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Renewable energy shoud be part of your company's sustainability programme, but start with energy efficiency before investing in renewables.

Improving energy performance in plant and buildings: Part 2

by Gary Williams, Carolinas Energy Associates

Part 1 of this article provides insight into the crucial role of energy conservation and efficiency in South Africa's transition to a clean energy future (see Vector, January 2016, page 48).

Energy efficiency is our cheapest energy resource. According to a report released by the American Council for an Energy-efficient Economy (ACEEE), energy efficiency is the cheapest method of providing electricity (see Fig. 1). In the USA, energy efficiency programmes aimed at reducing energy waste effectively, costs utilities some $0,03 per kilowatt-hour saved. Generating this amount of electricity can cost up to three times more.

Adopting renewable energy (RE) solutions when the installed electrical load is not efficient carries a number of substantial risks. The larger investment needed to generate energy for wastage will lengthen the payback period and prevent the system from being profitable.

Relying on less energy from a renewable energy system improves return on investment (RoI) and ensures that the system is sized accurately.

Renewable energy should be a part of your overall sustainability plan, but start with energy efficiency initiatives, then invest in renewables.

US Utilities state and local programme director Maggie Molina writes that "investing in energy efficiency helps utilities and ratepayers avoid the expense of building new power plants and the pollution that plants emit."

Energy Star for factories

The US Environmental Protection Agency's (EPA's) Energy Star Challenge for Industry is a tool designed to help energy managers and industrial sites improve energy performance and set goals. Industrial sites participate by committing to the pre-established goal of reducing energy intensity by 10% within five years or less.

The Energy Star plant lable recognises plant which score in the top 25% on the Energy Star energy performance scale, where the challenge for industry recognises sites that reduce energy intensity by 10%.

The Energy Star Challenge for Industry is aimed at manufacturing plants only. Manufacturing plants outside of the USA are welcome to participate but the plant's parent company must have operations in that country, employ a corporate energy manager or appointed consultant located within the USA, and the parent company must be an Energy Star partner.

Implementing this challenge into an organisation should start with a commitment "from the top down". This should be followed by an energy assessment matrix of the manufacturing facility as well as of the energy management portfolio of the

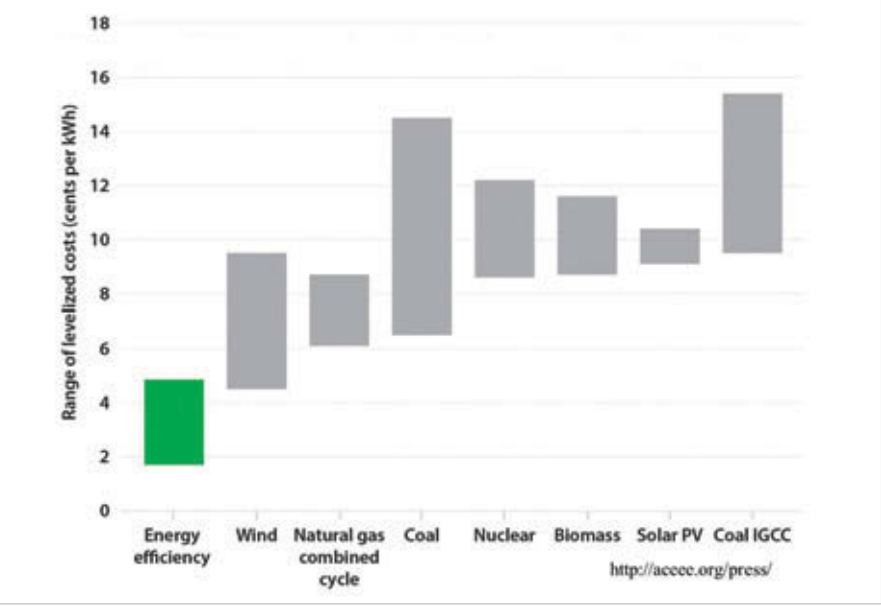

Fig. 1: Energy efficiency is the cheapest energy resource.

