficient”⁵ component. Other important factors include: overall infrastructure, tax rates, labor skills, education,⁶ prior urbanization, proximity to large urban area, topography, etc.⁷ Planned and coordinated development that seeks to make the best use of resources is also an important factor to maximize livability and avoid sprawl or ineffective use of land around an interchange. Various entities within Boone County and northern Illinois have conducted studies, community outreach, planning efforts, and other activities aimed at identifying the best opportunities and use of resources. Continuation of those efforts can have a positive impact on livable development and opportunities for job creation that surround the proposed interchange. It is important to acknowledge that development and job creation depend on many variables. Economic realities now and in the future obviously affect development, but it is also important to recognize that coordinated, livable development does not happen by accident. The type of development assumed in the following analyses becoming reality will be the result of planning and policies that are well-conceived, adopted, and implemented.

Method of Analysis

An economic impact analysis seeks to quantify the effect of a policy, program, project or event on the economy of a given area. The economic impact is typically measured in terms of changes in economic growth (output or value added) and associated changes in jobs (employment), income (wages) and taxes.

The first task was to develop the input assumptions to allow construction of an economic model. A working group including officials and personnel from Boone County, the City of Belvidere, the Belvidere-Boone County Planning Department, Growth Dimensions, the Northern Illinois Commuter Transportation Initiative, and others accepted the task of specifying the land use and development assumptions. The scenarios assumed are not intended to represent a specific set of goals for land use or a specific course of action to be taken by the stakeholders, but are instead intended to be a useful way to understand the potential impacts of investment in the interchange.

The working group developed two scenarios for analysis, and Hanson added a third scenario. The scenarios specified how many and what broad categories of jobs would be created if the interchange were constructed. The numbers and categories of jobs

⁵ “Public Infrastructure and Regional Economic Development”, R. Eberts

⁶ “Major Factors in Industrial Location: A Review”, J Blair and R. Premus

⁷ “Interstate Highway Interchanges Reshape Rural Communities”, H. Moon

were based in large part on previous study efforts including the “Growth Management Study” conducted by Northern Illinois University for the City of Belvidere in 2007, the collaborative Flora Neighborhood Plan, and other recent public outreach activities, studies and neighborhood plans.

The scenarios detailed assumptions about the density of jobs that could be expected to develop within a 1-mile radius of the interchange. The working group assumed that the jobs analyzed in the models were directly attributable to the interchange being constructed. Other economic impacts (not modeled here) might be expected to result from other changes to transportation, economic activity unrelated to the interchange, etc.

The working group’s first scenario was based on built out density of approximately 27,000 jobs created in Boone County and does not include a commuter rail land use component. The economic impact was modeled assuming that about half of that density would be achieved over a twenty year period, with some of the higher-end development occurring in the last ten years. The first scenario was intended to analyze the impact to the County of a set of assumptions about development and job creation that may occur if a full interchange is completed at Irene Road. The assumptions are intended to describe a specific scenario that is representative of what could reasonably be expected to develop if the interchange is constructed.

The second working group scenario was based on a land use incorporating commuter rail and a built out density of approximately 35,000 jobs created in Boone County. Again, the economic impact was modeled assuming that about half of that density would be achieved over a twenty year period, with some of the higher-end development and job creation occurring in the last ten years.

For comparison, Hanson added a very low-end scenario in order to analyze the impact of directly developing only about 1300 jobs over a twenty-year period. The low-end scenario amounts to creation of less than 5% of the development density the working group assumed in the more conservative of their two scenarios. Hanson also briefly analyzed the impact that the construction project would have on Boone and Winnebago County.

Once the working group developed the input assumptions for the models, Hanson used a well-known data and software package called Impact Analysis for Planning (IMPLAN) to build the models and calculate outputs from the three different land-use and employment density scenarios. IMPLAN uses proprietary data and software to create complete, extremely detailed social accounting matrices and multiplier models of local economies. The IMPLAN database contains county, state, zip code, and federal economic statistics which are specialized by region, not estimated from national averages, and can be used to measure the effect on a regional or local economy of a given change or event in the economy's activity. IMPLAN data files are compiled from a

wide variety of sources including the US Bureau of Economic Analysis, the US Bureau of Labor, and Census data.⁸

Each of the working group scenarios were modeled twice: once with the impact area limited to Boone County only, and once with the impact area including both Boone County and Winnebago County.

