



Empowering ideas

A look at ten of the top emerging issues in the power and utilities sector

Contents

Managing uncertainty in the power and utilities sector	1
1. The carbon conundrum The race to reduce is on	2
2. Betting on renewables National incentives set the agenda	4
3. A nuclear renaissance Regulatory and political risks remain	5
4. Turning power into profit Plant efficiency improvements pay off	6
5. The generation gap Will electricity demand outstrip supply?	7
6. Public and private Divergent ownership models abound	8
7. Technological transformation The digital revolution presents no clear path	9
8. In search of skills Workforce planning enters a new era	10
9. Tackling infrastructure obsolescence Trillions needed to finance future growth	11
10. Managing demand Conservation and distributed generation each play a part	12
Sourcing solutions	13
Contacts	16

Managing uncertainty in the power and utilities sector

If one industry is poised to invest heavily in the coming years, the power and utilities sector is it. In a recent survey, the Edison Electric Institute indicated that the United States would need US\$1 trillion in additional capital over the next five years to refinance existing generation and network assets and to invest in both existing and new assets.

An aging infrastructure is only one aspect of the financial challenge. In the near term, the International Energy Agency says power and utilities organizations will need to double their base load generation (from both traditional and renewable sources) to address the growing energy demands of our global economy over the next 30 years. They also will need to invest in new technologies for carbon capture, smart metering and demand side management, even absent the development of global standards. The electric power industry will need to work with state and national regulatory authorities to reconfigure transmission and distribution systems to successfully integrate new sources of energy. And they must do all this amid the resource constraints caused by competition for capital and a looming talent shortage across the industry.

While this urgent need for capital predates the global financial crisis, the current economic climate has exacerbated the situation. Today, both the power and utilities sectors must compete with all other sectors for access to scarce equity and debt financing. Faced with constantly shifting environmental, regulatory and consumer demands, many traditional capital providers are having trouble finding investments that provide a risk-adjusted rate of return commensurate with all the risks facing the industry. Similarly, organizations that do have access to capital have the problem of choosing where to invest.

Given this ambiguity, executives may be tempted to take a wait-and-see approach. But giving in to this temptation may be a tactical error. Organizations are more likely to succeed by taking a series of diverse positions that account for a majority of possible futures. In short, it's about learning how to manage amid uncertainty.

To help your organization accomplish this, Deloitte's Power & Utilities practitioners from around the world identified 10 of the top issues emerging in the global power and utilities sector. While not all of these issues will directly affect every enterprise, every organization can benefit from gaining a more intimate understanding of the trends that are likely to unfold in the near future.

“The power and utilities sector is subject to constantly shifting regulatory, consumer and community demands, making it difficult for investors to get comfortable with this moving target. You can't know the unknowable. You can't predict the future. But you can plan for several alternative scenarios rather than placing one big bet.”

John McCue, U.S. Power & Utilities Industry Leader, Deloitte Consulting LLP (United States)

1. The carbon conundrum

The race to reduce is on

A couple of decades ago, few industry watchers would have imagined that a staid industry like power and utilities would find itself at the epicentre of one of society's defining issues. Yet the role attributed to greenhouse gas emissions in contributing to climate change has put power and utilities organizations squarely in the public policy spotlight.

This rising concern over emissions from fossil fuel energy conversion has spurred governments around the world to action. By 2020, the Waxman Markey Bill is targeting a 17% reduction in greenhouse gas emissions below 2005 levels; the European Union has targeted a 20% reduction below 2005 levels; Canada's government plans to reduce emissions to 20% below 2006 levels; the UK aims to cut emissions by 34% below 1990 levels.

Turning these goals into reality will be no easy task, particularly for power and utilities organizations with large capital investments in place that are required to meet future demand growth. While several strategies have already emerged, each presents its own challenges that organizations will have to overcome.

Cleaner coal

The math on power generation tells this story. Burning coal emits approximately one tonne of carbon dioxide (CO₂) for every megawatt (MW) of electricity generated; natural gas emits roughly 0.4 of a tonne; and wind is mostly neutral. Based on the numbers alone, there is a seemingly strong argument both to retrofit existing coal-fired generation stations and to build new coal stations with carbonlimiting technologies. Replacing them with nuclear and renewable sources of energy does not seem realistic given the global dominance of coal as fuel for electric power generation. There are currently 50,000 fossil fuel plants worldwide, with the prospect of a further 750 coal stations by 2018 based on the local availability of low cost coal supply and conversion technologies. Plus, fast-growing emerging countries like India and China still see coal as the most effective way to meet consumer demand for electricity.



