

Direct Testimony on HB 2446

of

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS ADDRESS.

A. My name is Dean Lagle Kothmann. I am self-employed by firms as an engineering and business consultant. My business address is 4307 West 126th Street, Leawood, Kansas 66209.

Q. PLEASE BRIEFLY OUTLINE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A. I have a Bachelor of Science degree in Mechanical Engineering from Texas A&M University. My education has been furthered by completing many electric utility business and technical courses during my career. My over 38 years of professional experience includes transmission line, power plant, wind farm, and bio-mass development. I was a partner with the firm of Black and Veatch, a large Overland Park Kansas electric utility professional engineering firm, for 16 years during tenure of 20 years. Previous consulting activities have been with a wind farm, a bio-mass company, several technology companies, and a nuclear engineering organization of a large electric utility engineering firm.

Q. ARE YOU A REGISTERED PROFESSIONAL ENGINEER?

A. Yes, I am a Registered Professional Engineer (retired) number 64830 in the State of Texas.

II. SCOPE OF TESTIMONY

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS PROCEEDING?

A. I am testifying on behalf of myself.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to present a subject matter expert's knowledge, conclusions, and recommendations regarding a proposal to grow the State of Kansas's dependence on renewable energy for the generation of electricity.

Q. WILL YOU ADDRESS THE NEED FOR ALTERNATIVES TO RENEWABLE GENERAGED ELECTRICITY?

A. No. My testimony will focus on the growing evidence that previously passed renewable energy laws are neither effective in reducing environmental impacts nor affordable in today's credit crisis.

Q. WHAT INFORMATION HAVE YOU RELIED UPON IN MAKING YOUR EVALUATION AND ARRIVING AT YOUR CONCLUSIONS AND RECOMMENDATIONS?

A. I have relied upon the information in the current Kansas legislation, relevant data from industry and government publications, and my educational and professional experience in the electric utility and energy industries.

Q. HOW ARE THE REMAINING SECTIONS OF YOUR TESTIMONY ORGANIZED?

A. In Section III, I will offer my testimony. In Section 4, I will provide my conclusions and recommendations.

III. TESTIMONY

Q. HOW DO RENEWABLE ENERGY GENERATED ELECTRICITY OPTIONS COMPETE WITH EACH OTHER?

A. Renewable electric energy is generally derived from wind and/or solar power. Wind is perceived to be the most competitive renewable electric generating source in Kansas. Roof top solar may have limited applications and be competitive during peak loads for special situations.

Q. IS WIND GENERATED ELECTRICITY COMPETITIVE WITH OTHER ENERGY SOURCES?

A. **No.** Penetration of wind, as an electric energy source, has been greatest in Europe and in the United States of America in Texas. In both cases, electric rates have risen at unprecedented levels due to the addition of wind energy. Civitas and KPMG recently conducted studies for the United Kingdom, and both studies found wind to be the least competitive alternative for future electric energy additions. Since Texas began its wind additions, the Electric Reliability Council of Texas provides evidence that electric energy costs have risen at unprecedented rates at the same time wind power plant additions have been added at unprecedented levels. There is a direct correlation of rising electricity rates and rising wind resources in the generation mix where renewable energy market share has risen to higher levels.

Q. WHY IS WIND MORE EXPENSIVE?

A. One must speak from a general case versus a specific case because each wind location is unique. Wind has many negative characteristics from an economic perspective that increase the cost of wind.

Generates power when none is needed: Generally, the wind does not blow when consumers are using electricity. Wind is an intermittent energy source that offsets fuel consumption, but wind does not add much to the electric generating capacity. Therefore, wind's primary value is the amount of fossil fuel it purportedly displaces.

Other large investments required: a) Wind demands a fully installed SMART electrical grid, as well as, electric energy storage technology. A complete SMART grid in Kansas is still years in the future and will be very expensive. b) Wind demands more transmission and distribution investments. c) Wind demands new peak-load backup power plant investments of .5MW for each 1MW of wind.

No way to store renewable energy: Since Edison, Tesla, and Westinghouse invented the electric system, engineers have dreamed, researched, and tried to develop large utility electric energy storage systems. Energy storage remains a dream versus a near term invention for most electric systems in the United States.

Q. DOES WIND REDUCE CO₂ EMISSIONS? IF NOT, WHY?

A. Generally, **wind does not reduce CO₂ emissions.**

Wind requires the addition of backup / redundant fossil power plants because it is intermittent. These load following power plants generate very high levels of CO₂ and are inefficient due to load following of a wind plant during periods of too strong or too slow wind. Generally, the combination of the wind power plant and the required fossil plant to support intermittent power generation generate more CO₂ than if one had just used the fossil fuel and never built the wind plant.