Assumptions and Limitations

The following key assumptions and understanding of limitations are included in the analysis:

1. Employment in Boone County will increase if the interchange is completed and development is planned.
2. The economic impact model does not predict what development will occur – it analyzes the direct, indirect and induced impacts of *assumed* development.
3. This model does not include negative impacts such as environmental, public works, etc. There will be costs associated with those elements which must be considered to understand the total picture of cost vs. benefit of development around the interchange.
4. The Impact results are based on the demographics, types of businesses, and economic relationships that existed in Boone County and Winnebago County in 2008. 2008 is the most recent year for which data is available.
5. The development area for the models is assumed to be within a 1-mile radius of the interchange. The resulting impacts affect the entire county (two counties when the model includes Winnebago County along with Boone County).
6. The study is not intended to predict future development or revenues.
7. The land uses depicted in the assumption scenarios are not intended to represent an accepted or preferred land use plan.
8. The scenarios and results describing commuter rail or non-commuter rail land uses DO NOT measure the economic impact of having or not having commuter rail. Instead, this study analyzes the impacts of assumed jobs created due to the construction of an interchange and planned land uses. Analysis of the impacts of commuter rail would be a very different study including different variables and different assumptions.

⁸ <http://implan.com/v3> and modified

Assumed Development

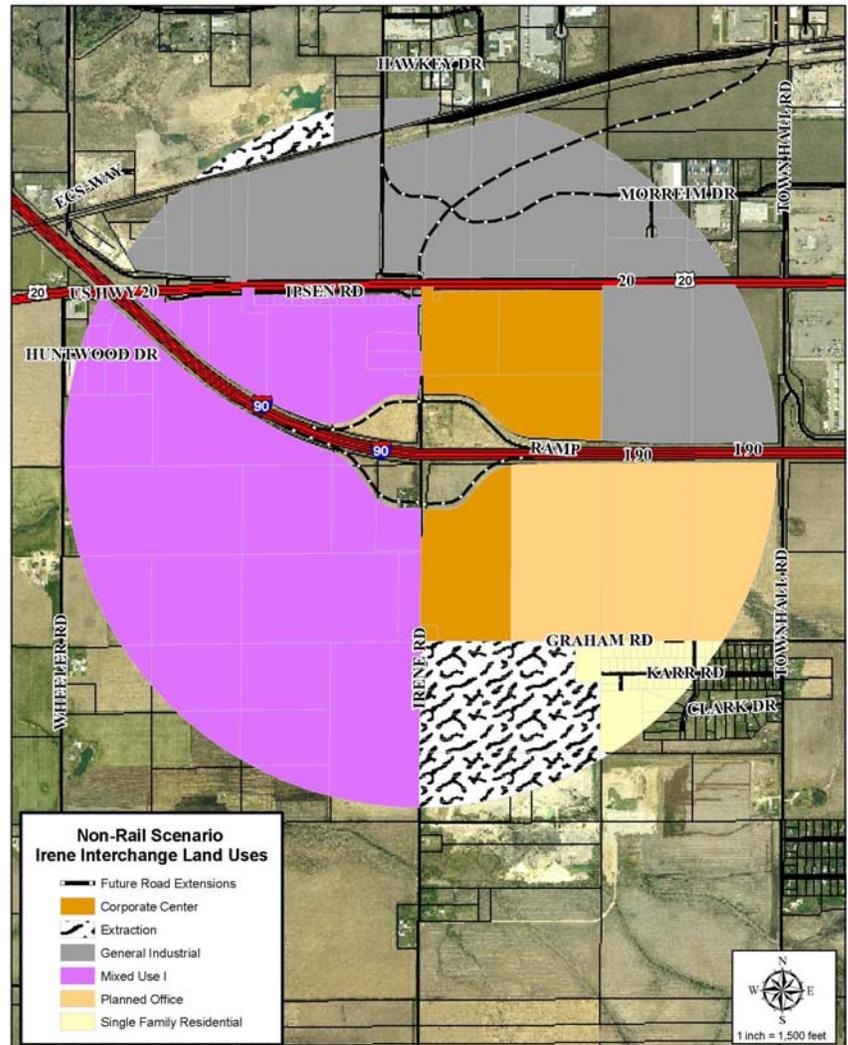
Non-Commuter Rail Land Use Scenario

This Scenario inputs a constant investment equivalent to approximately 12,000 direct jobs created in Boone County over a 20 year period. The investment amount is deflated each year to bring it in line with the 2008 data used in the model. The following categories of land use indicate the types of jobs anticipated for the scenario.