There are currently 50,000 fossil fuel plants worldwide, with the prospect of a further 750 coal stations by 2018 based on the local availability of low cost coal supply and conversion technologies.

For power and utilities organizations unable to replace coal economically, commercial-scale carbon capture and storage (CCS) technologies are becoming a critical area of focus. Yet, CCS is not without its challenges. In addition to the uncertain level of upfront capital costs and operating cost concerns, first generation CCS reduces power plant output by more than 20% – making abated power significantly more expensive than unabated. What is the result? Many organizations are consequently looking to their governments to help fund the first series of CCS investments as they gain construction and operating experience.

Cap and trade

Power and utilities organizations in the European Union (EU) are in their second iteration of trading emission allowances through the European Trading Scheme (ETS) cap and trade market. A new market began in 2009 in the north-eastern United States as the Regional Greenhouse Gas Initiative (RGGI) and markets are being discussed among western states. The U.S. House of Representatives also passed cap and trade legislation, which is now under consideration in the U.S. Senate. Congressional observers expect favourable action in 2009 or 2010.

While government regulations are establishing targets, organizations must still determine the best mix of compliance options to meet those targets cost-effectively. In some jurisdictions, domestic offset systems may provide an avenue of low-cost compliance; however, challenges in entering these markets remain. Once qualified offsets are identified, many organizations will still lack the capability to manage diversified trading portfolios, resolve uncertainties related to issues such as point of regulation, and mitigate the risks associated with transacting in carbon allowances (including those related to regulatory uncertainty, data integrity, tax treatment and fraud).

Despite these uncertainties, power and utilities organizations must continue to seek the most efficient forms of lowcarbon and carbon-neutral generation, invest in emerging technology solutions and find other innovative ways to encourage the reduction of greenhouse gas emissions (including the introduction of conservation and demand management programs). Missteps are likely inevitable as organizations seek solutions absent all the facts. Yet inaction is not an option for organizations that must answer to the rising demands of regulators, investors and concerned citizens.

“To reduce greenhouse gas emissions and mitigate the possibility of climate change effects, we must both reduce demand for energy and transition to non-greenhouse gas emission technologies. To do all this is necessary. It’s as simple as that.”

Branko Terzic, Regulatory Policy Leader, Deloitte Services LP (United States)

2. Betting on renewables



National incentives set the agenda

Given the need for power and utilities organizations to reduce greenhouse gas emissions, investing in renewable energies has become one of the critical areas of focus. While this imperative is apparent, choosing which renewables to invest in is another matter entirely. Despite the current shaky economics, some countries – like Germany and Spain – subsidize investments in solar and/or wind energy. Canada’s government has committed to having 90% of its power from nonemitting sources by 2020. Australia has also embraced a renewable target of 20% of the total energy generation portfolio.

For its part, wind energy is gaining in popularity throughout Europe and Latin America, driven in large part by requirements that electricity supply portfolios include specified renewable percentages. Germany has become the world’s largest solar producer. Spain already has an installed capacity of 18,000 MW of wind energy, while wind farms are being developed in Brazil, Chile, Mexico, Uruguay and Argentina. That said, wind remains an intermittent source of energy and most countries will require a major expansion of transmission systems and access to back-up capacity to fully leverage its availability.

Finally, biofuels such as wood waste, plant waste and landfill gas remain nascent sources of power generation and have yet to achieve the efficiency of traditional sources, like natural gas and hydro. Options such as co-firing with conventional coal are under investigation and may expand use of bio-fuels in the short run.

In this evolving environment, power and utilities organizations are having trouble identifying profitable renewable energy projects and obtaining the financing to develop them. And the concerns extend beyond choosing the ‘right’ power source. In many countries, multi-year delays in grid connection and unresolved debates over who will pay for transmission expansion are often the norm. Solutions to these challenges will not appear overnight. Yet power and utilities organizations can still put plans in place under various scenarios and mandated targets. Governments are responding to the financing issues by introducing feed-in tariffs, guaranteed rates and tradable certificates (such as the Renewables Obligation Certificates prevalent in the UK). At the same time, organizations should continue modeling various economic and financial scenarios to identify those most capable of supporting a sustainable business case for their investments in renewables.

“Whether you’re an established power and utilities organization diversifying into renewables, or a company that generates renewable power as a business model, you need to be well positioned to invest strategically in these new sources.”