Q. HAVE THERE BEEN SCIENTIFIC STUDIES TO SHOW WIND DOES NOT REDUCE CO₂ EMISSIONS?

A. **Yes.** “In a comprehensive quantitative analysis of CO₂ emissions and wind-power, Dutch physicist C. le Pair has recently shown that deploying wind turbines on "normal windy days" in the Netherlands actually increased fuel (gas) consumption, rather than saving it, when compared to electricity generation with modern high-efficiency gas turbines. Ironically and paradoxically the use of wind farms therefore actually increased CO₂ emissions, compared with using efficient gas-fired combined cycle gas turbines (CCGTs) at full power.” [Electricity Costs: The Folly of Wind-Power Civitas Jan2012, pg. 30]

Q. IS WIND POWER A RELIABLE ENERGY SOURCE?

A. **No.** Generally, wind blows at electricity generating appropriate speeds approximately thirty percent (30%) of the time or less. In rare cases, acceptable windspeeds may occur up to about 38% of the time. **More important,** wind frequently blows, or ceases blowing at the most inopportune times. The atmospheric temperature and the ground temperature have their smallest differential (meaning limited wind) at about the same time as consumers demand the most electricity.

One may go to the Electric Reliability Council of Texas web site on the hottest days in Texas (a period when power demand is highest) and one will find wind is contributing very little to the electric load. Wind cannot be called upon when needed to keep the electric system stable, and so a brown or black out may be unavoidable. Wind is the LEAST reliable electric energy source due to this natural attribute.

Q. WHY ARE THERE NEGATIVE ECONOMIC IMPACTS FROM CHOOSING THE LEAST RELIABLE AND MOST EXPENSIVE ELECTRIC GENERATING SOURCE?

A. Choosing environmental attributes over cost and reliability raises the cost of electricity. The rising cost of electricity causes energy poverty. The bottom half of society must choose between leaving the power on versus food and shelter. The top half of society has less money to spend on consumer activity, which is 70% of the USA economy. Businesses have fewer funds to bring on more employees because of increased electric power costs, hence potential investment funds are lost. The inefficient use of funds compounds the loss of economic activity.

Q. WHICH ELECTRIC GENERATION POWER SOURCE IS GENERALLY THE LEAST RELIABLE AND MOST EXPENSIVE ELECTRIC GENERATING SOURCE?

A. Wind power.

Q. DO RENEWABLE ENERGY MARKET SHARE MANDATES IMPACT THE ECONOMICS OF REGIONAL ECONOMIES AND PREVENT “ALL OF THE ABOVE” ENERGY OPTIONS FROM BEING DEVELOPED?

Yes. “Under the Renewables Directive, Britain is committed to sourcing 15% of final energy consumption from renewables by 2020. These commitments add to energy costs and undermine business competitiveness (Introduction ii).....adding 45% to electricity costs by 2030 for medium sized business users. (Chapter 1)” Electricity Costs: The Folly of Wind-Power Civitas Jan2012 P ii and Chapter 1

The United Kingdom is struggling to meet Climate Change and Renewable Mandates because these regulations and legislated mandates limit other electric generation options from being considered as alternatives, even though other electric generating alternatives are readily available, more competitive, more environmentally friendly, and more acceptable to the market place.

IV. RECOMMENDATIONS AND CONCLUSIONS

Q. WHAT ARE YOUR CONCLUSIONS REGARDING THE PENDING LEGISLATION RELATED TO RENEWABLE ENERGY STORAGE IN THE STATE OF KANSAS (HB 2446)?

A. Like Kansas, many States and other countries have sought to reduce CO₂ emissions. Many renewable energy schemes have been tested. Current results are shocking. By observing the outcome of USA States with high renewable energy standards and reviewing studies by world renowned and unbiased firms like Civitas and KPMG, wind energy is being proven to be more expensive, unreliable, a larger CO₂ generator, and a job destroyer.

During a time of financial crisis due to prior excess expansion of credit, future capital must be deployed in the most productive manner. Productive deployment of capital regenerates the economy. Renewable energy is among the least productive ways to deploy capital, and therefore, significantly impairs the economy of the region adopting renewable energy sources.

Q. DO YOU HAVE ANY RECOMMENDATIONS REGARDING RENEWABLE ENERGY WITHIN KANSAS?

A. **Yes.**

- 1) Kansas should use science and economics versus emotion and politics to make electric energy decisions.
- 2) Kansas should pass legislation to reduce renewable energy megawatt market penetration mandates until:

- a) a renewable energy source can be proven to not increase CO₂ relative to the lowest CO₂ emitting fossil fuel source.
 - b) The renewable energy source can be proven to be affordable relative to other energy sources, where ALL costs (including Federal and State subsidies) to citizens are accounted for; including, but not limited to additional transmission and distribution lines, energy storage cost, and SMART grid additions.
- 3) At a minimum, the addition of riders to any current legislation, such as HB 2446, to increase renewable energy market penetration should be avoided.