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Understanding Ethanol Plant Economics: Will Boom Turn Bust?

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CORNHUSKER ECONOMICS

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Institute of Agriculture & Natural Resources
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http://www.agecon.unl.edu/Cornhuskereconomics.html

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Market Report	Yr Ago	4 Wks Ago	11/9/07
Livestock and Products, Weekly Average			
Nebraska Slaughter Steers, 35-65% Choice, Live Weight.	$85.30	$91.19	$92.17
Nebraska Feeder Steers, Med. & Large Frame, 550-600 lb..	107.61	121.17	117.83
Nebraska Feeder Steers, Med. & Large Frame 750-800 lb.	99.06	118.85	112.06
Choice Boxed Beef, 600-750 lb. Carcass.	144.90	145.08	139.78
Western Corn Belt Base Hog Price Carcass, Negotiated.	60.04	58.08	46.84
Feeder Pigs, National Direct 50 lbs, FOB..	56.75	45.64	36.74
Pork Carcass Cutout, 185 lb. Carcass, 51-52% Lean..	65.75	61.21	58.72
Slaughter Lambs, Ch. & Pr., Heavy, Wooled, South Dakota, Direct..	*	93.25	90.12
National Carcass Lamb Cutout, FOB.	251.11	266.64	261.55
Crops, Daily Spot Prices			
Wheat, No. 1, H.W. Imperial, bu..	4.62	7.49	7.05
Corn, No. 2, Yellow Omaha, bu.	3.15	3.20	3.66
Soybeans, No. 1, Yellow Omaha, bu.	6.34	9.05	9.79
Grain Sorghum, No. 2, Yellow Dorchester, cwt..	5.11	6.21	6.68
Oats, No. 2, Heavy Minneapolis, MN , bu.	2.64	*	*
Hay			
Alfalfa, Large Square Bales, Good to Premium, RFV 160-185 Northeast Nebraska, ton..	135.00	135.00	135.00
Alfalfa, Large Rounds, Good Platte Valley, ton..	87.50	87.50	87.50
Grass Hay, Large Rounds, Good Northeast Nebraska, ton..	87.50	*	*

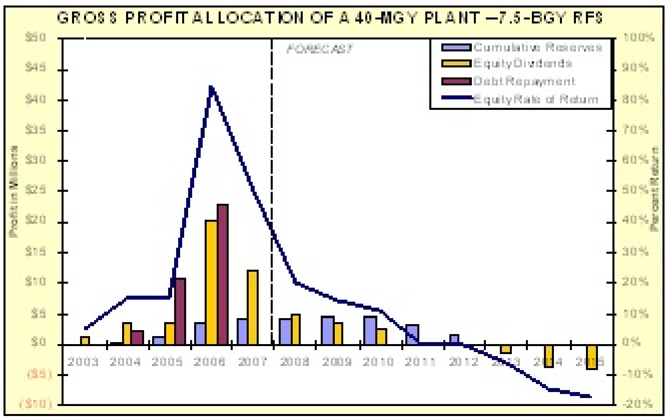
* No market.

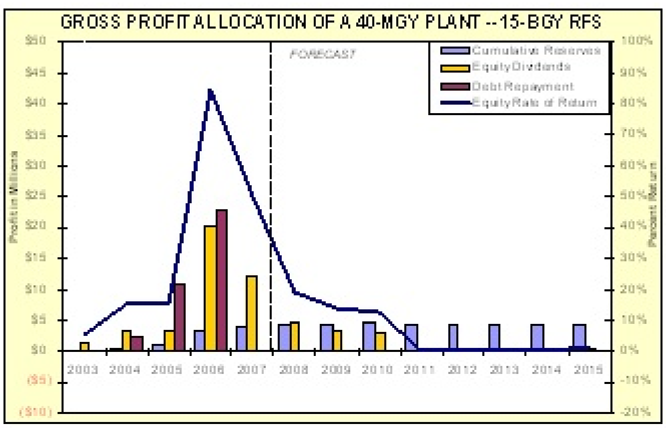
Nebraska, along with several other Midwestern states, is in the middle of an ethanol boom. In the past few years a combination of high oil prices, cheap corn and favorable government policy have driven expansion of the industry. In turn, this has generated an unprecedented amount of industrial investment in many rural communities. However, local governments and economic developers have little information regarding the long-term economic viability of these plants. This information gap limits the ability of local governments to make informed public policy decisions about ethanol plants in their community, especially in terms of local tax incentives and abatements.

To understand ethanol plant economics requires a model of how plants operate in terms of revenues and costs. For this analysis, hypothetical scenarios for two types of ethanol plants most prevalent in Nebraska were developed – a 40-million gallon per year plant built in 2002, and a 100-million gallon per year plant built in 2005. It is important to note that the model is not a forecast of what will happen, but rather a projection of what could happen if certain economic assumptions and policies remain in place. Further, these scenarios do not model how ethanol plants will respond to price changes to ensure profitability, such as reducing costs or increasing efficiency and productivity. Nonetheless, making reasonable assumptions allows us to better understand how ethanol plants are affected by production and price changes over time.

