Briefing: Smart Grid – City of Victor Harbor

Overview - April 2011

Purpose To demonstrate that communities fostering renewable energy development and peer to peer transmission of that energy across "smart grids" can become hubs for economic development.

Audience Elected Members, Council staff, Ratepayers and Residents.

In this document This document contains the following topics.

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Research Documentation

- Smart Grids – The Economist – June 2009
- Wall Street Journal – March 2010
- CSIRO – Smart Grid Report – March 2010
- Transition Handbook – Bob Hopkins – 2009
- Brief – Traditional Energy Industry in SA – CVH -2010
- Solarisation – An Affordable Proposal – Prof. Andrew Blakers
- Projected Distribution Network Constraint - the Fleurieu, ETSA Mar 2010
- National Strategy for Smart Electricity Networks – Energy Network Association – Sept. 2010
- Feasibility Study of the Application of Integrated Solar and Wind Power Plant in the City for Victor Harbor – Adelaide Uni – May 2010

Background

Description

Essentially an energy network boosted by renewables (solar/wind) and facilitated by Internet, allowing communication, monitoring, control and two-way energy distribution. As ratepayers harvest energy they can begin to share it “peer to peer” across the energy grid. Usage can be plotted and managed.

Problem

Broadband would greatly facilitate the development of a local smart grid. As more roofs go under solar panels and domestic wind turbines begin to spread, the older copper based Internet networks will struggle with traffic. Broadband is necessary for quick, reliable smart grid operation; or *its wireless equivalent*.

History

The CSIRO’s March 2010 Smart Grid report says PVPs will dominate the renewable energy area for the foreseeable future and be worth $120b by 2050. PVPs will dominate Distributed Energy (DE) growth from 2015. Smart grids will be a key economic driver and "peer to peer" power sharing of renewable energy, the basis of brand new industries.

An initial smart grid project is a 3-year research project July 2008 to June 2011 inc. with University of Technology, Sydney, University of Queensland, and UniSA, Queensland University of Technology and Curtin University. It is based in Newcastle with $3.4 million in funding from CSIRO and a further $6.1 million from collaborating institutions.

Consumers can reshape their behavior in ways which allow them to save or reduce consumption at peak times which enables utilities to better manage networks. This activity can lessen the immediacy to build power stations or peaking plants and is an early indication of smart grid possibilities.

Urgency

The cost of traditional electricity will become prohibitive. The addition of climate change imposts via carbon taxes will add another burden to ratepayers already struggling with food and water bills. Renewable energy is perhaps the only area where a community can lessen expense and possibly negate it.

Potential impact

A new renewable (solar/wind) energy company potentially employing 50 or more people, locally. Opportunities for school leavers to enter the energy industry deploy renewable power and buy and sell energy across the grid. The city of Victor Harbor, following its successful PVP retrofit, C-PREP, now has the means to track the power usage of 1,000 + ratepayers, record their money and carbon savings and estimate future energy usage. This group will form the basis of a new energy company. A smart grid deployed at regional level to support this concept has the potential for major economic impact.

Key Issues

Overview

- Broadband installed across the Fleurieu
- Selection of software and electronics companies
- Engaging the Regional Development Authority (Funding)
- Engaging current power grid owners (ETSA in SA)
- Engaging state/fed government, providing *necessary legislation*

Broadband across Fleurieu

Nextgen are the owner & operator of the recently installed fibre - and the BPOIs (Backhaul Points of Interconnect) where the new fibre hooks back into the existing copper network via an exchange. ISP Internode has installed DSLAMS in both VH and Strathalbyn exchanges.

What may prove opportune is that the RBBP actually installed generic/open access' DSLAM equipment in the BPOIs - so it is possible that a small ISP/ operator may not have to buy DSLAM and other kit prior to offering or developing a service. A smart grid trial delivering renewable energy peer to peer, when successful, could be adopted nationally. *Wireless LTE is key here.*

Software and Electronics

There are some 50 south Australian companies with the expertise to provide hardware and software applicable for smart grid operations. Open Energy, has products on trial in several Australian states. **3GPP Long Term Evolution** (**LTE**) is a standard for wireless communication of high-speed data, Features of LTE include an all-IP flat network architecture, end-to-end quality of service including provisions for low-latency communications, peak download rates nearing 300 mbps and upload rates of 75 mbps, capacity exceeding 200 active users per cell, the ability to manage fast-moving mobiles, and support for multi-cast and broadcast streams. Ideal for smart grids.

Regional Development Authority

While it is suggested that Victor Harbor initiate the smart grid on an introductory basis, the aim is to extend it across the peninsula. The Regional Development Authority has carriage of such initiatives, especially in fundraising support.

Engaging ETSA

ETSA is well aware of the impact of renewable technology. It is important that the distinction is made between energy generators and energy distributors. ETSA, being the latter, has expressed interest in the concept and may be prepared to assist in funding. Their purchase of renewable energy is inevitable and is already under way from large wind farms.

State Government Role

Legislation, state and local will be important to persuade remaining power companies to generate and distribute renewable energy. Similar to that already passed for hot water systems and based on European models.

Summary and Next Steps

Summary: Key issues

Clearly the cost of energy (vital for all economic activity) will escalate. In NSW the annual rise for domestic use is tipped between $600 and $1,000. Smaller rises are foreshadowed for SA but are inevitable to cover increased distribution costs and the impending closure of the states second largest generator, Alinta.

When a carbon tax is introduced costs will again climb. Renewable energy is the immediate way to alleviate the issue and simultaneously offer increased economic activity. Internet facilitates "smart grids" and can enable the precise distribution of energy across a grid. Such grids will lessen the demand for new power stations and decrease the use of existing coal fired stations. They also dramatically reduce carbon gas.

Decisions

Continue to facilitate and encourage domestic PVP retrofitting and initiate a commercial offering.

Engage state and federal government on policy and legislation necessary to support the programs, i.e. gross feed in tariff rather than net, installation of suburban wind turbines and the addition of said turbines to tariff program.

Suggestions are: The polluter pays principal power companies external costs including water: Conventional energy sources are still subsidized-why: the need to break the high unit cost – Councils as central buyers?

Seek Council approval for the Smart Grid concept linked to the establishment of a local renewable energy power company (or companies) based on the initial findings of the University of Adelaide's renewable energy report for Victor Harbor.

Next steps

- Brief Elected Members, CEO, Directors and staff
- Brief Regional Development Authority
- Begin dialogue with potential smart grid companies
- Draft business plan for a Victor Harbor Smart Grid/Company
- Engage Fleurieu ratepayers with LGA rollout and domestic wind turbines
- Seek funding