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**The Economics of Water Dependent Industries in Portage County**

By

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## **THE ECONOMICS OF WATER DEPENDENT INDUSTRIES IN PORTAGE COUNTY**

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The analysis presented in this report is intended to provide the residents of Portage County with insights on the economic structure of the regional economy with a particular focus on the importance of water dependent industries on the larger County economy. The authors are responsible for all errors of omission or commission. The opinions expressed in this report are those of the authors with the contribution of the Community Research Committee and are not those of the University of Wisconsin.

## **THE ECONOMICS OF WATER DEPENDENT INDUSTRIES IN PORTAGE COUNTY**

The following members of the Portage County community provided insight and support to the Community Research Committee for this study. The time and effort they gave contributed greatly to the success of this effort.

Dick Okray, Okray Family Farms, Plover

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Bill McKee, Supervisor, Town of Lanark

Steve Bradley, Portage County Conservationist

# THE ECONOMICS OF WATER DEPENDENT INDUSTRIES IN PORTAGE COUNTY

## Executive Summary

This study explored the local economic structure of Portage County, Wisconsin and the role that water resources play. To do this, a study committee defined water-dependent industries and analyzed their contribution to the Portage County economy.

Led by Portage County UW-Extension local agents and a UW-Madison economic specialist, this study engaged local stakeholders to design and implement the research. The latter included local government, industries, agriculture, water utilities, and economic development organizations. This Study Committee used a community economic impact model to measure the value of water-dependent industries in Portage County. This model is built on the premise that in local economies, all transactions are interconnected and can be measured through the use of multipliers. Businesses, residents and local government exchange goods, services and dollars.

The Study Committee set research goals of defining Portage County's water-dependent industries, or cluster, and measuring its contribution to the economy. Once the study was designed, UW-Extension collected and analyzed data. The economic overview measured population growth, changes in number of jobs, types of jobs, and the relative share of jobs in the major employment sectors. Since 1969, Portage County has seen rapid population and job growth, above state and national averages. Four industry categories accounting for the majority of employment are: retail trade, manufacturing, finance and insurance, and state and local government. Compared to U.S. and State averages, analysis shows that Portage County is heavily dependent on retail trade, finance and insurance, and hotels and restaurants.

The Study Committee reviewed this analysis and defined the water-dependent cluster to include agricultural production, food processing, and paper production. UW-Extension personnel used that cluster definition to determine the economic contribution to Portage County. This analysis shows both industry size and a measure of the inter-relationships between industry sectors based on employment, industry sales, labor income and total income. From here, the contribution of the water-dependent cluster was calculated, both in terms of the direct value and the results of industry inter-relationships, or multiplier effects.

The total impact of the water dependent cluster in Portage County is:

- 19.1% of total employment
- 19.9% of total labor income
- 20.4% of total income
- 32.2% of industry sales

The effect of this cluster provides local government revenue (but not cost of services) as well:

- 17% of local property taxes
- 9% of sales tax (the 0.5% that stays in the County)

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## THE ECONOMICS OF WATER DEPENDENT INDUSTRIES IN PORTAGE COUNTY

### Introduction

Local leaders, scientists, and citizens have identified water availability as a concern in Portage County for many years. In 1984, the Portage County Board of Supervisors created a Groundwater Council which studied water conditions and later developed a Groundwater Management Plan in 1988, since updated in 2004. The Board increased capacity in the Planning and Zoning Department to address the issue by creating a groundwater position. To facilitate connection with Portage County residents, the Board created a Citizens' Advisory Committee. Community planning organizations noted concerns about this key resource as well. For example, the 2006 Portage County Comprehensive Plan identified a need to address water quantity and quality issues in land use planning. These issues were reiterated in Portage County's 2009 Land and Water Resource Management Plan. At the State level, legislation was drafted in the spring of 2010 focused on groundwater regulation. This legislation was not passed but generated discussion at several community forums and tours of the County.

The Stevens Point Area League of Women Voters developed an informational forum on the history, science and economics of water coupled with presentations by local elected officials and industry leaders. The League requested that Portage County University of Wisconsin-Extension (UW-Extension) conduct a study on the economics of water in Portage County and present the results at the forum.

The purpose of this study is to gain a better understanding of the local economic structure and the role that water resources play.

### Methods

This study used a method in which local leaders and stakeholders create a committee to design and implement the study. Sectors for committee representation included local government leaders, industries that use high volumes of water, water utilities, local economic development organizations, and government staff with access to history, trends, and data. Individuals representing these areas were then invited to join the Study Committee.

The Study Committee used a community economic impact model to measure the value of water dependent industries in Portage County. This model is built on the premise that in local economies, all transactions are somehow related. Businesses, residents and local government exchange goods, services and dollars.

At the first meeting, the Study Committee set research goals. Once the study was designed, UW-Extension collected data and conducted analyses. The group was presented an overview of the Portage County economy followed by an analysis of Portage County Clusters. After being presented economic information (employment, industry sales, labor income, and total income) on the thirty largest industries in Portage County, the group was asked to define the water-dependent cluster in the county. Finally, data analysis was done to determine the economic contribution of the water-dependent cluster to Portage County. This process occurred between August 27 and September 30, 2010.

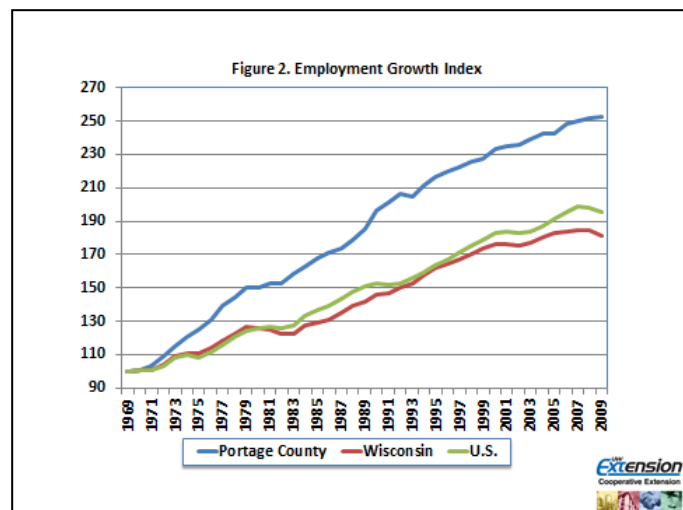
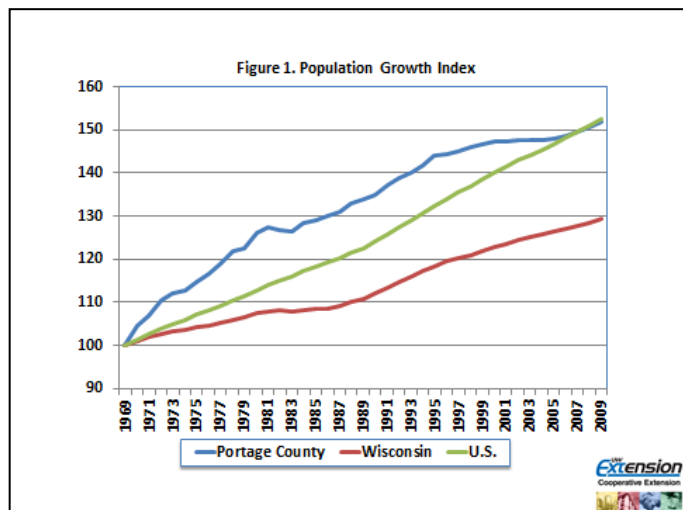
## Overview of the Portage County Economy

Portage County's economy has experienced significant growth over the past 40 years. This section will report on growth in the following areas: population, employment, per capita income, and shares of employment by sector. The data source for this section is Woods and Poole Economics, Inc., which uses data from the U.S. Department of Commerce's Regional Economic Information System.

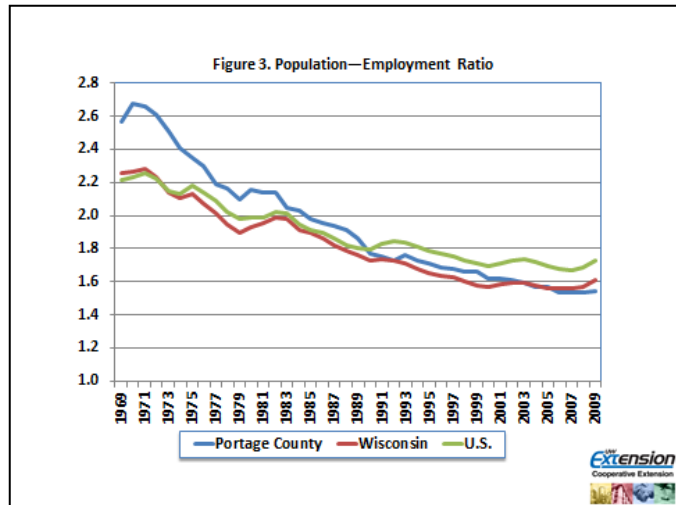
Portage County's population has historically experienced a rate of growth faster than Wisconsin and in the 1970s faster than the U.S. From 1969 to 2009 population has grown by slightly more than 50% compared to a growth of population in Wisconsin of only about 30% (Figure 1). Since about 1995, however, the population growth of the County has been much more modest and only in the last few years has the County experienced a return to positive population growth.

Growth in employment, however, has been even more robust (Figure 2). First, growth in employment in Portage County has grown by almost 150% from 1969 to 2009 while both the U.S. and Wisconsin have experienced much smaller growth rates. Second, the County does not appear to have experienced job declines in past recessions to the same extent as either Wisconsin or the U.S. This is most evident with the current economic recession. While more current data may suggest otherwise, the apparent robustness of the Portage County economy is noteworthy. For example, other than the current recession, the recession of the early 1980s was particularly hard on Wisconsin, but Portage County experienced only modest slowing of its growth rate. There are modest one year downturns (e.g., 1993), however, there is no evidence of significant job loss over the past 40 years.

