

## **Intelligent Grid Research Cluster- Project 5**

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### **Chapter 4.3: Results & Analyses of Energy Stakeholder Interviews**

#### **Overview**

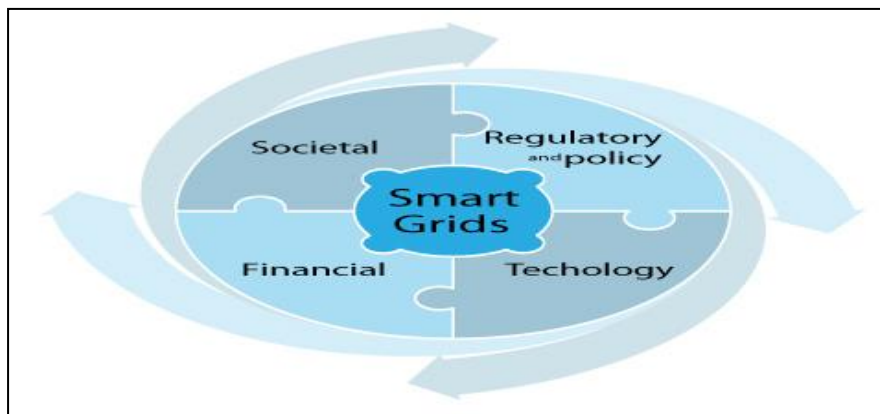
Representatives of Perth Energy stakeholders were asked to respond to a number of questions related to the conceptual understandings and the issues associated with policy development and implementation of IG-DE solutions (see Appendix ). The process involved participants sharing their views about the key impediments and drivers associated with an IG-DE transition within the Western Australian context. Firstly it must be noted that these participants represent an exclusive population group and the themes reflect the personal perspective of those involved with policy and regulation within the energy stakeholder network and not that of the organization. In keeping with a cultural and thematic analytic approach taken by this study the stakeholder analysis revealed two dominant perspectives that underlie their smart grid frame of reference.

While the perspectives do not necessarily fit the distinct (i) hierarchist; (ii) individualist and (iii) egalitarian cultural domains the nuance is that it is dependent on whether the frame of reference adopted toward smart grid as seen as involving all four pillars (a) Societal; (b) Financial; (c) Regulatory & Policy and (d) Technology as distinguished by the International Energy Agency (IAE) as the roadmap towards a smart grids (see Figure 1 below). The first perspective includes those who view smart grids as involving all four pillars and identify society as the key driving force to the transition process. Hence, the recommendations target educational and financial incentives including community energy initiatives to facilitate bottom up processes toward a greener economy and community. While there is recognition that visionary leadership is equally vital to enable societal level transition the focus is on enabling action at the grass roots level.

For those perceiving smart grids as involving three pillars (financial; regulatory and policy and technology) governments and energy Utilities are attributed with playing a key role in the change process. From this perspective the recommendations emphasize

government leadership as well as policy and regulatory changes to facilitate appropriate market mechanisms through which both supportive and punitive measures motivate change toward clean energy solutions. While the focus is on top down processes, there is also emphasis on public education as a vital tool to enable the community to benefit from intelligent grid technologies. While the perspectives differ on emphasis with regard to the smart grid transition being driven as either top down or bottom up process there is agreement that a complementary approach is more powerful. Following are the key themes outlining their assessment of the issues, the impediments and the drivers toward IG-DE.

**Figure 1 : IEA Smart Grid Road Roadmap, 2010.**



## **Energy Discourse and Conceptual Understandings of IG-DE**

Energy stakeholders referred to the conceptual understandings and the issues related to intelligent grid and distributed energy as separate entities. While many referred to smart grid as the enabling technological infrastructure, the software along with consumer engagement to promote a more energy efficient grid system. Others referred to smart grid as a decision making tool for management as it promotes flexible institutional thinking away from traditional centralized approaches. Hence, rather than limiting solutions to the traditional mindset of poles and wires the view is that smart grids offers potential for incorporating a repertoire of DG technological options at various locations demanding more power. For one participant smart grids is about making efficient use of capital.

While the majority of stakeholders considered DE as encompassing smart grid communications and control mechanism, distributed generation as it is more often referred

to is generally discussed in terms of the smaller scale energy generation technologies located where it is needed. While no concern is expressed about the incorporation of DG generation technologies such as CCHP there is greater concern about the impact of renewable energy (RE) sources as it is considered a barrier to reliability and stability of the networks.

It is noteworthy that energy stakeholders preferred the substitute discourse of smart grid and distributed generation in their response to questions posed about IG-DE. While respondents referred to institutional, regulatory, economic, technical and consumer barriers, the aspect that the majority highlighted is that energy stakeholders lack a detailed understanding of industry implications and the costs and benefits of intelligent/smart grid approaches. While there is strong support for the proposed benefits flowing from a smart grid transition there is also alarm expressed over the unquestioning support without any assessment of the costs and implications involved with such a revolutionary change to the electricity system. This excerpt demonstrates policy makers' views of lack of debate around smart grid *"what frightens me is that there is a massive debate on the National Broadband Network ... In our [energy utility] industry there is no debate and people are just going headlong and I call it a juggernaut and its confusing me because the benefits have been proposed but no one has proven those benefits as yet or that they exist and no one can define clearly the costs..."*.

## **Impediments and Issues related to IG/smart grids**

### **Economic Barrier**

The overwhelming consensus with regard to the most significant impediment to a smart grid transition is economic as it is extremely difficult for stakeholders to justify the costs involved with a major transformation of WA's electricity system. While most refer to the Californian smart grid transition as the exemplary model which Australia should follow the distinction made is that this has been funded from a stimulus package involving millions in expenditure. With government funding commitment of this magnitude smart grid can be expected to be economically feasible. The concern is that while Australian energy utilities are following American based intelligent grid innovations it is being pursued independently of government economic support. It is emphasized that the proposed IG-DE policy and program objectives outlined by energy utility organizations lack clarity of the costs and

benefits associated with a transition within the Australian energy policy and market context. As costs are a significant impediment it would be difficult for energy utilities to gain funding required for an IG-DE transition because the business case will be the prime mover. Unless energy utilities can demonstrate a solid transparent and justifiable business case the case for an IG-DE transition will be very difficult.

### **Obsolescence of Technologies**

While it is convincing to argue that fifty year old networks should be replaced with smart grid innovations that offer modern technologies such as smart meters, self-healing networks and a two way communications system. One policy maker highlighted that the longevity of smart grid products cannot be predicted, they may reach obsolescence in two, three or five years, but the traditional networks last for more than twenty to thirty years. The pace of technological innovation transpiring across the computer, internet and air conditioning industry confirm that pace of technological change and obsolescence is unpredictable. Energy policy makers therefore have a vested interest in evaluating the costs and benefits including the economics of replacing traditional networks with new network operations that may have a limited life span.

