



## Advice to Pres. Obama #1: An Actuary's Impractical Perspective

Posted by [Gail the Actuary](#) on January 12, 2009 - 10:42am

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The suggestion was made to Oil Drum staff that some of us might want to write recommendations relating to President Obama's energy policy. It seems to me that several steps come before energy policy: we need to get the worst of our financial problems behind us and we need to understand where we are, before we can make intelligent decisions going forward. Also, the issues are really broader than energy policy--they include agriculture, education, commerce, and a broad range of other areas affected by reduced energy supplies.



In this post, I offer a few ideas regarding what needs to be done. My ideas not chosen from a point of view of what is practical; instead, they are chosen based on what logically needs to be done, regardless of the practicality. Also, these ideas assume a fairly high level of understanding, and a desire to implement the best long-term solution, without consideration of the politics involved. In the real world, I doubt that these ideas have much chance of being implemented.

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### 1. Put our financial problems behind us.

This is a tough one. There is vastly more debt in the world than can ever be paid back. There are also vastly more derivatives than it is possible to unwind nicely. A fractional reserve banking system requires continued growth, in order to pay back all of the debt with interest, so that it does not fall apart in the way a Ponzi scheme does.

The US economy is now in a position where it can no longer grow rapidly enough to keep the current system going because of energy resource limitations.\* The only logical thing to do is to start getting rid of the debt and start winding down the financial institutions that need debt-based products to survive. It may make sense to have a partial debt jubilee. If we keep trying to add more debt, the system will eventually collapse, and we will need to start over with a new system that is much less debt based.

Borrowing more money to stimulate the economy (or to salvage financial institutions) is not the way to go. It is just piling more debt on top of what we already have. We need to plan as if there will be less and less debt in the future, not more and more.

## **2. Set a floor for energy prices.**

Long term, the level of energy prices is going to determine the level of investment. In years past, we have offered farmers price supports for agricultural products. Energy products are just as essential. We need to encourage the production of energy products, even if the "normal" market price would be too low. Allowing energy companies to go bankrupt, and their employees to leave the industry, is counterproductive.

Because of these issues, the US government should somehow see that energy companies receive a minimum price for oil and gas that is purchased for use inside the US. (This may require some creativity, but probably not more than has used with respect to the financial sector.) A reasonable minimum might be \$75 a barrel for oil (adjusted for quality), and \$8 per 1000 cubic feet for natural gas. These minimums may need to be adjusted upward over time. US suppliers should be given first preference at these prices, but if more is needed, non-US suppliers should be offered the full price. Imported finished products should have similarly high prices, to discourage substitution for US made energy products.

## **3. Start adopting practices that flatten wages between management and rank-and-file workers.**

Workers who don't earn enough money to afford what a manufacturer is producing aren't able to buy the products produced. Over the long term, we need to work toward a society in which workers in a given location are producing goods (including food) for that same geographical area, and earning enough money so that they can buy the goods that are produced in the area. Flattening wages (lowering the [Gini Coefficient](#)) is a way of making this happen.

One approach may be to encourage more employee-owned companies. Many companies are likely to go bankrupt this next year. Employee groups might be encouraged to buy the companies they work for. With employee ownership, there is likely to be more interest in equitable wages for workers.

## **4. Make an honest assessment of what energy availability is likely to be in 10, 20, 30, 50, and 100 years, at selected price levels.**

If we are going to plan for the future (number of new trains, number of new nuclear power plants, number of new wind turbines, etc.), we need to have an honest assessment of how much oil, gas, coal, and uranium is likely to be available in the future, assuming different prices levels (current, current x 2, current x 3). For example, deep water offshore resources and Canadian oil sands probably require a price of at least \$80 a barrel to encourage new production. Estimates of energy availability should distinguish between what the US is likely to be able to produce and what is likely to be available on the export market.

