Gainesville Regional Utilities

2010 financial statement audit results

Ernst & Young

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Gainesville Regional Utilities

April 4, 2011

Dear Honorable Mayor and Members of the City Commission,

We are pleased to present the results of our audit of the 2010 financial statements of Gainesville Regional Utilities (GRU or the Company).

Our audit was designed to express an opinion on the 2010 financial statements as of September 30, 2010. We continue to receive the full support and assistance of GRU's personnel in conducting our audit. Open and candid dialogue with you, as an City Commission, is a critical step in the audit process, and in the overall corporate governance process and we appreciate this opportunity to share our insights resulting from our audit.

At Ernst & Young, we continually evaluate the quality of our professionals' work, with a focus on our goal to deliver remarkable client service. We strive to provide you with audit services of the highest quality that will meet or exceed your expectations, and we encourage you to participate in Assessment of Service Quality (ASQ) process to provide your input on our performance. The ASQ process is a critical tool in enabling us to continually monitor and improve the quality of our audit services to GRU.

This report is intended solely for the information and use of the City Commission and management. It is not intended to be, and should not be, used by anyone other than these specified parties.

We look forward to meeting with you to discuss the contents of this report and answer any questions you may have about the results of our audit.

Very truly yours,

Michael Pattillo
Managing Partner

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Overview of the 2010 audit

Executive summary

Significant 2010 considerations	
Revenue recognition, including unbilled revenue and receivables	Derivative and hedging activities, including implementation of GASB 53 and related disclosures
Allowance for doubtful accounts	Regulatory assets/liabilities

Key observations

- Audit scope is consistent with what was planned; we continually reassessed for changes in risk throughout the audit
- Company's analysis of significant accounting matters is appropriate
- Reasonable judgments and consistency used by management in accounting estimates
- No unrecorded audit differences were identified
- Entity level controls and other internal controls over financial reporting are operating effectively
- Outstanding cooperation and communication between the Company and Ernst & Young

2010 audit results

Financial statement accounts and disclosures

Key issue/risk area	Summary of procedures and findings
Revenue recognition – Unbilled revenue and receivables	▶ GRU estimates unbilled revenue and related receivables utilizing a percentage unbilled calculation based on the number of days billed in the subsequent billing cycle related to the prior month. Billing cycles typically span across two months. This process assumes that consumption is equal throughout the billing cycle, however, management also takes into consideration weather effects to adjust for any significant differences in usage over the billing cycle. ▶ We tested the calculation for unbilled revenue as of September 30, 2010 and validated the unbilled percentage used by obtaining the query of October actual billings and recalculating the unbilled percentage based on service dates. We factored in considerations for the impact of weather on consumption during the month of September versus October. ▶ Based on the procedures performed, we believe unbilled revenue and related receivables are fairly stated in all material respects.
Allowance for doubtful accounts	▶ GRU calculates the allowance for doubtful accounts by applying historical write-off percentages to certain aged receivables. ▶ We obtained the detail calculation and clerically tested it. Using audit software, we re-aged the accounts receivable detail to ensure the percentages were applied to the correct aging balances. Reviewed support for historical write-off percentages and reviewed assumptions made by management in light of current economic trends. We performed a hindsight analytic to determine the reasonableness of management's estimation process. ▶ Based on the procedures performed, we the allowance for doubtful accounts is fairly stated in all material respects.

2010 audit results

Financial statement accounts and disclosures

Key issue/risk area	Summary of procedures and findings
Derivative and hedging activities, including implementation of GASB 53	▶ GRU retroactively adopted GASB No. 53, *Accounting and Financial Reporting for Derivative Instruments*, in fiscal year 2010. ▶ For interest rate swaps, we confirmed values with counterparties, we independently tested the fair value of swaps by utilizing our EY valuation professionals. We independently tested the hedges effectiveness in accordance with GASB 53. ▶ As the fuel hedge contracts are traded on an active market exchange, we independently tested the fair values by tracing to market quotes as of 30 September 2010. We evaluated the hedges effectiveness in accordance with GASB 53. ▶ Based on the procedures performed, we believe the deferred outflow and inflow amounts recorded in the Balance Sheet and disclosures are fairly stated in all material respects.
Regulatory assets/liabilities	▶ GRU's services are rate regulated, with those rates established by its Board. GASB 34, *Basic Financial Statements–and Management's Discussion and Analysis–for State and Local Governments*, permits qualifying enterprise funds to apply the provisions of FAS 71, *Accounting for the Effects of Certain Types of Regulation*. A rate regulated governmental entity should follow applicable GASB and FASB pronouncements for measurement and recognition unless its regulator has provided alternative measurement or recognition requirements. ▶ GRU has established certain regulatory assets/liabilities as a result of management approval and City Commission actions. We tested all new regulatory assets/liabilities and traced establishment to approved. We ensured appropriate accounting for regulatory assets/liabilities in accordance with related actions. ▶ Based on the procedures performed, we believe GRU continues to meet the requirements to apply FAS 71 and all regulatory assets/liabilities have been accounted for appropriately.

Fraud considerations and the risk of management override

We are responsible for planning and performing our audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether caused by error or by fraud (SAS No. 99, *Consideration of Fraud in a Financial Statement Audit*).

Our audit procedures encompassed the requirements of SAS 99: brainstorming, gathering information to facilitate the identification of and response to fraud risks and performing mandatory procedures to address the risk of management override (including examining journal entries, reviewing accounting estimates and evaluating the business rationale of significant unusual transactions).

Identified fraud risks	Controls related to fraud risk	Summary of tests of controls and substantive procedures and related findings
Inappropriate capitalization of costs	Management review of the financial statements as well as reconciliations for the utility plant accounts. Purchase requisitions require approval.	We tested controls over the purchasing process. We performed substantive testing around fixed asset additions by ensuring appropriate capitalization.

2010 Ernst & Young services

	Services and deliverables
Opinions	▸ Express an opinion on the financial statements of GRU. ▸ Be made in accordance with auditing standards generally accepted in the United States and generally accepted Governmental Auditing Standards as set forth in the U.S. General Accounting Office's (GAO's) Government Auditing Standards (January 2007 Revision), and rules of the Auditor General, State of Florida for the form and conduct of audits of Florida local governments.
Internal control communications	▸ Issue reports on internal control over financial reporting and compliance with certain provisions of laws, regulations, contracts, grants, and other matters. ▸ Report on other matters as required by Chapter 10.550, Rules of the Auditor General. ▸ Issue a management letter that provides our recommendations regarding internal controls and opportunities for improvement or efficiency, based on observations made during the course of our audit.

Required communications

Area	Comments
Auditor's responsibilities under generally accepted auditing standards The financial statements are the responsibility of management. Our audit was designed in accordance with auditing standards generally accepted in the United States, as established by the American Institute of Certified Public Accountants, to obtain reasonable, rather than absolute assurance about whether the financial statements are free of material misstatement. An audit of financial statements includes consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we will express no such opinion.	Our responsibilities are included in our audit engagement letter. A copy of such agreement has previously been provided to you. As part of our audit, we have obtained a sufficient understanding of internal controls to plan our audit and to determine the nature, timing and extent of testing performed. We issued an unqualified opinion on the Company's financial statements for the year ended 30 September 2010, and 2009.
Overview of planned scope and timing We discuss with those charged with governance an overview of the planned audit scope and timing. These discussions are intended to assist those charged with governance in better understanding the consequences of the auditor's work for their oversight activities, discussing with the auditors issues of risk and materiality, and identifying any areas for which they may request the auditor to undertake additional procedures. Additional matters we may discuss include: ▸ How we propose to address the significant risk of material misstatement, whether due to fraud or error ▸ The concept of materiality in planning and executing the audit, focusing on the factors considered rather than on specific thresholds or amounts ▸ Where the entity has an internal audit function, the extent to which we will use the work of internal audit, and how we and the internal auditors can best work together.	We previously provided our views in the 2010 Audit Plan. We have provided our findings in the section titled "2010 audit results."

Required communications

Area	Comments
Other information in documents containing audited financial statements AICPA AU Section 550 establishes the auditor's responsibility for other information prepared by management that accompanies the audited financial statements. If the Company includes other information in documents containing audited financial statements, we review such other information and consider whether such information, or the manner of its presentation, is materially inconsistent with the audited financial statements. If we conclude that a material inconsistency exists, we determine whether the financial statements, our auditor's report, or, both require revision. In addition, we will notify you if we conclude that there is a material misstatement of fact in the other information.	We reviewed GRU's financial statements and noted the information in the audit financial statements is consistent with other sections of that document.
Our views about the qualitative aspects of the Company's significant accounting practices We have open and constructive discussions with those charged with governance about qualitative aspects of the entity's significant accounting practices, including acceptability. These discussions may include: ▸ The appropriateness of accounting policies to the particular circumstances of the company, including the adoption of, or a change in, an accounting policy ▸ The effect of significant accounting policies in controversial or emerging areas ▸ Significant accounting estimates ▸ Financial statement disclosures and other related matters	We previously provided our views in the 2010 Audit Plan. We have provided our findings in the section titled "2010 audit results."

Required communications

Area	Comments
Our views about the qualitative aspects of the Company's significant accounting practices: ▸ **The appropriateness of accounting policies to the particular circumstances of the company including, the adoption of, or a change in, an accounting policy** As part of our discussion about the qualitative aspects of the Company's significant accounting practices, we discuss our views about the adoption of, or a change in accounting policies which may include the following: ▸ The initial selection of new, or changes in, significant accounting policies, including the application of new accounting pronouncements. ▸ The effect of the timing and method of adopting a change in accounting policy on current and future earnings of the entity (or expected new accounting pronouncements). ▸ The appropriateness of the accounting policies to the particular circumstances of the entity ▸ Where acceptable alternative accounting policies exist, the identification of financial statement items that are affected by the chose of significant policies as well as information on accounting policies used by similar entities	Our auditor's report includes an explanatory paragraph discussing the Company's adoption of the new standard. ▸ During fiscal year 2010, GRU adopted GASB 53, *Accounting and Financial Reporting for Derivative Instruments*, which required GRU to record its interest rate swaps on their Balance Sheet. GRU has elected to apply GASB 71 to all ineffective hedges, deferring the related income statement effect. As a result, all fair value changes are recognized through deferred inflows/outflows account. The effect of adopting this standard impacted the 30 September 2009 Statement of Net Assets by recording Deferred outflows of $12.1 million for interest rate swaps and Deferred inflows of $1.2 million for futures and options contracts at the beginning of fiscal year 2009. GRU recorded a loss of $30.0 million on interest rate swaps and a gain on futures and option contracts of $4.7 million as of 30 September 2009. The impact on the 30 September 2010 Statement of Net Assets was to record a loss of $20.1 million on interest rate swaps and a loss on futures and option contracts of $1.6 million. The effect of adopting these standards did not impact amounts or classifications of the 30 September 2010 and 2009 Statement of Revenues, Expenses and Changes in Net Assets. Accordingly, we have not modified our opinion as to consistency.
Our views about the qualitative aspects of the Company's significant accounting practices: ▸ **The effect of significant accounting policies in controversial or emerging areas** As part of our discussion about the qualitative aspects of the Company's significant accounting practices, we may discuss with those charged with governance effects of significant accounting policies in controversial or emerging areas (or those unique to an industry), particularly when there is a lack of authoritative guidance or consensus.	We are not aware of any significant transactions recorded by GRU based on significant accounting policies used by GRU in controversial or emerging areas for which there is a lack of authoritative guidance.

Required communications

Area	Comments
Our views about the qualitative aspects of the Company's significant accounting practices: ▸ **Significant accounting estimates** As part of our discussion about the qualitative aspects of the Company's significant accounting practices, we discuss our views about the Company's accounting estimates which may include the following: ▸ Management's identification of accounting estimates ▸ Management's process for making accounting estimates ▸ Risks of material misstatement ▸ Indicators of possible management bias ▸ Disclosure of estimation uncertainty in the financial statements	We have provided our findings in the section titled "2010 audit results."
Our views about the qualitative aspects of the Company's significant accounting practices: ▸ **Financial statement disclosures and related matters** As part of our discussion about the qualitative aspects of the Company's significant accounting practices, we discuss our views about the Company's financial statement disclosures and other related matters which may include the following: ▸ The issues involved and related judgments made, in formulating sensitive financial statement disclosures ▸ The overall neutrality, consistency and clarity of financial statement disclosures ▸ The potential effect of significant risks and exposures and uncertainties on the financial statements ▸ The extent to which the financial statements are affected by unusual transactions including nonrecurring amounts recognized ▸ The factors affecting asset and liability carrying value ▸ The selective correction of misstatements	We have provided our findings in the section titled "2010 audit results."

Required communications

Area	Comments
Significant difficulties encountered in dealing with management when performing the audit We inform those charged with governance of any significant difficulties encountered in dealing with management related to the performance of the audit which may include such matters as: ▸ Significant delays in management providing required information ▸ An unnecessarily brief time within which to complete the audit ▸ The unavailability of expected information ▸ Restrictions imposed on us by management ▸ Management's unwillingness to provide information about management's plans for dealing with the adverse effects of the conditions or events that lead us to believe there is substantial doubt about the entity's ability to continue as a going concern.	None.
Unrecorded misstatements We discuss with those charge with governance uncorrected misstatements and the effect that they may have on our opinion in the auditor's. We also discuss with those charged with governance the effect of uncorrected misstatements related to prior periods on the relevant classes of transactions, account balances or disclosures, and the financial statements as a whole. In addition, we discuss with those charged with governance the implications of a failure to correct known and likely misstatements, if any, considering qualitative as well as quantitative considerations, including the possible implications in relation to future financial statements.	There were no such unrecorded audit adjustments related to the 2010 audit.
Material corrected misstatements We discuss with those charged with governance material, corrected misstatements that were brought to the attention of management as a result of our audit procedures. In addition, we may discuss with those charge with governance other corrected immaterial misstatements, such as frequently recurring immaterial misstatements that may indicate a particular bias in the preparation of the financial statements.	There were no material corrected misstatements brought to the attention of management as a result of such procedures.

Required communications

Area	Comments
Disagreements with management We discuss with those charged with governance any disagreements with management, whether or not satisfactorily resolved, about matters that individually or in the aggregate could be significant to the Company's financial statements or our auditor's report. For purposes of this discussion, disagreements do not include differences of opinion based on incomplete facts or preliminary information that are later resolved.	None.
Representations we are requesting from management We discuss with those charged with governance representation we are requesting from management.	We have provided a copy of the 2010 Management representation letter in Appendix B.
Management's consultation with other accountants When we are aware that management has consulted with other accountants about auditing or accounting matters, we discuss with those charged with governance our views about significant matters that were the subject of such consultation.	None of which we are aware.
Significant issues, if any, arising from the audit that were discussed, or the subject of, correspondence with management We discuss with those charged with governance any significant matters that were discussed with, or the subject of correspondence, with management, including: ▸ Business conditions affecting the entity, and business plans and strategies that may affect the risks of material misstatements ▸ Discussions or correspondence in connection with our initial or recurring retention as the auditor, including, among other matters, any discussions regarding the application of accounting principles and auditing standards	None.

Required communications

Area	Comments
Communication of independence matters Although the auditor's report affirms our independence, in certain situations, we discuss with those charged with governance circumstances of relationships (e.g. financial interests, business or family relationships, or nonaudit services provided or expected to be provided) that in our professional judgment may reasonably be thought to bear on independence and that we gave significant consideration to in reaching the conclusion that independence has not been impaired.	There are no matters that, in our professional judgment, may reasonably be thought to bear on our independence or that we gave significant consideration to in reaching the conclusion that independence has not been impaired. Relating to the audit of the financial statements of GRU as of 30 September 2010, and for the year then ended, we are independent certified public accountants with respect to GRU within the meaning of the applicable published pronouncements of the Independence Standards Board; Rule 101 of the American institute of Certified Public Accounts' Code of Professional Conduct, its interpretations, and rulings; and *Governmental Auditing Standards*. Our policies relating to financial interests (e.g., stock ownership, loans and other credit) generally are stricter than the requirements imposed by those regulatory and professional bodies.
Fraud and illegal acts involving senior management and fraud and illegal acts that cause a material misstatement of the financial statements We communicate with those charged with governance fraud and illegal acts involving senior management and fraud and illegal acts (whether caused by senior management or other employees) that cause a material misstatement of the financial statements. In addition, we discuss any misappropriations perpetrated by lower level employees, based on our understanding with those charged with governance regarding the nature and extent of communications with them about such matters.	We are not aware of any matters that require communication. Refer to the "Fraud considerations" section for more information about our procedures related to the risks of material misstatement due to fraud.
Significant deficiencies and material weaknesses in internal control We communicate all significant deficiencies and material weaknesses in internal control that were identified during the course of our audit.	No material weaknesses were identified.

Required communications

Area	Comments
AICPA ethics ruling regarding third-party service providers From time to time and depending upon the circumstances, third-party service providers, independent contractors, and consultants to Ernst & Young may participate in providing professional services. AICPA Ethics Ruling No. 112 under Rule 102, *Integrity and Objectivity*, requires that we inform clients whenever we use a third-party service provider in providing professional services to a client. The Rule has broadly defined "third-party service provider" to include an individual who is not employed by our US firm. Accordingly, third-party service providers might include, but not be limited to, the following examples: non US personnel who work for Ernst & Young affiliate firms (e.g., Ernst & Young United Kingdom), non US personnel working in the US on a foreign secondment, non US personnel working at Ernst & Young shared service centers.	From time to time, and depending on the circumstances, (1) we may subcontract portions of the Audit Services to other EY Firms, who may deal with the Company or its affiliates directly, although EY alone will remain responsible to you for the Audit Services, and (2) personnel (including non-certified public accountants) from an affiliate of EY or another EY Firm or any of their respective affiliates, or from independent third-party service providers (including independent contractors), may participate in providing the Audit Services. In addition, third-party service providers may perform services for EY in connection with the Audit Services.
Other findings or issues regarding the oversight of the financial reporting process We communicate other findings or issues, if any, arising from the audit that are, in our professional judgment, significant and relevant to those charged with governance regarding their oversight of the financial reporting process.	There are no other findings or issues arising from the audit that are, in our judgment, significant and relevant to those charged with governance regarding the oversight of the financial reporting process.

