

# **A Portfolio Approach to Securing Internal Financing for Energy Efficiency**

*Evelyn Lundhild, IESO  
Ian Shaw, ArcelorMittal Dofasco*

## **ABSTRACT**

The Ontario Independent Electricity System Operator (IESO), formerly the Ontario Power Authority (OPA) has worked closely with one of Ontario's largest electricity users to develop energy efficiency projects within its facilities through provision of funding through the Industrial Accelerator program. The initial approach was to develop each project individually and secure corporate financing. Significantly greater success was encountered by taking a portfolio approach and presenting a major multi-year capital program to the leadership of both organizations to secure ongoing funding for a series of projects that would allow the customer to revitalize their manufacturing assets and move their facility to a leadership position in sector energy intensity.

## **INTRODUCTION**

ArcelorMittal is the world's leading steel and mining company with operations in more than 60 countries. In 2014 its revenues were more than \$80 billion US and its crude steel production was more than 85million tonnes. ArcelorMittal Dofasco (AMD), with 5,400 employees in Canada, is one of North America's leading steel producers and suppliers of high quality flat-rolled steel products. Steel has been produced at the Hamilton, Ontario site since 1912 and the site has annual steel shipments of 4.5 million tonnes. Energy accounts for approximately 25 percent of the cost of the finished product making the efficient management and use of energy a critical factor to the company's financial success.

The Ontario Power Authority (OPA) was established in 2004 to manage long term resource and infrastructure planning and procurement for the Ontario electricity market and to oversee the delivery of electricity conservation programs in the province. The OPA was merged with the Independent Electricity System Operator (IESO) as of January 1, 2015.

The IESO works closely with local distribution companies (LDCs) to design and deliver electricity conservation programs to their customers and manages the funding for their programs. The province of Ontario has established a target for the LDCs for the 2015-2020 time period of 7 TWh of electricity savings across the province. In addition the IESO designs and delivers conservation programs directly to the large entities like AMD that are directly connected to the provincial grid. The provincial energy savings target for the transmission connected customer base is 1.7 TWh by 2020.

The Industrial Accelerator Program (IAP) was launched in 2010 to encourage the large transmission connected industrial customers in Ontario to make capital investments in energy

efficiency. The program offers incentives for capital investments that will lead to long term energy efficiency gains. Incentive rates of up to 70% of project costs or \$230/MWh of annual energy savings are offered, whichever is lower. In addition the program offers full funding of engineering studies required to develop the project and determine the budget and energy savings target for the project (recovered from the project incentive if the project proceeds.) There are roughly sixty facilities in Ontario that are directly connected to the grid and are eligible for the program. AMD, as one of the largest electricity users in the province, was one of the key target customers for the program, and was consulted early on to provide feedback on the design of the program.

The cash flow component of the incentive funding was a critical element in the design of the IAP. It was identified early on that securing funding early in the project lifecycle was critical to getting these large capital projects off the ground. The IAP incentive structure is designed such that the participant can access the funding in increments across the construction phase of the project rather than waiting until the end of the project. Funding can be disbursed as 25% on initial approval, 25% once 25% of project is completed, 25% once 50% of project is completed, and the final 25% once the project budget is fully completed. Ten percent of each payment is held back until the savings have been demonstrated through one year of project operation after completion.

AMD participated in the IAP from the beginning of the program. Its early approach of securing internal support and financing on a project by project basis will be compared and contrasted with its later, more successful approach of seeking senior management support for a portfolio of energy saving initiatives.

## **INITIAL APPROACH**

While AMD has historically undertaken numerous non-capital energy efficiency initiatives including training and education and efficient operating procedures, large capital investments were required to produce the greatest energy usage reductions and efficiency gains. The challenge was to make its energy efficiency projects financially sound. AMD has viewed the IAP as a key enabler in advancing energy objectives and addressing financial challenges. AMD participated in the program design process as a key stakeholder providing feedback on program elements and was one of the first participants in the program. Initially, AMD developed projects individually on a case by case basis through the traditional project development process. In some cases, they used OPA funding to develop engineering studies that demonstrated project feasibility, or in other cases they completed feasibility studies in house. Once the studies were complete, projects were developed and submitted to the OPA for funding approval and then to AMD management for confirmation of capital commitment before the project could move ahead. During this period AMD's familiarity with the IAP requirements increased making subsequent submissions more efficient.

