

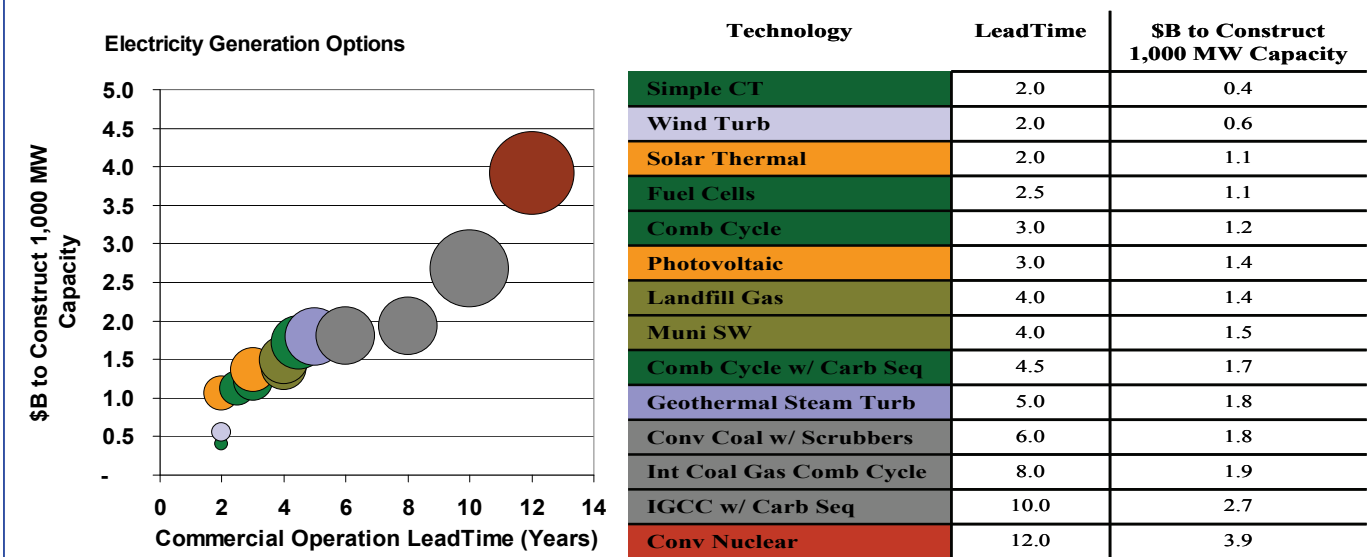
Market Research

Attacking The Foreign 'Oil Addiction' - Part II

Last month we concluded the US must actively, urgently, and passionately engage a new era of transportation fuel technology in order to eliminate the foreign 'oil addiction'. (A copy of last month's research can be found on the website at www.capstonetradingadvisors.com, under Energy Analysis.) This month we take a look at the formidable infrastructure challenge facing the US in a transition from petroleum to electricity or natural gas fueled vehicles.

In 2008, the US private sector consumed 28.5 quadrillion Btu's as a transportation fuel. Assuming we sourced 50% of this fuel from natural gas propelled vehicles, domestic natural gas production would need to increase by 60% from 2008 levels. Not likely. And remember, natural gas (like crude oil) is a finite resource. Assuming we utilized electricity propelled vehicles to replace 50% of transportation fuels, domestic electricity production would have to increase by 20% from 2008 levels. (It is also worth noting that 21% of the current US electricity generation fleet is natural gas fired.) Capstone believes natural gas would be wasted as a transportation fuel as it is a finite resource, and serves better value as a heating fuel and a major source of nitrogen, a key element in agricultural fertilizers. Therefore, we focus on an electricity solution to the transportation fuel dependency.

The graph and table below represent the construction cost and lead time required to place 1,000 MW of electricity generation capacity into commercial operation. (Note the data represented below excludes the likely capacity factor, i.e., the ability of that technology to produce electricity all hours of every day.) The realistic timeline for significant coal and nuclear capacity additions is 8-15 years, hardly a solution for today's addiction. Additionally, coal and nuclear projects face hurdles associated with project financing, siting, permitting, emissions, waste disposal, water usage and skilled labor requirements. As stated previously, natural gas is better conserved for higher value human needs. Biomass electricity generation should be a priority, but its scale does not solve the volumetric magnitude of the 'oil addiction'. Wind and solar electricity generation have several advantages: 1) domestically produced, 2) no fuel costs or price volatility, 3) no emissions, 4) no waste disposal issue, 5) spurs employment, and 6) capacity additions attainable in 2-3 years. Conversely, quality wind and solar resources are regional specific, requiring significant investment in electrical transmission systems nationwide.



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