If current low oil and gas prices persist, new investment is likely to drop off almost immediately, and the amount of oil and gas available in 10 years will drop precipitously. At a higher price, the amount of natural gas might stay higher for a while longer, but it will still drop off rather quickly, as available gas at a given cost level is depleted. At a very high price level, more oil and gas may be available, but we need to understand what this will mean for the rest of the economy.

**5. Put together a number of alternative infrastructure spending plans and evaluate them in light of the amount of energy resources that are likely to be available at various points in time, based on (4).**

If we want to realistically plan for the future, analysts need to create several alternative scenarios modeling what the future might look like, and work through the details to determine which of these scenarios is really feasible. These scenarios should include year-by-year estimates of a large number of variables, such as number of continuing coal-fired power plants, number of new coal-fired power plants with carbon sequestration, number of wind turbines, number of miles of roads maintained, number of new and continuing nuclear reactors, number of miles of water and sewer systems maintained, number of miles of new electrical grid, number of miles of oil and gas pipeline built, number of new trains and buses, number of new electric cars, number of acres farmed using diesel tractors, number of new homes built, number of factories built, number of schools built, extent of Internet availability, population growth, etc.).

One consideration for each scenario is how much capital will be required to produce the scenario and where it likely will come from, considering that little debt is likely to be available in the future. Another consideration for each scenario is the annual energy requirement, compared to expected energy resources based on the outcome of Item (4). Analysts will also want to consider whether adequate water availability exists for each scenario, and whether the scenario is likely to have other adverse impacts (deforestation; lower soil quality; increased pollution). Analysts may also wish to compare total CO<sub>2</sub> equivalent emissions of the various scenarios.

If products necessary for a particular scenario are not produced in the US from US-made products, a long-term review of the continued feasibility of necessary imports should be performed. Will the US have sufficient exports in each year to balance out necessary imports? Are the countries from which imports are expected sufficiently stable, and will they have sufficient resources themselves, to produce the necessary goods?

A close review of these scenarios is likely to show that many are not feasible, or are not feasible for more than 10 or 20 years. If this is the case, less ambitious scenarios should be evaluated as well, perhaps including the use of draft animals and bicycles and resettling a significant share of the population to less urban areas.

**6. Make an honest assessment of how the minimum needs for the population might be met, without large fossil fuel inputs.**

We have gotten so accustomed to our current way of life that we have become oblivious to the big gap between what we have now and what would be needed to go back to a more sustainable lifestyle. To provide a base for future planning, we need to take an inventory of our basic needs and how they can be met, given the declining resources indicated in Item (4) above.

We need to ask questions such as: How might we go about producing enough food and water for our population, with minimal fossil fuel inputs? If resettlement is necessary, what kind of new housing can we truly afford in various parts of the country? How can we maintain the fertility of our soil and adequate forest cover? What adjustments are needed if we are no longer able to

irrigate? What steps need to be taken to assure adequate clothing for each person, minimal heating for each residence, and a heat source for cooking?

It may be a useful exercise to put these requirements through the analysis suggested in Item (5) as an additional scenario. If the analysis in Item (5) indicates a continued shortfall of resources even with these reduced requirements, family planning may necessary to limit population. Once we have a clear focus on our basic requirements, it will be easier to start teaching people the necessary skills to provide an adequate lifestyle for all.

**7. If there is any significant chance that a significant downgrade in lifestyles is needed within 20 years, start teaching the skills *now* to deal with those downgrades.**

Unfortunately, it is not possible to learn new skills overnight. If there is a chance that our current oil-powered factory farm system cannot be maintained for 20 years, we need to start now teaching people the skills to produce food locally, with simplified tools and organic farming methods. We also need to start developing appropriate open pollinated seed for each part of the country and developing optimal farming techniques that do not require large fossil fuel inputs.

If there is a chance that private passenger automobiles will become unavailable to most people, we need to be thinking about ways to minimize the need for transportation and develop alternative methods. If there is a chance that we will frequently need to do without electric power within the next 20 years, we need to start teaching children and adults about this, and start developing workarounds.

