# 25 by ’25:
# Getting the Priorities Right

**David Morris**
**Institute for Local Self-Reliance**

**3rd National Renewable Energy Summit**
**Washington, D.C.**

**March 21, 2007**

ILSR

# 25 by ’25:
# Getting the Priorities Right

**David Morris**

**3rd National Renewable Energy Summit**
**Washington, D.C.**

**March 21, 2007**

It is an honor and a privilege to be able to address this group, especially about a topic so near and dear to my heart. Having been an advisor or consultant to federal energy agencies since the President Ford administration, I can tell this audience without hesitation that we are embarked on the third stage of renewable energy development.

The first stage occurred in the 1970s. Our challenge then was to invent new technologies, develop new expertise and nurture new businesses. In the 1990s we moved into the second stage, from nurturing small businesses to creating viable industries, a national delivery infrastructure, performance warranties, financing instruments, and widespread customer acceptance.

Today we are moving into the third stage: increasing market shares from the current 1-2 percent to 10, 20 and 50 percent as we move the new renewable energy industries from the margins of the economy to its center. To accomplish this we need new rules--new regulations, tax policies, building codes, land use ordinances, trade agreements---that channel scientific ingenuity and entrepreneurial energy and investment capital in new directions. Designing and enacting those new rules is the principal challenge facing this movement at this moment in history.

As we create these new rules, in effect, we build a new road to the future. Before we do this, we need to be clear where we are going and where we want to end up.

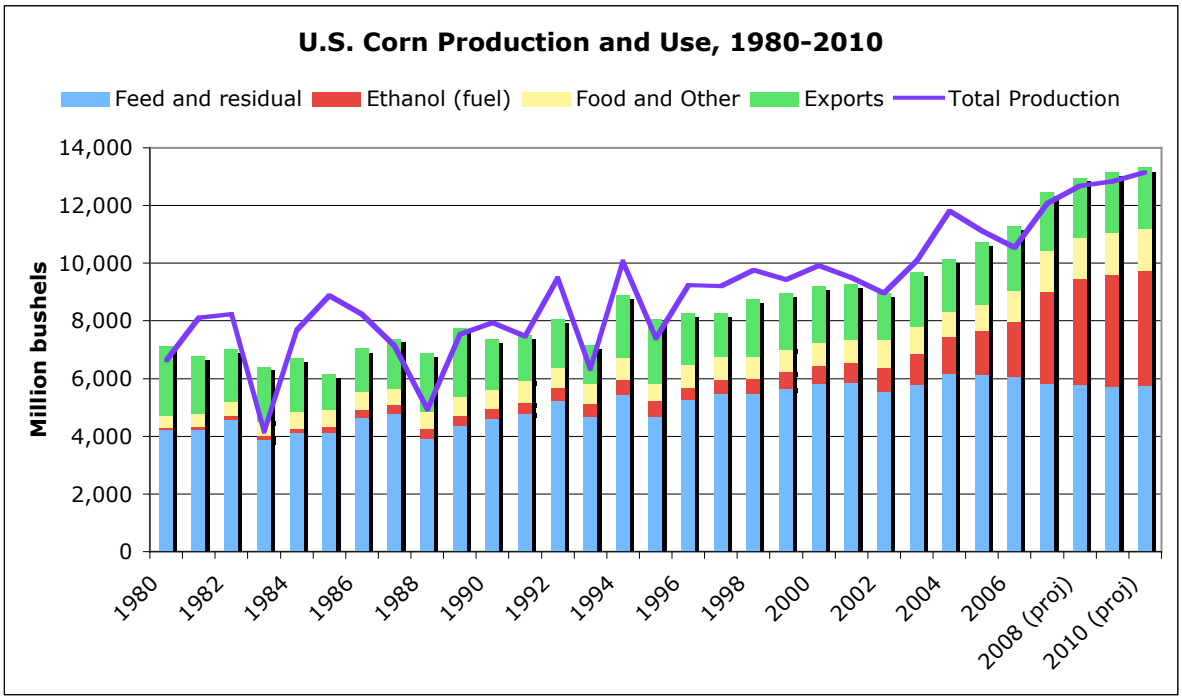
“25 by ’25”, by its very nature is a quantitative goal: generating 25 percent of the nation’s energy with renewable fuels by 2025. Thus it is not surprising that most will view the challenge primarily as how to design rules that achieve this level of output. Yet we need to take into account qualitative goals as well. We need to strive not just for more, but for better.