The rapid growth in employment relative to population can be directly captured by examining the population-employment ratio

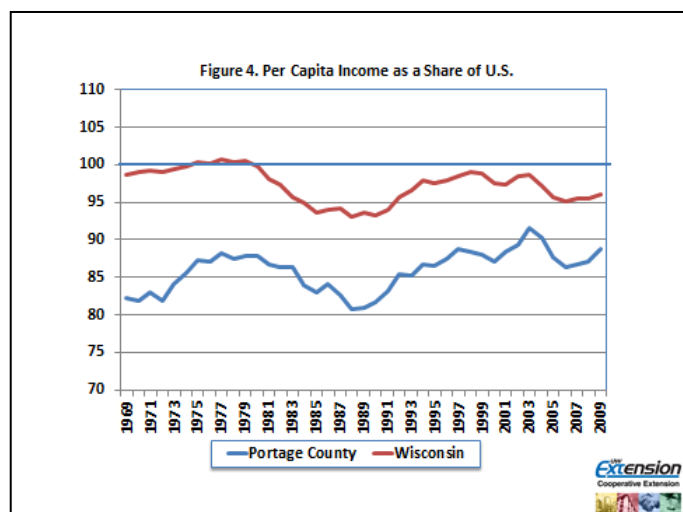


over the same time period (Figure 3). In 1969 there were about 2.7 persons for every job in Portage County which is significantly higher than either the U.S. or Wisconsin. But over time that ratio declined to about 1.6 persons per job in 2009 which is slightly below either the U.S. or Wisconsin. As evident in Figure 1, the strong population growth of Portage County has been significantly outpaced by even stronger job growth, much stronger than one might expect given the Wisconsin growth rates.



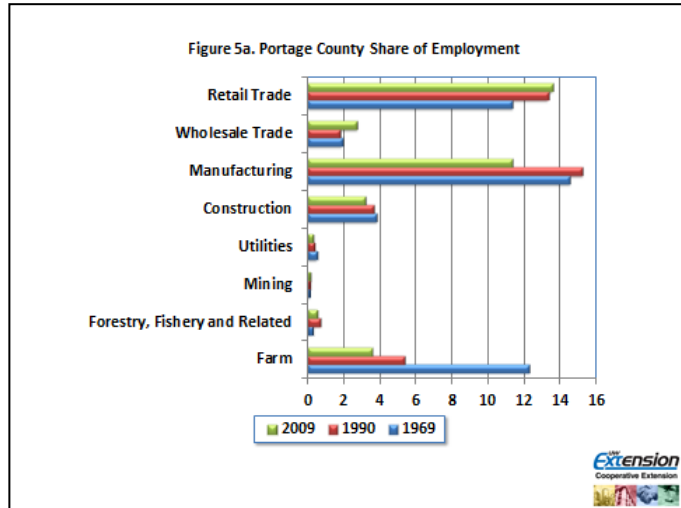
This remarkable decline in the population—employment ratio both within the County and across the nation has several interesting angles. First, the ability of the economy to sustain the job growth has been due to the rapid increase in women participating in the labor force. Unfortunately, this rate of women in the labor force has stabilized and where the people to fill these newly generated jobs will come from becomes a concern. Second, much of the job growth has been in the form of part-time jobs in the retail and some service sectors. The rapid growth in part-time jobs raises the question, if an adequate number of full-time jobs will be available for people seeking full-time work. While this study does not address the issue of underemployment (the case where people wish for full-time employment but can only find part-time jobs and people are forced to find work in occupations that are below their capacity) this is a cause for concern. Beyond the current recession, the “hollowing out of the middle class” has been occurring for at least the past 20 years.

The third traditional measure of economic growth is income, or more specifically per capita income. Between 1969 and 2009, real per capita income (the effects of inflation have been removed) grew by 135% in Portage County and only 106% for Wisconsin and 113% for the U.S. This level of growth is consistent with the County’s population and employment growth. But if we examine relative levels of per capita income, a slightly different picture is painted. Consider Portage County’s per capita income as a percentage of the U.S. national average (Figure 4). In 1969, per capita income was \$12,895 (in 2004 inflation adjusted dollars) which is 82.3% of the U.S. average (\$16,465). Throughout the entire 40 year period examined here per capita income in Portage County has been below both the national as well as Wisconsin per capita income. But the “gap” has been narrowing and in 2009 Portage County per capita

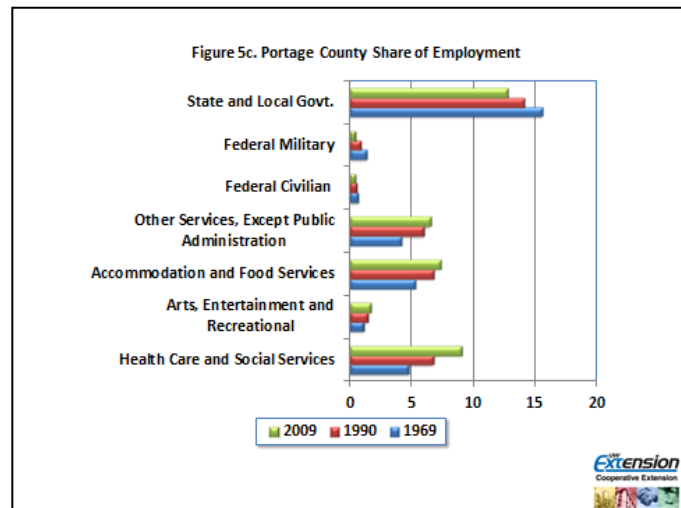
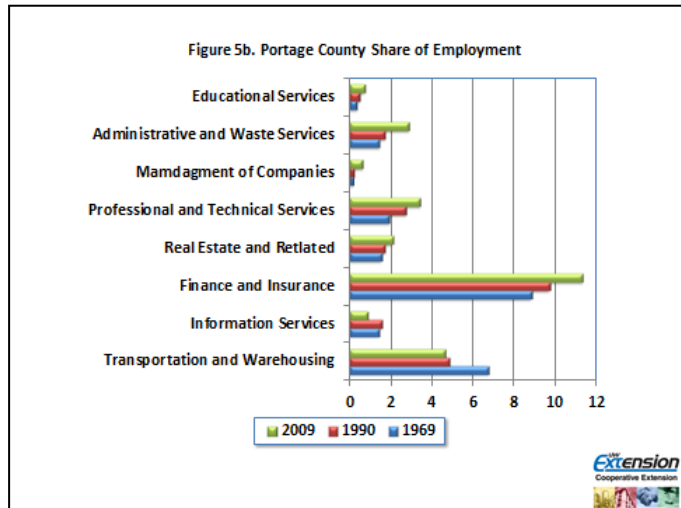




income was 88.7% of the U.S. average. The gap was narrowest in 2003 at 90.5%. Perhaps more pronounced is the closing of the gap between the County and Wisconsin: in 2009 the County's per capita income (in 2004 dollars) was \$30,239 and for Wisconsin per capita income was \$33,128, a difference of about nine percent. While it is clear that the County has been experiencing strong growth, some concern could be expressed about the level of income generated by the strong job growth.



If we examine the sources of the strong job growth, insights into why income levels are below the nation and Wisconsin can be gained. Consider how the share of employment in different sectors has changed from 1960 to 1990 to 2009 (Figures 5a, 5b and 5c). In addition to examining how sources of employment have changed over the past 40 years we can also gain insights into the major sources of employment in the County. Today there are four major industrial categories that account for the majority of employment: retail trade, manufacturing, finance and insurance and state and local government. The latter is reflective on the presence of the University of Wisconsin - Stevens Point campus in Portage County, along with local government employment including K-12 public education (note that in this industrial classification "educational services" does *not* include the University of Wisconsin - Stevens Point or K-12 schools but rather private educational providers. A more detailed discussion of the relative sizes of different industries in the County will be included below.



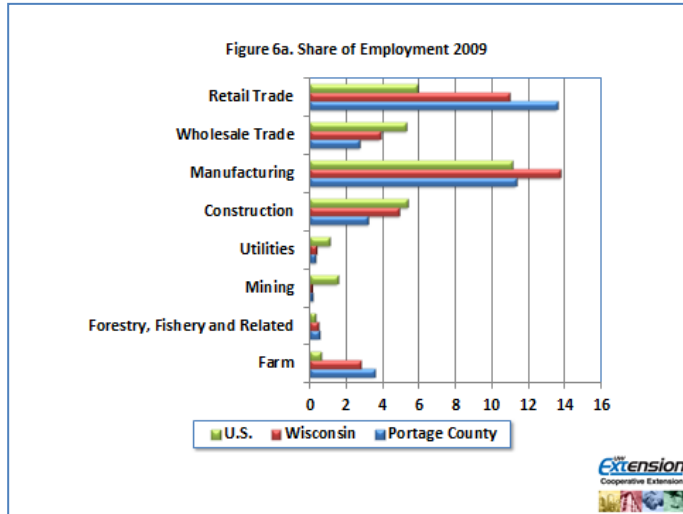
For our discussion here the more important question is how these shares have changed over time. Notice, for example, in 1969 farming accounted for slightly more than 12% of all employment and today it accounts for less than 4%. On-farm employment experienced a rapid decline between the early 1980s and about 2003. This downward trend, however, has stabilized and employment in farming has remained relatively flat. This is reflective of a national trend and mirrors similar patterns across Wisconsin. Part of the explanation for the rapid decline starting in the early 1980s can be attributed to the farm crisis of the 1980s. The combined effects of collapsing commodity prices due to changes in international trade policy (e.g., the closing of export markets to the former Soviet Union), patterns of reoccurring droughts, and over-leveraging of farm expansions with inflated interest rates created the “perfect storm” for farmers. The result was massive consolidation of farm enterprises into fewer and larger farm enterprises. The resulting gains in efficiencies reduced the demand for farm employment along with the number of farmers.

