

Large-Scale Shift To Distributed Generation Would Cut GHGs

The head of a New Jersey-based company that has an interest in a Canadian-based income trust says his company and others like it that recycle heat, fuels and other waste energy streams from steel factories, naval yards and other facilities to generate power -- so-called decentralized generation (DG) -- could save the world \$5 trillion (US), lower incremental power costs by up to 40% and reduce carbon dioxide (CO₂) emissions by 50%.

Thomas Casten, CEO of Primary Energy Ventures, a privately-owned developer, owner and operator of on-site combined heat and power (CHP) and recycled energy projects, which has an interest in Primary Energy Recycling Corporation, an income trust listed on the Toronto Stock Exchange, says the world must break the "central generation paradigm" of the major utilities.

Casten, author of a book on what he sees as the urgent need to shift to DG -- entitled "Turning Off the Heat: Why America Must Double Energy Efficiency to Save Money and Reduce Global Warming" -- argues that the dominance of central power plants has persisted despite the evolution of technology that will allow the economical development of DG.

"By 1970, mass-produced engines and turbines cost less per unit of capacity than large plants, and the emissions have been steadily reduced," he said in a recent address.

"These smaller engines and gas turbines are good neighbours, and can be located next to users in the middle of population centres.

"Furthermore, the previously wasted heat can be recycled from these decentralized generation plants to displace boiler fuel and essentially cut the fuel for electric generation in half, compared to remote or central generation of the same power."

Casten claims the utility industry, dominated by government-owned firms or giant corporations, has "ossified," largely because the requirement by regulators to pass on all efficiency savings to consumers has prevented them from adopting new technology.

He argues that "monopoly protection" for large utilities has stymied the development of decentralized power.

"In fact, such local generation erodes the rationale for continued monopoly protection -- if one can make cheap power at every factory or high-rise apartment house, why should society limit competition," he asks.

But he and other company officials now see opportunities growing for the development of DG, largely because of rising power rates, concerns about greenhouse gas (GHG) emissions from large, centralized, fossil fuel-based power plants and the desire of some governments to foster more competition.

Mark Hall, senior vice-president of Primary Energy Ventures, says the company, which, despite having a Canadian presence with its interest in the income trust, has no Canadian projects yet. But it sees significant opportunities opening up in Ontario.

"We're happy to see the Ontario government issue an RFP [Request for Proposals] where it's calling for the development of cogeneration facilities," he says.

"We believe there will be opportunities there."

The company, funded by a venture capital firm established by the heir to the Sears, Roebuck & Company fortune, specializes in capturing waste heat and fuel from various industrial processes, ranging from electric generation to steel and chemical production to petroleum refining. That heat and fuel would typically be vented into the atmosphere -- meaning its DG technology brings with it both energy-efficiency and GHG reduction benefits.

Primary Energy Ventures owns a 100% interest in nine projects, ranging from a naval dockyard in California to a co-generation facility at a university campus in Colorado.

Its partially-owned Primary Energy Recycling, the Canadian-listed trust, has interests in five industrial facilities, most of them engaged in the steel business, and all located in northwest Indiana. Overall the 14 projects produce 900 megawatts of electricity and four million pounds of steam per hour.

Hall says the parent company plans to eventually shift more of its projects to ownership by the Canadian-listed trust.

Meanwhile, it will continue to search for DG projects that would generate between 20 megawatts and 135 megawatts of power.

CEO Casten points to a world energy outlook by the International Energy Agency (IEA) to illustrate how urgent the need is to shift to DG on a large scale.

The IEA forecast envisions electricity demand doubling worldwide over the next 30 years. That would require the construction of 5,000 gigawatts of new generation capacity -- equivalent to adding six times the current U.S. electric generation capacity.

That new generation would cost \$4.2 trillion (US), plus transmission and distribution costs of \$6.6 trillion (US). That would lead to an increase of 70% in global CO2 emissions.

Casten claims that projection, based on a continued reliance on centralized power, can be altered if the world turns to the DG technology that is now available.

He goes on to say that centralized power is unreliable, pointing to 105 power grid failures in the U.S. between 2000 and 2003. He says those outages added 29-45% to the cost of power (consumers paid \$272 billion (US) for power in 2003).

Furthermore, he argues that the power systems in most countries outside of the U.S. are even more unreliable, with frequent outages.

"Close examination of past power industry options and choices suggests that load growth can be met with just over half the fossil fuel and pollution associated with conventional central generation," he says.

At this point only about 8.1% of U.S. generating capacity is met by DG, with an estimated 931 DG plants producing 72,800 megawatts of power.

He has no similar statistics for Canada but it is believed the percentage in this country, largely because of the dominance by government-owned power firms, is much smaller.

For instance, Tom Adams, executive director of Toronto-based Energy Probe, has argued that the former Ontario Hydro actively discouraged companies in that province from using cogeneration and other DG technologies by offering them deep discounts for continued use of power from Ontario Hydro facilities.

Adams argues that, with power rates in Ontario expected to rise substantially in the next few years, there will be a need for industries to shift dramatically to DG.

Casten points out that DG is anything but a new concept. For instance, Thomas Edison built his first electric plant near Wall Street to recycle energy to heat surrounding buildings.

Hall says one development that stalled the development of DG on a wide scale, after the U.S. Congress changed the law to allow independent power producers to build facilities as a third party (previously they could only partner with plant owners), was the "Enron factor."

"One of the largest developers of distributed generation was [now bankrupt] Enron Corp., which relied more on financial engineering than power engineering," he says.

Most of the former Enron DG facilities were subsequently bought by large utilities.

Casten calculates that full reliance on DG for load growth -- which he argues is feasible -- would avoid \$326 billion (US) in capital investment by 2020, reduce incremental power costs by \$53 billion (US), reduce nitrous oxide emissions by 58% over a centralized power growth scenario and reduce CO2 emissions by 49% versus total reliance on central generation.

Furthermore, he says if the world shifted to DG to the same extent, oil consumption would be reduced by 122 billion barrels (from what would be consumed with a total reliance on centralized power) saving \$2.8 trillion, there would be fewer air pollution-related illnesses and global warming would be reduced because of a reduction of 50% in anticipated CO2 emissions.

 [Previous](#)

[Next](#) 

 [Contents](#)

[Home](#) | [Search](#) | [About Us](#) | [Contact Us](#) | [Site Map](#) | [Help](#)



© 2006 Copyright Nickle's Energy Group. All rights reserved.
[Disclaimer](#) | [Privacy Policy](#) | [Comments](#)

