

IEA DSM Task XIII- Demand response resources

Subtask 5- AU technology database

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Please note – company details have been listed in the order in which information was provided.

Wireless Monitors Australia Pty Ltd (CENT-A-METER™)

A. General company contact information

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B. Overview of the company

Wireless Monitors Australia Pty Ltd is a privately owned Australian company that invents, designs, manufactures and supplies the cent-a-meter™ product to distributors in Australia, New Zealand, USA, UK and Canada. It is based in Sydney with 5 employees and operates through strategic alliances with engineering, quality and marketing consultants, manufacturers and distributors.

WMA owns the international patent and trademark (pending) for the product which is made under licence in China, by a high quality manufacturer of wireless equipment, toys, cameras, clocks, medical and computer products for international brand-name corporations.

The product is designed to international standards for electronic and wireless equipment, manufactured under ISO 9001 quality standard and has been approved for sale and operation in Australia, New Zealand, Europe, UK, USA and Canada - having passed C-tick, FCC, UL, IC, RTTE and CE accreditation.

The cent-a-meter™ has won a number of prestigious awards for innovation including the Australian Museum Eureka prize for Science 2003 and the Housing Industry of Australia Greensmart Product of the Year 2004 award.

In Australia the product is distributed under the CLIPSAL brand and is endorsed and actively promoted by such leading electricity retailers in Australia and New Zealand such as: AGL, ERGON, ENERGEX, GENESIS, TRUST POWER etc. To date about 18,000 units have been sold.

C. Description of demand related technologies

The cent-a-meter™ is an easy-to-use wireless home monitoring system that measures electricity being used in homes and small businesses and shows the cost per hour on a portable display, perfect for those serious about reducing energy consumption and environmental conservation.

The cent-a-meter™ display features include: power consumption, cost per hour of electricity, equivalent greenhouse gas generated, indoor ambient temperature and humidity comfort levels.



By providing people with real-time feedback of their energy use on a large display in their homes, family members are educated and encouraged to make permanent changes in their behaviour to reduce non-essential electricity use, resulting in energy savings of between 10% to 25%, without affecting comfort levels. The device also acts as a home safety warning system, by alerting people to electrical appliances that may have been inadvertently left on when they leave home.

Providing point-of-use pricing signals to consumers also makes them more aware of the impact of their energy use patterns, especially in peak load times, even though the actual cost savings may be relatively insignificant in relation to their convenience and comfort levels.

The alarm feature included in the unit can be pre-set to a responsible level and when exceeded in peak times can act as a signal to induce a voluntary load reduction, when supported by appropriately targeted educational campaigns. The positive effect of such media messages have been proved in places like South Australia, which suffers with blackouts during hot summers caused by excessive air conditioning loads on a capacity constrained system. This voluntary demand reduction could be much more significant at such critical times if supported by energy-wise cent-as-meter™ customers.

In addition to customer testimonials and anecdotal feedback over the last two years, we have two independently conducted market surveys (one in Australia and the other in New Zealand) demonstrating that over 70% of participants made savings in energy consumption during the trial period. The Australia survey (30 respondents in 2001) is restricted but can be shown on request, whilst a copy of the New Zealand survey (200 respondents in 2004) can be provided on a confidential basis on request. There is also a body of university behavioural studies specifically on the subject of energy savings attributable to providing customers with timely feedback of use in an easily understood manner.

D. Features and benefits and expenditure vs savings consideration

The retail price of the cent-a-meter™ is about A\$150.00 plus an installation cost of about A\$75.00, making a total electrician installed cost of about A\$225.00.

If it is assumed that an average household electricity bill is about A\$2000.00 per year with savings of between 10% to 20%, then the payback period is between 6 to 12 months. Of course larger users have a potential to save much more, and visa versa.

With contestable power supply contracts becoming common place in some areas, there is often an incentive for electricity retailers to seek to lock in larger use customers for longer term supply contracts. The cent-a-meter™ product has proved to be a much better inducement for these customers to sign up with suppliers offering the product for "free" compared to those suppliers offering small cash rebates or other less environmentally friendly small consumer goods. A typical example is AGL in South Australia, where they found that their free-install cent-a-meter™ campaign was much more successful last year than previous campaigns not offering such a desirable product.

Naturally, bulk purchase and planned installation program involving large numbers of subsidised cent-a-meters™ is less expensive than the numbers quoted above, producing a much larger net benefit to both the retailer and consumer. In the above example, AGL as the major electricity retailer in South Australia also reaps the added benefit of cultivating a more power system educated, price sensitive and environmentally aware consumer base. Such communities will be more attuned to conserving power in peak load periods and help reduce demand on overstressed systems. An added bonus is that it will produce bottom line savings for the retailer who can avoid paying excessive prices for peak load power whilst having to resell it at a much lower price.

Such long term base load and peak load savings by large numbers of power conscious consumers in their homes also has a strong potential to carry over to their workplace lives, with consequent savings in business, industry and to the environment as a whole.

At present a number of Government bodies, electricity authorities and environmental organisations are starting to admit that there are no set of simple solutions to reducing energy use in industrialised, wealthy countries and that all efforts must be made across the spectrum of energy efficiency, more use of sustainable resources as well as widespread consumer behavioural change.

