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THE ENERGY GOLD RUSH

YOUR TOOLKIT FOR STRATEGIC ENERGY MANAGEMENT

Based on our Energy Webinar series

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AGL Energy in action®

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CONTENTS

INTRODUCTION

These are challenging times for business. There's fierce competition, resource constraints, rising energy prices and tight margins. And let's not forget the urgent need to curb emissions amidst regulatory uncertainty.

But scratch beneath the surface and you'll find a pot of gold waiting to be mined – energy efficiency. We think energy efficiency will create property's equivalent of the next gold rush, with plenty of value on all levels – environmental, financial and social.

Richard Branson's Carbon War Room gets it. In its report last year, ***Raising the Roof on How to Create Climate Wealth Through Efficient Buildings***, it says that the energy efficiency market is worth $87 billion a year today, with the potential market in 2020 to be $245 billion a year.

In Australia, **The Climate Institute** says:

> **If Australia improved its energy efficiency by just an extra one per cent each year it would generate an additional $8 billion in GDP by 2020 and $26 billion by 2030.**

The benefits are certainly financial – the cost savings on operational expenditure can be huge. But the benefits can also go far deeper and have a greater impact on your business performance and the value of the portfolio.

GOLD IN BRAND, PERFORMANCE AND INVESTMENT VALUES

Saving energy can improve your NABERS Energy rating. This can translate to a better brand profile for stakeholders – owners, occupants and customers.

Buildings with higher environmental ratings – for NABERS and Green Star – are also now consistently showing superior investment performance as well, both in terms of income and capital.

See:

- **The IPD Green Property Index**
- **The Building Better Returns research report**
- **Interview with academic Nils Kok**

The most exciting thing about environmental savings is that they go hand in hand with financial savings and adding value.

However, it's not always easy to prove the business case, especially with some companies and organisations where energy spend is high, but is minor compared with other operational costs such as staff and rent.

To create the big opportunities around energy and to make a deep impression on the company's bottom line, you need first to adopt an approach that will appeal to the "C suite" – the chief executive, the chief financial officer and the chief operating officer.

As with all major business initiatives, the key to success in energy management is the development of a clear strategy. You need a champion for your initiative, robust data on your energy consumption and buying behaviour, and knowledge of the energy market.

Once you have those fundamentals in place you can dive in and uncover the rich seam of energy efficiency opportunities. The question is, where to start?

A PATHWAY TO THE GOLDFIELDS

To provide you with a pathway to these opportunities *The Fifth Estate* has collaborated with three experts in the energy field – AGL, Energetics and Envizi – to present a webinar series and this ebook, which summarises the key messages covered in the webinars and provides practical guidance.

This is your toolkit to help you develop, present and execute a better, more efficient, lower cost, lower carbon energy plan for your business.

This guide is designed specifically for facility managers, sustainability managers and operations managers. It's presented in a way that demystifies the concepts and messages so that any stakeholder can gain a better understanding of this potentially complex but critical part of business operations.

We encourage you to take this ebook guide and its messages out to the world, and create your own gold rush.

Happy digging,

Tina Perinotto
Managing editor and publisher
The Fifth Estate

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AGL's Energy Services team, which forms part of the Business Customers Group, leverages AGL's specialist skills and expertise to undertake energy efficiency and embedded generation projects within AGL's business customer base to assist customers in developing long term value; to manage energy price risk; and improve the carbon footprint and energy efficiency of their operations.

The Energy Services team comprises engineers, scientists and technicians across mechanical, material science, steam, combustion, generation, electrical, lighting and HVAC disciplines.

The projects identified are typically "low risk" projects with reliable energy savings post implementation. In order to ensure that AGL customers benefit from audits and other feasibility studies, AGL typically seeks a role in the delivery of energy efficiency measures identified for customers, i.e. we wish to provide our customers a high degree of certainty that investment in energy efficiency delivers the expected value.

AGL's approach is to identify opportunities, benchmark (through data collection and modelling), deliver measures and then prove the success through monitoring and verification.

For further information please visit:
agl.com.au

Energetics has 30 years' experience in carbon and energy management working with large, complex, multi-site energy users spanning a wide range of economic sectors.

As advisers on the challenges of escalating energy costs and managing carbon emissions, our services and products combine business insight with technical and project management excellence. Our clients achieve improved business metrics and decreased carbon and water footprints.

Energetics' services for the built environment include:

- A strategic, planned approach to energy procurement – our experts advise on the best time to enter into a contract negotiation, strategies for managing market and regulated costs, and ways to optimise your contracting approach and duration to mitigate market risk.
- Identifying projects that can reduce energy costs – Energetics has helped two thirds of ASX200 companies to identify energy savings opportunities across often large, complex, multi-site operations.
- Measurement and verification of energy projects – we have Australia's largest team accredited to the International Performance Measurement and Verification Protocol as Certified Measurement and Verification Professionals (CMVPs).

Energetics has offices in Brisbane, Canberra, Melbourne, Perth and Sydney.

For further information please visit:
www.energetics.com.au

Envizi is a global, cloud-based software platform that captures, manages and distils complex sustainability and energy data into powerful insights to support business decision making. The system works at the enterprise level and can harness data from any system in any format and transform it into a single system of record accessible to all stakeholders, empowering them to deliver results.

Our energy solutions enable you to:

- Manage and analyse data at the utility bill, utility meter and sub-meter level
- Automate data capture from suppliers, internal business systems and different equipment types
- Rapidly identify, quantify and manage opportunities to optimise energy consumption and spend
- Free up valuable resources to focus on strategic energy management as opposed to data management
- Manage granular data from the asset all the way to the enterprise level
- Analyse cost and consumption metrics and conduct benchmarking
- Set energy targets and track progress
- Identify, prioritise, plan, and track energy efficiency projects

Envizi is an Australian company with offices in Sydney and New York. We work closely with partners such as Energetics and AGL to deliver a full service offering to some 140 enterprise clients across 80,000 locations in 112 countries.

For further information please visit:
www.envizi.com

WHAT THIS BOOK COVERS AND DOESN'T COVER

The topics covered in the webinar series and in this ebook are of value to all organisations. Some of the specifics may be more applicable to large organisations that use more than 160 megawatt-hours of electricity a year and are therefore able to contest electricity costs with their retailer. In Queensland, that figure is 100MWh.

Customers connected to the National Electricity Market, or the NEM, will also find it particularly useful.

Our ebook does not cover the unique dynamics of the **Western Australian** and **Northern Territory** markets, so some sections of the ebook will not apply.

1

THE BUSINESS CASE: HOW TO STRIKE GOLD

FIRST, WIN THE HEARTS AND MINDS

One of the biggest challenges – and opportunities – is to change the perception of energy costs in your business. How can you influence the business to make more capital available for an energy efficiency program you know will improve the bottom line and create a better investment and environmental profile for your organisation's property portfolio and tenancies?

For many organisations energy is a relatively minor cost when compared with other overheads like wages and rent.

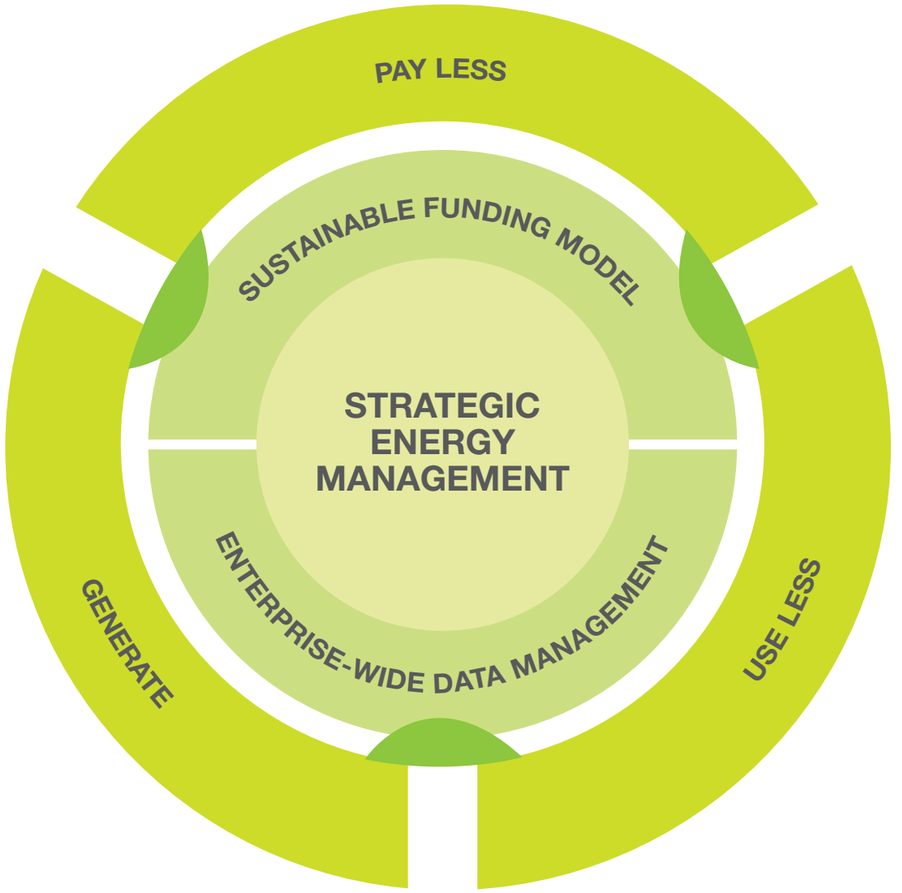
As a result, energy efficiency is often not seen as a strategic priority, despite the significant benefits to be had.

However, it's possible to develop a framework that will help you convince the "C suite" in your business – the chief executive, the chief financial officer and the chief operations officer – of the seam of gold waiting to be mined.

The key is to treat energy management as a strategic initiative from the outset; one off, tactical efforts won't do it. The diagram on the opposite page sets out the key focus areas for developing a strategic approach to energy management.

Like all successful strategic initiatives there are some essential steps to achieving success in strategic energy management.

