STRATEGIC } INSIGHTS

Three perspectives on energy demand and the manufacturing sector: The Good, the Bad and the Unanticipated

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The question of where energy demand will go after this recession is one that must be plaguing our Ontario electricity system planners, the IESO, and developers of new generation. To be sure, electricity demand is currently below what was forecast only a year ago. Compared to the same month last year, the February 2009 average hourly demand in Ontario was down by over 1000 MW. Anyone active in the sector must be looking for indications of how long this trend is likely to continue and what is realistic to expect in terms of electricity demand after the recession is over.

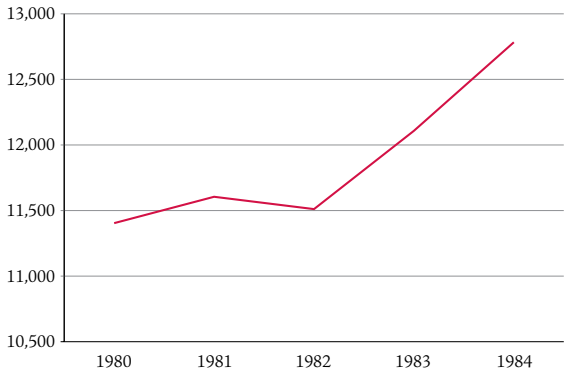
When one considers these questions, it is critical to look at the manufacturing sector in Ontario. More than 50 per cent of the electricity in Ontario is used by large volume customers. Of this 50 per cent, a significant portion is in the manufacturing sector.

Trend Analysis of Electricity Demand during the last two Recessions

If we examine electricity demand during the past two recessions, an interesting picture emerges. Once in the early 1980s, and again in the early 1990s, a recession caused a marked decrease in electricity demand. These "dips" were followed by a rebound in electricity demand as soon as the recessions were over. Considering the overall trend line in load growth, the post-recession growth and the pre-recession growth follow a relatively upward line. From a load growth perspective, the post-recession growth trend makes it appear as though the recessions never occurred.

The question we must ask is whether this historical trend will show itself again post-recession? (See figure 1.)

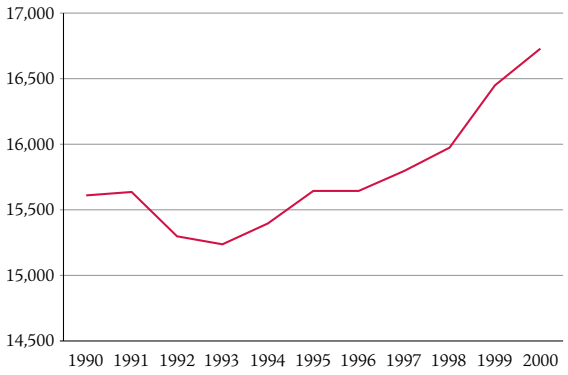
Figure 1: Ontario Average Hourly Demand (MW): 1980 – 1984



Source: IESO

In the 1980s recession, demand in electricity returned quickly (within about a year and a half). However, the recession in the 1990s took longer to recover; electricity demand did not reach 1989 levels until 1993, a full four years after demand dropped. That said, the overall trend in the 1990s echoes the 1980s recession in that once the average demand did return to previous levels, it did so with relative gusto. Drawing an overall trend line for Ontario's average electricity demand between 1988 and 1998 would look as if the recession had never occurred. (See figure 2.)

Figure 2: Ontario Average Hourly Demand (MW): 1990 – 2000



Source: IESO

The manufacturing sector in this recession. Will it bounce back post–recession?

The manufacturing sector is the basis of Ontario's economy. Manufacturing directly accounts for 20% of Ontario's economic activity. Moreover, Ontario's energy-intensive manufacturers are centred on a handful of major sectors: automotive (22%), primary and fabricated metal products (15%), chemical and petroleum manufacturing (7%), and plastic and rubber products (7%). Manufacturing, as a whole, employed 17.5% of Ontarians in the pre-recession era.

Are the elements surrounding the manufacturing sector similar to those of previous recessions? In other words, are we experiencing a fundamental shift in the foundation of Ontario's economy, which will result in a very different future for our electricity demand? Will the numerous conservation programs being initiated actually have a permanent effect on Ontario's large manufacturers?

In answering this question, I've examined three different perspectives:

Perspective one: Electricity demand growth will return to pre-recession levels

One could argue that we should expect electricity demand to return to pre-recession upward trends. The analysis of past recessions suggests that electricity demand rises to expected levels after a recession is over. In the past two recessions, electricity demand rose substantially after the recession making it seem as though the recession never occurred from a load growth perspective.

This perspective, while a valid one to consider, is in my opinion somewhat naive. We know from the 2007 Annual Report of the Canadian Industry Program for Energy Conservation that mining, manufacturing and construction industries improved their energy intensity by an average of 2.0 percent per year between 1990 and 2005. Furthermore, this trend towards reducing energy intensity is expected to continue in the manufacturing sector because it is intrinsically linked to electricity cost savings for industry, which increases profit margin. As a result, the electricity system will likely experience less overall demand growth as a general trend.

Perspective two: A fundamental shift is occurring in Ontario's economy whereby the current electricity demand drop is here to stay as new sectors take over

Another perspective, which is supported by many influencers in the electricity sector, is that the current drop in electricity demand is evidence of a fundamental shift in Ontario's economy. This shift will result in a move away from our economy's manufacturing sector base towards more of an economy based on services and high tech products.

