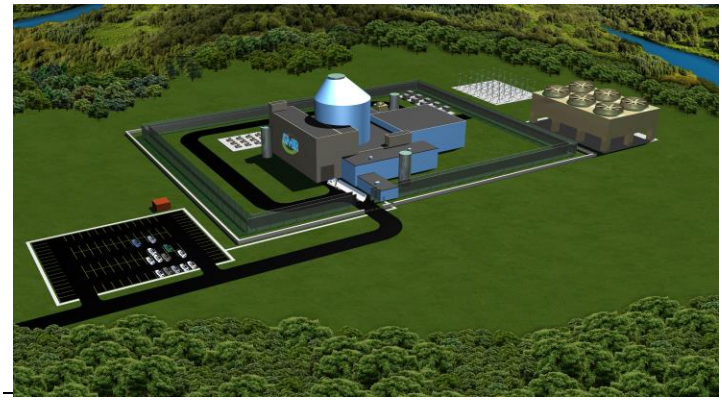
An Executive Summary of Holtec's SMR-160's key features and capabilities that underpin its universal appeal as the ideal workhorse for carbon-free *distributed* Power Generation

Conceived by Dr. Kris Singh of Holtec International (NJ, USA) in 2010, the SMR-160 is a water-cooled small modular reactor that would produce 160 MW electric power using conventional enriched uranium fuel available from current worldwide commercial suppliers. The SMR-160 is termed the world's safest nuclear reactor because it does not rely on any pump or motor for its safe operation. Only pure water is used in its systems and most importantly, water circulates *purely by the action of gravity.* Another important feature of the SMR-160 is that it is *walk away safe,* which means that in the case of an accident from any source (including sabotage or terrorist action), the reactor does not rely upon human intervention to safely shut down! In other words, the SMR-160 is unconditionally harmless to its host community. Euphemistically speaking, its presence in any population center would be as benign as a chocolate factory, with no risk of a Chernobyl or a Fukushima type of catastrophe.

A single SMR-160 unit would occupy less than 2 hectares of land; two units can be sited on less than 3 hectares. Holtec expects the regulator to permit the emergency planning zone to just a small buffer around the plant and the fenceline for the site. The graphical illustration of a single unit below speaks to its simplicity. There is no limitation on the number of SMR-160s that be built at one site. However, the most economical deployment considers constructing in sets of four units.

The nuclear commodities in the SMR-160 reactor are located over 14 meters below-grade which, along with the slow moving gravitation-propelled water in the reactor coolant circuit, ensures that the background radiation from the reactor at the site boundary will be less than the cosmic radiation that bathes the site day and night.

The SMR-160 has been expressly designed to reject its waste heat (inherent to power generation by thermodynamic laws) to air or any conventional water source (such as a lake, river or sea). Thus it can be deployed in the water-rich as well as in arid regions of the world. SMR-160 is also a flexible plant whose output can be split into part steam and part electric power. Thus, providing process steam for desalination and other industrial use (such as steel mills) with the remaining steam used to produce electric power makes SMR-160 useful in supporting the local industry as well.



Single-unit site arrangement for the SMR-160 small modular reactor (Holtec International)

Another key benefit of the SMR-160 is what we term as the "cell phone" effect: Just as cell phone towers replaced land lines, the SMR-160 will eliminate the need for wheeling power over long-distance high-tension wires that are vulnerable to weather and other forms of disruption. SMR-

160s distributed across the country will produce all the power necessary to serve local needs, with any surplus easily shared to neighoring communities. The nation's power supply infrastructure will become immeasurably more secure. Because of its ruggedness, SMR-160 can also be used as captive power supplier to a high value national resource such as a national laboratory or military base.

The SMR-160 produces a modest amount of used nuclear fuel which has been engineered to be stored below-ground at the plant site. The below-ground storage area will occupy less than a tenth of a hectare of land for 120 years of operation. The fuel will be stored in sealed Canisters that can be readily accessed, if required.

From a financial standpoint SMR-160s make a compelling case, costing just $1 billion per unit. With a three year construction cycle, the SMR-160 requires a comparatively modest investment with a rapid cost recovery schedule. A financial model wherein successive SMR-160s are built using the revenues produced by the predecessor units is quite viable. This is in stark contrast to the seven billion dollar investment required for a large nuclear reactor, with at least a ten year gestation period. In terms of Net Present Value, the SMR-160 competes favorably with gas-fired plants if gas is at $7 per million BTU because the SMR-160's useful service life is a minimum of 80 years as compared to 15 to 20 years of service life typical of gas-fired plants.

The SMR-160 reactor is currently under regulatory review by the Canadian authorities. This review cycle is expected to be concluded by 2021. A first mover client can secure the PSAR approval by 2022 and complete construction by 2025.

The SMR-160 program has a strong support from leading global nuclear companies. America's largest nuclear generator, Exelon, is a development partner as are Mitsubishi Electric of Japan and SNC Lavalin (owner of the Candu technology) of Canada. Ukraine's national nuclear company, Energoatom, and the country's national nuclear consultant, SSTC, have entered into a consortium with Holtec to work on adapting SMR-160 for use across their country. Ukraine has entered into a MOU with Holtec to build six SMR-160s in north-west Ukraine and is likely to adopt SMR-160 as its national nuclear energy generator.