

RESPONSE TO INQUIRY INTO THE ENERGY SERVICES INDUSTRY NO. 1

1. Progress to date

The energy services industry in Victoria is **not** well developed or, for that matter, defined. Currently there is a good deal of activity relating to energy services both at a State and Federal level however the delivery mechanisms (the consultants, equipment suppliers, energy retailers, etc) are not well coordinated. Some of these service providers are not promoted as energy management companies as such but provide energy management advice as a component of their core activities (e.g. retailers, appliance providers, etc).

Background

The concept of energy management services has been around in various guises since the mid 1970's when the State Government agencies (SECV and Gas and Fuel) promoted energy efficiency as a responsible component of their supply activities. The initiatives back then included the operation of energy centres', consulting to industry and research support to appliance manufacturers. During the 1980's these Authorities promoted Demand management through similar programs. During the privatization period and the introduction of competitive markets of the mid to late 1990's the focus of these businesses changed to competitive supply and management of the emerging regulatory environment of open markets. Whilst energy retailers now provide energy services as a component of their service offerings to their customers it is probably fair to say that it is not the core focus of their businesses.

Current Situation

The primary drivers for energy efficiency services in Victoria are currently the State Government programs managed by SEAV, legislation relating to EPA permit licensing for industry and Building Regulations relating to new home and commercial building construction. Apart from companies and individuals taking actions to address these there is little activity currently being undertaken on a voluntary basis.

In reviewing the Energy Services Industry in Victoria it is important to categorize it into the various sectors (Residential, Commercial and Industrial). The service industries to these classes are very different and the drivers for further developing service arrangements are likely to be significantly different in each classification.

For example in the Residential markets the current energy services relate to retail supply offers (for both power and gas), appliance sales (star ratings, etc) and housing design and construction. Whilst there have been many good initiatives to improve end use efficiency in these areas, particularly through Government legislation on new home efficiency, etc there is not an integrated approach to Residential end use efficiency. To achieve real long term impact the whole supply chain for the life of a particular residential property would need to be focused on energy reduction outcomes. Currently most of the community endorses the concept of energy savings however few really practice efficiency in their normal day to day activities. For example people will now buy a compact fluorescent light at the hardware store, some will buy front loader washing machines, etc but will, at the same time, run their central heater at 21C or buy a 4 litre capacity car when a smaller capacity would suffice. For end users there are few "day to day" drivers for most people to encourage them to change their ways. Stationary energy (gas and electricity) is very inexpensive for the majority of people and few relate end use of these commodities to the overall supply chain issues required to deliver energy to the meter. Whilst it is not an easy ask to achieve real impact the overall mind set needs to change.

The Commercial and Industrial Sector is very different in that the customer base is much smaller, the energy expenditure is larger and the end use energy applications are more complex and diverse. In the Commercial sector there has been a good deal of activity around developing minimum energy standards for energy efficiency. On the other hand in the Industrial sector there are currently few incentives sufficient to persuade companies to commit resources to energy management activities. The majority of activity undertaken by industry is driven by their requirements to satisfy the EPA energy efficiency protocols. The SEAV has also introduced alliance partnering to some end use customers and associations however this is in its infancy and has fairly small coverage at this stage.

Generally the current low pricing for gas and electricity combined with the lack of a co-ordinated approach to energy efficiency and lack of knowledge by end users of what is possible seem to be the

major constraints relating to energy efficiency. There also appears to be a "silo" effect existing when it come to energy generally. The energy supply chain (production/generation, transmission, distribution and retailing) operates independently of the energy services (appliances, energy management, etc) with different Government Departments responsible for policy development in these elements of energy supply. As Carbon "commercial value" becomes more defined it will be critical that all components of energy supply and utilization be co-ordinated through common policy groups within State Government.

2. Range of Services and Technologies available and the diversity of business models, compare with those in other QECD countries;

As previously stated the Energy Services industry is not clearly defined in the Victorian market. The focus on energy services is greater in Europe, Japan and the USA where natural gas and electricity is much more expensive and more severe climates lead to higher energy usage particularly for the residential sector.