STRATEGIC ENERGY MANAGEMENT



THE CHECKLIST FOR CHANGE:

- ☑ Leadership support and an understanding of goals
- ☑ Ownership of issues and solutions, and skilled people to assist
- ☑ Clear understanding of the improvement opportunities
- ☑ A robust business case based on facts
- ☑ A focus on timely implementation of opportunities
- ☑ A process to achieve verification and validation of results

This list might apply to any new project you want to introduce to an organisation but with energy management you need to pay particular attention to the need for ownership, engagement and alignment, because these are the areas where you could come unstuck.

Responsibility for energy is typically split among multiple stakeholders. The trouble is that staff with energy management responsibility are sometimes not necessarily best equipped to handle it.
For example, energy supply is often dealt with through a finance and procurement process, but the finance team may not have the deep-seated energy market knowledge to procure energy optimally.

STOCK UP YOUR MANAGEMENT PERSUASION TOOLKIT

Similarly, demand management might be routinely handed to facility managers, though this may be quite a peripheral concern for them. In a commercial environment, most facility managers are focused on tenant comfort, security, after-hours access and the like – the logistics of running a building. In this scenario there is a lack of ownership, and energy management becomes a lower priority.

"Energy management relies on multiple stakeholders so a strategic approach demands a champion. It is important that somebody takes responsibility for a broad-based plan that ties all the pieces of the strategy together."

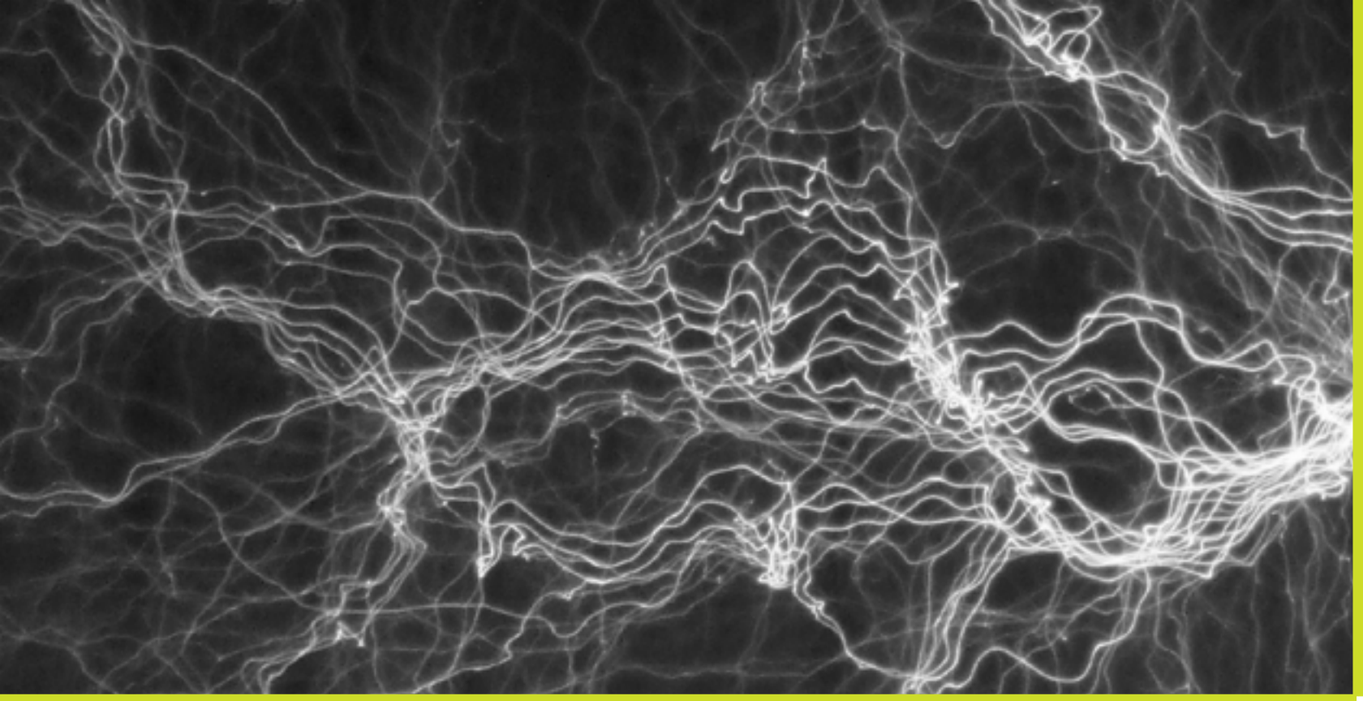
— David Solsky, chief executive and co-founder, Envizi

The following chapters expand on each of the sections set out in the strategic energy management diagram including:

Getting the fundamentals in place:
- Setting up an enterprise-wide data management system
- Developing a sustainable funding model

Developing plans and acting on efficiency initiatives:
- Lowering your costs by paying less
- Saving money by using less
- Taking control by generating your own energy onsite

Different stakeholders have different agendas so understanding the various drivers, aligning goals and gaining engagement are essential to the success of your energy management initiative. We provide some tips on how to achieve this in the final chapter of this ebook.



THE FUNDAMENTALS

ENTERPRISE-WIDE DATA MANAGEMENT

Before we dive into how to pay less, use less and generate your own energy, we need to talk about the fundamental requirement for a robust set of data. Energy data is complex and includes cost information, consumption data and a variety of other charges.

Data can be widely dispersed. It can be held on multiple spreadsheets, enterprise resource planning software and business management systems. It is difficult to make decisions when data is incomplete, unreliable and inaccessible. Thus, the foundation of a strategic approach to energy management is a robust enterprise-wide data management system.

1. IDENTIFY STAKEHOLDERS AND THEIR REQUIREMENTS

Understanding who your stakeholders are, the information they require, the format they need it in and when they need it is a critical first step. Key stakeholder groups, and the outputs they need, will most likely include:

- **Procurement –** accurate cost and consumption reporting to support purchasing activities
- **Facilities and Operations –** KPI metrics for building performance
- **Engineering –** granular energy consumption data
- **Sustainability –** Inputs for external reporting and internal KPI tracking
- **C-level executives –** typically looking for high-level bushiness performance indicators. “How are we tracking against our energy reduction target?”

2. LOCATE YOUR ENERGY DATA

There are three primary sources of energy data:

- **Utility invoice data** – this may be in a paper or electronic format. Most of the major energy retailers are capable of providing electronic billing so make sure you mandate this in your energy contract.
- **Utility interval meter data** – all sites with annual consumption greater than 160MWh or $30,000-$35,000 total electricity spend can opt into the contestable energy market and gain access to an interval smart meter that provides 15- or 30-minute interval data. Meters are installed, managed and read by meter data agents (MDAs) who provide daily meter readings to energy retailers. Clients are able to access the meter readings daily from the MDAs under a letter of authority provided to the energy retailer.
- **Sub-meter or building management system data** – this data is typically available in large commercial or industrial buildings where specific parts of the facility or major equipment are individually metered to provide ongoing visibility of the energy used. This data can provide greater insight into asset performance, for example, lighting and chillers. Sub-meters can be installed cost effectively via electrical contractors.

3. IDENTIFY DATA OWNERS

Data owners can vary across large organisations and can include finance and procurement for utility invoice data, as well as operations and facilities management for meter data. Sustainability managers are also key stakeholders in energy data that is used extensively for carbon emissions and sustainability reporting. By working with key data owners, you can gain access to electronic data files from utility providers, metering providers as well as internal systems.

Electronic data can significantly reduce the time and cost to capture data, and provides timely reporting and greater levels of data accuracy compared with manually captured data from paper-based records.

4. CREATE A SINGLE SYSTEM OF RECORD

An enterprise-wide data management solution is critical. It should capture and manage energy data across your entire organisation, creating a single system of record from which to drive decision making.

Many organisations may start with spreadsheets to manage their data, but spreadsheets quickly become hard to manage across large portfolios or where large volumes of meter data are prevalent. Spreadsheets also introduce a number of other potential issues including a lack of audit trails, difficulty in supporting multiple users concurrently and data loss, as they are not backed up often enough.

Finally, there can be multiple copies of the same data files, which creates a risk of users accessing the wrong version.

A centrally held database, on the other hand, provides a robust, single system of record that can be concurrently accessed by multiple users. This ensures a “single source of truth” with all users working with the same version of the data. Databases can be managed by professionals and backed up regularly, as well as have audit trails for user access and transactions.

Understanding your data and having it in one place opens up opportunities to conduct analysis and generate powerful insights.

Once you’ve framed energy management as a strategic priority and employed a data management solution, it’s time to move on to other golden opportunities with energy: how to pay less, use less and generate your own energy.

2

LOWER YOUR COSTS: PAY LESS

Most businesses can reduce their energy costs by buying better. Although less than half of electricity costs are negotiable, there are items over which you can have some influence, namely energy consumption charges, environmental charges and metering charges.

Here are some of the key elements that will ensure you obtain the best possible electricity prices and contract for your business:

- **Go to market at the right time**
- **Contract for the best duration**
- **Make your contract attractive to retailers**

ELECTRICITY MARKET TARIFFS AND TRENDS

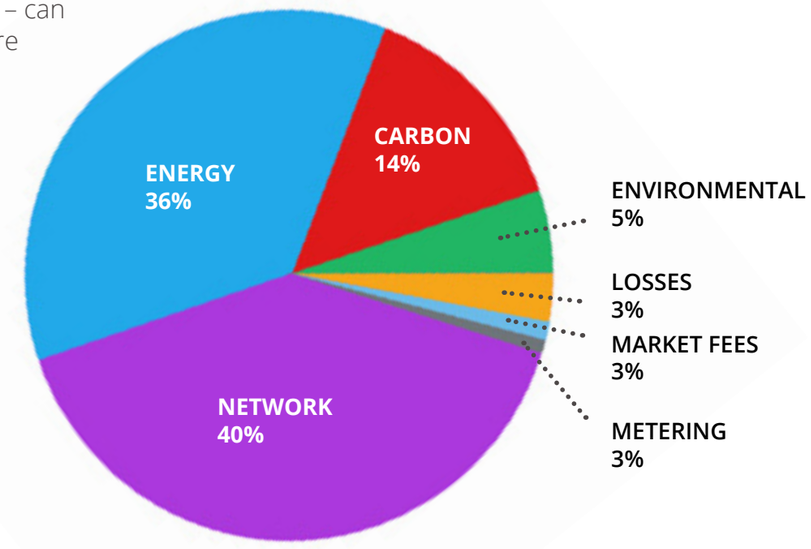
First you need to understand the electricity market.