Initial opportunities identified and implemented included:

- Variable frequency drives (VFD) for large fans in process and environmental systems

- Rationalizing Air and Nitrogen compressor systems – elimination of large numbers of old inefficient compressors and replacement with fewer, more efficient machines
- Technology replacement and upgrade of dewatering equipment
- Upgrade and spray pressure reductions for process water cooling systems
- Installation of a CHP system using by-product gases from the steelmaking process by leveraging excess capacity in existing steam boiler system

## COMPETING FOR FUNDS WITH OPERATIONS

As in most manufacturing businesses, all improvement projects compete based on their financial return. Most energy efficiency improvement projects provide project returns in the range of 3 to 7 year paybacks. The IAP incentives change the business case dramatically through staged incentive dispersal at key milestones during the implementation of the project. These capital injections affect the internal rates of return, moving projects into a sub 2 year payback range, enabling projects to effectively compete for capital. Through this key fund dispersal element of the IAP, AMD was able to create a portfolio of energy projects that were near “cash neutral” over the project life.

However, when proceeding on an incremental basis, each project had to compete for its share of a limited capital budget for the year. Other projects that were critical to operations or led to increased production capacity were often viewed as more strategic to long term business health and were prioritized accordingly. The fixed pool of capital for the site was often constrained by economic conditions.

## PORTFOLIO APPROACH

While progress was made using the initial approach, it was suboptimal in the eyes of both IESO and AMD management teams. Each of the individual projects listed above were brought forward to the management team without a contextual framework or a vision for how they fit into AMD’s larger program and facility objectives. Much time was invested in justifying the projects, seeking and reconfirming approvals as the projects were developed. It was difficult for both organizations to effectively forecast and budget for expected capital requirements and the resulting project benefits on completion.

At the suggestion of AMD leadership, a portfolio approach was developed that incorporated a long term vision of energy usage goals and capital spending required to achieve the goals.

### *Holistic approach bundling multiple projects*

Through a holistic, strategic approach, the energy team packaged together a bundle of projects that was large enough to receive high level management attention and commitment. The business case for the projects included long term financial projections of cash flow for the capital investment as well as projections of energy costs. They were also able to benchmark their facility against competing facilities both internally and externally and show that through the project portfolio they could approach best in class energy cost per tonne of steel produced.

The group was able to demonstrate that a portfolio of projects, that had been developed to the stage that financial and energy savings projections could be made, could have a strategic impact on the company's operations. The package of projects, if completed, could make a significant impact on energy cost per tonne of steel produced. This in turn impacted the facilities' competitive position both inside and outside the global organization.

The combination of the IAP funding and the portfolio approach offers significant leverage to the company's funds. While the company must make a minimum capital investment, a significant portion of the funds come from the combination of the available utility incentives and the energy savings generated by the projects as they are brought into service. When the portfolio is allowed to include the expected bill savings from ongoing projects in their cash flow modelling it enables the company to run a series of staggered projects simultaneously. By the time a later starting project in the portfolio needs cash, the first project is generating savings that can be used for financing. When capital investment is needed for a new project there are now two additional income streams: the IAP incentives and the actual energy savings from current projects. The payment streams make it easier for a large corporation like AMD to support and fund these energy projects. By managing project schedules, the incentive payments can be timed to make the project portfolio have cash neutral spending even in difficult economic times.

High level management commitment to the portfolio meant that funding could be budgeted over multiple years and was not going to be reallocated except in extreme circumstances, allowing the energy team to plan its projects and resourcing over the long term. Once management support for the long term portfolio approach was received, the company was able to approach the IESO to get similar long term support for the plan. The IESO was able to demonstrate to its senior management a significant planned partnership that demonstrated the value that the program was delivering to stakeholders. The IESO was able to commit to the company that funding would be available long term for the planned set of projects provided that all necessary technical studies were completed and data was provided to support individual projects.

Table 1 below shows an example of the portfolio approach that indicates the cash flow opportunities that make the portfolio attractive to senior management.