Jane Allen, Leader, Power and Utilities, Deloitte Inc. (Canada)

3. A nuclear renaissance

Regulatory and political risks remain

With countries like Italy and Sweden repealing their nuclear moratoria, the first-time entry of the Middle East into the nuclear market and the development of large nuclear projects in countries as diverse as China, Vietnam, Thailand, India, Russia, Finland, the UK and France, it would appear that the world is embracing nuclear power generation on an unprecedented scale.

To be sure, the trend is not universal. Germany and Spain, for instance, are uncertain about the future of, or are phasing out, nuclear power. Similarly, the appetite for nuclear build in Australia is extremely limited.

The U.S. continues to relicense the remainder of its 104 nuclear plants not already relicensed for an additional 20 years and expects to license six to eight new plants in the next few years. That said, a nuclear renaissance is imminent, and power and utilities organizations in many jurisdictions are grappling with the challenges this presents.

In some countries, the concern over nuclear construction includes political risk. In the U.S., Canada and the UK, the issues centre on the cost uncertainty of new construction and the selection of new technologies. The uncertainty holds true from a regulatory perspective as well. To minimize costs and increase efficiency, power producers may begin to standardize their nuclear construction programs. This effort can be compromised if they must revise their standard designs to accommodate inconsistent regulatory regimes.

The challenges don't end there. Without clearly defined processes for obtaining both building and safety approvals in some countries, companies will be hard pressed to engage experienced and qualified nuclear component suppliers. Lack of access to skilled resources in the nuclear industry makes it hard to develop appropriate procurement and construction models or properly allocate risk. Capacity constraints create bottlenecks in the supply chain. Prevailing economic conditions also complicate financing, especially considering the long time horizon, the uncertain energy prices and the high capital expenditures that characterize nuclear investments.

To resolve these issues, organizations will need to engage in long-term financial modeling, consider the liabilities associated with disposal and decommissioning and take steps to strengthen their supply chain processes. Governments, communities and enterprises must also find new ways to collaborate to share the risks – and rewards – of the new nuclear era.

“While there is a lot of expectation regarding nuclear generation, the progress towards the pouring of concrete is slower than desired. The current economic climate, combined with extensive capital investment requirements, is affecting both self-funded and government-funded utilities, making it imperative for organizations to carefully prioritize their investments.”

Alastair Scrimgeour, Partner, Financial Advisory Services,
Deloitte LLP (United Kingdom)

4. Turning power into profit

Plant efficiency improvements pay off

It's rare for an issue to apply equally to investor-owned and regulated utilities, generators and distributors, system operators and wholesalers. Yet power plant efficiency affects the entire sector in jurisdictions around the world.

The issue comes down to improving commercial performance by minimizing the costs of production and maximizing revenues. Of course, these issues play out differently across the industry. Some power and utilities organizations face particular challenges managing their aging assets, streamlining project management or identifying their highest margin services. Others must determine how to transfer knowledge from an aging workforce to a new generation of workers. Still others struggle to connect their employees' daily activities with the actions they must take to achieve organizational goals. Even fully regulated utilities feel ministerial pressure to tighten their budgets. Regulation can also incent or impede management's moves to improve efficiency through revenue requirement and rate setting practices.

Despite the disparity of these issues, a market-based approach to power plant efficiency can help resolve them. With the appropriate technological investments, power and utilities organizations can convert their raw data into business intelligence capable of guiding their decision-making and maximizing market performance. They can cascade knowledge down through the ranks to improve business performance. Notably, they can also gain an enterprise-wide view of their value chain that can enable them to manage demand more efficiently. For example, in Russia alone, 45% of the energy produced is wasted. By aligning production with real-time demand, Russia could realize savings of 300 million tonnes of oil each year – the equivalent of all energy produced in the UK.

Strengthening people and processes in this way does more than reduce costs and improve performance. It also positions owners of assets to realize an enhanced return on their investment over the long term.

“The advantages delivered by improving efficiency are enormous. By putting the right foundations in place, power and utilities organizations can more easily respond to market shifts by simply fine-tuning their existing processes. This can make for a business that is completely unassailable.”

Barry Dyson, Partner, Power Plant Efficiency, Deloitte & Touche CIS (Russia)

5. The generation gap

Will electricity demand outstrip supply?

