



Doing Different Things; Doing Things Differently

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ABSTRACT

To respond effectively to climate change and the demand for new energy solutions, communities and governments must work together to develop regional adaptation strategies. These adaptation strategies depend upon a clear and consistent national energy strategy that addresses the use of renewable energy sources as well as the environmentally sustainable use of traditional energy sources. The national energy strategy must also place a strong emphasis on energy conservation as well as emphasise integrated solutions, solutions that make use of the best available technologies and can be readily tailored to local requirements. Such solutions evolve as technologies change, and provide a wide range of choices to meet varying social, economic and environmental conditions.

This paper proposes that a localised integrated solution approach be adopted for regional Australia and implemented to the extent that makes good environmental and economic sense for defined localities. The success of even the best integrated energy solutions, however, relies on the will of people to embrace change. Only if governments consistently advocate and reward changes in people's behaviours that focus on how we produce and consume energy, will we reach a critical mass – a tipping point – at which desired changes no longer occur gradually, but occur dramatically.

This paper proposes that the tipping point for the adoption of renewable energy solutions can be brought about in a relatively short timeframe by putting in place, across all levels of government, a common framework that underpins and unites the energy strategies and solutions not only for regional Australia, but for all Australia. This paper outlines such a framework – a framework through which desired changes in behaviour can be identified and weighted, and the performance toward their achievement can be assessed, rated and monitored. By putting in place this framework, we can more quickly reach the rate of change that will make a difference.

INTRODUCTION

The importance of Renewable Energy for Regional¹ Australia is, of course, not a new issue. We've recognised for a couple of centuries that the by-products of our use of fossil fuels adversely affect us and our environment. We've realised for decades that fossil fuels cannot meet our energy demands forever. We've experimented with solar, wind, wave, and various biomass substitutes – with varying degrees of success and perseverance. Yet today, despite all of our efforts and the advances we've made, we have not been able to incorporate renewable energy sources into our lives at a global level to quickly and significantly reduce the damage we are doing to ourselves and our planet, while providing corporate enterprise with an attractive economic return and maintaining the level of creature comforts to which we have become accustomed.

Most of today's public discussion focuses on the supply side of the energy equation. Certainly, finding and improving ways to produce energy that are environmentally friendly and economically viable is an important issue. However, the other factor in the energy equation, demand, is equally important yet receives far less attention. Finding and improving ways to reduce our demand for energy is the most effective way to quickly obtain sustainable reductions in carbon emissions. As Peter Robertson, Vice Chairman of Chevron, recently commented: "The best source of new energy is efficiency and conservation. The best source is not to use so much."²

Community education about the benefits of energy conservation is a critical first step in encouraging widespread adoption of energy saving measures, and many organisations provide such education. A key part of their message is that reducing demand will also make it easier to introduce significant levels of supply from alternative means. In effect, we will be lowering the bar for companies seeking to enter the market and reducing the timeframe for the development of commercial viability. Such development would increase the number and cost attractiveness of consumer choices – critical issues in the take-up of alternative energy sources.

Unfortunately, many are reluctant to work toward energy conservation because of a couple of widely believed myths about adverse consequences of reducing energy demand. Asking people to use less energy is often equated to asking people to make significant sacrifices in their quality of life. Yet there is no evidence to support that view. Research generally shows that adopting appropriate energy saving measures not only results in meaningful levels of savings (return on investment) but also improves quality of life through increased reliability and improved performance.³ Reducing demand for energy is also often equated with economic slow down; another view not supported by the evidence. As people move to adopt

¹ When talking about renewable energy in terms of regional Australia, we need to remind ourselves that there is no consistent definition of 'regional Australia', nor a single set of consistent geographic classifications which permit analysis of 'regional outcomes'. (FaCS policy Research Paper No.8, 2001) For the purposes of this paper, we have adopted the broad definition used by the Department of Immigration, that regional Australia covers all areas of Australia except [the urban areas of] Sydney, Newcastle, Wollongong, Melbourne, Perth, Brisbane and the Gold Coast. (Department of Immigration & Citizenship website).