Our product the cent-a-meter™, is the first mass produced, affordable, easy-to-use, whole-of-house wireless electricity feedback monitor specifically designed to appeal to both electricity retailers and consumers – with demonstrable benefits to the economy and the environment.

Energy Response Pty Ltd (DSR Facility)

A. General company contact information

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B. Overview of the company

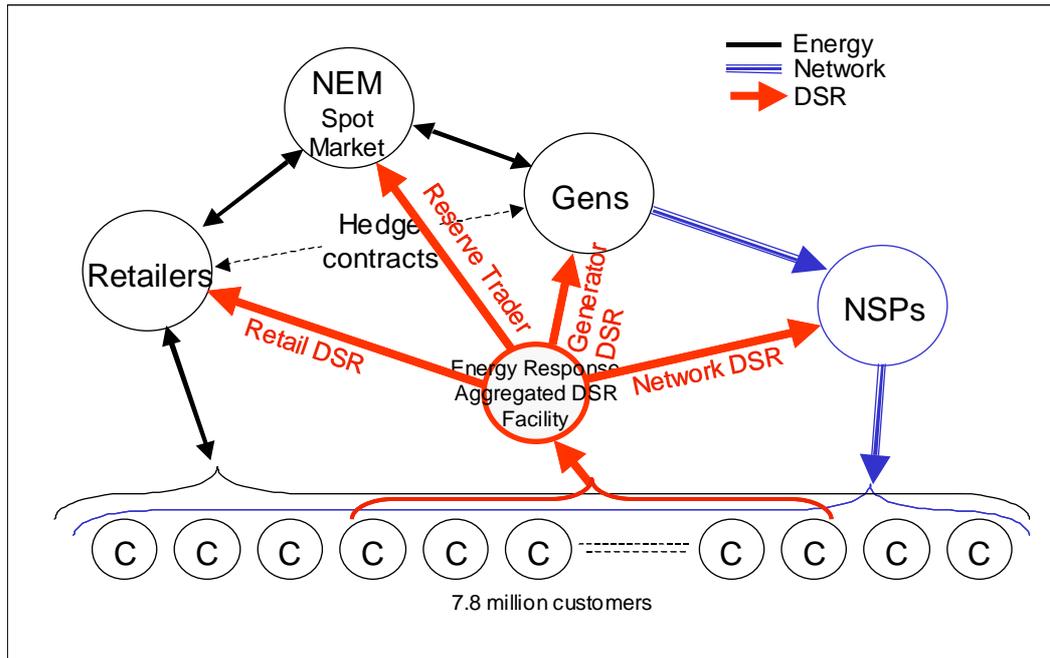
Energy Response is the only Demand Side Response (DSR) aggregator in the Australian National Electricity Market (NEM). The Energy Response process of using DSR to reduce electricity demand has been tested in a formal Trial which included 3 major electricity retailers (AGL, Energy Australia and Origin Energy), 3 major electricity distributors (United Energy, Energy Australia and AGL) and 9 mid to large electricity customers totalling 120MW of electricity DSR capability.

An independent assessment of the Trial and Report provided a very encouraging outcome (a copy of the report on the trial is available on the EUAA website). Subsequently, Energy Response was established to provide a process through which electricity customers will gain maximum benefit, either directly for DSR provided, or as a result of the first fully effective DSR facility operating anywhere in the world.

Demand Management, and more particularly DSR reflects the positive actions that *consumers* of electricity can take *now* to:

- reduce the cost of energy;
- pro-actively limit long term increases in electricity prices;
- relieve stress on critical 'poles and wires' infrastructure (networks) at times of extreme peaks, creating greater supply reliability;
- defer the need for costly and inefficient spending on under-utilised supply side capacity; and
- reduce green house gas emissions.

Energy Response has developed a national DSR facility that overcomes many of the reasons why an effective DSR has not evolved naturally since the NEM's inception in 1998. By registering a range of DSR from a wide range of electricity consumers across the market Energy Response is able to form high quality and reliable 'aggregated' DSR products which are valuable to electricity retailers, network operators, NEMMCO (the market operator) and ultimately a number of other market participants as shown in the diagram below. The use of these DSR products will address the major inefficiencies in the market and result in lower electricity costs.



C. Description of demand response related technologies

Most electricity consumers should be able to provide some Demand Side Response (DSR) by:

- Reducing their non urgent usage or shifting that usage to another time (eg, away from a forecast high wholesale price); or
- Transferring some of the site demand to an on site generator (eg, a standby generator).

While the dispatch speed and quantity of DSR can be enhanced through improved technology and automation, in general no additional spending or changes are required to participate in Energy Response's program.

Energy Response has developed a DSR Aggregation, Dispatch and Settlement system called "Lynx". This is a sophisticated IT system built on a fully functional Customer Relationship Management (CRM) system that :

- enables DSR providers to register individual plant items and the DSR available from each,
- facilitates the updating of provider data on line via a web browser
- categorizes the DSR available at any time of day or night and prioritises the dispatch of the DSR, based on a number of key factors
- facilitates the communication with key provider managers to manage DSR dispatch process
- provides dispatch data through to a settlement module for billing and payments.
- provides statistical and reporting tools

D. Features & benefits and expenditures vs. savings consideration:

An average of only 3 to 5% of consumer demand is required through this DSR aggregation facility to create a major impact. This amount of demand reduction or shift in time of use is unlikely to require any loss of production or amenity (Case Studies have proven this) and will certainly not require any reduction in site health, safety or security.