Over the same time period the dependency on manufacturing along with state and local government has declined somewhat while dependency on finance and insurance along with retail trade has expanded. The declining importance in manufacturing is not surprising as employment in manufacturing at the national level has been significant. From a national perspective there are two reasons for the decline in manufacturing employment. First, many “routine” types of manufacturing have moved to lower cost overseas markets including but not limited to Mexico and China. Here “routine” manufacturing generally refers to production processes that involve simple repetitive steps and often requires a low-skilled labor force. Second, the introduction of technologies such as robotics has reduced the demand for labor overall and again low-skill laborers in particular.

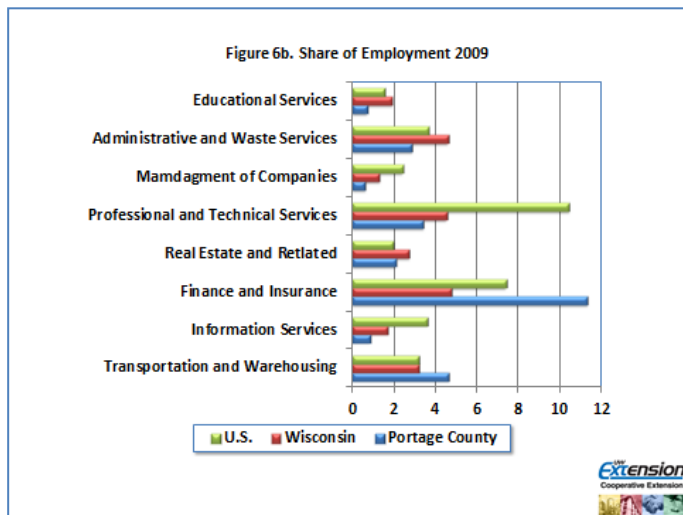
The decline in state and local government employment is attributable to two factors. First, there has been significant pressure on the Wisconsin public sector to reduce tax burdens, or at least minimize growth rates. The result has been a significant slowdown in the growth of public sector employment. Second, given the strong growth in overall County employment (Figure 2) the more modest growth in the public sector is simply being outpaced. As a result, the share of a growing pie has been declining.

The growth in the retail sector along with finance and insurance also mimics national changes. Employment in the retail sector has been significant and could potentially be interpreted as overstated because of the large number of part-time jobs. But for Portage County there is a second phenomenon that is occurring. Nationally retailing is concentrating in regional urban hubs. This is partially a result of the expansion of “big-box” retail but also shifts in retail shopping patterns. Retailing is subject to what economists call “agglomeration economies” where a higher concentration of retailing tends to self-reinforcing. As the number of two wage-earner and single parent families grows, people have altered their retail shopping patterns. Increasingly people concentrate shopping into single multi-purpose trips. Here customers are looking to be able to make multiple purchases in one trip. Increasingly, these single trips occur on weekends and people want to be able to make multiple purchases. The result is regional retail hubs with higher concentrations of shopping opportunities. Portage County, and in particular the cluster of communities around Stevens Point, has benefited from this movement to regional shopping hubs.

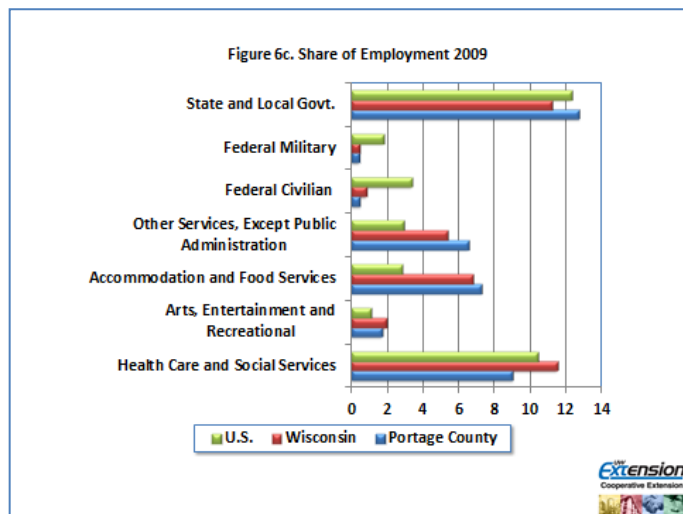
The growth in the finance and insurance industry is not surprising given the overall national growth in this sector. But as we will see in the more detailed discussions below, this sector stands out as particularly important for the Portage County economy. The presence of Sentry Insurance and Associated Bank’s processing facility makes this industry unique for the County. But, as the financial sector goes through significant restructuring after the financial crisis of the past few years suggests that care must be taken when exploring this sector.



While overall dependency, growth and declines in dependency on key industries is an important first step in understanding the local economy, looking at the County in isolation can lead to misleading conclusions. For example, is the high dependency on the financial sectors unique to Portage County or is the County simply following a national trend. To gain insights into *relative* dependency, we compare shares of employment in each sector in 2009 to the U.S. and Wisconsin (Figures 6a, 6b and 6c).



Consider retail trade where there has been significant growth in County employment. But when compared to Wisconsin and the U.S. in particular it becomes readily apparent that the County is heavily dependent on the retail sector for employment. This again speaks to Portage County becoming a regional retail hub as described above. The relatively high dependence on retail for Wisconsin compared to the U.S. hints at the role of tourism in the state’s economy.



Manufacturing dependency for employment in the County is actually below Wisconsin’s

dependency and on par with the U.S. While manufacturing remains an important source of employment for Portage County, it is not overly dependent, or more dependent than one might expect. Farming employment, while declining over time, is modestly higher than Wisconsin, traditionally viewed as an agricultural economy, and much higher than the U.S. Thus while farming remains a small source of employment, the County is more heavily dependent on farming than one might expect.

As previously noted finance and insurance is a major source of employment for the local economy and is significantly higher than both the U.S. and Wisconsin. From a broader economic growth and development perspective, future thinking about local economic policy particular attention should be paid to this potential economic cluster. At the same time the employment opportunities in professional and technical services is particularly low, particularly compared to the U.S. But when compared to Wisconsin the lack of employment in this sector might be considered a bit more as expected. From a broader perspective, the overall lack of employment in professional and technical services might paint a weakness for Wisconsin and the County. From an economic growth perspective, economists generally considered employment in this sector as a major source of new innovations which are vital to new sources of growth.

Given the presence of the University of Wisconsin - Stevens Point campus it is somewhat surprising that the dependency on state and local government employment is not higher than it is given the employment shares for Wisconsin and the U.S. While the dependency on state and local government is higher than Wisconsin it is only slightly higher than the U.S. The higher dependence on hotels, motels and restaurants is only slightly higher than Wisconsin which again speaks to the County being a regional hub for central Wisconsin, but is significantly higher than the U.S. This latter result again points to the importance of tourism to the State's economy. One of the fastest growing sectors in the U.S. is health care, but the County appears to have lower dependency on the health care sector for employment than one might expect given the data for Wisconsin and the U.S. Given the County's growth in population one might expect more growth in this sector than previously experienced. This may be due to many well-known regional health care facilities in Wausau and Marshfield.

Given the State and U.S. data, two sectors appear to rise to the top in terms of employment dependency: finance and insurance and retail trade along with hotels and restaurants. Some sectors that are somewhat lower than might be expected include state and local government employment, particularly given the presence of the University of Wisconsin - Stevens Point campus, professional and technical services, and health care. But in order to gain a deeper understanding of the strengths and weaknesses of the Portage County economy we need to take one additional step. In the next section we explore the notion of "economic clusters" specific to Portage County.

## An Analysis of Portage County Clusters

In 2003 the Wisconsin Office of the Governor embraced the notion of cluster development as the foundation of economic development policies. Forward Wisconsin defines clusters as:

. . .geographic concentrations of interconnected companies, specialized suppliers, service providers and associated institutions in a particular field. Clusters develop because they increase the productivity with which companies can compete in an increasingly more competitive global market, and they are the source of jobs, income and export growth. The philosophy behind clusters is that large and small companies in a similar industry achieve more by working together than they would individually. Clusters give businesses an advantage by providing access to more suppliers and customized support services, skilled and experienced labor pools, and knowledge transfer through informal social exchanges. In other words, clusters enhance competitiveness.

The state initially identified 10 existing and potential clusters, including dairy and food processing. Other clusters include paper and wood products, biotechnology, plastics, medical devices, information technology and wind energy. Methods of identifying clusters vary widely, but an approach suggested by Harvard business economist Michael Porter is growing in popularity. The approach is built on the notion of location quotients: current values of the location quotient, changes in the location quotient over time, and relative size of the industry coupled with other industry characteristics. The location quotient (LQ) is an indicator of self-sufficiency, or relative strength, of a particular industry.

The LQ is computed as:

$$LQ_r^i = \frac{\text{percent of county activity in sector } i}{\text{percent of U.S. activity in sector } i}$$

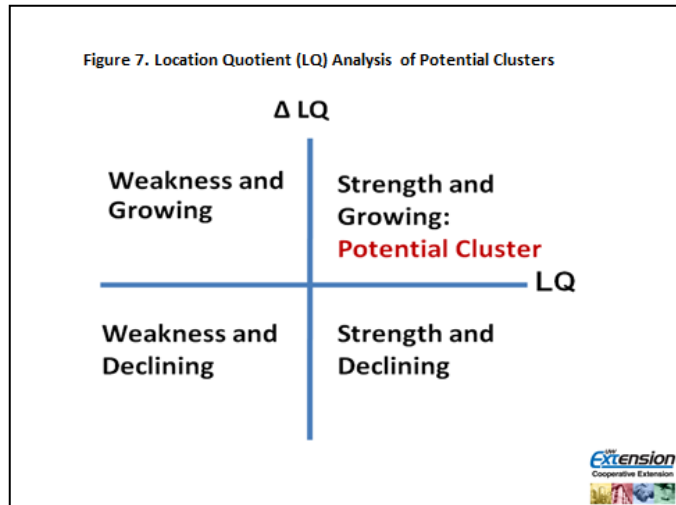
Return to the analysis presented in Figures 6a, 6b and 6c and simply divide the percent of County employment in any given sector by the U.S. employment share. The proportion of national economic activity in sector *i* located in the County measures the region's production of product *i*, assuming equal labor productivity. The proportion of national economic activity in the region proxies local consumption, assuming equal consumption per worker. The difference between local production and consumption is an estimate of production for export (i.e. production > consumption).