At least two qualitative goals merit our consideration. One is the goal of achieving our energy objectives without undermining our capacity to meet our nutritional needs. Every one agrees. Nutrition is the highest and best use of plant matter.

The second qualitative goal is to achieve our energy objectives in a way that maximizes the benefits to the communities in which these fuels are produced and harvested.

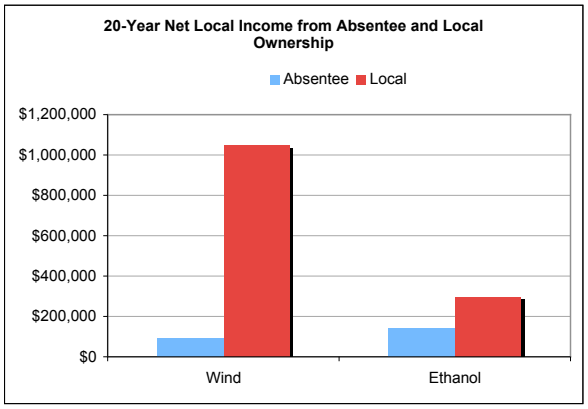
## Ownership Matters

Let me comment on the second issue first. Farmers know from over a century of bitter experience that increased demand for their crops rarely translates into more than a temporary improvement of their personal well-being or to the well-being of rural communities in general.




Just because the fuel comes from rural areas doesn't inherently mean that rural areas will significantly benefit. The impact on the rural area varies dramatically depending on a number of factors, the primary one being whether the wind turbines or the biorefineries are locally owned.[1]

Over the last 15 years, farmers who owned a share in a biorefinery earned three to five times more per bushel than farmers who simply reaped the higher price of corn due to the location of a nearby ethanol plant. Farmers who own a share in a wind turbine earn up to 10 times more than farmers who simply lease their land to wind energy developers.




25x'25 offers potentially enormous benefits for rural communities. Displacing a quarter of our transportation energy with biofuels will require the cultivation and harvesting of more plant matter than is currently used for all purposes- food, feed, construction, paper, textiles, chemicals and energy. In some respects we are creating a new agricultural system next to the existing one. To generate that amount of fuel, assuming public policy encourages modestly sized and locally owned facilities, could require some 2500 biorefineries. If locally owned, these could attract

[1] For fuller discussion see David Morris, *Energizing Rural America: Local Ownership of Renewable Energy Production is the Key*, January 2007. Available at www.newrules.org.

over 1 million new investors, a number exceeding the number of commodity farmers in the nation.

If wind energy were to supply 25 percent of the nation's electricity, more than 150,000 additional wind turbines would be needed. Again, if local ownership were a priority, these could attract investment from more than 15 million rural households, over half of all rural households.

**To maximize the benefit to rural areas, ownership and scale issues need to be addressed.**

To maximize the benefit of 25x25 to rural communities, ownership and scale issues need to be addressed. So far federal policy has almost entirely been focused on increasing production. It has been indifferent to plant size or ownership structure.

In 2002, half of all existing ethanol plants were majority farmer owned and about 80 percent of those planned has a similar ownership structure. Today almost 95 percent of new and proposed ethanol plants are absentee-owned and are two to three times the size of a biorefinery built five years ago. This dramatic change in ownership structure is uncoupling the impact of our biofuels policy on our rural areas.

The federal government might address this situation by following the example of my home state, Minnesota. In the late 1980s, Minnesota redesigned its ethanol tax incentive. At the time it mirrored the current federal tax incentive, exempting blenders from a portion of the gasoline tax. The state converted this pump credit intended to encourage consumption into a producer payment intended to encourage in-state and locally owned production. In the late 1990s a similar incentive encouraged local ownership of wind turbines.

