

Mr. Chaimlan and Members of the Committee:

I appreciate the opportunity to appear before you today to discuss the winter energy outlook and energy's role in the agricultural sector. The Energy Information Administration (EIA) is the independent statistical and analytical agency in the Department of Energy. We do not promote, formulate, or take positions on policy issues, but we do produce data, analyses, and forecasts that are meant to assist policymakers, help markets function efficiently, and inform the public. Our views are strictly those of EIA and should not be construed as representing those of the Department of Energy or the Administration. Even before Hurricane Katrina struck, crude oil and petroleum product prices were setting records. On August 26, the near-month price of crude oil on the New York Mercantile Exchange closed at over \$66 per barrel, which was \$23 per barrel, or more than 50 percent, higher than a year earlier. On August 29, as the hurricane made landfall, average gasoline prices stood at \$2.61 per gallon, 74 cents higher than one year earlier, and diesel prices were \$2.59, or 72 cents higher. Oil prices worldwide had been rising steadily since 2002, due in large part to growth in global demand, which has used up much of the world's surplus production capacity. Refineries have been running at increasingly high levels of utilization in many parts of the world, including the United States. High production of distillate fuels and higher-than-average refinery outages this summer added to tightness in gasoline markets. Throughout the summer months, EIA warned about the potential adverse impacts of an active hurricane season on domestic energy supply and prices. These warnings unfortunately are being reflected in the challenging realities brought about by Hurricanes Katrina and Rita. The impact on oil and natural gas production, oil refining, natural gas processing, and pipeline systems have further strained already-tight markets on the eve of the 2005-2006 heating season.

Energy Use in Farming and Farming-Related Sectors

Before turning to the energy outlook, a brief review of energy's role in the agricultural sector can help provide some context. For 2005, EIA estimates that energy use on farms will total about 1,155 trillion British thermal units (Btu), of which: diesel accounts for 38.6 percent, natural gas accounts for 18.9 percent, liquefied petroleum gas (LPG or propane) accounts for 17.2 percent, electricity accounts for 14.9 percent, gasoline accounts for 8.5, and other fuels account for 1.9 percent. In addition to direct farm use of energy, agriculture is indirectly affected by energy requirements in the fertilizer industry, specifically in nitrogenous fertilizers. The energy requirements of this industry, in terms of thermal content, are about 500 trillion Btu, of which 97.5 percent is natural gas (471 billion cubic feet (2002) and virtually all of the remainder is electricity (3.5 billion kilowatt-hours). The cost of natural gas used in the nitrogenous fertilizer industry accounts for almost half the value of its shipments.

Short-Term Outlook

Introduction

My discussion of the near-term outlook for energy markets is based on EIA's October Short-Term Energy and Winter Fuels Outlook, which we released on October 12 and which is available on our web site at www.eia.doe.gov. Our November Outlook was released yesterday but is not reflected in this written testimony due to the usual requirement to provide the testimony in advance of the hearing date. The latest Outlook will be reflected in my oral remarks, and also is available on our web site. Energy projections are subject to considerable

uncertainty. Price projections are particularly uncertain because small shifts in either supply or demand, both of which are relatively insensitive to price changes in the current market environment, can necessitate large price movements to restore balance between supply and demand. On the supply side, our Winter Fuels Outlook reflects a "Medium Recovery" or baseline scenario for recovery of energy operations in the Gulf of Mexico based on information available to EIA as of the end of the first week of October. On the demand side, the baseline projections incorporate the mean values for heating degree-days by Census Division as provided by the National Oceanic and Atmospheric Administration's Climate Prediction Center. EIA also examines 10-percent colder and 10-percent warmer winter cases to provide a range of heating fuel market outcomes.

Winter Heating Expenditures

This winter, residential space-heating expenditures are projected to increase for all fuel types compared to year-ago levels. On average, households heating primarily with natural gas are expected to spend about \$350 (48 percent) more this winter in fuel expenditures. Households heating primarily with heating oil can expect to pay, on average, \$378 (32 percent) more this winter. Households heating primarily with propane can expect to pay, on average, \$325 (30 percent) more this winter. Households heating primarily with electricity can expect, on average, to pay \$38 (5 percent) more. Should colder weather prevail, expenditures will be significantly higher. These averages provide a broad guide to changes from last winter, but fuel expenditures for individual households are highly dependent on local weather conditions, the size and energy efficiency of individual homes and their heating equipment, and thermostat settings.