The key assumptions to operationalize the location quotient approach are that the regional production technology is identical to national production technology (i.e. equal labor productivity) and that local tastes and preferences are identical to national tastes and preferences (i.e. equal consumption per worker). Assuming the national economy is self-sufficient, the comparison between the community and the national benchmark gives an indication of specialization or self-sufficiency.

Three important location quotient values derive from the self-sufficiency interpretation of location quotients. A location quotient of 1 means the region has the same proportion of economic activity in sector *i* as the nation. The region just meets local consumption requirements through local production

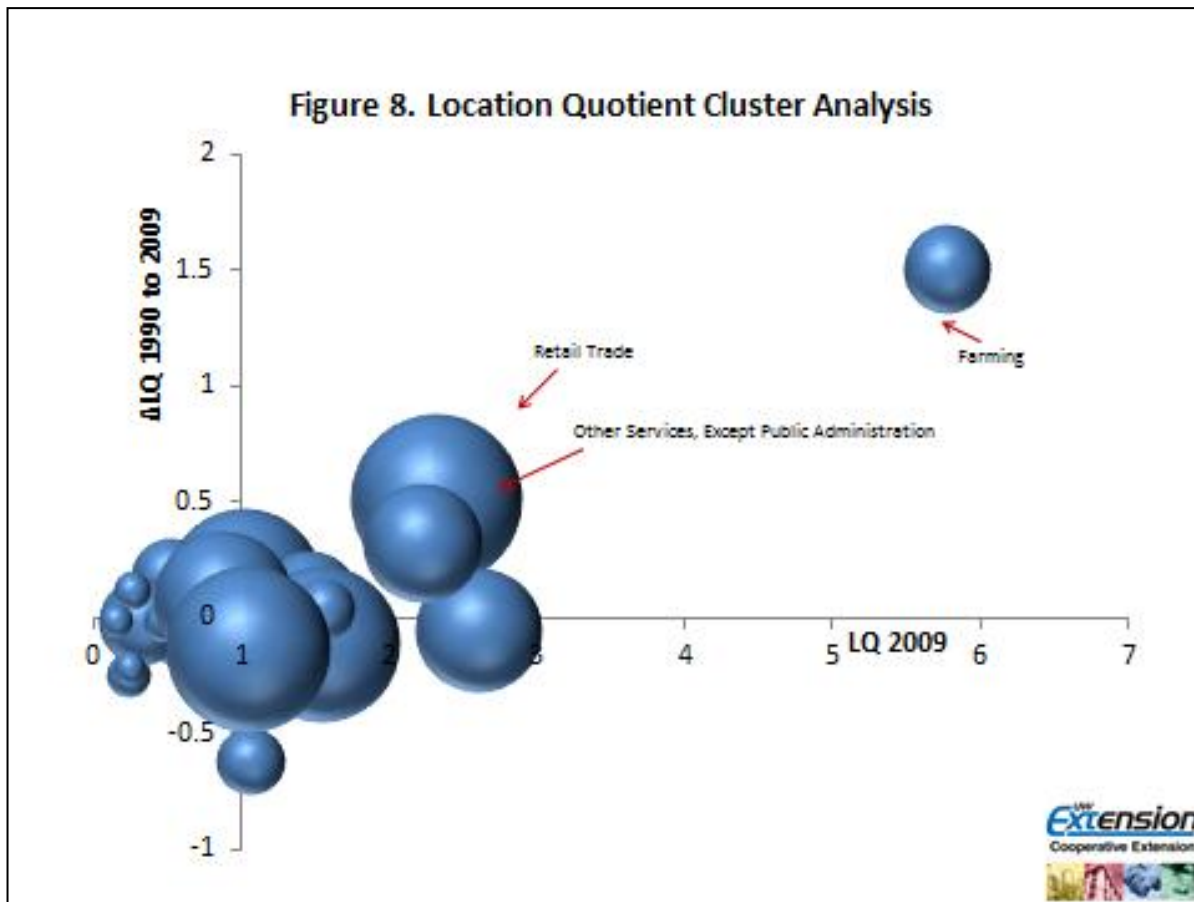
of the specified good or service. If the location quotient is less than 1, the region is not producing enough to meet local needs. If the location quotient is greater than 1, the region has a larger proportion of its economy in sector *i* than does the nation.

The Porter notion of clusters evaluates levels and changes of the location quotient coupled with the absolute size of the industry and other characteristics that may make the industry desirable as a source of employment opportunities. Consider the simple mapping of the level and change of the LQ as outlined in Figure 7. There are four potential combinations.



First, if the industry has a LQ less than 1 and is declining, this industry is considered a “weakness and declining” industry and generally should not be considered a potential cluster. Second, if the LQ is less than 1 but increasing, the industry can be considered a “weakness and growing” industry and may be a possible industry of focus for economic development. Third, if the LQ is greater than 1 but is declining over time, it is considered “strength and declining.” Industries in this category might be considered at risk and deserving of special consideration to understand why a strong industry (i.e.  $LQ > 1$ ) is weakening (i.e.  $\Delta LQ < 0$ ). In particular, does the decline of these industries present a potential risk to the regional economy? Fourth, if the LQ is greater than 1 and growing over time, it is considered “strength and growing.” Porter suggests that industries in this category might be considered potential clusters for economic growth and development. These industries have self-identified the region as having a comparative advantage over other regions and may have further growth potential. While there are several ways to measure economic activity we used employment for consistency with the previous discussions.

Using the data from Figures 6a, 6b and 6c along with changes in the location quotient from 1990 to 2009 we are able to plot the data for Portage County and identify potential clusters (Figure 8). From this simple analysis three industries could be identified as potential clusters: farming, retail trade and the general category “other services except for public administration”. The strength in the retail sector is as expected given our discussions above; in essence Portage County has become a regional retail hub for central Wisconsin. Perhaps more important to this larger study of the importance of water to the local economy is the strength of the farming sector. Although the dependency on farming for a source of employment has declined over the past 40 years (Figure 5a) for the County, the decline at the national level has been more severe.



This result for farming presents several challenges to the County. First, from national, state and indeed local perspectives farming as a source of employment has been declining. Although this decline has stabilized over the past few years, the fact that the County is even modestly dependent on a sector that has limited opportunities for employment growth may be of concern. Second, farming has historically been a strong sector in Portage County and much of Wisconsin. The question is what are the characteristics of the region that continues to make farming a viable enterprise? Natural geography, soil types, input support industries and viable markets for farm products are present. For Portage County the latter include the vegetable processing facilities.

One of the limitations of the visual presentation of the cluster analysis outlined in Figure 8 is that it is difficult to separate individual industries. Consider the tabular presentation of the data contained in Figure 8 (Table 1).

Table 1. Cluster Analysis for Portage County

| <u><i>Strength and Growing (Cluster?)</i></u>    | LQ 2009 | Change<br>1990-2009 | Share Jobs |
|--------------------------------------------------|---------|---------------------|------------|
| Farm                                             | 5.77    | 1.51                | 3.5        |
| Retail Trade                                     | 2.31    | 0.52                | 13.6       |
| Other Services, Except Public Administration     | 2.23    | 0.32                | 6.5        |
| Forestry, Fishery and Related                    | 1.67    | 0.06                | 0.5        |
| Arts, Entertainment and Recreational             | 1.55    | 0.04                | 1.7        |
| Transportation and Warehousing                   | 1.46    | 0.08                | 4.7        |
| Manufacturing                                    | 1.02    | 0.13                | 11.3       |
| <u><i>Strength and Declining (Threat?)</i></u>   |         |                     |            |
| Real Estate and Related                          | 1.06    | -0.61               | 2.1        |
| State and Local Govt.                            | 1.04    | -0.13               | 12.8       |
| Accommodation and Food Services                  | 2.59    | -0.05               | 7.3        |
| Finance and Insurance                            | 1.53    | -0.11               | 11.3       |
| <u><i>Weakness and Growth (Opportunity?)</i></u> |         |                     |            |
| Health Care and Social Services                  | 0.87    | 0.08                | 9          |
| Administrative and Waste Services                | 0.79    | 0.16                | 2.9        |
| Wholesale Trade                                  | 0.51    | 0.18                | 2.7        |
| Management of Companies                          | 0.25    | 0.12                | 0.6        |
| <u><i>Weakness and Declining</i></u>             |         |                     |            |
| Construction                                     | 0.59    | -0.03               | 3.2        |
| Educational Services                             | 0.47    | -0.01               | 0.7        |
| Professional and Technical Services              | 0.33    | -0.01               | 3.4        |
| Utilities                                        | 0.29    | -0.05               | 0.3        |
| Federal Military                                 | 0.24    | -0.21               | 0.4        |
| Information Services                             | 0.23    | -0.25               | 0.8        |
| Federal Civilian                                 | 0.14    | -0.01               | 0.5        |
| Mining                                           | 0.12    | -0.03               | 0.2        |



In addition to farming and retail trade other sectors that are strengths and growing include forestry, fishery and related businesses, arts and entertainment and recreational, transportation and warehousing and manufacturing. But forestry, fishery and related businesses accounts for less than one percent of the County's total employment and arts, entertainment and recreation focused businesses accounts for less than two percent of total employment. Based on our previous discussion about the role of tourism and recreation this latter result may appear to be inconsistent. One must keep in mind that businesses that classify themselves as arts, entertainment and recreation is relatively narrow and does not include restaurants that hosts live entertainment or the University of Wisconsin - Stevens Point which hosts athletic events and entertainment venues. Rather, outside of an area that is highly dependent on tourism and recreation, such as the Wisconsin Dells, businesses that classify themselves in this area tend to be small. Interestingly, dependency on manufacturing is close to where one might expect it to be given national trends.

