

Walrus Article Gets it Wrong

Introduction

The column on energy in the January/February 2009 edition employs the familiar but questionable rationale that new renewable energy sources are the key to combating climate change and achieving a sustainable twenty-first-century economy. Specifically, it says that a feed-in tariff for new renewables is “the single most effective climate change measure yet devised.” Totally overlooked is that, in Canada, our problem is not insufficient use of renewable energy sources (Canada gets 58 per cent of its electricity from renewables), it is excessive and wasteful demand (not supply). Also overlooked is the insignificant impact that new renewables can have on electricity supply, and consequently on CO2 emissions reductions. In Germany such policies have made no discernable impact, and will not in the foreseeable future. Germany faces larger issues as will be discussed below.

Conservation is the single most effective climate change measure in terms of impact on fossil fuel use and CO2 emissions reductions, costs, sustainability (especially in the area of industrial development and employment), and minimum impact on all aspects of the environment. A book could be written on the subject of conservation. This is the important story, not the illusory, miniscule and unsustainable new renewable energy program that is established in Germany.

By 2020, the impact of conservation in Canada can be four times greater than that possible from new renewables (in MWh terms) at substantially less cost, less overall environmental impacts (including CO2 emissions reductions) and with considerable and sustainable benefits for our economy, including employment.

Renewable Energy in Germany

The article points to Germany as a shining example that we must follow. Although Germany is a leader in *new* renewable energy, especially wind and now solar, Germany’s actual use of renewables at 14 percent is more a result of hydro plus biomass than wind power. The wind component has increased the use of gas generation, which is necessary for wind shadowing backup, and this more than offsets any contribution to CO2 emissions reductions by wind plants. See *Analysis of Ontario’s Electricity System*.

By comparison in Ontario, we obtain 23 percent of our electricity from renewable sources and this will increase to 31 percent by 2015. At this point, with some help from gas plants, we will have eliminated our coal plants, if, and only if, we achieve the planned conservation levels. As already stated, but worthy of being repeated, Canada’s use of renewables is 58 per cent. Canada and Ontario are already ahead of Germany, and it cannot catch up to us.

New Renewables

In any event, *new* renewables (for example, wind, solar, biomass, and geothermal) cannot, and will not, make significant contributions to energy supply and CO2 emissions reduction for the foreseeable future (up to 30-50 years from now), although they are positioned to start establishing real distributed generation initiatives now. Such approaches include installations in individual buildings or small communities. An important characteristic of distributed generation, and these types of installations embody this, is that the electricity be consumed where it is generated. Further, such installations naturally encourage conservation because the value of electricity is more evident to these users than to others who are totally reliant on grid-supplied electricity. This is similar to the greater appreciation of water resources that is more apparent to those using their own wells and water systems than those using municipality-supplied water.

Theoretical calculations about in large energy content in areas with good wind regimes, for example in the U.S. Midwest, ignore the need for attendant shadowing backup and the grid limitations for transporting the electricity to centres of demand. Substantial grid upgrades, and especially “smart grid” technologies, are necessary enabling factors that are not realistically going to be in place for 30-50 years because of the high costs involved and the need for further research and development. By the time smart grid technology is deployed, it is very likely that solar will literally eclipse wind as the new renewable of choice.

Walrus Article Gets it Wrong

Fossil Fuel and Nuclear Energy in Germany

Germany obtains 60 percent of its electricity from fossil fuels. Compare this to Ontario at 27 percent, going to 14 percent by 2015, and all of Canada at 26 per cent.