By providing some DSR through this facility for short periods (say 1 to 2 hours, up to 20 times per year), electricity consumers will be able to earn substantial rates of income relative to the cost of electricity for the same period (approximately five to ten times the cost of electricity to users). Energy Response can provide worked examples to demonstrate this for a range of different types of businesses.

The benefits from providing DSR will also create a net reduction in electricity costs, with the savings contributing directly to the company's bottom line. DSR providers will also be contributing to a more secure, reliable, efficient and sustainable future for electricity supply. An effective DSR has also been confirmed to contribute positively to the environment through reduced energy losses

Arrow Australia Electronics Pty Ltd (LonWorks (Echelon Corp))

(Note: this is a draft only- we are waiting on a final version of a case study from Echelon)

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B. Overview of the company:

Arrow is the Australian distributor for Echelon Corporation products- leading supplier of infrastructure hardware and software to the networking market.

Echelon is the leading supplier of infrastructure hardware and software to the rapidly growing device networking market. Since 1988, Echelon's solution—the LonWorks system—has been adopted by thousands of device and system manufacturers. Millions of connected LonWorks devices have been installed into buildings, factories, transportation systems, homes, utilities, and hundreds of other applications worldwide.

Echelon device networking technology enables end-users to remotely connect, monitor, control, and diagnose intelligent devices. Whether opening and closing an elevator door in an office building, or collecting energy use data from a factory floor via the Internet, Echelon's products and services enable you to manage every aspect of your device networking environment.

Today, LonWorks networks are the leading de facto standard for networking everyday devices. Our solution is recognized by standards organizations around the globe—including AAR, ANSI, ASHRAE, IEEE, IFSF, and SEMI—for networking systems in homes, trains, semiconductor fabrication equipment, intelligent buildings, gas stations and freight train braking systems. Echelon supplies over 90 products to original equipment manufacturers (OEMs) and systems integrators from its offices in the United States, United Kingdom, China, Japan, Germany, France, South Korea and The Netherlands and channel partners throughout the Americas, Asia, and Europe. Echelon is publicly traded on the NASDAQ market under the symbol ELON.

C. Description of demand response related technologies:

Echelon Products

Over the past decade, a silent revolution has taken place in the networking world. What exists today is an electronic fabric of communication devices that connect everyone to everything. When electronic devices in our homes and businesses are network-enabled, the result is more convenience, increased productivity and profitability, and an improved quality of life.

Echelon is at the forefront of this technological revolution because of the LonWorks platform, a universal, open standard for networking everyday devices to each other and the Internet. At the heart of Echelon's LonWorks technology are networks of low-cost, intelligent devices like switches, thermostats, elevators, washing machines, and utility meters that communicate with each other to provide distributed monitoring and control.

Around the world, thousands of organizations—manufacturers, service providers, system integrators, end-users, and standard bodies—have embraced Echelon's open LonWorks solutions for making everyday devices smarter, accessible, and manageable over the Internet. Echelon provides over 90 products and services based on the LonWorks platform for device networks. Echelon's products and services allow manufacturers and integrators to quickly develop, test, debug and deploy LonWorks products and systems.

Echelon's commitment to quality and total customer satisfaction is the responsibility of every employee and is demonstrated by our quality system, on-going management review, and continual improvement based on customer feedback. Echelon will comply with the European Union's mandate of the Restriction of Hazardous Substance Act (RoHS) by 2006. A *tentative schedule* has been posted to provide this information.

Starter Kits for Integrators

Get going with a LonWorks Starter Kit! Kit includes all the hardware and software you need to get started with the LonWorks system.

Enterprise Software

The Panoramix platform is a highly scalable, enterprise software that enables businesses to collect and manage data from device networks across multiple facilities and turn it into actionable business intelligence. The Panoramix platform lets you tap into the information running your core operations, extract it to a central site, aggregate it, and integrate it with your planning, operating, and other business systems to gain insight into the heart of your business.

OEM Components

To make LonWorks networks as economical as possible, Echelon produces a wide array of products for original equipment manufacturers (OEM) for embedding Free Topology Transceivers, Power Line Transceivers, Control Modules, a Microprocessor Interface Program (MIP), a ShortStack™ Micro Server, or a OEM Network Interface. These products are designed for quickly and simply adding LonWorks control and networking to any product.

Integration Tools

Integrating products from among the 4,000 suppliers of LonWorks products would be a daunting task were it not for the work of the LonMark Interoperability Association and network integrations tools like the LonMaker Integration Tool, LonScanner Protocol Analyzer, LNS plug-ins, the LNS DDE server, and the embedding Device Manager. These tools provide every integrator with easy-to-use applications for the management, monitoring and control services for LonWorks networks.