### **Critical Perspective of Smart Meters**

While the majority of stakeholders highlight the benefits of a smart grid electricity system this excerpt presents a critical perspective of the use of smart meters: “... *people generally express the idea of smart meters when they talk about smart grid ... I think of smart grid as very much of an integrated, bilateral electricity structure and I don't believe that necessarily entails smart meters at all and I am personally not of the view that smart meters will deliver the economic basis that which they are alleged to usually be installed to do. It also includes behaviour change, education, knowledge to even begin the process ...*”. From this perspective questions are being posed about what evidence exists to demonstrate that the massive expenditure associated with smart meter installation would be funded without Utilities having to increase tariffs.

While there is theoretical evidence that the benefits of smart meters will exceed the costs, some respondents are not convinced. As this excerpt demonstrates: “... *I have not seen a single indication of that anywhere in the world – I have seen plenty of cost benefit analysis that*

*theorize that but none that actually demonstrates it to be real ...". While the shared understanding among energy stakeholders is that smart meters will lead to a 5% reduction in energy consumption and load shift by up to 15% as a result of using power at night, the view is that there is no evidence to support these findings. Some question the use of theorized benefits to justify the installation of smart meters which could pose a financial risk to the Utilities. As one excerpt indicated: " ... what happens once they're installed and you find that people actually don't change their behaviour and you have just spent \$500 per household installing meters and infrastructure that will not pay for itself..."*

Presenting an appraisal of the application of smart meters in California where critical peak pricing is approximately six times higher than the usual tariff, the view is that these strategies are unnecessary to motivate reductions in energy use. Given that critical peak periods only occur a few times during the year in WA the suggestion is that a public response approach would be more efficient at encouraging people to reduce their energy usage. As this excerpt reveals: "... you would probably get a better outcome ... just telling people to please turn off your air conditioner, to reduce energy use through various strategies or we are going to charge you a very high tariff tomorrow from 2pm to 4pm ...". Hence, from this perspective smart meters are not necessarily the only option to deal with critical peak issues and it is vital for energy Corporations to undertake careful cost benefit analyses as the economics of smart meters has not been proven.

### **Consumer Energy Knowledge - Education & TOU Participation:**

An important impediment to an IG transition is that energy consumers lack basic knowledge about how the electricity grid operates and are not engaged with energy technological developments. The consensus view is that people in general have a limited understanding of the electricity grid and smart grid and this includes politicians and policy makers. While Utilities provide in-house education of smart grid it lacks depth and the possibilities always seems to revolve around the benefits of smart meters. Nevertheless, there is general agreement that consumers can benefit from smart meters but only with a time of use (TOU) pricing mechanism. It will however take time and education to familiarize the public to the costs and benefits of the new tariff structure. While electricity is

not an engaging product the price hikes have stirred intense public reaction and energy has now become a salient issue. In spite of the timely opportunity the view is that policy makers have failed to act on the realization that the end use customer is the linchpin to a successful transition toward an energy efficient system. Unless customers are engaged with the products and can appreciate the benefits they derive from smart grid technologies then success will be limited. While many consider smart meters an enabler for energy efficiency, the general agreement is success is heavily dependent on end use customers changing their behaviours however the issue is that policy makers have failed to act on this realization.

### **TOU Tariffs & Energy Poverty**

While most agree that TOU tariffs are the key to influence energy behaviours there is equal concern that fairness must be incorporated to protect the lower socio-economic groups. Many recommend a sliding scale tariff to target energy guzzlers who live an energy intensive lifestyle and the Californian tariff model is proposed. As this excerpt outlines: *"... you get penalised as you go up the high usage tariff ... where the average price is X and the lower energy usage would equal  $X - 1$  and higher energy usage would equal  $X + 2$  times and so on ... this would benefit the low energy users and the lower socio-economic groups would not be penalised ..."*.

To assist customers who will be adversely impacted by the higher tariffs many also advocate social policy approaches to enable the reduction of energy consumption. This includes offering economically disadvantaged consumers energy efficiency options such as replacing energy inefficient appliances, cheaper fuel sources, retrofitting and other incentives. The general agreement however is that energy tariffs must be cost reflective otherwise the artificially low prices will be subsidizing energy guzzlers. As this excerpt indicates: *"... It is a huge balancing act to put up prices and have the right mechanisms to ensure energy guzzlers don't get it subsidized from tax payers and protecting the minimum lifestyle needed for those on low incomes..."*.

One participant warned that consumers will have to pay for the smart grid infrastructure and if the benefits are not forthcoming protests to government would curtail the initiatives. Consumers also need protection from possible exploitation by Utilities who charge customers for smart meters and fail to educate them sufficiently to leverage the best

outcomes. Care is needed to ensure that customers benefit from smart grid otherwise the Ombudsman and the Regulator will terminate these initiatives. These concerns are raised because the view is that energy stakeholders appear to be too focussed on the network intelligence aspects of smart grid to the neglect of consumer benefit. As one participant highlighted the dominant discourse of smart grid is a one sided top down perspective that fails to appreciate that success is dependent on end use customers accruing benefits from energy behavioural changes.

### **Technical, Network, Polity & Regulatory Barriers**

Stakeholders also highlight other barriers categorised as (a) technical; (b) the network and (c) policy and regulatory. Technical refers to the lack of a standardised approach to the connection of power generators and this can incur considerable costs to both the energy Utilities and customers. The standards and the technical issues around grid connections are therefore considered a major problem for the industry. As one participant highlighted the network has also been designed for centralized delivery of power hence much technical modification is required to deal with the uptake of excess generation capacity. This excerpt highlights the network issues: *"... the grid is already starting to experience some of these issues but we do not know what the solution is right now ..."*.

As for the policy and regulatory issues the view is that the current market system is not set up for the purchase of DE and current market rules are not appropriate for the residential generators. For example, there is the possibility for liability issues to arise when damage is caused to the network through the process of a dual flow grid system. Hence, policy and regulatory responses are vital to assign responsibility for costs incurred. An impediment to DE uptake from a policy point of view also is that while there is a growing penetration of PVC power, Western Power is not regulated to ensure that the grid can accommodate all the solar power that is generated by householders. Ultimately the issue is about ensuring that there is consistent government policy to ensure that DE can be accommodated on the grid.

## **Selection Process of Generation Source: Free Market Issues**

Another regulatory and policy issue impeding increases in uptake of cleaner energy sources is that the current market mechanism is not set up to prioritize RE sources. As this excerpt demonstrates: “... *there is nothing driving the selection of the appropriate new energy generation coming onto our grid system... Renewables are constrained because it is left to the free market ...*”. There is a lack of government policy to push renewable energy (RE) sources and based on the current policy and regulatory environment it is deemed unlikely that WA will meet the 20% MRET obligation. The recommendation is to follow Germany’s regulated approach where RE generators get automatic priority access to the network. This is in contrast with WA’s quasi-market approach that lacks coordinated planning and issues are managed through an ad hoc process.