## Food vs. Fuel

Let me now shift to the challenge of fashioning a biofuels policy that puts nutrition first. The food vs. fuel debate re-emerged with increased intensity after the rapid increase in corn prices since last August. A tiny sampling of recent media headlines illustrates the ubiquitous nature of the issue.

- Would More Biofuel Use Threaten Food Supplies? *National Public Radio*, March 15.
- Biofuel may worsen hunger, *Reuters*, March 8.
- Fuel or food, a debate set to rumble, *Financial Times*, March 6.
- Ethanol's hunger for corn upsets global food chain, *International Herald Tribune*, February 12.
- Food vs. Fuel, *Business Week*, February 5.
- Rise in Ethanol Raises Concerns About Corn as a Food, *New York Times*, January 5.

The food vs. fuel debate is not new. Indeed, Lester Brown has been sounding the alarm for more than 30 years. In 1981 he warned the *Washington Post* about the use of biofuels: "The pressure on croplands around the world is already intense, excessive in some areas", he noted. "I doubt that we ever will have excess capacity again."[2]

In 1980, Brown maintained that the then current world population of 4.3 billion was already severely taxing "the carrying capacity of the earth's basic biological systems -- fisheries, forests, croplands and grasslands." "For the first time since the beginning of the Industrial Revolution,... human demands are overriding the capacity of new technology to offset the constraints inherent in natural systems."[3]

Now let me be perfectly clear here. Just because someone makes a prediction in 1979 that has yet to come true, doesn't mean it will never come true. Lester Brown clearly underestimated the ingenuity of American and world farmers to increase productivity. The world did see excess capacity in much of the 1990s. The price of corn

[2] Ward Sinclair, Use of a Vital Food Commodity For Gasohol Raises Hopes, Questions, *Washington Post*. June 12,1981

[3] Dick Kirschten, The Earth May Be Running out of Earth As Demands for Use of the Land Increase, *National Journal*. January 19, 1980.

and other commodities did not increase much, if at all, from 1980 to 2005, even while ethanol production went from zero to 3 billion gallons a year.

However, in the last year the price of corn has doubled as ethanol production has increased from 3 to 5 billion gallons. The USDA now projects corn prices staying above $3.50 a bushel and rising to $3.75 a bushel in 2009, driven by the increased demand for ethanol.

**For the first time in almost 30 years, farmers are getting a price for their corn that is over their cost of production.**

Virtually all commentators accentuate the negative when talking about these price increases. Let me begin by accentuating the positive.

1. For the first time in almost 30 years, farmers are getting a price for their corn that is over their cost of production. Indeed, a recent USDA study found that in the decade before 2006, without government payments, corn farmers, on average, did not meet their cost of production except for the drought year of 1996, when overall production shrank considerably. Most recently, the USDA estimates that at a price of $3 per bushel, the corn farmer just marginally earns revenue over the cost of producing the crop.

2. Which brings me to a second positive result of higher grain prices: the reduction in government payments. Two generations ago the federal government enacted a farm policy that in effect used tax money to keep grain prices artificially low. Over the last ten years average government payments to corn farmers fluctuated dramatically, from 7.5 percent to 69 percent of the market price of corn. On average, the government paid the farmer about 35 cents per bushel. With corn prices above $3.50 a bushel for the foreseeable future, the marketplace has replaced the taxpayer. And that's a good thing.

3. A third positive result of high corn prices is that it may alleviate the anger from farmers abroad about what they deem a US farm policy that undermines their welfare. Farmers have complained to the World Trade Organization that Americans have been selling their crops on the world market below their cost of production.

If the level of grain exports declines, a prospect that should delight farmers around the world, domestic feed needs can easily be met even with a significant increase in ethanol production.

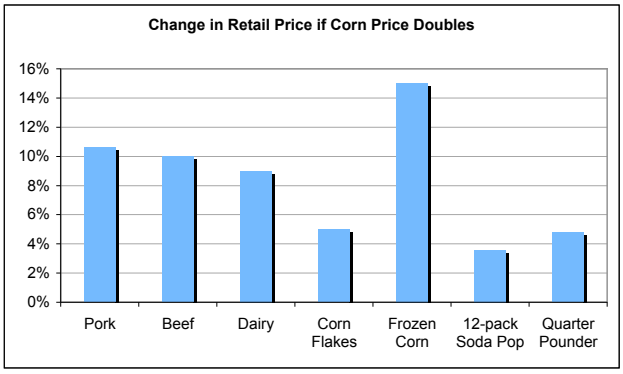
And now, to the negative side. The price of food will indeed rise. But not by very much. USDA's latest prediction calls for food prices in 2007 rising by about the same amount as in 2006. One thing is clear. The price of food depends far more on the weather than on biofuels. Droughts cause big price increases, not the increased use of ethanol.