Network Interfaces, Routers, and Internet Connectivity
Recognizing that control networks may be located in disparate locations throughout a plant or city, or even in different countries, Echelon designed LonWorks networks to support different means of wide area networking, including dial-in/ out modems and IP (Internet Protocol) networking. IP support is an integral component of many Echelon products. For example, Echelon's LNS software—the standard network management platform for LonWorks networks—permits remote clients to operate over IP networks for remote installation, management, operation, and maintenance of control networks.

I/O Devices

The many advantages of LonWorks networks have opened up a world of applications in building and factory automation, home control, utility monitoring, and transportation systems. To better serve the users of control networks, Echelon has created the LonPoint family of control products and trained network integrators in their proper application. Designed for use as a stand-alone system or together with LonWorks products made by other manufacturers, the LonPoint family of products is able to integrate new and legacy analog and digital devices into cost-effective,

interoperable control systems. By fully leveraging the open architecture and distributed intelligence inherent in LonWorks networks, the LonPoint products lower overall installation and life cycle costs, increases reliability by minimizing single points of failure, and provides the flexibility to adapt to a wide variety of applications.

Development Tools

Echelon's development tools provide the foundation for quickly producing intelligent products and services with the NodeBuilder 3.1 Development Tool, LonScanner Protocol Analyzer, LNS Network Operating System (LNS Turbo Edition), Microprocessor Interface Program (MIP), ShortStack Micro Server, and others. Each tool will bring your development efforts to the cutting edge of LonWorks products.

Support

Echelon offers a comprehensive technical support program for OEM developers, network integrators, and end-users. Supported by trained application engineers stationed around the world, this program offers different service levels to meet every budget and need. Services include OEM hardware and software development support, extended warranty programs, and product architectural design reviews.

Training

The complexity of networking millions of everyday devices across new and legacy networks—in myriad business solutions—demands a comprehensive training program. Echelon's first-rate curriculum provides you with step-by-step, practical, and in-depth knowledge of product design, implementation, and maintenance for the LonWorks platform. Our training programs enable you to get your products to market and systems installed on time, and on budget.

Example application

LonWorks Demonstrates Watts New in Energy Conservation- During 2001, California consumers and businesses came to learn that electricity is a finite commodity. The threat of increasing blackouts generated frantic searches for ways to cut usage. Many ideas were abandoned as too harsh. Did conservation have to be so arduous? An innovative program sponsored by Southern California Edison incorporating Echelon LonWorks technology proves that conservation can be truly painless.

Just Say, "Charge It"

Electric vehicles including forklifts used in warehousing, food processing, and other industrial facilities as well as thousands of golf carts recharge their batteries daily—commonly during regular working hours when demand for electricity is greatest. "It became apparent that many customers could conveniently and easily shift their battery charging to off-peak times if they had the proper control equipment," says Dick Cromie, Program Manager with Southern California Edison. SCE realized that if it could shift the recharging of just 3 to 5 percent of the estimated 70,000 such vehicles within its territory to off-peak hours, the utility could reduce peak loads by 8 megawatts.

SCE applied to the California Energy Commission (CEC) in June 2001, proposing a program to reduce industrial electric vehicle on-peak charging loads. Under the program, funded by the State of California, companies that installed energy management equipment on their battery charging systems would be paid up to \$150 per kilowatt (kW) if they shifted from on-peak to off-peak weekdays during the 2002 summer months.

Developing the charger management solution for the Peak Load Reduction Program (PLRP) was a joint effort between SCE's Electric Transportation Division and several industry trade allies,

including VaCom Technologies, an Open Systems Alliance member and Echelon Authorized Network Integrator located in La Verne, California.

Charging Ahead

VaCom recommended using controls based on LonWorks open technology and using LonMark certified products. The systems would have built-in compliance and override verification plus Internet or phone line communications options. In addition, a LonWorks network would not require expensive, custom coding that could take months to create. Doug Scott, president of VaCom, points to another, longer-term benefit of the program. "An open system could also be viewed as a starting point for additional energy management control within these same businesses; the core of an energy efficiency infrastructure building block that could be expanded over time, saving even more energy in the future."

Charged Up and Ready to Go

VaCom named their technology solution the Battery Charger Control Panel (BCCP). The BCCP system is compact and self-contained. All required control, remote monitoring capability, and power switching devices are included in one simple-to-install package, completely pre-wired and pre-programmed.

The size and configuration of BCCP installations vary based on individual requirements. However, each BCCP installation consists of one or more of Echelon's LonPoint DIO-10 input/output modules, which monitor current flow and control the battery charger relays; a LonPoint SCH-10 scheduler, which works like a timer; LonPoint DL-10 data logger that provides a history of on/off cycles and power usage; Echelon SLTA serial adapter for dialup connectivity; an i.LON 1000 for Internet connectivity; and WattNode and Veris kWh LonWorks power meters. Leading the Charge for Conservation The BCCP program was an immediate success with businesses. Over half of all firms contacted signed up. As of March 2002, more than 50 companies have agreed to participate. "The return on investment for these companies is excellent with up to \$500 savings per vehicle per year," says Scott.