The stakeholders highlighted that Western Power’s approach and economics drive the selection process of energy source and as a result coal fired power is given preference. As indicated coal is not considered a suitable fuel mix: “... *apart from being the worst fuel, it is the worst in terms of mixing with Renewables – if we want a Hybrid Renewable energy penetration you don’t go with coal its very inflexible- its all the wrong technology...*”.

## **Incentivise Stakeholders in Value Chain – Revenue Decoupling**

Stakeholders identified that in a disaggregated environment there is a clear lack of regulatory and financial incentives for Utilities to promote change towards IG-DE solutions. As this excerpt demonstrates: “... *at this point there is no incentive for us to sell less – there is no incentive for Western Power to stop building bigger networks ... you need to change the regulated network and the regulatory environment – where if we spend this money – we need to be able to get some of that returned because the return does not necessarily go to the people spending the money ...*”. Hence, addressing the barriers requires policy and regulatory changes to incentivise the various stakeholders in the value chain to motivate delivery of cleaner sources of energy and energy efficiency. An example highlighted is that Retailers are dependent on funds derived from selling power however they are financially penalised for energy efficiency gains as mechanisms do not exist in WA to recoup the revenue loss. The recommendation is to follow the Californian decoupling policy where incentives are provided by decoupling the



sales in kilowatt hours to the revenue forgone in energy efficiency. Generators are also not incentivised to switch to greener cleaner fuels. To redress the energy sustainability and smart grid barriers the recommendation is for governments to provide Utilities with incentives to recoup financial losses that result from generating cleaner energy sources and promoting energy efficiencies.

Other stakeholders also highlight that while Western Power is considered the lead agency to drive energy efficiency the incentives appear to be non-existent. As this excerpt demonstrates: *“... they are a regulated business, understaffed, under-skilled, under resourced, staid and any time they want to do anything and spend money it gets knocked back by the ERA and Treasury ... there is no incentive to do something...”*. The issue is that without a GHG emission liability it is very difficult to justify the funding of energy efficiency strategies. Although Western Power is motivated to target energy efficiency to reduce the peak load issues the view is that they are severely constrained by the ERA process that demands economics as its first priority.

A number of stakeholders see the ERA process as an impediment to IG-DE uptake as the requirement to prove economic benefits to the exclusion of social and environmental benefits is considered onerous and narrow. Nevertheless, there is a level of optimism that despite the impediments it can be achieved: *“ ... I can't see past the economic benefits of what we have to prove, it is a regulatory requirement, it is the ERA criteria and also internally we are getting a lot smarter and we are a lot better now at knowing what the Regulator is going to ask us and what we need to demonstrate – its not the regulator now – it is the internal process that has stepped up the economics criteria as part of the procedures...”*.

## **Disaggregation**

There is overwhelming agreement that disaggregation is a key impediment to smart grid solutions because strategic planning and collaboration between the networks is stifled. As this excerpt signifies: *“ ... when it was Western Power together and SECWA there was central planning about the destiny ... but now that we have split up there is no overall plan just the free market – so you end up with imbalances - too much of the wrong generation, certain generation, shortage of it sometimes, so its much harder to actually take it down the RE path ...”*. The view is

that disaggregation has increased waste of time and money. As this excerpt portrays: “... its driven costs up enormously ... even the technical rules for the connection to the grid ...you can only change it once every 3 years and it’s a really torturous process to get it changed and as a result they drive some silly solutions ...”. There is also acknowledgement of Western Power’s frustration with the ERA approval processes to achieve things that seem obvious to the industry.

The efficient operation of the Utilities and the economic viability of the energy industry is also curtailed under the current disaggregated structural environment. The consensus view is that the expectation of disaggregation has been overplayed. As this excerpt portrays: “ ... the belief that somehow you could take one organization and chop it up into four bite size pieces and thereby create an environment where the benefits of competition were available to be harnessed or captured was an unrealistic expectation in the first place ...so how you create real competition by changing the market dynamic in this way mystifies me....”

Respondents highlight that one of the major impediments associated with the transition toward IG-DE solutions is that the energy industry is not economically viable within the current model of disaggregation. For example, one of the misconceptions is that changing the dynamics of the market structure would lead to reductions in energy prices. This does not eventuate even in true competition unless there is some margin of savings to be passed on in the first place. The energy sector before disaggregation was a heavily subsidized industry with no real savings to be made. Hence, competition is not feasible when there is insufficient profit to be made in the value chains. As this excerpt elaborates: “... you need some head-room above the total cost to attract some players ... at our starting point the margin was two percent that is not enough to entice anybody...”. A competitive market is also hindered as the public would not tolerate the substantial rises in tariffs needed to attract new businesses to compete in WA. Until a sufficient head room can be created in the industry competition and economic viability will suffer.

### **Technological Push toward RE Sources:**

Some energy stakeholders identified that the strong push toward Renewable DE sources is a barrier toward an IG-DE transition. “... one of the problems with RE at the moment I think is everyone is supportive of them – but they are simply more expensive and somebody has to

*pay for them...". It appears that the inducement toward technologies such as PVC panels and wind turbines is at the expense of other more feasible options. Hence the call is for policy makers to consider a suite of alternatives that make common sense from a triple bottom line perspective. The view is that RE on the whole is not economically viable. The costs relate to providing transmission infrastructure, backup generation to deal with intermittent generation or sourcing another generation supplier amount to significantly higher costs. In comparison to RE sources technologies such as CHP and CCHP are more economically viable in terms of traditional generation. The call is for decision making approaches that are based on objective research, cost benefit analyses and feasibility of the most appropriate technological response as opposed to powerful lobby groups.*

### **Policy Makers Learning Curve:**

A key impediment to IG-DE policy implementation also is that funding is controlled by policy makers and funds are not forthcoming if the government does not understand the concepts, the costs and benefits including the impacts to the WA energy context. To enable the process toward smart grids, the suggestion is for government agencies to become knowledgeable about energy technologies and policies as this will enable effective and timely decisions to be made. As one participant highlighted *"... government can't be lost ... they need to understand at least the strategic aspects and how they want it to affect and not affect the state...we can't be bringing things to them as we do now ... and they say Oh No you can't do this because we don't understand it – and we waste another year as they try to understand it ..."*.

Stakeholders are highly supportive of WA's energy governance structure however a concern is raised that aspects of the process currently impede timely decisions being made. As it currently operates the Ministers' Office is supported by the Office of Energy to provide government with information on energy policy options. The issue raised is that currently the Office of Energy is under undue pressure to keep pace with the task as they lack the staffing expertise. As this excerpt reveals: *"... the vast majority of staff are relatively new .. junior ... private enterprise has poached their experienced people to help drive policy ... energy Utilities have also taken their staff ... because they are so inexperienced they are grappling to deal with so many issues on their plate..."*. To promote an effective transition toward smart grid it is highlighted

that government agencies need to be less operationally focussed and more strategic in outlook to drive the energy visions that are beneficial for the State.