² "In Search of Cheney's 'Virtue'", *New York Times*, 20 Aug 2007

³ "Common Sense Solution #3: Increase Energy Efficiency in Homes and Businesses", *Union of Concerned Scientists website*; Statement of Mary J. Hutzler, Department of Energy, Energy Information Administration before the House Committee On Science, United States House Of Representatives Hearing On The Nation's Energy Future: Role Of Renewable Energy And Energy Efficiency, February 28, 2001: "Total energy use per square foot of floorspace is actually projected to slowly decrease at an average annual rate of 0.1 percent between 1999 and 2020, in part due to equipment standards, which help to increase the efficiency of residential appliances. For almost all end-use services, technologies now exist that can significantly curtail future energy demand if they are purchased by consumers. The most efficient technologies can provide significant long-run savings in energy bills".

energy saving technologies, there is generally a net economic benefit as businesses tool and staff to design, produce and improve the enabling equipment for those technologies. The Washington Post recently noted, for example, that the global market for solar panels is \$9.5B USD and is growing at 20% a year. A market that size and with that growth potential is certainly not contributing to an economic slow down!⁴

When we focus on energy conservation supported by environmentally sensitive energy production and supply, it is clear that there is no one Solution – no energy ‘Silver Bullet’ – that will address all or even most of the issues we face. The energy solution is, in reality, an evolving series of integrated energy solutions, large and small, from renewable and non-renewable sources, which collectively address current and future issues of supply and demand using the best available practices and technologies at the time.

STRATEGIES AND SOLUTIONS IN CONTEXT

Ultimately, the evolution of successful integrated energy solutions requires clarity of public policy – regional climate adaptation strategies based on a firm national commitment to energy conservation and environmentally sustainable energy production. This commitment, in the form of a national energy strategy, can not be tied to the agenda of a particular political party or leader, or undermined by variances in fiscal policy between political parties. State energy strategies, in the absence of an overarching national framework, are contradictory or so dissimilar as to cause confusion in the business community. Without the assurance of clear, stable government policy, businesses are understandably reluctant to invest in the research and development which will ultimately increase the availability and reduce the cost of integrated energy solutions.

Even in the absence of a strong national energy strategy, however, effective integrated energy solutions can be designed and implemented to address supply and demand in the local context while taking advantage of synergies across larger geographic areas. A community first needs to consider what its energy solution should be, and second, what synergies that municipality has with neighbouring municipalities in order to leverage economies of scale in energy infrastructure investments. Developing embedded integrated energy solutions, for example, reduces the cost and complexity of the supply chain as well as the energy loss attributable to the geographic distance between generation and consumption.⁵ At the same time, such development spreads economic benefits such as technology investment and employment into the communities, reinforcing ownership and responsibility at the local level. Sustainable solutions are developed collaboratively and owned locally.

⁴ “Cloudy Germany a Power House in Solar Energy”, *Washington Post*, 5 May 2007

⁵ *Bendigo Weekly*, Issue 521, 31 August 2007. Cr Keith Reynard, of the City of Greater Bendigo: "Currently our reliance on a centralised system of fossil fuel generation not only has a high environmental impact but is also inefficient because regional areas lose a lot of energy generated in transmission. Bendigo, for example, loses up to 18 per cent of the power generated in the Latrobe Valley as it travels along the lines to its destination.."; *Efficient Energy for Sustainable Development Partnership Fact Sheet*, April 26, 2007, US Department of Energy: "Efficiency gains in the generation, delivery, and use of energy have a direct and immediate impact on people's lives, and on economic productivity. For example, assuming the relatively low cost of \$.01 per kilowatt-hour (kWh), a 10% gain in efficiency in developing countries would result in \$15 billion in energy savings every year. Efficiency gains also yield environmental and health benefits by significantly reducing greenhouse gas and other emissions. Improvements in the generation and delivery of energy raise the reliability of existing capacity, relieve pressure on both natural resources and fuel imports, and slow the need for expensive new generating capacity."