To examine the real world impact of rising corn prices, I recently asked my friendly corner grocer to compare the price she paid for a box of corn flakes last September and today(mid March). During that period the price of corn had risen by about 60 percent. The price of corn flakes increased by 3.5 percent. That shouldn't be surprising. Corn itself represents only 5 percent of the cost of a box of corn flakes. Thus a 60 percent increase should roughly translate into a 3 percent rise in the retail price.

We shouldn't trivialize the food price issue. The retail prices of beef and chicken may rise by 10-15 percent.

Some sectors will feel pain. We cannot have a rapid run up in the use of biofuels without some dislocation, some pain.

The challenge before us is to minimize that pain.



We are in a transitional period. I firmly believe we will look back a decade from now and find that the most pain was experienced when we went from a 2 percent to a 5 percent biofuels blend in our nation's gasoline. Going from 5 percent to 25 percent will be less disruptive, in part because a national delivery and storage infrastructure will be in place, and in part because we will have shifted to a more abundant and less controversial fuel source.

Which brings me to the question of cellulosic feedstocks. The critical challenge is to make the cellulosic ethanol transition quickly, so as to relieve the strain on our grain crops while still allowing us to rapidly ramp up our ethanol capacity. To me, the most important weapon in our policy arsenal is the 250 million gallon cellulosic ethanol mandate contained in the 2005 Energy Policy Act. That mandate, effective in 2013 was intended to be a set aside for ethanol made from cellulose. Regrettably, at the last minute an alternative definition for cellulosic ethanol was added which largely compromises the integrity of that set aside. Hopefully, Congress will delete this one sentence obstacle this session.[4]

We should keep in mind that the shift to cellulosic crops does not inherently end the food vs. fuel debate. Conflict could still remain if the cellulosic crops we choose have little food value and if they are grown on land that has been used to grow food and feed.

## An Electric-Alcohol Transportation Future

This group's goal is to capture a 25 percent market share in the transportation fuel market with biofuels. That is doable. A 25 percent share translates into about 80 billion gallons, if only gasoline is taken into account, and about 110 billion gallons if diesel is added. The land area is available to achieve this goal. But we could need upwards of 100 million acres to achieve this goal, making acreage devoted to cellulosic energy crops greater than acreage devoted to either corn or soybeans today.

For most in this audience, 25x25 is just an intermediate goal. But with respect to biofuels, I think it more realistic to think of it as an endpoint. It is doubtful we can significantly exceed a 25 percent market share, unless the efficiency of vehicles doubles and the vehicle miles driven declines, or if we achieve yields of 30 tons per acre or algae harvesting becomes significant. For biofuels to become our primary transportation fuel would indeed strain the capacities even of the U.S., a nation that boasts the world's largest available per capita moderate arable land in moderate climates.

**For most in this audience, 25x'25 is an interim goal. With respect to biofuels, it is more realistic to view it as an endpoint.**

Happily, this group is not focused solely on biofuels, but on multiple renewable fuels and multiple end-uses including electricity and heat. Rural areas are rich in two transportable renewable fuels: wind and biomass. Which means you are a national group that can self-interestedly embrace an electric-alcohol transportation future. And should.