Energy conservation may be all the rage in many developed nations, but these efforts cannot hide an underlying reality – demand for electricity is on the rise. Today, only one-third of the world’s population has access to adequate electricity; another third struggles with intermittent access; and the remainder has no electric service at all. As developing countries pursue long-term growth, shortages may loom.

A case in point can be found across the Middle East. In an effort to diversify their economies away from oil, many Middle Eastern governments have stepped up investment in major infrastructure projects. All this new industry needs more power, resulting in a greater than 10% annual increase in electricity demand.

There is only one solution to this challenge – construction of new generation plants. Yet concerns about the choice of fuel have left many power and utilities organizations uncertain about how to proceed.

- Coal remains a highly available, predictably priced solution, impelling some generators to maintain their coal investments – despite the environmental impact. Offsetting these implications, however, requires a vast advancement of existing carbon capture and storage technology, which is not anticipated in the near term.
- Natural gas is also available and emits roughly 50% less carbon than coal, but price volatility remains a cause for concern.
- Nuclear generation offers a sufficiently compelling alternative that many nations (including the United Arab Emirates, Saudi Arabia, Kuwait, Qatar, Jordan and Egypt) have engaged private nuclear companies to conduct pre-feasibility studies on building nuclear plants. Yet the capital costs and issues related to disposal and decommissioning complicate the assessment.
- And while many power and utilities organizations continue to pursue alternative and renewable energy strategies, they must still resolve issues related to the intermittency of power, transmission, scalability and storage.

No easy solutions exist. But solutions must be pursued – the risks of inaction are simply too high.

“Faced with skyrocketing demand, power and utilities organizations must add a lot of capacity quickly. Determining what type of plant to build is complicating the effort, but ignoring the program will only lead to potentially catastrophic consequences.”

Paul Navratil, Energy & Resources Consulting Leader, Deloitte & Touche (M.E.)



6. Public and private

Divergent ownership models abound

There are arguments both for and against public and private models of utility ownership. Privatization, or “liberalization” as it is called in the EU, can occur with or without the introduction of competition. Countries like Australia that continue to divest national energy assets understand the cost benefits associated with a competitive environment and private ownership, particularly among energy retailers. For instance, both privatization and liberalization can drive power plant efficiency, mandate infrastructure upgrades and encourage technological and operational innovation under the right market structure and regulatory scheme. On the flip side, Middle Eastern nations that have never known private ownership or liberalization in energy infrastructure point to the advantages of government ownership, which, in addition to accessing lower cost capital, makes energy available to all.

Then there are the countries that combine both public and private models in an effort to achieve the best of both worlds. In the United States, for instance, 15% of residences receive electric service from local governmentally-owned distribution systems or non-profit rural cooperatives, while the federal government owns most large hydroelectric facilities. Canada’s provinces also have both public and private ownership of energy infrastructure.

Either way, government- and investor-owned electric and gas systems face many of the same issues. They need to earn adequate revenues to recover escalating operating costs, introduce demand management practices, raise new capital and make strategic decisions concerning future fuel and generating technology alternatives.

For the foreseeable future, it appears that commodity prices and capital costs related to electricity, gas and water utilities are on the rise, a trend that requires both publicly- and privately-owned utilities to display innovative regulation and management. In both cases, long-term success depends on an organization’s ability to manage public expectations and its own governance process. Privately-owned utilities can do so by engaging in the regulatory process and building strong relationships with regulators in a difficult rising rate environment. For their part, publicly-owned utilities managers will need to do the same with the political institutions that govern them and that, in many cases, provide access to capital and rate adjustment approvals.

“As the power and utilities sector trends towards selective re-regulation, organizations must hone their abilities to effectively manage the regulatory process.”

Chris Nicholson, Chairman, Energy & Resources and Leader, National Energy Companies, Deloitte Touche Tohmatsu

7. Technological transformation

The digital revolution presents no clear path

In the power and utilities sector, two key trends dominate the technological agenda: the need for commercial-scale carbon capture and storage (CCS) technology and the inexorable move towards the adoption of a smart grid. Beyond a highlevel framing of the issues, however, few organizations understand how to translate these needs into practical solutions.

In the CCS space, organizations are faced with choosing from among a wide range of carbon sequestration technologies, geographies, geologies and techniques. The development of solutions that can be economically integrated at a sufficiently rapid pace to respond to rising consumer demand is proving a serious challenge.