### **Evaluation of IG-DE**

A key concern also is that policy makers will adopt the smart grid initiatives deployed within the US context without evaluating WA's unique energy system where it is islanded off from the Eastern States' networks. As one representative argued it would be a mistake to think that WA can deploy the initiatives undertaken by California as the process has been driven by a different set of conditions. While the dominant discourse among energy stakeholders is for WA to follow the Californian smart grid example, the alternative view is that a number of factors need consideration before the path is taken. Firstly California has been undertaking the smart grid initiatives since the 1960's it is also a service based economy while Australia is a resource based economy. California also does not generate energy within the state as all the energy is imported and all the resource industries are pushed out of the state. California is rated the eight largest world economy and residents enjoy a high standard of living. Imposing a mandatory five star energy efficiency rating for televisions is feasible in a strong economy but the view is that this is less acceptable in WA where the cost of living continues to rise. Concern is expressed that WA will charge down the Californian energy policy approach without gaining any perspective of the contextual differences. Hence, gaining an understanding of why it works in California and whether it can be replicated in WA's socio-economic energy policy context needs consideration.

### **Climate Change & Energy Policy Vacuum:**

The consensus view is that a lack of Climate Change and Energy Policy is a key barrier to a smart grid transition as change must be driven from the top. This lack of motivation is reflected by most WA government departments' actions where climate change is not perceived to be part of their strategic operations. Climate change is not a salient issue for WA and a whole of government approach toward energy conservation is largely non-existent. This is attributed to a lack of political will as the government does not take climate change seriously. Most respondents believe that regardless of climate change beliefs there is

public willingness to implement energy efficiency for a variety of economic and altruistic reasons. However, stakeholders believe that it will take public pressure through elections to force government action rather than through visionary leadership. As this excerpt portrays: *"... I think our governments tend to be too cautious about introducing things – it all has to be very consultative and takes years to finally come to a conclusion that it is a good idea and it has lost years of opportunity..."*. The lack of political will is also attributed to the strong coal lobby, the plentiful coal reserves and climate change dissenters who are seen as a significant threat to a green energy transition.

### **Barriers to Distributed Generation – Cultural, Technological & Economic**

Western Power is considered a key influence in the energy policy network and leads the policy push toward smart grids. They have also publicly acknowledged the economic benefits associated with the transition in their submission to the government's Energy Directions paper. An opposing perspective is that Western Power can be considered a key barrier to DG as their actions reflect a limited commitment to DG solutions. Many respondents agree that despite the public declarations, at the ground level engineers and management still view DG as creating numerous problems for the network are reluctant to change. One participant highlighted that Western Power is on a steep learning curve with smart grid technologies and therefore their immediate response is to be cautious. The expectation is that given sufficient time Western Power will eventually overcome the problems. The reasons for this belief is revealed in this excerpt: *" ... it will be resolved because a sufficient portfolio of DG across the network is simpler ... it would make their network more stable and probably allow them to defer costs..."*.

Many highlight that Western Power tends to be cautious and sets artificial limits to the DG load because it does not have the funds and resources to undertake modelling research. The recommendation is that real solutions need to be tested to facilitate a rational basis to decisions made about what load the grid can actually handle. While some believe that cultural change is the barrier others believe it is the practical limitations as immense technological modifications are needed to operate a dual flow electricity system. This excerpt demonstrates an optimism for change: *"... it is not impossible to get Western Power over*

*that curve to the point when they embrace rather than the current softer, unspoken issues approach that make them go slow treading lightly more conservative rather than with gusto...”*.

A further barrier to DE uptake is the misinformation being communicated to householders about the financial benefits that flow from solar power generation. As one respondent highlighted while a 1.5kW solar generation system will provide a household approximately 25 per cent to 30 per cent of their annual power, based on information gleaned from advertisements consumers could be misled about the profits they can make from selling their excess power. Synergy's own statistics on the REBS scheme showed that just 17 per cent of the energy it produced was actually exported to the grid. Furthermore under the REBS scheme householders pay more for using their own renewable energy and would be better off buying renewable energy from Synergy because it's cheaper (Sonti, 2010). There is concern that clarity of information is lacking and the extent to which consumers will benefit from DE generation must be accurately portrayed.

### **Cultural Change to Business Planning**

Respondents highlight that the barriers to DG are both economic and cultural as determining who is pays for the construction of DG is an important issue. While the Energy Retailers have seen a growing interest among commercial customers for opportunities to install CHP and CCHP, determining how the various parties pay for the DG initiatives need detailed examination. As one participant established “... *commercial customers can benefit from CHP or CCHP but cultural change is needed in the energy industry and the customers in terms of how this is financed ...*”. It is noted that acceptance of DG among the business sector will require enormous cultural change from currently purchasing electricity off the grid to long range economic planning to finance their own generation plant. As this excerpt illustrates to install a CCHP system: “... *you need a 15 year gas contract to make it all work [economically viable] ... so you need a whole systemic change in the way organizations and people look at how they secure their power supply...*”. A further impediment is that respondents see little incentive for network businesses to build small scale DG as it is not economically attractive. For example it is less economical for Verve to build 20 small scale 20MW power plants as opposed to one

200MW custom built generation plant. Hence it is not considered realistic to expect that a generation network would be enticed to build small scale DG plants.

### **Costs & Benefits of Renewable Technologies**

There is general agreement that RE sources are economically prohibitive for the majority of consumers. Although solar technology is now well advanced and people are familiar with its operation, costs are still a barrier. The rapid penetration is attributed to government subsidies and increased feed in tariffs (FIT) and as long as governments continue to support this policy then Australia can expect to see a significant penetration.

#### ***Wind Turbines:***

Small scale wind turbines are also associated with several impediments, the intermittent nature of wind requiring expensive storage and back up technologies, and depending on location also requiring expensive grid connection. At this stage the energy grid also does not need wind power generated at night. The intermittent change of wind velocity also requires expensive technical equipment to synchronize and protect the grid. As one respondent highlighted, in Western Australia back up supply tends to be either coal or gas and as this reduces its green credentials customers are less likely to subscribe to it. Nevertheless, there are positives associated with wind power. From a technology point of view wind power has progressed enormously and an example of the pace of advancement is seen with the development of the Albany wind farm where original plans for twenty turbines were reduced to ten turbines to generate the same power.