Whilst there are significantly more companies involved in energy services provision in these countries the types of services on offer are not significantly different to what has been offered in this country over the last few decades. Many of these services have not proved commercially attractive in Australia whereas they are apparently viable in these other markets. These Energy Services and Technologies typically include:

**Industrial and Commercial
ENERGY ANALYSIS**

Energy Audits (Levels 1, 2 and 3)
Process Analysis.
Energy Monitoring and Targeting.
Energy Project Feasibility Studies.

ENERGY MANAGEMENT TRAINING

Industrial Energy Management Practices.
Gas and Power Utilisation Training.
Energy Process Management.

Supply Installations.

System Sizing; Meters/Regulators/Fitting Lines/Services.
Process Heat Equipment selection.
Plant Equipment Layouts.
Safety Audits and Procedures Development.

Steam System Management.

Boiler Efficiency Checks.
Boiler Scheduling and Operations management.
Combustion Analysis.
Steam process and loss analysis.
Steam Trap Failure analysis.
Control Valve evaluations.
Steam Distribution System design.
Heat and Steam Recovery/Reuse.

Process and Space Heat Evaluations.

Temperature Control Analysis and Mapping.

Heat Balances and Draft Control.
Space heating design layouts.
Heat Recovery Analysis and design.
Exhaust Flue flow calculations and analysis.
Control Systems.

Electrical Systems Management.

Power Quality Analysis (e.g. Surge protection, Voltage Regulation, Line Filtering, UPS, etc).
Power Factor Analysis and Correction.
Demand Control System design.
Pump and Fan Analysis.
Motor design, sizing and Operations.
Lighting Surveys and System selection.

Third Party Financing

These include large projects such as Cogeneration plants, Steam Plants, Compressed Air Generation services, etc through to smaller projects such as funding power factor correction and demand control systems.

In the residential sector they include insulation retrofits (pay it off with the energy bills, etc), double glazing (cooler overseas climates), etc.

3. Competitiveness of the Victorian energy services industry

The Victorian energy services industry is not a significant service provider with gaps in many of the areas where known services are provided in other countries. Currently the main areas of activity are energy auditing for industry and commerce and energy efficiency assessment for new homes in the Residential sector.

The energy audit consultants fall into three main categories;

- Energy auditors working for energy retailers providing enhanced services to their energy retail customers;
- Energy auditors working for large engineering services companies who often offer this services to facilitate sales of building and engineering consultancies;
- Independent energy consulting companies specializing in this service as their core offering. These companies are often small and sometimes provide other products limited to ancillary products (e.g. lighting control or power factor correction systems, etc) as other product lines.

The fees charged vary significantly however for technical services typically range between \$700 to \$1200 per day for engineering services. Whilst these fees are comparative to engineering fees charged for similar technical services there is some resistance by end users to accept these fees for energy management advice. It is interesting to note that these same customers have no hesitation in accepting these rates (and higher) for Commercial advice relating to energy purchasing and tendering. This perhaps tends to indicate that companies generally place a higher priority on the immediate commercial reality of energy supply pricing than they do to more, longer term issues such as energy efficiency or environmental emissions. Whilst most companies at Corporate level are very aware of the potential impact of energy efficiency on future operations this is generally not translated into a sense of immediacy at an operational level within these organizations.

The current demand for energy auditing in Victoria is fairly low with perhaps ten or less organizations providing these services to Industry and Commerce on a consistent basis. Competition between these companies is fairly high. The level of service is typically to Level 1 or 2 of the Australian Standard with few customers prepared to fund the more detailed analysis required of a Level 3 audit.

The more innovative implementation projects (as mentioned in Section 2) are generally not offered to industrial customers. There are some service providers (normally the larger Service firms or energy retailers) that have offered these products to the Commercial sectors.

The main reason why these third part financing and partnering type arrangements have not been implemented in industry is the complexity of managing the contracts (benchmarking actual improvement outcomes, etc) the difficulty ring fencing the said project and the relatively small quantum of energy savings compared to the complexity of typical partnering arrangements.

In the Commercial sector there have been a number of examples where building services companies take over the management of services to complexes. Whilst this approach is common overseas there has been a mixed response to this within the Commercial sector within this state. Whilst energy is one factor in successful projects of this type the project is normally justified on all elements of improvements achieved (manning, maintenance and improve plant management).