Looking ahead

Accounting and auditing developments

Accounting and auditing developments	Summary	Effect on GRU
GASB Statement No. 58, *Accounting and Financial Reporting for Chapter 9 Bankruptcies*	► Provides accounting and financial reporting guidance for governments that have petitioned for protection from creditors by filing for bankruptcy under Chapter 9 of the United States Bankruptcy Code. It requires governments to remeasure liabilities that are adjusted in bankruptcy when the bankruptcy court confirms (that is, approves) a new payment plan. ► For governments that are not expected to emerge from bankruptcy as going concerns, this Statement requires remeasurement of assets to a value that represents the amount expected to be received. ► Governments that have filed for bankruptcy are required to disclose information regarding, among other things, the pertinent conditions and events giving rise to the petition for bankruptcy, the expected gain, and the effects upon services. ► The requirements in this Statement will improve financial reporting by providing more consistent recognition, measurement, display, and disclosure guidance for governments that file for Chapter 9 bankruptcy. In addition, these requirements will provide financial statement users with better information regarding the effects of bankruptcy upon governments that file for Chapter 9 protection.	For periods beginning after 15 June 2009. Retroactive application is required for all prior periods presented during which a government was in bankruptcy. Currently, this standard is not expected to have an impact on the financial statements of GRU.

Accounting and auditing developments

Accounting and auditing developments	Summary	Effect on GRU
GASB Statement No. 59, *Financial Instruments Omnibus*	► The requirements of this Statement will improve financial reporting by providing more complete information, by improving consistency of measurements, and by providing clarifications of existing standards. ► The objective of this Statement is to revise existing standards regarding financial report update and improve existing standards of certain financial instruments and external investment pools for which significant issues have been identified in practice. ► This Statement provides amendments to the following Statements: Statements No. 25, *Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans, and No. 43, Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans*, Statement No. 31, *Accounting and Financial Reporting for Certain Investments and for External Investment Pools*, Statement No. 40, *Deposit and Investment Risk Disclosures, and* Statements No. 4, *Accounting and Financial Reporting Principles for Claims and Judgments and Compensated Absences*, No. 53, *Accounting and Financial Reporting for Derivative Instruments*.	The provisions of this Statement would be effective for financial statements for periods beginning after 15 June 2010, GRU's fiscal year 2011.

Accounting and auditing developments

Accounting and auditing developments	Summary	Effect on GRU
GASB Statement No. 60, *Accounting and Financial Reporting for Service Concession Arrangements*	► The requirements of this Statement will improve financial reporting by establishing recognition, measurement, and disclosure requirements for SCAs for both transferors and governmental operators, thereby improving comparability of financial statements. ► The objective of this Statement is to establish accounting and financial reporting requirements for service concession arrangements (SCAs), which are a type of public-private or public-public partnership arrangement. ► The primary issue for accounting and financial reporting for SCAs by transferors is determining whether the transferor should report the facility subject to an SCA as its capital asset. This Statement applies specific criteria to determine whether a transferor has control over the facility. ► This Statement also provides guidance for governments that are operators in an SCA. The governmental operator reports an intangible asset at cost for its right to access the facility and collect third-party fees; it would amortize the intangible asset over the term of the arrangement in a systematic and rational manner. ► This Statement requires disclosures about an SCA, including a general description of the arrangement and information about the associated assets and liabilities, the rights granted and retained, and guarantees and commitments.	The requirements of this Statement would be effective for financial statements for periods beginning after 15 December 2011, which is GRU's fiscal year 2013. The provisions of this Statement generally would be required to be applied retroactively for all periods presented. At this time, management is not aware of any agreements which would be impacted and as such, it is not anticipated that this standard will have an impact on the financial statements of GRU.

Accounting and auditing developments

Accounting and auditing developments	Summary	Effect on GRU
GASB Statement No. 62, *Codification of Accounting and Financial Reporting Guidance Contained in Pre-November 30, 1989 FASB and AICPA Pronouncements*	► The objective of this Statement is to incorporate into the GASB's authoritative literature certain accounting and financial reporting guidance that is included in the following pronouncements issued on or before 3 0 November 1989, which does not conflict with or contradict GASB pronouncements: 1. Financial Accounting Standards Board (FASB) Statements and Interpretations 2. Accounting Principles Board Opinions 3. Accounting Research Bulletins of the American Institute of Certified Public Accountants' (AICPA) Committee on Accounting Procedure ► This Statement supersedes Statement No. 20, *Accounting and Financial Reporting for Proprietary Funds and Other Governmental Entities That Use Proprietary Fund Accounting*, thereby eliminating the election provided in paragraph 7 of that Statement for enterprise funds and business-type activities to apply post-November 30, 1989 FASB Statements and Interpretations that do not conflict with or contradict GASB pronouncements. ► The requirements in this Statement will improve financial reporting by contributing to the GASB's efforts to codify all sources of generally accepted accounting principles for state and local governments so that they derive from a single source. This effort brings the authoritative accounting and financial reporting literature together in one place, with that guidance modified as necessary to appropriately recognize the governmental environment and the needs of governmental financial statement users. It would eliminate the need for financial statement preparers and auditors to determine which FASB and AICPA pronouncement provisions apply to state and local governments, thereby resulting in a more consistent application of applicable guidance in financial statements of state and local governments.	The provisions of this Statement would be effective for financial statements for periods beginning after 15 December 2011, which is GRU's fiscal year 2013. Earlier application is encouraged.

Accounting and auditing developments

Accounting and auditing developments	Summary	Effect on GRU
Exposure draft: Financial Reporting of Deferred Outflows of Resources, Deferred Inflows of Resources, and Net Position	► This proposed Statement would provide financial reporting guidance for deferred outflows of resources and deferred inflows of resources. Existing financial reporting standards do not include guidance for reporting those financial statement elements, which are distinct from assets and liabilities. ► This proposed Statement would amend the net asset reporting requirements in Statement No. 34, *Basic Financial Statements—and Management's Discussion and Analysis—for State and Local Governments,* and other pronouncements by incorporating deferred outflows of resources and deferred inflows of resources into the definitions of the required components of the residual measure and by renaming that measure as net position, rather than net assets.	The provisions of this proposed Statement would be effective for financial statements for periods beginning after 15 June 2011, which is GRU's fiscal year 2012. Earlier application is encouraged.

Appendix A
Timing of required communications

Timing of required communications

	Communicate when event occurs	Communicate on a timely basis, at least annually
Our responsibility under generally accepted auditing standards, including discussion of the type of opinion we are issuing		X
Overview of planned scope and timing		X
Other information in documents containing audited financial statements		X
Our views about the qualitative aspects of the Company's significant accounting practices, including:		
▸ The appropriateness of accounting policies to the particular circumstances of the company including, the adoption of, or a change in, an accounting policy	X	
▸ The effect of significant accounting policies in controversial or emerging areas	X	
▸ Significant accounting estimates		X
▸ Financial statement disclosures and related matters		X
Significant difficulties encountered in dealing with management when performing the audit	X	
Unrecorded misstatements		X
Material corrected misstatements		X
Disagreements with management	X	
Representations we are requesting from management		X
Management's consultations with other accountants	X	
Significant issues, if any, arising from the audit that were discussed, or the subject of correspondence, with management	X	
Communication of independence matters	X	
Fraud and illegal acts involving senior management and fraud and illegal acts that cause a material misstatement of the financial statements	X	
Significant deficiencies and material weaknesses in internal control		X
AICPA ethics ruling regarding third-party service providers		X
Other findings or issues regarding the oversight of the financial reporting process	X	
Additional communications required under GAS		X

Appendix B
Material written communications

Material written communications
Content

- 2010 Management letter of representation
- 2010 Management letter

February 4, 2011

Ernst & Young LLP
390 North Orange Avenue,
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Orlando, Florida 32801

In connection with your audits of the balance sheets, statements of revenues, expenses and changes in net assets, and cash flows of Gainesville Regional Utilities (GRU), a department of the City of Gainesville, Florida (the City), as of September 30, 2010 and 2009 and for the years then ended, we recognize that obtaining representations from us concerning the information contained in this letter is a significant procedure in enabling you to form an opinion whether the financial statements present fairly, in all material respects, the financial position, changes in financial position and cash flows of GRU in conformity with US generally accepted accounting principles.

Certain representations in this letter are described as being limited to matters that are material. Items are considered material, regardless of size, if they involve an omission or misstatement of accounting information that, in light of surrounding circumstances, makes it probable that the judgment of a reasonable person relying on the information would be changed or influenced by the omission or misstatement.

Accordingly, we make the following representations, which are true to the best of our knowledge and belief:

Management's responsibilities

We recognize that, as members of management of GRU, we are responsible for the fair presentation of its financial statements. We believe the statements of financial position, changes in financial position and cash flows are fairly presented in conformity with US generally accepted accounting principles applied on a basis consistent with that of the preceding years. We also recognize that, as members of management of GRU, we are responsible for establishing and maintaining effective internal control.

We have made available to your representatives all financial records and related data.

We have no plans or intentions that may materially affect the carrying value or classification of assets and liabilities.

Unrecorded audit differences

There are no unrecorded audit differences (including the effects of correcting or reversing prior year audit differences) relating to the current year financial statements.

Internal control

There are no transactions of a material nature, individually or in the aggregate, that have not been properly recorded in the accounting records underlying the financial statements.

We are not aware of any significant deficiencies or material weaknesses in the design or operation of internal control over financial reporting.

Minutes and contracts

We have made available to you all minutes of the meetings of the City Commission and committees of commissioners or summaries of actions of recent meetings for which minutes have not yet been prepared.

We also have made available to you all significant contracts, including amendments, and agreements and have communicated to you all significant oral agreements. We have complied with all aspects of contractual agreements that would have a material effect on the financial statements in the event of noncompliance.

Risks and uncertainties

There are no risks and uncertainties related to significant estimates and current vulnerabilities due to material concentrations that have not been disclosed in accordance with Statement of Position 94-6, *Disclosures of Certain Significant Risks and Uncertainties.*

Environmental liabilities

We have disclosed to you all significant environmental matters and have made available to you all significant relevant information related to them. The environmental liabilities included in the balance sheets represents our best estimate of the potential losses, based on applying the probability of cash flows model defined in Government Accounting Standards Board (GASB) Statement No. 49, *Accounting and Financial Reporting for Pollution Remediation Obligations*, using assumptions that we believe represent the expected outcomes of the uncertainties. The disclosures of environmental matters in the financial statements are adequate and consistent with the requirements of GASB Statement No. 49. Any deferred charges related to environmental liabilities have been approved by the City Commission and are fully recoverable pursuant Financial Accounting Standards Board (FASB) Statement No. 71, *Accounting for the Effects of Certain Types of Regulation.*

Kelly Oil Contamination Liability Reserve

Based on our 2010 filing with the Florida Department of Environmental Protection, we have noted the contamination is contained within the grounds of the facility. As result, we updated our previous estimate and determined we would not be to able reasonably estimate a liability as it would require the demolition of the facility. Ownership and pledging of assets GRU has satisfactory title to all assets appearing in the balance sheets. No security agreements have been executed under the provisions of the Uniform Commercial Code, and there are no liens or encumbrances on assets, nor has any asset been pledged. All assets to GRU has satisfactory title appear in the balance sheets.

Receivables and revenues

Receivables (including unbilled revenues) represent valid claims against the debtors indicated

and do not include amounts for services provided subsequent to the balance sheet dates or other types of arrangements not constituting sales. All revenue recognized as of the balance sheet dates has been realized (or is realizable) and earned. Revenue has not been recognized before (1) persuasive evidence of an arrangement exists, (2) or services rendered, (3) consideration to be received is fixed or determinable and (4) collectibility is reasonably assured.

Adequate provision has been made for losses, costs and expenses that may be incurred subsequent to the balance sheet dates in respect of sales and services rendered prior to (those) dates and for uncollectible accounts, discounts, returns and allowances, etc., that may be incurred in the collection of receivables at those dates.

We have adequately disclosed a description of our major revenue-generating products and services, the types of arrangements (including multiple-element arrangements) used to deliver these products or services, and a description of the revenue recognition policies applicable to these products or services.

We have disclosed to you all sales terms (both expressed and implied), including all rights of return or price adjustments and warranty provisions. We have made available to you all significant contracts, communications (either written or oral), and other relevant information pertaining to arrangements with our customers, including distributors and resellers.

Inventories

Inventories, including goods that are defective, slow-moving, obsolete or unusable, are stated at amounts not in excess of their estimated net realizable values. Physical counts and measurements of inventories were made by competent employees under the supervision of management and book records were appropriately adjusted after giving recognition to cut-off for materials received and products shipped. Financial instruments and deposits GRU has properly reported its investments at their fair values, based on quoted market prices, in accordance with GASB Statement No. 31, Accounting and Financial Reporting for Certain Investments and for External Investment Pools, and all applicable disclosures required by GASB Statement No.40, Deposit and Investment Risk Disclosures, have been made. GRU has complied with Section 218.415, Florida Statutes, related to the investment of public funds. Risk disclosures associated with deposits and investment securities are presented in accordance with GASB requirements.

Investments in The Energy Authority (TEA)

We have disclosed our equity interest in TEA in accordance with applicable GASB pronouncements and properly accounted for GRU's share of the net income of TEA for the periods ended September 30, 2010 and 2009. We have also disclosed GRU's commitments to TEA through trade guarantees, and believe that GRU's exposure to credit and/or transaction risk is limited to the guarantee amount disclosed in the notes to the financial statements.

Although not common stock in legal form, GRU's investment in TEA has risk and reward characteristics that are substantially similar to that entity's common stock.

Deferred charges

We believe that all material expenditures that have been deferred to future periods are recoverable through utility rates. In addition, the City Commission, as the rate setting authority, has approved the GRU budget which includes the material regulatory assets and liabilities related to environmental claims.

Fuel Contracts and other Derivative Instruments (including debt related instruments)

We believe that the value of the outstanding fuels contracts (options and futures) as of September 30, 2010 and 2009 is accurate and properly disclosed and recorded. All derivative financial instruments to which GRU is a party are reported at their fair values in the financial statements. GRU has appropriately implemented GASB Statement No. 53, *Accounting and Financial Reporting for Derivative Instruments*, by reporting the fair value of all derivative instruments on the balance sheets (with retroactive application). GRU has also properly assessed hedge effectiveness or ineffectiveness in accordance with the provisions of GASB 53. For those instruments deemed as ineffective under GASB Statement No. 53 (i.e., investment derivatives), we have applied FASB Statement No. 71 to defer recognition of the changes in fair value. This is consistent with GRU's rate making and bond covenant requirements and is fully disclosed in the notes to the financial statements.

Long-lived assets to be held and used, including amortizable intangible assets

No events or changes in circumstances have occurred that indicate the carrying amounts of long-lived assets to be held and used, including intangible assets that are subject to amortization, may not be recoverable.

Related party transactions

Transactions with related parties, as defined in FASB Statement No. 57, *Related Party Disclosures*, and related amounts receivable or payable, including sales, purchases, loans, transfers, leasing arrangements and guarantees, have been properly recorded and/or disclosed in the financial statements.

Arrangements with financial institutions

Arrangements with financial institutions involving compensating balances or other arrangements involving restrictions on cash balances and line-of-credit or similar arrangements have been properly recorded or disclosed in the financial statements.

Events of default under debt agreements

No events of default have occurred with respect to any of the GRU's debt agreements.

Contingent liabilities

There are no unasserted claims or assessments, including those our lawyers have advised us of, that are probable of assertion and must be disclosed in accordance with FASB Statement No. 5, *Accounting for Contingencies*.

There have been no violations or possible violations of laws or regulations in any jurisdiction whose effects should be considered for disclosure in the financial statements or as a basis for recording a loss contingency.

There have been no internal investigations or communications from regulatory agencies or government representatives concerning investigations or allegations of noncompliance with laws or regulations in any jurisdiction, noncompliance with or deficiencies in financial reporting practices, or other matters that could have a material effect on the financial statements.

There are no other liabilities or gain or loss contingencies considered material, individually or in the aggregate, that are required to be accrued or disclosed by FASB Statement No. 5, nor are

there any accruals for loss contingencies included in the balance sheets or gain contingencies reflected in earnings that are not in conformity with the provisions of FASB Statement No. 5.

Oral or written guarantees

Except for certain trading guarantees related to GRU's participation in TEA programs (which have been disclosed in the financial statement footnotes), there are no oral or written guarantees, including guarantees of the debt of others.

Purchase commitments

At September 30, 2010 and 2009, GRU had no purchase commitments for inventories in excess of normal requirements or at prices that were in excess of market at those dates.

There were no agreements or commitments to repurchase assets previously sold. There were no material commitments outstanding at September 30, 2009 and 2008, other than the interest rate swap arrangement and fuels contracts positions that are disclosed in the financial statements, as a result of being a party to futures or forwards contracts, short sales, or hedge transactions.

We have provided you with all agreements regarding purchases and sales of electric power and/or fuel. These agreements represent the entire arrangements and are not supplemented by other agreements either written or oral.

Fraud

We acknowledge our responsibility for the design and implementation of programs and controls to prevent and detect fraud. We have no knowledge of any fraud or suspected fraud involving management or other employees who have a significant role in the GRU's internal control over financial reporting. In addition, we have no knowledge of any fraud or suspected fraud involving other employees where the fraud could have a material effect on the financial statements. We have disclosed to you all allegations of financial improprieties, including fraud or suspected fraud, coming to our attention (regardless of the source or form and including, without limitation, allegations by "whistle-blowers") where such allegations could result in a misstatement of the financial statements or otherwise affect the financial reporting of the GRU.

Independence

We are not aware of any capital lease, material cooperative arrangement or other business relationship between the GRU and Ernst & Young LLP or any other member firm of the global Ernst & Young organization.

We are not aware of any reason that Ernst & Young LLP would not be considered to be independent for purposes of the GRU's audit.

Conflicts of interest

There are no instances where any officer or employee of the GRU has an interest in a company with which the GRU does business that would be considered a "conflict of interest." Such an interest would be contrary to GRU policy.

Required Supplementary information

Required supplementary information (MD&A) is measured and presented within prescribed guidelines.