The expectations for this effort have been truly met and exceeded. "This program has opened everyone's eyes to potential energy cost savings for vehicle battery charging, and shown what a win-win proposition it really is," adds Cromie.

Key Benefits

- Businesses realize energy cost savings and rapid ROI
- Utility reduces chance of blackouts, lowers need for new generating capacity
- Easy installation with prepackaged system

In addition to these, other examples can also be found at <http://www.echelon.com./solutions/industrial/industapps.htm>

D. Features & benefits and expenditures vs. savings consideration:

This is very difficult to provide in a few paragraphs description. Total costs solutions vary from a few thousand to 10's of thousands, to even 100's of thousands for enterprise systems.

Operational & performance are very difficult to define in a general sense as they vary so much depending on the application. The previous example provides a good indication of what can be achieved as well as the other application examples on Echelon's website. See <http://www.echelon.com./solutions/industrial/industapps.htm>

Computer Control Instrumentation (PowerMate™)

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B. Overview of the company:

CCI was founded in February 1995 to provide engineering expertise to industry. We provide electronic repairs & service to a wide range of electronic equipment. We also offer a complete service from initial concept, using our design engineering skills, both for original circuit design and for printed circuit board layout & fabrication.

Our current international sales are only to New Zealand mainly the Power-Mate meter. We have a strategic alliance with SAXCESS who are currently seeking to find overseas buyers for CCI's products.

C. Description of demand response related technologies:

The *PowerMate* can show figures on the greenhouse gas emissions and running costs of particular appliances. The *PowerMate* has the ability to set greenhouse gas emissions and electricity tariffs as emissions from electricity generation and prices change over time. *PowerMate* measures the watts drawn and kilowatt-hours consumed by an electrical appliance and can estimate hourly, quarterly and yearly running costs and greenhouse gas emissions. It's easy to use - plug the *PowerMate* into a power point and then plug your appliance into the *PowerMate*.

Energy SA assisted CCI with the development of the prototype and has since purchased the first 230 *PowerMates*. These are being used by home energy auditors participating in the Energy Friends Program and the Energy Efficiency Program for Low Income Households.

We have designed and manufacture; temperature controllers - both PC and PLC based systems used in wineries and the plastics industries, a range of DC to DC converters used by the Railway industry, Gas Guns used for bird deterrent usage, and automated testing equipment mainly used by whitegoods manufacturers. Installations of our equipment include Electrolux Home Products, Kirrihill Winery, EDI & Pacific National rail.

D. Features & benefits and expenditures vs. savings consideration:

All customers are happy with the practicality and performance of their installations, all systems are designed in close consultation with the customers and end users.

AMPY Email Metering (Home Energy Monitor)

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B. Overview of the company:

Founded in 1921, AMPY Email Metering is Australia's leading electricity and gas metering company, delivering metering products to every State and Territory in Australia and overseas, having achieved a number of "world first" designs along the way. Our parent company, Bayard Group, is the world's largest electricity meter manufacturer, having added Landis and Gyr to its impressive metering stable. Bayard Group has invested in the metering sector in part because of their commitment to the growth of demand management and energy efficiency.

AMPY Email Metering's most recent innovative development is an advanced metering infrastructure (AMI) system which not only measures electricity consumption but also delivers usage and pricing signals into customer homes through a home energy monitor. Home owners are able to make informed decisions about how and when they consume energy providing measurable benefits to peak energy demand management.

C. Description of demand response related technologies:

The AMPY Email Metering AMI demand response system provides home owners real information on applicable energy tariffs and usage information, such as the energy consumed over the past hour and how much energy the home is currently using. Displayed in engineering units and Dollars and Cents on the home energy monitor, customers may respond to the easy to understand information and utility generated price signals to vary demand in peak periods.

Australia's first AMI deployment utilises AMPY Email Metering's system. It has been undertaken in NSW by Country Energy (in partnership with Bayard Group and AMPY Email Metering). The 18 month pilot aims to demonstrate that customers, if provided with price signals that more closely mimic time-variable costs of running an electricity system, will respond by changing their electricity consumption patterns.

D. Features & benefits and expenditures vs. savings consideration:

Bayard Group research continues to demonstrate significant benefits accrue to Energy Distribution Networks, Energy Retailers, Governments and Customers that extend well beyond simple meter reading, through adopting AMI demand response systems.

AMI systems enable utilities to defer investment in network system reinforcement, to pinpoint and restore outages quickly and avoid unnecessary callouts, to do more granular and precise load forecasting, to reduce hedge cover on a targeted basis, to avoid costs of special meter reads, to reduce estimated billing queries and complaints, to enable remote disconnection where

appropriate, and to improve customer care. Customers gain not only the ability to budget energy use and realise potential savings through innovative tariffs, but also a greater understanding of household impact on the environment.

CSIRO Distributed Energy Management & Control Project

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B. Overview of the company:

CSIRO is Australia's premier research organisation, with over 6500 people working in a variety of research areas, from entomology to energy technology. The Distributed Energy Management and Control project is a research project, part of CSIRO's Energy Transformed Flagship, whose goals include dramatically changes in the efficiency and greenhouse emissions of the nation's electricity generation, supply and end-use systems.