General Industrial: Heavy industrial, storage and disposal land uses, with moderate landscaping and signage. (Auto industry suppliers, light manufacturing, warehousing, some heavy industrial)

Planned Office: High-quality office, institutional and office-support land uses with very generous landscaping and limited signage. (Single store office – development anticipated in later years, 10-20 years)

Planned Mixed Use: Mixed use buildings – containing one or more of office, personal and professional service, retail, entertainment, institutional and parking uses. Similar, or residential, uses may be permitted on a second and third floor or in a multistoried building. (Commercial Service – hotel, gas station, restaurants, etc.; office; service retail – no large box retail)



Corporate Center: Moderate intensity office-oriented mixed use buildings at a minimum of two stories above ground level – containing one or more of office, personal and professional service, retail, entertainment, institutional and parking uses at or below ground level, with office uses above the first floor. (Office – multistory; satellite campus – agricultural technology or medical; specialty medicine – women’s health, sports, or other specialty medicine)

Commuter Rail Land Use Scenario

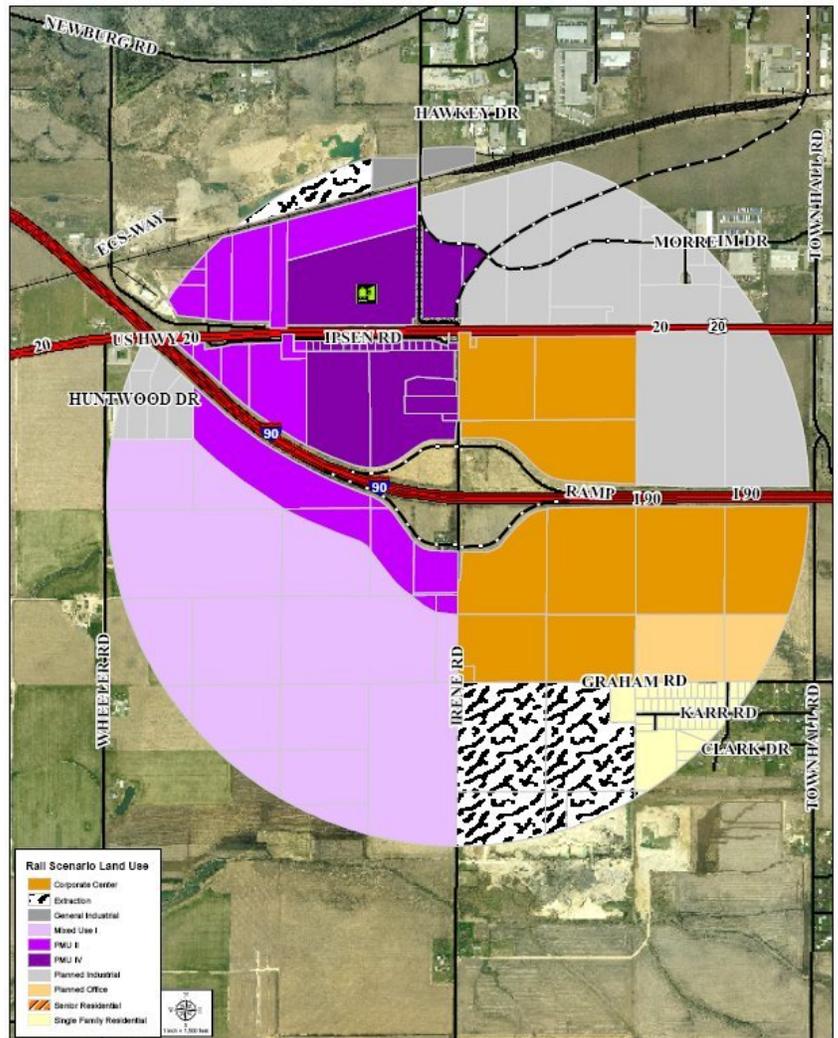
This scenario inputs a constant investment equivalent to approximately 17,500 direct jobs created in Boone County over a 20 year period. The investment amount is deflated each year to bring it in line with the 2008 data used in the model. The following categories of land use indicate the types of jobs anticipated for the scenario.