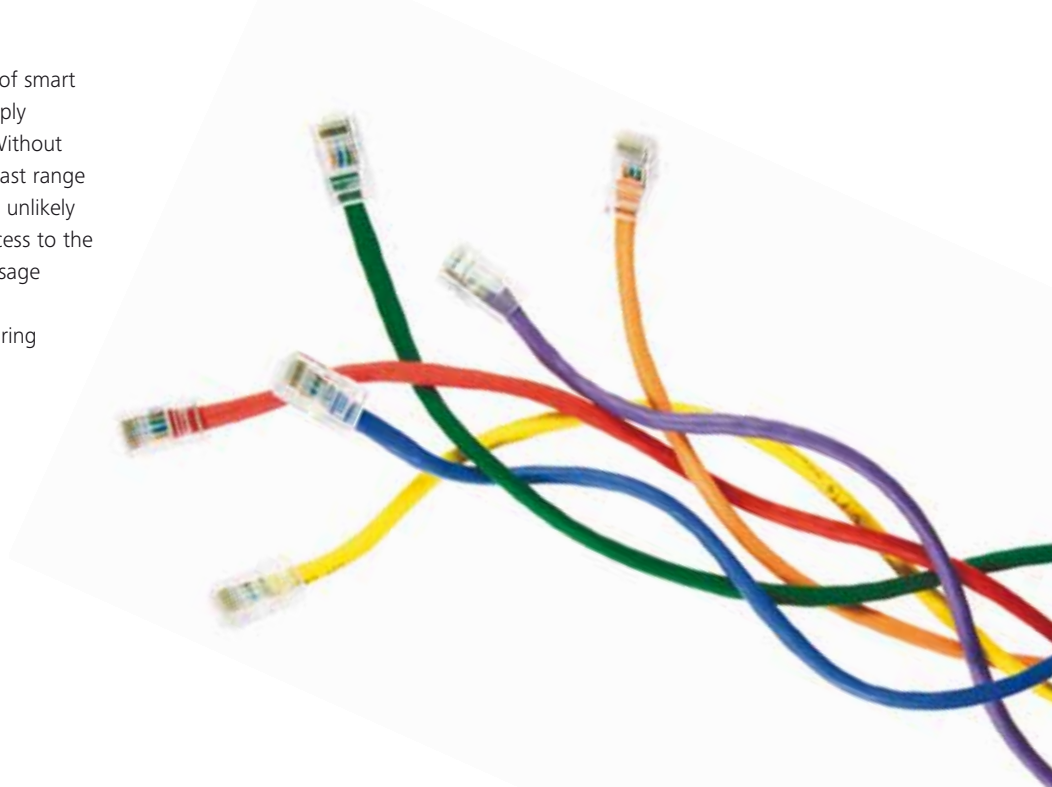
In many ways, the transition to smart grid technology is even more complex. On the one hand, governments around the world are making bold commitments to equip consumers with smart meters. Already, Australia's state of Victoria, Canada's province of Ontario and 20 other countries have begun large scale rollouts of smart meters. The U.S. government has allocated \$4.5 billion in stimulus money to smart grid technologies. Even China is getting in the game, with a software implementation designed to improve the flow of electricity across its various grids.

On the other hand, reaping the true benefits of smart grid technology requires much more than simply equipping consumers with in-home meters. Without signalling and manufacturing standards, the vast range of equipment that underpins the smart grid is unlikely to interoperate. Providing consumers with access to the rich data they need to monitor their energy usage requires a huge investment in data collection, aggregation and distribution. The costs of retiring 'dumb' meters must also be considered.

To be sure, international studies show that smart grid technology can help significantly reduce overall and peak energy loads, while improving network management and control. As with so many other issues facing the power and utilities industry, the key to success will lie in obtaining the necessary financing to turn this vision into reality.

“To make informed smart grid investments, power and utilities companies must do more than identify the low and high risk technologies. They must also learn new ways to manage their data, procure and source their equipment, and integrate disparate systems into a seamless solution.”

Michael Rath, National Leader, Energy and Water,
Deloitte Touche Tohmatsu (Australia)



8. In search of skills

The chemistry of talent

Ever since the organizational hierarchy was invented, the corporate ladder has been the gold standard for personal success. But for talent today, the ladder model of career progression isn't always a good fit.

Mass Career Customization™ (MCC) enables a corporate *lattice* culture, offering a customized model for building careers and developing talent.

