True Sustainability : Electrification of the Ground Transportation Fleet

In 1985, Chrysler Corporation Chairman Lee Iacocca asked his staff the following question:

"What is the cleanest type of vehicle from an emissions point of view?"

The quick answer he received was "electric," or what was, and continues to be lauded as the *"zero emission vehicle,"* the ZEV.

Understanding that the response was far too quick, Mr. Iacocca decided to get an answer that resulted from detailed analysis and hard facts; not shoot-from-the-hip sycophantism. The assignment was forwarded to my boss, Director of Product Planning Mr. James Hossack. Aware of my interest and knowledge in these areas, Mr. Hossack directed that I provide a detailed and documented answer to Mr. Iacocca's question.

In 1985 I was an analyst in the Advanced Components Planning Group; among our many duties we also handled the sourcing decisions of fuel and emissions components, for Chrysler cars and Dodge trucks.

From the detailed analysis, contained in my paper which was reviewed by the Chairman and the Board of Directors, the answer previously given to Mr. Iacocca, "electric," was *not correct !*

In 1979 I completed a graduate course in 'Cost Accounting' by esteemed Cornell University Professor Ronald Hilton. One section involved "system wide" costing. The accounting profession declared this practice Activity-Based Cost Accounting, or ABC.

The true system-wide cost is not restricted to the individual component, or an instant in time. True cost is derived from all activities, and over all time: from cradle to grave to rebirth (e.g. from the mining of raw materials to environmental protection, and later cost recovery/benefits through recycling):

- The key to my analysis was the energy generation mix to, and then provided by, "the grid."

Unfortunately, as of this essay, this aspect has not changed sufficiently to warrant major revisions to my 1985 paper. Then-as-now, the energy generation mix provided by the grid, specifically that portion of the infrastructure that recharges electric vehicle batteries, was energized by far too many pollution-emitting sources, especially coal . . . in 1985, there was no such thing as "clean coal."

- When system-wide polluting sources were included under ABC practice, the winner was the natural gas *fueled* vehicle. The electric vehicle, recharged from the grid, was second.

That is, today's trendy rhetoric which declares that the "electric" is a zero emission vehicle remains false. In the context of ABC, as a result of the electrical energy generation mix in the USA, that rhetoric has no more credibility than the sycophantism spewed at Mr. Iacocca in 1985. At the system-wide level . . . and in reality . . . **the ZEV remains a well-promoted rhetorical myth.**

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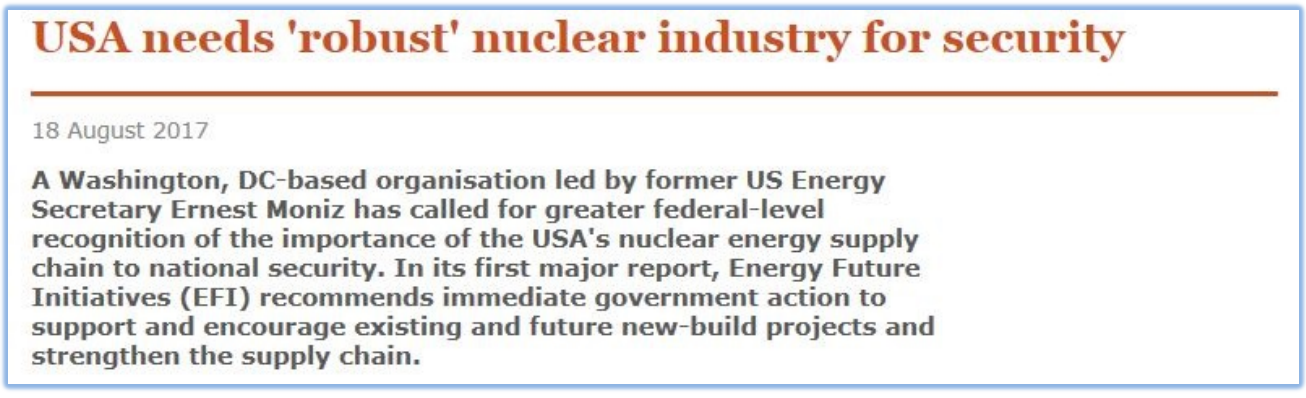
But . . . an echo from all the way back in 1985 . . . my paper also declared that without the installation of a more efficient electrical energy distribution grid, ***and*** **without additional non-polluting nuclear power plants to energize that grid,** the natural gas fueled vehicle would continue to reign as "*the cleanest type of vehicle from an emissions point of view."*

That is, the following <u>recent</u> headlines were no surprise to me:



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We turn to today's ongoing trendy rhetoric . . . but from an unlikely source.

