PICTURE THE FUTURE: AUSTRALIA – WATER & ENERGY

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ABSTRACT

Today, the world is undergoing significant changes due to climate change, demographic change, urbanisation and globalisation. As Australians and global citizens, we have reached a future-critical cross road.

Siemens has undertaken a comprehensive and unique research project called 'Picture the Future Australia ,focussing on the two critical issues of water and energy in Australia.

Undertaken in consultation with some of Australia's leading research and development institutions, this research provides a technology blueprint outlining what can be achieved in the next two decades to help Australia meet carbon emissions targets, and to ensure a secure and sustainable water future.

In view of these current challenges and opportunities, I believe what is missing is a course of action – but one that is not overwhelming in its detail. Rather, a strategy that brings together the wealth of information and proposes a plan. I believe our research delivers this.

Australia has always had the choice to pursue an economically and environmentally sustainable future – and, even in the midst of global challenges such as climate change, demographic change, urbanisation and globalisation, these choices are still available for us to fulfil.

Our future is our choice.

PROJECT OVERVIEW

The Siemens 'Picture the Future Australia' is a comprehensive research project that presents a technology blueprint to 2030 for the most pressing challenges in our region. Water and energy are the first two challenging issues being confronted in this series, with the remaining projects delving into other significant topics including healthcare, productivity, mobility, environment, safety and security.

This research is unique in that it focuses on addressing the eight pressing issues mentioned above from a technology perspective. It is based on two reference points – now and 2030 – and provides the solutions that can be progressively applied in this 'in-between' period to achieve an acceptable scenario for the future and more importantly, one that aligns with Australia's social and economic standards.

What does this mean?

Despite being a wealthy, developed country, Australians experience significant restraints on water usage due to the shortage of available water. At the same time, we also face power outages in some areas that would question our integrity as a well-developed nation. These are two of many water and energy issues that our nation faces which could potentially jeopardise our position on the world stage.

If these trends continue, it would suggest a negative outlook for the future. Conversely, as a technology-based solutions provider, Siemens believes that a country like Australia, rich in natural resources and abundant with skills, deserves a more positive future. We also believe that this is achievable through the application of current technologies that are available today. Our future generations can live in a world where water availability and energy sustainability prevail and this research aims to define what kind of future this is, in great detail and clearly identify how we get there.

To do this, we have consulted with some of Australia's leading research and development institutions, peak industry bodies and industry experts to assess all the latest technologies available to address these issues. The ultimate goal is to portray a picture of the future and what can be achieved as a result of applying these current technologies.

In this particular project, the research will propose a future picture of the water and energy landscapes in Australia, providing a comprehensive outlook into the potential demand and supply scenarios and the progressive technology uptake that needs to occur to achieve this. In doing so, many factors will be considered to include the subtle characteristics and relevant issues that impact on the entire water and energy value chain.

KEY FINDINGS

Water

- In Australia, existing technologies are available while future technologies are being developed to:
    - Eliminate water restrictions for current and future generations in our urban areas, under all but the most extreme droughts
    - Ensure our current and future generation of farmers can use water that is available to maximise economic, environmental and societal benefits
    - Reduce the stress on catchments, rivers, wetlands and estuaries

- Despite common perception, lack of rain is not the only cause of Australia's drought vulnerability

- Australia's water shortage is a result of the combined effects of climate change and natural drought cycles, together with the increasing total demand for water, driven by population growth

- Although Australia is the world's driest inhabited continent many of our products have an extremely high content of embedded water and awareness must be raised for Australia to become more water efficient in production
- Australia's ability to meet its population's demand for water through traditional surface and ground water sources was exceeded in the mid-1990s and the gap between demand and supply has been a challenge ever since

- There is an inherent expectation by urban communities that water supplies are secure, available and of a quality that is fit-for-purpose, all at an acceptable cost

- A diverse supply mix of water will be required to meet Australia's urban needs going forward including surface water, groundwater, desalinated water, recycled water and stormwater

- Demand management strategies (efficiency, conservation, loss reduction and pricing) are effective in reducing the water demand-supply gap

- Irrigated water systems, particularly around the Murray-Darling Basin, require radical reform to better meter, monitor, trade and apply water to provide maximum beneficial and sustainable utilisation of dwindling surface and groundwater resources