Not a superpower

DAVID KEITH

Clean energy innovation cannot be left to the market alone, nor can it be achieved by governments that dodge hard decisions by spreading funds to all. Winning the clean-energy innovation game requires industry and government to focus resources on a small set of industrial clusters.

En matière d'énergie propre, on ne peut laisser au seul marché le soin d'innover, pas plus qu'on ne peut s'en remettre aux gouvernements quand ils éludent les enjeux et soutiennent tous les secteurs sans distinction. Pour réussir l'innovation énergétique, il faut que l'industrie et les gouvernements privilégient quelques filières clés.

The idea of Canada as an energy superpower excites the imaginations both of those who hope for continued growth in oil and gas production and of those who want Canada to become a world player in clean energy. I'm among those who want to see Canada turn away from fossil fuels because I want my grandchildren to have a more stable climate. If we want to stop adding to the climate's carbon burden, we must (eventually) stop moving carbon from the deep geosphere into the atmosphere. This enormous challenge arises even as the world needs to expand its energy supplies if the poorest billions are to access the benefits of modern energy. We cannot conserve our way to zero carbon. Only if we make rapid progress in the shift toward carbon-free clean energy can we sustain both environmental protection and development. I would love to see Canada play a leading role in this shift.

The energy superpower ideal serves as a political big tent of magical elasticity. It is also a dangerous myth. Canada is a niche player in energy technologies. As measured by money, patents or leading technology vendors, the country is a minor contributor to solar, wind, biofuels and nuclear power. It is not even a superpower in oil and gas. While the scale of the oil sands resource matches that of some of the world's largest conventional oil resources, it is also a high-capital-cost play that does not grant the political superpower status achieved by countries capable of opening the throttle on their output of conventional oil. Moreover, the oil sands require special-purpose technology that has a very limited export market.

My critique of the superpower myth is no counsel of despair. Rather it's a plea for realism that carries specific implications for the way we make decisions about clean energy innovation. I am proud of Canada's accomplishments. I could not be more eager to see success in Canada's clean tech sector. Indeed, I founded Carbon Engineering, a small Calgary-based company that has raised roughly $15 million and is poised to build a pilot plant to capture carbon dioxide from the atmosphere, enabling low-carbon transportation fuels.

The danger of the superpower myth is that it encourages Canada to pursue an all-of-the-above energy strategy. Canadian governments all too often adopt a spread-the-wealth approach to energy innovation. We fund everything from a myriad variety of biofuels to solar photovoltaics,

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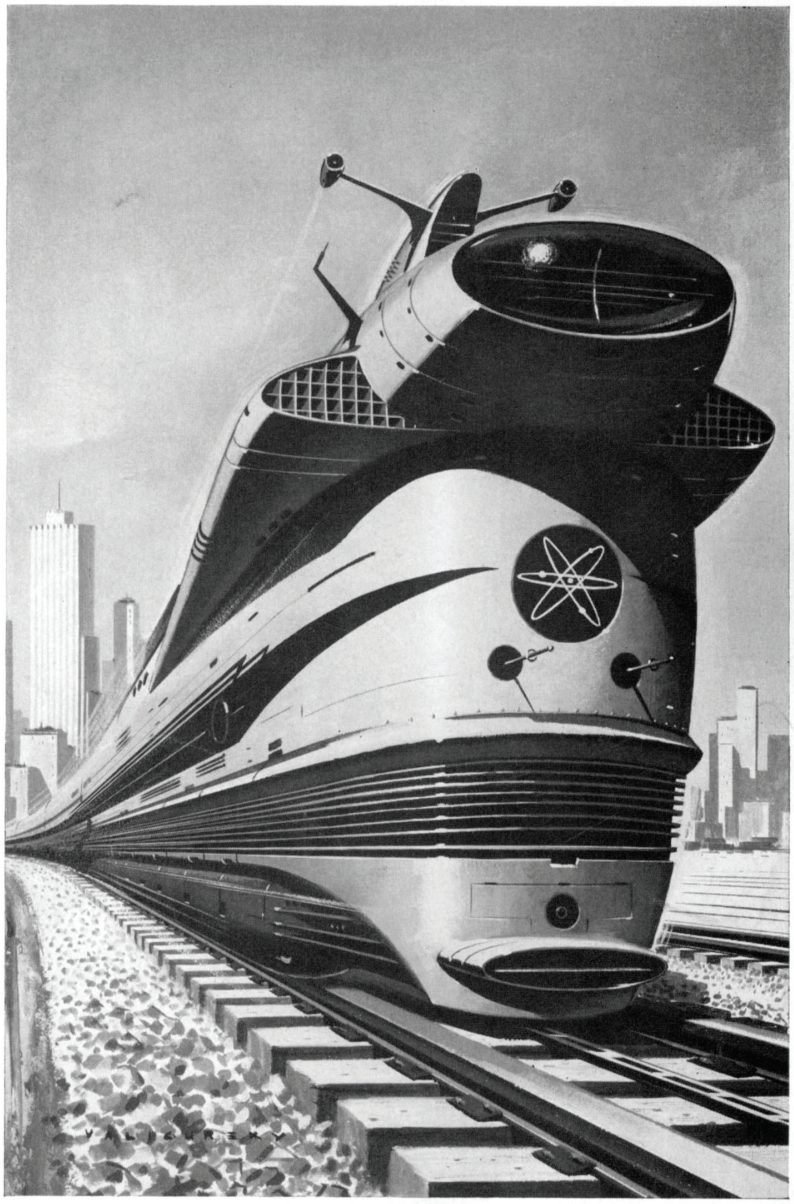
Will atomic energy power tomorrow's railroads?