#### ***Wave Power:***

With regard to wave power the impediments are that the technology is relatively new, it is unproven and it is not commercially viable as yet. Nevertheless, developers like Carnegie are demonstrating its feasibility and are surmounting some impediments to improve the aesthetics by diminishing the visibility of the buoys and by ensuring that the buoys are located at the sub surface level to avoid posing a danger to the ship lanes. The buoys so far are proving to be durable and the size has been reduced but wave power is still not commercially proven. The hope is that the Garden Island project will enable Carnegie to

demonstrate the technology and attract early adopter investments. The expectation is that in time wave and solar energy will be placed on a similar level where costs will be the main determining factor. The key benefit for Western Australia and Australia as a whole with wave power is that most cities tend to be located near the coast and the transmission and distribution connection problems including associated costs will not be an issue.

## **Most Important Drivers toward IG-DE**

### **Leadership and Vision - Sustainability**

While stakeholders highlight that the capacity for energy Utilities to reduce the costs of power line augmentation is a key motivator for change, the majority view is that it takes leadership and vision at the national and state government level to promote the transition toward IG-DE solutions. As this excerpt highlights: “...*The governments really need to lead those sorts of charges and that’s why it has been such a success in places like California ... it has come from the top down...*”. The California energy policy model is used extensively to demonstrate the kind of leadership and vision that is vital to set long term goals and to promote energy conservation in line with IG-DE solutions. As one respondent highlighted the state needs to be more proactive about sustainability as the core of the issue but at the moment WA appears to be in a policy vacuum.

The consensus view is that governments need to take the lead role in driving the Smart grid and DG visions forward. While the Office of Energy made a promising start with the State Government Strategic Energy Initiative issues paper “Energy 2030” the view is that it has since grounded to a halt and direction once again appears to be lacking. The view also is that key WA policy makers lack energy expertise and need to become conversant with the trends emerging in energy policy to undertake strategic planning and evaluation of the impacts to WA’s energy context. Representatives are also in agreement that developing policy and planning future energy initiatives requires the collaborative engagement of all the energy Utilities and the consumer base applying their core strengths to drive the policy visions forward.



## **Drivers for the Consumers: Economic Incentives & Choice**

The participants identified a number of incentives driving householders' motivation to adopt DE solutions they include rising energy costs, government subsidies and the desire to mitigate climate change impacts. However, for the vast majority of people the single key driver is rising costs of energy, as this excerpt highlights the WA context: *"... especially here in WA where over last two years we've seen a fifty percent increases in energy prices ... while it has come from quite a low base its hitting people in the hip pocket ..."*. There is consensus that the rising cost of energy in WA is a key driver and as one participant highlighted WA can expect a sustained growth in electricity prices to exceed the CPI for the next decade and probably longer. Hence, the rising cost of electricity is a powerful motivator to deploy DE generation particularly among those who can afford it. It is therefore not surprising that a key enabler for consumers is the capacity to cut down on energy costs through solar PV generation.

The majority of participants also highlight that the key enablers for IG-DE is economic based, the revised FIT although only a net tariff is regarded as a chief driver for household customers. Other major complementary enablers include the RECs, REBS and government subsidies that have facilitated a greater penetration of solar power generation. Many participants agree that consumers actually want choice and that is a key facilitator of change toward smart grid solutions. The emerging development of electric vehicles is also considered a key enabler of smart grid as it will facilitate people to engage with DG capabilities. Customer choice is considered the key enabler to smart grid as people will have the tools to reduce costs by load shifting energy use to non peak periods or they can choose to use it during the peak.

## **Economic Benefits of IG-DE**

For many participants, the ultimate driver of change is that all sectors of society, the energy industry, business and consumers will see the economic benefits of smart grid and DG. For example, if customers are demanding flexible alternatives then that could influence Western Power's orientation toward it. When the economics of smart grid is proven it is expected that Western Power would add DG to the system rather than just transmitting. At the energy industry level there is a high level of agreement that driving the IG-DE transition

is highly dependent on Western Power management embracing cultural change and being convinced that the network will accrue real benefits in terms of deferring costs and operating the grid more efficiently and reliably.

### **Facilitating a Clean Energy Market: Energy Security, Research & Development**

While some believe that the push toward emissions reduction and energy security are key drivers for IG-DE solutions, others believe that financial and market incentives to promote the research and development of clean energy sources is also vital. The consensus among energy stakeholders is that subsidization is the key to influence the vast majority of society to get on board the clean energy route. Subsidization of green energy developments will lead to lower costs of the technology and broader access.

Allowing energy Utilities to move into more research and development arenas is also considered a key driver of IG-DE. As this excerpt indicates: *"... I would form a much closer relationship with CSIRO and Universities ... invest a small amount of money for some promising kinds of research and development ... if you don't stay close enough ... you are not aware and you cannot take them into consideration as part of your overall strategy ..."*. Unfortunately there are only government owned Utilities in WA and governments are reticent about spending money on research and development and to get into particular technologies it will be up to Synergy to drive these technologies.

### **Balanced Approach to Behavioural Change: IG Technologies**

There is overall agreement that the best incentive to change behaviour involves the incorporation of a balance between reward and punishment. The optimal strategy for use with smart meters is the incorporation of TOU tariffs as flat rates would curtail choice and energy efficient behavioural change. Customers should not be offered a choice as TOU tariffs would be compulsory with the installation of smart meters. When energy usage is cost reflective then the choice is left with the consumer to pay the higher cost for usage at peak times or to shift energy usage to a lower tariff period. Vital however, is that consumers are provided with the education and training required to empower them to make informed choices that best reflects their lifestyle and budget.

## **Political Determination – Sustainable Energy Solutions**

For many stakeholders the key barriers in WA are politics and the policy and regulatory framework underpinning the energy industry. As one participant highlighted it is the dominance of a free market ideology that undermines political determination toward sustainable energy solutions. As this excerpt demonstrates: “... *they are more business aligned, they are getting the alarmist position of why we can’t do anything why we have to keep on doing the coal way, carbon sequestration etc ...*”. In terms of energy policy the criticism levelled at the government’s Energy Directions paper is that it fails to reflect long term planning which is considered vital to move the industry forward. With regard to WA’s regulatory framework many stakeholders emphasize that it lacks an accountability mechanism to firstly ensure that Western Power’s networks can accommodate all the generated residential solar power. Secondly, the concern is that WA lacks the formal mechanisms to obligate Synergy to purchase its RECs in WA as they can purchase it from the Eastern States. These issues remain unchallenged and the view is that political leadership and coordination is vital to ensure the best interests for WA and the smart grid transition.

## **Identifying & Prioritizing Policy/Regulatory Issues**

A range of responses were articulated about how major policy and regulatory issues are identified and prioritised in the organization. For one major energy stakeholder, policy and regulatory issues are identified when new concepts and products emerge in the market and they are assessed as possible solutions. The government also approaches management for energy policy solutions and during the planning and discussion process potential regulatory issues emerge for prioritization by government. With regard to IG-DE matters a specialist Strategy group has been formed to provide leadership on the policy and regulatory implications. This group also provides advice to governments about market and regulatory requirements when new energy policy outcomes are being deliberated for impacts.