There are already a number of realistic, economically viable renewable energy choices that can be integrated effectively, and this number can grow dramatically with the appropriate support and participation.⁶ By evolving localised integrated solutions using the best available options, we can open up a broader range of practical solutions that not only address current issues, but also provide for long-term energy sustainability. Long-term technical, economic and environmentally sustainable solutions to the issues of supply and demand are mutually dependent and must compliment each other; this interdependence allows us to exploit positive linkages between improvements on one issue with improvements on the other.

THE CHALLENGE – DRIVING THE CHANGE

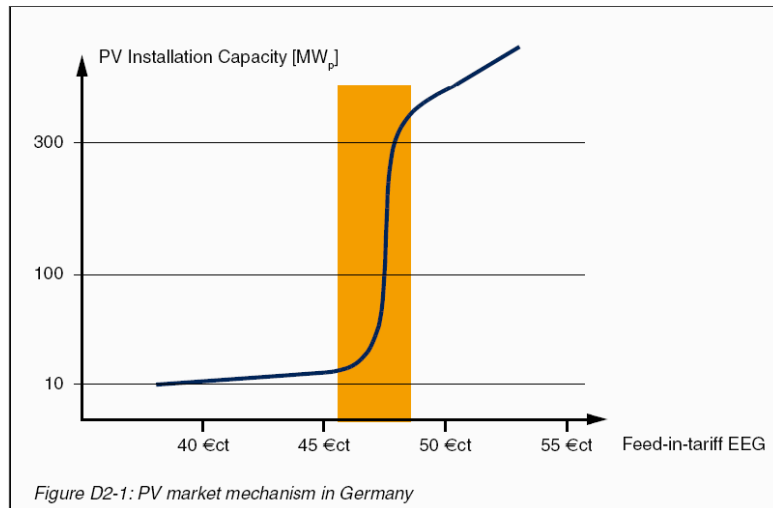
Communities are increasingly frustrated by the lack of progress in moving from rhetoric to action, despite the increasing number of opportunities and increasing urgency for action. They are ready to put into practice renewable energy solutions that are available now, and to support policy measures to accelerate development of all available low-emission technologies. State and Federal governments, however, have been slow to move away from energy policies and practices that maintain “business as usual”. The pressure required to overcome the political inertia must therefore come from community activity.

Driving the change from the bottom up makes use of the most abundant and powerful of all renewable energies – the will of people to embrace change. Local governments and community organisations are best placed to advocate change in behaviours that focus on how we produce and consume energy. They are also best placed to reward changes in behaviour, encouraging a steady increase in the occurrence of such changes. If such programs are consistent and persistent, the adoption of these new behaviours will build to that critical mass at which change no longer occurs gradually, but occurs dramatically – a tipping point.

There is a tipping point for individual and community adoption of any renewable energy solution, and various approaches may be more or less effective in encouraging adoption of any specific solution. However, adoption of solar panels for private homes in Germany is an example of how dramatic a tipping point can be. The German government repeatedly increased the feed-in tariff until individuals perceived the payment as a major driver for change, at which point the adoption rate increased exponentially, actually temporarily overwhelming the industry’s ability to produce and install the panels.⁷

⁶ Pacala, S. & Socolow, R. “Stablization Wedges: Solving the Climate Problem for the Next Fifty Years with Current Technologies”, 2004 *Science* 305, p 968-72

⁷ “Discussion Paper on South Australia’s Feed-in Mechanism for Residential Small-Scale Solar Photovoltaic Installations, February 2007”, Australian PVPS Consortium and CEEM UNSW, March 2007, p.15



Within an integrated energy solution, there will be many renewable energy options and therefore many tipping points. By designing and implementing programs that encourage behavioural change at these many points, local governments and communities can create a collective momentum. Once the tipping point has been reached, the changed behaviour becomes the norm and can be sustained without special intervention.