Planned Industrial: High-quality indoor manufacturing, assembly and storage land uses, with generous landscaping and limited signage.

Planned Office: High-quality office, institutional and office-support land uses with very generous landscaping.

Corporate Center: Moderate intensity office-oriented mixed use buildings at a minimum of two stories above ground level - containing one or more of office, personal and professional service, retail, entertainment, institutional and parking uses at or below ground level, with office uses above the first floor.

Mixed Use 1: Mixed use buildings - containing one or more of office, personal and professional service, retail, entertainment, institutional and parking uses. Similar or residential, uses may be permitted on a second and third floor or in a multistoried building.



PMU II: Carefully controlled moderate intensity mixed use buildings at a minimum of two stories - containing one or more of office, personal and professional service, retail, entertainment, institutional and parking uses. Similar or residential uses may be permitted above the second floor.

PMU IV: Carefully controlled high intensity mixed use buildings at a minimum of four stories - containing one or more of office, personal and professional service, retail, entertainment, institutional and parking uses. Similar or residential uses may be permitted above the fourth floor.

Results and Commentary

Scenario Key:

- 1 5% density realized over 20 years
- 2 50% density realized over 20 years
- 3 50% of employees live in Boone County
- 4 50% of employees live in Boone or Winnebago County
- 5 100% of employees live in Boone County
- 6 100% of employees live in Boone or Winnebago County
- 7 Interchange construction occurs over a 1-year time frame in the future
- 8 All dollars are deflated to 2008 value

Impact of Construction – Boone & Winnebago County ^{Key 6,7,8}

	Direct	Indirect	Induced	Total
Employment	237	68	117	422
Labor Income	\$14,763,231	\$3,388,022	\$4,142,590	\$22,293,843
Value Added	\$15,634,490	\$4,780,320	\$7,503,798	\$27,918,608
Output	\$35,341,308	\$8,122,961	\$12,627,131	\$56,091,400

State & Local Tax Implication - \$1,877,168

The impact of an assumed 1-year construction project on the combined model including Boone County and Winnebago County is the creation of 237 jobs directly involved in the construction activity and an additional 185 jobs in other various local industries as a result of the economic activity created by the construction contract. This 1-year impact would result in over \$56 million in output (from an approximately \$40 million construction contract). This is in addition to the ongoing annual impacts described in the following models.

Low-End Development Scenario

What happens if constructing the interchange only results in a fraction of the jobs that the land use scenarios assume, or if it takes longer than twenty years for the jobs arrive?

In order to examine that question, we took another look at the non-rail land use scenario (the one with less jobs assumed). That scenario assumed that about 50% of the potential employment density would be realized within 20 years from completion of the interchange. What happens if only 5% of the jobs materialize over twenty years?

Low-End Scenario – Boone County Only ^{Key 1,5,8}

	Direct	Indirect	Induced	Total
Employment	1,284	148	211	1,643
Labor Income	\$66,636,620	\$6,676,488	\$5,616,571	\$78,929,679
Value Added	\$91,842,540	\$10,404,070	\$13,569,830	\$115,816,440
Output	\$392,831,136	\$19,464,858	\$22,320,414	\$434,616,408

State & Local Tax Implication - \$9,753,345

The results indicate that achieving only 5% of the lower density scenario (or 1300 direct jobs) over a twenty-year period would result in output of over \$400 million annually thereafter and the creation of an additional 350 jobs in Boone County.

Non-Commuter Rail Land Use – Boone County Only ^{Key 2,3,8}

	Direct	Indirect	Induced	Total
Employment	11,887	1,870	1,065	14,822
Labor Income	\$289,797,504	\$73,853,856	\$28,196,856	\$391,848,216
Value Added	\$574,982,800	\$122,759,900	\$68,543,260	\$766,285,960
Output	\$1,680,157,824	\$227,391,952	\$112,664,704	\$2,020,214,480

State & Local Tax Implication - \$71,599,746

The total impact within the county of adding approximately 11,900 jobs over a twenty year period is the creation of an additional 3,000 indirect and induced jobs and a total output of over \$2 Billion on an ongoing annual basis.

