

## Re: Mook's quote about nuclear being a "low grade heat". Is it true?

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On 4 Jul 2004 20:43:37 -0700, [william.mook@mokindustries.com](mailto:william.mook@mokindustries.com) (william mook) writes:

- > *I thought them reasonable given the political environment in which*
- > *they operate. Those references if examined closely can seem to be*
- > *biased. They discard those plants that in the view of the authors are*
- > *unreasonably delayed and turned off for insufficiently good reasons.*
- > *So, they are biased toward rather rosy and optimistic figures – not*
- > *real world figures with real people and real politicians around.*

[FYI, I've found this discussion very interesting, but I wish you didn't talk through each other as much as you are.]

I think the problem here is that you are counting externalities as costs. If a plant has a social cost of \$2B, that being the amount of labor, material, etc needed to construct it, tear it down, and manage the waste, but NIMBYism inflates the expense of the plant to \$5B, the social cost of the plant remains \$2B, even though the owner has to pay the extra externality of \$3B to overcome NIMBY. That externality causes the expense of the plant to increase, not the social cost of the plant.

That externality exists as long as the social environment remains the same. But I think you're wrong to charge that externality to nuclear power as a technology, but to the social environment.

The owner has to pay that expense----its a real expense----for as long as the NIMBYism exists. But, change the social environment----say, a realization that its either nuclear power or blackouts, and with luck that expense will decline and the total cost of a nuclear plant will be closer to the social cost of it.

- > *Not striving for hyperbole just trying to make a simple point, namely,*
- > *that we cannot rely on nuclear power to displace oil in our lives. It*
- > *cannot be used to power industrial processes that will generate*
- > *synthetic fuels at anything like the cost of fossil fuels today.*
- > *Which is my point.*

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You're arguing that nuclear power, with the externality of NIMBYism, cannot replace fossil fuels. What about nuclear power without that externality. The difference between these two is a social choice, not an inherent social cost of nuclear power. We have deliberately chosen to inflate the expense of nuclear power beyond its actual costs.

Society can change its mind quickly, and the moment it happens all of that reasoning goes out the window. I think some of your claims should be moderated with: "In the current social environment about nuclear power ...". And I think you should differentiate between the [social] costs and actual expenses.

> *You seem to be under the misapprehension I have some political agenda.*  
> *I do not. I'm giving great credit to the nuclear industry when I say*  
> *their all in total cost is \$5.00 per watt. If I were striving for*  
> *hyperbole I'd say the number were more like infinity per watt. But I*  
> *didn't do that did I? No! Because I'm trying to make a simple point,*  
> *namely we cannot rely on nuclear power as its currently configured to*  
> *save us from the end of oil if it should come.*

> *I'll accept \$5 per watt as an achievable goal for new construction*  
> *properly managed. A poorly managed program could cost many times*  
> *this.*

I believe daestrom has replied to your claims in the past with actual numbers, with the ball in your court. You are claiming this number with no evidence that I can see. Do you mean?

"In the current social environment with rampant NIMBYism nuclear power may not be buildable for an expense less than \$5/W."

I could accept that claim, though it would have little to do with the actual social cost of a nuclear power plant. The difference between them being, as before, a voluntary societal choice.

> > >  
> > > *Any chemical conversion process has capital costs which add roughly*  
> > > *\$0.01 per kWh to the mix.*  
> > >  
> > > *The process itself is about 50% energy efficient (70% to produce*  
> > > *hydrogen, 70% to take hydrogen + carbon to hydrocarbon), so in the end*  
> > > *we have the following numbers;*  
> > >  
> > > *\$0.07/kWh capital and nuclear fuel costs (using \$2.50 per watt*  
> > > *figure) and 68 kWh per gallon (with efficiency losses) – obtains a*  
> > > *price of gas equal to \$4.76 per gallon – which translates to a massive*  
> > > *shrinkage of our economy.*  
> > >

> *Yes, but I was which was the whole point. People who say – gee we*  
> *won't have to worry about energy when oil runs out because we have*

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- > *nuclear power – are wrong. We do have to worry because the cost of*
- > *energy the real costs we really pay, affect our standard of living in*
- > *an industrial society. Nuclear as currently configured won't cut it –*
- > *not at \$5 per watt, not at \$2 per watt. It won't cut it. Which is my*
- > *point.*

Going by daestrom's numbers of \$.05/kW\*h and this above, there's a serious problem. \$3/gallon gasoline is going to be terribly bad for our economy. Taxes might inflate the retail expense above that in some parts of the world, in which case the government would siphoning value off of cheap (costing) gasoline and putting it into other projects. If the actual cost was \$3/gallon, there's be nothing for the government to siphon off.

We'd need energy at or under penny/kW\*h to afford gasoline without those dislocations. Could nuclear go that cheap?

Daestrom, any suggestions?

- > *IN EITHER CASE – its far lower than nuclear is ever likely to achieve*
- > *– although nuclear plants are about 4 times more capital efficient*
- > *because they run when its dark. That means they must sustain \$2.40*
- > *per watt (if untaxed) or \$1.20 per watt – if we want roads to travel*
- > *over and police to secure them. Which is lower than \$5 per watt and*
- > *even lower than \$2.50 per watt you're pushing.*

Scott