The NEM covers all states and territories in Australia, except for Western Australia and the NT, which have their own regional markets. Small users are subject to regulated tariffs, however larger users – those who consume more than 160MWh a year (or 100MWh for Queensland) – can opt to have direct exposure to wholesale market prices through contracts with electricity retailers.

THE PRICING OUTLOOK

By late 2013 and early 2014 the price of electricity had increased due to network, carbon and environmental charges. The cost of the commodity, on the other hand, had been falling at an annual rate of about 1.2 per cent since annual demand peaked in 2008-09. Demand is not expected to return to 2008-09 levels until 2015-16, with most growth forecast to arise in Queensland.

This demand forecast scenario, coupled with the anticipated repeal of the carbon price, is expected to push electricity prices down in the near term. Spot market prices are forecast to drop by between 22 per cent and 32 per cent between 2013/14 and 2015/16.



High-level breakdown of energy costs

UNDERSTAND YOUR ENERGY BILL

Energy bills are complex beasts, and a surprising number of businesses don't fully understand their bill.

The first step is to understand what is driving costs. You can then use this information to buy better.

ENERGY COSTS

While network costs make up the majority of energy bills, and are regulated, there is leverage to be had when negotiating your contract rate for energy.

The wholesale or "commodity" cost element typically constitutes around 30-40 per cent of the electricity bill paid by large users. This is the component of the bill (along with terms and conditions) that you can negotiate.

Energy costs are the largest single negotiable component of your bill, and the key to paying less. These costs represent the rate your retailer sells energy to you after purchasing from the market pool of generated energy.

When you're looking for a new quote from retailers, first make sure your usage data is as accurate as possible, and presented to as many retailers as possible.

The less accurate you appear to be, the more risk premium a retailer will build into the price. Most businesses will be required to provide meter data with their tender, covering the past year of operation.

You can ensure accuracy by providing precise measurement, using a combination of software and metering devices.

NETWORK CHARGES

The network charges as stated above are regulated, however there are usually a number of different rates that a business can have applied depending on the usage profile. Understanding each of these tariffs, your usage and the impact on the applied rate may provide opportunities to further save money.

If you are in the built environment you may have a time-of-use tariff, which has peak, shoulder and off-peak rates. Key to figuring out if there is a better tariff is understanding your electricity demand and load by looking at your meter data.

Once you do this, you'll be able to apply different tariffs and work out which is the cheapest option.

You may even be able to investigate shifting loads to a cheaper time. Can you potentially delay any energy-intensive activity to off-peak?

Or you may opt for a tariff that not only involves time-of-use charges, but has a demand component, too – how much network capacity are you using? This capacity charge can be very substantial – up to 20 per cent of your bill – and is based on your largest peak demand. This can be reset, but you need a year of billing data to show that you've improved your company's peak demand needs.

You can only typically switch tariffs once every 12 months so make sure you're switching to the correct tariff.

Ongoing savings of 0.5-1 per cent of energy spend can be made through tariff optimisation.

Other cost elements include charges such as carbon tax pass-through (or its equivalent), environmental levies and metering fees, all of which can be negotiated.

ENVIRONMENTAL CHARGES

Environmental charges are contestable. They refer to the costs retailers pass on to the end user to meet legislated environmental schemes, such as the Renewable Energy Target, the Energy Savings Scheme (NSW) and the Victorian Energy Efficiency Target scheme (Vic).

Differences between retailers' environmental charges can be greater than the differences between their energy prices, so check each retailer's charges to make the best decision.

METERING CHARGES: THE DEVIL'S IN THE DETAIL

A bill's metering charge covers the costs of installing and maintaining a site's electricity meter, as well as recording and processing usage data. This is a negotiable element. Customers can contract directly with a metering provider and ask the retailer to pass through costs, rather than being assigned a retailer-preferred metering provider. Annual savings of $100-$200 for each meter are possible, but watch out for retailer administration fees charged for not going with their preferred provider.

VERIFYING YOUR ENERGY BILL

Errors on energy bills are surprisingly frequent, and some retailers are much worse than others.

Having bill validation performed by an expert, if done well, can lead to savings of between 0.5 per cent and one per cent on your energy bill.

Common mistakes include duplicated charges, overlapping periods, incorrect network charges and incorrect contract rates.

"It surprises me how frequently errors can be found on electricity, natural gas and water bills. Getting refunds for these errors – year after year – can be a good income stream for some organisations."

— David Martenson, CarbonScope general manager, Energetics

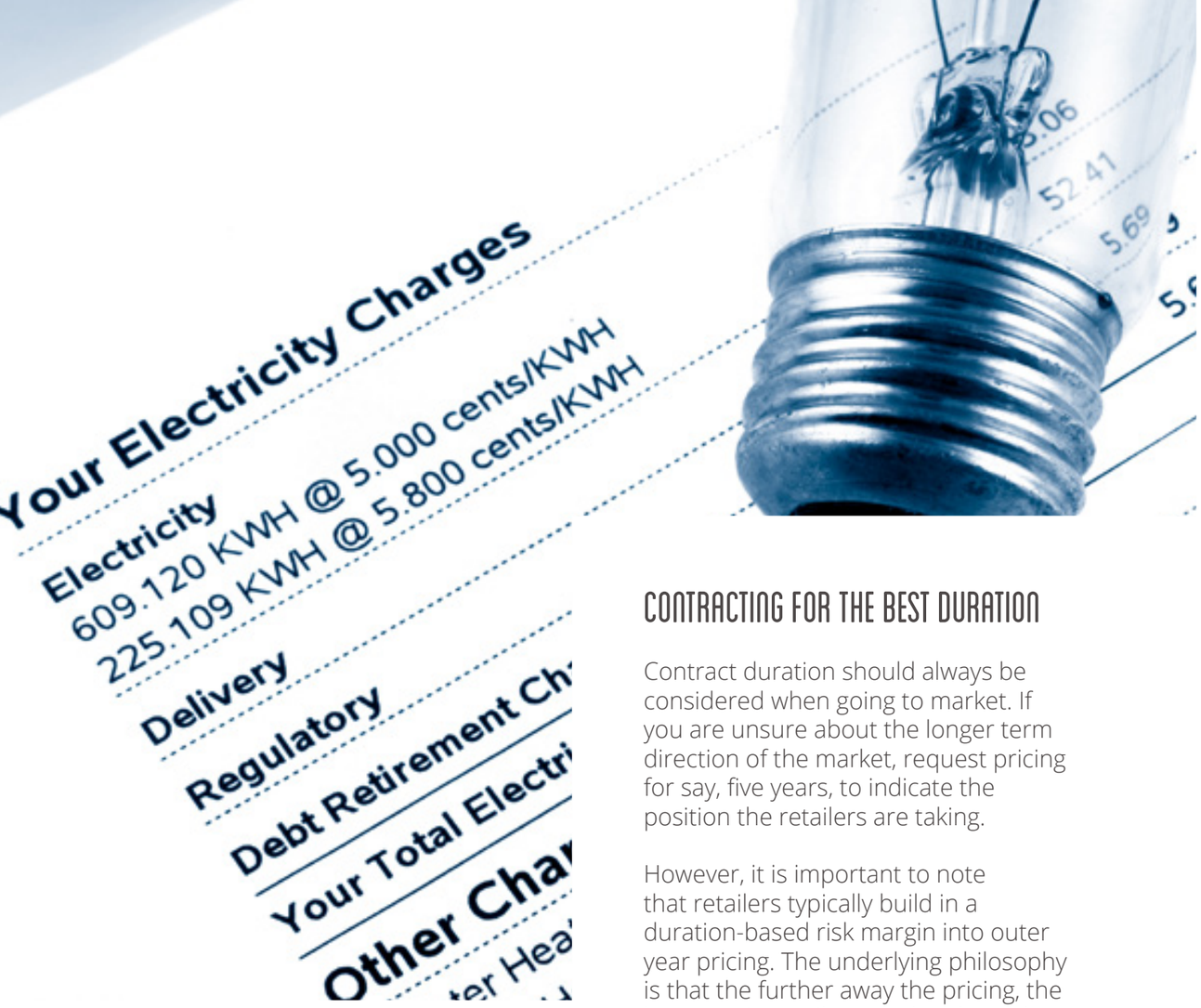
Some examples of savings Energetics has helped their clients achieve include:

- A company that was charged the incorrect energy contract rate, a finding that led to a 57 per cent saving on the bill, or $39,027
- A landlord charged for an incorrect demand meter reading, a finding that shaved 89 per cent off the bill, or $84,040
- A bill issued twice, a discovery that saved a company $12,022

The following table summarises the opportunities to save from verifying your energy bill:

OPPORTUNITY 1: VERIFYING YOUR DETAILS
• Make sure it's your bill – check the name and address • Check the National Meter Identifier (NMI) or Metering Installation Reference Number (MIRN) • Check the billing period • Make sure the start date on this bill is the day after the finishing date on your last bill • Check the length of the billing period – look at the number of billing days • See if your account is up to date
OPPORTUNITY 2: CHECKING YOUR PLAN, DISCOUNTS AND BENEFITS
• Check the details of your energy plan or contract • Make sure the name or description of your plan matches your contract and previous bills • Check your tariff description – it should also match previous bills • TOU is time of use billing – price of energy varies depending on time of day (peak, shoulder, off-peak) • Check that the discounts you're getting match your plan, as outlined in your contract • Note that some discounts only apply to some charges and not to the whole bill
OPPORTUNITY 3: CHECKING YOUR CHARGES – PART 1
• Take a look at your energy charges one-by-one • Check the type of meter reading – actual or estimate? • Locate the amount of energy you've used and the applicable rate/s – do a quick calculation to check the totals • There may be a range of other charges, such as demand charges • Check the rate for demand charges against your contract • Loss factors are approved by independent energy regulators
OPPORTUNITY 4: CHECKING YOUR CHARGES – PART 2
• Energy bills commonly include a wide range of other charges • Some of these are set by government agencies – check with your retailer if they vary significantly between bills • Make sure all charges are in accordance with your contract • Check with your retailer if you see an unexpected price increase

Source: Australian Industry Group



GOING TO MARKET AT THE RIGHT TIME

It is not necessary or advantageous to wait until the expiry of your old electricity contract to start your purchasing exercise.