C. Description of demand response related technologies:

The Distributed Energy Management and Control (DEM&C) project is primarily concerned with the management and control of distributed energy resources. Considering large-scale uptake of distributed energy resources below the 5MW level, the operation and scheduling of these resources in a timely and coordinated fashion is a difficult challenge. Generally, traditional electricity network SCADA systems are not designed to operate at the required granularity at such a low level in the network, and the extension of traditional SCADA systems to this level is considered uneconomical.

The DEM&C project is focused on applying cutting-edge computer science, communications and electrical engineering technology to solving this problem. Our general approach is to use *decentralised* control methods for managing the system- no single controlling entity manages the system, rather, the system shows *emergent behaviour*, in trying to solve a variety of possible issues, such as reducing expenditure, minimising greenhouse gas contribution, or maximising profit. This decentralised approach has many advantages, including scalability, no single points of failure, great flexibility, and increased granularity of control.

We apply state of the art approaches from computer science for managing individual generators or loads in the system, where an *agent* takes care of a local device, and a network of agents can achieve quite complex goals. Aggregation mechanisms allow us to autonomously aggregate individual distributed energy resources into significant quantities, facilitating benefits such as:

- Reduction of pool-price exposure risk for electricity retail businesses.
- Peak management for networks businesses.
- Increased network security through automatic reconfiguration of distributed generation.
- Improved customer choice in the overall distributed energy paradigm.

D. Features & benefits and expenditures vs. savings consideration:

Where possible, the project is based around relatively cheap consumer electronics equipment, minimising the capital investment required for the roll-out of our technology. In general, the network, monitoring and control hardware required for this technology is significantly cheaper than traditional SCADA systems applied in electricity network management systems.

Whilst still primarily a research project, we anticipate a variety of financial benefit scenarios, depending on the actual business model used to deploy this technology. These may include:

- Financial incentives passed on to the consumer by a retailer, in return for our technology helping a retailer manage their exposure to market risk.
- The formation of new businesses such as aggregation businesses, who reward consumers who participate in the demand response event, and are in-turn rewarded for the aggregated demand-response quantity by a retailer or networks business.
- The formation of local aggregations who directly participate in electricity markets themselves, providing generation and load management response at times that suit the aggregated entity.
- End use efficiency benefits, from the improved *intelligent* control of devices at the customer's premises.

EDMI Pty Ltd

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B. Overview of the Company:

EDMI is a modern international company that designs, manufactures and sells innovative and technologically advanced electronic Energy Meters, Automatic Meter Reading (AMR) Systems and Metering System Software. EDMI has an extensive range of products for use in revenue applications across the Generation, Transmission and Distribution sectors of the electricity market as well as for Sub-metering and Energy Management applications.

All EDMI meters comply fully with IEC standards as well as specific national standards in many countries around the world. EDMI is accredited to the latest quality standards and is committed to supplying products of the highest standard and providing outstanding customer service.

EDMI has offices in Singapore, Australia, China, Malaysia and the UK and has appointed sales agents in other regions including Europe, ASEAN, the Middle East and Africa. Customer Service Centres have also been established in multiple countries across Oceania, Asia and Europe. These centres are used to calibrate and customise EDMI meters to support specific local market requirements and act as regional support hubs for our metering products, handling local customer enquiries, technical support and repairs.

Recently, EDMI has expanded into new markets across Asia, Europe and the UK. Customer Service Centres have been established in China and Malaysia and a network of sales agents have been created in countries such as Vietnam, Bangladesh, Thailand, Belgium and Mauritius. EDMI now has a presence in more than 14 countries worldwide and has customers in over 20 countries.

EDMI meters feature a range of communication capabilities including RS 232, RS 485, TCP/IP, ANSI optical, FLAG™ IEC 1107, MODBUS, DNP3, IEC870-5-102, radio, fibre optic and GSM/GPRS/CDMA. This communications flexibility is integral to EDMI's advanced Automatic Meter Reading (AMR) systems.

C. Description of demand response related technologies:

Meters

EDMI manufactures a range of electronic smart meters to suite all sectors of the energy utility industry. The pyramid below shows which sectors of the industry typically use the different EDMI metering products.

EDMI's Class 0.2S meters, the Mk3 and the recently released Mk6E are perfect for generation and transmission utilities. The meters include high accuracy measurement engines combined with specific communications and power quality features designed for this sector of the market.

