

KANSAS ENERGY PLAN 2003

Executive Summary

State Energy Resources Coordination Council

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Table of Contents

State Energy Resources Coordination Council Members (SERCC)	iii
External Committee Members	iv
Staff Support for SERCC	iv
Acknowledgments	iv
Executive Summary	1
Energy Production and Consumption Forecasts	1
Energy Recommendations	2

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Executive Summary

After nearly a century of being one of the nation's leading energy exporters, Kansas is now a net energy importer (Figure 1). Kansas's net energy balance is expected to worsen for the foreseeable future, with serious implications for the economic well being of the state. Fossil energy fueled the Kansas economy and provided substantial exports to other states for much of the 20th century. By about twenty years ago, Kansas's energy production and consumption were roughly in balance. This was due to a combination of declining oil, gas, and coal production, and increasing imports of coal for electricity generation and gasoline for transportation. However, since 1997, the net energy balance has shifted strongly to the negative side (Figure 1). By 2007, we estimate that Kansas's net imports will be 650 trillion Btu a year, which means that Kansas could be importing more than \$2.5 billion of energy to meet its demand.

The State Energy Resources Coordination Council (SERCC) is tasked with developing plans to increase the state's energy self-sufficiency and restore the state to being a net energy exporter. Specific tasks of the Council include preparing a comprehensive energy plan, updated annually. The Council is also tasked with developing forecasts of

Kansas energy production and consumption for the next five years.

Achieving energy self-sufficiency will likely require a combination of the following:

- extending the life of the state's oil and gas fields,
- increasing conservation and efficiency, and
- developing new sources of energy, of which the most promising in the near-term appear to be ethanol, wind, and coalbed methane.

Energy Production and Consumption Forecasts

The Kansas energy balance continues to worsen, with production declining and demand increasing. Imports are increasing sharply to make up the shortfall. The state production and demand were about balanced from 1982 to 1997 (Figure 1). Since 1997, however, the state has become a net importer of energy. By 2007, the state is projected to need 650 trillion Btu more energy annually than it produces. Unless conservation and production increase dramatically, the shortfall will have to be made up from imports.

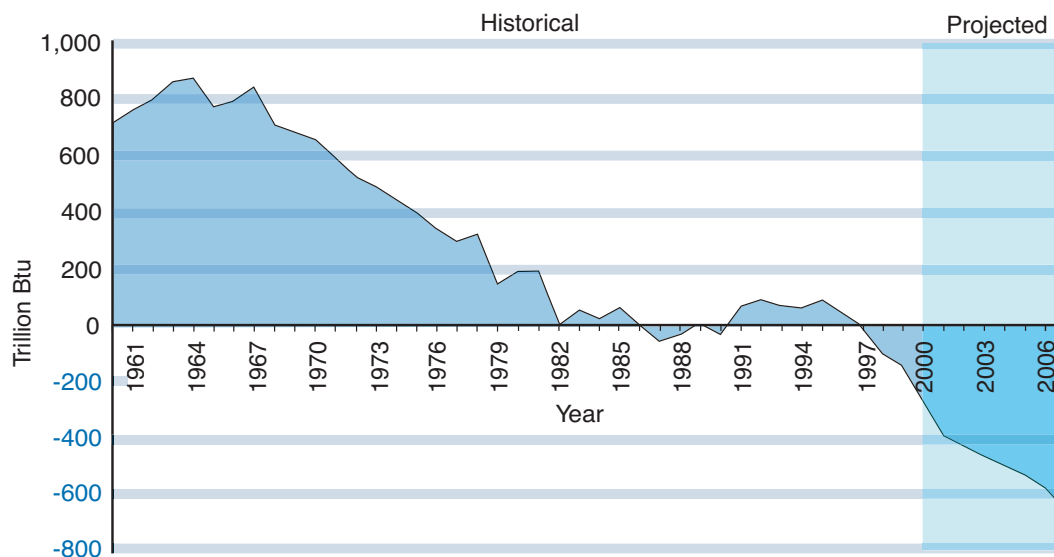


Figure 1—Kansas net energy balance, 1960 to 1999, with projections to 2007. Positive numbers show energy produced in excess of consumption (exports), while negative numbers show energy consumed in excess of production (imports).

Production Forecasts

- Based on expected prices significantly above \$20 per barrel of oil (BO), Kansas oil production is forecasted to maintain current monthly rates of 2.9 million BO¹, with a lower limit of 2.8 million BO, 2.7 BO million, and 2.6 million BO per month in December 2003, 2005, and 2007, respectively. Annual production for 2003, 2005, and 2007 would be 33.6 million BO, 32.4 million BO, and 31.2 million BO, respectively.
- Current monthly gas production of approximately 38 billion cubic feet (bcf) is expected to decline to approximately 37.5 bcf, 36 bcf, and 32 bcf per month in December 2003, 2005, and 2007, respectively, using a hyperbolic depletion curve. Annual production for 2003, 2005, and 2007 would be 450 bcf, 432 bcf, and 384 bcf, respectively.
- Electricity generation in Kansas is forecast to increase steadily over the next five years. In 2001, 44,707 million kilowatthours (kWh) were produced in Kansas. For the years 2003, 2005, and 2007, Kansas electricity generation is projected to increase to 47,642 million kWh, 50,252 million kWh, and 52,862 million kWh, respectively. Renewable energy, based primarily on wind, is forecast to nearly triple in production, though it will only produce 2% of the state's electricity by 2007.

