



Preliminary Study of Potential Market for Small Reactors

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Small reactors are an energy supply for a specific purpose and oriented for a different market than large reactors. Small reactors will provide a local solution for developed and developing countries, such as, in remote areas, on small grids, or for non-electricity applications such as, district heating, seawater desalination and process heat. Single or medium sized power stations with small reactors should be compared with single fissile or renewable energy source and not be compared with large reactors.

CRIEPI and LLNL have studied the business opportunities for small reactors. The small reactor concept is planned for initial use in small remote communities and in developing countries with small power distribution grid. Rapid installation and simple operation of the small plants is intended to support use in these communities without requiring development of a substantial nuclear technology infrastructure. In this study, two approaches were used in the assessment of the potential market. The first approach took a global look at the need for small nuclear plants. Then selected countries and sites were identified based on countries expressing interest in small reactors to the IAEA and consideration of sites in the US and Japan. (1) Tunisia, Mexico, Indonesia, Uruguay, Egypt and Argentina have demonstrated interest in nuclear power. Selecting one of these is dependent on political and socioeconomic factors, some of which have been identified, that require direct interaction with the countries to establish if they represent real opportunities. (2) The states of Hawaii and Alaska in the United States have high power cost and remote or island communities that may benefit from small nuclear plants. Alaska has shown greater interest in power alternatives including small than Hawaii and there is clearly less public resistance to nuclear power in Alaska. (3) The countries in Central America are actively expanding their power grids but have not demonstrated great interest in the nuclear power option, probably because they do not require large nuclear plants. Deployment schedules have been developed for each of these categories. Ten units are estimated for installation in Alaska and Hawaii, 11 units in Mexico, 12 units in each Tunisia, Uruguay, and Egypt, 4 units in Indonesia, and 3 units in Argentina. Central America could use 126 units.

The current interest of Alaska in the small reactor is an indication that the need for small reactors is real. It is also demonstrating that the economic and political interest of any specific location is important. It is recommended that an effort be undertaken to identify one or two specific locations, in addition to Alaska, for completing a cooperative development plan for installation of small nuclear reactors.

Keywords: small reactors, small grids, non-electricity applications