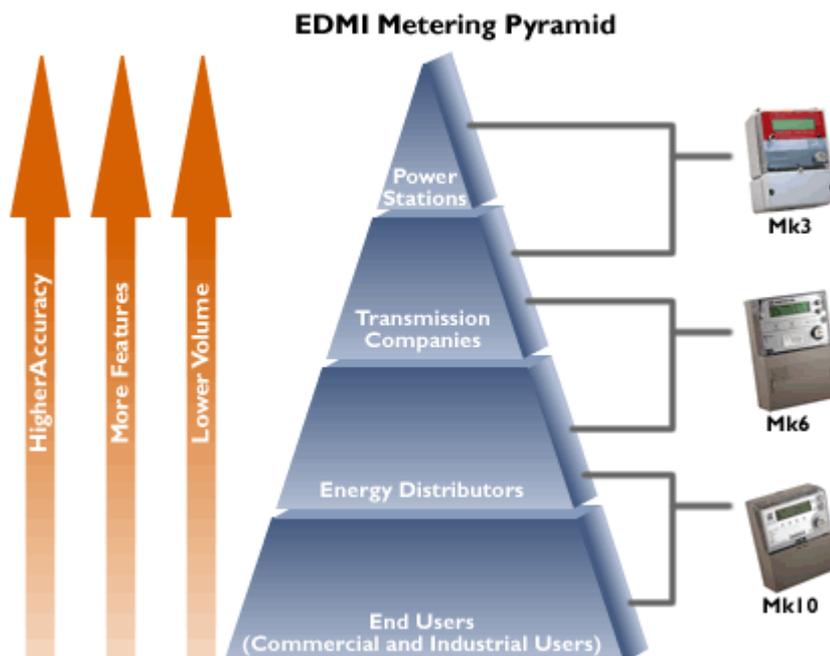
Transmission and distribution utilities looking for highly functional Class 0.5S meters use the EDM I Mk6 or Mk6E meters. These meters combine highly reliable measuring engines with extended functionality for network monitoring via power quality features and scripting capabilities.

The EDM I Mk6 and Mk10 meters are used in utility metering in commercial and industrial applications. The Mk6 is used in sites requiring Class 0.5S accuracy or where value added features such as power quality monitoring or complex demand side management are required. The Mk10 is used in cost sensitive Class 1.0 installations.

EDM I Mk6 and Mk10 meters are also widely used in energy management and sub-metering applications.

Common features of EDM I's meters-

- IEC compliance. All EDM I meters are certified to IEC standards. EDM I meters are also tested to market specific standards ensuring compliance throughout the world.
- Firmware and Software capabilities. EDM I meters are powered by the latest microprocessor and digital signal processing technology. EDM I is responsible for the design and implementation of all meter firmware code. This allows our engineers to add functionality into EDM I meters traditionally not seen in tariff metering products. EDM I's range of Mk6 meters support Extensions, add on programs that can be uploaded into the meter to provide even more functionality.
- All EDM I meters are provided with our EziView software suite. EziView runs on Windows based PC's and provides meter users with a method of setting up and configuring EDM I meters. EziView also enables users to download historical data or view real-time measurements and status information.
- Communication capabilities. EDM I meters feature a range of communication capabilities including RS 232, RS 485, TCP/IP, ANSI optical, FLAG™ IEC 1107, MODBUS, DNP3, IEC870-5-102, radio, fibre optic and GSM/GPRS/CDMA. This communications flexibility is integral to EDM I's advanced Automatic Meter Reading (AMR) systems.



EziView

All EDMI meters are provided with our EziView software suite. EziView runs on Windows based PC's and provides meter users with a method of setting up and configuring EDMI meters. EziView also enables users to download historical data or view real-time measurements and status information locally or remotely via a modem.

Eziview can be tailored to specific customer's needs by hiding some of the more complex functions and is available in multiple languages.

EziScheduler

Eziview includes a configurable download client EziScheduler that enables scheduled download of historical data from EDMI meters.

Multidrive

EziView Multidrive is an Automatic Meter Reading (AMR) program that can be used to remotely read meters over various communication networks. Used in conjunction with our technology partners, we are therefore able to meet the trend for the provision of AMR systems comprising meters, communications devices and remote reading ability and other advance functions such as data analysis and energy management. To speed up our progress in this area we have formed partnerships with companies who are well advanced in various aspects of Automated Meter Reading (AMR) systems.

PowerSignature

PowerSignature is a web-based application that provides the ability to view real-time data from EDMI meters across the Internet. It allows viewing of real-time values including waveform capture and Power Quality.

Strategic Partnerships

EDMI has formed strategic partnerships with the following AMR partners.

Echelon Corporation

EDMI has become a full Networked Energy Services (NES) Partner offering Echelon Power-line carrier technology solutions.

The system enables end-users to remotely connect, monitor, control, sense, and diagnose intelligent devices. Today, thousands of intelligent devices and appliances are equipped with LonWorks networks. You can find them in every aspect of the device-networking environment—from HVAC and lighting in buildings, to collecting energy usage information or data across a grid of 15 million homes—24 hours a day. LonWorks networks simplify system management, conserve energy, improve operations, and reduce costs.

Stalon

EDMI has formed a strategic alliance with STALON to integrate Australian Power-Line Carrier (PLC) technology into EDMI meters. Stalon is an LonTalk© PLC Gateway.

The PL-01 Version of STALON combines a robust power line transceiver and embedded MAC Layer into a single chip. This is the worlds first LonTalk© PLC Gateway allowing the user to network almost any processor onto an EIA709.2 conformant power line network. The PL-01 digital integrated circuit interfaces seamlessly to the power line interface module, no extra chips are required and no complex interconnection, which means development times are drastically shortened. Both the PL-01 and PLon-01 will communicate with existing EIA709.2 products such as the PLT-22® by Echelon®.