Consumption Forecasts

- Annual petroleum consumption is forecasted to increase by 2.25% to 3% annually. In 2003, 2005, and 2007, petroleum consumption is projected to be 85,582 thousand barrels, 89,920 thousand barrels, and 94,874 thousand barrels, respectively. Motor gasoline and distillate (diesel) fuel consumption are projected to increase annually by 0.1% and 0.44%, respectively. Consumption of LPG (liquid petroleum gas) is projected to increase 7.1% annually, while consumption of lubricants is projected to decrease by 0.2% annually.

- Natural gas consumption, which was 321 bcf in 2000 (the most recent data available), is projected to decrease 9.9% in 2002 and then increase by 1% to 1.4% annually through 2007. Gas consumption in 2003, 2005, and 2007 is forecast to be 300.4 bcf, 307.5 bcf, and 315.7 bcf, respectively.
- Total electricity consumption, which was 35,921 million kilowatthours (kWh) in 2001, is projected to increase to 39,068 million kWh, 41,317 million kWh, and 43,697 million kWh in 2003, 2005, and 2007, respectively.

Energy Recommendations

The Council recognizes that the plan presented in this report will not immediately improve Kansas's energy self-sufficiency. The plan was prepared in a short time period with the full realization that State financial investment would not be available in the near term to implement more far-reaching, but potentially costly, strategies. The Council is making modest recommendations this year to start laying the foundation for an expected long-term solution to the State's energy problems.

Recommendations for Council Action

- Establish a Transmission Task Force in Kansas to identify and recommend changes to improve the transmission network to support potential energy resources from wind or other emerging technologies and improve the flow of electricity within and outside Kansas.
- Establish a working group (composed of representatives from key state agencies, research universities, and the private sector) to identify specific research needs and opportunities to increase energy production and efficiency and that could also lead to development of new businesses (e.g., manufacturing wind turbines) in Kansas. Tasks include:
 1. Provide for technical assistance to independent petroleum operators, similar to the technical support given to agriculture, that will improve recovery of existing Kansas energy resources in an environmentally benign manner.

¹ The delay in posting oil and gas production data in Kansas averages about five months. For the purposes of this report, current production would be July 2002.

2. Develop information on the economic potential of coalbed methane in Kansas.
 3. Promote opportunities for employment in the oil and gas producing sector by developing curriculum that can be taught in the community colleges and vo-tech schools.
 4. Promote enhanced oil recovery (Tertiary) technology to recover residual oil left after water flooding.
 5. Explore sources of CO₂ in locations closer to mature producing fields to use in enhanced oil recovery projects, and explore feasibility of State's construction of CO₂ pipeline or financing of CO₂ pipeline owned by investors.
 6. Promote irrigation management practices designed to achieve maximum economic yield by reducing pumping costs. Adjusting pumping rates based on frequent monitoring of crop, soil, and weather conditions can provide water and energy savings with limited impact on yield.
 7. Expand technical assistance to industry. Existing programs, such as the Energy Extension Service at K-State and the Energy Analysis and Diagnostic Center at the University of Kansas could be enhanced to provide high-quality energy audits and specific technical assistance to Kansas industries seeking to improve energy efficiency. These efforts should be structured to avoid displacing private sector services.
- Establish an annual energy conference to discuss the state's energy issues among researchers, state and local policy decision-makers, industry, utilities, and the public.
 - Review energy programs in other states for their effectiveness and potential applicability to Kansas.
 - Implement an awards program, providing recognition (and monetary rewards) for important contributions in energy-efficiency achievement based on actual measured performance.

Recommendations for Legislative Action in 2003

- Implement energy performance contracting for existing, state-owned buildings.
- Update 1989 energy efficiency standards with American Society of Heating and Air Conditioning Engineers (ASHRAE) 1999 standards for all new construction.
- Provide legislation that will alleviate punitive financial liabilities upon industry for actions taken to comply with state and federal regulations.

Priority Study Items for 2003

- Analyze all incentives for renewable energy, including, but not limited to, net metering and Renewable Portfolio Standards (RPS), as part of a goal to increase the generation of renewable energy.
- Develop an educational program for the public (consumers and students) about energy issues, environmental impacts, and the initiatives to address those concerns.
- Make a study of the value of the petroleum industry to Kansas as a base for policy decisions.
- Study electric utility demand-side management programs related to time-of-day pricing.
- Investigate the market for low environmental impact "green" energy sales to interested consumers and utilities facing pollution abatement requirements.
- Encourage the state's electric utilities to participate and take a leadership role in all renewable energy groups and discussions.
- Investigate a systems benefit assessment/charge on all energy consumption and use proceeds to fund current energy-related program costs (e.g., weatherization, low-income heating assistance, development of renewable energy).

Energy Issues for Future Consideration

The Council compiled over 175 recommendations from its membership and previous studies. Many were dropped from consideration as being obsolete or were combined with related issues. Some were

adopted as part of the current year's State Energy Plan. A complete listing of the remaining recommendations is included in the report as Appendix 2—Energy Recommendations for Future Consideration.