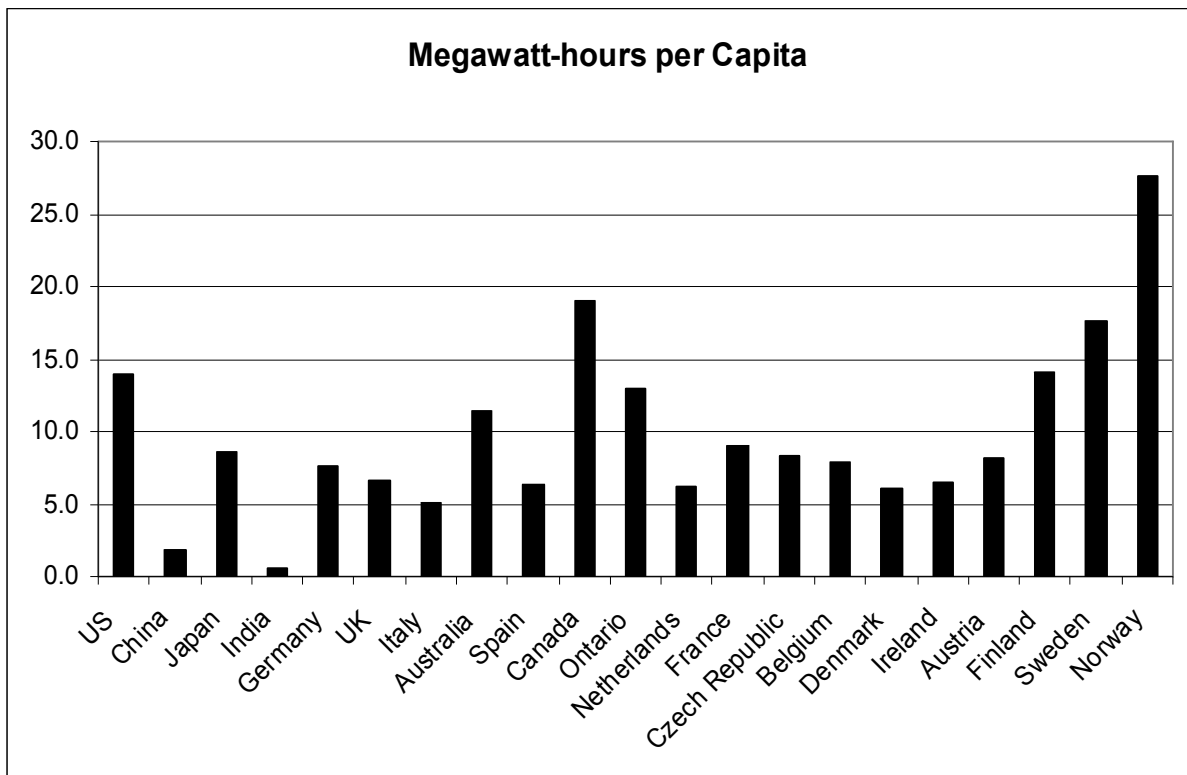
The author criticizes Ontario for “dumping money into “unproven” clean coal technology and environmentally problematic, chronically cost-overrunning nukes”. Germany is in the process of implementing 25 GW of new coal plants, which is roughly equal to all of Ontario’s electricity capacity. Its energy policy calls for its nuclear plants to be eliminated, but this will increase CO2 emissions by at least 100 million tons per year, in spite of massive increases in wind power. Guess what the final German decision will be with respect to their nuclear plants.

The Real Paradigm Shift Needed

The “paradigm shift” that the article claims to be required by electric utilities is certainly not represented by Germany. Even if it were necessary for any country’s electric utility, it is not for those in Canada or Ontario.

Arguably, we do not need a paradigm shift in electricity generation today. The analogy using telecommunications provided by the John Anderson of the Rocky Mountain Institute (RMI) is tenuous. The article describes this institute as “...one of the world’s most influential **energy efficiency** [emphasis added] think tanks...”. The paradigm shift that it should recognize as being necessary, especially in North America, is to move aggressively to a conservation culture. It does not make sense for the RMI, or for anyone, to conclude that the electric utility is the major focal point for dramatic change. Remember, especially in Canada and the US, we have a demand problem not a supply problem. Figure 1 illustrates this point, and Ontario is shown for reference.

