

CASE STUDY 5

Using a capital lease to finance voltage optimisation



SCENARIO **New equipment**

TECHNOLOGY TYPE **Voltage optimisation**

Situation

Company XYZ runs a manufacturing facility that uses a wide variety of equipment including a large amount of electric motors. The company is considering voltage optimisation to generate energy savings at this site. This involves installing a piece of equipment at the main electrical supply to the site to improve the electrical characteristics including:

- Reduce the supplied voltage from the typical level around 242V to the more common input required by most equipment of 220V
- Reduce phase imbalances in the three phases of electrical supplies, improving the efficiency of AC motors significantly.

How does the energy efficiency system compare to the standard system?

The company first determines the financial impact of installing the equipment, as compared to business as usual, by calculating the expected cash flows and financial impact of each scenario. The lifetime cash flows are based on the following costs, electricity use and lifetime for each system.

Equipment type	Business as usual	EE
Cost to install (\$)	\$0	\$40,000
Operation and maintenance cost (\$ p.a.)	\$0	\$1,000
Electricity use (kWh p.a.)	1,700,000	1,500,000
Equipment life (years)	N/A	50
Electricity cost reduction in first year from EE (\$)		\$40,000
Simple payback period for EE (years)		1.0

Annual cash flows comprise the following:

- In the first year, the cost of installing the equipment
- In all years, the operating costs (including operation and maintenance, plus electricity costs) and tax impact of purchasing the equipment. The tax impact is the change in tax payable due to the change in operating costs and depreciation, which are tax deductible
- Electricity rate of \$200/MWh in year one, increasing each year by 2% (excluding inflation).

Electricity cost reduction
\$40,000
 in the first year

“ The company determined that it would be better off by about **\$331,000** over 50 years ”

The company used these annual cash flows to calculate the following NPVs of each scenario.

Item	NPV
Business as usual	-\$3,197,467
EE system	-\$2,866,311
Difference	\$331,156

The company determined that it would be better off by about \$331,000 over 50 years if it invested in voltage optimisation. While the business would need to invest in new equipment, the voltage optimisation results in much lower electricity costs and lower operation and maintenance costs throughout its life.

Based on this financial analysis, the company chooses to install voltage optimisation.

What is the effect of Energy Savings Certificates?

If company XYZ installs voltage optimisation it could generate additional value by creating ESCs through the NSW Energy Savings Scheme.

XYZ calculated the number of ESCs it could create and the money it would receive from these certificates, less the tax it would need to pay on the sale of ESCs. It used the Project Impact Assessment with the Measurement and Verification Method to determine the number of ESCs it could create. The potential net revenue from the ESCs was estimated at about \$4,900, further increasing the value of the energy efficient system.

For more details on the assumptions and calculations XYZ used, refer to the cash flow model accompanying this finance guide.

How do the various energy efficiency and renewables finance options compare?

The company calculated the expected cash flows and their NPVs for each finance option, including and excluding the expected value of generating ESCs. The results were as follows.

Finance option	NPV, no ESCs	NPV with ESCs	NPV rank	Comment
On-bill financing	\$332,287	\$339,281	1	
Commercial loan	\$331,073	\$338,068	2	
Capital lease	\$330,328	\$337,323	3	
Self funded	\$331,156	\$336,052	4	
Operating lease	\$86,805	\$93,799	5	
Environmental Upgrade Agreement	N/A	N/A		Not considered as the project is not in a council area where Environmental Upgrade Agreements are available
Energy Efficient loan	N/A	N/A		Not considered as the project does not meet the minimum finance amount criteria

On-bill financing results in the highest NPV; however the company does not purchase energy from Origin Energy or AGL and does not wish to change energy retailers, so it will not seek this finance option. The next best options are commercial loans and capital leases. The company would prefer a finance option with fixed finance repayments to provide more certainty when it develops its budgets. It therefore decides to seek a capital lease to finance its voltage optimisation project.

FINANCE OPTION SELECTED

Capital lease

NEXT STEPS

Refer to the process outlined in Section 5.1