Heating expenditures by region show similar patterns. In the Midwest, about 75 percent of households rely on natural gas to heat their homes. This winter, these households can expect to pay nearly 61 percent more in natural gas expenditures relative to last winter. Households in the Northeast, where 30 percent of households use heating oil as their primary heating fuel, are projected to pay about 30 percent more in heating oil expenditures compared to last winter. Midwest households relying on heating oil can expect to pay 41 percent more than last winter, but relatively few households in the Midwest (3 percent) use heating oil as their primary fuel. Far fewer households rely on propane as their primary heating fuel (about 4 percent); these households can expect to pay 20 percent (Northeast) to 36 percent (Midwest) more this year in propane expenditures. Electricity is the primary heating fuel for 29 percent of households in the West, 49 percent of households in the South, 11 percent in the Northeast, and 10 percent in the Midwest. While winter electricity expenditure increases are not as high as expenditure increases for natural gas and heating oil, households in the South are projected to pay about 9 percent more this winter on electricity bills due to increased consumption and prices relative to last winter. Factors Affecting the Short-Term Outlook Several factors are driving up winter prices and expenditures: first, international factors such as low spare crude oil capacity and political tensions contribute to uncertainty and low supply growth for crude oil; second, recent hurricanes and associated disruptions exacerbate already tight markets in oil, petroleum products, and natural gas; and, finally, winter weather affects consumption and, consequently, household expenditures. This winter, we are likely to have slightly colder weather, as measured by population-weighted heating degree-days, relative to last winter.

The loss of a considerable amount of crude oil and natural gas production from the Gulf of Mexico region and significant disruptions to the nearly half of the U.S. refining industry located

in that region following Hurricanes Katrina and Rita have resulted in significantly higher natural gas and petroleum product prices in U.S. markets than were anticipated in mid-summer. These developments are expected to carry very high prices for heating fuels (and other products) into the coming heating period compared to the situation last winter.

Hurricane Rita made landfall on September 24, 2005, just as the Gulf was well into recovery from Hurricane Katrina. As Hurricane Rita approached, 16 refineries along the Gulf Coast shut down as a precautionary measure and to allow employees to evacuate. Damage to some of these refineries, and the lack of electrical power supply to others, prevented their immediate return to service. Hurricane Rita resulted in more than a dozen natural gas processing plants going off-line due to flooding, lack of supplies, an inability to move stored liquids, or safety precautions, and natural gas pipelines sustained significant damage.

Hurricane recovery is underway, but it will take many months for a complete recovery. As of October 27, about 1.0 million barrels per day of refining capacity remains offline (about 6 percent of the Nation's refinery capacity) due to hurricane-related outages. According to Minerals Management Service (MMS) data, as of October 27, about 1 million barrels per day of crude production, representing about 65 percent of normal Gulf of Mexico production, is still shut-in in the Federal Gulf of Mexico area. Shut-in natural gas production has declined to 5.5 billion cubic feet (bcf) of natural gas, about 55 percent of normal Federal Gulf of Mexico natural gas production. Significant outages of natural gas and oil production remain in areas under Louisiana's state jurisdiction, and there are several natural gas processing plants in Texas, Louisiana, and Mississippi that are still inactive.

Energy Projections

EIA's projections in the October Outlook reflect continued recovery of energy infrastructure in the Gulf region through the end of the year with nearly complete recovery (a return to pre-Katrina levels) by the end of the first quarter of 2006. Overall, prices for petroleum products and natural gas are expected to remain high due to tight international supplies of crude oil and hurricane-induced supply losses. Under the baseline weather case, Henry Hub natural gas prices are expected to average around \$9.00 per thousand cubic feet (mcf) in 2005 and around \$8.70 per mcf in 2006. Retail regular gasoline prices are expected to average close to \$2.35 per gallon in 2005 and about \$2.45 in 2006. Retail diesel fuel prices are projected to remain high throughout the forecast period, averaging \$2.45 per gallon in 2005 and \$2.58 in 2006. Residential retail heating oil prices are expected to be \$2.54 per gallon this winter season, a 32-percent increase over last winter, reflecting not only high crude oil prices, but also strong demand in the international market for distillate fuels. Residential electricity prices are expected to average 9.3 cents per kilowatt-hour (kwh) in 2005 and about 9.5 cents per kwh in 2006, with significant regional differences depending on the fuel mix used to generate electricity in each region of the country. Under a colder weather scenario, prices for natural gas and all petroleum products are projected to be somewhat higher. Worldwide petroleum demand growth is projected to slow from 2004 levels, but still remain strong during 2005 and 2006, averaging 1.8 percent per year over the 2-year period, compared with 3.2 percent in 2004. Moreover, only weak production growth in countries outside of the Organization of Petroleum Exporting Countries (OPEC) is expected. With the loss of production in the Gulf of Mexico from the