**Table 1: Cash Flow example (all figures in millions of dollars)**

	Capital	IA Incentive	Net Capital	Savings	Payback w/o IA	Payback w/ IA
Project 1	1.7	0.9	0.9	0.5	3.4	1.7
Project 2	8.5	5.5	3.0	2.8	3.0	1.1
Project 3	6.8	2.7	4.1	2	3.4	2.0
<b>Totals</b>	<b>17</b>	<b>9.1</b>	<b>7.9</b>	<b>5.3</b>	<b>3.2</b>	<b>1.5</b>

	Year	1	2	3	4	5	Total
<b>Capital</b>	Project 1	0.5	0.5	0.7	0.0	0.0	1.7
	Project 2	0.0	4.0	4.5	0.0	0.0	8.5
	Project 3	3.4	3.4	0.0	0.0	0.0	6.8
	<b>Total Capital</b>	<b>3.9</b>	<b>7.9</b>	<b>5.2</b>	<b>0.0</b>	<b>0.0</b>	<b>17.0</b>
<b>IA Incentives</b>	Project 1	0.3	0.3	0.4	0.0	0.0	0.9
	Project 2	0.0	2.6	2.9	0.0	0.0	5.5
	Project 3	1.4	1.4	0.0	0.0	0.0	2.7
	<b>Total Incentive</b>	<b>1.6</b>	<b>4.2</b>	<b>3.3</b>	<b>0.0</b>	<b>0.0</b>	<b>9.1</b>
<b>Savings</b>	Project 1	0.0	0.0	0.5	0.5	0.5	1.5
	Project 2	0.0	0.0	0.0	2.8	2.8	5.6
	Project 3	0.0	0.0	2.0	2.0	2.0	6.0
	<b>Total Savings</b>	<b>0.0</b>	<b>0.0</b>	<b>2.5</b>	<b>5.3</b>	<b>5.3</b>	<b>13.1</b>
<b>Net Cash Flow</b>	Project 1	-0.3	-0.3	0.2	0.5	0.5	0.7
	Project 2	0.0	-1.4	-1.6	2.8	2.8	2.6
	Project 3	-2.0	-2.0	2.0	2.0	2.0	1.9
	<b>Total Net Cash</b>	<b>-2.3</b>	<b>-3.7</b>	<b>0.6</b>	<b>5.3</b>	<b>5.3</b>	<b>5.2</b>

## RESULTS OF PORFOLIO APPROACH

The portfolio approach has provided a number of benefits to both organizations. Earlier insights are available regarding the scope and magnitude of conservation opportunities and projects, allowing for better management and distribution of resources. Agreement in principle (meaning that both AMD and IESO were able to commit to funds being made available when acceptable projects were presented within a given time frame) on portfolio level funding enables both organizations to have greater clarity on future budget requirements and greater comfort that funds will be available when needed. AMD is able to manage its engineering resources more optimally. The IESO is able to count on a level of program participation that allows it to maintain resources in place over the long term.

Increased financial certainty has allowed AMD to move projects forward more quickly and provides increased impetus to deliver results. Greater project financial certainty enables the company to plan for larger and more comprehensive projects than one off equipment retrofits. These projects have a greater impact on the operation and in return deliver greater credibility for

the energy team. It is easier for the company to dedicate resources in the early stages of large projects knowing that there is a higher likelihood of success for the project.

Figure 2 below illustrates that AMD (the third customer from the left in the picture) has submitted more applications to the IAP program for energy efficiency incentives than any other eligible customer.