In the Residential Sector the new energy efficiency building regulations has required a large number of accredited housing designers to enter the market. I am not aware of the success or activity levels achieved in this service sector although some of these people are employed by builders and architects.

Other related service provision relates to appliance manufacturers and plumbers. Appliance manufacturers are active in promoting the efficiencies of their products however the installation of these is normally not well integrated into the operation of the systems installed within the homes. Whilst plumbers are aware of the relative benefits of high efficiency appliances they are normally not skilled in demonstrating actual saving benefits (in \$ and energy terms) to the end use clients. They also do not optimize installations to ensure the overall system (rather than just the appliance) is installed.

4. Barriers and Drivers in residential, commercial and industrial sectors

Main barriers:

- Low Price for energy
- Price In-elasticity
- Lack of detailed knowledge of energy supply chains.

5. Training, accreditation and performance guarantee arrangements

There are few training programs currently on offer to train potential participants in provision of energy efficiency services. The Department of Industry Tourism and Resources and the SEAV are both working on options for capacity building in this area although it is early days in the development of suitable training programs to ensure effective Accreditation arrangements can be put in place. AIRAH has run an accreditation program over the last few years however this does not appear to have been recognized or adopted by all parties.

AIRAH also runs a two day training program on energy management for commercial buildings. Our company (ETS P/L) has held Industrial Energy Management and Gas Utilisation courses for large industries and new consultants over the last few years.

Information needs to be "captured" from those people who were involved in earlier energy programs. Like the "core" energy supply industry many of the practitioners from that era have or are approaching retirement and whilst the energy industry has moved on the basic technical application of energy use has not materially changed. Whilst energy monitoring is an important component of future programs the actual skills of measurement, estimation and process modification need to also be in place to ensure real outcomes.

6. Measurement and Promotion

In recent years there have been few demonstration projects on new energy technologies in Industry or Commerce. The SEAV partnering programs have established some projects where installed technology could be replicated in various industry sectors. In the 1980-90's the then NERDDC Projects managed by the Department of Primary Industries and Energy were aimed at demonstrating relevant energy technologies in Industry.

Technologies are well known to the energy industry (e.g. waste heat systems, recompression of steam, improved process control, energy efficient motors, optimizers, product pre heaters, condensing boilers, etc) yet few can currently be justified with current fuel pricing. It is therefore recommended that if "new" technologies are to be demonstrated then they should be capable of replication through normal

commercial evaluation of the energy and other process benefits. If this is not the case replication will not occur unless subsidies are provided to make the projects commercially attractive.

There is still scope for housekeeping improvements in industry and commerce. In other countries "tool-kits" and "rules of thumb" are provided to assist industry to do their own analysis of energy savings. Much of this material is available from DOE in USA. Energy kits presented in a user friendly way could play an important role to get "buy-in" for energy programs. These type of kits need to be sufficiently detailed to allow relatively accurate calculations; there has been a tendency for check lists to be provided without providing back up resource to calculate potential from each idea.

Lack of in-plant meters is another important barrier to gaining accurate information for case studies and before and after evaluations. It is normally not practical to retro-fit gas or electrical sub-meters. There are however portable metering and estimation techniques that could be used to facilitate these activities.

Overall plant performance comparisons are often misleading as the comparison of specific energy performance (Energy used per unit of production) can vary significantly from plant to plant. An apparent "similar" process can vary significantly in energy intensity for a variety of reasons so it is extremely difficult to develop realistic benchmarks at Industry sector level. Even if a plant's energy performance is compared with itself factors such as weather and production levels need to be factored in. One option is to use a moving 12 month specific energy figure corrected for degree days. This moving average figure tends to smooth variances and shows overall trends in energy performance.

7. Role of Governments in energy efficiency services industry

My only comment here relates to co-ordination of Government efforts. Both State and Government Departments are involved in developing programs to address energy and greenhouse issues. Industry appears to be supportive of the overall energy initiatives (if commercially viable) but objects to multiple reporting of basically the same information to various departments. If energy use, CO2 equivalent emissions and action plans plus other parameters can be reported in a similar form to the various Government agencies it would streamline this part of any program.