There are four sectors that remain strengths of the local economy but appear to be losing some of their strength. These include real estate, state and local government, hotels, motels and restaurants, and finance and insurance. Given the weakness in the real estate markets, it should not be surprising that employment in the real estate sector declined. But the decline appears to be larger than might be expected given the national trends (i.e., the location quotient declining). The decline in state and local government is a reflection of the fiscal stress state and local governments have been experiencing over the past several years. The University of Wisconsin - Stevens Point, for example, has been unable to expand because of declining state aids to higher education. There is a modest decline in accommodations and restaurants where the decline is small enough to almost overlook. The weakening of the financial and insurance industry is again modest but given the importance of this industry to the local economy some concern must be expressed. The modest decline may be attributed to weakening of the financial sector, particularly the banking industry, during the most recent recession. But given the major restructuring of the banking industry the question is raised; is the local economy at risk?

One of the limitations of the analysis presented in Figure 8 and Table 1 is the level of industry aggregation. While examining large (i.e., aggregated) industry sectors provides a "big picture" view of the local economy it does not provide a sufficient level of insight to craft effective local economic growth and development policies. To gain this additional insight we break the broad industry classifications in Table 1 into more refined industries (Table 2).

There is one technical distinction between the analysis in Tables 1 and 2 that warrants explanation. In 2000 the manner in which the federal government defined industries was updated from the Standard Industrial Classification (SIC) System to the North American Industrial Classification System (NAICS). The older SIC system had been in place for a number of decades and provided heavy industrial classifications for the "old economy" including manufacturing. But the SIC System was "light" on the "new economy" which is dominated by the services industry. Thus NAICS was created to better reflect our growing dependence on service sectors. Unfortunately, as we look at more refined industrial sectors we cannot make comparisons prior to 2001. Hence, the timeframe examined in Table 1 is from 1990 to 2009 and in Table 2 the timeframe is 2001 to 2009. Thus some care must be taken comparing the aggregate analysis in Table 1 (and Figure 8) and Table 2.

The strongest growing sector is classified as "nonstore retailers" which would include mail-order and/or internet based retailers. This could include larger distribution centers such as Lands' End. Consistent with the analysis in Table 1, insurance carriers and related activities remains a potential cluster for Portage County followed by crop production. The latter would include vegetable and fruit production

such as potatoes and cranberries. The challenge with identifying potential clusters is the relative size of the industry. Clearly, nearly one in ten jobs in Portage County is in the insurance industry and is a cluster. But crop production accounts for only 2.2% of employment: is this sufficiently large to deem crops a cluster for the County? This is a judgment call that must be made by the residents of Portage County.

One sector that has historically been a strength of the local economy that has been in decline is food manufacturing, or food processing. While the location quotient is still relatively large at 3.38 in 2009 it has declined by 2.17 from 2001 to 2009. While still generally viewed as an integral part of the overall “agricultural cluster” (on-farm production and food processing combined) food processing appears to be “threatened” via the rather large decline in the location quotient over the past nine years. The natural question to be asked is what is driving this decline. A decline in the location quotient can come from one of three sources (or combination of the sources). First, employment in the sector has declined while the rest of County employment has remained stable or increased. Second, there may be employment growth in the sector but it is not growing as fast as the rest of the local economy. Here the share of employment in the sector is actually declining. Here the numerator in the location quotient is declining causing the location quotient itself to decline. Third, the industry is growing faster at the national level relative to the local level. In essence the denominator of the location quotient equation is growing faster than the numerator causing the location quotient to decline. Clearly, what is happening to the food processing industry in Portage County needs further examination.

One limitation to this more detailed analysis centers on data disclosure rules imposed by the U.S. Department of Commerce, the agency which collects and reports the data. The rules are such that if reporting the data allows the user to identify the characteristics of a specific firm, the data will not be released. For our analysis of water dependent industries this is troublesome because we have no data for paper mills. As we will see below, however, we do have detailed industrial data for 2008 but not for two separate years which is required to examine changes in the location quotient over time.

Table 2: Detailed Cluster Analysis for Portage County

|                                                         | LQ 2009 | Change<br>2001-2009 | Share Jobs |
|---------------------------------------------------------|---------|---------------------|------------|
| <b><u>Strength and Growing (potential cluster?)</u></b> |         |                     |            |
| Nonstore retailers                                      | 8.38    | 2.15                | 3.26       |
| Insurance carriers and related activities               | 5.82    | 0.20                | 11.46      |
| Crop production                                         | 4.44    | 0.49                | 2.21       |
| Printing and related support activities                 | 4.05    | 0.41                | 1.98       |
| Truck transportation                                    | 3.18    | 0.56                | 3.75       |
| Membership associations and organizations               | 2.65    | 0.60                | 3.29       |
| Miscellaneous manufacturing                             | 2.59    | 0.67                | 1.40       |
| General merchandise stores                              | 1.45    | 0.11                | 4.07       |
| Merchant wholesalers, nondurable goods                  | 1.33    | 0.62                | 2.44       |
| Building material and garden supply stores              | 1.25    | 0.03                | 1.36       |
| Warehousing and storage                                 | 1.25    | 1.25                | 0.74       |
| Credit intermediation and related activities            | 1.22    | 0.54                | 2.94       |
| Fabricated metal product manufacturing                  | 1.14    | 0.41                | 1.39       |
| Accommodation                                           | 1.13    | 0.21                | 1.85       |
| Social assistance                                       | 1.10    | ND                  | ND         |
| Food services and drinking places                       | 1.05    | 0.00                | 9.16       |
| <b><u>Strength and declining (threat?)</u></b>          |         |                     |            |
| Food manufacturing                                      | 3.38    | -2.17               | 4.58       |
| Wood product manufacturing                              | 1.79    | -0.60               | 0.60       |
| Gasoline stations                                       | 1.01    | -0.02               | 0.78       |
| <b><u>Weak and growing (opportunity?)</u></b>           |         |                     |            |
| Electronics and appliance stores                        | 0.97    | 0.77                | 0.44       |
| Transit and ground passenger transportation             | 0.97    | 0.43                | 0.38       |
| Animal production                                       | 0.96    | 0.20                | 0.20       |
| Beverage and tobacco product manufacturing              | 0.90    | ND                  | 0.16       |
| Repair and maintenance                                  | 0.69    | 0.03                | 0.73       |
| Management of companies and enterprises                 | 0.64    | 0.44                | 1.11       |
| Broadcasting, except Internet                           | 0.62    | 0.23                | 0.18       |
| Administrative and support services                     | 0.61    | 0.28                | 3.86       |
| Furniture and related product manufacturing             | 0.56    | 0.10                | 0.20       |
| Merchant wholesalers, durable goods                     | 0.53    | 0.15                | 1.40       |
| Professional and Technical Services                     | 0.46    | 0.07                | 3.22       |
| Health and personal care stores                         | 0.45    | 0.21                | 0.41       |
| Publishing industries, except Internet                  | 0.41    | 0.41                | 0.30       |
| Agriculture and forestry support activities             | 0.40    | 0.09                | 0.12       |
| <b><u>Weakness and declining</u></b>                    |         |                     |            |
| Personal and laundry services                           | 0.90    | -0.20               | 1.08       |
| Motor vehicle and parts dealers                         | 0.97    | -0.09               | 1.48       |
| Food and beverage stores                                | 0.94    | -0.38               | 2.49       |
| Sporting goods, hobby, book and music stores            | 0.94    | -0.04               | 0.54       |
| Construction of buildings                               | 0.89    | -0.01               | 1.11       |
| Nonmetallic mineral product manufacturing               | 0.76    | ND                  | 0.28       |
| Furniture and home furnishings stores                   | 0.72    | -0.32               | 0.30       |
| Miscellaneous store retailers                           | 0.65    | -0.46               | 0.48       |
| Ambulatory health care services                         | 0.65    | -0.36               | 3.51       |
| Amusements, gambling, and recreation                    | 0.65    | -0.17               | 0.85       |
| Specialty trade contractors                             | 0.47    | -0.06               | 1.64       |
| Telecommunications                                      | 0.41    | -0.27               | 0.38       |
| Performing arts and spectator sports                    | 0.31    | -0.32               | 0.11       |
| Clothing and clothing accessories stores                | 0.29    | -0.19               | 0.37       |
| Real estate                                             | 0.25    | -0.03               | 0.33       |
| Waste management and remediation services               | 0.11    | -0.43               | 0.04       |
| Heavy and civil engineering construction                | 0.10    | -0.15               | 0.08       |
| Securities, commodity contracts, investments            | 0.10    | -0.03               | 0.07       |
| Educational services                                    | 0.05    | 0.00                | 0.11       |

Defining the Water Dependent Cluster in Portage County

The study committee created a list of industry types based on their knowledge of the community that rely on higher volumes of water. Their list was condensed to agriculture production, food processing, and paper production. By their definition, agriculture production includes dairy farming, row crops, vegetables, cranberries, livestock, and horticulture, while food processing includes vegetable canning, frozen vegetables, breweries, and dairy processing.

To ensure that other industry types weren't omitted from the list, they asked UW-Extension to collect names of high volume water customers from municipalities with water utilities in the county. UW-Extension also reviewed a database of high capacity well owners from the Wisconsin Department of Natural Resources to identify non-municipal high volume water users.

