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To: Jennifer Brown, KCEDC  
From: Claire Thompson, Kewaunee County UWEX  
Date: March 4, 2013  
Reg: Revised Economic Impact of Kewaunee Power Station: Tri-County Region  
of Kewaunee, Brown, Manitowoc Counties

Enclosed please find the revised economic impact analysis which takes into account actual employment and local spending numbers as shared by Dominion Energy. I worked with Steve Deller at University of Wisconsin Department of Agriculture and Applied Economics to revise the rough estimates originally made in December, 2012.

The Kewaunee Power Station (KPS) contributes to the economy of the Tri-County region in two ways: (1) directly through hiring workers and the direct costs associated with running a nuclear power plant; and (2) indirectly through the electricity produced and consumed by customers. To assess the impact of KPS on the local economy, this study uses a regional input-output model of the Tri-County area using data from 2010 (most current year available).

The scenario under consideration is the contribution of 649 full time workers, the corresponding \$54 million in employee compensation and the other non-labor costs associated with operating a nuclear plant in Wisconsin. The results of this analysis are provided in Table 1.

The scenario also considers the contribution of an average of 850 supplementary workers that are brought in every eighteen months to help facilitate the transfer of spent fuel rods, also known as an "outage." These employees patronize area hotels and restaurants for 3-4 weeks at a time and present an important contribution to the local hospitality industry. Please see attached memo from Deller outlining "Low" and "High" refitting scenarios.

The typical annual operation of the KPS supports a total of 1,114 jobs, \$72.3 million in labor income (wages, salary and proprietor income), and \$85.5 million in total income (labor income plus transfer payments, dividends, interest, rental income, etc.). Total income reflects out-of-state corporate headquarters. We estimate KPS to produce \$589.0 million in Industry Sales with a total effect of \$638.9 million. We did not receive actual numbers from the corporation and are using estimates from the IMPLAN model.

For every 10 jobs in nuclear there are an additional 7 jobs generated elsewhere in the local economy (employment multiplier of 1.7), while for every dollar of labor income paid there is an additional 34 cents of labor income generated elsewhere in the local economy (labor income multiplier of 1.34).

The industry impacted most after Utilities (TIPI), is "Service" which is largely consumer oriented services. This is due to the high employee pay scales driving the "induced multiplier effect": much of the impact comes from relatively highly paid workers spending their wages in the economy.

In addition to generating economic activity as measured by employment, income and industry sales, there are state and local government tax revenues generated. Employees pay income taxes on wages and salaries earned as a result of the multiplier effect, households and firms pay property taxes, and as workers spend their income they pay sales taxes. The amount of economic activity supported by the direct operation of the nuclear plant generates about \$6.1 million in state and local government revenues. Sales taxes (the bulk of which flows to state government with some flowing to certain county governments) represents over \$1 million, income taxes (all flows to state government) represents over \$400 thousand, and property taxes (which flows to local governments, predominately K12 public education) represents \$1.3 million.

	Employment	Labor Income	Total Income	Industry Sales
Plant Itself	649	\$ 54,044,596	\$ 54,044,596	\$ 589,012,680
Direct Effect	48	\$ 2,564,146	\$ 2,959,338	\$ 3,116,671
Indirect Effect	0	\$ 18,815	\$ 27,508	\$ 47,157
Induced Effect	417	\$ 15,722,168	\$ 28,517,920	\$ 46,722,732
Total Effect	1,114	\$ 72,349,725	\$ 85,549,362	\$ 638,899,240
Multiplier	1.716	1.339	1.583	1.085
Agriculture	0	\$ 9,453	\$ 17,794	\$ 46,972
Mining	-	\$ 498	\$ 1,136	\$ 1,704
Construction	3	\$ 202,207	\$ 274,358	\$ 421,729
Manufacturing	3	\$ 154,561	\$ 209,587	\$ 851,355
TIPI	649	\$ 54,044,596	\$ 54,044,596	\$ 589,012,680
Trade	121	\$ 3,707,153	\$ 6,251,241	\$ 9,034,504
Service	276	\$ 10,748,881	\$ 20,134,244	\$ 33,421,249
Government	51	\$ 2,778,383	\$ 3,172,147	\$ 3,577,028
Sales Taxes	\$ 1,019,496			
Income Taxes	\$ 413,120			
Property Taxes	\$ 1,335,361			
Other	\$ 476,883			
Plant PILT	\$ 2,887,667			
Total State & Local Govt	\$ 6,132,527			

