The Red, Blue & Green

Part Four: Magic Elixirs and Life Boats

This month we will continue our discussion of Glasgow's energy future and the possible paths we might take toward properly planning for that future. In Part One we talked about why we decided to start shopping for new energy supply. In Part Two we talked about the forces acting upon Glasgow's energy future. Then we talked about how our corner of the world may look in 2020, and started discussing four different paths we might take to make the best out of a rather dismal energy outlook. In Part Three we addressed two of those potential paths and this month we are going to examine the other two.

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Waiting for a Magic Elixir. *An optimist may see a light where there is none, but why must the pessimist always run to blow it out?* – Michel de Saint-Pierre. Perhaps the most popular path for most of us to choose would be this one. It is, more-or-less, the choice of not choosing. It is the path of eternal optimism and belief that some new "free energy" invention or discovery is just around the bend. All of us at the EPB would be happy to choose this path such that we could quit worrying about our energy future. This is an option that you as individuals have, but it is our job to deal in reality. And the reality of this path requires more blind faith than we think advisable.

Glasgow has a number of resources of its own that might be used in "Building Lifeboats."

Many friends and customers tell me about reading, hearing, or knowing about certain energy solutions that will surely mitigate the need for vast new supplies of electric power in the near future. These include: hydroelectric power from Barren River Dam, vast reserves of oil in Canadian tar sands, solar power, and, the much ballyhooed hydrogen fuel cells of tomorrow. Please allow me to draw a deep breath and blow out all of those candles.

In the early 80's the EPB went to a great deal of trouble and expense to study the idea of adding hydroelectric generation to Barren River Dam. It was a great idea. Energy is being wasted every day at this facility just a few miles outside of Glasgow and it made a lot of sense to tap that resource. However, as we discussed in Part Three, as a society we are not very good at cooperating with each other for our common-good. This was proven when the owner of the dam, the Army Corps of Engineers, in concert with the EPA, placed so many restrictions on how we could use the dam and how much dissolved oxygen we would need to add to Barren River downstream of the dam, that the project was rendered economically infeasible. But, even if that were not the case, the energy potential of the water released from the lake is practically irrelevant to our energy needs. Remember, we have *doubled* our use of electric power in Glasgow since this project was being considered in the 80's. Today Glasgow consumes more than 365 million KWH annually. The generation potential of Barren River Dam is less than 25 million KWH annually. It is hardly worth the effort.

Since the recent shortages and price increases for petroleum have resurfaced, several reports have appeared on television about the massive reserves of oil, trapped in tar sands, available to us in our friendly neighbor to the north, Canada. In fact, the Canadian province of Alberta now reports that they have so much "proven oil reserves" in those tar sands that they are now second only to Saudi Arabia in accessible reserves of petroleum. Many feel that this proves we have nothing to worry about because we have now found vast new supplies for our future. But remember how we discussed how each energy source is completely dependant on other energy sources? These "reserves" in Alberta are a great example of that. In order to un-trap this petroleum from the tar sands, they must bake the tar sand with

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steam. Want to know where the steam comes from? They make the steam by using vast amounts of fresh water (already in short supply) which is heated by burning equally vast amounts of natural gas (and we were counting on Alberta for our natural gas supply)! So, to get at these petroleum reserves, all we need to do is have enough natural gas to coax it out. Please see our discussion in Part Two about the projections that our natural gas supply is already being depleted. Swapping natural gas and fresh water for oil is not a viable solution.

The story of solar power and of hydrogen fuel cells is much the same. The energy required to manufacture modern photovoltaic panels is greater that the likely output of the panel during its life. The energy required to produce the hydrogen for the much-discussed fuel cells is also greater than the likely output of the cell. Swapping one form of energy for another will get us nowhere. I hate to say it, but the path of "Waiting for a Magic Elixir" seems to offer little to us.

Building Lifeboats. What might we do locally to help with our energy future? This seems like something we should explore, especially if we lack faith in the "Last One Standing," "Power Down," or "Waiting for the Magic Elixir," options. Now it is doubtful that we could efficiently provide for all of our future energy needs, but perhaps we have the resources to help us "hedge our bets" on counting solely on others to provide for our needs. While we expressed doubt in the "Power Down" path of cooperation and conservation and our ability to shape Glasgow's energy takings into a flat base-load shape, it might be possible to produce our own peak demand power to help accomplish that shape.

Glasgow has a number of resources of its own that might be used in "Building Lifeboats." We operate a sophisticated regional landfill, and landfills have a by-product, methane gas. Methane can be used to generate electric power. Right next to the landfill is our waste water treatment plant. It produces methane too. Glasgow has a number of timber and lumber mill operations nearby. Those produce by-product sawdust and other organic waste that can be converted to biodiesel fuel. We are surrounded by agriculture operations that can produce a variety of crops which could also be converted to biodiesel fuel. In turn, this fuel could be used to generate electric power and it could be used to satisfy the fuel needs of many of our vehicles. We also have another "life boat" here . . . our broadband network. Since 1988 we have been building and refining this network, always with the goal of being able to use it for remote meter reading and the ability to control our electric load. So, it seems that we do have some of the resources necessary for building lifeboats, but there is also a downside to this path . . . it is expensive.

Building the methane, biodiesel, and biomass recovery systems, and the necessary electric generation systems to use them, would cost many, many millions of dollars. So even though this path might sound like a great one to take initially, we must consider the risk of assuming all of this new debt just the same as we consider the risks involved in the other three paths (predominantly, running headlong into fuel depletion without a plan for Glasgow's survival). Is certain massive debt more attractive than an uncertain availability of electric power? It is not an easy question to answer.

So there you have a brief description of all four of the identifiable paths toward our energy future. First we need to decide what our future is likely to look like. Then we need to decide what solution we feel would be the best way to prepare for meeting that future. Not easy, eh?

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