This review identified the road construction industry (asphalt, concrete, aggregate, etc.) as a high volume user. However, when examined from an economic standpoint, this industry type contributed a mere fraction of jobs, income, and revenue in the County. Based on this information, the committee did not include road construction in the water cluster.

Many of the top water users included businesses that used water for direct human consumption only. The group made the decision that these businesses were not located here because of the water resources, therefore, should not be included in the cluster.

The committee also discussed including tourism in the cluster. A significant portion of members reasoned that it was beyond the scope of this study to ascertain the water-based portion of the tourism industry. The committee concluded that the water cluster should include agriculture production, agriculture processing and paper production. Deller reviewed the full list of industry sectors and recommended that the Portage County Water Dependent Cluster include the sectors listed in Table 2a.

| Table 2a: Industry sectors included in the Portage County Water Dependent Cluster |                                                             |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------|
| Paper mills                                                                       | Frozen food manufacturing                                   |
| Vegetable and melon farming                                                       | Dairy cattle and milk production                            |
| Fruit and vegetable canning, picking, drying                                      | Grain farming                                               |
| Animal production, except cattle, poultry, eggs                                   | Support activities for agriculture, forestry                |
| Paperboard container manufacturing                                                | Cattle ranching and farming                                 |
| Fruit farming                                                                     | Commercial logging                                          |
| Greenhouse, nursery, floriculture production                                      | Bread and bakery product manufacturing                      |
| Breweries                                                                         | Oilseed farming                                             |
| Ice cream and frozen dessert manufacturing                                        | Commercial hunting and trapping                             |
| Dry, condensed, evaporated dairy product manufacturing                            | Animal (except poultry slaughtering, rendering, processing) |
| Poultry and egg production                                                        |                                                             |

## The Economic Contribution of the Water Cluster

To conduct the analysis reported here we employ a detailed regional economic model of Portage County. Specifically, we built an input-output model of Portage County using IMpact analysis for PLANning (IMPLAN) data for 2008. An input-output model is a detailed “snapshot” of the flow of money throughout the local (County) economy. The focus is on the purchasers (demand) of goods and services along with the producers (supply) of those goods and services. One can think of the input-output model as a large “spreadsheet of the economy” where the purchasers (demand) are across the columns of the spreadsheet and producers (supply) are down the columns. Each cell where an individual column (buyer) and row (seller) captures the dollar value flowing from buyer to seller. For the full Portage County input-output model there are 167 individual industries. Because of how the model is constructed we are able to by-pass the data disclosure problems that we had with the detailed location quotient analysis above. Unfortunately, we cannot compare across time.

This detailed empirical representation allows us to conduct two levels of analysis. First, the level of detail within the input-output model allows us to conduct detailed descriptive analysis in terms of industry sizes. Second, the model allows us to calculate how changes in one industry can “ripple” throughout the entire economy. This “ripple” effect is associated with economic multipliers. For example, if crop farming increases production it must purchase additional inputs including labor. For example more fertilizer might be purchased. This means that demand for locally supplied fertilizer increases and that firm must increase its production. Alternatively, that additional labor that is hired spends its income in the local economy. We can use the input-output model to calculate the magnitude of how different industries contribute to the whole of the economy.

Consider first the 30 largest industries in Portage County for 2008. The size of any given industry is measured in four different ways: employment (Table 3), industry sales (Table 4), labor income (Table 5), and total income (Table 6). Employment here is simple jobs within the industry and there is *no distinction* between part- and full-time jobs. Thus some sectors, such as retail trade, that rely on a large number of part-time workers can appear larger than industries that depend more of full-time workers. Labor income is composed of wages, salaries and proprietor income. This is income associated with work. Total income includes labor income as well as other sources of income such as dividends, interest and rent and is akin to gross domestic product (GDP).

Based on our input-output model of Portage County the largest single source of employment is state and local government employment with 4,053 jobs, or 9.4% of the County’s total employment. Given the presence of the University of Wisconsin - Stevens Point campus this level of employment is somewhat as expected. But if we return to Figure 6c along with the location quotient analysis this level of dependency on state and local government for employment does not appear to be particularly inconsistent with the U.S. or Wisconsin. The typical job in this sector pays about \$47,000. The second largest source of employment is insurance carriers with 3,496 jobs with a typical worker earning \$70,400 dollars. Total income per job associated with insurance carriers is \$129,000. Generally, the insurance industry in Portage County supports particularly well-paying jobs. Food services and drinking places (restaurants, catering businesses, and bars) is the third largest sector measured by employment, but the low level of income per job points to not only the quality of the jobs but also the part-time nature of so many of these jobs.

Table 3. Thirty Largest Industries by Employment 2008

| Description                                                              | Jobs       | Share of County Total | Revenue Per Job | Labor Income Per Job | Total Income Per Job |
|--------------------------------------------------------------------------|------------|-----------------------|-----------------|----------------------|----------------------|
| Employment and payroll only (state & local govt, education)              | 4,053      | 9.4%                  | \$53,064        | \$46,850             | \$53,064             |
| Insurance carriers                                                       | 3,496      | 8.1%                  | 277,875         | 70,405               | 129,573              |
| Food services and drinking places                                        | 2,780      | 6.4%                  | 44,582          | 12,812               | 18,983               |
| Retail Nonstores - Direct and electronic sales                           | 1,480      | 3.4%                  | 74,382          | 14,866               | 52,685               |
| Retail Stores - General merchandise                                      | 1,195      | 2.8%                  | 51,304          | 21,965               | 32,701               |
| Wholesale trade businesses                                               | 1,150      | 2.7%                  | 144,474         | 53,923               | 91,930               |
| Transport by truck                                                       | 1,120      | 2.6%                  | 143,673         | 56,568               | 75,650               |
| Private hospitals                                                        | 1,067      | 2.5%                  | 101,768         | 46,172               | 48,489               |
| <b>Paper mills</b>                                                       | <b>963</b> | <b>2.2%</b>           | <b>668,930</b>  | <b>73,847</b>        | <b>127,627</b>       |
| Real estate establishments                                               | 962        | 2.2%                  | 101,876         | 17,798               | 80,380               |
| Employment and payroll only (state & local govt, non-education)          | 917        | 2.1%                  | 55,917          | 49,369               | 55,917               |
| <b>Frozen food manufacturing</b>                                         | <b>891</b> | <b>2.1%</b>           | <b>303,441</b>  | <b>40,812</b>        | <b>52,655</b>        |
| Offices of physicians, dentists, and other health practitioners          | 794        | 1.8%                  | 147,792         | 89,943               | 104,805              |
| Retail Stores - Food and beverage                                        | 732        | 1.7%                  | 48,276          | 19,398               | 29,741               |
| Individual and family services                                           | 725        | 1.7%                  | 27,230          | 10,747               | 11,977               |
| <b>Vegetable and melon farming</b>                                       | <b>699</b> | <b>1.6%</b>           | <b>208,002</b>  | <b>67,342</b>        | <b>75,049</b>        |
| Printing                                                                 | 640        | 1.5%                  | 162,886         | 55,020               | 75,721               |
| Civic, social, professional, and similar organizations                   | 615        | 1.4%                  | 42,848          | 20,773               | 12,088               |
| Nondepository credit intermediation and related activities               | 570        | 1.3%                  | 122,509         | 45,272               | 70,596               |
| Grantmaking, giving, and social advocacy organizations                   | 549        | 1.3%                  | 46,742          | 32,393               | 13,434               |
| Construction of new nonresidential commercial and health care structures | 516        | 1.2%                  | 137,502         | 42,542               | 48,157               |
| Retail Stores - Motor vehicle and parts                                  | 478        | 1.1%                  | 72,153          | 42,818               | 53,089               |
| Retail Stores - Building material and garden supply                      | 463        | 1.1%                  | 78,667          | 31,378               | 50,926               |
| Business support services                                                | 452        | 1.0%                  | 86,298          | 42,555               | 57,152               |
| Employment services                                                      | 431        | 1.0%                  | 27,696          | 18,247               | 19,695               |
| Custom computer programming services                                     | 425        | 1.0%                  | 117,126         | 69,956               | 73,220               |
| Nursing and residential care facilities                                  | 416        | 1.0%                  | 34,075          | 22,790               | 23,649               |
| Services to buildings and dwellings                                      | 387        | 0.9%                  | 46,722          | 18,982               | 23,254               |
| Hotels and motels, including casino hotels                               | 375        | 0.9%                  | 52,844          | 16,584               | 30,057               |
| Monetary authorities and depository credit intermediation activities     | 369        | 0.9%                  | 156,527         | 42,692               | 112,049              |

From our definition of water dependent industries (agricultural production, agricultural processing, paper production) three sectors fall into the top 30 in terms of **employment**: paper mills, frozen food manufacturing (processing) and vegetable and melon (e.g., potatoes) farming. Paper mills accounts for 963 jobs with an average per worker pay of \$73,800 and total income of \$127,000 which places it on par with the insurance industry within the County. Frozen food processing contributes 891 jobs with a per job pay of about \$41,000. Vegetable production accounts for about 700 jobs and pays an average of \$67,000 per job. But care must be taken when interpreting the income estimates for farm production because it is very sensitive to commodity prices which are inherently unstable. For the study year, 2008, many agricultural prices were high resulting in a particularly well paying year. Commodity prices today are significantly lower and one could reasonably expect per job pay today to be lower than in 2008.