Although human resources strategies won't convert into strategic planning overnight, organizations can take five key steps towards achieving their strategic objectives:

1. Identify critical workforce segments. Think through how your workforce needs will change in the years ahead. What kinds of people will you need – and by when?
2. Establish data consistency. Upgrade your capabilities in workforce analytics and business intelligence. That means improving your data mining, statistical analysis and predictive modeling to better understand your recruitment, retention and deployment challenges.
3. Sharpen your knowledge about external talent markets. Use economic and demographic data to analyze labour supply and demand.
4. Identify strategies to mitigate future labour gaps. This includes reskilling and cross-training your existing workers, investing in training and development programs, building alliances with academic institutions to attract new students to the industry and considering alternative sources of employment – including global recruitment.
5. Embed workforce planning into your annual planning process. Regularly assess where you are now and where you want to be.

Workforce planning enters a new era

In countries with static or declining birth rates and aging populations approaching retirement, talent shortages loom in virtually every sector. The threat is particularly acute for the power and utilities industry, which relies on exceptionally specialized skill sets. As the industry transitions to nuclear and renewable power, and embraces emerging technologies, this demand for specialization is set only to grow.

This trend requires that organizations engage in more progressive workforce planning than ever before. The current economic climate presents an ideal chance to tap into one of the best hiring pools seen in recent years. Yet the window of opportunity is short. Within the next two years, as the economy corrects its course, organizations that fail to build strategic workforce planning competencies will have to compete heavily for talent.

At its crux, the issue revolves around the realization that the workforce of the future will be radically different from the workforce of the past. Around the world, workers increasingly expect more flexible career paths that recognize their shifting personal goals. To attract and retain these workers, organizations will need to do more than reach out to a wider pool of talent. They may also need to revise their recruitment policies, their training practices and even their cultural foundations.

“Knowledge-intensive employers in growth oriented sectors need to think about how to attract and retain specialized skill sets or they will be caught unprepared when the economy corrects itself.”

Ian Cullwick, National Practice Leader, Human Capital Advisory Services, Deloitte Inc. (Canada)

9. Tackling infrastructure obsolescence

Trillions needed to finance future growth

The numbers are mind boggling. According to the International Energy Agency's World Energy Outlook 2008, the global cumulative infrastructure investment needed between 2007 and 2030 amounts to US\$26.3 trillion (in year-2007 dollars). The power sector accounts for US\$13.6 trillion, or 52% of the total. China alone anticipates needing more than US\$2 trillion in electricity infrastructure investment to meet growing demand. Australia's energy sector requires an infusion of US\$97 billion over the next five years to upgrade existing assets and build new ones. Canada estimates its required power and utilities investments will exceed US\$150 billion, while the United States' projected electric utility investment needs could be as high as US\$1.5 trillion by 2030. Similar trends hold in other countries around the world.

The challenge extends beyond renewing existing generation stations, transmission and distribution lines and hydroelectric sites, which in many cases are 30, 50 and even 70 years old. Significant sums are also required to keep pace with industry evolution. This includes investments to build the infrastructure required to support both nuclear and renewable power generation, funds to transform and strengthen electricity network infrastructure to facilitate carbon reduction goals and capital programs to support new initiatives, including desalination plant development and pipeline construction.

To complicate matters, power and utilities organizations and their governments are being asked to commit these funds in an environment of serious regulatory and technological uncertainty. Without a clear understanding of the most economically viable power sources and technologies, organizations will need to build strategic flexibility into their generation planning. This may result in some losses, but with intelligent diversification, those losses will ideally be offset by more significant gains over time.



“Until there’s more regulatory certainty around climate change, until we know which emerging technology will be commercially viable, until we establish a predictable price of carbon, it’s a daunting task for any organization to make major investments in infrastructure.”

Greg Aliff, Vice Chairman, U.S. Energy & Resources Leader, Deloitte LLP (United States)

10. Managing demand

Conservation and distributed generation each play a part

As the power and utilities industry grapples to secure power supply, it's essential to remember that there's a flip side to this coin. In essence, organizations are being challenged both to curtail demand and to find ways to meet demand beyond increasing generation.

On the conservation side, many jurisdictions have begun to introduce incentives to stimulate energy efficiency. The UK Low Carbon Transition Plan, for instance, plans to channel £3.2 billion to help households become more energy efficient. In Canada, some utilities have begun to provide rebates to customers who reduce electricity consumption during peak periods. The U.S. has allocated more than US\$12 billion in stimulus funds to energy efficiency and demand side investment. That said, jurisdictions that have best succeeded in introducing conservation programs are those that operate in a competitive environment. When electricity prices are subsidized, consumers have less incentive to reduce demand.

