

CASE STUDY 11

Using an Energy Efficient loan to finance a wind turbine system

SCENARIO **New power generation system**

TECHNOLOGY TYPE **Wind turbine**

Situation

A meat processing plant owner is investigating ways to reduce the amount of electricity it purchases from the grid. The plant is located in a remote regional area with frequent supply interruptions. The site is located in an area with a good wind resource and sufficient space for a small wind turbine. The owner decides to investigate installing a small wind turbine with a system capacity of 100kW.

How does the renewable energy system compare to business as usual?

The company first determines the expected financial impact from installing the renewable energy system to offset its current energy costs. The lifetime cash flows are based on the following costs, energy generation and lifetime of the system.

Equipment type	Value
Cost to install (\$)	\$400,000
Electricity generation (kWh p.a.)	262,800
Equipment life (years)	25
Electricity cost reduction in first year (\$)	\$52,560
Simple payback period for (years)	7.6

Annual cash flows comprise the following:

- The cost of installing the equipment
- In all years, the tax impact of purchasing the equipment. The tax impact is the change in tax payable due to the reduction in electricity costs and the increase in depreciation, which are tax deductible
- Creation of Renewable Energy Target certificates
- Electricity rate of \$200/MWh in year one, increasing each year by 2% (excluding inflation).

Electricity cost reduction
\$52,560
in the first year

“The company determined that the value of the certificates created is about **\$39,350** over the life of the system”

The company used these annual cash flows to calculate the following NPV of installing the renewable energy system.

Item	NPV
Renewable energy system	\$116,563

As the NPV is positive, the company determined that it would be financially better off if it invested in the wind turbine, since the expected reduction in the cost of electricity purchased from the grid over the life of the system exceeds the cost to purchase and install it. In addition, installing a wind turbine will improve the reliability of electricity supply to the plant.

Based on this, the company chooses to install the wind turbine. The installation also reduces their exposure to future energy price rises and supply interruption.

What is the effect of Renewable Energy Target certificates?

If the company installs the wind turbine system it could generate additional value by creating LGCs through the Federal Renewable Energy Target. LGCs can be created when a wind turbine of more than 10kW capacity is installed; below this capacity, STCs can be created.

The company calculated the number of LGCs it could create and the money it would receive from these certificates, less the tax it would need to pay on the sale of LGCs. It determined that the value of the certificates created, which is included in the above NPV, is about \$39,350 over the life of the system.

For more details on the assumptions and calculations the company 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. The results were as follows.

Finance option	NPV	NPV rank	Comment
Energy Efficient loan	\$118,812	1	
Commercial loan	\$97,374	2	
Capital lease	\$89,925	3	
Self funded	\$77,214	4	
Operating lease	-\$133,345	5	
Environmental Upgrade Agreement	N/A		Not considered as the project is not in a council area where Environmental Upgrade Agreements are available
On-bill financing	N/A		Not considered as the project is not in a council area where Environmental Upgrade Agreements are available

The company decides to seek an Energy Efficient loan for its wind turbine, as this results in the highest expected NPV.

FINANCE OPTION SELECTED

Energy Efficient loan

NEXT STEPS

Refer to the process outlined in Section 5.1