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The energy superpower myth that encourages us to imagine we can do it all will result in achieving little.

solar thermal, small wind, large wind, hydro, fusion and nuclear power. This strategy will not succeed.

Success grows from a combination of bold dreams aggressively pursued and day-to-day realism that enables smart decisions. The hardest decisions are the ones abandoning failing efforts before good money is poured after bad. And success will come only when we realize the need to build world-beating industrial clusters that can make clean energy technologies at an economic scale large enough to substitute for the eventual decline of oil and gas.

Success does not mean installing technologies made elsewhere. This is not a plea for protectionism. We live in a rapidly globalizing world. We should compete harder in the global clean energy marketplace, not back away behind walls. Societies thrive when their major industries add significant economic value: that is, when the value of their products is greater than the cost of the inputs used to produce them. High value-added industries also tend to require an educated, cosmopolitan workforce. Societies falter when they lose such industries.

Canada spent over $3 billion installing wind power in 2013, but Canadians were installing hardware that was (mostly) made elsewhere. The big profits in the wind power industry, and the concentrations of high-quality jobs that drive these profits, are tied to the big turbine manufacturing companies, many of which now have sales of about $10 billion per year. In order to build an economically successful Canadian clean energy economy, we need a few world-beating companies in Canada building technologies for export. We cannot build such companies by sticking to our historical practice of supporting everything at a subcritical level in what amounts to little more than a jobs-and-votes program.

A clean tech sector that simply installs and maintains technologies made elsewhere will not thrive; nor will it secure the broad societal support needed to sustain policies — such as a carbon tax or cap-and-trade — that drive the economy toward clean energy.

The only plausible way to win is ruthless focus: we must find ways for industry and government to focus investments on a small set of technology clusters. Government will have to have some role in picking winners.

There are obvious risks in this aggressive type of industrial policy. Crony capitalism in government and in the industries that depend on that government means that abandoning a losing bet becomes very difficult. The Canadian hydrogen-fuel-cell boom that came to an end in the mid-2000s is a painful reminder of that trap. At the time it was obvious to many thoughtful observers that we were in a bubble of tulip-mania proportions, yet when I talked to senior officials in the Canadian government in those years, they were blind to any rational evaluation of the prospects for large-scale adoption of hydrogen-fuel-cell cars.

But I am skeptical of claims that the right course for a small country is to make all decisions about large-scale business and economic development through laissez-faire open markets. No country really relies solely on market-driven energy policy, neither the market economies of France and Germany nor the autocracies of Russia and China. Even in the United States, a massive energy producer and consumer, government support of innovation has played a central role in many of the most important energy innovations from the development of wind, nuclear and solar power to high-performance gas turbines and new fracking technologies that have driven the natural gas revolution.

Canada must not allow the superpower myth to delude us into thinking that an unfettered business sector can adapt our economy to the changing energy landscape. We must develop institutions that can do a better job of producing clean tech industrial policy. We need mechanisms that enable the smart decisions required to choose a few industrial clusters and support them with the resources needed to compete in the global market. We have to develop the adaptive decision-making needed to abandon losing bets and shift resources elsewhere.

Canada brings great strengths to the dance: an educated workforce, the energy of our new immigrant communities, wealth, good government and natural resources. We don't need a perfect policy to make a global contribution to clean energy innovation. Failure is a necessary part of innovation.

The superpower myth encourages us to imagine we can do it all, a folly that will result only in achieving little or nothing. It's time we shook it off. ■