**8. Start thinking durable, flexible, and recyclable in everything we build.**

Instead of aiming for efficiency and low cost, we need to be designing 100-year products. If we build bicycles, we need to figure out how to keep them operating for more than five years without rusting and falling apart. We need to figure out how to make roads (or railroad tracks) enduring. Clothing should be made with the assumption that it will be transferred from wearer to wearer until it is fully worn out. We need to be developing local sources for our simple, flexible, and durable products, so that when these products do wear out, they can be replaced.

It is likely that we will lose energy availability in the future. We need to be planning with this contingency in mind. For example, is there a way that the railroad tracks we build now can later be used by a lightweight human powered vehicle, or by a horse drawn cart? Can factories be built that will use local wood as an energy input, if that is all that is available? How can we optimally recycle all of things we now have -- clothing, automobiles, worn out tires, even asphalt roads?

**\*Note on US Energy Problems**

If seems to me that the US has likely passed peak energy consumption, and because of this, economic growth is likely to slow in the future, and may become negative. On a per capita energy consumption basis, the US appears to have passed peak energy consumption in 2000:

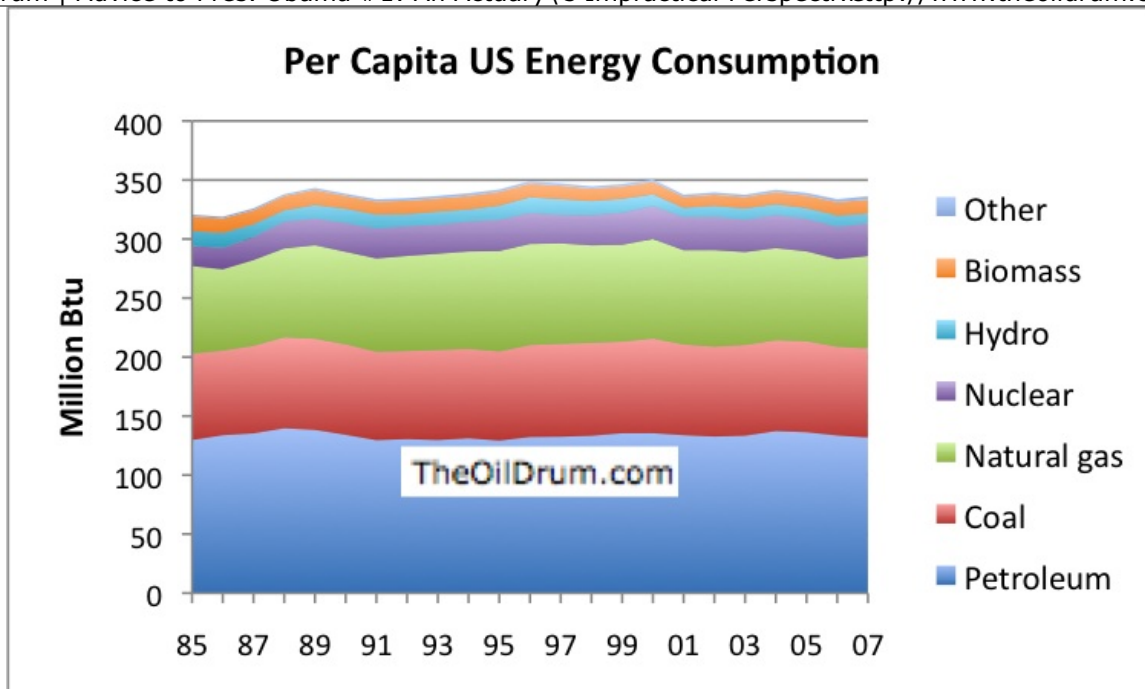


Figure 1. US Energy Consumption by Source, Based on EIA Data

While the drop in per capita energy consumption since 2000 is not large, it is likely closely related to lack of growth since that date, other than growth related to the increasing amount of debt outstanding. We are now finding that maintaining this large amount of debt is unsustainable, and this is a major reason for the debt crisis that we are in the midst of.