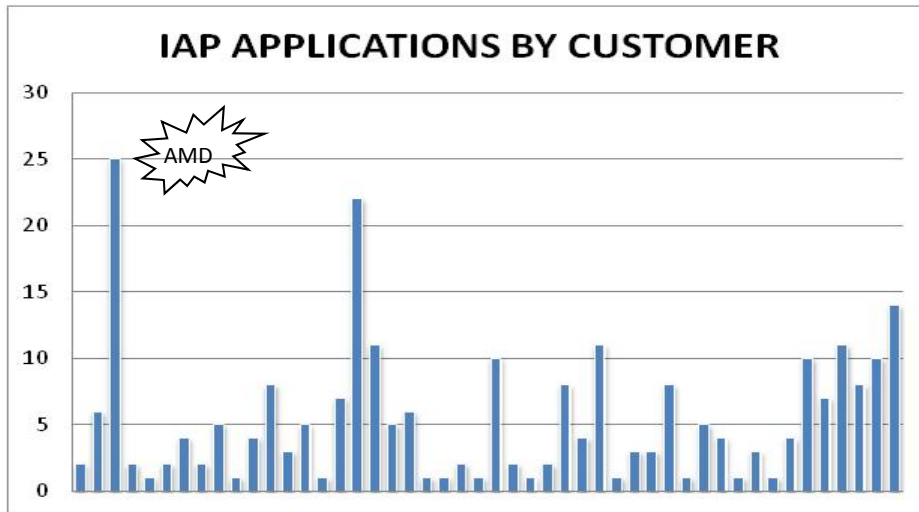


Figure 2: Number of applications to the Industrial Accelerator Program by customer. AMD is the third customer from the left side of the figure.

AMD has also successfully delivered more energy savings than any other participant in the program, as shown in Figure 2 below.

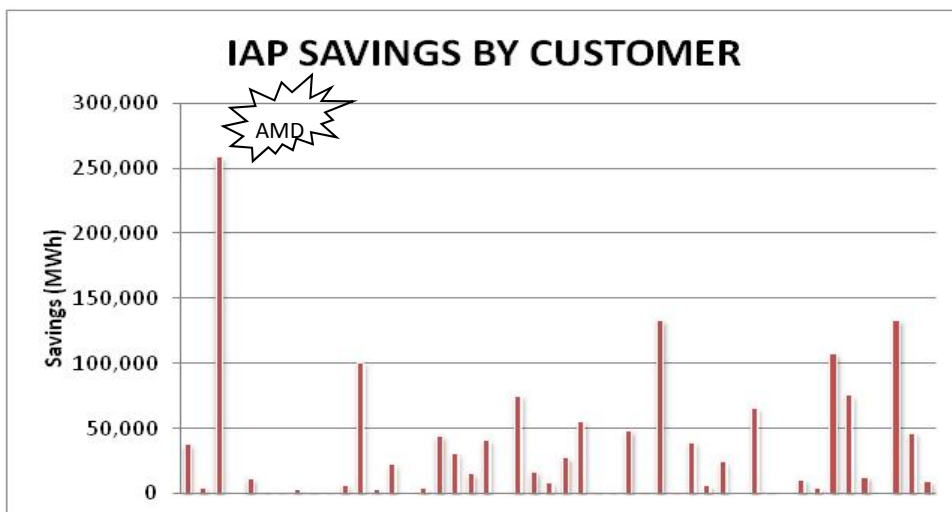


Figure 3: Energy savings program to date by customer for the Industrial Accelerator Program. AMD is the third customer from the left in the figure.

## LONG TERM IMPACT

The portfolio approach has brought clear benefits to both organizations. AMD has been able to make a large multi-year commitment to developing energy savings projects with a streamlined approval in principle from senior management. The overall business case for the portfolio has been clearly articulated and accepted by all stakeholders. This allows for increased efficiency by the project teams as they know they have long term commitments and can distribute resources accordingly. Individual project timing within the portfolio can be adjusted to meet either shifting capital disbursement goals or project needs. This minimizes the cash flow impact of the overall portfolio on operations during the construction period. It also enables effective forecasting and budgeting of capital requirements. For the IESO, the approach has enabled forecasting of incentive budgets and reporting of savings, which has brought stability to the program through a strong base of expected results.

Figure 4 below illustrates the projected impact of implementing the current portfolio of projects on AMD's electricity bill over time. Through this set of capital improvements they will have mitigated projected impacts of electricity cost increases forecasted in the latest long term energy plan published by the government. Figure 5 shows the total projected impact on the site peak demand.

