The Increasing National Emphasis on Making Energy Efficient and Renewable

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KCP&L Overview

- Approximately 500,000 customers
- Generating capacity of over 4,100 MWs
- Approximately 20 million MWhs of electricity generated annually







KCP&L Generating Facilities

KCP&L Operates

- Nine plant sites with 26 generating units (including our recently-added wind facility near Spearville, KS)
- Over 4,100 megawatts (our share) of efficient generation assets

Net Generating Capacity



		Accredited Net Capacities	Planned Capacities
4 . A	Nuclear		
•	Wolf Creek	548	
	Wind		
	Spearville	100	
E	Coal		
AN CA	LaCygne	711	
	latan	456	
	Montrose	510	
	Haw thorn	563	
	latan II		465
		2,240	465
6	Gas		
<u>el 12</u>	Haw thorn	420	
	Osaw atomie	77	
	W. Gardner	308	
		805	
	Oil		
•	NE CT's	458	
	Total	4,151	465





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KCP&L Fuel Mix % of Energy Generated in 2007 (YTD August 2007)

Generation stats

- Over 96% of energy generated in 2007 is from low-cost coal-fired, nuclear, and wind plants
- Summer peak load of 3,721 MW occurred July 2006
- Winter peak load of 2,446 MW (Heating) occurred February 2007







KCP&L Retail Customers

Retail Customer statistics

Average number of retail customers during 2006: 503,000









KCP&L ranked 67th out of 188 IOUs in retail revenue in 2005







World Energy Demand – Growth Projections



Note: A quadrillion Btu is one million million British thermal units. A Btu is the amount of heat needed to raise the temperature of one pound of water by one degree Fahrenheit. Sources: EIA: U.S. Energy Information Administration, *International Energy Outlook 2006*. IEA: International Energy Agency, *World Energy Outlook 2006*.







World Population



Source: UN World Population Prospects.



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World Energy Demand Growth from 2004 - 2030



Source: IEA World Energy Outlook 2006.





World Energy Supply – Historical and Projected



Source: IEA World Energy Outlook 2006.





Sources of global electricity production, 2004

	Thousand GWh	Percent of total
Coal	6,944	39.8%
Natural gas	3,419	19.6%
Hydro	2,810	16.1%
Nuclear	2,739	15.7%
Oil	1,170	6.7%
Biomass	149	0.9%
Waste	77	0.4%
Geothermal	56	0.3%
Solar	2	0.0%
Wind	82	0.5%
Total	17,448	
All renewable sources	3,176	18.2%

Source: International Energy Agency, JP Morgan





Long-run costs of electric generation

Fuel	Cost \$/kWh
Waste	\$0.02-\$0.05a
Coal	\$0.035-\$0.045
Nuclear	\$0.04-\$0.05
Natural gas (combined heat & power)	\$0.04-\$0.06b
Hydroelectric	\$0.04-\$0.08
Natural gas (electric only)	\$0.05-\$0.06
Geothermal	\$0.05-\$0.08
Wind	\$0.06-\$0.08b
Solar	\$0.20-\$0.40

Source: International Energy Agency, JP Morgan

Notes: a) assumes power plant is paid to dispose of waste; b) assumes natural gas price of \$5/MMBtu. All estimates assume 10% discount rate.





US Energy Consumption by Source — 2005



Source: Energy Information Administration & JPMorgan.







US Renewable Energy Consumption — 2005



Source: Energy Information Administration & JPMorgan





US oil and natural gas imports as % of total energy consumption



Source: Energy Information Administration, JP Morgan





Our Comprehensive Energy Plan represents a balanced approach to meet the needs of our customers



High-Efficiency Coal-Fired Plant

- Affordable, reliable energy to fuel long-term economic growth
- Environmental improvements to keep our area's air clean
- Renewable energy
- Infrastructure investment to reduce frequency and duration of outages
- Programs to give customers more control over their energy usage





We Must Build on Progress to Date



Sources: EPA, EIA & Bureau of Economic Analysis





Emission Reductions (Source: EPA)





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World Carbon emissions – 1980-2004



Source: Energy Information Administration, JP Morgan





Achievement of CO₂ reductions will require management of a portfolio of options





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Energy R&D Investment 1974-2004



Source: The Global Energy Technology Strategy Program





The recent agreement with Sierra Club proactively addresses many potential issues & risks

- Energy efficiency additional
 - 100 MWs annual demand by 2010
 - 200 MWs annual demand by 2012
- Wind energy additional
 - 400MW
- Emission controls
 - Collaborate on reducing CO₂ 20% by 2020
 - Achieve $SO_2 NO_x$ levels that are among the lowest in the country
- File for regulatory approval of net metering
- Finance community projects to support the environment and improve infrastructure



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U.S. Wind Energy Potential





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Megawatts of Installed Utility-Scale Wind Power at August 31, 2007