This may explain why some organizations are pursuing a different type of demand management program – one centred on distributed generation and storage. In Central America, for instance, the Regional Power Interconnection Commission is working to unify the regional power market by allowing energy trade among its six founding countries. The ultimate aim is to offset power supply shortages in one location with excess supply from another.

Regardless of the program organizations pursue, demand management hinges on the adoption of more robust technological solutions. For consumers to understand their existing consumption patterns, utilities must provide them with detailed usage data. For organizations to distribute generation, they must upgrade their network infrastructure. While many of the technologies that enable these solutions have not yet reached a commercial scale, the good news is that they do exist and will continue to be refined in the years to come.

“Effective demand management can be achieved only if all industry participants come to recognize that power supply security is about more than increasing installed capacity – it's also about balancing demand by improving energy efficiency and encouraging multinational integration.”

Carlos Lloveras, Partner, Deloitte & Co SRL



Sourcing solutions

In tracing the top 10 trends in the power and utilities industry, it is clear that each issue will affect organizations differently, depending on both their business model (as a national utility, a regulated generator or an independent power producer, for instance) and on the jurisdictions in which they operate.

Response strategies for the power and utilities sector

One issue transcends them all – the need for additional capital to pursue their strategic objectives.

To succeed in this brave new world, organizations need to identify all potential sources of funding, from ministerial budgets to consumer revenue streams, from sovereign wealth funds to infrastructure investors, from private equity to traditional banks. They need to carefully assess the vast range of investment opportunities available to determine their risk-adjusted rate of return. Based on that assessment, they also need to prioritize their investments to ensure their spending aligns with their long-term goals and obligations.

Most important, whatever they decide to do – whether they're investing a portion of their distribution in renewables, implementing a first wave of smart grid technologies or deciding on the next 100 MW of generation – they must do an outstanding job of understanding the costs and risks, and communicating the rationale for their investment to all their constituencies, from customers to regulators to investors.

Building new competencies

This is no easy task. To succeed, power and utilities organizations will have to undergo some challenging transitions. They must also acquire a range of competencies that enable them to (among other things):

- **Gain** a better understanding of their emissions inventory to optimize their portfolio of generation sources.
- **Develop** an array of scenarios to underpin their strategic planning.
- **Conduct** in-depth situation assessments, economic forecasts and financial analyses.
- **Adhere** to international best practices and transact business under different regulatory frameworks.
- **Attract and retain** a new generation of talent.
- **Manage** the regulatory process, from compliance to training.
- **Structure** appropriate procurement models for their infrastructure projects, while properly allocating risk and managing the supply chain.
- **Design** effective data flows and security processes in their adoption of new technologies.



In building these skill sets, it's important to learn from global best practices. Carbon trusts and carbon registers, for instance, provide strong incentive for companies to reduce their carbon footprint to align with industry peers. Smart grid concept cities are paving the way for more ambitious smart grid rollouts on regional and even national scales. Innovative energy efficiency programs that encourage consumers to curb their demand can also help power and utilities organizations evolve into energy services suppliers – potentially adopting a new business model that encourages conservation.

Of course, the sheer enormity of the decisions facing industry participants can stymie action, as organizations struggle to identify the ideal response. For a sector operating amid exceptional uncertainty, however, no single ideal response exists. Instead, power and utilities players will need to make several choices appropriate to their unique operating environments. As long as those choices bring them closer to their operational goals and position them to comply with emerging regulatory standards, they are unlikely to make a wrong decision. Many paths lead to the ultimate goal and each one provides power and utilities organizations with new skills to navigate a variety of possible futures.

“Given the scale of changes needed in the power and utilities sector, governments must facilitate, and in some cases fund, the developments required. Regulators must create an environment that encourages investment. And organizations must accept their responsibilities for guiding consumer behaviours. A partnership among industry players is the only way to effect change.”