For other respondents, the policy and regulatory issues are also highlighted when the market and consumers ask for new products to undertake energy efficiency. Prioritization of specific issues also occurs when governments impose a particular policy

regime and the business focus needs to be change to meet the regulatory requirements. The response also is that since Western Power has been afforded a greater voice to advocate on smart grid and DG issues its management team is working more proactively with government and energy agencies to prioritize specific solutions. For other stakeholders who can be identified as advocacy groups they respond to policy and regulatory issues by providing submissions to government and energy agencies on the impacts posed to other sectors of the community.

### **Forming Policies & Regulations:**

For the majority of the participants working in Corporations they are involved in specialist strategist groups to identify and address policy and regulatory issues as they emerge. While many belong to a dedicated Energy Strategy Group there is regular consultation and collaboration with other sections of the organization particularly those dealing with the market and trading issues as well as the more specialised technical issues. In general prioritization of particular technologies revolves around what the impacts are for the Corporation and the customer. For other participants policy and regulatory issues are identified if it affects their operations and there is basic monitoring of GHG emissions and Renewable energy policy but there is less of a tendency to drive any changes. As this excerpt demonstrates: “... *it is certainly an organization that intends to have a direction but there is no intention to influence renewable policy or whatever ... we respond to calls for submissions...*”. Some stakeholders also identified a political element to the decision making process as there is a clear division between those supporting fossil fuel and RE sources. If the gatekeepers are proponents of fossil fuel then the green options are ignored by management. On the whole most respondents are actively engaged in specialist energy strategy groups and policy and regulatory issues including prioritization of solutions are identified during regular discussion forums.

### ***Advocating for Specific Technologies – Governance Process***

While it is technically possible for officers to advocate for particularly technologies, it is unlikely as energy Corporations are predominantly government owned. Apart from surmounting the process of a corporate hierarchical structure, the advocate would also need

to gain the full support of the government, the Office of Energy and the Minister's advisors. This type of governance structure is less flexible and is not ideal to advocate for particular energy technologies. The governance structure of private organizations is considered more ideal for a senior executive for example to gain access to funds and resources to advocate for technologies that make economic sense.

This excerpt demonstrates the impediments associated with operating as a government regulated Utility as subsidization of energy efficiency investments is deterred: “*...We are happy to buy energy from anyone but there is a certain market price that we are willing to pay ... and while we are government owned we operate as a private company and government does not give us any money but we give them a dividend of 75% which no other private company does – so we can't afford to be overly generous by saying that we would like to get this [particular technology] off the ground and pay you a certain amount of money ...what entrepreneurs need to understand is that they want a sustainable product - if they are not getting the market rate then it is not going to be sustainable ...*”.

## **Most Promising Process or Technology**

### **Community Energy & Community Engagement:**

Community energy is identified as a promising process as it can play a significant role in facilitating IG-DE solutions as community members are leading the charge and are willing to bear the costs associated with developing local energy generation. Western Power who is engaging with regional communities to plan a sustainable energy visions is considered a key enabling process for IG-DE acceptance. This deliberative process which has attracted participants with high level energy expertise has generated numerous ideas and solutions most appropriate for the regional community level. Western Power officers highlight that management views this process as more credible because the economically justified initiatives have been driven by the community.

One participant identified that a promising process to support the IG-DE path in WA is the State Government's LEED (Low Emissions Energy Development) Fund which supports technological development to cut GHG emissions from the energy sector.

Investments of \$30 million have been provided for research and development of biodiesel, geothermal, solar and wave power sources. The expectations overall is that solar will be leading the technological advancements, however the need to be informed is also highlighted by this excerpt: “... *incredible strides have been made in photovoltaics ... in film and even spray-on PVs ... how credible this is you don’t know unless you are part of that mosaic of experts ... we are a couple of steps away from some of these research collaboratives ... we are totally reliant on the internet, the press and published research which is too late ...*”.

### **Bottom Up Processes: *Land Developers***

Some participants believe that a promising bottom up process is that Land Developers are pushing for smart grid technologies as there is a growing demand for the construction of energy efficient commercial buildings and residential homes. Developers are seeking advice from Western Power and Engineering Consultants on how best to build energy efficient demonstration sites that include a suite of energy efficient technologies. The report is that Land Developers are now becoming more vocal about what they expect from Western Power and are pursuing energy efficient technological developments to gain market edge.

### **Solar PV Technological Progress**

The consensus view is that most promising is the technological innovation emerging with PV solar research where current efficiency with most home sized solar panels at 15% is expected to progress significantly on that figure. Hence the expectation is that the performance characteristics of PVC panels will continue to improve and the production costs will fall sufficiently to be cost effective. The realization is that until it is cost effective PV solar will continue to need high levels of subsidization through RECs and a high FIT to encourage penetration. The expectation is that PVC technologies will become truly competitive in ten to fifteen years.

### **Wave Power Developments:**

In terms of wave technology the Carnegie wave power developments is identified as a promising source that will highly beneficial to WA and Australia due to the significant

wave and tidal patterns. Australia is geographically well placed for wave power and the additional advantage is that wave produces base load energy. Other benefits include the easier access to network connections as it can be connected on the coast line at Fremantle and Kwinana. Wave is also significant to WA as the generation process can also produce clean water. Smaller scale generation studies are demonstrating that it is economically viable and the expectation is that as the uptake of the wave technology grows it will prove to be an economically viable generation source.

### **Cogeneration and Tri-generation Technologies**

CHP (Combined Heat and Power and CCHP (Combined Cooling, Heating and Power) systems are also identified as the ideal DG solution as it is a well advanced DE generation plant. As this excerpt portrays: *"... a lot of the equipment is pre-packaged now – it is not difficult to install, operate and most of all it will automatically set frequency controls. ..."*. This DE technology is described as the most efficient electricity generation plant that needs prioritization by policy makers. One advocate highlighted that CHP and CCHP represents a golden opportunity for governments to provide RECs as it reduces carbon output by 40% and up to 60% in some cases.

### **Gas Turbine:**

The Combined Cycle Gas Turbine plant which is currently operating in Kwinana, WA is also identified as most promising. It is proposed that this system is the most efficient electricity generation plant that the world has in application today. However, the process of operation is considered too complicated for commercial purposes.

### **Micro Wind Turbines:**

Smaller scale wind turbines are also predicted to be a promising technology. Its size makes it less distracting and noise reduction can be engineered to make it more environmentally friendly and aesthetically pleasing.

### **Fuel Cells:**

Also offering real promise are fuel cells and with mass production characteristics the cost are expected to go down and be economical viable for small commercial enterprises and eventually residential consumers. While it is not economically viable for small scale use at this stage it is expected to eventuate.