Given the fluctuation in prices over any given year it is well worth investing the time to request offers on a lower priced day or when the market prices are in a downward trend. To identify the "right time", you can access electricity futures and spot market information from a number of free websites such as the **ASX**, **AEMO** and **ASX Energy**.

CONTRACTING FOR THE BEST DURATION

Contract duration should always be considered when going to market. If you are unsure about the longer term direction of the market, request pricing for say, five years, to indicate the position the retailers are taking.

However, it is important to note that retailers typically build in a duration-based risk margin into outer year pricing. The underlying philosophy is that the further away the pricing, the less certain retailers can be about the actual prices available.

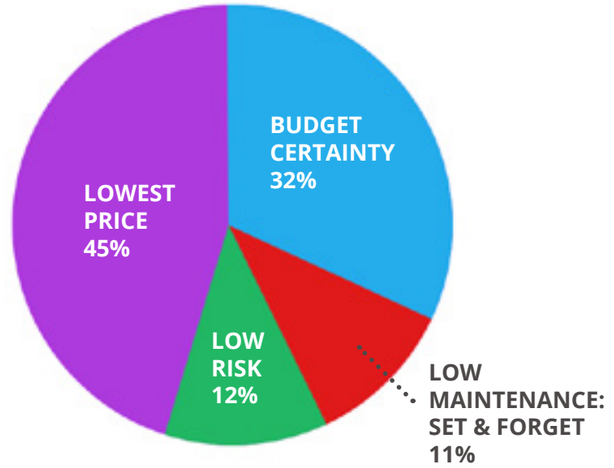
To assess the best contract duration you should compare the prices offered to you with the electricity futures available and they should also be considered in light of any major price driver impacts and trends.

In a steadily rising market it's a good idea to opt for a longer duration. In a flat, decreasing market it may be better to go for a shorter period with the aim of buying cheaper in the future.

A poll from our webinar series shows that price and certainty are most important:

WHAT IS MOST IMPORTANT TO YOU WHEN CONTRACTING ELECTRICITY?

Source: *The Fifth Estate* Energy Savings webinar poll



MAKE YOUR CONTRACT ATTRACTIVE

Retailers are risk averse, or at least they will build premiums into their pricing to cover risk. It is important, therefore, to make sure your potential contract is as low risk and attractive to retailers as possible. It is also important to approach as many retailers as possible to get a competitive price.

To make your contract attractive:

- Provide an accurate picture of your consumption – request your usage for each half hour period over 12 months from your current retailer. This gives the retailer an excellent understanding of how much electricity you will use in each time band of either peak, shoulder or off-peak electricity. The better understanding the retailer has, the less risk premium for load fluctuation needs to be built into pricing.
- Shift load to off-peak times where possible and take action to smooth out any spikes in demand – retailers like contracts where the load is steady and predictable and often they will prefer greater load in off-peak periods where the market is less likely to be volatile. See the section dealing with demand charges.

BUYERS GROUPS: TIME TO JOIN UP?

Consider joining a buying group to use collective bargaining to leverage a discount off the regulated rate of electricity from a retailer. This may offer significant savings to your business.

Some energy consulting firms have access to buying groups. Check with an energy consultant to see if there is an opportunity to join one that matches your profile.

3

SAVE MONEY: USE LESS

One of the best ways to minimise the cost of electricity is to use less. This will also lower greenhouse gas emissions for your business's property portfolio and has the potential to enhance values and improve rental returns, not to mention drive higher NABERS Energy ratings and a better environmental profile for your business.

- See the **IPD Green Property Index** for how property with higher NABERS and Green Star ratings outperform property with lower environmental ratings on both capital values and yields
- See the **NABERS website** for details of the Australia-wide energy rating system

The first step in using less energy is to understand your energy use – where energy is used and when – and what factors can influence these patterns.

An energy assessment will provide:

- An energy assessment report tailored to the business, incorporating analysis of energy bills, consumption patterns, load profile graphs and a breakdown of energy consumption across the site
- Options to reduce energy consumption and identification of operation and maintenance savings
- Options to improve energy efficiency, including no-cost and low-cost initiatives for immediate energy and cost savings
- Cost estimates of upgrades, tailored payback periods projects of total energy savings
- Financial analysis of upgrade proposals
- Options for funding pathways, such as rebates, finance and incentives

WHERE AND WHEN ENERGY IS CONSUMED: ENERGY AUDITS

Energy audits can improve energy efficiency, reduce overheads and they also enable the three golden rules of measurement, verification and reporting, which can be used for measurement of greenhouse gas emissions, future business planning, goal setting, marketing purposes and mandatory government reporting, if this is required.

Three key types of energy audits are undertaken to Australian Standards AS3598. These are:

AUDIT LEVEL	DESCRIPTION	BUDGET ACCURACY
LEVEL 1	Recommendations based on the desktop review or simple walk-through of the site with estimated energy savings	+/- 40%
LEVEL 2	More an on-site investigation, measurement and energy monitoring. This audit outlines estimated energy savings	+/- 20%
LEVEL 3	The most detailed and comprehensive. They require a thorough site investigation including sub-metering of equipment and analysis of potential energy efficiency measures	+/- 10%

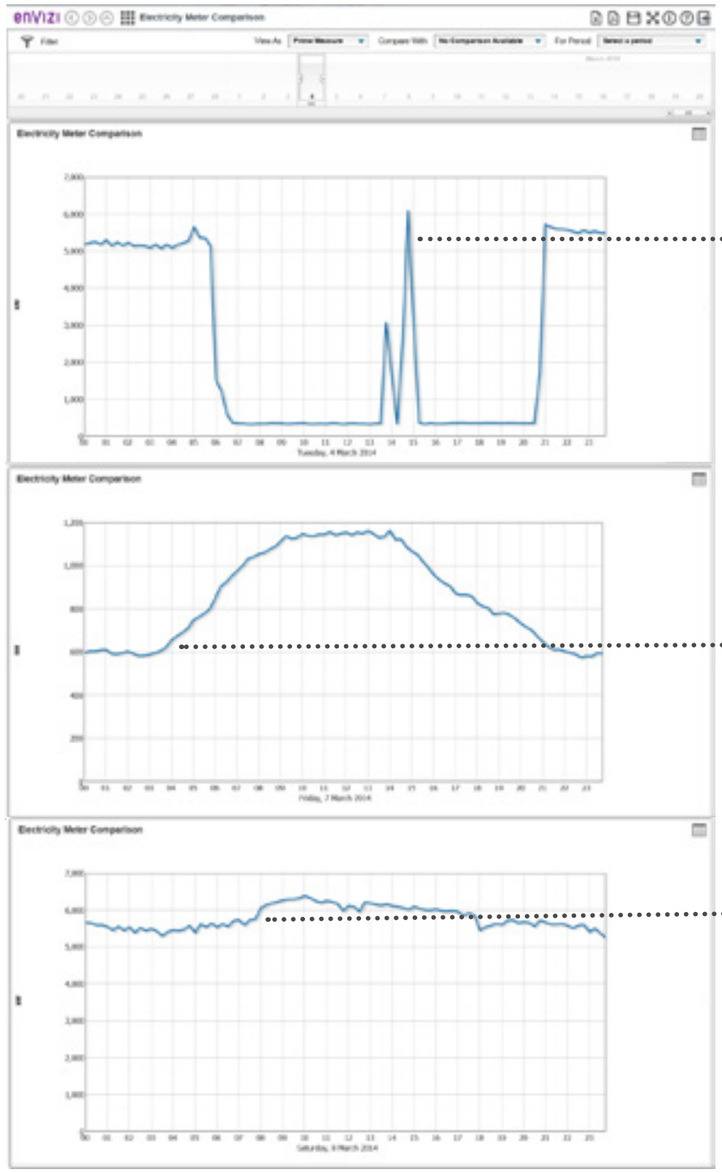
To make any kind of prudent business decision you will likely need a level 3 audit.

WHERE DO YOU AUDIT?

Look for a typical building in the portfolio to audit or an outlier building using more energy than typical of its floor size.

WHEN IS THE ENERGY BEING USED?

One of the key outputs of an audit is a depiction of when energy is consumed, in 15- or 30-minute intervals. From here you can see if there is any unusual activity, such as early morning energy use and weekend energy use that might indicate something is amiss with equipment.



Examples of audit findings from interval data:

What caused this spike in energy usage?

Is equipment being left on overnight?

This business is closed at weekends. What's using all this energy?

EQUIPMENT USE

The other key output of an energy audit is a breakdown of energy by equipment type. The pie chart on this page is typical of a commercial office – heating, ventilation and airconditioning accounts for 40-50 per cent of energy use, followed by lighting at about 26 per cent.

If time and capital are limited you can quickly see where you should be focusing and where there may be more "bang for your buck".

WHAT TYPES OF OPPORTUNITIES MIGHT YOU FIND?

The answers to our webinar poll about what energy efficiency initiatives organisations are investing in over the coming 12 months place lighting and employee behaviour at the top the list.

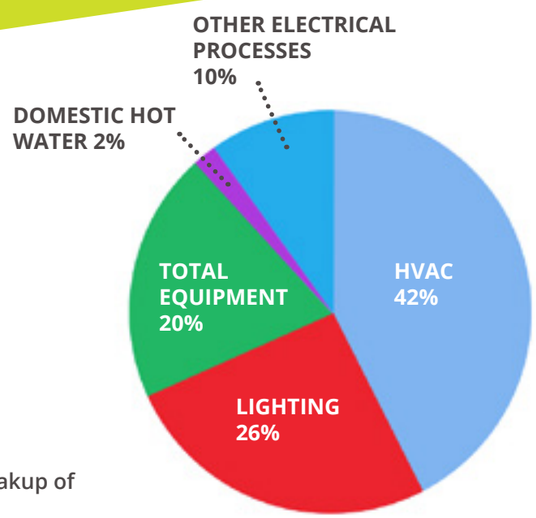
BIGGEST SAVINGS DESERVE THE BIGGEST ATTENTION

To maximise savings, it may be wise to focus on the areas of largest energy use. Here are those areas that promise the biggest savings:

LIGHTING

Lighting technology is rapidly evolving and LEDs are cheaper, more efficient and now more readily available. This is an area that has one of the quickest payback periods and installation is relatively straightforward.

