

# **An Itemization of Regional Economic Impacts from the Construction and Operation of an Intermodal Transportation Center in Dubuque, Iowa**

**David Swenson**

**Department of Economics, Iowa State University**

**August, 2010**

This report contains the projected job, labor income, and industrial output values that would be associated with the construction and operation of an intermodal transportation center in the city of Dubuque, Iowa. The evaluation was conducted at the Department of Economics, Iowa State University, using an input-output model of the Dubuque County economy.<sup>1</sup>

There are five sets of short-term, enduring, and potential future impacts that are evaluated. The first two involve the design, engineering, and architectural phase of the project followed next by facility construction. These are the project related short-term economic consequences necessary to get the facility up and running. The values of these temporary economic outcomes exist only during the design and construction phases. The next measure is the annual and ongoing economic value to the region of operating the facility as an intermodal transportation center. The last two assessments consider two future scenarios. The first involves Dubuque becoming an AMTRAK terminus allowing roundtrip passenger transport to Chicago, IL. The next supposes that the existence of the intermodal transportation center and the AMTRAK addition creates increments in regional visitorship.

## **Understanding Input-Output Results**

Input-output (I-O) models are used to evaluate the possible region wide economic value of production changes or some shock to an economic system. I-O models are completely transparent systems composed of actual government-collected data for a regional economy, to include the total number of jobs in each industry, labor incomes, and the number of proprietors. These models also estimate purchases that industries make from one another within the study economy, based on national surveys of industrial transactions. Through a series of mathematical manipulations the modeling process compiles the activity of the industry in question, its relationship to supplying firms, and other important transactions that occur in an economy when industrial production or household consumption changes.

There are three key variables that are often reported from impact modeling systems along with three economic effects or values dimensions. *Industrial output* is the sales value of all commodities produced during a calendar year as a result of what we are measuring. *Labor income* is composed of wages and salaries and returns to proprietors. The last indicator reported is the *jobs* summary. There are more jobs in the economy than employed persons as many people have more than one job. Jobs are not to

---

<sup>1</sup> This analysis used both the Minnesota Implan Group software and the purchased 2008 Dubuque County Implan data set for the analysis. Modifications to that model were made by the author based on direct data submitted by the City of Dubuque.

be confused as representing full-time employment. However, the job values that are declared in an impact model consider those job amounts on an annualized basis.

The three reporting dimensions are the direct values, the indirect values, and the induced values. *Direct values* are those that relate specifically to the industrial activities that we are studying. The *indirect values* represent the industrial activity that is stimulated in the region when the direct firms buy all manner of production inputs from regional suppliers. *Induced values* accumulate when workers and business owners convert their labor incomes into household spending. When these three dimensions are summed, they constitute an unduplicated estimate of the total value of the economic activity to the region under study.

### Short-Term Construction Effects

Designing and building the facility boosts output in the design, engineering, and architecture section of the local economy as well as in construction firms. The design period is anticipated to last for from five to seven months, and the construction is expected to be finished within one year. In all, the project would be expected to last around 18 months. The first two tables express the annual values of each dimension.

Table 1 displays the value of the design phase. The budgeted amount is \$1 million. That amount of activity in that sector would require 8.8 direct jobs earning \$524,453 in labor incomes. That firm (or those firms) would require \$217,134 in indirect inputs from area suppliers of goods and services, which would need 2.4 jobs making \$83,695 in labor incomes. When the direct and the indirect workers converted their paychecks into household spending, they would induce \$339,300 in output, requiring 3.4 jobs making \$104,396 in labor incomes. Combined, this economic activity would support a total of \$1.56 million in regional industrial output, \$712,544 in labor incomes, and 14.6 jobs.

Table 1

#### Design, Engineering, and Architecture Activities

	Direct	Indirect	Induced	Total
Output \$	1,000,000	217,134	339,300	1,556,433
Labor Income \$	524,453	83,695	104,396	712,544
Jobs	8.8	2.4	3.4	14.6

Table 2 contains the area economic impact values of the short-term facility construction activities, which are intended to be completed within one year. A \$15.5 million boost to the region’s construction industry would require 119 jobs making \$5.53 million in labor incomes. That activity would require \$3.73 million in regionally supplied inputs, necessitating 32 more jobs making \$.138 million in labor incomes. Taking into account household consumption as a result of those earnings, \$3.86 million in induced output would be supported with 39 jobs making \$1.19 million in labor incomes. Combined, that year’s worth of economic activity would support \$23.1 million in regional industrial output, 190 jobs, and \$8.1 million in labor incomes.