Xemex

The WatchTalk concept allows Ferraris disk or electromechanical meters to be remotely monitored. Using Optical Character Recognition (OCR), ISM band wireless and General Packet Radio (GPRS) technology, allowing what normally would be a stranded asset to be turned into a day-profiling, automatically read meter.

EDMI has been licensed to distribute XEMEX WatchTalk technology in the Asia Pacific region.

Radio Tech

Radio-Tech Limited has established itself as a World leader in the design and supply of Radio Data Communications, wire free AMR, Radio Telemetry and Radio Modems solutions for Licensed and Licence free operation. In recent times, a hybrid of GSM cellular and GPRS data collection with Low Power Radio has been developed to further serve the AMR market.

Radian

EDMI is the Australian / New Zealand agent for Radian.

Radian Research, Inc. is the recognized industry leader in North America for watt-hour reference standards, watt-hour meter test accessories and automated laboratory calibration systems. Radian provides both portable and primary watt-hour reference standards that are absolutely unequalled in accuracy, stability and reliability. Radian customers typically consist of electric utility companies, watt-hour meter manufacturers, watt-hour meter test board manufacturers and governmental bureaus of energy measurement reference.

BGlobal

BGlobal have a partnership with EDM I to offer certified MK10 Atlas Meter and EziView data retrieval software.

Major clients

Utility	EDMI Product	Approx Total Meters in use	AMR
<p>Energex www.energex.com.au</p> <p>ENERGEX are a distributor and retailer of electricity, natural gas, liquefied petroleum gas (LPG) and a range of value-added products and services. They are based in Queensland, Australia and provide products and services to more than 1.1 million residential, industrial and commercial customers.</p>	Mk 3 Mk 6	4500 11000	EziView MV 90
<p>Agility www.agl.com.au</p> <p>AGL are a major retailer of gas and electricity to about three million customers. They own and invest in power generation plants, electricity, and natural gas distribution networks. AGL also provide customers with a range of energy products and services.</p>	Mk 3 Mk 6 Mk 10	250 1000 100	MV 90

<p><i>Energy Australia</i> www.energy.com.au</p> <p>Energy Australia is one of the largest energy suppliers in Australia. They provide broad-based energy solutions ranging from electricity and gas supply to energy management and renewable energy alternatives. Energy Australia sells electricity to over 1.5 million homes and businesses in NSW, ACT, SA, Victoria, and Queensland.</p>	Mk 3 Mk 6	5000 27000	MV 90
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Intermoco (Utiligy)

A. General Company contact information:

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2. Website: www.intermoco.com
Related sites: www.ampymetering.com/meters/electricity/utility.htm
www.asx.com.au (company code INT)

B. Overview of the Company:

Intermoco is a leader in the provision of remote monitoring and control services. Our business focuses on the design, development and marketing of a range of leading edge products and solutions for application in the worldwide monitoring and control systems industry.

Intermoco Limited (A.B.N. 15 006 908 701) is one of the first companies to be listed on the Australian Stock Exchange ("ASX") that operates exclusively in this rapidly expanding arena, with an emphasis on providing infrastructure solutions to the utilities industries, developers and others.

Until recently, the Company was known as Australon but as our expertise grew and aspirations rose to take in international markets, the Board of Directors recommended to the shareholders a change of name to more accurately reflect the Company's activities - that being **International Monitoring and Control** or Intermoco. The Company formally changed its name on 12 August 2002.

At Intermoco, we aim to make complex systems and networks simple. Our products and the technologies we use to manage these seemingly complex tasks, deliver simple yet sophisticated solutions. A key initiative of the Company is to provide "smart metering" to major utility companies in the form of automated wireless real-time meter reading and associated services which have the capacity to generate significant commodity savings and efficiencies for the utilities industry and commensurate environmental benefits.

The core technology developed to deliver automated meter reading has been designed for modularity and allows the company to adapt this easily for other monitoring applications including plant and pumping equipment, liquid gas tanks and most situations where monitoring information is required remotely.

Intermoco's capabilities are based on an in-depth knowledge of the remote monitoring and control industry and the needs of its potential customer base.

In addition to the automated meter reading services, other areas in which the Company is active include the following:

- Development of specific products for monitoring and control applications
- Building and home automation
- Network integration
- Other services, including engineering design consulting and product development

Please provide a brief overview of your Company and its demand response related products and services. Are these products and services marketed and sold internationally – if so, where specifically? Does your Company have any strategic alliances and/or partnerships with other companies on a National or international basis which involve your existing or planned demand response related technology products or services?

C. Description of Demand Response related Technologies:

Intermoco's Utiligy AMR solution is the first end-to-end web-based AMR solution, which provides real-time meter data recording and presentation of a customer's energy profile.

Utiligy empowers electricity utilities to record and control energy consumption and demand patterns to maximise the effective use of system capacity and to more closely match system capacity to demand.

Please provide information/descriptions of your Company's technologies and their general application(s) as well as information on actual installations – please be as specific as possible regarding these actual applications (name of customer, location, product application details, length of time installed/operational, and performance expectations/characteristics, etc.).

D. Features & Benefits and Expenditures vs. Savings Consideration:

Information source: Company website

Correspondence to date: 3 phone calls + 3 emails requesting information

Status: interested in submitting information