LEDs can not only save money but can also improve working conditions, which may improve productivity. They can also reduce maintenance – music to the ears of facility managers everywhere. Make sure new fittings meet standards, safety regulation and provide the right levels of light. Savings of up to 10 per cent can be achieved.



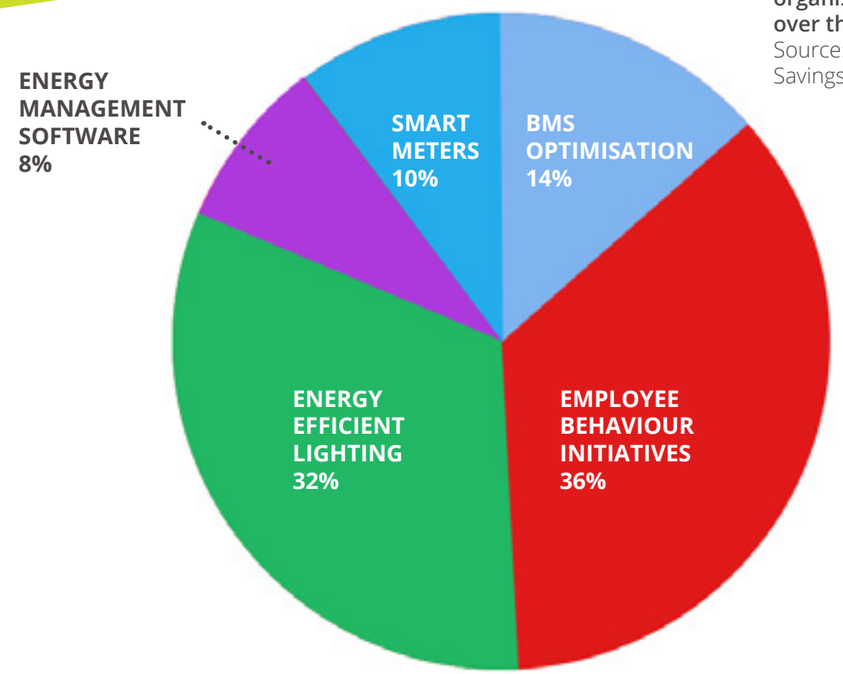
Typical end use breakup of commercial offices

CHILLER UPGRADE

Overall Project cost:	$397,960
Achieved electricity savings:	821,742 kWh/year
Electricity cost saving:	$124,900/year
Simple payback:	3.2 years
Emissions Savings:	852 tonnes CO_2-e/year

AGL was engaged to design and manage the project to upgrade an ageing chiller at Crowne Plaza Hotel.

- The replacement unit was a high efficiency magnetic bearing chiller.
- The building is using approximately 35 per cent less energy than before, has higher reliability and the new unit is vastly quieter and produces less vibration.



What energy efficiency initiatives is your organisation investing in over the next 12 months?
Source: *The Fifth Estate* Energy Savings webinar poll

ENERGY EFFICIENCY OPPORTUNITY 1: REPLACING FLUORESCENT LAMPS

- Replacing fluorescent lamps with LED equivalents is an easy way to reduce lighting costs
- Replacing a 36W, 1200mm T8 lamp with a 22W LED lamp of the same size reduces consumption by around 50 per cent
- LEDs don't need a control box – a further energy saving
- LEDs last around 50,000 hours compared with 10,000-20,000 for fluorescent lamps, so you also save on replacement and maintenance costs

ENERGY EFFICIENCY OPPORTUNITY 2: DELAMPING

- Removing some of the lamps from light fittings – delamping – is an easy solution to over-lighting
- Try removing half the lamps and test the result
- Always make sure lighting levels meet Australian standards
- If lighting has become uneven, try installing reflectors
- If your ceiling grid allows, you may want to rearrange the spacing of lights

ENERGY EFFICIENCY OPPORTUNITY 3: REPLACING HIGH BAY LAMPS

- High bay lamps are common in factories and warehouses – these are often 250-400W Mercury Vapour or Metal Halide lamps
- 150W LED lamps use 65 per cent less energy
- LEDs have more efficient control gear, which saves even more energy
- LEDS last around 50,000 hours compared with 10,000-15,000 hours for fluorescent lamps, so you also save on replacement and maintenance costs
- Investigate other emerging replacement technologies, such as induction lamps

ENERGY EFFICIENCY OPPORTUNITY 4: OTHER WAYS OF REDUCING LIGHTING ENERGY USE

- Install lighting controls, such as a seven-day timer
- Install daylight and motion sensors
- Rearrange switching so lights in all parts of the site are on only when they need to be
- Clean skylights and polycarbonate roofing

Source: Australian Industry Group

HVAC

Heating, ventilation and airconditioning (HVAC) can account for 40-50 per cent of energy consumption in buildings. A new breed of chillers for HVAC systems has seen energy reductions of 50 per cent. For existing chillers in mid-life, tuning systems, upgrading control systems and changing operating temperature bands can lead to energy savings. Installing high efficiency electric motors for fans and pumps with variable speed drives is another way to cut energy consumption.

LIGHTING UPGRADE

Capital cost:	$226,168
Electricity savings:	668,670 kWh/year
Electricity cost savings:	$88,838/year
Reduced maintenance costs:	$15,480/year
Payback:	2.2 years (not including ESCs)
Reduction in CO_2 emissions	736.9t CO_2-e/year
Relative carbon cost (RCC)	-$80/tonne

AGL was engaged to design and manage a project with the Four Seasons Hotel's front of house to:

- Replace the 300W atrium light fittings with more efficient 28W LED fittings
- Replace the old cove lighting in the lift lobby with warm white fluoro lighting fittings
- Upgrade inefficient 50W Halogen low voltage lamps with 10W LED replacement lamps, and replace 70W halogen lamps with 12W LED lamps
- Replace the main stairwell Xenon lighting with LED light strips.

BMS UPGRADE

Overall Project cost:	$159,548
Overall Project cost to client:	$82,548
Grant Funding:	$77,000
Achieved electricity savings:	395,919 kWh/year
Electricity cost saving:	$59,387/ year
Simple payback:	1.6 years
Emissions Savings:	423.6t CO_2-e/year

AGL was engaged to deliver a BMS upgrade project for Eureka Funds Management at 10 Bridge Street, Sydney.

The project included:

- Replacement of the main controls system components, including new head-end, graphics and communications infrastructure
- New variable speed drives on main pumps and cooling tower fans
- Comprehensive review and improvements to the system's functional logic for improved energy efficiency
- Comprehensive commissioning and tuning of the whole system

BMS

Building Management Systems do more than start and stop airconditioners. They can learn the local weather conditions and occupancy patterns and then optimise the start and end time of equipment to save energy while maintaining a pleasant indoor environment.

WHAT IS THE CONDITION OF THE BUILDING?

The condition of the building services is the other main influence on high-energy consumption.

Typical culprits include:

- Old and outdated control systems
- Ageing inefficient and/or inappropriately sized HVAC plant (chillers, boilers, pumps and fan systems)
- Inefficient lighting (lamps, light fittings and the control systems)
- Lack of sub-metering systems to identify problems
- Lack of funding for maintenance and re-commissioning activity
- Complex/multiple systems working inefficiently

PROJECT ANALYSIS: HOW TO PRIORITISE SAVINGS OPPORTUNITIES?

COST AND PAYBACK

Once you have determined the energy savings measures most appropriate to you, you should consider prioritising your opportunities before you get specialists in to conduct detailed investigations or issue requests for quotations.

The big question is obviously money – the cost of the equipment and associated implementation cost, the value of the savings and co-benefits.

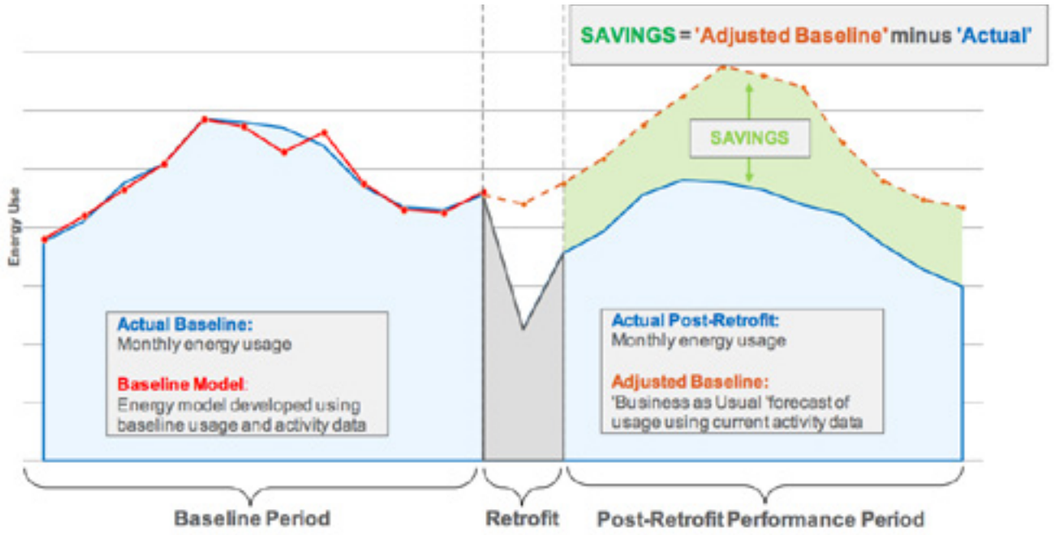
The most common financial appraisal methods used to assess energy projects are the Simple Payback Method, Net Present Value and Internal Rate of Return. You can read more about these methods later in the section on finance in Chapter 5.