There are many supporters for this perspective. First, in the pre-recession era, competition from manufacturers in Asia and other global regions was causing many traditional Ontario manufacturers to lose profit margin. Asian manufacturers were competing head on with Ontario's finest and winning a large portion of market share in key sectors to our economy such as automotive parts. This was exacerbated by increasingly high commodity rates in areas such as steel and other raw materials. Ontario manufacturers were already in trouble before the recession hit.

When the bubble burst late last year, the proverbial straw broke the camel's back. The resulting downfall affecting our manufacturing sector has had the undesirable effect of factories closing, layoffs occurring and production being brought to a snail's place. Given the situation pre-recession, is it surprising? Many would argue not. However, what is surprising is the speed with which this occurred.

The proponents of this perspective argue that it is only a matter of time before Ontario manufacturers pick up and move out to less expensive jurisdictions. We already know that electricity prices are on the rise. Given the Ontario Government's Green Energy Act and the high value it places on getting more renewable generation in the system, we can assume that higher electricity prices are here to stay.

Moreover, labour rates in Ontario are expected to skyrocket. Our aging demographic is creating a phenomenon where the skilled workers we need for the mid to far future will just not be there. For instance, the Electricity Sector Council noted in the 2008 APPrO Conference that one third of the workforce in the electricity sector will be eligible to retire by 2015. Based on my firm's client experience, this example supports what we have seen in the manufacturing sector as well.

All these forces combined could suggest that a fundamental shift in our economy has begun – one that will forever change the nature of our manufacturing base. With this shift, we can expect the future of electricity demand growth to be significantly different than that of the pre-recession era. If followed to its logical conclusion, believers in this perspective would expect that electricity demand will continue to remain low into the future as large manufacturers come off of the Ontario grid and relocate elsewhere.

While tempting as it may be to agree with my esteemed colleagues that hold this view, there is in fact a third perspective that suggests this future scenario will likely not take place.

Perspective three: A resurgence of electricity demand will occur post-recession at lower than expected growth rates.

From my research and the many interviews I have conducted recently with manufacturing companies, a third perspective emerged that suggests electricity demand will return to a growth mode in the post-recession era – whenever that may be. This growth, however, will not follow the trajectory trend of past recessions. While rising above the "dip", the demand growth curve will likely increase at a rate that will be less than what it was in the pre-recession era. In other words, if electricity demand was growing at an average of 2% per year, we can expect that demand will return to pre-recession levels but will continue to grow at a less than 2% per year rate after that.

There are a number of persuasive arguments that support this perspective:

1. The pre-recession trend of moving manufacturing facilities to other countries that have lower labour rates has slowed down considerably. This is due to three critical reasons. First, transportation costs have virtually tripled in the past few years. As a result, the lower labour rates for

manufacturing goods have been offset by higher transportation costs. The competitive gap between goods manufactured in Ontario and those manufactured in other regions (e.g. China) is lessening.

Second, quality issues have been uncovered with many components manufactured in jurisdictions with low labour costs (e.g., tainted toys with lead paint). Buyers of these manufactured goods are finding it increasingly expensive to deal with these quality issues and are re-opting to pay higher prices for quality goods manufactured in Ontario.

Finally, manufacturing is a sector where there are high barriers to entry due to high capital costs. Given the higher transportation rates and quality issues, many companies are making decisions to keep their manufacturing plants in Ontario because of the high capital costs that are already sunk. While some plant closures are occurring, they are often those facilities that did not manufacture their company's "base" or "primary" components. These "head office" plants have for the most part remained open and will likely continue to do so.

2. Conservation initiatives are being undertaken. In interviews with manufacturing companies, the vast majority stated that they have implemented conservation initiatives. Many have had energy audits done and have put into action programs to reduce their consumption to some extent (e.g., redirected lights so that they only use them where work is being done at that time). They have undertaken these initiatives because managing electricity costs makes good business sense. In a recession, it is more important than ever to examine where to save costs.

3. Conservation will not make a substantial dent in electricity demand from the manufacturing sector for the time being. The success of conservation in the manufacturing sector is closely tied to capital replacement. With the dried up credit market, most manufacturers cannot find the required funding to replace older machines with newer, more energy efficient ones. In addition, profit margins have shrunk amongst manufacturers. These two factors combined have resulted in fewer capital replacements. Indeed, according to the Canadian Manufacturers and Exporters, there is a plateau in the energy efficiency side of manufacturing due to the credit crisis. Any current investments are being geared towards making their products "greener" to the public, and hence more marketable.

   Many manufacturers did state that they will eventually implement some further conservation measures, but that these would occur very gradually. Ultimately, they will not fundamentally change their behaviour as part of this recession, and they fully expect their own production levels to return once the recession is over.

The above three points suggest that electricity demand will return to pre-recession growth levels eventually, but will grow at a slower rate after that, due to the conservation culture that is starting to take hold within manufacturing companies.

In considering the three perspectives on the future of electricity demand growth and manufacturing, it is important to be careful and not get carried away by current recessionary circumstances. It is easy to predict doom and gloom for the manufacturing sector given the realities of today's credit environment. However, it is also important to remember that the heart of Ontario's manufacturing base continues to be strong. The changing circumstances within lower cost jurisdictions provide even greater reasons for buyers to support Ontario-based manufacturers' goods. Fundamentally, I believe Ontario's manufacturing base will survive this recession relatively intact.

Manufacturers need electricity to operate. Conservation measures are critical to maintaining a sustainable and greener environment, and they do have an important place in making Ontario's manufacturing sector more efficient and cost effective. However, these initiatives will be challenging to implement in today's environment. As a result, expect electricity demand to continue to grow in the post-recession era based on a manufacturing sector that will remain in Ontario – even if that growth may be less than pre-recession forecasts.

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