Table 4. Thirty Largest Industries by Industry Sales 2008

| Description                                                              | Industry Sales     | Share of County Total | Revenue Per Job | Labor Income Per Job | Total Income Per Job |
|--------------------------------------------------------------------------|--------------------|-----------------------|-----------------|----------------------|----------------------|
| Insurance carriers                                                       | \$971,482,880      | 15.6%                 | \$277,875       | \$70,405             | \$129,573            |
| <b>Paper mills</b>                                                       | <b>644,162,688</b> | <b>10.3%</b>          | <b>668,930</b>  | <b>73,847</b>        | <b>127,627</b>       |
| <b>Frozen food manufacturing</b>                                         | <b>270,384,928</b> | <b>4.3%</b>           | <b>303,441</b>  | <b>40,812</b>        | <b>52,655</b>        |
| Employment and payroll only (state & local govt, education)              | 215,089,696        | 3.5%                  | 53,064          | 46,850               | 53,064               |
| Motorcycle, bicycle, and parts manufacturing                             | 181,415,792        | 2.9%                  | 650,516         | 84,000               | 121,756              |
| Wholesale trade businesses                                               | 166,147,024        | 2.7%                  | 144,474         | 53,923               | 91,930               |
| Transport by truck                                                       | 160,969,680        | 2.6%                  | 143,673         | 56,568               | 75,650               |
| <b>Fruit and vegetable canning, pickling, and drying</b>                 | <b>150,812,800</b> | <b>2.4%</b>           | <b>493,747</b>  | <b>43,076</b>        | <b>75,459</b>        |
| <b>Vegetable and melon farming</b>                                       | <b>145,398,528</b> | <b>2.3%</b>           | <b>208,002</b>  | <b>67,342</b>        | <b>75,049</b>        |
| Food services and drinking places                                        | 123,944,448        | 2.0%                  | 44,582          | 12,812               | 18,983               |
| Offices of physicians, dentists, and other health practitioners          | 117,393,792        | 1.9%                  | 147,792         | 89,943               | 104,805              |
| Transport by rail                                                        | 113,198,352        | 1.8%                  | 388,977         | 97,794               | 228,234              |
| Retail Nonstores - Direct and electronic sales                           | 110,098,128        | 1.8%                  | 74,382          | 14,866               | 52,685               |
| Private hospitals                                                        | 108,560,080        | 1.7%                  | 101,768         | 46,172               | 48,489               |
| Printing                                                                 | 104,186,728        | 1.7%                  | 162,886         | 55,020               | 75,721               |
| Real estate establishments                                               | 97,978,352         | 1.6%                  | 101,876         | 17,798               | 80,380               |
| Other basic organic chemical manufacturing                               | 82,430,096         | 1.3%                  | 2,342,155       | 89,471               | 149,049              |
| Construction of new nonresidential commercial and health care structures | 70,924,432         | 1.1%                  | 137,502         | 42,542               | 48,157               |
| Nondepository credit intermediation and related activities               | 69,856,432         | 1.1%                  | 122,509         | 45,272               | 70,596               |
| Retail Stores - General merchandise                                      | 61,325,464         | 1.0%                  | 51,304          | 21,965               | 32,701               |
| Monetary authorities and depository credit intermediation activities     | 57,795,976         | 0.9%                  | 156,527         | 42,692               | 112,049              |
| Employment and payroll only (state & local govt, non-education)          | 51,257,760         | 0.8%                  | 55,917          | 49,369               | 55,917               |
| Farm machinery and equipment manufacturing                               | 50,863,512         | 0.8%                  | 563,505         | 71,153               | 134,299              |
| Custom computer programming services                                     | 49,818,216         | 0.8%                  | 117,126         | 69,956               | 73,220               |
| Surgical appliance and supplies manufacturing                            | 49,474,908         | 0.8%                  | 240,205         | 61,670               | 97,688               |
| <b>Dairy cattle and milk production</b>                                  | <b>48,404,428</b>  | <b>0.8%</b>           | <b>138,332</b>  | <b>9,111</b>         | <b>52,402</b>        |
| Metal can, box, and other metal container (light gauge) manufacturing    | 48,255,732         | 0.8%                  | 551,334         | 62,198               | 124,851              |
| Other state and local government enterprises                             | 48,062,840         | 0.8%                  | 258,818         | 65,469               | 85,561               |
| Telecommunications                                                       | 46,528,016         | 0.7%                  | 407,465         | 56,673               | 153,056              |
| Soap and cleaning compound manufacturing                                 | 45,684,360         | 0.7%                  | 2,203,568       | 326,533              | 1,085,669            |

In terms of **industry** sales, five of our water dependent industries fall into the top 30 industries: paper mills, frozen foods, vegetable canning, vegetable farming and dairy production. These five industries combined accounts for \$1.26 billion in industry sales, or about 20.2% of the County's total. Income per job ranges from \$73,800 for paper mills to \$9,100 for dairy farms. But total income per dairy farm job is \$52,400 which is only slightly below total income per frozen food processing. When looking at income for farms care must be taken in terms of how wages are accounted for. In some farm commodity groups payments takes the form of transfers and not labor income. For practical purposes this is purely an accounting anomaly. Again, insurance carriers are the largest single industry along with state and local governments.

For brevity we allow the reader to review the largest industries based on our two measures of income, labor income and total income. Key sectors of the water dependent cluster identified above appear as being among the 30 largest industries regardless of metric considered include frozen food manufacturing, vegetable and melon farming, and paper mills.

Table 5. Thirty Largest Industries by Labor Income 2008

|                                                                                    | Labor Income      | Share of County Total | Revenue Per Job | Labor Income Per Job | Total Income Per Job |
|------------------------------------------------------------------------------------|-------------------|-----------------------|-----------------|----------------------|----------------------|
| Insurance carriers                                                                 | 246,144,288       | 14.1%                 | 277,875         | 70,405               | 129,573              |
| Employment and payroll only (state & local govt, education)                        | 189,901,968       | 10.9%                 | 53,064          | 46,850               | 53,064               |
| Offices of physicians, dentists, and other health practitioners                    | 71,442,960        | 4.1%                  | 147,792         | 89,943               | 104,805              |
| <b>Paper mills</b>                                                                 | <b>71,112,880</b> | <b>4.1%</b>           | <b>668,930</b>  | <b>73,847</b>        | <b>127,627</b>       |
| Transport by truck                                                                 | 63,377,840        | 3.6%                  | 143,673         | 56,568               | 75,650               |
| Wholesale trade businesses                                                         | 62,011,552        | 3.5%                  | 144,474         | 53,923               | 91,930               |
| Private hospitals                                                                  | 49,252,944        | 2.8%                  | 101,768         | 46,172               | 48,489               |
| <b>Vegetable and melon farming</b>                                                 | <b>47,073,988</b> | <b>2.7%</b>           | <b>208,002</b>  | <b>67,342</b>        | <b>75,049</b>        |
| Employment and payroll only (state & local govt, non-education)                    | 45,255,300        | 2.6%                  | 55,917          | 49,369               | 55,917               |
| <b>Frozen food manufacturing</b>                                                   | <b>36,365,916</b> | <b>2.1%</b>           | <b>303,441</b>  | <b>40,812</b>        | <b>52,655</b>        |
| Food services and drinking places                                                  | 35,618,700        | 2.0%                  | 44,582          | 12,812               | 18,983               |
| Printing                                                                           | 35,192,308        | 2.0%                  | 162,886         | 55,020               | 75,721               |
| Custom computer programming services                                               | 29,755,006        | 1.7%                  | 117,126         | 69,956               | 73,220               |
| Transport by rail                                                                  | 28,459,610        | 1.6%                  | 388,977         | 97,794               | 228,234              |
| Retail Stores - General merchandise                                                | 26,255,652        | 1.5%                  | 51,304          | 21,965               | 32,701               |
| Nondepository credit intermediation and related activities                         | 25,814,818        | 1.5%                  | 122,509         | 45,272               | 70,596               |
| Motorcycle, bicycle, and parts manufacturing                                       | 23,425,944        | 1.3%                  | 650,516         | 84,000               | 121,756              |
| Retail Nonstores - Direct and electronic sales                                     | 22,003,808        | 1.3%                  | 74,382          | 14,866               | 52,685               |
| Construction of new nonresidential commercial and health care structures           | 21,943,696        | 1.3%                  | 137,502         | 42,542               | 48,157               |
| Retail Stores - Motor vehicle and parts                                            | 20,456,634        | 1.2%                  | 72,153          | 42,818               | 53,089               |
| Business support services                                                          | 19,222,954        | 1.1%                  | 86,298          | 42,555               | 57,152               |
| Grantmaking, giving, and social advocacy organizations                             | 17,777,246        | 1.0%                  | 46,742          | 32,393               | 13,434               |
| Real estate establishments                                                         | 17,116,710        | 1.0%                  | 101,876         | 17,798               | 80,380               |
| Monetary authorities and depository credit intermediation activities               | 15,763,679        | 0.9%                  | 156,527         | 42,692               | 112,049              |
| Retail Stores - Building material and garden supply                                | 14,521,384        | 0.8%                  | 78,667          | 31,378               | 50,926               |
| Retail Stores - Food and beverage                                                  | 14,195,517        | 0.8%                  | 48,276          | 19,398               | 29,741               |
| Couriers and messengers                                                            | 14,100,290        | 0.8%                  | 90,694          | 40,445               | 65,878               |
| Construction of other new nonresidential structures                                | 13,788,171        | 0.8%                  | 125,855         | 42,839               | 45,226               |
| <b>Fruit and vegetable canning, pickling, and drying</b>                           | <b>13,157,313</b> | <b>0.8%</b>           | <b>493,747</b>  | <b>43,076</b>        | <b>75,459</b>        |
| Construction of new residential permanent site single- and multi-family structures | 13,070,416        | 0.7%                  | 114,737         | 36,231               | 36,956               |