TIME TO IMPLEMENT

Another factor to consider is the ease of implementation. More often than not complex installations will be more costly and this will be reflected in the financial analysis. Consider:

- The availability of in-house skills to execute the project
- Technical complexity of installation
- Interruption of the business operations and consequential losses during installation
- Availability of technical maintenance support in your area

Co-benefits from energy efficiency can also be important, for instance, lower greenhouse gas emissions, lower maintenance costs and greater reliability of equipment.



How M&V works. Source: NSW Office of Environment and Heritage

HOW DO I KNOW THAT I HAVE BEEN SUCCESSFUL? MEASURE AND VERIFY

Energy, water or demand savings cannot be directly measured since savings represent the absence of energy/water use or demand. Instead, savings are determined by comparing measured use or demand before and after implementation of an Energy Conservation Measure, making suitable adjustments for changes in conditions.

The effect of an ECM is best understood against the energy usage that would have occurred in a "business as usual" situation had the ECM not been implemented. The chart above illustrates this concept.

Measurement and verification is the process of using measurement to reliably determine actual savings for energy, demand, cost and greenhouse gases within a site by an ECM.

Measurements are used to verify savings, rather than apply deemed savings or theoretical engineering calculations, which are based on previous studies, manufacturer provided information or other indirect data. Savings are determined by comparing post-retrofit performance against a "business as usual" forecast.

Across Australia the use of M&V has been growing, driven by business and as a requirement in government funding and financing programs. M&V enables:

- Calculation of savings for projects that have high uncertainty or highly variable characteristics
- Verification of installed performance against manufacturer claims
- A verified result that can be stated with confidence and can prove return on investment
- Demonstration of performance where a financial incentive or penalty is involved
- Effective management of energy costs
- The building of robust business cases to promote successful outcomes

In essence, M&V is intended to answer the question, "How can I be sure I'm really saving money?"

HOW DOES M&V WORK?

BEFORE THE ECM IS IMPLEMENTED: THE BASELINE

- A period of time prior to the ECM implementation is selected and measured – this is the "baseline period".
- During the baseline period, data is also collected for "independent variables", which change on a regular basis, and have a direct effect on baseline energy usage patterns. Examples of such variables include changes in weather.
- An energy model is developed to describe the relationship between baseline energy use and the independent variables affecting energy use.

AFTER THE ECM IS IMPLEMENTED

- Once the ECM is implemented, data over a suitable period is once again selected and measured. This is called the "post-retro fit" performance period.
- Data is also collected for the same independent variables for the post-retrofit period.

CALCULATING SAVINGS

- A "business as usual" forecast of energy use or demand is determined by adjusting the developed baseline energy model with data for independent variables from the post-retrofit period. This is known as the "adjusted baseline".
- Finally, savings are determined by subtracting the measured actual usage from the adjusted baseline.

"How does M&V work" courtesy of the State of NSW and the Office of Environment and Heritage.

4

LOWER YOUR COSTS: GENERATE YOUR OWN

WHY GENERATE YOU OWN ELECTRICITY?

Generating your own energy has a number of potential benefits, including:

- Reducing the energy invoice
- Producing less greenhouse gas emissions than alternatives
- Reducing the demand on the electricity network, and helping reduce peak demand
- Improving reliability
- Providing options in remote areas
- Achieve higher results in rating schemes (for example, NABERS or Green Star)

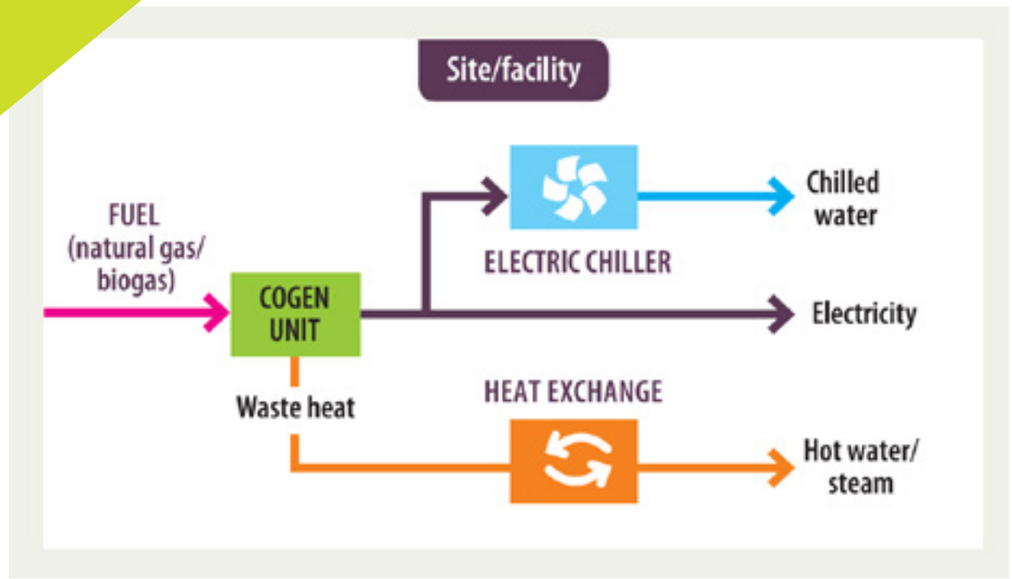
As the price of electricity and gas moves upwards, and onsite generation technology matures and becomes more cost effective, it may become, or already be, a cost effective option for your business.

For this section the options will be restricted to onsite generation of energy in buildings.

There are a number of on-building generation systems available, with the main contenders being:

- **Cogeneration and trigeneration**
- **Photovoltaic (PV) systems**
- **Biomass and biogas energy**
- **Building integrated wind energy**
- **Solar thermal energy generation**
- **Electrical storage**

Distributed generation accounts for three per cent of the energy mix in Australia, and this is quickly rising to meet up to five per cent of demand.



Cogeneration. Source: NSW Office of Environment and Heritage

FIRST STEP: GET THE BASICS RIGHT

Get your house in order before pursuing generating your own energy. Make sure your building is performing efficiently, through the steps listed in this guide, then look at generating your own energy.

It's vital to ensure the business case is correct. There's no point installing a PV system on a low efficiency building without addressing basic efficiency first, for instance.

And there is also no point installing a co/trigeneration system, only to find it is unaffordable to operate because hedging the cost of natural gas was overlooked. Increasing localised generation can also cause upstream electrical issues, so address these early.

OPTIONS FOR PRODUCING YOUR OWN ENERGY

COGENERATION AND TRIGENERATION

Cogeneration consists of a natural gas powered internal combustion reciprocation engine, or turbine, coupled to an electricity alternator. The alternator produces electricity that is used either on site or exported into the electricity grid.

The "waste" heat from the engine can be used to generate steam or hot water that can be used for a process, or to provide heating (such as for buildings or swimming pools) or domestic hot water.

Trigeneration is cogeneration with the addition of an absorption chiller that uses waste heat to also produce cooling and chilled water.

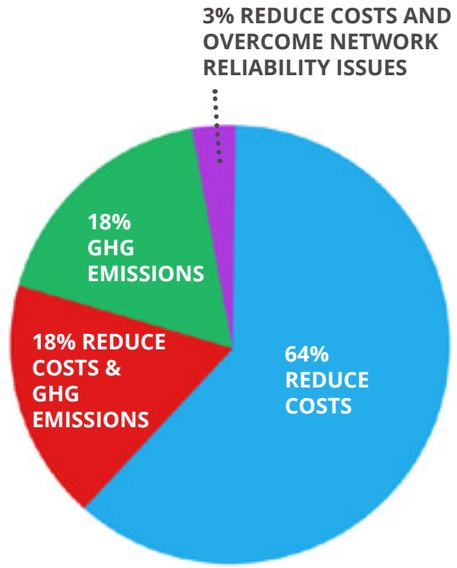
The benefits of adopting co/trigeneration are many, from increasing the reliability of energy to providing a useful source of heat and, in most Australian states, reducing the carbon content of electricity.

When considering a system that runs on natural gas the projected forward price of natural gas must be considered. The risk associated with any price increase must be mitigated.

Indeed, this is why there are often build, own, operate arrangements to reduce some of the risks associated with price increases.

Things to keep in mind:

- Most cogeneration systems also require a high pressure gas supply
- Some electricity grids are quite old and cannot cope with potential serious faults and, as such, most electricity networks will require that extensive network analysis be carried out to see if your co/trigeneration system can be connected to the grid
- There are local noise and emissions requirements to consider
- Co/trigeneration systems can be quite large and space is a premium in commercial buildings
- You may need to change your existing electricity and gas rate tariffs with your utility company – your consumption patterns will change so your rates may also change



What would you need to consider cogeneration or trigeneration for your building? Source: *The Fifth Estate* Energy Savings webinar poll.

Questions to ask to determine if cogeneration is right for your building or facility:

- Do you have a use for both heat and electricity? If not, cogen may not be right for you.
- What do your energy prices look like? – the best scenario is high electricity rates and low gas rates. In a market with falling electricity prices and rising gas prices, unless there are other drivers, such as a need to increase the security of supply or a desire to reduce greenhouse gas emissions, then co/trigeneration may not be right for you from an economic viewpoint.
- Is your cogeneration system sized appropriately? – If you're not collecting interval data on your existing electricity consumption and heat production (steam or hot water), then you should start sub-metering as soon as you can. Although at least 12 months of data is ideal for a full study, even a few months of sub-metering can help to provide your engineer with enough information to make sure that the project is appropriately sized.

The NSW government has created a **Energy Saver Cogeneration Feasibility Guide and Tool** so you can ascertain whether co/trigeneration is right for your business.

CASE STUDY

COOPERS BREWERY

An example of a larger scale cogeneration system is Coopers Brewery in South Australia, which worked with AGL to develop a plant using a BOO arrangement.

The cogeneration system is a 4.4 megawatt gas turbine, which generates 9000MWh a year used within Coopers and 24,000MWh a year exported to the grid.

The unit also produces 50,000 tonnes of steam a year, which is all used in the brewing process.