Use of the Work of a Specialist

We agree with the findings of specialists in evaluating the coal inventory aerial survey and have adequately considered the qualifications of the specialists in determining the amounts and disclosures included in the financial statements and the underlying accounting records. We did not give or cause any instructions to be given to specialists with respect to the values or amounts derived in an attempt to bias their work, and we are not otherwise aware of any matters that have had an effect on the independence or objectivity of the specialists.

Net Assets

Net asset components (invested in capital assets, net of related debt; restricted; and unrestricted) are properly classified and, if applicable, approved.

Debt Compliance

GRU is in compliance with all required debt covenants and requirements. GRU is also in compliance with post issuance requirements as specified in the Internal Revenue Code, including but not limited to the areas of arbitrage and private business use, for each of its outstanding bond issues.

General Disclosures

We have identified and disclosed to you, all laws, regulations and provisions of contracts and grant agreements that could have a direct and material effect on financial statement amounts.

There have been no violations (or possible violations) of laws, regulations and provisions of contracts and grant agreements with effects that should be considered for disclosure in the financial statements or as a basis for recording a loss contingency.

We have followed applicable laws and regulations in adopting, approving and amending budgets, debt limits and covenants and secondary market disclosures, deposits and investments.

The financial statements include all joint ventures with an equity interest, and properly disclose all other joint ventures and other related organizations.

There are no transactions that are required to be reported as special or extraordinary items.

Special items are appropriately classified and reported.

Subsequent events

Except for the debt transaction included in the notes to the financial statements, subsequent to September 30, 2010, no events or transactions have occurred or are pending that would have a material effect on the basic financial statements at that date or for the period then ended, or are of such significance in relation to GRU affairs to require mention in a note to the basic financial statements in order to make them not misleading regarding the financial position, changes in financial position and, where applicable, cash flows of the GRU.

We understand that your audits were conducted in accordance with auditing standards generally accepted in the United States as promulgated by the by the American Institute of Certified Public Accountants and were, therefore, designed primarily for the purpose of expressing an opinion on the basic financial statements of GRU taken as a whole, and that your tests of the accounting records and other auditing procedures were limited to those that you considered necessary for that purpose.

Regards,

Robert E. Hunzinger, General Manager

Jennifer L. Hunt, Chief Financial Officer

Christine C. Marion, Controller

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City Commission, City of Gainesville, Florida and
Gainesville Regional Utilities

In planning and performing our audit of the financial statements of Gainesville Regional Utilities (GRU or the Utility) as of and for the year ended September 30, 2010, in accordance with auditing standards generally accepted in the United States, we considered its internal control over financial reporting (internal control) as a basis for designing our auditing procedures for the purpose of expressing our opinion on the) financial statements, but not for the purpose of expressing an opinion on the effectiveness of the Utility's internal control. Accordingly, we do not express an opinion on the effectiveness of the Utility's internal control.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct misstatements on a timely basis. A material weakness is a deficiency, or combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A significant deficiency is a deficiency, or combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

During our current year audit, we noted no new deficiencies in internal control (as described above). Below is an update on prior year findings:

SAP Accounting System User Education
During our year-end audit procedures, GRU personnel had difficulty providing required client assistance. Specifically, personnel had difficulty navigating the SAP accounting and SAP billing systems and were unable to generate required reports in a timely manner. We recommend that management provide additional resources and education in data extraction and reporting tools in order to efficiently deliver client assistance.

2009 Management Response: Management agrees with this recommendation. GRU implemented a new financial system in May of 2009. As with any new software implementation, there is a learning curve in the areas of data extraction and reporting. GRU staff is very familiar with the SAP accounting and billing software. During the coming year, GRU will provide additional training to appropriate staff to ensure reports needed to deliver client assistance are in place and available on a timely basis.

Current Year Update: GRU has provided training to key staff members in both IT and Finance area. Reports have been developed and modified to meet the requests encountered during last year's audit. Staff has also become much more familiar with the data and how to extract information from the system as needed.

SAP* Configuration
During our IT audit procedures, we noted the system configuration "login/no_automatic_user _sap*" was set to a value of "0". We also noted the "SAP*" account was deleted from the SAP user master table. This configuration may allow privileged access to the SAP system for any individual with knowledge of the default password for the "SAP*" user account. Further, such access is not logged. We recommend that the system configuration "login/no_automatic_user _sap*" be set to a value of "1". If the recommended configuration

change is not possible, we recommend that all "SAP*" activity be logged and reviewed on a regular basis.
2009 Management Response: Management agrees with this recommendation. The configuration described is correct, and has been corrected in the client noted, R3P.

Current Year Update: The recommended configuration change has been implemented.

SAP Change Controls Configuration
During our IT audit procedures, we noted the "SCC4" Change Transport Configuration was modified during the audit period (last modified date of 7/27/2009). Through further inquiry, we noted the SAP production environment is periodically "unlocked" for maintenance. When the SAP production environment is "unlocked", changes may be made directly to the SAP system. GRU does not log or audit changes made to SAP when the production environment is "unlocked". Therefore, there is a risk of unauthorized, untested and unapproved changes being made to the production environment. We recommend that management log each time the "SCC4" transaction code is used to "unlock" the SAP production environment. We also recommend that management log all activity performed within the SAP production environment when it is "unlocked". Lastly, we recommend that a formal review of the activity log be performed on a regular basis to verify that only documented/authorized changes were made to production.

2009 Management Response: Management agrees with this recommendation. GRU is working to implement all of the recommendations during the current year.

Current Year Update: The first recommendation has been implemented. Such occurrences are documented within the relevant Mercury ticket when the need arises. Audit Logging will also capture everything and is on at all times in both SAP systems. Key strokes are not captured, rather transaction codes used, reports started, etc.

FERC Depreciation
During our year-end audit procedures, we noted SAP asset management system did not depreciate assets in accordance with Federal Energy Regulatory Commission (FERC) accounting guidance. SAP asset management system depreciates assets utilizing the traditional U.S. GAAP depreciation methods rather than group depreciation as outlined in FERC. Management adjusted the related asset accounts to reflect the proper amounts in accordance with FERC accounting guidance and these values are properly reflected in the financial statements and related footnotes. We recommend that management develop a process and implement controls to record depreciation utilizing the composite depreciation rates as required by FERC.

2009 Management Response: Management agrees that Federal Energy Regulatory Commission (FERC) accounting guidance is the appropriate accounting authority to use for utility asset accounting. Management does apply such guidance in all respects where it is practicable and legal to do so. Specific assets were accounted for using more detailed values than are required by FERC accounting and in so doing, did conform to U.S. GAAP depreciation methods. However, as stated, management did make the recommended adjustments to reflect values as if accounted for under FERC accounting so that all financial statement and related footnote balances are properly stated. Management will make every effort to ensure that specific asset and related accounts reflect the appropriate balances in conformity with FERC accounting treatment.

Current Year Update: At this time, management has determined that we will continue to use the SAP system as designed for specific assets, while other options are explored. At fiscal year end, an adjustment will be made to reflect values as if accounted for under FERC accounting for reporting purposes until a permanent solution is established.

This communication is intended solely for the information and use of management, the City Commission of the City of Gainesville, and others within the organization and is not intended to be and should not be used by anyone other than these specified parties.

We would be pleased to discuss the above matters or to respond to any questions, at your convenience.

Ernst & Young LLP

February 4, 2011

Appendix C
Utilities unbundled

New perspectives on the power and utilities sector

Utilities Unbundled

Issue 09 | December 2010

New technologies, new expectations, new capital – can utilities balance the load?

Balancing act

How are utilities balancing the demands of first-of-a-kind projects with capital efficiency?

Electric vehicle focus

Steering EVs to the mass market

Vattenfall develops options to boost climate-smart mobility

How fast should utilities get behind the EV wheel?

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Contents

New technologies, new expectations, new capital

Can utilities balance the load?

Despite the constraints of the downturn and a tough financial environment, power and utilities CEOs cannot afford to downgrade their current capital expenditure programs. In fact, their longer term rate of spending is likely to increase rather than decrease.

As the energy and technology sectors become increasingly interdependent, developments such as electric vehicles (EVs), the smart grid, new nuclear and renewables all demand bold, strategic decisions and heavy investment. These new technologies, combined with new regulations and new ways of working, all add to the financial pressure on utilities.

But it is well known that big capital spending programs hit the bottom line, and CEOs want above all to maintain the industry's reputation as a low-risk environment for investors. How can they do this when so much of the required new investment is in endeavors where risks are highly unpredictable, the technology is new and its future impact on the industry is unknown?

This issue of *Utilities Unbundled* explores the challenges of taking on "first-of-a-kind." Our main feature (page 8) examines how some of our leading US and European utilities are balancing the risks and demands of major new investments to deliver capital-efficient results.

We also look in depth at another "great unknown" for the utility industry: the impact of electrified transport. Vattenfall reports on its involvement with the new electric drive options (page 34); our Cleantech forum has discovered how cross-industry cooperation is supporting the fledgling EV industry (page 20); and we contrast utility and car manufacturer's views on how fast utilities should get involved with EVs (page 42).

Still on the track of the new, we examine innovative options for the industry to fill the current funding gap (page 24) and find out how leading utilities PPL EU, American Electric Power and Iberdrola view their current funding challenges (pages 28, 27 and 32 respectively).

All of the projects explored in this edition have highlighted the crucial role of the regulator in stimulating the necessary investment. The creation by the regulator of a low-risk investment environment, where the return on investment is clear, is the means by which the massive investments required are being funded and contributing to the delivery of national energy policies.

Please call our authors if you want to discuss any topic raised here — you will find contact details on page 44.

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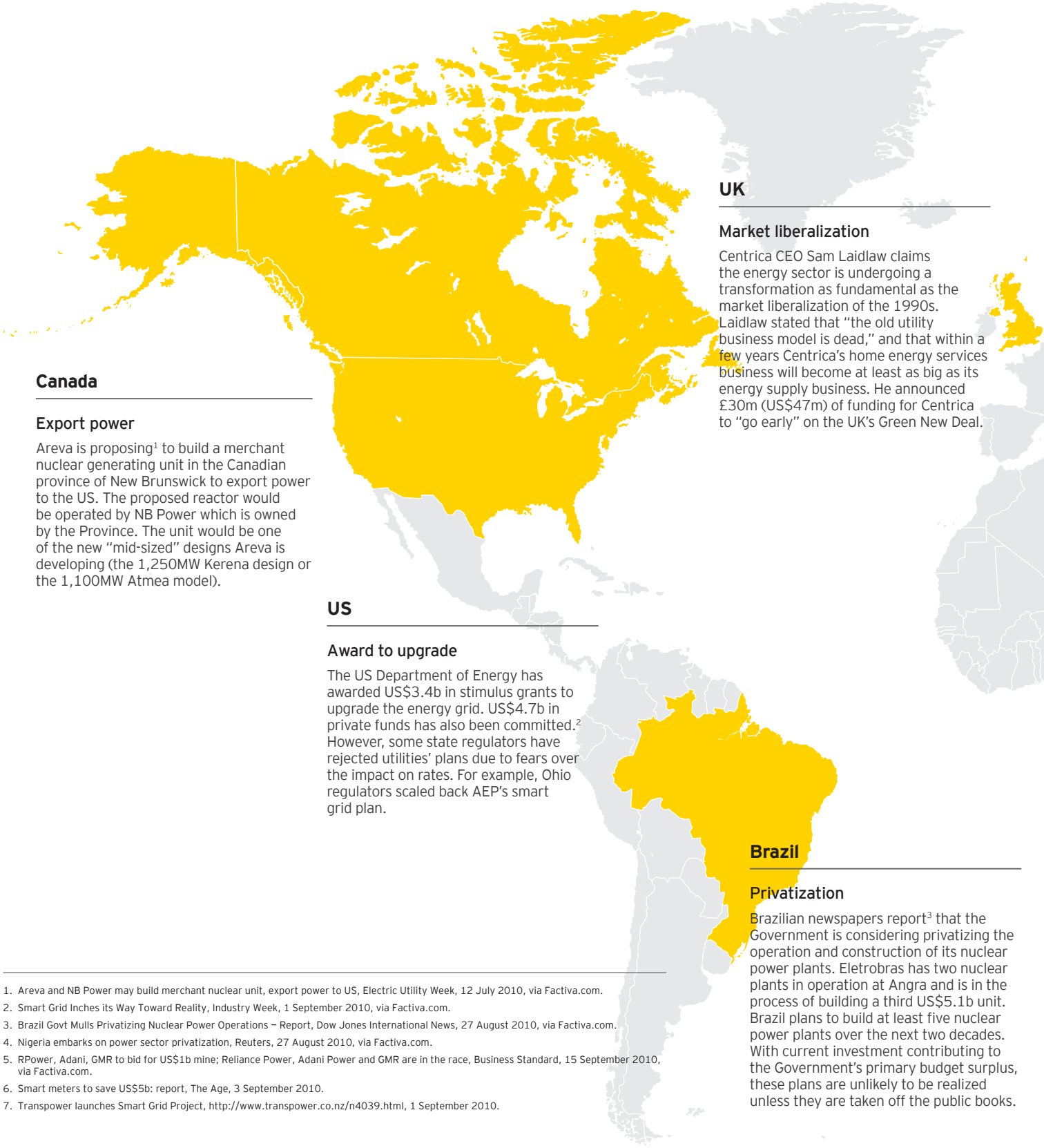
Market monitor

Update on regional utilities projects



Canada

Export power

Areva is proposing[1] to build a merchant nuclear generating unit in the Canadian province of New Brunswick to export power to the US. The proposed reactor would be operated by NB Power which is owned by the Province. The unit would be one of the new "mid-sized" designs Areva is developing (the 1,250MW Kerena design or the 1,100MW Atmea model).

US

Award to upgrade

The US Department of Energy has awarded US$3.4b in stimulus grants to upgrade the energy grid. US$4.7b in private funds has also been committed.[2] However, some state regulators have rejected utilities' plans due to fears over the impact on rates. For example, Ohio regulators scaled back AEP's smart grid plan.

UK

Market liberalization

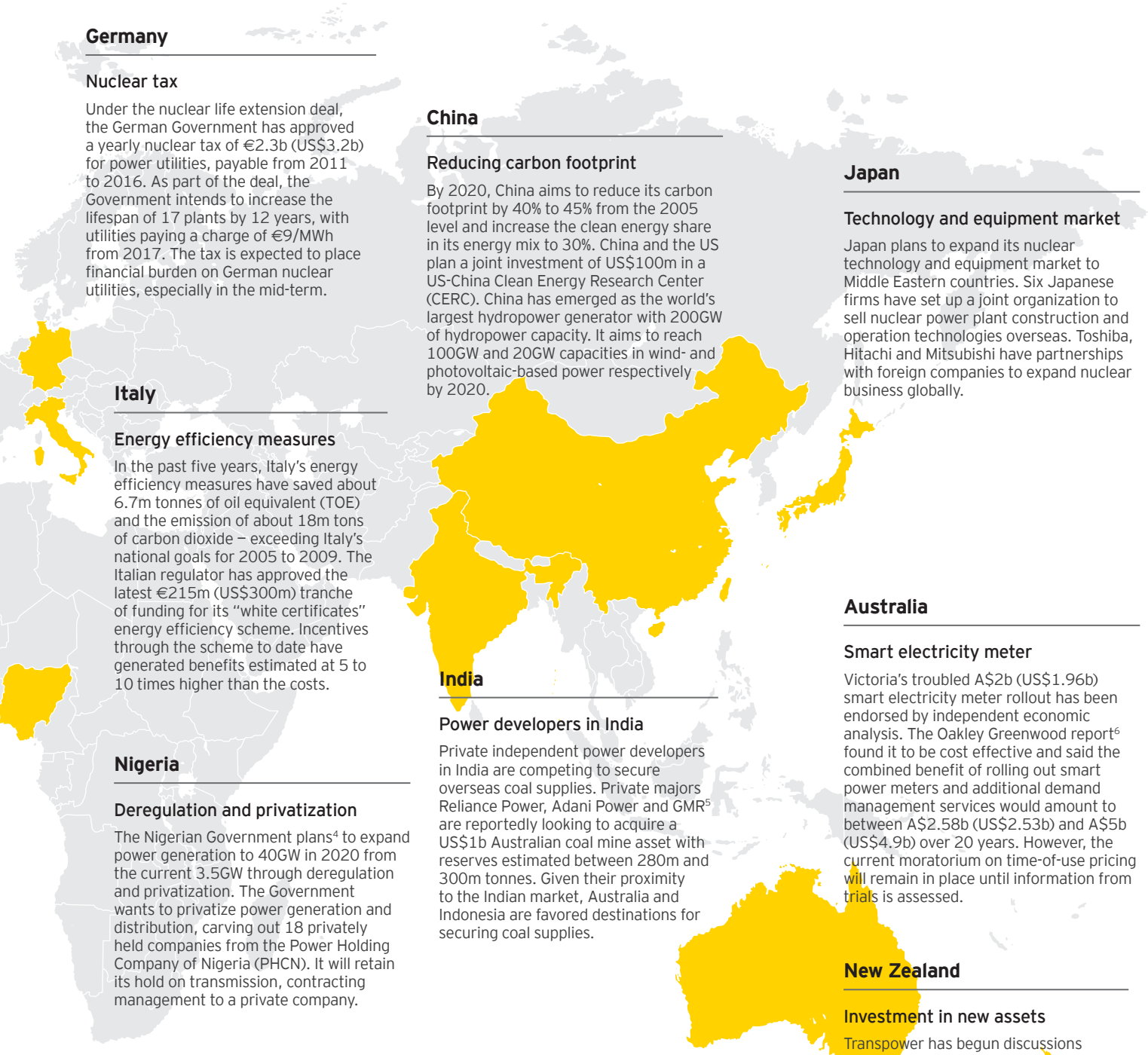
Centrica CEO Sam Laidlaw claims the energy sector is undergoing a transformation as fundamental as the market liberalization of the 1990s. Laidlaw stated that "the old utility business model is dead," and that within a few years Centrica's home energy services business will become at least as big as its energy supply business. He announced £30m (US$47m) of funding for Centrica to "go early" on the UK's Green New Deal.