Non-Commuter Rail Land Use – Boone and Winnebago County ^{Key 2,4,8}

	Direct	Indirect	Induced	Total
Employment	11,867	3,587	2,896	18,350
Labor Income	\$290,432,960	\$151,177,408	\$102,507,992	\$544,118,360
Value Added	\$575,887,300	\$247,266,800	\$185,916,500	\$1,009,070,600
Output	\$1,680,157,952	\$430,959,072	\$312,941,024	\$2,424,058,048

State & Local Tax Implication - \$95,136,223

The total impact within the counties of adding approximately 11,900 jobs over a twenty year period is the creation of an additional 6,500 indirect and induced jobs and a total output of over \$2.4 Billion on an ongoing annual basis. The resulting economic impacts could be expected to be even higher if the Chicago area were included in the model.

Commuter Rail Land Use – Boone County Only ^{Key 2,3,8}

	Direct	Indirect	Induced	Total
Employment	17,601	1,730	1,436	20,767
Labor Income	\$423,718,656	\$65,914,204	\$38,019,928	\$527,652,788
Value Added	\$765,024,300	\$108,151,100	\$92,489,500	\$965,664,900
Output	\$1,586,934,784	\$193,762,928	\$152,012,464	\$1,932,710,176

State & Local Tax Implication - \$94,156,594

The total impact within the county of adding approximately 17,600 jobs over a twenty year period is the creation of an additional 3,200 indirect and induced jobs and a total output of almost \$2 Billion on an ongoing annual basis. Note that although the number of jobs that were input and the jobs subsequently created in this scenario is higher than in no-commuter rail land use scenario, the total output is slightly lower. This is directly due to the *types* of jobs assumed. The first scenario assumes nearly 1,000 more manufacturing type jobs, which results in higher total output because they have tangible products to sell. The jobs assumed in this second scenario are more heavily weighted toward service or knowledge jobs. Even though the total output is less in the second scenario, the number of jobs, the labor income and the value added are considerably higher than in the non-commuter rail land use scenario.

Commuter Rail Land Use– Boone & Winnebago County ^{Key 2,4,8}

	Direct	Indirect	Induced	Total
Employment	17,440	3,204	3,159	23,803
Labor Income	\$346,465,728	\$133,509,208	\$111,786,944	\$591,761,880
Value Added	\$639,956,500	\$217,483,000	\$202,796,600	\$1,060,236,100
Output	\$1,586,934,784	\$370,851,648	\$341,373,024	\$2,299,159,456

State & Local Tax Implication - \$103,462,103

The total impact within the counties of adding approximately 17,600 jobs over a twenty year period is the creation of an additional 6,400 indirect and induced jobs and a total output of approximately \$2.3 Billion on an ongoing annual basis. Again, note that although the total output is less for a job mix that places less influence on manufacturing, the total jobs created, the labor income, and value added are higher in this scenario when compared to the non-commuter rail land use scenario. Again, the resulting economic impacts could be expected to be even higher if the Chicago area were included in the model.

Summary and Conclusion

Table of Results

Scenario	Value Added*	Total Output*	Jobs Created		
			Direct	Indirect & Induced	Total
Interchange Construction Project	\$27,918,608	\$56,091,400	237	185	**422
Low End Employment Scenario– Boone County Only	\$115,816,440	\$434,616,408	1,284	359	1,643
Non-Rail Land Use - Boone County Only	\$766,285,960	\$2,020,214,480	11,887	2,935	14,822
Non-Rail Land Use - Boone & Winnebago Counties	\$1,009,070,600	\$2,424,058,048	11,867	6,483	18,350
Rail Land Use - Boone County Only	\$965,664,900	\$1,932,710,176	17,601	3,166	20,767
Rail Land Use - Boone & Winnebago Counties	\$1,060,236,100	\$2,299,159,456	17,440	6,363	23,803

* All values are in 2008 dollars to match the year of the model data.

** The construction project impacts and jobs end when the project ends. All other impacts are assumed to be annual and continue to occur once that development level is achieved.

The County and the stakeholders involved in this study have indicated that they recognize there is a great deal of work remaining in order to achieve the assumed jobs and reap the rewards. Among other requirements, that work will include the very important elements of creating, adopting, and implementing appropriate land use plans and policies. This study is one step in the ongoing process of gathering information and making good decisions. The study clearly indicates that the assumed jobs result in positive economic impacts far in excess of the \$50 Million investment required to purchase right-of-way, and design and build the interchange.