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Capitalizing on Energy Efficiency

- In the next 25 years, U.S. is expected to be using 50% more electricity than today
- Some ambitious estimates today predict that as much as onethird of projected <u>new</u> demand for electricity could be met through efficiency measures
- Electric utilities, between 1989 and 2004 spent \$28 billion on efficiency programs

Source: Thomas R. Kuhn, President, Edison Electric Institute

"Capitalizing on Energy Efficiency", World Energy, (Vol. 10, No. 1, 2007)





Our Industry Principles to Achieve a Modernized Plan for Energy Efficiency

- Provide customers with new options to capitalize on wholesale price variations (Demand Responsive Market)
- Recognize positive role of new electric technologies
- Identify opportunities to include energy efficiency into resource portfolio
- Make energy efficiency a good investment
 - cost recovery & earning potential
- Make energy efficiency sustainable
 - electric rate design
- Develop cost effective national appliance-efficiency standards & building codes
- Understand that efficiency is everyone's responsibility
- Recognize authority of States

Source: Thomas R. Kuhn, President, Edison Electric Institute

"Capitalizing on Energy Efficiency", World Energy, (Vol. 10, No. 1, 2007)





Short Term Efficiency Gains

□ Current actions to improve energy efficiency:

- Fostering smart & efficient buildings
 - homes & commercial buildings consume two-thirds of nation's electricity & one-third of natural gas
- Promoting smart & efficient appliances & equipment
 - fastest growing use of electricity
- Accelerating development of smart meters & advanced metering infrastructure
- Supporting development of innovative rates & regulations
- Advancing plug-in hybrid electric vehicles

Source: Thomas R. Kuhn, President, Edison Electric Institute

"Capitalizing on Energy Efficiency", World Energy, (Vol. 10, No. 1, 2007)





End-Use Energy Technologies

- End uses include demands such as cooling, heating & lighting homes, transporting people & freight, heating & powering industrial processes
- More efficient end-use technologies help conserve natural resources, reduce impact of energy production on the environment & enhance energy security
- □ Findings from international public/private research programs
 - "The importance of increased electrification in response to a CO₂ stabilization policy is one of our big findings of our research on end-use energy. The development of improved, more cost effective, end-use energy technologies that use electricity can reduce emissions through both efficiency improvements and the use of electricity from low carbon emission sources."
 - "Global Energy Technology Strategy Addressing Climate Change Phase 2 Findings from Findings From An International Public-Private Sponsored Research Program"
 - » JA Edmonds, MA Wise, JJ Dooley, SH Kim, SJ Smith, PJ Runci, LE Clarke, EL Malone, GM Stokes (May 2007)



Legislative and regulatory support is critical

- In order to successfully develop energy efficiency as a sustainable "first" fuel capability, legislative and regulatory support is required
 - Legislative support can provide direction that regulators can use when assessing energy efficiency initiatives
 - Regulatory support can address disincentives related to actions that would otherwise increase investment in energy efficiency





We are currently engaged with national, state, and local initiatives to promote and demonstrate leadership for energy efficiency

- National
 - EEI Energy Efficiency Institute
 - Formed by eight utilities representing 20 million customers in 22 states
 - Provides a mechanism to share best practices in energy efficiency and help develop appropriate regulatory models
 - Will promote and help deploy efficient end-use options while working to increase customer participation
 - EPRI's Energy Efficiency Initiative
 - Over 30 utilities are participating in the initiative that is focused on 3 elements: Energy Analytics, Infrastructure, and Smart & Efficient End-Use Devices
 - Mike Chesser, Chairman & CEO of Great Plains Energy, serves as the Chair of the EPRI Board of Directors Ad-Hoc Committee on Energy Efficiency
- Regional/State
 - Since 2004 we have been working on Energy Efficiency Pilots in KS & MO
 - Voluntary renewable portfolio standards goals in both states
 - Working with commissions & legislatures on more sustainable rules & models
- Local
 - Energy Task Force of Greater Kansas City Chamber of Commerce
 - KCMO Climate Protection Planning Process
 - Kansas Mayors' Climate Protection Initiatives



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Recent Energy Efficiency Forum was a first step in working towards a collaborative solution

- Begin a collaborative and inclusive effort to shape state policy in a manner that embraces energy efficiency
- Enable a positive business model for energy efficiency
- Build awareness and support among key stakeholder groups for energy efficiency
- Gain public support and momentum to more aggressively pursue energy efficiency
- Build public support for legislative and regulatory enablers that will be critical to drive wide-spread adoption of energy efficiency programs
 - Energy efficiency should be treated as a "first fuel" and part of the industry's future energy portfolio required to meet customer's growing need for electricity
 - The utility industry should be compensated fairly for implementing energy efficiency reduction programs that reduce energy consumed as it for initiatives that produce and deliver energy to its customers (See Energy Efficiency Principles)
- Increase awareness and dialog