Brazil

Privatization

Brazilian newspapers report[3] that the Government is considering privatizing the operation and construction of its nuclear power plants. Eletrobras has two nuclear plants in operation at Angra and is in the process of building a third US$5.1b unit. Brazil plans to build at least five nuclear power plants over the next two decades. With current investment contributing to the Government's primary budget surplus, these plans are unlikely to be realized unless they are taken off the public books.

1. Areva and NB Power may build merchant nuclear unit, export power to US, Electric Utility Week, 12 July 2010, via Factiva.com.
2. Smart Grid Inches its Way Toward Reality, Industry Week, 1 September 2010, via Factiva.com.
3. Brazil Govt Mulls Privatizing Nuclear Power Operations – Report, Dow Jones International News, 27 August 2010, via Factiva.com.
4. Nigeria embarks on power sector privatization, Reuters, 27 August 2010, via Factiva.com.
5. RPower, Adani, GMR to bid for US$1b mine; Reliance Power, Adani Power and GMR are in the race, Business Standard, 15 September 2010, via Factiva.com.
6. Smart meters to save US$5b: report, The Age, 3 September 2010.
7. Transpower launches Smart Grid Project, http://www.transpower.co.nz/n4039.html, 1 September 2010.



Germany

Nuclear tax

Under the nuclear life extension deal, the German Government has approved a yearly nuclear tax of €2.3b (US$3.2b) for power utilities, payable from 2011 to 2016. As part of the deal, the Government intends to increase the lifespan of 17 plants by 12 years, with utilities paying a charge of €9/MWh from 2017. The tax is expected to place financial burden on German nuclear utilities, especially in the mid-term.

Italy

Energy efficiency measures

In the past five years, Italy's energy efficiency measures have saved about 6.7m tonnes of oil equivalent (TOE) and the emission of about 18m tons of carbon dioxide – exceeding Italy's national goals for 2005 to 2009. The Italian regulator has approved the latest €215m (US$300m) tranche of funding for its "white certificates" energy efficiency scheme. Incentives through the scheme to date have generated benefits estimated at 5 to 10 times higher than the costs.

Nigeria

Deregulation and privatization

The Nigerian Government plans[4] to expand power generation to 40GW in 2020 from the current 3.5GW through deregulation and privatization. The Government wants to privatize power generation and distribution, carving out 18 privately held companies from the Power Holding Company of Nigeria (PHCN). It will retain its hold on transmission, contracting management to a private company.

China

Reducing carbon footprint

By 2020, China aims to reduce its carbon footprint by 40% to 45% from the 2005 level and increase the clean energy share in its energy mix to 30%. China and the US plan a joint investment of US$100m in a US-China Clean Energy Research Center (CERC). China has emerged as the world's largest hydropower generator with 200GW of hydropower capacity. It aims to reach 100GW and 20GW capacities in wind- and photovoltaic-based power respectively by 2020.

India

Power developers in India

Private independent power developers in India are competing to secure overseas coal supplies. Private majors Reliance Power, Adani Power and GMR[5] are reportedly looking to acquire a US$1b Australian coal mine asset with reserves estimated between 280m and 300m tonnes. Given their proximity to the Indian market, Australia and Indonesia are favored destinations for securing coal supplies.

Japan

Technology and equipment market

Japan plans to expand its nuclear technology and equipment market to Middle Eastern countries. Six Japanese firms have set up a joint organization to sell nuclear power plant construction and operation technologies overseas. Toshiba, Hitachi and Mitsubishi have partnerships with foreign companies to expand nuclear business globally.

Australia

Smart electricity meter

Victoria's troubled A$2b (US$1.96b) smart electricity meter rollout has been endorsed by independent economic analysis. The Oakley Greenwood report[6] found it to be cost effective and said the combined benefit of rolling out smart power meters and additional demand management services would amount to between A$2.58b (US$2.53b) and A$5b (US$4.9b) over 20 years. However, the current moratorium on time-of-use pricing will remain in place until information from trials is assessed.

New Zealand

Investment in new assets

Transpower has begun discussions on a multimillion-dollar demand-side initiative[7] in the Upper North Island to help defer investment in new assets. Transpower is looking for interruptible load that they can reduce temporarily under severe conditions. Businesses will be paid to participate. The project, to which approximately NZ$10m (US$7.5m) of initial funding has been allocated, is part of a wider NZ$110m (US$82.5m) regional program.

Deals roundup

The good news is that 2010 opened with better deal flows than we saw as last year ended – with strong regional trends. **Joseph Fontana** reports

Highlights

- Transaction activity remains volatile across the globe, with a remarkable renaissance of M&A in the US.
- Deal flow has stabilized and is up 41% on average from H2 2009 (US$527.9m) to H1 2010 (US$747m).
- Outbound investment from China is growing.

Power and utilities M&A: the big picture

Globally, M&A deal flow for power and utilities (P&U) is on the rise, certainly in terms of deal value (see Figure 1). Average deal value in Q2 2010 was US$309m.

Figure 1: All deals

		Volume	Total value (US$b)	Average value (US$m)
2009	Q1	85	57.6	966.6
	Q2	110	40.4	492.9
	Q3	98	16.6	224.7
	Q4	130	28.8	303.2
2010	Q1	85	24.5	438.0
	Q2	121	28.5	309.0

Figure 2: Private equity and infrastructure fund deals

		Volume	Total value (US$b)	Average value (US$m)
2009	Q1	17	5.0	295.4
	Q2	16	4.0	250.6
	Q3	10	4.2	422.2
	Q4	26	4.5	174.7
2010	Q1	22	2.6	117.0
	Q2	22	3.0	138.0

Financial buyers such as private equity (PE) and infrastructure funds are still playing an important role, evidenced by stable volumes. Average deal values, however, indicate that these are smaller deals rather than big ticket buy-outs (see Figure 2).

Regional trends

Deal volumes increased across all geographies in Q2 2010, albeit at a different pace. There are some remarkable regional differences, with significantly increased deal value in the Americas for the fifth consecutive quarter (as at Q2 2010).

In Europe, traditionally the most active M&A market for P&U in terms of deal value, we are seeing much lower levels of activity. This may represent a "new normal" for Europe following years of mega-mergers, as finding the best returns on investment and reducing debt burden become the new priorities.

In Asia-Pacific, there was significant outbound activity from State Grid Corporation of China with its US$1.7b purchase of seven transmission assets in Brazil.

Outlook

We expect similar transaction levels in coming months, given recent announcements of further asset disposals and merger announcements (e.g., GdF-Suez's takeover of International Power).

Deals commentary

Globally we are seeing a number of drivers for transaction activity, including asset sale programs to streamline operations and reduce debt burden as well as distressed assets for sale.

Cheaper electricity drives US deals

In the US, however, debt is not the primary driver. The real driver is lower valuations resulting from cheaper electricity. The spot price for electricity has declined as a consequence of a lingering economic slowdown and a dramatic reduction in the key fuel that drives the price of electricity – natural gas. To illustrate the impact, in the last two years the 1 October spot price of natural gas at Henry Hub has dropped from US$7.17 per MMBtu to US$3.809. This is largely due to new drilling techniques that have unlocked natural gas trapped within shale rock formations. These developments have increased the estimated gas supply by at least 100 years (and much higher if you believe the optimists).

With valuations down, investors in the US see opportunities. They expect demand to increase post-recession and valuations to rise in the mid to long term. Financial buyers have never really left P&U. PE houses have been in this market long enough to understand its ebb and flow – they will act when the fundamentals are right.

Alternative energy (AE) sector consolidates

Lower electricity prices are also affecting AE developers, who are finding it difficult to sign long power supply agreements at sufficient prices. As a result, some projects are struggling, and we are seeing greater consolidation. Those with robust balance sheets and financing are in a position of strength.

Looking ahead, the federal cash grant program (established under Section 1603 of The American Recovery and Reinvestment Act) is due to expire at the end of 2010. This program (which pays 30% of a project's eligible costs) has been a tremendous success, with more than US$5b paid out since the first grants were released in September 2009. Large wind projects and geothermal have dominated the program, but a wide array of technologies have received grants.

At this point, no replacement funding has been announced, which could have a devastating effect on the sector. The US would not be alone, however, in cutting AE subsidies. Spain, for example, has announced plans to decrease its feed-in tariffs for solar photovoltaic (PV) this year.

Looking ahead

As we all know, this is a dynamic market that is highly sensitive to oil and gas prices as well as technological advances. Given the level of cash held by financial investors, when change occurs, we can expect a prompt response.

Balancing

Utilities face a major wave of investment, much of it in new energy technologies. How are they balancing the demands of these first-of-a-kind projects with capital efficiency? Report by **Susan Bell**, **Michael Juchno**, **Matt Sapp** and **Ian Whitlock**

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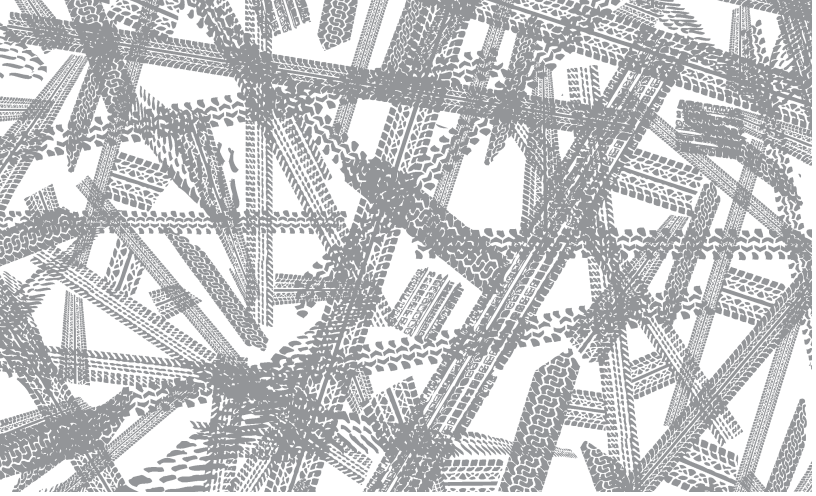


Utilities are embarking on a period of significant capital spending to replace aging infrastructure, meet new environmental standards, adapt to new technologies and keep up with growing energy demands.

Many industries face big challenges in delivering major capital projects, and almost all come in with cost overruns and timetable slippages. History shows that big capital spending waves can lead to lower returns, reduced spending power and even, potentially, damaged credit ratings. But taking on large-scale, first-of-a-kind projects may be especially damaging to a utility's capital efficiency because:

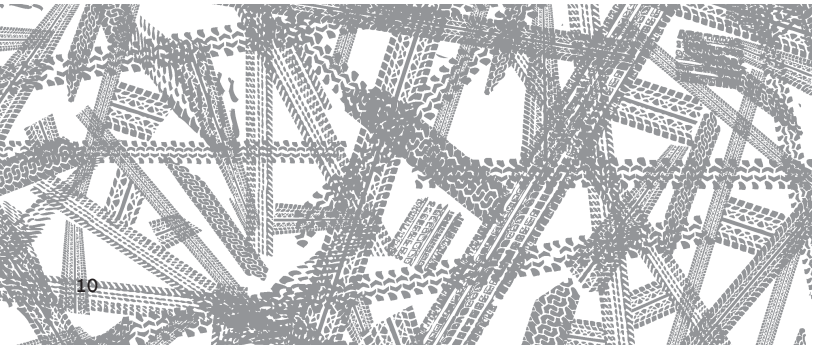
- Utilities may not have recent experience in managing unpredictable and expensive projects.
- Many utilities don't run a large portfolio of businesses, which restricts their ability to spread costs and reduce risks.
- The project's size could represent a significant proportion of the utility's total capital base.
- Many projects involving unproven technology could change the core business model in unforeseen ways, potentially increasing risk.
- These long-term investments are vulnerable to energy policy changes, which could threaten returns.

How are utility leaders managing the unique demands of these projects while maintaining capital efficiency and protecting their reputation as a low-risk industry?

This article explores how three leading utilities are developing new capital projects with a range of "unknown unknowns," including EV charging, new nuclear construction and the creation of new IT infrastructure for the smart grid.

"Generally speaking … big capital spending leads to big rate increases, leads to disallowances or lagging recovery of those investments. And if you don't get the right rates, your cost of capital goes up over time. You need to strike a fine balance"

Knut Simonsen, DTE Energy



Venturing into electric vehicle charging

As the market for EVs grows,[8] a number of pilots are under way to create networks of plug-in electric car recharging points. Utilities eyeing such developments want to be sure there is a convincing business case for investing in the fledgling industry.

So what are the main stumbling blocks? First, we have yet to see a large-scale EV charging network built. Technical standards are proving a major challenge: so far, neither car manufacturers nor the charging solutions are completely aligned. And no one knows how the business model will work — how people will pay for charging, or exactly what the public infrastructure will be. In the midst of this, utilities are not helped by the fact that many of the current pilots are operating in isolation, with only a few designed to facilitate meaningful sharing of lessons learned.

So are utilities interested in exploring opportunities? Can they see a solid business case to invest and take EV charging forward in a capital-efficient way?

Knut Simonsen
Vice President, DTE Energy

Knut Simonsen leads strategy and corporate development and also serves as President of DTE Energy Ventures. Prior to joining DTE Energy, Knut was a management consultant with McKinsey & Company in Dallas, Texas, and a project manager at Texaco, where he focused on alternative energy projects.

DTE on the EV business case[9]

Based in Detroit, DTE Energy operates regulated electricity and gas utilities that are among the largest in the US, at the heart of the world's auto R&D territory. The company is committed to supporting the successful growth of EVs. It is running a pilot of the new technology, which includes environmental modeling, installation of charging stations, pilot pricing programs and smart charging. How does the company view the business case for utility involvement in EV charging?

Regulated and unregulated utilities will view this in different ways, says Knut Simonsen, President of DTE Energy Ventures, the venture capital arm responsible for running the pilot.

In a "traditional" regulated utility business model (in which the utility generates and distributes electricity and collects payment), he explains, the incremental earnings opportunity over the next decade is relatively small. "The incremental sales require limited new capital investments, and these sales will offset the need for future rate increases," Simonsen says. "In effect, increased off-peak demand from charging helps increase capacity utilization of the electric grid and deter future rate increases. Furthermore, our customers will dramatically reduce their petrol/transportation expenses (around a 75% reduction in the US). Certainly it presents an opportunity for utilities to establish a closer relationship with their customers by providing their transportation 'fuel' at dramatic savings."

In other words, for regulated utilities, the bottom line is not affected in a big way. However, in deregulated utilities operating a traditional business model, any extra revenue would flow back to the bottom line, benefiting shareholders.

Changing the business model would probably involve speculative investments, e.g., big investments in public charging stations or "ownership" of customers' batteries.

8. See Technology article, page 20.
9. See page 43 for more on the DTE pilot and potential business model change.

Be prepared

DTE's ability to commit to the EV pilot investment is supported by the existence of the company's venture capital arm, which allows it to test-drive speculative, strategic investments in initiatives that don't conform to a "normal" utility risk profile.

Few other utilities are in this position. But however they approach new technology, Simonsen believes the key issue is "not to go into this transition completely unprepared. I'd encourage utilities everywhere to start pilots. … Create a dialogue with cities and communities, find out what program will work in your area – and who will pay for it."

Taking the initiative in this way reduces the risk of being overtaken by newcomers and ending up with a poor position in the value chain.

Take it to the regulator

For DTE, any discussion around investment in unproven technology has to involve a constructive dialogue with the regulator. "We have to find the optimal set of solutions, so that when we make those investments, we avoid future disallowances and surprises."

If utilities collaborate with regulators to set up a framework to take advantage of EV charging, they could create a valuable new service for their customers.

Richard Lowenthal
CEO, Coulomb Technologies

Richard Lowenthal is the CEO of Coulomb Technologies, which he co-founded in 2007. With a background in electrical engineering and telecoms, he has a long and successful track record as a founder of several start-ups and was previously Vice President and General Manager of Cisco's WAN Access Products Division.

The software company view

Richard Lowenthal is CEO of US business software company Coulomb Technologies, a leading provider of charging station infrastructure for EVs. For Coulomb, the business case for investing was clear cut: there are opportunities to make money from installing charging stations, as well as recurring income from billing systems as the company becomes part of the value chain to facilitate use of the network. "Two million charging stations at between US$2,000 and US$6,000 each creates at least a US$4b business, and that's just the charging stations," says Lowenthal. "We think this will be a significant market."

He believes US utilities are trailing their European counterparts and should have confidence in the growing EV market to get fully involved in large-scale deployments. He is concerned that a number of thorny issues – including energy demand response and time-of-use pricing – are not being addressed properly because public utilities commissions and utilities are not getting involved.[10]

> "We think [charging stations] will be a significant market"
>
> Richard Lowenthal

10. See our article on page 20 for more on how cross-industry cooperation is supporting the EV industry.

Ofgem attracts best-value investment for UK offshore wind

The UK energy regulator Ofgem has attracted £1.1b (US$1.7b) to support expansion of the country's new offshore wind assets, by providing a strong regulatory framework that reduces risk and increases certainty. Report by **Ian Whitlock**

Many regulators around the world are developing from a pure customer protection remit to take on further supportive roles – enabling them to innovate with the methodology of regulation. The UK's independent energy market regulator Ofgem is in the vanguard of this movement, as demonstrated by its involvement in funding infrastructure to support the country's latest tranche of wind farms.[11]

In August 2010, Ofgem announced the winners of a competitive tender to own and operate offshore transmission links to seven new coastal wind farm sites, in return for a 20-year regulated revenue stream. Running a competitive tender was a step change for Ofgem – a world away from the normal price controls.

"Our challenge was to establish a new long-term offshore regime that would attract investors and reduce costs to consumers," explains Robert Hull, Managing Director, Commercial, Ofgem E-Serve.

Investors showed great confidence in the commercial proposition and the competitive process. The fact that Ofgem was able to de-risk the investment by offering 20 years of regulated revenue proved so attractive that bids far exceeded the assets on offer. Ofgem received bids totaling £4b (US$6.3b) – nearly four times the estimated £1.1b value of the assets.

By making the process competitive, Ofgem was able to keep costs down for both consumers and developers. "The cost came in significantly below the onshore equivalent, saving some £350m (US$540m) for consumers," Hull says.

Ofgem offered the 20-year licenses without periodic reviews. Instead, the regulator set clear, long-term operational and delivery obligations that bidders had to prove they could fulfill as part of the tender process.