The first scenario models a 40-million gallon per year (MGY) ethanol plant that was constructed in 2002, and represents the future viability of older plants. Assuming that the current 7.5 billion gallon per year (BGY) federal renewable fuels standard remains unchanged through 2015, a 40-MGY ethanol plant only remains profitable between 2003 and 2010. The plant fails to be profitable by 2011, and generates losses by 2013. Losses are primarily due to falling ethanol prices as the 7.5-BGY standard is met, relatively high corn prices and the expiration of tax credits. Given current demand, the ethanol boom for a 40-MGY plant only lasts until 2010, after which the plant will struggle to make a profit and may go bust by 2013 if they do not reduce costs or increase efficiency and productivity.

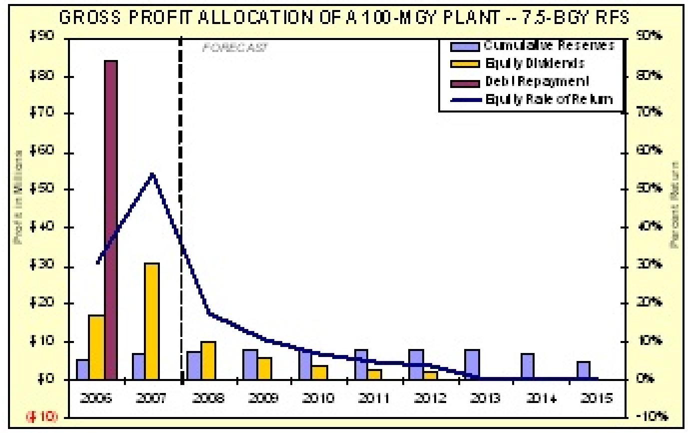
However, proposed legislation in Congress seeks to increase the renewable fuels standard to 15 billion gallons a year by 2015, which is expected to raise ethanol and corn prices from the current projected levels. The proposed 15-BGY renewable fuels standard would return a 40-MGY ethanol plant back to profitability and generate small net profits between 2013 and 2015. Further, the plant has sufficient cash reserves to cover small net losses in 2011 and 2012, and these reserves could also be used to pay investors a larger return. By contrast, the current 7.5-BGY standard results in sizable net losses during this same period. Given an expanded demand, the ethanol boom is expected to last through 2010. The plant will struggle to break even in 2011 and 2012, but from 2013 onwards the plant is expected to generate small net profits with no bust expected. In short, an expanded renewable fuel standard is necessary in order to keep an older 40-MGY ethanol plant economically viable.

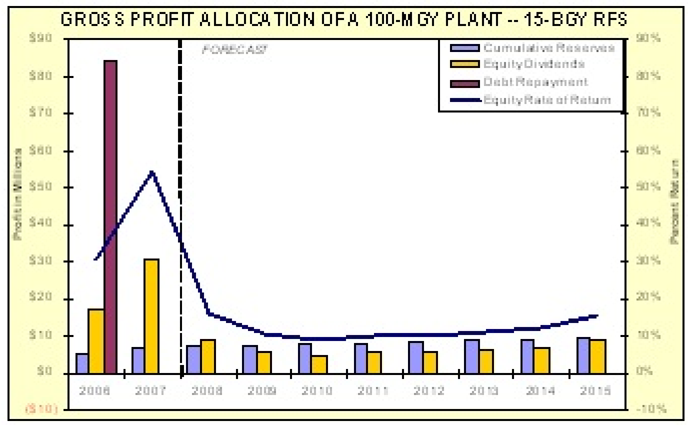




The second scenario models a 100-MGY ethanol plant that was constructed in 2005, and represents the future viability of newer plants ,which are assumed to be more productive than older 40-MGY plants. Again assuming that the current 7.5-BGY standard remains unchanged through 2015, a 100-MGY ethanol plant remains profitable between 2006 and 2013. The plant generates losses in 2014 and 2015, but these losses are easily covered by existing cash reserves. Losses are primarily due to falling ethanol prices as the 7.5-BGY standard is met and to relatively high corn prices. Given current demand the ethanol boom for a 100-MGY plant lasts until 2013, after which the plant generates losses. However, the plant will have adequate cash reserves to cover any losses in the coming years.

The proposed 15-BGY renewable fuels standard, if passed and fully implemented by 2015, would greatly enhance the profitability of a 100-MGY ethanol plant – generating sizable net profits and double digit returns to investors in all years. By contrast, the current 7.5-BGY standard results in relatively marginal or no profits during the same period. Given an expanded market demand, the ethanol boom for a 100-MGY will last through 2015. In short, ethanol plants of this size will likely gain the most from any expanded renewable fuel standard.





This analysis has presented a projection of ethanol plant viability, making a number of assumptions about how plants operate under certain economic conditions. The assumptions in this analysis can be customized to model most types of ethanol plants under a variety of economic conditions. This allows users to run "what-if" scenarios for use in local economic development planning. Those interested in having customized scenarios run for their community can contact the author or their local Extension Educator. For further information about this analysis refer to Extension Circular 849 *Understanding Ethanol Plant Economics: Will Boom Turn Bust?* available from UNL Extension at:

http://www.ianrpubs.unl.edu/sendIt/ec849.pdf .

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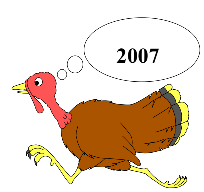

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