### **Plug-in Hybrid Electric Vehicles (PHEV):**

While one participant identified the plug in electric vehicles as a promising technological advancement, the transition is considered an immense undertaking for the energy Utilities. Although PHEVs are considered inevitable it is considered too costly. While the PHEV is expected to play a major role for the smart grid network with its DE storage, one participant is highly concerned about the impacts: *"... it is actually the worst thing for the network because you've got all these loads charging into the network all at the same time ... but fortunately it is so well discussed that we are aware of it but we don't have the answer ... but at least it is out in the open ... it gives us time to look at the issues and the solutions ..."*.

### **Home Area Network (HAN):**

The Home Area Network (HAN) (In Home Display) and Direct Load Control capabilities, the simplest and smaller technologies are considered the next significant milestone to be deployed by the energy industry.

The summary view is that while there are no silver bullets, there are many processes and emerging technologies that are considered promising but the issue of most concern is the political lobbying by green groups that promote a narrower repertoire of technologies and where fairness is absent. As this excerpt portrays: *"... they push photovoltaics ... and you start paying out like in New South Wales fifty cents feed in tariff - somebody has to pay for that – so these types of DG are coming at an enormous cost to tax payers who are not necessarily benefiting equally particularly those that can't afford to self generate..."*.

## **Making IG-DE Attractive to the Business World**

The majority consensus is that the greatest impediment to DE is that it competes with the much cheaper coal and gas sources. Therefore DE options will become attractive to the



business world when there is a reduction in costs to make it competitive. As one stakeholder highlighted “ ... take the climate change aspect out of it you are going to pay something like \$120/mega watt hour for a wind farm as opposed to \$60/mega watt hour for coal ... we can't justify doing that because the customer base out there cannot withstand those costs...”. To promote the acceptance of DE the costs would need to be reduced to a level that is equivalent to current energy sources. For the majority of respondents cost effectiveness is the key as viable profits are vital for the energy industry. The recommendations include government subsidies and a greater educative process to inform the sector of the options and improving the economics of DE.

### **Rising Costs of Electricity**

The consensus view is that the relentless increases in the price of electricity will be the motivational force for businesses to realistically look at how much of the bottom line can be devoted to energy and most particularly electricity generation. The view is that as soon as the businesses start to evaluate the options available to control or to hedge the costs of power then they will start thinking long term in ten year time frames to make DG a viable choice. Respondents expect that cultural change is needed for businesses to incorporate DG as an additional set of criteria to include in the business plan.

The view also is that businesses have largely ignored energy costs and in many cases DG is an economically viable option and it is becoming a more salient issue now. One participant highlighted that the business sector has the opportunity to evaluate the options available to pursue a more energy efficient and cost effective business operation. There are many major chains of hotels and businesses in the US using CHP package solutions and micro wind turbines and Australian business are only starting to become knowledgeable about the options.

### **Policy Motivations**

In general respondents found it very difficult to ascertain how IG-DE can be made more attractive to the business world. As they highlighted “... there are no business plans or information available on how it should work, how it is suppose to save money and what it actually does. It also depends on who will benefit from it ...”. As stakeholders highlighted there are

different motivations for energy Utilities to undertake IG-DE. Firstly, Western Power pursues some level of DE & DSM to beat the peak demand placed on its networks. Synergy on the other hand is motivated to pursue it to avoid paying high prices during annual peak demand periods. There is also motivation for Synergy to undertake IG-DE to meet their RET and RECs liability obligations and also because they want to provide customers with a choice of green energy. However, smart meters are the popular choice of technology pursued by the Utilities. At this stage the Utilities target specific technological strategies to save on costs. Verve pursues large wind farms because of the RETS and the revenue gained from commercial operations. The consensus view is that the Utilities are motivated for a variety of reasons to pursue IG-DE but the key is that it leads to gains in revenue and cost savings. No clear guidelines were able to be articulated about how it can be made more attractive to the business world.

### **Limitations of MRET Policy**

Utilities do collaborate on research and development trials of new technologies but under the ACT it can only be undertaken if it is commercially proven. Hence there is no long term indication about where the Corporation is headed with regard to deployment of IG-DE technologies and the criteria is necessary to pursue it. Nevertheless, the MRET is credited with motivating the development of large quantities of RE and that on the whole it appears that policy drives the dominant vision. The negative aspect of this type of process is that it constrains innovative thinking. As this excerpt aptly demonstrates: *"...When you have to focus on policy I think people get busy meeting an obligation rather than looking at what can we do ... You should probably be doing both –you should be meeting your obligation but should also be focussing on the future. In the past we had to justify RE on the fuel savings – GHG wasn't even a consideration back then – and also resource conservation was a big thing – we needed to conserve our fossil fuels because it wasn't going to last forever. Now the resource conservation side hardly features ..."*.

### **Cost Benefit Analysis of IG-DE**

To make IG-DE more attractive the consensus view is that policy makers need to understand and demonstrate what the real costs and benefits are for the networks and what is needed to ensure that the customer benefits from the technology. While network

engineers want to embrace smart grid technologies that facilitate a self healing network, there are a lot of redundancies in the network that need to be dealt with. As this excerpt highlights: *"... this means a lot of copper and a lot of poles and wires ... given that the current network is available 99.95% times of the year, are customers really upset about that .05% reliability ... if they are upset are they prepared to pay \$300 per year to fix it ... those are the types of answers we need to have..."*. The overall view to make IG-DE attractive to the business world is that the process must begin with genuine debate about the costs and benefits including implications of IG-DE for the WA context. The recommendation is to also include the Federal government in the debate as they are the major funding body.

## **Effectiveness of Energy Governance Structure**

Stakeholder were asked to evaluate the effectiveness of the current energy governance structure in WA to promote IG-DE solutions, the majority view is that the structure is sound but it needs to be complemented with more powerful voices and more technical voices. As one respondent highlighted the industry is more dynamic and technical change is transformational, it is imperative for policy makers to have the energy expertise to play an immediate policy and regulatory role. The concern raised is that the electricity industry is at a disadvantage if policy makers rely on the expertise and knowledge of energy Utilities to make good decisions about energy policy.

The recommendation is to for the energy governance structure to be complemented with the expertise needed to understand the implications, the costs as well as other policy implications otherwise this will be a barrier to an efficient electricity system. Hence, increasing the expertise of key players within the energy governance structure is vital as the visions need to come from the top. This will enable government priorities to emerge from strategic planning rather than from indiscriminate decision making processes.

## **Sustainability Planning**

There is a strong belief that the energy industry operates under a narrow regulatory framework and the call is to incorporate a triple bottom line approach to the ERA process as it is too focussed on economics. The assessment of the ERA process is that long term

visioning is not possible within this regime where economics is the priority and social and environmental considerations are invisible. The suggestion is for governments to take risks with short term economic pain with strategies that will benefit the community and the energy networks in the long term. The proposal also includes Legislators playing a greater role in enabling a broader focus to energy policy planning by changing the rules to enhance the conservation needs of society. While the salience of energy conservation has faded it appears that policy makers are relying solely on pricing mechanisms as the main policy instrument to reduce energy consumption. This is considered too narrow and the recommendation is that policy makers need visions that go beyond an economic rationalist approach that punishes those most disadvantaged.