That long-term obligation works both ways, explains Stephanie McGregor, who led the tender process for the regulator: "OFTOs will be held to their license obligations for the 20-year duration in return for no clawback. If they want to refinance or build in operational efficiencies in future, they keep all the benefits. They have 20 years to manage their costs as they see fit."

In the future, investment in offshore networks is expected to exceed onshore. "This lays the foundation of a major new market," McGregor says. "We're confident we have created a sound structure for the regime, which will continue to attract efficient, low-cost capital in a value-driven way."

11. This tranche of wind farms will produce 2GW of renewable electricity. Future investment raising phases will aim to fund construction of up to 50GW of offshore wind generation.

Robert Hull leads Ofgem's design and delivery of new regulatory regimes to attract investment into low carbon generation and energy efficiency, including Offshore Transmission, and the UK's smart metering rollout program. Previously, he was a policy director at Ofgem. Before joining Ofgem, he was an international business development director with National Grid plc.

Robert Hull
Managing Director
Commercial, Ofgem E-Serve

Stephanie McGregor
Director
Offshore Transmission, Ofgem E-Serve

Stephanie McGregor led the design and delivery of the offshore wind competitive tender process for Ofgem. She originally trained in town planning and came to the regulatory world after five years as Project/Bid Director with John Laing plc, a leading UK developer, owner and operator of housing, property and infrastructure.

Joseph A. "Buzz" Miller

Executive Vice President, Nuclear Development
Southern Nuclear Company/Georgia Power Company

First-of-a-kind challenge for Southern Nuclear

Southern Company, based in Atlanta, is building the first nuclear plants in the US in three decades. The AP1000 plants, Vogtle 3 and 4, are under construction and are expected to begin commercial operation in 2016 and 2017, respectively.

The company is forging new ground in the US, as the first utility to be approved for federal loan guarantees and the first to build a nuclear plant since the Three Mile Island accident in 1979. Its share of the development costs for the two plants is approximately US$6.1 billion, including US$1.7 billion in financing costs that will be recovered during construction.

Southern Company will also be the first to build a third-generation nuclear plant in the US. "In pursuing new nuclear, we – along with everyone else – do not want to repeat the mistakes of the past," says Joseph A. "Buzz" Miller, Executive Vice President, Nuclear Development at Southern Nuclear Company. "The Georgia legislature passed a law some years ago detailing how future nuclear projects should be handled. This requires the Public Service Commission (PSC)[12] to be involved every step of the way – from certifying the project at inception to reviewing contracts before they're signed, tracking spending through semi-annual reporting, etc. For the loan guarantees, the Department of Energy (DoE) had its own consultants conduct due diligence on our project prior to approval, and continue to be involved."

As Miller explains, the loan guarantee is useful but not critical to the project's success. "We have never been dependent on loan guarantees to proceed with this project. We started six years ago, before loan guarantees were introduced, and we won't see the benefits until our license is granted. We were very pleased to be approved, and in a regulated environment our lower interest rate will translate into significant savings for our customers."

Miller believes the company has benefited both financially and culturally from what has been dubbed by others as 'extreme oversight'. "In nuclear, you have to have a culture

12. The PSC is the local state regulator in Georgia.

Southern Company breaks new ground at the Vogtle site in Georgia, US

that is always open to challenges from all stakeholders. You have to be fully transparent every step of the way. We don't want to miss a thing. We don't expect the Nuclear Regulatory Commission to turn up any surprises during an inspection – our objective is to detect them first."

Southern is working with the Shaw Group and Westinghouse Electric Company, which are also involved with the world's first AP1000 reactor in China. "The first Chinese unit is about two years ahead of our schedule, which is very helpful. Westinghouse and Shaw are taking steps to capture and share lessons learned, and I have personally been to the China sites twice. Our China experience will help us to get the detailed construction packages together, which are required at a far earlier stage than they were 30 years ago. Under the new approach, more than 90% of the detailed design is completed before you begin construction."

Ultimately, Southern is responsible for the plants and all financial risks. However, given the high degree of involvement from contractors that nuclear construction requires, risk allocation was a critical part of the two-year negotiation process. "There were times when we were prepared to walk away from the project. Financial risk is everything – how you manage your labor, your contracts, activity at the site, the quality of components being built in factories across the globe, how we resource the plant without impacting our operating units, supply chain, etc. We are comfortable that risks have been allocated appropriately."

With so many components being manufactured around the world, for example in Italy and South Korea, procurement also represents a key risk. "We have an oversight plan, full-time staff doing technical surveillance, and a number of 'witness and hold' points on the components so that fabrication can't proceed until we are there to witness and sign off."

Though some in the industry are concerned about a potential labor shortage, Southern doesn't expect it to be a problem. "Although nuclear construction is different from regular construction, Southern has in-house expertise in major projects with a similar magnitude of steel and concrete. We also have employees who were involved in the building of Vogtle 1 and 2, who find the project very exciting and have been placed in key positions. Our knowledge of the construction world meant we could recognize labor trends and spot when major projects were tailing off, so we're comfortable that we have the technical skills we need. We are focused on process and controls to mitigate any surprises that arise."

So what has contributed to Southern Nuclear's position? "From day one, we have had alignment up to the Chairman of Southern Company. Senior people decided that we are going to do this, that there would be no question about authority or our commitment to put the right resources on this project. The company has given us what we need to get this done."

This project is far from over, and Miller anticipates many challenges ahead. He will also be relying on some rather old-fashioned technology to help keep the company nimble. "We're having to adjust rapidly and make sure we continue putting the best people in the right positions at all times. One of the lessons we've learned is to keep our organization chart in pencil."

Photograph is courtesy of Southern Company.

Into new territory with smart metering

ERDF, France's monopoly electricity distributor, is developing a central IT infrastructure to support its national smart metering rollout. As a large[13] regulated monopoly, it has secured regulatory approval and the necessary funding to make a big up-front investment in a database ultimately capable of serving its entire customer base. If all goes to plan, 35 million French users will be smart by 2020.

The utility is currently running a pilot installation of 300,000 smart meters in French homes, set for completion in December this year. In theory, the entire strategy and work-to-date could be completely overhauled if the pilot fails to meet its expectations, but ERDF is viewing the pilot as a precursor to full-blown rollout, rather than part of an iterative implementation: "ERDF is starting with an immediately mature and fully interoperable system," asserts Jean Vigneron, ERDF's Managing Director for Metering. "We do not anticipate starting from scratch once the 'experimentation' phase is complete."

The utility is already thinking ahead to the fully scalable IT architecture that will sit behind the smart meter and the suite of web applications developed to make the most of the new meter's capabilities.

Overall spend is forecast to top €4b, with payback (also in the region of €4b) due over a 20-year period; €100m has already been invested in the pilot system architecture. The savings to the utility, says Vigneron, will come from headcount reduction and a significant reduction in losses from fraud and defaults on payment. Investment payback to this time frame is only possible for a monopoly distributor.

Other benefits are flowing from creating a large, central system. For example, at the contractual stage, the utility was able to ensure it would be able to keep a tight rein on meter manufacturer costs through standardization. "Because we insisted on a standard IT architecture and a sole system integrator, meter suppliers have had to develop 'interoperable' meters," explains Vigneron. "Three suppliers were selected for the pilot phase. More will come on line, thanks to standardization, as full deployment gets under way."

13. ERDF is largest electricity distributor in the EU.

Jean Vigneron
Managing Director, Metering
ERDF

> "ERDF is starting with an immediately mature and fully interoperable system. We do not anticipate starting from scratch once the 'experimentation' phase is complete"
>
> Jean Vigneron, ERDF

Increased competition for the meter business has seen manufacturers coming in at increasingly lower unit costs, as low as €32 to €35 per meter – way below typical costs elsewhere in the EU.[14]

Turning "unknowns" to your advantage

Installing 35 million meters over seven years is a big, expensive challenge. ERDF decided to outsource the human resource element for installing meters to smaller companies, which offered better rates than national operators. However, when these companies were commissioned, an "unknown" reared its head in the form of workforce management issues with subcontractors.

ERDF intervened and created an overarching workflow process to apply to all contractors. The new system, which is governed by a personal digital assistant (PDA), has proved highly effective. It provides a detailed breakdown of contractors' performance, which enables it to keep customer dissatisfaction low – currently 0.6% – and to provide performance-based feedback to operators.

Once pilot construction is completed at the end of this year, ERDF will conduct a performance evaluation of the overall system and wait for the green light from the regulator and the Government to accelerate the project across the country.

14. This meter cost is at the lower end of the range being procured by EU utilities. Costs can be as high as €200 per installation, depending on technology choice and functional requirements.

Focus areas for utilities

Utilities have a reputation, which they prize highly, as a low-risk industry. What is the danger that investment in first-of-a-kind projects could tip the balance and start to make them look higher risk?

Certainly wherever technology change touches the utility business, it has the potential to transform and create value – or disrupt and create chaos. As we have seen, all of our interviewees are managing a host of "unknown unknowns" – unproven technologies and unpredictable risks that could threaten their profits and reputation.

Their experience demonstrates how important it is to have the inspiration to spot new markets and create new business models. But to secure a positive outcome, the "left brain" skills – articulating the change they seek, establishing strategy, running action plans, testing new models – have been just as important. As the industry moves further into the unknown, utilities need to hold on to fundamental business competencies, including sound planning, robust controls and disciplined project management, and focus on:

Engaging with the regulator through the business model

New developments – particularly in IT – could profoundly change the utility business model, creating big risks. But the projects discussed here (and in the Ofgem case study on page 13) demonstrate how regulatory relationships can hold the key to mitigating that risk. Is your business model clearly aligned to supporting government delivery of energy policy? And will your model help you to work with the regulator to offset risk?

Innovating on funding

While traditional ways of raising capital still have a place, the industry needs new sources to make up the current funding shortfall (see Business article, page 24). How can you extend internal team skills and external contacts to explore new routes to access funding and exploit incentive schemes?

Learning from the best program managers

Utilities excel at operating assets, but they don't necessarily know everything about building them. How can you use experience from other sectors – such as airports, toll roads and railway lines – to help you deliver excellent project management?

Tracking and delivering benefits to boost fundability

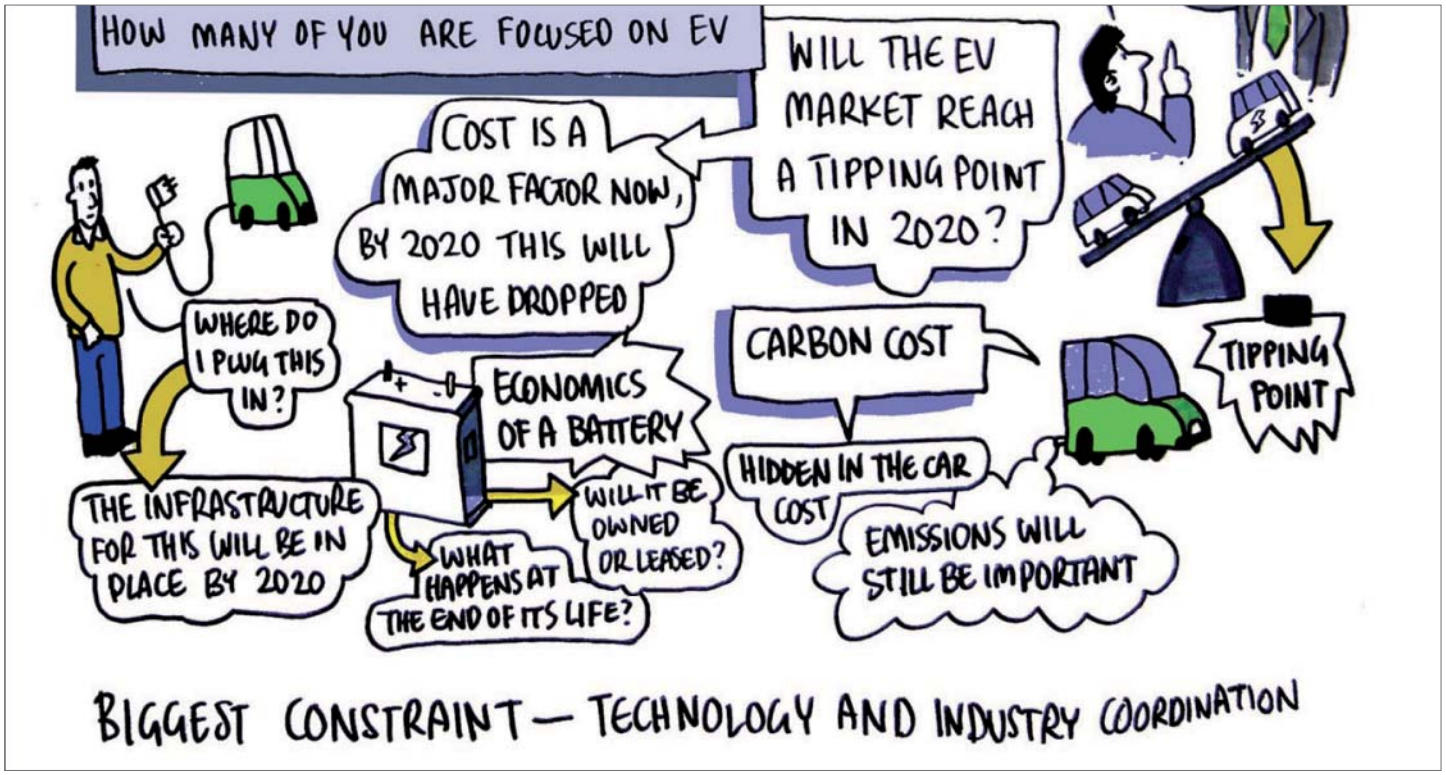
Regulators, investors and other stakeholders expect utilities to demonstrate that they are delivering expected results. Maintaining a reputation for delivering on time and on budget, even on first-of-a-kind projects, will boost investor confidence and keep financing costs low – benefiting the whole utility industry. Have you built in the necessary levels of program assurance to keep your project on track?

Read extended interviews with our contributors on www.ey.com/powerandutilities

▼ Munich executive roundtable discussion

Steering electric vehicles to the mass market

▼ Shanghai executive roundtable discussion



Top industry minds gathered recently to debate how to propel electrified transport from vision to reality. Report by **Gil Forer**

After decades of stuttering starts and stops, the global electric vehicle (EV) industry is poised to fulfill its promise. Recently, significant developments in technology, big stimulus money and the drive toward a more resource-efficient, low-carbon economy have all fueled interest and excitement in EVs. So what can the EV industry do as a whole to accelerate the market toward its tipping point?

To fathom the path from niche to mass market, investors, government and non-government organizations, big businesses and utilities joined the debate at this year's Ernst & Young Cleantech Ignition Sessions in Munich, Shanghai and Silicon Valley.

Customers, infrastructure and value chains, business models and partnerships came under scrutiny as the delegates sought to resolve hurdles to the market's ongoing evolution and eventual economies of scale.

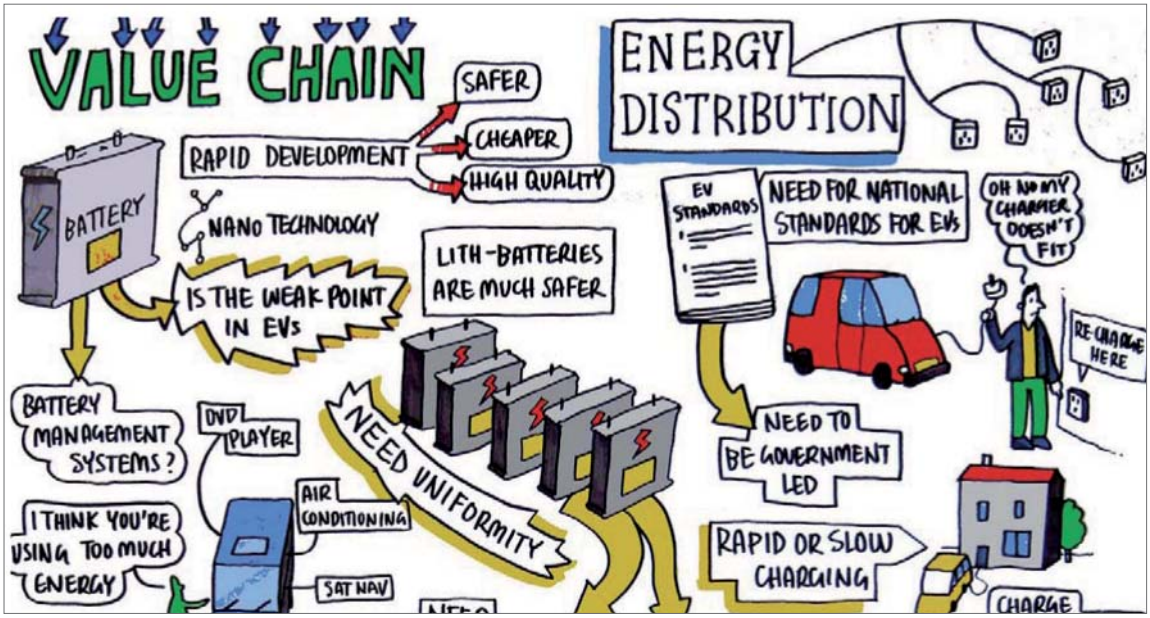
Fleets will kick-start market

There are three target customer groups for EVs: private consumers, business delivery and government fleets. Winning them over depends on how well performance, price and safety concerns are addressed.

According to Ignition Session delegates, fleets (corporate or government-owned), are most likely to kick-start mass market uptake. China's Government is mandating EV fleets to cut the country's dependency on foreign oil, reduce exhaust emissions and realize grid efficiencies. US participants similarly predict EV fleet take-up as a response to their country's overdependence on foreign oil, as well as sustainability concerns.

Business fleet owners in China and Europe are likely early adopters. They want to leverage EV adoption to reduce their carbon footprint and are inclined to consider the total (rather than up-front) costs of EV ownership. They also tend to have deep pockets, central depot structures and typically need regular and quick access to city centers. Meanwhile, in the US, rental car companies are already agreeing contracts with EV manufacturers in cities with good charging infrastructure.