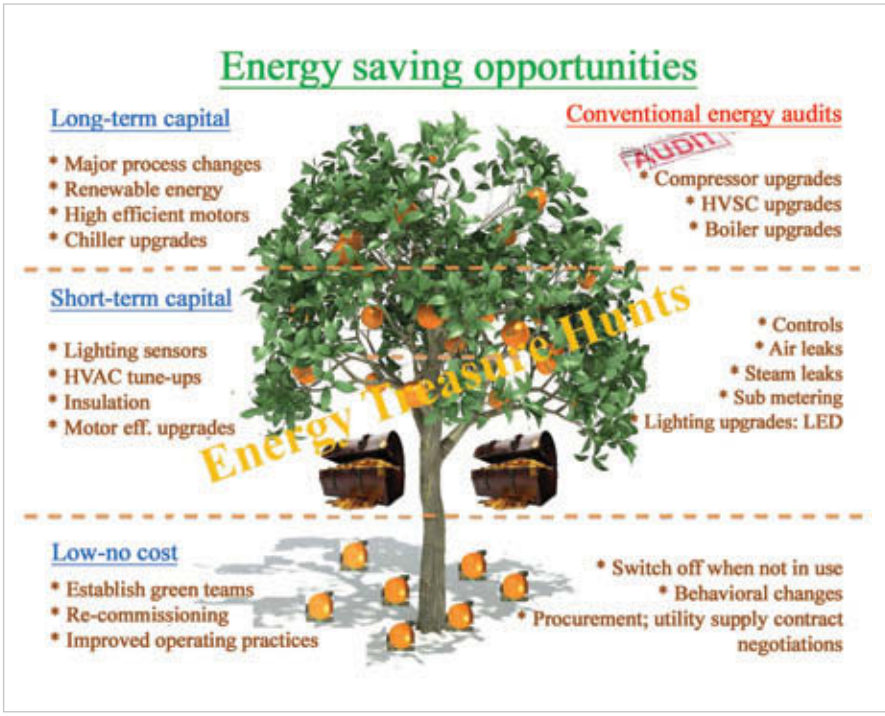

Fig. 2: The EPA Energy Treasure Hunt.

organisation's management team and the setting of performance goals.

Carbon treasure hunts

The EPA's Energy Treasure Hunt is a dynamic, effective process for identifying savings opportunities. By focusing on energy savings, Energy Treasure Hunts help to create an energy management programme and to implement the EPA's Energy Star guidelines for energy management (see Fig. 2).

The Energy Treasure Hunt guide presents a step-by-step approach for organisations to follow to integrate the hunt into a successful energy management programme. The activities, forms and reporting devices described within this guide are designed to help the company or facility perform a successful hunt. Organisations are encouraged to customise the process to meet their unique energy management needs.

At the core of the Energy Treasure Hunt is an onsite, three-day event in which cross-functional teams of employees identify operational energy efficiency improvements. Energy Treasure Hunts cover energy management opportunities during both operational and non-operational times. Companies or plant which operate from Monday to Friday should conduct the Energy Treasure Hunt from Sunday to Tuesday. Facilities which operate 24/7 can perform the Energy Treasure Hunt over any three consecutive days.

Establish green teams

Case studies indicate that, while there is no one-size-fits-all approach to sustainability education, engaging employees at every level of the company is essential to successful initiatives. Involving employees from across the organisation will help establish employee commitment and increase the ability of the company to engage, inspire, empower, and act on its sustainability goals.

Green teams are self-organised, grassroots and cross-functional groups of employees who come together voluntarily to educate their colleagues on sustainability and to identify and implement solutions to help their organisations become more environmentally sustainable.

Build green awareness

The "Building green awareness: an overview on sustainability" workshop will educate employees to better understand green concepts, key environmental issues and the aspects of sustainability which apply to their organisations.

Greenhouse gas emissions

Organisations committed to sustainability are taking steps to manage their Greenhouse gas (GHG) emissions and to reduce their impact on climate change. These companies are building strong business cases for managing their GHG emissions, including cost savings, brand enhancement and other competitive advantages.

There are many options in terms of managing GHG emissions as no two businesses face the same risks or opportunities with respect to climate change. Some choose to make their entire operations carbon neutral while others create carbon neutral products or services.

Businesses can offset their emissions and achieve carbon neutrality by purchasing carbon credits but they should first mitigate their emissions by improving the energy efficiency of their operations. Carbon credits can then assist with making up the balance of their emissions that cannot be reduced in the short term.

The purchase of carbon credits in South Africa is currently voluntary but there are many options available. It is important to purchase the carbon credits from legitimate project sources. A single carbon credit represents a reduction of one tonne of CO_2 equivalent emissions. There is no set price for carbon credits. Two markets exist for trading carbon credits – mandatory and voluntary markets, in which a number of local organisations facilitate buying and trade in voluntary carbon credits.

Contact Gary Williams,
Carolinas Energy Associates & Sustainability Consultants,
gary@carolinasenergy.com ♦