Figure 1 – Electricity Use Per Capita for Selected Countries

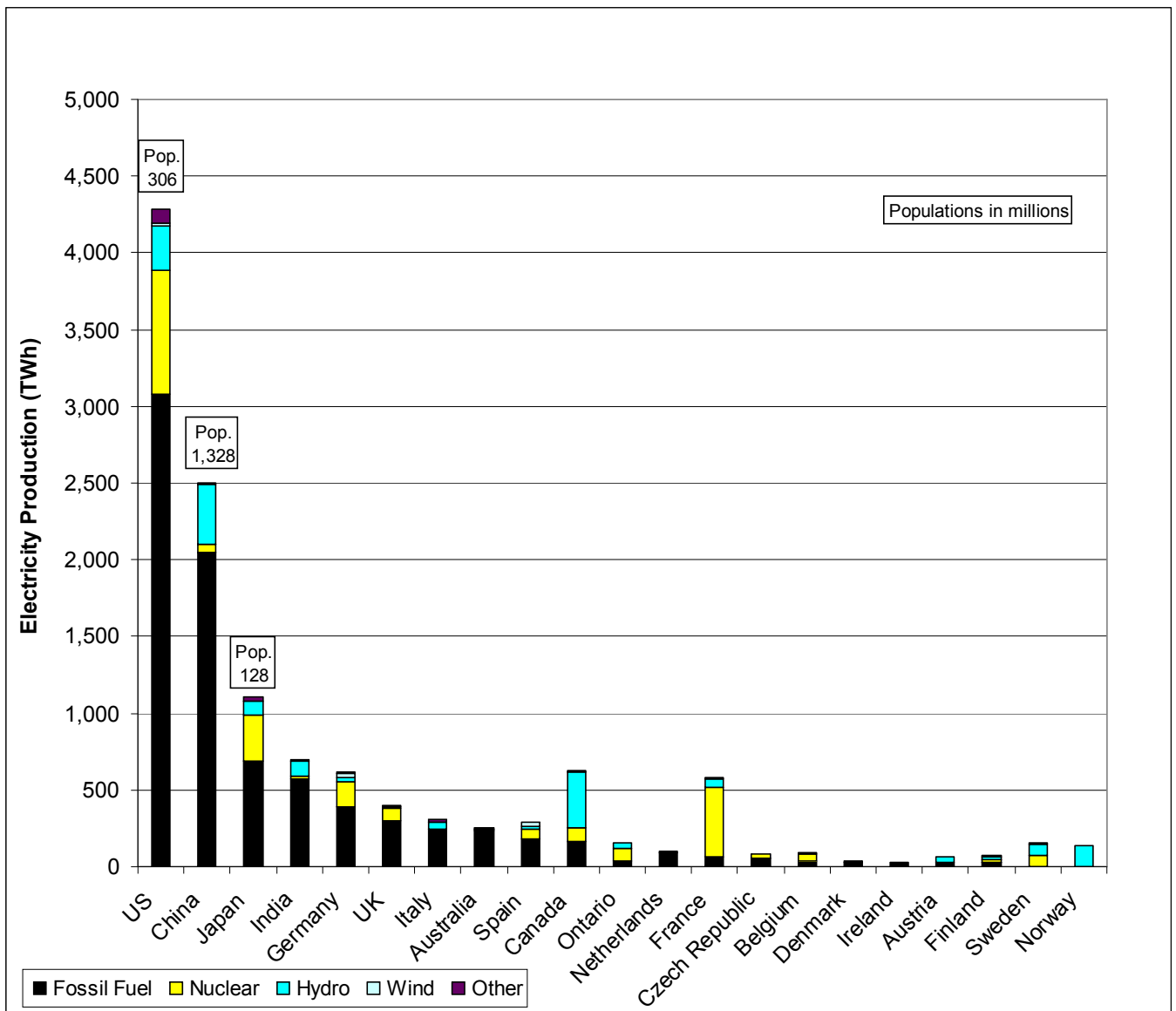


Walrus Article Gets it Wrong

With respect to electricity generation, couple the information in Figure 1 with the electricity generation profiles of these same countries as shown in Figure 2. Note in particular the barely discernible impact of new renewables (Wind and Other) and the challenge represented to them in replacing fossil fuel and nuclear electricity generation. For a closer look at the profiles shown here see *Electricity Generation Carbon Footprints*.

The reality of the meagre showing of new renewables in Figure 2 is not an argument for aggressive expansion of their use, especially in the case of wind, because of the extensive gas generation shadowing backup required, but an argument for the futility of such a strategy. In effect, it is like sending a few infants to do the work required of an army.

Figure 2 – Electricity Production Profiles for Selected Countries



Walrus Article Gets it Wrong

New Renewables Impact on Climate Change in Germany

Germany has made gains in reducing its CO₂ emissions since 1990, but its new renewable energy measures (primarily a massive implementation of wind power relative to the total capacity) in the electricity sector have not made any contribution to the reductions achieved. The article does correctly point out that its reductions to date were largely accomplished by the closure of major polluters in the former East Germany in the early 1990's.

The claim that Germany is "on track" to generate 30 per cent of its power from green sources within a quarter century is very questionable. As the financial services industry often states, past performance is not necessarily an indicator of future results. This is especially true for Germany, as already mentioned, in that about 75 per cent of the progress to date was achieved on a one-time basis through the shutting down of major polluters after unification. The remainder was the result of some shift from coal to gas in the production of electricity (wind shadowing backup) and heat, and reductions in emissions from road transportation, households and services. Consider also the comments above relating to new coal plants and policy statements regarding nuclear plants.