Hindering adoption in Europe are lingering worries about EV availability, the obsolescence of expensive batteries and the continuance of government incentives. In China, practicalities such as the vast distances that buses need to travel could hinder take-up. The lack of longer-range, medium- and heavy-duty EV trucks is among the obstacles to adoption in the US, while inconsistent policies across states frustrate a concerted EV push.



▲ Shanghai executive roundtable discussion

Winning over consumers

One way to reach a consumer adoption tipping point is to leverage affluent, environmentally aware and aspirational drivers as ambassadors to the mass market. According to delegates, winning them over could hinge on tax breaks, subsidies and congestion pricing, as well as dedicated lanes and parking spots.

But what do ordinary drivers want from an EV? The European consumer expects the same price, convenience and comfort as a conventional car. But in China, where 80% will be first-time buyers, "just good enough" is an acceptable standard. Reduced fuel bills and carbon footprints influence purchasing decisions in Europe more than in the US, where gas prices are cheaper. In China, however, environmental issues rarely sway buying behaviors.

In theory, the EV market already exists. A 2010 Ernst & Young survey[15] gauged interest in plug-in hybrid and EVs. It found that 83% of the 4,000 drivers polled paid less than US$35,000 for their vehicles and travelled fewer than 50 miles a day – well within an EV's battery range. Between 7% and 37% of drivers in developed economies and 60% in China showed keen interest in purchasing EVs.

Ten years from now, just under half of European and US delegates predict adoption of battery electric vehicles (BEVs) in their home markets will be less than 10%. In Europe, 48% envisage adoption in the region of 10% to 25%; that rises to 51% in the US and 55% in China. A slim majority anticipates BEV adoption in the 25% to 50% range by 2020.

"EVs really are the 'killer app' in terms of the grid. This will be the biggest appliance in a customer's home … and a real opportunity for us to drive to the next level of what the grid can offer"

US utility delegate

Vital role for utilities in supply chain

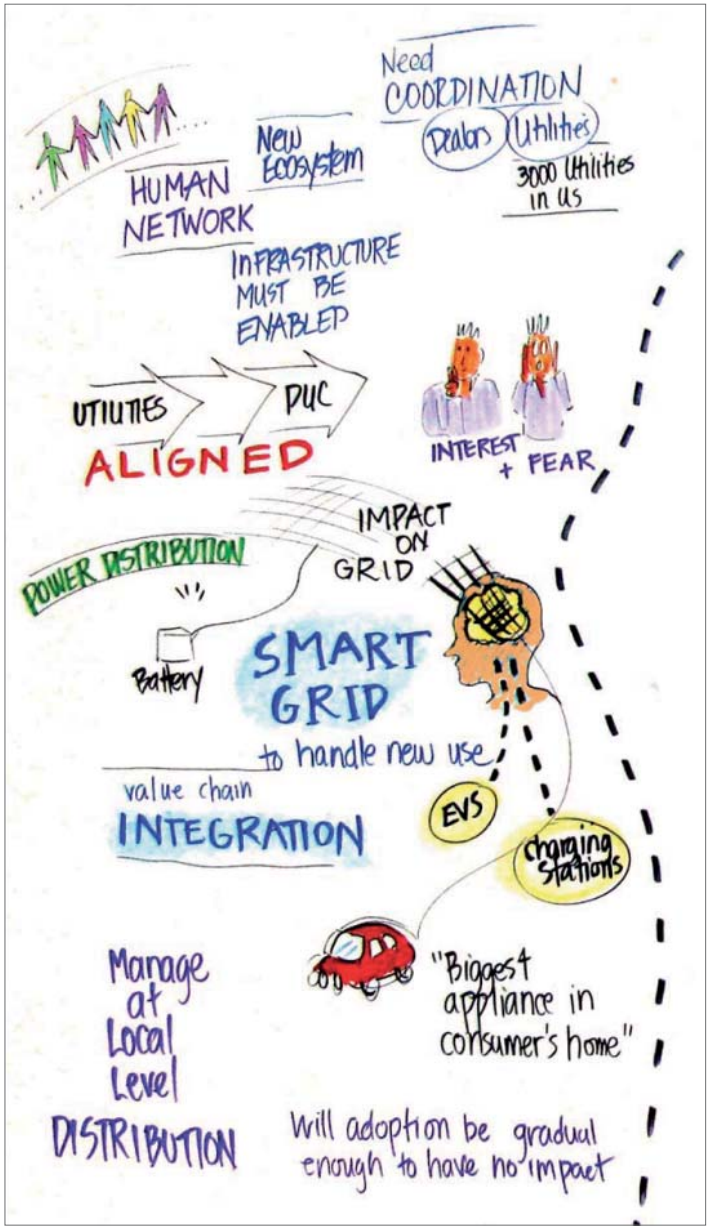
The makeup of the supply chain will change as vehicle manufacturers, battery makers, charging infrastructure suppliers, power management companies and utilities all play a part in the transformative shift of the industry. The chain's dynamics will alter as players engage in new, symbiotic relationships.

But European delegates believe the incentives – returns on their capital-intensive commitment to EVs – need to be aligned to realize the technology upgrades that are necessary for rollout and adoption. Only then can the benefits of public engagement and faster payback be felt across the chain.

P&Us need to become more customer-centric, say delegates. They need to build infrastructure robust enough to avoid power blackouts and capable of providing fast-charging and storage options.

Better coordination between the automobile and utility industries and their regulators is essential to bring about an EV ecosystem to support rapid transformation. European delegates call for governments to create frameworks to build trust between battery makers and automakers, to bridge chasms between industry players though the introduction of pro-EV legislation, to provide funds and subsidies, to set standards and to promote national and regional R&D.

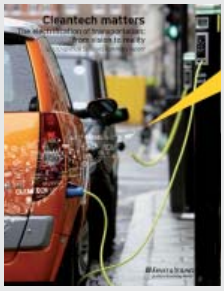
15. Gauging interest for plug-in hybrid and electric vehicles in selected markets, Ernst & Young 2010 www.ey.com/Publication/vwLUAssets/Gauging-interest-for-plug-in-hybrid-and-electric-vehicles/$FILE/Gauging-interest-for-plug-in-hybrid-and-electric-vehicles.pdf.



▲ Silicon Valley executive roundtable discussion

In China, the Government already plays a pivotal role in fine-tuning the value chain. It has sought to advance EV standards and the technology and infrastructure that will trigger customer demand. Even so, technology shortcomings and industry readiness remain stumbling blocks, while government directives fail to prevent a jumble of standards from surfacing.

Although the US Government has offered incentives to encourage innovation, players are looking for policy coordination to achieve an operationally aligned and smoothly functioning value chain. "We're a lovely little microcosm here, but think about the millions of other people that have to interconnect to make this thing work," comments a Silicon Valley delegate on the lack of supply chain communication and cooperation.



The electrification of transportation: from vision to reality
This report summarizes the outcomes of the 2010 Cleantech Ignition sessions and outlines key actions needed to take electric vehicles from niche to mass market. For further information and copies of the report, please contact Gil Forer on +1 212 773 0335 or gil.forer@ey.com.

Working in partnership

Pending a major breakthrough that will accelerate EV adoption, participants will have to learn to work together and form creative partnerships to fast-track deployment and share investment and value. Some equipment manufacturers are forging pacts with battery manufacturers; others are outsourcing battery ownership to mitigate risk. Bundled energy and vehicle contracts, battery leasing and pay-as-you-drive agreements are among the solutions mooted.

Utilities are charged with delivering electricity reliably and at a reasonable rate to support the transformation. As a US delegate comments, "EVs really are the killer app in terms of the grid. This will be the biggest appliance in a customer's home … and a real opportunity for us to drive to the next level of what the grid can offer."

Some utilities will stick to their core strengths and develop outside partnerships for charging stations; for others, EVs are an opportunity to grow revenue, possibly by setting up non-utility companies within holding company structures to manage their charging infrastructure.

Sharing in the big opportunity

Delegates in China, Germany and the US all agreed that collaboration, within the framework of spirited competition, is the way ahead.

Cross-border collaboration among universities, research centers, component suppliers, vehicle manufacturers and utilities will accelerate the adoption tipping point. China is taking the lead, forging partnerships with the US and Germany to accelerate the commercialization of technology. Global government standards, norms and regulations are also considered critical for incentivizing partnerships between players and creating affordable, reliable products.

In this fledgling market, collaboration is seen as a means of sharing leading practices, piloting vehicle rollouts and bringing together stakeholders to showcase their developments and to bring the industry to its tipping point. "It's a race, and it's actually a good race," says a US participant. "The faster or more vigorously the Chinese compete with us, the faster we will develop the technology. … we need each other, and we will learn to work with each other to make it work for both countries."

Plugging the funding **shortfall**

The twin challenges of sustainably meeting surging power demand in developing nations and replacing aging infrastructure in developed nations require unprecedented amounts of capital. To survive, power and utilities companies need to develop more innovative financing structures. Report by **Dr. Jim Fitzgerald**

Power and utilities (P&U) companies face a critical funding challenge. By 2035, they will need to raise an estimated US$16.6 trillion[16], yet annual global revenues are just US$1.6 trillion[17]. Traditional sources are unlikely to be able to meet the unprecedented investment needs. How will utilities go about it?

Investment challenge

The P&U industry faces demands from all sides.

There is an unprecedented and substantial need for investment in P&U infrastructure. The developed economies find their 50-year old infrastructure past its prime and in need of replacement; the emerging economies, particularly China and India, depend on the development of their power systems to drive economic growth.

The sector is seeking funding for low-carbon, high-efficiency, sustainable infrastructure. But investors, their fingers burned by the financial crisis, are not buying. In many regions, they are currently opting for the high-carbon, traditional assets of coal and gas over low-carbon technologies such as wind farms and nuclear plants, which tend to be more capital-intensive and carry higher technical, operational and regulatory risks.

Other funding avenues are drying up, too. The P&U sector is already one of the biggest recipients of bank loans globally, but the financial crisis has seen international banks withdraw from overseas funding projects. While local banks have sought to take up some of the slack by providing capital in locally denominated currencies, they are rapidly reaching their lending ceilings and exposure to the sector. Since 2007, power project financing deals have declined, with a significant 27% (US$17b) decline in the first half of 2010, according to the *Infrastructure Journal*.

P&U companies have already stretched the capacities of the global bond markets. Globally, bond issues have fallen from a peak of US$73b in the first quarter of 2009 to just US$20b in Q2 2010, with Europe's share decelerating from nearly 60% to just 15% over the same period.

The sector is further compromised by overly leveraged balance sheets, which affect companies' credit ratings and, therefore, their ability to raise funds.

It is clear that while conventional funding models still have a place, they cannot, in aggregate, meet the total demands of the sector. Bluntly, P&U companies will have to find new ways to attract investment.

16. World Energy Outlook 2010 © OECD/IEA 2010.
17. Forbes Global 2000, 2010.

Alternative funding models

The mission for P&U companies is to attract and deploy new capital in ways that will provide a sustainable risk/return profile to investors, keep consumers happy and meet regulatory and credit rating agency expectations. There are some ideas that companies can borrow from other sectors. For the rest, they will have to think more radically than ever before.

Some of the more innovative funding structures the industry is starting to explore include:

"Synthetic JV"

A structure to enable joint venture (JV) partners to retain control of assets by creating a "pass-through" company. This has a higher consolidated borrowing capacity but is not, potentially, recognized as holding assets or liabilities for accounting purposes.

Carve-out consumer levies

Already practiced in the waste and toll-road sectors, this type of structure could see P&Us ring-fence levies (taxes) intended to encourage consumer take-up of renewable or low-carbon power. Companies could retain control of their supply portfolios while diverting levies into renewable or low-carbon generation projects.

Increase regulated asset bases

This model is being tested by the UK regulator Ofgem. Under the scheme, offshore wind farms are transferring unregulated assets (transmission cables) that have a higher level of risk and higher cost of capital into a regulated regime, lowering risk and the cost of capital. Early reports suggest savings of around £300m to consumers from lower financing costs.

Private-public partnerships (PPPs)

Successful in other sectors, this model would allow for low-cost financing of power projects at the critical build and development phases. In a full PPP, the public sector would act as the power procurer and "off-taker" and share in some or all of the construction and operational risk. In a pseudo-PPP, the private sector would sell power into the wholesale markets while the public sector underwrites some or all of the risks.

Clearly, models such as these need further refinement and, in some cases, regulatory approval. But, as investment money runs out and demands on P&Us increase, companies that fail to entertain more innovative structures could find their businesses unsustainable in the years ahead.

American Electric Power (AEP), one of the biggest utilities in the US, is implementing innovative approaches to project development and financing. Lisa Barton, Vice President of Transmission Strategy and Business Development, explains

Lisa Barton

Vice President
Transmission Strategy & Business Development, AEP

Lisa Barton is charged with developing and executing AEP's transmission strategy and ensuring its alignment with overall corporate strategy. As well as business planning and analysis, Barton manages AEP's interface with corporate partners to ensure that the utility can achieve its business goals.

Using new investment structures to access capital

In the current financial climate, P&U companies face major challenges in raising capital to fund needed investments. There is a growing trend among investors to limit their exposure to a given project or company.

Investors desire greater transparency into investments. The setup of vertically integrated utilities, which typically own transmission, generation and distribution businesses and are governed by state-based regulatory frameworks, creates a complicated proposition for investors to understand.

Additionally, in regard to transmission development, regional transmission organizations (RTOs) effectively call the shots in determining what infrastructure is built and when. This makes it difficult for utilities to predict their capital deployments for investors consistently.

With capital expenditure under greater scrutiny, companies such as AEP are learning to become more creative in their development strategies to appeal to existing, as well new, investors.

Consider how AEP is raising capital for its transmission business in Texas. Until 2008, almost 50% of AEP's total transmission budget was devoted to Texas to fund the interconnection of multiple wind projects, putting a squeeze on capital available for transmission needs in other areas. To address the situation, AEP brought in a strategic and financial partner in MidAmerican Energy Holding Company, creating a joint venture (JV) – Electric Transmission Texas (ETT). Both partners now share equally in development risk and capital demands and enjoy investment returns from an opportunity that could rise to US$3.1b within the next decade.

AEP is also utilizing a JV strategy to participate in the needed nationwide build-out of high-voltage transmission infrastructure. These JVs are attractive to investors because of their transparency and appeal to utilities – they limit the capital demands and distribute the development risks. AEP has four JV projects, approved by the Federal Energy Regulatory Commission, totaling US$3.3b worth of investment and scheduled to enter service between 2013 and 2016. The company also has a robust pipeline of projects worth approximately US$15b.

Other funding ideas include the formation of wholly owned transmission companies for state-level investment. For investors, these vehicles offer the enhanced project visibility that they seek. P&Us, meanwhile, can attract new investment with an offering that differs from traditional utility investment products. AEP has created a series of wholly owned transmission companies to do just that.

It seems that when cash is tight and lending ceilings reached, those companies that dare to use less conventional funding avenues could be the ones that triumph in the long run.

PPL

Electric Utilities

raising capital for a smarter future

David G. DeCampli
President, PPL Electric Utilities

David G. DeCampli assumed his current position as President of PPL EU in April 2007, having previously served as the company's Senior Vice President of Transmission and Distribution Engineering and Operations. Under his leadership, PPL EU launched a comprehensive energy efficiency and conservation plan. He was previously Vice President of Asset Management for Exelon Energy Delivery.

PPL Electric Utilities (PPL EU) plans to spend US$2.5b over the next five years on its transmission and distribution systems – none of it on applications below the meter. Report by **Bob Ford**, Power & Utilities Sector Leader for the Americas, in discussion with David G. DeCampli, President of PPL EU

PPL EU, a Pennsylvania-based utility and a subsidiary of PPL Corporation, delivers electricity and provides default electric supply to 1.4 million customers in central and eastern Pennsylvania. With the increasing need to address aging infrastructure, improve reliability and meet electric demand across the state, as well as the deployment of advanced "smart grid" technology, the company is raising capital at a steady rate.

In contrast to many US utilities, PPL EU believes that the most significant benefits of a more intelligent or smart grid will be to improve network management and enhance operations. "The major benefits of intelligent technologies are improving system reliability, integrating renewables, reducing costs and enabling customers to use energy more wisely. Our focus is on running a more efficient and reliable delivery system, not what's behind the meter in consumers' premises," explains PPL EU President David DeCampli.

The benefits of a smart future

In 2004, the company installed advanced meters in all customer premises, adopting a measured approach that focuses on operational efficiency for primarily meter reading, billing and customer service. "Some of the so-called smart projects on the market are being rushed into and, as a result, are running over cost and not meeting customer expectations for benefits," says DeCampli. "Many focus mainly on applications stemming from smart meters, or meters with two-way communications between the utility and customer, like energy management systems.

"We are moving deliberately. There is plenty of time to evolve into an energy services company. We are building the technological foundation to enable us to evolve and ultimately reach behind a customer's meter by installing a wireless communications infrastructure capable of handling many more points of data on the distribution system. Such a system will be capable of integrating more, smaller generation sources and moving enough data to control plug-in hybrid electric vehicle charging as that technology itself evolves.

"With our current pilot deployment of a more intelligent grid, customers will enjoy reduced-frequency and shorter-duration outages and improved voltage control on distribution circuits – this will lead to less electricity consumption due to a smoother voltage profile across the entire length of distribution circuits. The distribution management system software interrogates the system's current state and selects the best alternative source with capacity to restore electric service following an outage. So even during a storm with multiple problems, the system will outthink failures and maximize the restoration of customers before we are involved."

So far, the automated meter reading (AMR) strategy is working, as evidenced by PPL EU's more accurate meter reading and reduced billing errors and customer complaints. Additionally, the advanced meters support storm response and distribution planning.

DeCampli says the company is justifiably proud of its continuing record of award-winning customer satisfaction and brand loyalty. Today, customers can track hourly, daily and monthly usage and reduce energy usage through a website that supplies energy-saving tips, tools and energy efficiency incentives.

Raising capital

In total, PPL EU will invest US$410m to modernize, upgrade and maintain its transmission and distribution (T&D) systems this year alone. This is the largest investment in the T&D infrastructure in a single year in the company's history. The pace of investment will remain high as the company addresses needs to modernize and improve systems.