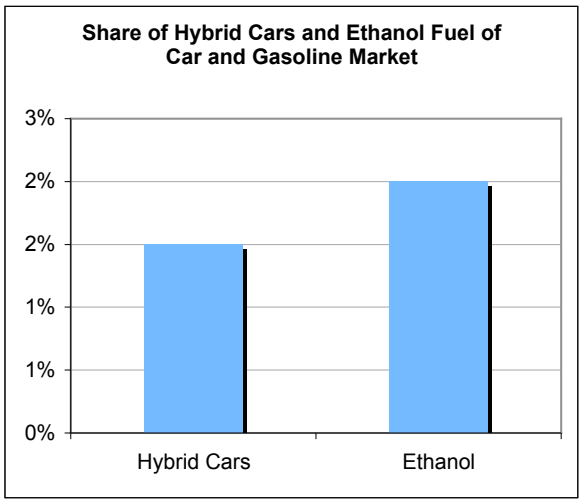
In the last three years, hybrid electric vehicles have become the fastest growing segment of the US automobile market. Intriguingly, in 2006 hybrids achieved just about the same market share of new car sales as biofuels did of gasoline sales, 1.5-2.0 percent.

Hybrids offer a new technological platform that allows a motor or engine or both to drive the car. Currently, a hybrid's batteries can only be recharged from the engine and can travel only very short distances solely on electricity. No hybrid on the market has a flexible fueled engine that allows biofuels to be its dominant engine

[4] For a fuller discussion of this issue, see David Morris, *Making Cellulosic Ethanol Happen: Good and Not So Good Public Policy*, October 2006. Available at www.newrules.org.

fuel. However, plug-in and flexible fueled plug-in hybrids are just around the corner.

The advantages of driving on electricity includes higher efficiency, equivalent to over 100 miles per gallon, a lack of tailpipe emissions and a virtual independence from oil(only a small fraction of electricity is generated from oil). The disadvantage of all-electric vehicles is the cost and weight and limited driving range of their batteries. A hybrid overcomes these problems by having a backup engine.[5]




Economics will encourage drivers to rely on electricity whenever possible since driving on electricity will cost about a penny a mile while driving on engine fuels will cost 8-10 cents a mile. The engine will be used as a backup, which could reduce engine fuel needs by 65-80 percent.

Which means that when it comes to transportation, a 25 percent market penetration of biofuels could translate into a 100 percent substitution for gasoline. The remaining automotive energy could come from electricity generated by wind turbines.

Plug-ins are just beginning to enter the market. Just 18 months ago all major car companies dismissed the technology. As of early 2007, Toyota, GM, Ford and others have introduced demonstration or pre-commercial plug-in models and are visibly advocating their potential.

The 25x25 movement should embrace an electric-alcohol transportation future. Whether the hinterlands generates the electricity for the batteries via wind or biofuels for the engine via plants should matter less than the car's fuel being homegrown.

Practically, this means the 25x25 movement should support federal policies that encourage plug-in cars with flexible fueled engines. Furthermore, it should support a performance-based renewable energy standard for transportation like the renewable energy standards that have been enacted in two dozen states for electricity. Unlike the existing renewable transportation fuel standards, the renewable electricity standards do not prescribe a specific fuel but rather allow all fuels that are renewable. California recently embraced a different kind of performance standard based on carbon emissions.

**The 25x25 movement should support a performance-based renewable energy standard for transportation similar to the renewable electricity standards enacted in over 22 states.**

In the case of renewable electricity standards, 90 percent of the standard is and will be met by wind energy even though it is not a wind mandate. Likewise, 90-100 percent of a renewable energy standard for vehicles will be met by biofuels, even if biofuels themselves are not specifically mandated.

A performance based standard allows the market flexibility. Moreover, it makes clear that 25x25 embraces multiple energy sources and that it recognizes the ultimate limitations of a biofuels-only transportation system.

[5] For fuller discussion see David Morris, *A Better Way to Get From Here to There*, December 2003. Available at www.newrules.org.

This year Congress will be designing the rules that will take us through the transition to a renewable energy future. We need to remember that reaching quantitative goals is necessary, but not sufficient. We need to achieve qualitative goals as well.

More is good. But better is better.

The Institute for Local Self-Reliance (ILSR) is a nonprofit research and educational organization that provides technical assistance and information to city and state governments, citizen organizations and industry. Since 1974, ILSR has worked to help communities strengthen their local economies by getting the most from their local resources.

**Institute for Local Self-Reliance**

1313 5th St. SE

Minneapolis, MN 55414

612-379-3815

www.newrules.org