Table 2

<b>Short-Term Construction Activity</b>				
	Direct	Indirect	Induced	Total
Output \$	15,500,000	3,730,124	3,862,268	23,092,392
Labor Income \$	5,525,154	1,380,664	1,188,226	8,094,044
Jobs	119.0	31.8	39.2	190.1

It is important for readers to understand that when the design and the construction phases end, so too do the total job effects. In short, short-term job and labor income gains must be assumed to yield exactly equal regional job and labor income losses once the projects are completed.

### Facility Operation Effects

After all design and construction activities have been accomplished, the proper way to measure the ongoing value of an industry or a community enterprise is to gauge the value of its annual output. The facility will serve as a parking facility, a bus depot, a potential rail hub, and as a commercial space. The proposers anticipate the center will have 12 jobs in daycare, 25 in retail sales, 6 located in the Welcome Center, and 2 facility maintenance positions. The output of the facility considering all of these activities would amount to \$2.25 million<sup>2</sup>, which would require 45 jobs and \$1.17 million in labor incomes (see Table 3). The facility and those enterprises are expected to need \$480,846 in regionally supplied goods and services, which would support 4.5 jobs and \$149,289 in labor incomes. Combined with the induced activity, the facility operation total values would be \$3.46 million annually, which would support 57 jobs making \$1.545 million in labor incomes. Unlike construction and design activities which will have ended, these effects are enduring and should be considered permanent.

Table 3

<b>Ongoing Intermodal Transportation Center Annual Operation</b>				
	Direct	Indirect	Induced	Total
Output \$	2,245,695	480,846	734,702	3,461,243
Labor Income \$	1,170,000	149,289	226,437	1,545,726
Jobs	45.0	4.5	7.5	57.0

### Future Activities

A completed facility will be able to accommodate an AMTRAK station. If indeed AMTRAK extends a line to Dubuque, it is anticipated it would serve 21,000 riders per year. Assuming half of those riders are

<sup>2</sup> This output assumes revenues from the parking enterprise estimated at 350 vehicles times 250 days times \$5 per vehicle. Boosting this value or lowering it only affects the direct and the total output amounts, but it does not affect any of the indirect or induced values as there is no anticipated change in the cost of fixed inputs (utilities for example) or the cost of maintenance.

from the Dubuque region and round trip ticket to Chicago of \$76 per person (at current fares), then that would boost regional rail transportation output originating in the facility by \$798,000 (see Table 4) annually. Were that to happen, the modeling system indicated the Dubuque area would see, when all direct, indirect, and induced activity is accounted, \$1.1 million in boosted regional output and \$308,652 in labor incomes to 5 additional jobs. Were the AMTRAK scenario to eventuate, the values in Table 3 and Table 4 would be added together to provide a new estimate of the facility's area value.

**Table 4**

**Potential Future Impact: The Addition of an AMTRAK Line**

	Direct	Indirect	Induced	Total
Output \$	798,000	164,057	141,316	1,103,373
Labor Income \$	201,315	63,769	43,569	308,652
Jobs	2.1	1.5	1.4	5.0

There are no reliable local estimates of the amount of additional tourism to the city that would be stimulated by the addition of the intermodal facility. Table 5 provides an estimate of regional economic impacts that would accumulate per \$1 million in visitor spending.<sup>3</sup> Using that indexed value, that much new local spending would support nearly 13 direct jobs making \$238,239 in labor incomes. As that activity worked its way through the indirect and the induced sectors, it would result in a total of \$1.22 million in regional output, \$359,591 in labor income, and 16.5 jobs.

**Table 5**

**Potential Future Impact: Tourism Impacts Per \$1 Million in Tourist Spending**

	Direct	Indirect	Induced	Total
Output \$	1,000,000	213,752	167,257	1,224,709
Labor Income \$	238,239	69,828	51,524	359,591
Jobs	12.9	2.0	1.7	16.5

To put Table 5 into perspective, it is the equivalent of declaring that the intermodal facility was solely instrumental in attracting, say, 10,000 more visitors to the community who spent an average, per visit for all possible reasons, \$100 per person. Whether or not those are reasonable assumptions or not will have to be determined by additional research. Certainly, however, the future tourism value hinges primarily on the potential for additional passenger traffic attributable to the AMTRAK addition.

---

<sup>3</sup> Visitor spending was weighted 40 percent to hotel or motel stays, 20 percent each to dining or to gaming and other entertainment, and 10 percent each to miscellaneous retail and gasoline stations. The retail values are expressed as sales at the cash register for ease of understanding in this table rather than the margined value conversions that are used in the modeling system. Sales values at the other industries are their actual output amounts.