This total includes US$38m in a smart grid upgrade at the distribution level for 60,000 Pennsylvania customers in communities around the state capital. This project, with GE Energy, Lockheed Martin and Alcatel-Lucent as partners, involves the installation of network management software as well as hundreds of sensors and switches that will connect to a dedicated high-speed communications network and a centralized distribution management system. The new distribution management system will be installed system-wide to benefit all PPL EU customers immediately.

A US Department of Energy (DOE) grant of US$19m will finance half the upgrade. "Even without the DOE grant, we would have done this because it brings positive benefits to customers; we believe the investment is prudent and therefore recoverable as an addition to rate base," DeCampli says.

In the coming decade, PPL EU will spend roughly US$2b on the replacement of aging T&D assets, new installations and maintenance.

Getting investment into the rate base

A constructive working relationship with the Pennsylvania Public Utility Commission is critical to achieving a cost-effective build-out. In Pennsylvania, utilities are required to raise capital and complete investments prior to requesting inclusion into rate base in order to begin recovery on, and of, the capital. Investments must be deemed prudent and useful for customers and approved through a lengthy regulatory process. The process has worked well in the past, but in a period of increasing capital investment, the "regulatory lag" created by delaying the start of return on investments will certainly challenge a utility company's credit metrics, ultimately resulting in increased cost to customers.

The company would like to see consideration for alternative rate-making mechanisms that have evolved in the US, Europe and Australia that provide for more rapid recovery of significant, or increasing, capital investments. In the meantime, it is necessary continually to "socialize" new investments, such as smart grid, in advance with regulators and legislators.

"Our customers would truly benefit from an environment that would allow a company to get intensely focused on operational excellence and execution of its capital improvements by having additional surety of approval and timely recovery," says DeCampli. "Models already working in other jurisdictions would enable us to do this more efficiently and at a lower cost to customers."

PPL EU's most significant investment was in automated metering infrastructure several years ago: "It's a power line carrier-based communications scheme, with the meter transmitting usage data through our wires to the distribution substation. There it's taken off the power line carrier, repackaged and sent on to our data center. Every meter was new or retrofitted with the communications module. And the communications infrastructure was installed in substations," says DeCampli.

"We also invested heavily in data management to interface with the billing system," DeCampli says. "That investment was deemed prudent for customers. Almost the entire case was predicated upon efficiencies, not leveraging future opportunities. We began a return on the metering technology capital as of 1 January 2005. Today, we have a much more efficient, effective and accurate billing stream. We validated the true outcome against the business case – and it worked. We'll need to do similarly with any investment in advanced technologies in operations and customer service."

Holding down risk

PPL EU's investment in smart is intriguing not because of the technology per se, but because of how it is investing and what its investment priorities are. The company's approach – in focusing on networks rather than meters – sets it apart from the crowd.

But in common with other utilities around the world, PPL EU is essentially interested in investing at least cost and least risk. And close cooperation with regulators has provided a way to hold risk levels down, as DeCampli clarifies: "There is low risk to capital investment as long as it is in the 'swim lane' of standard utility operations to provide reliable and safe delivery systems to customers. The primary risk for any investment beyond historical standard utility operations is whether or not the asset would be deemed prudent by the Commission through a review or rate case process."

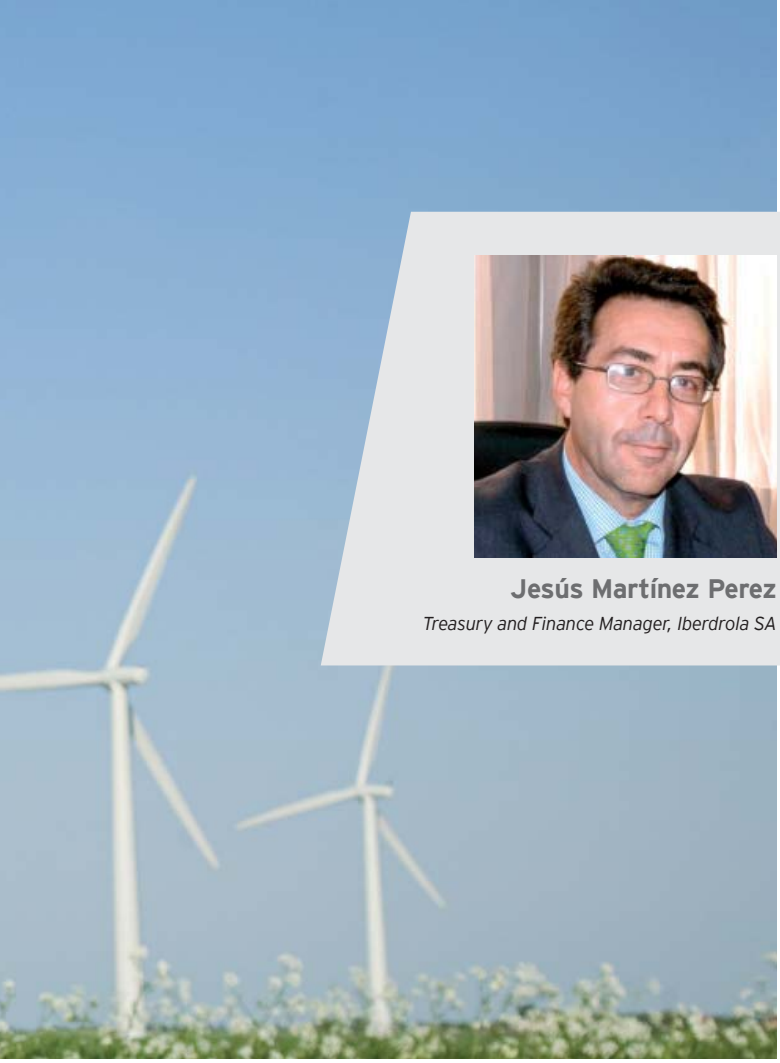
Were more US utilities able to enjoy increased certainty of return on investment through prior approval, they could resource projects with both funds and personnel at a lower cost.

Iberdrola's funding fundamentals

With the green investment climate shifting in Europe, how is renewables giant Iberdrola working to maintain its leading global position? Report by **David España Martin**

"We all understand the reality of the situation. If the returns aren't good enough, if risk isn't low enough, the funds aren't there, so we have to decide to invest where we can make safe returns. Equally, if the regulator demands too much from a utility, the investment won't take place. So if the regulator wants the investment, it has to allow a decent return"

Jesús Martínez Pérez, Iberdrola SA



Jesús Martínez Perez

Treasury and Finance Manager, Iberdrola SA

Jesús Martínez Perez has spent much of his professional career with Iberdrola, including previous stints as Head of the Debt Management and Administration Department and Head of Banking Management. Before joining Iberdrola, he was Commercial Manager at Banco Atlántico and Head of the Administration Department at Belgicast.

Global utility Iberdrola runs the world's largest renewable energy firm, Iberdrola Renovables. It is the world's largest owner-operator of wind farms and has interests in the solar, hydro, biomass and wave power industries. We asked Jesús Martínez, the group's Treasury and Finance Manager, for his view on financing challenges in the current environment.

Financing challenges

The widespread use of renewable energy technologies and a much smarter grid with increased data flows pose some unique challenges, Martínez says, but he believes the utilities industry is in good shape to address them. He emphasizes that "investing in, operating and getting efficient returns on assets is what we have been doing for more than a century. Renewables and smart grid investments may be newer assets, and technology and engineering has developed fast in the last decade, but they're still essentially just another part of the ongoing requirement to provide energy more efficiently."

However, Martínez agrees that utilities need market incentives to stimulate them to make these investments: "Attractive and secure incentive schemes, as well as ambitious growth potential, have been the drivers for investors to look overseas."

"Iberdrola has plans to invest heavily to boost its position as the global leader in wind power and drive international expansion," he says. "Our €18b of investments over 2010 to 2012 will be 40% in the US and 25% in the UK, simply because the market incentives comply with our investments criteria."

It's vital to maintain Iberdrola's financial foundations, Martínez says, and to demonstrate to investors that the company has a clear strategy that is not going to change: "To achieve our growth objectives, we have to be open to all sources of funding. Sources like the European Investment Bank (EIB) will continue to be important to us, as they have been for the past 15 years. We also think players like sovereign wealth funds could be good partners in new investments."

Sources of finance drive project choices

The 2008 liquidity crisis, Martínez says, changed Iberdrola's approach to project selection. "Prior to the crisis, Iberdrola decided where to invest and then went out to get the finance," he says. "Now, the sources of finance drive the investments we make. And government grants and loan guarantees are a vital driver to being able to get financial backing." The company received US$430m of grants in 2010.

Over the past seven years, Iberdrola has grown from €18b to €85b in assets. The company has had to develop good relationships with regulators in different markets to achieve this. Martínez makes the point that the economic crisis may have made it easier for regulators, investors and utilities to come to agreement.

Martínez is very much the pragmatist. In this more realistic financial world, he says, everybody is having to take a similar line.

Provided by client

Dr. Oliver Weinmann
Head of Vattenfall Europe Innovation GmbH

Oliver Weinmann joined Vattenfall in 2003 and is responsible for steering the group's activities in product and technology development. In parallel with running innovation, he also helped to build up Vattenfall's renewable energy business as Managing Director of Vattenfall Europe Renewables GmbH from 2004 to 2007.

For Swedish energy group Vattenfall, electric transport offers market growth and new ways to balance load. Germany-based Oliver Weinmann, Head of Innovation Management, outlines current initiatives. Report by **Martin Selter**

Vattenfall develops options to boost climate-smart mobility

With demand for electricity largely flat in Europe, Vattenfall is investigating the long-term business potential of the switch from fossil fuel transport to EVs. The Swedish-headquartered utility is currently running a range of electric drive pilots focusing on infrastructure and charging alternatives.

Oliver Weinmann, Head of Vattenfall Europe Innovation GmbH, explains that the aim is to maintain an agile position from which the company can provide whatever is required of future transport infrastructure.

EVs: connecting transport to the grid

Vattenfall has been running a joint pilot with German car maker BMW to test the feasibility and the acceptance of EVs since September 2009. The German Government is providing 30% to 40% of the investment.

"It's giving us a realistic view of the technology's potential," Weinmann says. "Customer acceptance is good, range anxiety hasn't been an issue and people find charging at home overnight convenient and cheap." Participants had to have a private garage to join in the pilot.

Research continues with further pilot projects in Berlin and Hamburg that involve cars from a range of manufacturers, including Toyota, Daimler and Renault.

Germany's target is to have one million EVs on the road in 2020, and at that rate Weinmann says there will be no problem meeting electricity demand. The challenges, he says, are more around establishing public charging infrastructure: going into the street is costly, and the company is still working on its business model.

Building hydrogen infrastructure to support a new market

Meanwhile, pilot fleets powered by hydrogen fuel cells have been on the streets for several years. But any mass-market launch of hydrogen-powered vehicles must go hand in hand with the expansion of the underlying infrastructure. "Right now, facilities to fill up with hydrogen are not widespread, and it will take years to build a network," says Weinmann.

With this in mind, Vattenfall has joined an association of car manufacturers, utilities and public sector bodies to build hydrogen infrastructure and commercialize fuel cell vehicles throughout Germany by the end of 2011. Funding is being supplied by German federal government stimulus.

Vattenfall is currently building Europe's biggest hydrogen filling station in Hamburg to power a fleet of fuel cell buses. "Half the hydrogen will be delivered, and the other half will be generated on site from water by means of electrolysis," explains Weinmann.

Load management potential

As one of Europe's leading wind power generators, Vattenfall has a strong interest in how vehicles might be incorporated in efforts to keep the electric grid stable.

"With EVs, it's the 'cashback car' idea, where power stored in EV batteries can be downloaded back to the grid. That could help us with stability on days when wind power is low. It's not applicable today, as there are still R&D issues to iron out. And you can't get away from EVs having to be connected to the socket to be used for load management. But in five years, it could be an option.

"Meanwhile, hydrogen power has one load management advantage compared to EVs, in that you can produce the hydrogen whenever there is excess electricity, but people can still fill up any time they like during the day without affecting the grid."

Weinmann is clear that Vattenfall will remain an infrastructure company and wants no involvement in the vehicle business – for example, owning batteries or leasing cars in a car and power contract. He believes the most convincing business case for Vattenfall "probably involves EV fleet operators and load management. As a business, we're looking for a cost-optimized solution. The more vehicles charging in one location – say, fleets of buses or refuse trucks – the cheaper the infrastructure is for us to build. Combine that with using EV fleets as a part of our load management capability, and the result would probably be the most cost-effective option for us."

Ignoring hype and keeping an open mind

For Vattenfall, the important thing as investment in innovation progresses is to maintain business agility and not get distracted by hype surrounding any particular technology.

"Since the mid-'90s, we've had hype about battery vehicles, hydrogen, biofuels, and now the focus is back on batteries. Hype creates huge expectations for quick change, but the reality is that technology and infrastructure need time to develop. Pilots are relatively cheap to run, so we can explore and iron out the big risks. We like to stay open-minded and investigate a wide range of technology alternatives and infrastructure options, from a commercial and grid management standpoint. That puts us in a driving position to react quickly when a new technology starts to become profitable."

Taste of the future for UK DNOs

The owners of the UK's 14 DNOs are now competing for a share of energy regulator Ofgem's new Low Carbon Networks Fund (LCNF). As part of Ofgem's latest distribution price control review, the Fund will provide £500m (US$790.5m) of financing for network companies to research and implement smart technologies over the next five years.

In the past, UK DNOs have not specifically been incentivized by the regulator to think creatively. Now, Ofgem is reforming the whole regulatory system, with the LCNF as a taste of sweeping future changes that will encourage DNOs to shift toward a more proactive role, anticipating demand rather than reacting to proven need.

UK regulatory reform presents distribution network operators (DNOs) with new challenges to support the smart grid. Ernst & Young's **Dan Gambles** asked a panel of UK DNOs for their views on the changes ahead

We will have to wait until December 2010 to find out who has won funding from this year's LCNF pot. Ahead of the announcement, we asked a panel of network representatives for their assessment of the changes ahead.

Changing roles

All agreed the new Fund marked a turning point for the distribution business. "LCNF signals Ofgem's expectation that DNOs should be thinking not just about technical and regulatory changes, but what else needs to change in terms of unbundling and interactions with customers," said one executive.

"The Fund is a sign of the times," agreed another, "part of a new competitive approach to regulation that concentrates on output and compares companies' efficiency. Ofgem is trying to get DNOs to compete with one another in a collegial way, and we can only expect it to get harder in the future."

Sharing lessons

Ofgem's plan is to share LCNF research findings among DNOs to support the development of the whole UK smart grid. The projects competing for funding vary hugely in size and complexity, from major IT and wind power projects costing tens of millions to a £3m (US$4.7m) trial of power storage.

Some DNOs reserve judgment on whether a competitive call is the best way to deliver the results the regulator is looking for in terms of sharing innovative practice. There was also some doubt as to how realistic it is to transport engineering and other lessons across companies: "It's more likely that thought processes will be transferable, rather than specific engineering solutions, because the context will vary so widely from one network to another," was the verdict.

However, all agreed it is important to learn what doesn't work – in terms of technology and regulation – as well as what does. "There is no foregone conclusion on what the trials might teach us: we may even find it's better to put more assets in the ground to increase network capacity rather than worry about smart at all."

The panel had diverse views on whether DNOs should be concerned about covering their own investment costs in LCNF projects. On the whole, most agreed with the member who thought covering immediate expenditure was not as important as the long-term impact: "The LCNF process could put us in a stronger position to respond to the next price control – which could be worth hundreds of millions. So even if we have to sacrifice a small amount of our own investment in the short term, the process as a whole pays off."

Should DNOs manage demand?

In the UK, distribution has been unbundled from supply, meaning that DNOs no longer have a direct relationship with end users but some of the proposed LCNF projects could involve DNOs venturing into managing demand. Again, views were diverse on whether DNOs need or want control over consumption: "Given how the regulator likes to play in competitive markets, it's unlikely they'd allow us to control particular loads on our network," thought one of the panel.

"Any demand management we did would have to be backed up by commercial contracts. It would only be possible if the economics work for everyone, in terms of whether we want generation brought on or demand taken off," commented a second member. Another was concerned that creating the necessary interrelating rules on restricting demand would require several years of negotiations between DNOs, suppliers, National Grid and Ofgem, creating an unacceptable administrative burden.

Taste of change

Ofgem has set out proposals for a complete overhaul of price control in its new RIIO regime (Revenue = Incentives + Innovation + Outputs), which could take effect in 2015. The panel all echoed the anticipation and uncertainty of one member's comment that LCNF is "a taste of RIIO – and who knows what that will taste like?"

Taking on a more proactive role may not yet be something that comes naturally to DNOs, and the panel discussion revealed that on some aspects of change – particularly technical specifications related to smart developments – they are still waiting for direction from the regulator and suppliers. But the DNOs who seize this opportunity to think creatively about what change means for their business are likely to be in a stronger position to generate positive outcomes in the transformed regulatory regime.

Our DNO panel

Great Britain

Simon Brooke
Low Carbon Projects Manager, Electricity North West

Charl Oosthuizen
Finance Director, Western Power Distribution

Asheya Patten
Strategy Manager, Central Networks (E.ON)

Northern Ireland

Sam Alexander
Network Generation Manager, Northern Ireland Electricity

All eyes on China's smart grid **boom**

Plans to establish a nationwide smart grid in Asia's fastest growing economy will send ripples around the world

With China's economy growing at around 10% a year, there's speculation that the country's electricity demand could double by 2020. To meet its aggressive energy objectives, the country's Government is making a massive investment in the electricity grid. China now leads the world in smart grid stimulus funding, with state investment in the new technology exceeding US$7.3b in 2010.[18]

Scale of the grid challenge

China faces a truly formidable grid challenge over the next 10 years. Much of the country's coal resources, solar and wind energy are located in the north and northwest of the country, with hydro power stations concentrated in the southwest. Meanwhile, demand is concentrated heavily in the east and central China (see map). Grid capacity and reliability must be enhanced to bring power to these load centers, and the whole system must be made smarter to achieve efficient integration of renewables.

To build what will be the world's biggest transmission network in the space of 10 years, the country and its utilities must make tough decisions on investment strategies, standards development and risk control. All three were hot topics of discussion at the October *World Smart Grid China – Focus 2010* conference in Beijing.

