

Continental energy security: Energy security in the North American context¹

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24 January 2011

¹ A textbox for the **Global Energy Assessment's Knowledge Module 5: Energy Security** to be published in summer 2011

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The North American continent has been endowed with immense energy wealth. The United States is among the world's top ten producers of coal, oil, natural gas, and electricity from nuclear and hydroelectricity, while Canada is in the top ten for oil, natural gas, and electricity from nuclear and hydroelectricity production, and Mexico ranks in the top ten for oil production (IEA, 2010). Despite this, each country has its own set of energy security problems.

Probably the most dominant and well known of these problems is that being faced by the United States and its dependence on foreign supplies of crude oil. Every U.S. president, from Nixon to Obama, has set targets, put forward proposals, commissioned reports, and signed legislation in an effort to stem crude oil imports and improve energy security (U.S. DOE, n.d.), all to no avail: with few notable exceptions domestic production continues fall while consumption continues to rise. Today, over 60 percent of U.S. demand for crude oil is met from imports (U.S. EIA, 2010).

Support for the U.S. transportation system is the driving force behind all energy security legislation put forward in the United States. For example, the 2007 Energy Independence and Security Act (EISA) calls for, amongst other things: reducing vehicular fuel consumption through increased CAFE (Corporate Average Fuel Economy) standards, replacing gasoline with ethanol, and requiring auto manufacturers to develop a new generation of vehicles to operate on electricity. (EISA, 2007)

EISA has had unintended consequences. The push for ethanol from cornstarch means that a significant percentage of U.S. farmland is being diverted from food into fuel production; this has had an impact on world corn supplies, indirectly affecting countries such as Mexico (Roig-Franzia, 2007).

The increasing demand for electricity in general and the inevitable reliance on mains electricity to meet the energy needs of plug-in electric vehicles in particular will have an impact on (electrical) energy security. At present, about 50% of the electricity in the United States is produced from domestic coal, followed by natural gas and nuclear (about 20% each), hydroelectricity (5%), and a mix of renewables (2.5%) (U.S. EIA, 2011). Demand pressures are forcing electricity suppliers to plan for new generation capacity and if climate change is ever addressed seriously by the U.S. Congress, it will be necessary to develop generation facilities that emit little or no carbon. However the supply mix is only part of the problem—the U.S. electrical grid is showing its age and must be refurbished if it is to meet the expected future reliance on electricity. The costs of new generation facilities (whether or not it addresses the issue of climate change) and grid upgrades are estimated in the trillions of dollars—the price of ensuring the availability of the electrical supply.

Until the middle of the last decade, it was assumed that domestic supplies of natural gas in the United States had peaked and, like crude oil before it, would make the United States increasingly reliant on imports of natural gas. To ensure (natural gas) energy security, plans were drawn up for dozens of liquefied natural gas (LNG) facilities around the continental United States (McAleb, 2005). Today things look considerably different—the use of horizontal drilling and frac'ing is making shale gas available as a replacement for declining stocks of conventional natural gas (Grape, 2006). Shale gas is rich in natural gas liquids (NGLs), meaning it can also improve U.S. energy security by offsetting imports of crude oil (Sandrea, 2010). Optimistic reserve projections have industry analysts suggesting that the U.S. could soon start exporting LNG (PennEnergy, 2010); this would not appear to be in the long-term energy security interests of the United States. There are also concerns over the environmental impacts associated with the extraction of shale gas (Doggett, 2010); time will tell whether it is considered an acceptable source of natural gas that will improve the energy security of the United States.

Two of the countries on which the United States depends for its energy are its nearest neighbours, Mexico and Canada; both countries are exporters of crude oil and other refined petroleum products to the United States, while Canada also exports natural gas and electricity. This reliance on Mexico and Canada for its energy has politicians and analysts in all three countries talking about North American or continental energy security (Angevine, 2010).

North America's energy security is governed by chapter six of NAFTA, the North America Free Trade Agreement, which outlines the rules and regulations regarding the trade of energy and petrochemicals. NAFTA requires a signatory to maintain its energy exports; short of war, any reduction in exports must be met by a proportional reduction in supply within the exporting nation. Mexico is exempt from this provision, Canada is not. (NAFTA, 2002)

Mexico is facing energy security challenges of its own. Its most important oil field, Cantarell (in the Gulf of Mexico), is in decline and further exploration is hampered by the Mexican constitution that restricts oil and natural gas development to the state oil company, Pemex (Law Business Research, 2010).

Canada, unlike Mexico, has few restrictions on international players exploiting its crude oil and natural gas. Despite the availability of these resources, not all Canadians have access to them; for example, although Canada is self-sufficient in crude oil, over 60% of it is exported to the United States, meaning that Canada meets almost 50% of its crude oil needs from imports (Hughes, 2010). Canada is also self-sufficient in natural gas, yet almost 60% is exported to the United States (IEA, 2011). Not only is Canada exporting energy that could ensure its energy security in the future, but it has compounded the problem by failing to develop the pipeline infrastructure to connect parts of eastern Canada with the oil and natural gas fields in western Canada (Hughes, 2010).

Although Canada's production of conventional crude oil and natural gas has peaked, the tar sands (euphemistically referred to as the "oil" sands in the United States) are seen as essential to continental energy security. The prime minister of Canada has gone so far as to call Canada an "energy superpower" when describing the development of unconventional energy resources such as the tar sands, shale gas, and Arctic oil and natural gas (Hester & Welsh, 2009). Canada's approach to energy security overlooks its own long-term energy needs.

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