hurricanes, production declines in the North Sea, and the slowdown in growth in Russian oil production, non-OPEC supply is projected to increase by an annual average of only 0.1 million barrels per day during 2005 before increasing by 0.9 million barrels per day in 2006. In addition, worldwide spare production capacity is at its lowest level in 3 decades. Total petroleum demand in the United States in 2005 is projected to average 20.5 million barrels per day, or 0.9 percent less than in 2004. Average demand for the first half of 2005 was at about the same level as during the first half of 2004 because rapidly rising prices constrained motor gasoline demand growth, weather factors depressed heating oil demand, and higher prices lowered residual fuel oil and propane demand. Hurricane-related disruptions, combined with increased prices, result in a lower projected demand for petroleum products relative to pre-hurricane predictions. Petroleum demand in 2006 is expected to average 21 million barrels per day, or 2.2 percent higher than in 2005.

Total natural gas demand is projected to fall by 1.2 percent from 2004 to 2005 due mainly to higher prices, but recover by 3.0 percent in 2006 due to an assumed return to normal weather (early 2005 was a relatively mild heating season in the Midwest) and a recovery in consumption by the industrial sector, which is projected to increase by about 6 percent over 2005 levels. Residential demand is projected to decline slightly from 2004 to 2005 mostly because of relatively weak heating-related demand during the first quarter, while industrial demand is estimated to decline by nearly 8 percent over the same period due to the much higher prices for natural gas as a fuel or feedstock. By 2006, both end-use sectors recover somewhat with residential demand estimated to increase 2.6 percent from 2005 levels and industrial demand increasing by 6 percent. The industrial rebound in 2006 is partly because of assumed reactivation of damaged industrial plants in the Gulf of Mexico region, but also reflects renewed fuel demand growth as domestic industrial plants adjust to higher prices. Power sector demand growth continues through the forecast period along with electricity demand growth. The pace is slower than the 5.7-percent rate projected for 2005 because an unusually hot summer and high cooling demand boosted 2005 growth significantly.

Domestic dry natural gas production in 2005 is expected to decline by 3.0 percent, due in large part to the major disruptions to infrastructure in the Gulf of Mexico from both Hurricanes Katrina and Rita, but to increase by 4.2 percent in 2006. Working gas in storage as of October 21 was estimated at 3.14 trillion cubic feet, a level 106 billion cubic feet (bcf) below 1 year ago but still 2.8 percent above the 5-year average. Although natural gas storage remains above the 5-year average, the double blows of Hurricanes Katrina and Rita reduced the peak storage achievable over the remainder of the injection season from what was expected previously. Expected working gas in storage at the end of the fourth quarter is expected to be about 2.5 trillion cubic feet, 200 bcf below year-ago levels and about 50 bcf above the 5-year average. Hurricane recovery profiles that differ from the scenario used for this month's forecast would significantly affect the storage forecast.

Ethanol

While higher petroleum product prices are naturally viewed as a negative development by most energy consumers, it should be noted in the context of this hearing that higher petroleum

product prices can also serve to improve the competitiveness of ethanol as a vehicle fuel.

EIA recently conducted a study of the near- and mid-term potential price and supply effects of enacting legislation mandating the use of renewable fuels. Our study considered provisions similar to those that were ultimately included in the recently enacted Energy Policy Act of 2005. The estimated impacts of such provisions were shown to be highly sensitive to the assumptions regarding the future path of world oil prices relative to the costs of ethanol. For example, the base case for that analysis projected growth in ethanol consumption from 3.4 billion gallons in 2004 to 5.7 billion gallons in 2012, because corn ethanol with the 51-cent per-gallon Federal tax credit was competitive with gasoline. Under a lower world oil price scenario, ethanol was found to be significantly less competitive absent a renewable fuels mandate, with consumption reaching only 4.5 billion gallons by 2025. Conversely, a higher world oil price scenario could stimulate even more renewable fuels consumption than is mandated by the recently enacted legislation. This issue will be bear close attention as new oil price scenarios are developed for the Annual Energy Outlook 2006, scheduled for release in late November 2005.

Impact of Energy Price Changes on Farm Costs

Using the previous information about energy use on farms and in closely-related sectors, every additional dime added to the price of gasoline and diesel oil, sustained over a year, costs U.S. agriculture almost \$400 million annually. Every dollar added to the price per thousand cubic feet of natural gas costs agriculture over \$200 million annually in direct expense, and costs the nitrogenous fertilizer industry almost \$500 million annually. Every dime increase in the price of liquefied petroleum gas (propane) costs agriculture over \$200 million per year. Every penny increase in the price per-kilowatthour of purchased electricity costs agriculture about \$500 million annually in direct expense, and costs the nitrogenous fertilizer industry about \$35 million.

This concludes my statement, Mr. Chairman. I will be happy to answer any questions you and the other Members may have.