- Direct effects – Direct effects refer to changes in production to respond to a change in demand for a good or service. This is the most basic phenomenon associated with monetary transactions;
- Indirect effects – Effects from business-to-business transactions. Note that these effects only include backwards linkages in the supply-chain. For example, money spent in a county to increase inventory as the result of a spike in demand represents the indirect effect of economic activity;
- Induced effects – Effects resulting from wages and salaries paid to employees which are in turn spent in the local economy.
- Multipliers-- Represent total effects divided by direct effects to represent the change in a variable due to an exogenous variable. For example, the plant might hire 100 employees creating 100 jobs that might not have otherwise existed. Due to peripheral needs to serve these employees, such as food, goods and utilities (things that might stimulate extra economic activity within the county), the number of jobs created is greater than 100. In this case, it would be 172, for instance. Therefore, our employment multiplier is  $100/172 = 1.716$  (rounding up).



Department of Agricultural and Applied Economics  
515 Taylor Hall – 427 Lorch St.  
Madison, WI 53706  
(608) 263-6251  
(fax) (608) 262-4376  
scdeller@wisc.edu

February 25, 2013

To: Claire Thompson

From: Steven Deller

A handwritten signature in black ink, appearing to read 'S. Deller', written over the printed name 'Steven Deller'.

**Re: Plant Refitting Impacts**

I was able to talk to some colleagues around the country about how to look at the potential impacts of the 18 month “outages”. The advice was to treat it as a special reoccurring construction project (plant refitting). The general census was that ex-ante analysis of construction impacts estimates suggest that the estimated impacts are almost always larger than what actually happens. The reason is that many of the workers that come into the region to work on the project send most of their earnings “back home” and spends very little in the local economy.

The general scenario is:

\$25/day food	\$25
\$60/night hotel	\$60
\$5/day gasoline	\$5
\$5/day general merchandize	\$5

What we generally find is that the workers “hole up” in their hotel rooms, work very long hours, order a pizza and buy some beer. They need to buy gas for commuting to the site and might spend a little bit at the local “Wal-Mart” on items such as socks, etc. The bulk of their earnings (wages) are shipped home.

Now there are two sets of ranges that the company gave us: (1) 650 to 1000 workers and (2) anywhere from three to four weeks. So I elected to conduct a “low-high” analysis to provide a range of potential impact of having these workers come into the region. The “low” was 650 workers for three weeks and the “high” was 1000 workers for four weeks.

The impacts are:

<b>Low Refitting Scenario</b>		<b>Employment</b>	<b>Labor Income</b>	<b>Total Income</b>	<b>Industry Sales</b>
Direct Effect		16	\$317,384	\$529,557	\$1,189,324
Indirect Effect		4	\$176,426	\$264,954	\$470,981
Induced Effect		3	\$104,096	\$187,119	\$307,447
<b>Total Effect</b>		<b>23</b>	<b>\$597,906</b>	<b>\$981,629</b>	<b>\$1,967,752</b>
<b>High Refitting Scenario</b>					
Direct Effect		33	\$651,045	\$1,086,271	\$2,439,640
Indirect Effect		8	\$361,899	\$543,495	\$966,115
Induced Effect		6	\$213,531	\$383,833	\$630,660
<b>Total Effect</b>		<b>47</b>	<b>\$1,226,474</b>	<b>\$2,013,599</b>	<b>\$4,036,415</b>

I have labeled them "refitting" because this is really what they are doing during the "outages": they shut down so that they can refit some of the "hardware" such as steam pipes.

It is important to note that the one thing that came through "loud and clear" from my discussion with colleagues across the country is that these "construction impacts" are almost always overly optimistic. So even though we have a "low-high" range, these are both probably upper bounds on what the real impacts might be.