Willingness on Germany's part to seek a 40 per cent decrease in CO₂ emissions by 2020, *if* other countries make the same commitment, can hardly be taken seriously. The article reminds us that Germany "...is already nearly halfway there", which ignores the significance of its previous acknowledgement about the nature of the gains made to date. In any event, statements of such goals, although admirable in intent, are a result of the equally questionable European Union energy policies, which depend so much on new renewables, especially wind power, for their realization. To illustrate this point, in reference to another German notion about combating climate change, in a *Der Spiegel* interview, Hans von Storch, one of Germany's leading researchers on climate change, said, "That's just another of those typically German attempts to save the world with symbolic acts. It makes us feel like better people and morally superior to everyone else."

Herr Scheer is given prominent place in the article. I refer you to my response (*Herr Scheer Needs Energy Rethink*) to The Toronto Star column based on an interview with him. In general, he displayed a significant lack of knowledge of Ontario's electricity situation in view of the advice he presumes to give.

For more information on Germany see *Germany, A Case Study*.

Germany is not a Model to be Emulated

Looking a little past the superficial considerations put forward in support of Germany as a model of a new energy paradigm easily shows that this is not the case. They deserve no such position when their total use of renewables and fossil fuel, and the nature of their CO₂ reductions to date are understood.

On Goals

In connection with Ontario's Standard Offer Program, the article presumes a goal that does not exist by maintaining "If however, the goal is to formulate a new and truly transformative energy policy – if, in other words, the goal is to *succeed* – then Canada's most ambitious program needs to be reassessed against the model that inspired it [the German FIT (Renewable Energy Sources Act)]". Here are some comments on this statement.

- It says that "the goal is to formulate a new and truly transformative energy policy"? Although this will be achieved in the longer term (30-50 years), the implication is that this is possible and desirable today, which is not the case. It simply does not take into account current realities and feasible options. The realistic goals set for Ontario's electricity system (for the next 20 years plus), and the Standard Offer Program are shown below better reflect these realities.
- How can a goal be "to succeed"? Success is a measure of achievement of a goal.
- The article's call to reassess the Standard Offer Program is based on a misunderstanding of this program as discussed below.
- Using Germany as a model has already been dealt with above. As indicated, Canada and Ontario are world leaders in the use of renewable energy for electricity generation and minimum use of fossil fuel. Table 1 provides a small sample.

Walrus Article Gets it Wrong

Table 1 – Selected Sample of Renewable and Fossil Fuel Use

Percent Electricity Production	Ontario 2008	Ontario 2015	Canada recent	US recent	Germany recent	Spain recent	Denmark recent
Wind	1%	5%	<1%	1%	5%	7%	17% (6%)
All Renewables	22%	31%	58%	8%	14%	19%	23% (12%)
Fossil Fuel	27%	14%	26%	72%	60%	61%	77% (77%)

The All Renewables plus Fossil Fuel do not add to 100 per cent. The difference is nuclear production, except for Denmark where the difference is the export of wind production. Also in Denmark's case the contribution to domestic consumption, which is the appropriate basis for comparison to other countries, is shown in brackets.

Although the percentages for the US, Germany, Spain and Denmark are recent, it will be difficult for these countries to effect much change in them because of current realities and commitments. Germany is far from a model to be emulated. Its FIT can be viewed more as an act of political desperation given the realities that it faces, including being far below the European average for renewable energy use. This latter point is stated in the German act.

Ontario's Standard Offer Program

Here is the published goal of Ontario's Renewable Energy Standard Offer Program (RESOP).

The Standard Offer Program is intended to support greater use of renewable sources of energy to generate electricity in Ontario. The program removes obstacles for smaller renewable source generating projects (10 megawatts or less) by providing a simplified process and stable pricing over a 20-year contract.

The article claims that recent additional limitations set aside "...significant swaths of the province's grid for power from new nuclear and natural gas plants", and calls for the program to be reassessed against the German model. I believe that the reality is that such additional RESOP restrictions were established to protect smaller renewable energy installations, which were being crowded out by the larger wind plants. The larger wind developers may have been dividing larger projects up into sizes to qualify within the SOP requirements, or crowding small projects out at the points of connection to the grid. The author seems unaware that the major wind plant developers in Ontario operate under a different program, Renewable Energy Supply III. The changes in the SOP were to facilitate the small installations, not to restrict the larger wind plants, which should not be considered under the SOP.

In summary, the article demonstrates a lack of knowledge on the RESOP and the circumstances surrounding it, on which its criticism is based.

Objectives for the Ontario Electricity System

What is the Ontario government's overriding objective with respect to the provision of electricity in Ontario? It is not to formulate a truly transformational energy policy. It is reliability of supply, and so it should be, because of the vital importance of electricity to us all. Subject to this, government policy gives priority to:

- Creation of a conservation culture
- Preference for renewable sources of energy
- Replacement of coal-fired generation for environmental and health reasons

Economic factors aside, which must be considered as well, I suggest it is difficult to find fault with this position. The only possible one is the nature of the preference for renewable sources of energy and the means adopted to satisfy it.

