



The EROI on supplying fuel

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Topic: [Demand/Consumption](#)

Tags: [fuel supply](#), [human carrying capacity](#), [mayan drought](#), [transportation](#) [[list all tags](#)]

There have been a couple of comments this past week that lead me from the question of my last post – “what if it doesn’t get better?” into the sequel “how is it going to get worse?” Because if the presupposition is that there will be some cataclysmic event that will carry us into the next phase of our evolving reality, I am not sure that this will happen. And yet, without this impetus, and a focus for public and political attention, it becomes more difficult to get action, or recognition, of the urgency of the problem.

I can perhaps simplify a picture of this evolution by a simple example. You are a farmer in the less populated parts of the country, and you drive over to your local gas station, after noticing that you have less than three gallons of gas in your tank. You get there to find that the station has closed, and there is a note on the door that says that the nearest station is now 50 miles away. If you can make it to the station, and if your car gets 20 miles per gallon, you will now use a third of your tank of gas, each time you fill up, just in filling up your 15-gallon tank. (Until you also start filling gas cans).

As the price of delivery of fuel to remote stations increases, the first step that the operators take is to increase prices. As Leanan has posted, in Drumbeat, this increase in price causes problems, consider, for example, [the Shetland Isles](#).

THE AVERAGE cost of a litre of unleaded petrol in the northern isles has rocketed to £1.15, while a litre of diesel costs £1.18. He wants to persuade the government to cut fuel duty in peripheral areas, following the lead of other EU states such as Portugal, Greece and France.

As the story notes, governments in Europe are recognizing that there already exists a problem in supplying fuel to the more distant parts of their economies.

Similar increases in cost can also drive up local prices in places such as [Bridgeport, CA](#).

The Shell station in Bridgeport, a tourist town of 850 residents during the summertime peak, is charging \$4.09 a gallon for regular. The outlet posted prices above the \$4 mark at least four other times this year.

Rosemary Glazier, who works in Bridgeport as Mono County's assistant finance director, is so

irritated by the prices that she refuses to fill up at the local stations.

"It makes the whole town look bad," Glazier said of the \$4-plus prices. Instead, she drives all the way to Gardnerville in Nevada, 62 miles north of Bridgeport, where gas is substantially cheaper.

Note that she is now driving a round trip of 124 miles (consuming what percentage of the gas in her tank one wonders) in order to fill (?) up. But at least, at present, she has the option to do either. The declining demand that comes from the increased price will reduce the profits of the dealers and station operators, in turn threatening their livelihoods. Consider the current case in [Maine](#) in the related fields of heating oil supply.

"The higher the price, the less the small oil companies are making," Porter said Wednesday. "It does impact you because it's getting tougher for people to order larger quantities, and it costs me money to make smaller deliveries. My travel costs have almost doubled."

Porter said that customers who ordered 150-gallon deliveries last year have been ordering 100 gallons at a time this season. That results in his having to make a delivery stop every two weeks instead of every four weeks as in previous years. As a way of cutting back on expenses, Porter has canceled all his advertising and is relying on word of mouth to market his product. He said he has been in contact with others in the oil business around the state, and their situation is just as bleak.

And so, as demand drops, and profitability disappears, so the neighborhood gas station will likely close, and one will have to drive further in order to fill one's tank, and thus the energy cost of filling a tank will get higher.

This is not a problem that will impact the majority of Americans, the gas stations along the highways and in the cities and larger communities will not be as oppressed, and will likely retain profitability, rather it is the remoter parts of the land, where the food is grown, where this might first appear as a problem. This is not the problem that relates to [refinery issues](#), but more to the simple economics of a small business. And it is difficult in the U.S., where there are not the tax burdens on fuel, to see the same sort of relief that is in existence in Europe.

One solution would be to accelerate the transition of vehicles to using higher percentages of ethanol, since that would at least provide a local source of fuel and reduce the need for the [ethanol pipeline](#). But, as we are seeing, the immediate glamour of ethanol is fading, and in this regard I disagree with [Richard Heinberg](#) on the relative conflict between food and fuel, at this stage. The data from this and earlier years suggests that when the price of the crops start to go up, then the food demand can afford to pay a higher price than the fuel demand can, and so food, albeit at a slightly higher price, wins. As a result the economic incentive to run a bio-fuels refinery disappears, and without greater incentives, some of the refineries either close, or never get built. Of course, with a mandate for a certain percentage fuel, this does, in time lift the price of the remaining ethanol until an uneasy balance develops between the two, but I suspect it will be one that leaves our poor farmer still at that gas station trying to decide whether he can get to next town before he runs out of gas.

Many societies don't have the luxury of the internal combustion engine to provide their supplies. R.B. Gill in his book on [the Great Mayan Drought](#) quotes Robert Drennan and Ross Hassig on the amount of food that a person can productively carry, over that which is consumed to provide the energy for the travel.

He estimated that a single human porter or tlameme as they were known in Nahuatl, could carry a load of about 25 kg (55 lb) of maize. He calculated, however, that the per day overburden of a porter, taking into account the nutritional needs of the porter and his family, was about 30% of the value of the load, based on a round trip for the porter. This places an absolute limit on the transportation of corn of 3.3 days or 100 km (60 miles). In other words, if a porter carried a load of corn 100 km, he would have used it all to feed himself and his family. The effective limit for a commercial distribution system, of course, would have been considerably less, say 50% of the absolute limit, or 50 km. During the Aztec dominance in the Mexican highlands, basic foodstuffs, other than gourmet items, were normally drawn from within a restricted radius of one day's journey or approximately 30 km.

He goes on to quote Johann von Thunen on German economics, with a horse

He determined that the absolute transportation limit for cereals carried by a horse and wagon was about 80 km. At that point, the horses and drivers would have eaten all the grain during the round trip.

It makes you appreciate the benefits of the coming of power., and the tremendous benefit in terms of food portability that it brings. But as that fuel availability diminishes, it also underscores the need to find alternative sources, since I am not sure that there is that much food grown within 30 km of any major U.S. city to feed its population.



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