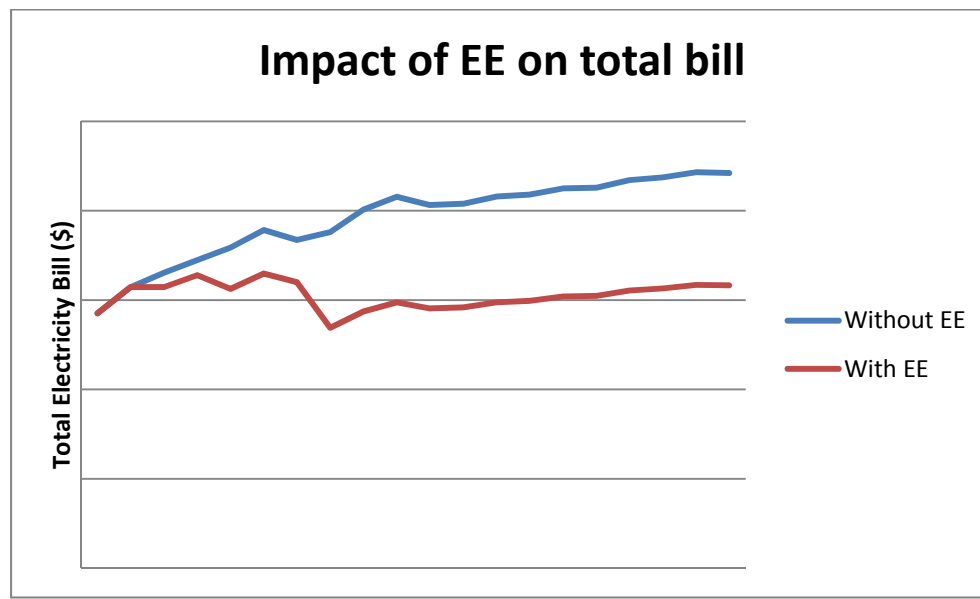


Figure 4: Projected bill impacts of energy efficiency portfolio of projects

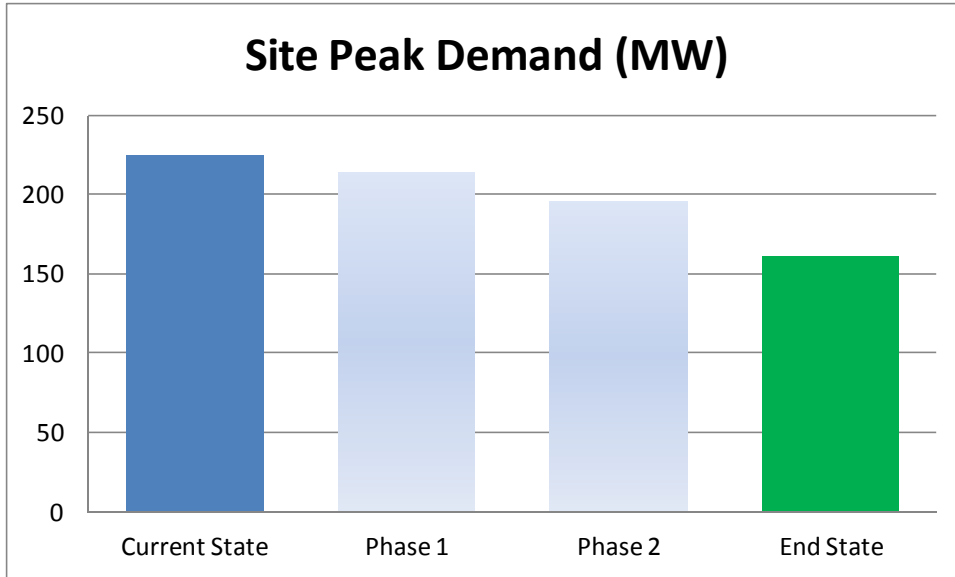


Figure 5: Site peak demand projection

## CONCLUSIONS

By taking a portfolio approach and considering the impact of both energy efficiency incentives available from the IESO and the resulting bill savings from the implementation of the capital projects, AMD has been able to drive a much deeper and more comprehensive program of capital retrofits with a much larger impact on their overall business competitiveness. By supporting this approach and giving “approval in principle” to the overall portfolio, the IESO has been able to drive superior program results from this large energy user.