## Key Information Sources

On the whole energy stakeholders tended to rely heavily on networking with other energy Utilities and the energy industry networks to access the latest information on smart grid and DG technology but access to research publications is limited. While the majority rely on internet sources for the latest information, senior management attend national and international energy conferences to keep up to date with the energy policy and technology trends.

### Table of Information Sources

<p><b>Internet Sources:</b></p> <p>US Energy Organizations; Department of Energy; California Energy Commission; EPRI Data;</p> <p>UK Cogeneration Europe – publicly available research data</p> <p><b>Australia:</b> Department of Climate Change; Department of Resources, Energy &amp; Tourism; Energy Utility and Industry Websites</p>
<p><b>Government Departments &amp; Institutions:</b></p> <p>Office of Energy; CSIRO; Curtin University</p>
<p><b>Media</b></p> <p>News Papers; Trade Magazines</p>
<p><b>Forums and Conferences</b></p> <p>Energy Research and Industry Forums – State, National and International</p>
<p><b>Commercial Customers</b></p> <p>Engineering firms; Hospitals; Land Developers</p>

## **Influential Stakeholders – IG-DE Policy & Regulation**

With regard to influence over IG-DE policy and regulation the respondents identified those they perceived as having voice and power over the policy and decision making process. The consensus is that governments both state and federal have the most influence over IG-DE policy. Within the WA context however, most view Western Power as having the most influential voice over the smart grid and DG approach. While some view Western Power as taking a cautionary approach others believe that the Corporation is leading the process. As this excerpt reveals: “ ... *I think that Western Power has the most influence as it has to rely on the Office of Energy’s radar ... Renewables have been on the radar but I don’t think DG generally has been prominent – at the moment I would say Western Power, although Synergy has done quite an extensive amount of DG ...*”.

Others highlight that a variety of energy stakeholders in WA have influence over the IG-DE path and identify the ERA, Office of Energy, Horizon, Verve and Synergy as the major stakeholders who also have a voice on policy and regulatory issues.

Energy stakeholders also identify research organizations like CSIRO and some Universities as having influence on smart grids but not as much with DG, although it is conceded that the whole concept of smart grid incorporates some level of integrated generation.

### **Promoting Voice of Those Impacted by IG-DE**

An important distinction highlighted by a majority of respondents is the need to include the voice of those who are affected by the decisions made by those in power. As this excerpt illustrates energy stakeholders need to be seen from broader decision making framework to develop socially just policies: “... *the energy stakeholders facilitate not only business and commercial enterprise but it also facilitates lifestyle, hence every member of the community should be represented as part of the stakeholder engagement network ...*”.

With regard to stakeholders having the most influence over IG-DE policy the respondents identified the stakeholders listed below. The State Government is identified as an influential stakeholder but because of its lack of vision and direction, by default Western Power has taken the lead to explore the options.

**Table of Influential Stakeholders**

Western Australian	State Government; Energy Ministers Office; Office of Energy; ERA (Economic Regulatory Authority), Treasury
Federal Level	Department of Climate Change; Department of Industry & Resources; Electricity Networks Association (ENA).
Nationally	Electricity Regulators: Office of NEM “takes a policeman approach as opposed to making policy and their voice is heard”. The Energy Ombudsman; Electricity Retailers Association of Australia; Electricity Suppliers Association of Australia
Energy Poverty Advocates	WACOSS; (ACOSS & associated federal and state bodies).

### **Playing a More Significant Role**

With regard to who should be playing a more significant role many respondents highlighted that as the end use customer is the linchpin in progressing the IG-DE transition, it is imperative that consumers play a more significant role in decisions that affect their lifestyle. There is also the view that customer needs are top priority and that the retail networks need to advocate on their behalf to ensure that their voice is heard at the policy and regulatory level.

With regard to energy Utilities respondents also highlighted that Synergy needed to play a more significant role in strategic planning and policy development of smart grid and

DE solutions. Other groups including the retailers and consumers' advocates such as WACOSS are also identified as needing to play a more significant role in regulation and policy development to ensure that policy addresses the issues from a holistic perspective. As one excerpt prominently identified: *"energy poverty is becoming a significant issue and they [WACOSS] would be significant players in driving policy in the future"*. Strong emphasis is also placed on the Electricity Retailers Association of Australia playing a greater role in policy and regulation as the dominant discourse suggests that smart grid is a distribution transmission network related initiative and that it does not impact on them. This should be challenged.

Other organizations such as the WA Chamber of Commerce & Industry and Chamber of Minerals and Energy WA are playing an increasing role in policy and regulation because energy has been a salient issue in Western Australia for only about 5 years. As energy issues become relevant the involvement of stakeholders is expected to increase.

While the energy utilities want to collaborate and play a greater role in policy and planning it is pointed out that it is difficult for organizations like Synergy and Western Power to advocate to government for particular energy systems as the Corporations are not independent. It is not possible for management to participate on debates that involve criticizing government policy as the organization itself would be in jeopardy.

## **Forming Closer Ties - Exclusion of WA**

The respondents' view is that Western Australian energy stakeholders are generally excluded from national energy policy development and debates. As this excerpt illustrates *"... often they hold workshops and discussion forums and we are not invited ... the issues are NEM focussed and WA is forgotten when it comes to policy making and debates ..."*. The problem also is that organizers forget that the WA Utilities are disaggregated and only Western Power is invited causing impediments to engagement, communication and collaboration for the energy Utilities as a whole. Some participants attempt to redress this exclusion by attending conferences to gain access to information and promote their voice. To ensure that WA is not excluded from the national energy governance process some participants would like to form

closer ties with some of the influential federal government departments leading the charge on energy policy.

If it was possible energy Utilities would like to form closer relationship with research institutions such as CSIRO and major Universities in WA and nationally to be able to undertake research and development opportunities and have access the latest energy knowledge.

## **Questions that needed to be asked**

### *Consumer Engagement & Collaboration*

For the majority of the participants the question that needed to be asked is how consumers fit into the transition toward smart grid solutions. The suggestion is for customer education to focus on the technologies that are being created to assist them. This is particularly with regard to smart meters being distributed to householders and the concern that adequate training is vital to promote an efficient and economic use of the technology and the tools.

With regard to playing a greater role in policy and regulation some participants feel that the public is not sufficiently knowledgeable to participate at that level. However, others advocate community engagement processes as ideal to involve the public in energy visions. The suggestion also is that energy Retailers are well trained in customer relations and ideal partners to collaborate with Western Power in undertaking community engagement. While there are impediments to collaboration particularly with Western Power the hope is that governance networks can be improved at the senior levels as a start to promote greater collaboration between the energy Utilities.