This facility helps to reduced greenhouse gas emissions by reducing the amount of natural gas required to produce process steam. The facility provides this by creating steam from the turbine waste Heat Recovery Steam Generator (HRSG), reducing the reliance on the traditional gas fired boilers for steam generation.

It is estimated that reductions in overall greenhouse gas emissions are up to 2613 tonnes a year.

PHOTOVOLTAIC SYSTEMS

Commercial solar is a promising solution for generating your own energy. A range of commercial PV panels are available and the pace of new technology is moving rapidly.

The solar generation profile is well matched to commercial load requirements, so it's a natural fit – that is commercial buildings need the most energy during daylight hours when solar panels are generating energy.

Key issues to keep in mind:

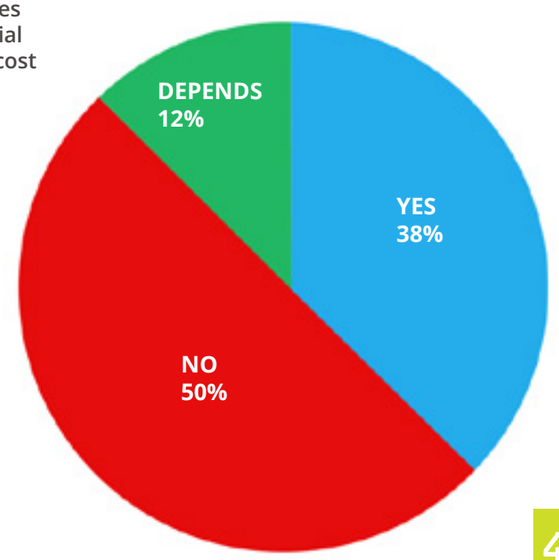
- Integration of the solar system and the network – the electrical system within the building must be robust.
- Space requirements – is there room for the system on or near your building?

WHAT SIZE ARRAY WOULD YOU NEED?

This can vary but a typical 10,000 square metre office building with maximum demand of 500kW will need 277 panels and 300 sq m of roof space to generate 10 per cent of onsite electricity demand.

The **Clean Energy Council guide** to installing solar on commercial buildings is a useful reference.

The Fifth Estate **webinar poll: Are government schemes necessary for commercial solar PV systems to be cost effective?**



RESEARCH

The performance of the panels, inverters and the organisation installing the equipment all differ and call for significant research.

GOVERNMENT SCHEMES FOR SOLAR

Several types of financial assistance are on offer for solar PV systems in Australia, including:

- Small-scale Technology Certificates (STCs)
- Large-scale Generation Certificates (LGCs)
- Feed-in tariffs (FiTs)
- GrantsLINK

PAYBACK

Due to various factors, paybacks on commercial solar installations can vary between about three and 10 years. The best financial outcomes occur where project complexity is low and self use of generated power is high.

Building characteristics can have a considerable impact on the price of a PV project, too. For example, difficult roof penetrations, long cable runs, roof edge protection and health, safety and environment considerations can all affect the cost of installation.

FUTURE OF SOLAR PV

In the next one to two years, expect advances in alternating current panels (AC). solar panels output direct current, however, it cannot be used by common household appliances and therefore needs to be converted by an inverter.

With AC panels, a microinverter is integrated on the panel to convert straight to AC. Benefits include simpler installation, the potential for improved electrical conversion (though they are still currently less efficient than a central inverter) and a reduction in complex componentry, which could lead to reduced maintenance costs. Having microinverters on the roof in hot climates could, however, lead to reduced lifespans.

In three to five years, smart battery storage with distributor control over load shedding and battery discharge will likely see headway.

Electricity storage is a vital piece of the puzzle for cost effectively generating electricity. Once perfected we will be able to generate solar during the day and use the electricity at a later stage.

CASE STUDY: 20KW PV SYSTEM, STOCKMANS HALL OF FAME

A 20-kilowatt peak solar array to the iconic Stockmans Hall of Fame in Longreach, Queensland, demonstrates a remote PV system.

The system, installed in June 2013, produces an estimated 36 megawatt hours of electricity a year, offsetting 32 tonnes of CO_2 a year.

CASE STUDY: 30KW PV SYSTEM, BASKETBALL STADIUM IN KILSYTH, VICTORIA

Big flat roofs like a basketball stadium are perfect for solar. The 30kW peak solar array in Melbourne's outer eastern suburbs has been operating since February 2013 and produces 39MWh of electricity a year, and is estimated to offset 48 tonnes of CO_2 a year.

Metro areas require close consultation with network operators to ensure grid connection approval is obtained.

This stadium also upgraded their lighting system to LED before the solar system was installed, thus reducing the load on the site first.

CASE STUDY: 70KW PV SYSTEM, SUPERMARKET IN TOCUMWAL, NSW

Again, this system took advantage of a big flat roof. This is a 70kW peak solar array in southern NSW operating since February 2013, producing 107 MWh a year, and offsetting 114 tonnes of CO_2 a year.

Sites with seven days a week loads are good solar candidates, as most of the generated power is consumed onsite with little exported.

A few promising solutions are:

The Redox Flow Cell is an electrochemical storage system that allows energy to be stored in two solutions.

See *The Fifth Estate* article **Cheap flow battery offers mass storage potential for renewables**.

The capacity of the system is determined by the size of the electrolyte tanks and the system power is determined by the size of the cell stacks.

Other technologies are moving along, too, including compressed air storage machines, superconducting magnetic energy storage and flywheels.

SOLAR THERMAL

As distinct from PV systems, solar thermal systems generate heat but not electricity. Solar hot water systems operate on this principle. The sun's heat is used to create hot water (or hot oil or mineral salt), which can then be used to provide thermal energy to generate electricity or heat for an absorption chiller.

Echuca Hospital in Country Victoria is using solar thermal energy for heat and processes.

See *The Fifth Estate* article **Solar cooling heats up in Australia**.

BIOGAS

A way of offsetting a reliance on natural gas is to consider bio gas. It's simply the creation of methane from green waste through an anaerobic process.

Depending on the project, this methane can be used to feed a boiler or scrubbed (where the impurities are removed) and used in cogeneration systems.

If not collected and used the methane needs to be burned (flared) or would just escape into the atmosphere – causing environmental damage.

BIOMASS

Biomass is used to describe the burning of solid material such as wood, waste material from grain or seed or sugar cane. It is considered renewable and carbon neutral. Biomass makes most sense when you have access to fuel – for example, waste product from a manufacturing process. You must also consider the energy used in the transport of the fuel.

BUILDING INTEGRATED WIND ENERGY

Small scale building integrated wind turbines are on a number of rooftops around CBDs and inner suburbs of our cities. The size varies from about 1.5kW to 25kW.

In a sense they are similar to PV systems, in that they produce electricity that can be used to reduce the reliance on connection to the grid.

Small scale building integrated wind turbines need to have access to laminar wind (uninterrupted flows of wind in parallel layers), however many areas in larger CBDs will have quite turbulent wind flows and therefore be unsuitable.

Cities can contain thermal hot spots – columns of heat rising above roads and buildings – which can upset the laminar flow.

Building integrated wind systems require careful design and local assessment of wind performance, and the intermittent nature of wind should also be considered in the design.

Access to wind is an important issue for these system, with low level buildings risking being built out.

5

HOW TO FINANCE YOUR PROJECTS, BUILD YOUR BUSINESS CASE AND TELL THE STORY

You need to make a watertight business case to the CFO, so it's clear that energy efficiency is an absolute no-brainer. A sustainable funding model will allow you to present a cohesive energy savings framework to the C-suite so they see it as a strategic initiative, rather than a group of ad hoc projects.

There is a number of alternatives that a business can use to fund projects. Each has positive and negative aspects to it, and most businesses may access a variety of these types of funds.

Examples of funding that businesses could consider are:

- Internal capital
- Revolving efficiency fund
- External finance
- Energy Performance Contracts (EPCs)
- Environmental Upgrade Agreements (EUAs)
- Leases
- Government grants and initiatives

Energy efficiency improvements often come at high upfront costs to pay for new equipment and the efforts associated with installation. On the other hand the benefits of these improvements, especially the reduced energy cost cash outflows, are generated over several years. In addition to this first-cost hurdle and timing mismatch, energy efficiency projects often involve many stakeholders, including site owners, end-users, technology providers, project developers, financiers and utilities. There can be split incentives across these stakeholders, especially in the real estate sector.

Over recent years a number of new financing and business models have emerged to tackle barriers and complexity. There are now ways to structure a financing solution that alleviate some of the pain points experienced by project proponents.

A number of internal and external financing solutions that should be considered are summarised in the following table:

Financing model	Financing mechanism	Balance sheet impact	Typical term	Repayment mechanism	Comments
Self-funded	Revolving energy efficiency fund with initial seed funding	On	1-5 y	n/a	• A fund is set up with initial seed funding and is replenished by project cost savings (typically energy cost savings) over time
Energy efficiency specialist loan	Bank loan	On	1-7 y	Debt repayment	• Reduced or eliminated up-front cost • Customer depreciates the equipment (tax benefits) • Repayments matched with energy cost savings • Clean Energy Finance Corporation product • Some banks offer better terms for energy efficiency equipment
Lease agreement (or master lease agreement)	Operating lease	Off	1-10 y	Lease payment	• Energy efficiency equipment is owned by the financier and leased to the customer • At the end of the lease, financier retains equipment ownership • Risk shifted to financier. Note: this generally comes at a higher finance cost and is often only available for very large projects • Repayments matched with energy cost savings • Clean Energy Finance Corporation product
	Capital lease	On	1-15 y	Lease payment	• Energy efficiency equipment is owned by the financier and leased to the customer • At the end of the lease, equipment ownership transfers to the customer • Customer depreciates the equipment (tax benefits) • Repayments matched with energy cost savings • Clean Energy Finance Corporation product
Pay-as-you save models	Utility on-bill financing	Off	1-5 y	Debt repayment included into energy bills	• Retailer/third party financier provides up-front capital costs and recoups by incorporating loan repayments into energy bills
	Energy Service Company financing (Energy Performance Contract with ESCO financing)	Off	1-15 y	Shared energy saving agreements	• ESCO carries performance and credit risk as it typically carries out the financing • Cost savings are split for a pre-determined length of time in accordance with a pre-arranged percentage
	Energy Savings Agreement / Power Purchase Agreement	Off	10-15 y	Through an agreed rate ($ per avoided unit of energy, $ per unit energy supplied)	• An ESA/PPA provider owns and maintains generation/energy efficiency equipment (eg, a chiller). • Customer agrees to pay based on realised savings/energy generated
Others	Managed Energy Savings Agreement	Off	15-20 y	Fixed repayment schedule	• ESCO charges a fixed fee; end-user receives a guaranteed level of service (eg, space heat, lighting, motive power, etc.) • Risk of energy price volatility
	Environmental Upgrade Agreement	Off or on	5-20 y	Council rates	• Loan tied to building and transfers with change in building ownership • Lower risk for financier, so better rates • Enables transparent pass-through of repayments to tenants, so the owner/tenant split incentive can be overcome • Repayments matched with energy cost savings • Clean Energy Finance Corporation product

Most types of energy efficiency and renewable energy projects can be financed. A preliminary review is needed to identify the options that best fit your financial restrictions and meet your risk management requirements.