The recent report by the Energy Futures Initiative group, *The U.S. Nuclear Energy Enterprise: A Key National Security Enabler,* mentions the term 'carbon dioxide' **eleven times**. EFI promotes the notion that CO2 is the cause of 'climate change' and then mentions that term **ten times.**

The point is . . . use of the CO2/climate change rhetoric has been minimal at-best in the nuclear power industry's efforts to promote itself. It is no surprise (to the non-vested) that Big Oil lauds and promotes the stampede about so-called "clean energy;" a notion that is equally strident and steeped in rhetoric about "sustainability."

But let us qualify the EFI report further, not to single it out, but to emphasize that it is representative. **Specifically . . . the term 'electric vehicle' is never mentioned!**

The simple and obvious fact that *'electrification of the ground transportation fleet'* would reduce *all* related emissions by orders of magnitude, and would further the viability of nuclear power as the choice for generating electrical energy through the enormous incremental electricity demands of the EV recharging infrastructure is not discussed by the EFI report or reports of similar incompetence.

Alternatively, despite the fact that the full electric vehicle has been discussed for decades, rarely is the following question confronted with any degree of foresight or competence:

- **Where are we going to acquire the implied energy equivalent, and how are we going to distribute that enormous incremental electrical energy, demanded by the recharging stations, which will replace the traditional "gas station" ?**

Again, the EFI report is just one example of today's trendy rhetoric versus a complete gloss-over regarding the '*electrification of the ground transportation fleet.'*

Instead of exploiting / regurgitating claims about CO2 and climate change, the nuclear power industry should focus its efforts on the enormous environmental, **sustainability**, and safety benefits of an electric ground transportation fleet . . . not hybrids, but the full EV.

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For the record, 'Electrification of the ground transportation fleet' is not some esoteric conspiracy that is lurking behind the scenes . . . hidden from public view, or hidden from the nuclear power industry:

France to ban sales of petrol and diesel cars by 2040

Move by Emmanuel Macron's government comes a day after Volvo said it would only make fully electric or hybrid cars from 2019

Germany pushes to ban petrol-fuelled cars within next 20 years

The resolution urges the European Commission to implement the ban across the European Union

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India to make every single car electric by 2030 in bid to tackle pollution that kills millions

Technology will be introduced 'in a very big way', says minister

Bloomberg Businessweek Markets Tech Pursuits Politics Opinion Businessweek

■ June 1, 2017, 12:01 AM EDT

The Country Adopting Electric Vehicles Faster Than Anywhere Else

● Fueled by cheap power and government subsidies, Norway is racing to ditch the "fossil car."

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Conclusion

We re-connect to 1985, Chairman Iacocca's question, and my paper . . . more than four decades later, **the media is finally catching up to the issue we addressed previously**:

Please note the Bloomberg byline . . . Mr. Michael Bloomberg and his staff are late by forty-four years.

But let us not single out Bloomberg regarding thee central points of the Conclusion discussed next:

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Thee central point of this Conclusion is derived from two simple questions . . . simple questions that today's trendy but utterly incompetent rhetoric, **robotically answers *without inquiry!*** The following typical headline is just one of tens-of-thousands; once again we look to the byline:

JACK STEWART TRANSPORTATION 03.15.18 07:00 AM

EVEN MORE EVIDENCE THAT ELECTRIC CARS COULD SAVE THE PLANET

The latest numbers say that as the American grid shifts toward renewables, the positive impact of electric cars is increasing. GETTY IMAGES

Note the preposterous conflating of two utterly disconnected concepts: the authors of this type of editorial rubbish stampede the general public with the notion that electric vehicles are dependent on deployment of "renewables" as the future of the "American grid," in order for EVs to have a "positive impact." Shift??

With this editorial rubbish in mind, let us conclude with two simple questions:

1. **How many times do the tens-of-thousands of articles, of the type sampled above, mention the term 'nuclear power' ?**
2. **The overwhelming leader in the effort toward 'electrification of the ground transportation fleet' is China. What is that leader's approach to answering the question posed on Page 3 above ?**