The event was moderated by Ernst & Young Global Power & Utilities Leader Ben van Gils, who said in his opening address, "Transmission grids have always been intelligent, but in order to cater for the technical needs of ultra high voltage[19] (UHV) grids and energy storage, they need to be not just intelligent, but smart. And 'smart' means self-balancing networks rather than the existing 'control-room' approach."

In China, he said, the sheer scale and ambition of the task is breathtaking: "Earlier this year, for example, China commissioned the Xiangjiaba-Shanghai UHV DC transmission line:[20] the world's longest UHV transmission system in regular operation, transmitting power over a line nearly 2,000km long. This dwarfs anything we have ever seen, and it's just the start."

And van Gils added that proposals to build a UHV link from Australia to China could indicate energy trends to come. "Oil started localized and went global, gas started regional and went global on the advent of LNG, and now power is going global with UHV," he said.

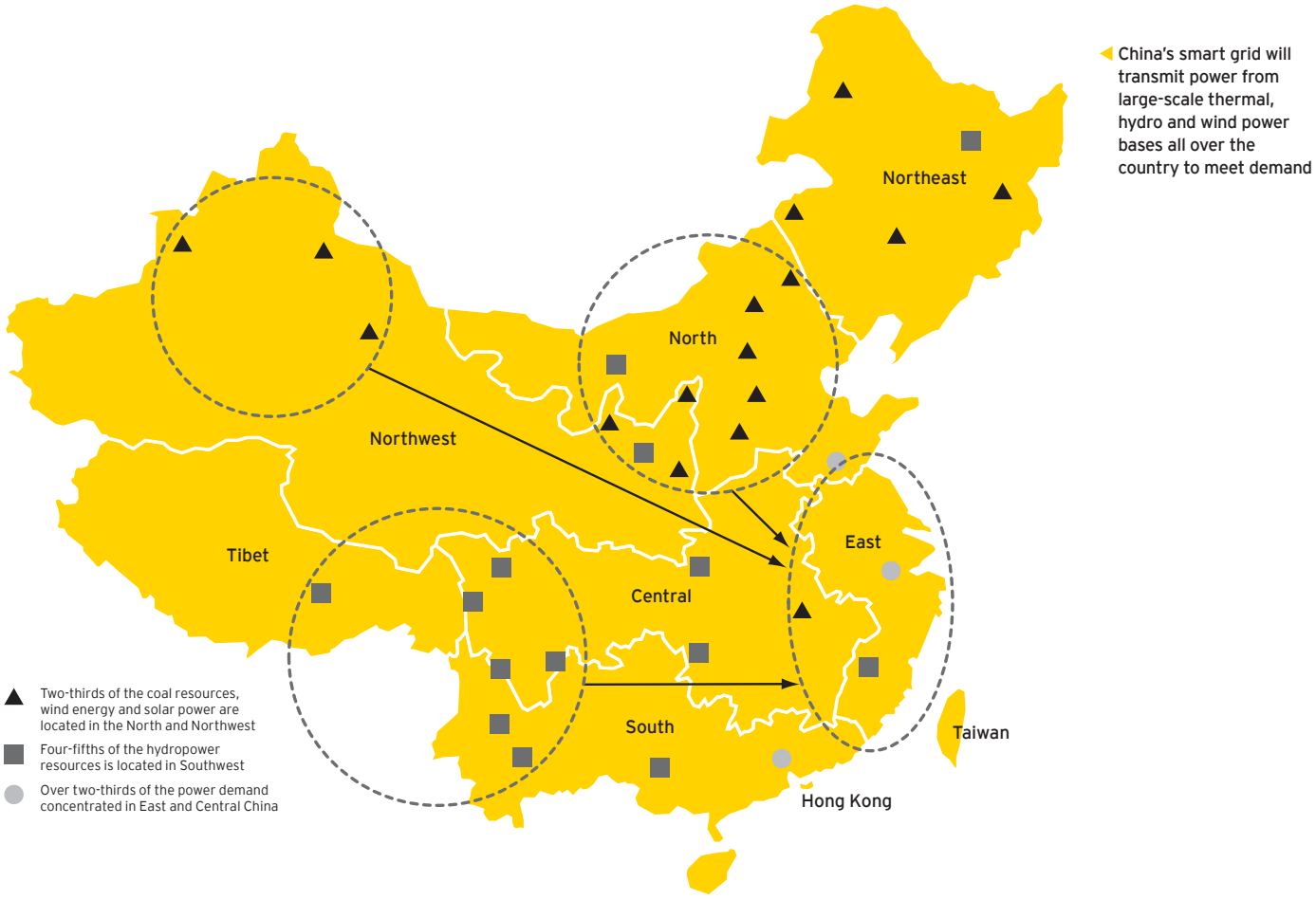
Key smart investment risks for China

Even though the smart grid project is Government-backed, there is not an inexhaustible pot of money. "Financial returns are not necessarily so important in the case of China," van Gils said, "but, in common with utilities in the rest of the world, the transmission system operators (TSOs) who are responsible for coordinating smart in China[21] need to keep tight control of risk and ensure this huge-scale investment is done efficiently. Risk could count for as much as half of every investment case, so risk reduction must be at the heart of smart grid projects to make them viable."

Van Gils highlights what he thinks will be the toughest risks to manage:

- **Technology risk** – with any first-of-a-kind project, unforeseen problems can crop up on implementation. Identifying problems as they occur and maintaining the operational agility to deal with them are both vital. In addition to the core transmission technologies, a host of challenges around communication and IT security need to be dealt with to ensure efficient operation.
- **Business risk** – with such genuinely transformational projects, it can be difficult to track and monitor the business benefits of investment. Setting up the right financial key performance indicators (KPIs) can give greater insight and control into the project.
- **Supplier and contract risk** – making sure that contracts reflect the right allocation of risk between contractors and utilities is tough. With such a major spend, it's vital to be able to audit whether investment is going to the right place.

18. Zpryme analysis. Figures show China's overall federal stimulus investments in smart grid projects will surpass the US Department of Energy (DOE) smart grid grants total of US$7.1b this year, making it the world's biggest investor in smart.
19. Ultra high voltage refers to lines with voltages of 1,000kV (AC), 800kV (DC) or higher.
20. http://www.sgcc.com.cn/ywlm/gsyw-e/232935.shtml.
21. The country's two TSOs are China Southern Power Grid covering the south of China, and State Grid Corporation of China covering the rest.



Impact on other countries and utilities

As China starts rolling out its new smart technology, it's likely to dwarf the size of the rest of the world market. The economies of manufacturing scale are potentially very interesting for utilities in other countries, as van Gils explained: "If the technology is interoperable, there's nothing to stand in the way. Why plow money into developing your own smart meters if you can buy a suitable product for a fraction of the price from China? The impact on the market price of technology could be as big as anything we have witnessed in the wind and solar fields, where prices plunged following China's entry to the market."

Meanwhile, China's investment plans have already attracted technology giants such as IBM, General Electric (GE), ABB, Hewlett Packard and Siemens into the country. GE is building a new smart grid demonstration center in Yangzhou (in the east, close to Shanghai) to showcase its products. IBM is launching a Chinese energy and utilities research lab and has announced that it expects annual revenues from Chinese smart grid development to top US$400m in the next four years.

Smart grid industry watchers at the Beijing conference were clearly interested in China's attitude to Western organizations looking for strategic alliances in smart development. It is unclear how far the state will ring-fence smart for its home-grown industry.

"But we know that the Government insists wind power projects must have predominantly made-in-China components," van Gils said. "It is likely to set similar requirements to help domestic companies win smart grid manufacturing contracts."

Business models "must be fit for the new world"

Wrapping up the conference, van Gils summed up the challenge faced not just by China but by the rest of the utilities community in funding and financial control of smart projects: "Back in the old days, utilities were technically driven. Then the finance function came forward and turned them into normal commercial companies. Now, smart grids are being led by the developers of the technology and utilities are being dragged back toward a technical focus. The financial world has to keep up with these developments and find a business model fit for the new world if the necessary investment is going to come through."

The World Energy Congress (WEC) runs every three years and continues to be the most important international gathering in the energy sector calendar. The 2010 event was held in September in Montréal, Canada, and was attended by 4,500 senior energy industry leaders

Demand, accessibility and changing energy mix high on **2010 World Energy Congress agenda**

The mood at the Congress was fundamentally different from the 2007 event. The past three years have seen a shift in the energy world's priorities, given the impact of the economic crisis on demand and funding and the continuing uncertainty that surrounds a global agreement to combat global warming.

Key challenges under discussion were energy accessibility and managing global imbalances between countries; the changing energy mix and the need to move to low emitting technologies; the impact of policymakers and regulators in determining the energy sources of the future; and financing challenges given the current restricted access to capital.

Energy accessibility

Energy accessibility was a key 2010 theme.[22] Jim Turley, Chairman and CEO of Ernst & Young, joined a panel of experts speaking on the issue at the WEC roundtable on "Meeting Energy Demand – A Global Challenge Requires Global Solutions."

Meeting surging demand in the booming economies of the developing world and eradicating energy poverty present tough challenges. "The private sector can help, given the right level of market stability and return on investment," Turley said, "and anecdotal evidence suggests companies also invest time and resources in developing country energy markets as long as they see strong future growth potential."

Private sector investors are looking for predictable, long-term revenues, he said, which means that policy objectives and regulatory requirements must also be predictable. Reforming policy and regulation to achieve this will require "a collaborative approach between governments, multilateral organizations and the private sector."

Latest Ernst & Young energy publications launched at WEC 2010

Passing the starting line: nuclear construction risk
Nuclear construction requires very different skills from plant operation. These major capital projects come with a multibillion-dollar price tag and a correspondingly high level of risk.

The global gas challenge
Global gas demand is set to grow by 1.5% per annum through to 2030, so how will demand be met? Could shale gas or coal bed methane be global game changers, and how could they affect liquefied natural gas investments?

The electrification of transportation: from vision to reality
Based on Ernst & Young's 2010 Cleantech Ignition Sessions, this report outlines key actions needed to take EVs from niche to mass market.

For copies of all reports please visit our website, www.ey.com

Sustainable energy mix for the future

There was intense discussion of major advances in technology to meet future demand and sustainability requirements. The World Energy Council invited Cathy Cobey, Ernst & Young's Canadian Climate Change and Sustainability Services Leader, to present our thought leadership on renewable energy in North America as part of a session on "Renewable and Alternative Energies in the Global Energy Mix."

Meanwhile, natural gas is clearly still viewed as a major element of the future energy mix. Current challenges in both the gas and nuclear sectors were explored in two new Ernst & Young reports released during the Congress: *The global gas challenge and Passing the starting line: nuclear construction risk*.

22. According to the International Energy Agency 1.4 billion people lack access to electricity. Source: World Energy Outlook 2010 "Energy Poverty: How to make modern energy access universal," IEA, September 2010, via http://www.worldenergyoutlook.org/development.asp.

Hot debates

As a gold sponsor of WEC and a patron of the World Energy Council, Ernst & Young participated widely in core events and hosted a popular debate program on its exhibition stand. A key topic this year was the increasing impetus behind electric transportation. A new Ernst & Young report released at WEC, *The electrification of transportation: from vision to reality*, helped to drive discussion on this topical issue (see report, page 20), and our Global Cleantech Leader Gil Forer chaired a core WEC session on *Energy for transport*.

Balancing priorities

How fast should utilities get behind the EV wheel?

Richard Parry-Jones
Automotive Council

Richard Parry-Jones is industry chair of the Automotive Council in the UK and former Chief Technical Officer at Ford.

Demand for electrical energy by auto manufacturers is accelerating, but general consumer take-up of low-carbon vehicles is still 10 to 15 years away. Worldwide, we can probably expect 1 million to 2 million EVs by 2020, rising to 5 million to 10 million by 2025. Mass take-up is likely to come in 2035, but by then the utility industry will be in the middle of another challenge – the mandate to substantially de-carbonize.

Right now, however, utilities are worried about returns from their investment in charging infrastructure. They are hanging back. This reluctance could slow down the evolution of EVs as the "killer app" that will transform the way we travel and reduce our dependence on fossil fuel.

Utilities could look to other fast-evolving and successful models, such as the mobile communications industry, for inspiration.

Consider, for instance, utilities as equivalents of mobile network operators. They could encourage take-up by subsidizing EVs and tying consumers into long-term contracts, with miles or kilowatts bundled into monthly packages. Meanwhile, automakers and utilities could enter into commercial partnerships to promote car-purchase deals to consumers more likely to be dissuaded by the initial cost of an EV than its lifetime economics.

Moreover, a regulatory structure, similar to that in the telecommunications industry, would allow vehicles to roam between charging points for electrical top-ups and for providers to reimburse each other. Of course, this means providers' charging stations will have to conform to a single standard, but that's no more complex than a tire manufacturer ensuring its products fit the wheels of the cars that use them.

This is a massive growth opportunity for utilities. They should be out headhunting the smartest people in the mobile phone industry, the ones who pioneered the business model behind that undisputed killer app, and getting them quickly on board.

> "Utilities could encourage take-up by subsidizing EVs and tying consumers into long-term contracts, with miles or kilowatts bundled into monthly packages"
>
> Richard Parry-Jones

Utilities are cautious about investing heavily in charging infrastructure while there is no proven demand; auto manufacturers seek assurances that the capabilities will be there once EV demand takes off. Auto expert **Richard Parry-Jones** and utility boss **Knut Simonsen** consider the industries' respective priorities

Knut Simonsen
Vice President, DTE Energy

Knut Simonsen is Vice President at US utility DTE Energy and President of DTE Energy Ventures.

"Utilities will be able to keep pace with EV adoption"
Knut Simonsen

The utility industry as a whole ultimately wants to do the right thing for all customers rather than rush out investing in expensive public charging infrastructure for what initially will be a small percentage of our customers, before there is any product available and while it is still unclear what customer adoption rates will be. The utility industry absolutely wants to be prepared for initial launch, and here in the US, it has collectively committed (via an EEI pledge) to a five-point readiness plan.

Recently, we've seen some utilities move too fast on smart meter implementation and get into trouble. We don't want that to happen with the EV launch.

With the major car companies preparing for EV launches at the end of 2010, DTE really wants to see the new wave of plug-ins succeed. Our current EV charging pilot is proof of our commitment. Collaborating with auto companies, research centers and other utilities, we kicked off a series of demonstration programs to plan and test what we need to do to get ready.

As part of our current pilot, we are funding the installation of domestic charging stations in 2,500 homes. We view this as the smartest way to learn about customer behaviors, loads and teething issues, and make sure installation runs smoothly when large-scale rollout begins.

No matter how optimistic the sales forecasts, EV manufacturing capacity is going to be limited to start with, so utilities have time for a staged response. We don't think there is a need for massive advance installation of public infrastructure: you can cover most people's initial needs by focusing on residential and workplace charging.

The priority for utilities is to persuade users to charge their vehicles at off-peak times, so that we can manage the demand and save our customers money. In the medium term, we want to get to a position where smart meters in every home allow for smart charging to ramp up overnight without inconveniencing the customer and have a fully charged vehicle by, say, 6 a.m. This will enable us to maintain control over load and guard against outages.

For a few years, it will cost more to purchase an EV than a conventional car. We will play our part to support EV adoption by making the fuel cost as attractive as possible, relative to petrol. But our industry is unlikely to engage in new business models that involve, for instance, battery and EV-financing contracts with customers. That would present all kinds of risks and take us beyond our traditional remit.

Ernst & Young contacts

If you would like to discuss any of the issues presented in *Utilities Unbundled*, please feel free to call or email our contributors.

Ernst & Young's global network of utilities professionals numbers 2,500 in 600 locations. Our member firms work with almost every utility in the world. Our range of services includes accounting and auditing; tax reporting, operations and advisory; business risk services; technology and security risk services; transaction advisory and human capital services.

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Matt helps cleantech and other high-technology clients, from early-stage venture capital-backed businesses to public multinational organizations, to achieve their ambitions. His 19 years of industry experience has helped many of the sector's fastest-moving organizations tackle challenges that include acquisition and divestment, restructuring and public equity offerings.

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Martin leads our Berlin transaction advisory services team and supports transactions across the north and east of Germany. He focuses on buy- and sell-side due diligence, negotiation support and consultation on IPOs and IFRS issues. Martin is a qualified German public auditor and tax advisor.

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In a world of uncertainty, changing regulatory frameworks and environmental challenges, utility companies need to maintain a secure and reliable supply, while anticipating change and reacting to it quickly. Ernst & Young's Global Power & Utilities Center brings together a worldwide team of professionals to help you achieve your potential – a team with deep technical experience in providing assurance, tax, transaction and advisory services. The Center works to anticipate market trends, identify the implications and develop points of view on relevant industry issues. Ultimately it enables us to help you meet your goals and compete more effectively. It's how Ernst & Young makes a difference.

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Appendix D
Peer review report

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System Review Report

To the Partners of Ernst & Young LLP
and the National Peer Review Committee of the AICPA Peer Review Board

We have reviewed the system of quality control for the accounting and auditing practice of Ernst & Young LLP (the firm) applicable to non-SEC issuers, in effect for the year ended June 30, 2010. Our peer review was conducted in accordance with the Standards for Performing and Reporting on Peer Reviews established by the Peer Review Board of the American Institute of Certified Public Accountants. The firm is responsible for designing a system of quality control and complying with it to provide the firm with reasonable assurance of performing and reporting in conformity with applicable professional standards in all material respects. Our responsibility is to express an opinion on the design of the system of quality control and the Firm's compliance therewith based on our review. The nature, objectives, scope, limitations of, and the procedures performed in a System Review are described in the standards at www.aicpa.org/prsummary.

As required by the standards, engagements selected for review included engagements performed under *Government Auditing Standards*; audits of employee benefit plans, and audits performed under FDICIA.

In our opinion, the system of quality control for the accounting and auditing practice of Ernst & Young LLP, applicable to non-SEC issuers, in effect for the year ended June 30, 2010, has been suitably designed and complied with to provide the firm with reasonable assurance of performing and reporting in conformity with applicable professional standards in all material respects. Firms can receive a rating of *pass, pass with deficiency(ies)* or *fail*. Ernst & Young LLP has received a peer review rating of *pass*.

KPMG LLP

December 06, 2010

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