Walrus Article Gets it Wrong

The OPA Plan for Renewable Energy

The author states that the OPA plan "...calls for renewable energy to comprise barely 20 percent of new electricity production being brought online by 2025". Table 2 shows the relevant information from the OPA Integrated Supply Plan (IPSP), Exhibit D, Tab 9, Schedule 1, Page 13 of 32.

Table 2 – Changes in Electricity Production from 2008 to 2025

Electricity Production TWh	2008 (TWh)	2025 (TWh)	Difference (TWh)	% of Difference
Conservation	2	28	24	36%
Renewables	38	63	25	37%
Nuclear	83	101	18	27%
Gas	15	15	0	0%
Total of Differences			67	100%

Table 2 provides a different picture. Take conservation out of the analysis and the renewables' portion increases to 58 per cent of the actual production. However, the article may be basing its 20 per cent on comparing the production from new-build of nuclear and gas plants versus the new-build renewable energy sources, which I have not taken the time to analyze. The problem with this approach is that there is no way new-build renewables can come up to the same production as new-build in these other plants, so the analysis is not relevant, and serves to skew the picture.

T. Boone Pickens

The article cites T. Boone Pickens plans for the world's largest wind plant (4,000 MW) In Texas. However, Pickens clearly states his position as, "Don't get the idea that I've turned green. My business is making money, and I think this is going to make a lot of money." Further, Pickens will not be putting this on his lands. He also has considerable gas assets, and the resulting increase in the need for gas generation may be an important part of Pickens promoting wind plants in the US. Considering the subsidies for his proposed wind plants, it's a "double win" financial play for him.

Finally with respect to the U.S. a recent report by the Texas Public Policy Foundation should be noted. It provides a realistic assessment and cautionary note about further expansion of wind implementations in Texas. Texas has recently expanded rapidly and passed California. As a result it quickly reached the 2 per cent level and has experienced problems in its electricity system.

California and Solar

It is interesting to note the shift to solar. California was the leader in the U.S. in wind power, but slowed down installations as it reached 2 per cent of total electricity, at which point the problems with wind's intermittency and fluctuations start to appear. See *Limitations to Wind Penetration* for more information.

The article notes the planned expansion of solar installations on individual buildings. This approach, which is also being pursued in Germany, is worth emulating today. The impact on electricity use and CO2 emissions reductions is small but is a good path to be on. It also provides the opportunity for sustainable industrial development in the short term and, along with an emphasis on research and development, could position countries, states and provinces for further advances in new energy technologies.

Walrus Article Gets it Wrong

Conclusion

This article is disappointing on numerous points and is illustrative of a typical lack of knowledge of the subject matter. As a result, it is simply on the wrong track in its messages and proposals. In summary the article:

- Emphasizes the supply side of electricity matters, when in Canada we clearly have a larger demand side problem
- Misses conservation as the most effective measure to combat climate change and a sustainable twenty-first century economy. This is possibly due to the natural inclination to avoid the more difficult but effective measures presented by conservation and opt for others that require no effort on the part of the individual.
- Identifies the wrong paradigm shift that is needed. It is not one that electric utilities must make but one that the customers of that utility and governments must make, especially in developed countries.
- Misunderstands the nature of the energy situation in Germany
- Has accepted at face value some questionable, albeit popular, models and advice for our guidance, namely Germany, Herr Scheer, the Rocky Mountain Institute, Paul Gipe and T. Boone Pickens.

Recent thoughts from a Canadian suggest a good illustration of what should be considered as good electrical energy policy. When asked about the reason for his success, Wayne Gretzky replied (presumably in part) that he did not skate to where the puck is, but to where the puck is going to be. For renewable energy sources in electricity generation today, industrial wind power is an extreme, incorrect, and undeserved focus (where the “puck” is). Again, with respect to renewable energy sources, one of the places where the “puck” will likely be is solar. For today, this is fast becoming installations on buildings for local use, and this is perhaps the only area that Germany can be looked to as a model. Although the impact on reductions in fossil fuel use and CO2 emissions will be small currently, this is where we should focus for any implementation today, but most importantly, we should be investing in research and development for tomorrow (where the “puck” is likely going to be).

For a more complete summary of policy alternatives in other countries see *Electricity Generation Carbon Footprints*.

As a long-time subscriber, I expect better from *The Walrus*.

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