We believe that the tipping points for energy conservation and the use of renewable energy options can be brought about in a relatively short timeframe by putting in place a common framework that provides for tangible incentives that motivate individuals, organisations, businesses and governments to embrace and drive change, while reinforcing equality and fairness. A common framework that is flexible and robust, yet simple in its application. A common framework that country and city folk find easy to understand, can readily relate to, and are willing to commit to. Such a framework could bring together the aims and objectives of environment and energy management at all levels of government, underpinning and uniting the energy strategies and solutions for not only regional Australia, but for all Australia.

A COMMON FRAMEWORK

The PE²RL[®] Index is an assessment and rating system developed by Faerber Hall for use by governments and organisations as a framework to facilitate a gradual, informed change in the overall behaviour of citizens and employees, including the move to new practices such as renewable energy technologies. The system is based on Faerber Hall's experience in defining practical strategies for managing the risk of change, business transformation, and sustainable development. The PE²RL[®] Index system not only provides a basis for facilitating conscious and committed change, but also provides a means for monitoring and evaluating the progress of change, thus giving individuals, organisations, businesses and governments a mechanism for regular feedback on their performance and achievements.

PE²RL[®] is the acronym for "Personalised Environment & Energy Responsible Living":

- Personalised (P) – a framework for facilitating a change in behaviour at any level of the community must embrace the individual at a personal level. We as individuals must make the conscious decision to change the way we think and act.

- Environment & Energy (E²) – environment and energy issues are inseparable. The health of the environment is directly impacted by our choices, both at a micro level and a macro level, in sourcing and using energy.
- Responsibility (R) – we all have the responsibility – a “Duty of Care” – to live in harmony with the environment that hosts our presence and sustains all life. There is just one you, one me and one Earth, but it is a shared responsibility.
- Living (L) – the standards by which we live influence the lifestyle choices we make. We must consider the environmental consequences of those lifestyle choices.

The fundamental principle of the PE²RL[®] Index is that we as individuals must take personal responsibility for the environmental impact of the lifestyle choices we make with respect to energy sources and consumption. This principle is consistent with us taking personal responsibility for the impact of our lifestyle choices on our personal finances, our general health and personal well-being, our family and friends, etc.

The PE²RL[®] Index system can be readily customised to take into account the distinct geographic, demographic and environmental characteristics of a defined locality or region. A range of energy choices available in the locality can be specified, as well as a set of desired behaviours, defined in terms of quantifiable achievements, relative to those choices and inextricably linked to environmental benefits. Thus a PE²RL[®] Index rating (i.e. a position on the PE²RL[®] Index scale) provides a measure of how one’s behaviours compare with the locality-desired behaviours. This rating can then be used to determine one’s qualification for available incentive programs and act as a motivator toward greater achievements.

For example, a community may place a high priority on reducing carbon emissions through more effective use of stationary energy. By ‘more effective’, we mean reduced demand, increased use of alternative energy sources, less climate damaging (cleaner) production, and use of energy from fossil fuel sources only where unavoidable. Local government can put in place a PE²RL[®] Index system that lists the range of energy choices available for their locality. These choices are linked in the Index to behaviours that contribute to achieving the community’s objective: reducing energy use through lifestyle changes; installation of solar hot water systems, solar panels, domestic wind turbines, energy efficient appliances, and fluorescent bulbs; and so on.

The behaviours are weighted in the Index according to their contribution to achieving the objective. Individuals, businesses and organisations within the community can achieve a higher rating on the Index by embracing a highly weighted behaviour or a combination of behaviours. Local government can then advocate and reward community response through appropriate awareness, recognition and incentive programs tied to Index ratings.