Table 6. Thirty Largest Industries by Total Income 2008

| Description                                                              | Total Income       | Share of County Total | Revenue Per Job | Labor Income Per Job | Total Income Per Job |
|--------------------------------------------------------------------------|--------------------|-----------------------|-----------------|----------------------|----------------------|
| Insurance carriers                                                       | \$453,002,368      | 16.2%                 | \$277,875       | \$70,405             | \$129,573            |
| Employment and payroll only (state & local govt, education)              | 215,089,696        | 7.7%                  | 53,064          | 46,850               | 53,064               |
| <b>Paper mills</b>                                                       | <b>122,901,816</b> | <b>4.4%</b>           | <b>668,930</b>  | <b>73,847</b>        | <b>127,627</b>       |
| Wholesale trade businesses                                               | 105,720,888        | 3.8%                  | 144,474         | 53,923               | 91,930               |
| Transport by truck                                                       | 84,757,560         | 3.0%                  | 143,673         | 56,568               | 75,650               |
| Offices of physicians, dentists, and other health practitioners          | 83,248,488         | 3.0%                  | 147,792         | 89,943               | 104,805              |
| Retail Nonstores - Direct and electronic sales                           | 77,982,368         | 2.8%                  | 74,382          | 14,866               | 52,685               |
| Real estate establishments                                               | 77,304,656         | 2.8%                  | 101,876         | 17,798               | 80,380               |
| Transport by rail                                                        | 66,419,556         | 2.4%                  | 388,977         | 97,794               | 228,234              |
| Food services and drinking places                                        | 52,774,604         | 1.9%                  | 44,582          | 12,812               | 18,983               |
| <b>Vegetable and melon farming</b>                                       | <b>52,461,236</b>  | <b>1.9%</b>           | <b>208,002</b>  | <b>67,342</b>        | <b>75,049</b>        |
| Private hospitals                                                        | 51,724,916         | 1.8%                  | 101,768         | 46,172               | 48,489               |
| Employment and payroll only (state & local govt, non-education)          | 51,257,760         | 1.8%                  | 55,917          | 49,369               | 55,917               |
| Printing                                                                 | 48,433,384         | 1.7%                  | 162,886         | 55,020               | 75,721               |
| <b>Frozen food manufacturing</b>                                         | <b>46,919,280</b>  | <b>1.7%</b>           | <b>303,441</b>  | <b>40,812</b>        | <b>52,655</b>        |
| Monetary authorities and depository credit intermediation activities     | 41,372,968         | 1.5%                  | 156,527         | 42,692               | 112,049              |
| Nondepository credit intermediation and related activities               | 40,255,156         | 1.4%                  | 122,509         | 45,272               | 70,596               |
| Retail Stores - General merchandise                                      | 39,088,364         | 1.4%                  | 51,304          | 21,965               | 32,701               |
| Motorcycle, bicycle, and parts manufacturing                             | 33,955,332         | 1.2%                  | 650,516         | 84,000               | 121,756              |
| Custom computer programming services                                     | 31,143,350         | 1.1%                  | 117,126         | 69,956               | 73,220               |
| Business support services                                                | 25,816,366         | 0.9%                  | 86,298          | 42,555               | 57,152               |
| Retail Stores - Motor vehicle and parts                                  | 25,363,646         | 0.9%                  | 72,153          | 42,818               | 53,089               |
| Construction of new nonresidential commercial and health care structures | 24,839,830         | 0.9%                  | 137,502         | 42,542               | 48,157               |
| Retail Stores - Building material and garden supply                      | 23,567,704         | 0.8%                  | 78,667          | 31,378               | 50,926               |
| <b>Fruit and vegetable canning, pickling, and drying</b>                 | <b>23,048,584</b>  | <b>0.8%</b>           | <b>493,747</b>  | <b>43,076</b>        | <b>75,459</b>        |
| Couriers and messengers                                                  | 22,967,008         | 0.8%                  | 90,694          | 40,445               | 65,878               |
| Soap and cleaning compound manufacturing                                 | 22,508,076         | 0.8%                  | 2,203,568       | 326,533              | 1,085,669            |
| Retail Stores - Food and beverage                                        | 21,765,230         | 0.8%                  | 48,276          | 19,398               | 29,741               |
| Surgical appliance and supplies manufacturing                            | 20,120,800         | 0.7%                  | 240,205         | 61,670               | 97,688               |
| <b>Dairy cattle and milk production</b>                                  | <b>18,336,316</b>  | <b>0.7%</b>           | <b>138,332</b>  | <b>9,111</b>         | <b>52,402</b>        |

The final part of our analysis is to consider the overall contribution of the water dependent cluster in Portage County. To do this we consider not only the *direct* contribution as outlined in Tables 3 through 6 but also the multiplier effects. By using the full input-output model we can trace how the water dependent industries are interconnected to other sectors in the economy. These interconnections can take two forms. One can best be described as business-to-business transactions and is referred to as the *indirect* effect. This would include potato farmers purchasing new equipment, fertilizer or crop consulting services, among others. The second is related to labor spending wages, salaries and other income in the local economy. For example, farm workers buy groceries at local stores, go to the movies and pays for barber services. These income-related impacts are referred to as the *induced* effect. Add the *direct*, *indirect* and *induced* together to derive the *total* impact. One can compute the water based industry cluster multiplier by dividing the *total* impact by the *direct*.

The summary of the impact analysis is provided in Table 7. Once the multiplier effects are considered the total impact of the water dependent cluster in Portage County is about 8,277 jobs, or 19.1% of total employment within the county. While the bulk of the impact is in agriculture and manufacturing (i.e., the direct effects), all sectors of the economy are “touched” by water dependent industries in the County via the multiplier effect. The implicit multiplier for employment is 1.843 which means for each

additional job added to the water dependent cluster an additional 0.843 jobs are created elsewhere in the County economy.

**Table 7. Water Cluster Economic Impact on Portage County**

| <u>Impact Type</u>              | <u>Employment</u> | <u>Labor Income</u> | <u>Total Income</u> | <u>Industry Sales</u> |
|---------------------------------|-------------------|---------------------|---------------------|-----------------------|
| Direct Effect                   | 4,464.00          | \$208,175,983       | \$329,633,429       | \$1,533,783,676       |
| Indirect Effect                 | 2,163.50          | 91,904,323          | 148,937,153         | 312,474,750           |
| Induced Effect                  | 1,599.50          | 48,152,896          | 92,530,527          | 158,817,679           |
| Total Effect                    | 8,227.10          | 348,233,202         | 571,101,109         | 2,005,076,106         |
| Multiplier                      | 1.843             | 1.673               | 1.733               | 1.307                 |
| Percent of County Total         | 19.1%             | 19.9%               | 20.4%               | 32.2%                 |
| <b><u>Across Industries</u></b> |                   |                     |                     |                       |
| Agriculture                     | 2,483.90          | 83,795,608.0        | 127,549,887.0       | 359,303,773.0         |
| Mining                          | 0.2               | 29,544.0            | 39,317.0            | 64,820.0              |
| Construction                    | 79.6              | 4,286,044.0         | 4,639,128.0         | 8,562,584.0           |
| Manufacturing                   | 2,561.70          | 144,841,353.0       | 232,480,893.0       | 1,281,870,409.0       |
| TIPU                            | 307.8             | 17,903,822.0        | 29,752,026.0        | 55,358,994.0          |
| Trade                           | 862.8             | 34,819,648.0        | 58,818,679.0        | 89,577,120.0          |
| Service                         | 1,866.90          | 58,311,337.0        | 112,798,392.0       | 196,607,413.0         |
| Government                      | 64.1              | 4,245,853.0         | 5,022,805.0         | 13,730,872.0          |

The water cluster accounts for 19.9% of labor income, or \$348 million, and 20.4% of total income or about \$571 million. The slightly larger impact on income than employment (19.9% or 20.4% versus 19.1%) hints at the slightly higher incomes earned in the water cluster industries. The labor income multiplier is 1.673 which means that for every dollar of labor income paid by a water cluster industry an addition 67.3 cents of labor income is generated elsewhere in the County economy. In terms of industry sales, the water dependent cluster accounts for just over \$2 billion or 32.2% of the County's total.

The economic activity generated by the water dependent cluster also generates state and local tax revenues. For 2008 this cluster generated or supported \$17.8 million in property taxes which flows almost exclusively to local governments in the County, \$13.5 million in sales taxes the majority of which flows to state government with a share to county government via the local option county sales tax and \$16.4 million in income taxes which flows exclusively to state government. The total amount of state and local government tax revenues generated is \$55.8 million dollars. This tax analysis represents only one half of a full fiscal impact assessment; the demands placed on state and local governments in the form of highway services, protective services, and public education is not considered. In addition, any changes to state aids to local governments are not considered.

## Conclusions

At the request of the community, this study explored the local economic structure and the role that water resources play. To do this, a study committee defined water dependent industries and analyzed their contribution to the Portage County economy. Led by the UW-Extension the research study team included leaders from the community, resulting in a process that was molded to meet their needs, and conclusions that are credible to the community. The process was not only transparent, it was inclusive. The community provided data and made decisions regarding methodology.

To set the stage, a description of the local economy in terms of past and present conditions was provided. Economic metrics included population growth, changes in number of jobs, types of jobs, and the relative share of jobs in the major employment sectors. Overall, Portage County has seen rapid population and job growth, above state and national averages. Four major industry categories accounting for the majority of employment are: retail trade, manufacturing, finance and insurance, and state and local government.

Compared to U.S. and State averages analysis shows that Portage County is heavily dependent on production agriculture (farming), retail trade, (typically low-wage, part-time employment) in addition to finance and insurance and hotels and restaurants.

At this point, the committee defined the water-dependent cluster to include agricultural production, food processing, and paper production. The analysis shows both industry size and a measure of the inter-relationships between industry sectors based on employment, industry sales, labor income and total income. From here, the contribution of the water-dependent cluster was calculated, both in terms of the direct value and the results of industry inter-relationships, or multiplier effects. This is not the net effect on local government finances; neither the cost of services nor the resulting changes in state aids were studied.

The total impact of the water dependent cluster in Portage County is:

- 19.1% of total employment
- 19.9% of total labor income
- 20.4% of total income, and
- 32.2% of industry sales.

The effect of this cluster provides local government revenue as well:

- 17% of local property taxes, and
- 9% of sales tax (the .5% that stays in the County).

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