BUILDING YOUR BUSINESS CASE AND TELLING THE STORY

You may only get one opportunity to pitch your strategy to a key decision maker or the management team. Keep in mind that your strategy will compete with many other good initiatives for a limited amount of capital.

Be clear on the decision-making "rules". Make sure you understand:

- The project investment decision making process and criteria used in your company
- The financial investment decision making metrics used to determine return on investment
- The hurdle rate (for example, internal rate of return, net present value and/or simple payback)
- The project risk rating framework used by your organisation

INTRODUCING THE REVOLVING EFFICIENCY FUND

A Revolving Efficiency Fund is a financing mechanism that has had significant traction in the sustainability field and is used extensively in the university sector. The model is very relevant to energy management and is increasingly being applied to this.

Simply put, a fund is created with either seed capital or an investment. The fund then invests in efficiency projects that generate annual cost savings. The savings can then be paid back into the fund to be invested in further efficiency projects, and to pay back initial investments.

There are a number of key aspects to the REF that are noteworthy.

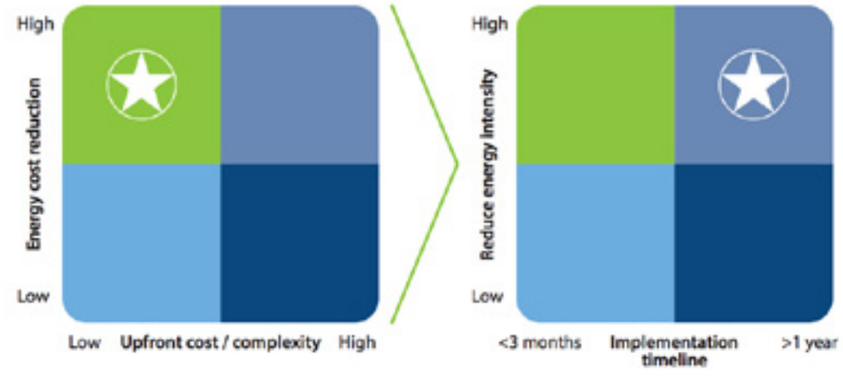
While the REF itself is not necessarily unique in terms of the financial model (it is in fact a very simple model), the fact that all energy savings and efficiency projects are presented holistically underpins the notion that the overall program of works has been approached strategically by the organisation. By contrast, individual efficiency projects presented as standalone business cases run the risk of being rejected on the basis that they are simply tactical projects.

Over a longer term horizon, REFs achieve high financial returns. Recent research shows that revolving funds deliver a median return on investment of **28 per cent annually**.

Read more about the REF model **here**.

Whether your presentation is formal or informal make sure you keep to some golden rules:

- Focus your presentation on the objectives of the decision makers. Use language they are familiar with, so focus on risks and benefits to the business, not the technical specifications. Avoid technical jargon, specialist technical terms and acronyms.
- Keep it brief and communicate your plan clearly. Remember: diagrams, graphs and photos can be effective tools in creating a compelling vision of the future.
- Build confidence by demonstrating that you know your operations and have done your "homework". Know your numbers, such as the life of current equipment, energy intensity of production to the implementation cost, financial benefits and implementation timelines of your proposed project.
- Make sure you identify business risks, can demonstrate that you evaluated alternatives and investigated co-funding sources (for example, government subsidies, incentives and grants).
- Keep the C-suite engaged by "telling a story". Executives are interested in what their competitors are doing. Refer to case studies (lessons learned and successes), not only hard financial and technical facts.



Source: Department of Industry

In addition to the clear benefits of energy savings and emissions reduction, energy efficiency improvements can lead to a broader range of impacts. The International Energy Agency has divided these benefits into five areas: production benefits, operation and management improvements, wider environmental impacts, improvements in tenant comfort, and other.

The IEA is developing guidance on how best to quantify the benefits. Its **recent discussion paper** gives a good overview, and may help you to understand the broader benefits of your strategic energy management program, which can then be presented to decision makers.

HOW TO PITCH YOUR PROJECT TO KEY DECISION MAKERS

How does your project support the objectives of key decision makers? One way is to plot them on a prioritisation matrix, as pictured to the left, and change the axis values to reflect the key priorities for your business. As an example, if the C-suite has identified enhancing the business's competitive advantage as a top priority, place your potential projects on a prioritisation matrix that uses these parameters. Reassess your project plan and build a case that hopefully speaks to those priorities.

UNDERSTANDING WHAT YOUR PROJECT MEANS TO KEY DECISION MAKERS

A useful way to gain insight into how well your projects support the objectives of key stakeholders is to plot your projects on a prioritisation matrix, then change the axis values to reflect their decision making criteria rather than your own. For example, if enhancing the competitive position of your company is top of the executive agenda, the decision making parameters most important to decisions makers versus your own prioritisation matrix may be as illustrated on the opposite page.

With this insight, you can re-assess your project plan with the view to potentially bringing this project forward. Build a case for your project that speaks to the priorities of the executive. By using energy intensity benchmarking you may be able to demonstrate how the project could enhance the organisation's competitive position (i.e. current and post project kWh/tonne of product produced, compared to a key competitor or the industry average).

CONCLUSION

This ebook is based on a webinar series in which *The Fifth Estate* collaborated with three of Australia's leading energy experts – **AGL, Energetics and Envizi** – to present a framework for strategic energy management and a roadmap for creating energy efficiency programs that can be applied to any organisation.

As our ebook shows, more efficient buildings not only save money for the occupants of a building but produce better capital rental returns for the asset owners.

The webinar series and this ebook show how to create a strategic business case that will win support from the "C-Suite" – the chief executive officer, chief operating officer and chief financial officer in your organisation.

We cover two fundamentals – **enterprise-wide data management** and **sustainable funding** – while also exploring in depth ways to pay less for your energy, use less and generate your own.

PAY LESS

We've stepped you through how to buy energy at lower costs, which means understanding your own energy use, how the energy markets operate and how to negotiate contracts.

USE LESS

We've outlined a range of energy efficiency initiatives that can be employed by your organisation. The best place to start is with an energy audit to identify any issues and expose the biggest savings that can be achieved. In commercial buildings these are typically lighting, HVAC and BMS upgrades.

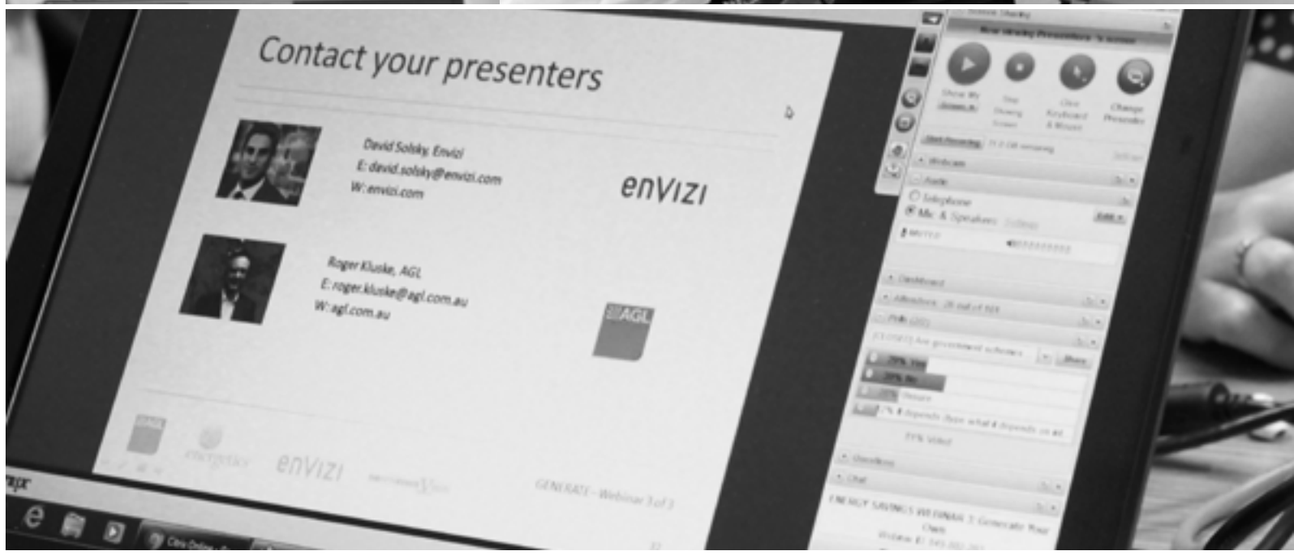
GENERATE YOUR OWN

We've outlined the exciting new world of alternative energy, most of which has lower greenhouse gas emissions than supplied by the grid.

With the fundamentals in place, and a plan to tackle the three key elements you have a strategic energy management plan. The final section of our ebook summarises how to finance your projects, build your business case and tell the story of why energy management makes good, rational business sense, for your organisation's business profile and for the environment.


David West, Energetics


(L-R) David Martenson, Energetics; David Solsky, Envizi; Roger Kluske, AGL




David Solsky, Envizi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THE WEBINAR SESSIONS

THE ENERGY GOLD RUSH

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