Roman Webber, Global Leader, Renewable Energy Community of Practice, Deloitte Touche Tohmatsu

Contacts

For more information contact a Deloitte Power and Utilities professional:

Global leadership

Peter Bommel
Deloitte Touche Tohmatsu
Global Industry Leader
Energy & Resources
+31 882 880 935
pbommel@deloitte.nl

Chris Nicholson
Deloitte Touche Tohmatsu
Chairman, Energy & Resources
Leader, National Energy Companies
+7 495 787 0600
cnicholson@deloitte.com

Dick Cooper
Deloitte Touche Tohmatsu
Leader, Global Energy & Resources
Consulting
+1 403 261 8115
dcooper@deloitte.ca

Pat Concessi
Leader, Deloitte Touche Tohmatsu
Climate Change and Carbon Markets
+ 1 416 601 6251
pconcessi@deloitte.ca

John England
Deloitte Touche Tohmatsu
Global Energy & Resources
Enterprise Risk Services
+1 713 982 2556
jengland@deloitte.com

Jean-Michel Gauthier
Deloitte Touche Tohmatsu
Global Energy & Resources
Leader, Financial Advisory Services
+33 1 55 61 69 11
jgauthier@deloitte.fr

Brad Seltzer
Deloitte Touche Tohmatsu
Global Energy & Resources
Leader, Tax
+1 202 220 2050
bseltzer@deloitte.com

Dominic Young
Deloitte Touche Tohmatsu
Leader, Global Energy Markets
+1 403 267 1778
doyoung@deloitte.ca

Roman Webber
Deloitte Touche Tohmatsu
Leader, Renewable Energy Community
of Practice
+44 20 7007 1806
rwebber@deloitte.co.uk

Regional leadership

North America
Greg Aliff
Deloitte LLP (United States)
+1 703 251 4380
galiff@deloitte.com

Latin America
Ricardo Ruiz
Deloitte & Co. SRL
+54 11 4320 4013
riruiz@deloitte.com

EMEA
Jesus Navarro
Deloitte S.L.
+34 9151 45000
jenavarro@deloitte.es

Asia Pacific
Kappei Isomata
Deloitte Touche Tohmatsu (Japan)
+81 92 751 0931
kappei.isomata@tohmatsu.co.jp

Additional specialists quoted

John McCue
Deloitte Consulting LLP
(United States)
+1 216 830 6606
jmccue@deloitte.com

Branko Terzic
Deloitte Services LP (United States)
+1 703 251 4350
bterzic@deloitte.com

Jane Allen
Deloitte Inc. (Canada)
+1 416 874 3136
janallen@deloitte.ca

Alastair Scrimgeour
Deloitte LLP (United Kingdom)
+44 20 7007 2993
ascrimgeour@deloitte.co.uk

Barry Dyson
Deloitte & Touche CIS (Russia)
+7 495 787 0600
bdyson@deloitte.ru

Paul Navratil
Deloitte & Touche (M.E.)
+973 1721 4490
pnavratil@deloitte.com

Michael Rath
Deloitte Touche Tohmatsu
(Australia)
+61 03 9671 6465
mrath@deloitte.com.au

Ian Cullwick
Deloitte Inc. (Canada)
+1 613 751 5480
icullwick@deloitte.ca

Carlos Lloveras
Deloitte & Co SRL (Argentina)
+54 11 43202 721
clloveras@deloitte.com

www.deloitte.com/energy

About Deloitte

Deloitte refers to one or more of Deloitte Touche Tohmatsu, a Swiss Verein, and its network of member firms, each of which is a legally separate and independent entity. Please see www.deloitte.com/about for a detailed description of the legal structure of Deloitte Touche Tohmatsu and its member firms.

Deloitte provides audit, tax, consulting, and financial advisory services to public and private clients spanning multiple industries. With a globally connected network of member firms in 140 countries, Deloitte brings world-class capabilities and deep local expertise to help clients succeed wherever they operate. Deloitte's 165,000 professionals are committed to becoming the standard of excellence.

Deloitte's professionals are unified by a collaborative culture that fosters integrity, outstanding value to markets and clients, commitment to each other, and strength from cultural diversity. They enjoy an environment of continuous learning, challenging experiences, and enriching career opportunities. Deloitte's professionals are dedicated to strengthening corporate responsibility, building public trust, and making a positive impact in their communities.

Disclaimer

This publication contains general information only, and none of Deloitte Touche Tohmatsu, its member firms, or its and their affiliates are, by means of this publication, rendering accounting, business, financial, investment, legal, tax, or other professional advice or services. This publication is not a substitute for such professional advice or services, nor should it be used as a basis for any decision or action that may affect your finances or your business. Before making any decision or taking any action that may affect your finances or your business, you should consult a qualified professional adviser.

None of Deloitte Touche Tohmatsu, its member firms, or its and their respective affiliates shall be responsible for any loss whatsoever sustained by any person who relies on this publication.

© 2010 Deloitte Touche Tohmatsu. All rights reserved.

Designed and produced by The Creative Studio at Deloitte, London.1984A