Through a cycle of periodic review, local government can keep the PE²RL[®] Index current. Energy choices and associated behaviours can be modified, weighting factors and linkages to incentive programs can be revised, and ratings can be updated. Regular recognition of rating gains can, over time, become the source of significant community pride and motivation.

The PE²RL[®] Index system is scalable, and therefore can be implemented at all levels of government. When implemented at the state or national level, the PE²RL[®] Index system is normalised against local conditions to ensure equality and fairness across the diversity of regional and national conditions. This provides local, state and national governments with a common framework under which they can encourage their constituents to move towards a more environment and energy responsible way of living, and to reward those constituents who embrace the change.

The PE²RL[®] Index system could also be applied to local, state and federal governments to the extent that a coherent set of policies, regulations and incentives are established to encourage the design and implementation of integrated energy solutions. The performance of local, state and federal governments against their energy and environmental policies and practices could thus be assessed and rated. Much like a government's sovereign credit rating reflects its level of responsible economic management, a government's PE²RL[®] Index rating would reflect its level of responsible energy and environment management.

Through a combination of economic incentives and social endorsements, the PE²RL[®] Index rating would function as a powerful motivator to change behaviours toward environmentally responsible energy production and consumption. The more widely the rating is applied and recognised, the more quickly a momentum can build toward achieving dramatic change – the more quickly the tipping point can be reached.

CONCLUSION

There is an optimum energy solution at any given point in time for a certain defined geographic and demographic area. Integrated energy solutions make use of the best available energy sources and technology; and can be readily tailored to local conditions. An integrated solution approach, therefore, can be adapted to any defined locality in regional Australia and implemented to the extent that makes good environmental and economic sense for that locality. The key to the successful design and implementation of integrated energy solutions for regional Australia is a clear, consistent national strategy with a strong emphasis on energy conservation, supported by government standards and incentive schemes.

The success of even the best integrated energy solutions, however, relies on the will of people to embrace change. Only by governments consistently advocating and rewarding changes in people's behaviours that focus on how we produce and consume energy, will we reach a tipping point at which desired change occurs much more rapidly. The tipping point for the use of renewable energy can be brought about in a relatively short timeframe by putting in place, across all levels of government, a common framework that underpins and unites the energy strategies and solutions for not only regional Australia, but for all Australia.

The PE²RL[®] Index system provides us with such a framework; a common framework through which desired changes in behaviour can be identified and weighted, and the performance toward their achievement can be assessed, rated and monitored. The more consistently we advocate and reward such changes in each behaviour, the quicker we will reach the tipping point for each behaviour, and the more behaviours that reach their tipping point, the quicker we will reach that critical mass at which change no longer occurs gradually, but occurs dramatically.

AUTHOR PROFILE

Karen Faerber and Philip Hall are strategic solution consultants with over 60 years combined experience across business, science, and technology. They leverage their expertise and extensive years of experience to provide a wide range of strategic management services and deliver realistic solutions that address the unique issues faced by their clients.

Through their company entity, Faerber Hall (a registered consultancy in Australia and the United States), they have worked internationally with a wide variety of public and private sector organisations across a broad range of industries.

Recent engagements include consultant to the Australian Government for development of the Project Implementation Strategy and Plan for the \$68.9m government initiative to provide a comprehensive tsunami warning system for Australia, and serving as Project Director for the South Pacific Sea Level and Climate Monitoring Project – an \$8m project sponsored by the Australian Agency for International Development (AusAID) involving 12 South Pacific Island countries.

Karen and Philip are currently collaborating with the UNFCCC and IPCC on the development of practical adaptation strategies for dealing with the impacts of climate change in the South Pacific.

They are also writing and presenting on a wide range of topics, including practical strategies for achieving sustainable business performance, integration strategies for renewable energy solutions, cascading effects of climate adaptation strategies, and practical strategies for the development and implementation of emergency management capabilities.