One reason why US energy consumption is dropping is that the US is producing less and less of its own energy fuels. This is the same graph, showing how the per-capita consumption shown in Figure 1 breaks out between US produced fuels and imports.

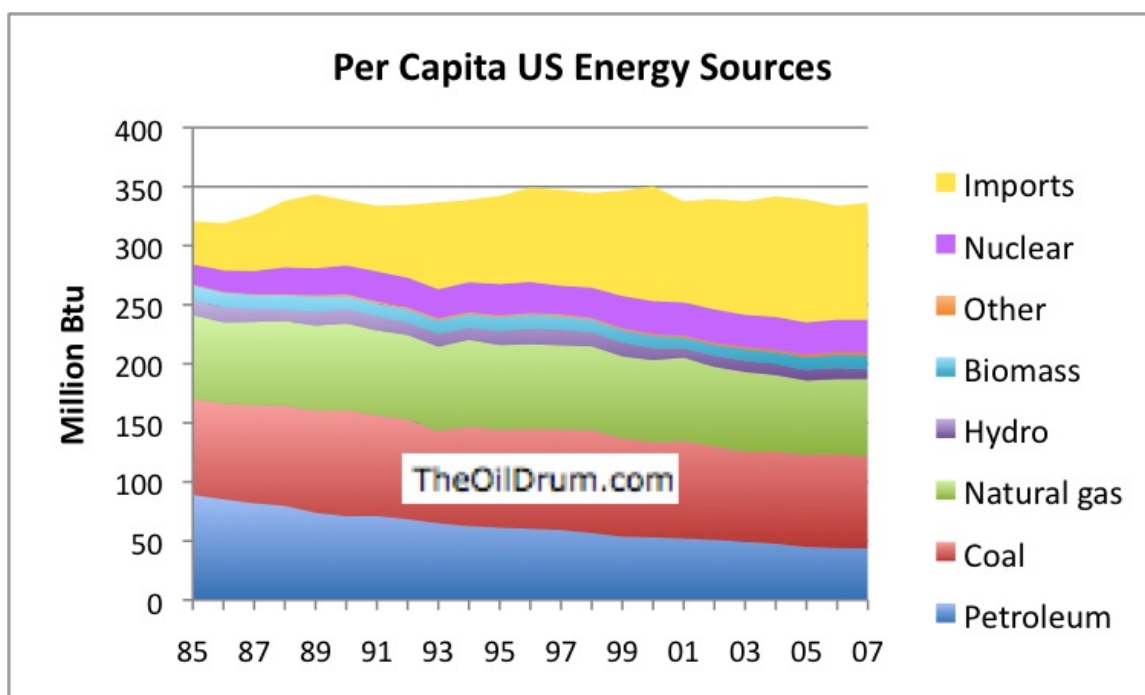


Figure 2. US Energy Consumption, Showing US Produced Fuels and Imports, Based on EIA Data. Nuclear energy, while not included in the imports, could also be considered an import, because its

If we were able to use the imported fuels to produce a large amount of high value exports, and use the sale of these exports to balance the imported fuels, there would be no problem. This is not the case, however. As the amount of imports grows, so does our balance of payments deficit. The recent spike in prices showed how unsustainable our current path is. The lower fuel prices we are seeing now are not likely to help the problem. Instead, they are likely to reduce fuels available for US consumption for two reasons:

(1) Exporters will likely delay new production in higher cost areas, and may even cut back on other production.

(2) US producers will likely delay high cost projects, and may close wells, such as oil stripper wells, that are no longer profitable.

With world oil production now reaching its limit, I can see no way out of our current predicament. We are now in the midst of a major debt unwind, related to the inability of the economy to keep growing without adequate fuel resources. There is no reasonable possibility that the economy can grow its way out of this predicament. Instead, the economy will have to shrink as the debt unwinds and as imports and exports reach a better balance.

**Link:** [Other "Advice to Pres. Obama" Energy Policy Posts in this Series](#)



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