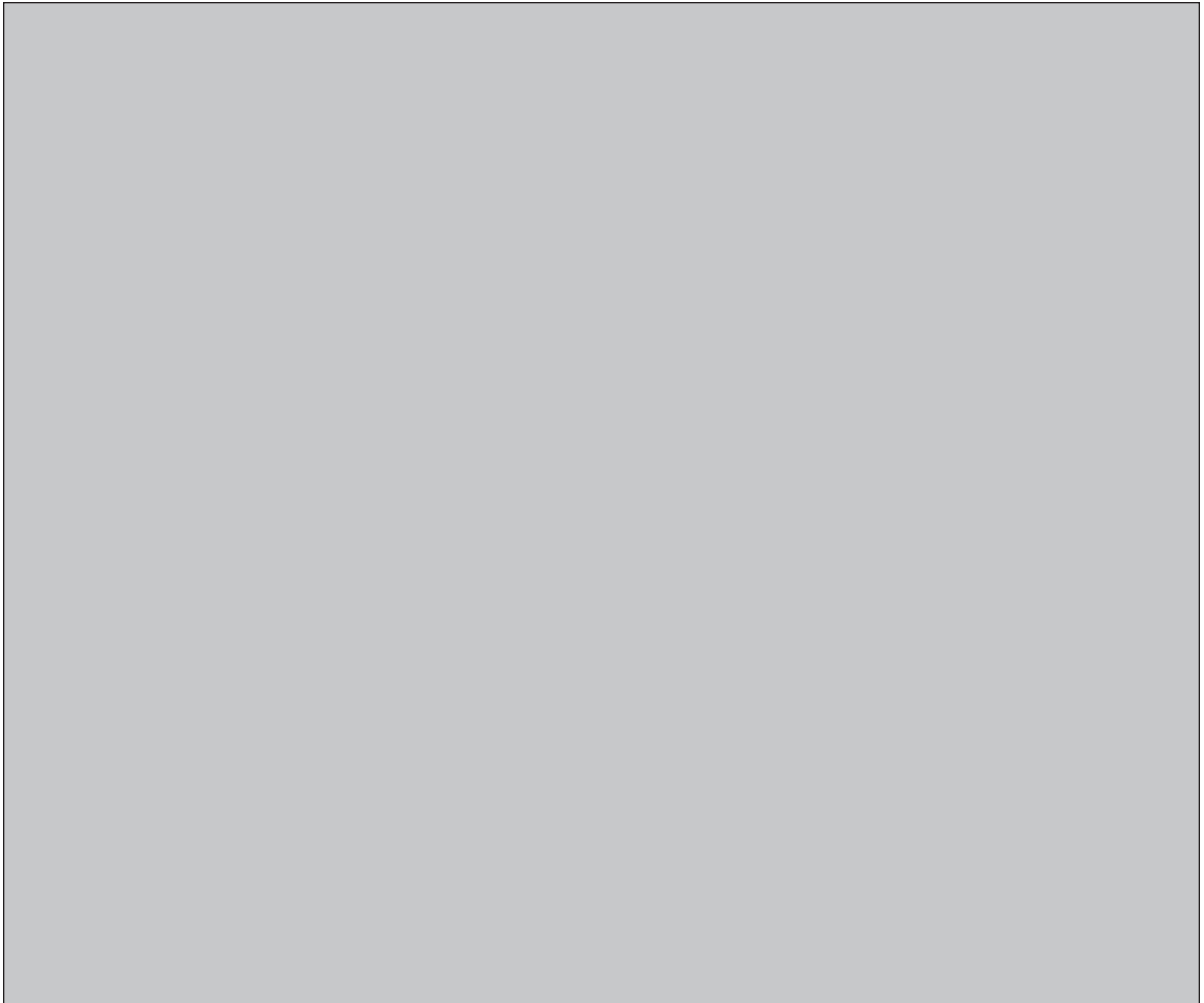


NWMO BACKGROUND PAPERS**5. ECONOMIC FACTORS****5-1 AN EXAMINATION OF ECONOMIC REGIONS AND THE NUCLEAR FUEL WASTE
MANAGEMENT ACT****EXECUTIVE SUMMARY**

Richard Kuhn, Department of Geography, University of Guelph

Brenda Murphy, Contemporary Studies and Geography, Wilfrid Laurier University



An Examination of *Economic Regions* and the Nuclear Fuel Waste Management Act

Executive Summary

Richard G. Kuhn* and Brenda L. Murphy**

August 14, 2003

*Department of Geography, University of Guelph

**Contemporary Studies and Geography, Brantford Campus, Wilfrid Laurier University

The report provides an overview of economic regions and highlights the implications of the use of these regions for NWMO and the management of nuclear fuel waste and to provide recommendations to NWMO regarding the use of the economic region approach.

As set out in the Nuclear Fuel Waste Act, *economic regions* are the broad-based geographic parameters within which NWMO will propose a management option. An economic region is a grouping of complete census divisions created as a standard geographic unit for analysis of regional economic activity. There are 76 economic regions in Canada.

The selection of a NFW management strategy for Canada implies that 1) a particular technology or set of technologies are selected; and 2) the selection and implementation of a siting strategy. There are two basic approaches to facility siting: the “technical” and “voluntary” approaches. In the “*technical*” approach, a top-down process utilizes criteria based on the optimal safety, technological, geological and engineering requirements.

The “*voluntary*” siting approach, endorsed by the Environmental Assessment Panel, relies on the basic principle that only communities that volunteer to investigate a facility are considered as potential hosts. The focus is therefore primarily, but not exclusively, on social and political aspects.

As stipulated in section 12(2) of the Act, NWMO is required to consider at minimum three waste management strategies - deep geologic disposal in the Canadian Shield; storage at nuclear reactor sites; and centralized storage, either above or below ground.

1. Deep Geologic Disposal in the Canadian Shield

There are a total of 21 economic regions on the Canadian Shield. The Canadian Shield falls within six provinces and two territories. For the Provinces of Quebec and Ontario and the territory of Nunavut, the majority of their land consists of the Canadian Shield.

Geologic criteria dominate in the initial stages of the site selection process. The broad region under consideration is the Canadian Shield. In essence, Canada is divided into two areas: Shield and non-Shield.

2. Storage at Nuclear Reactor Sites

The potential economic regions to be considered under this management option are those where nuclear generating facilities are currently located. The majority of nuclear reactors in Canada are located in the Province of Ontario, at the Pickering, Darlington and Bruce reactor stations. Reactors are also located in the Province of Quebec (Gentilly) and New Brunswick (Point Lepreau). Each of these locations is located within a specific economic region. From a geographical perspective, the on-site storage option is the most straightforward in that the siting regions are specified (reactor sites) and transportation of NFW is not a major consideration as the NFW is already there.

3. Centralized Storage, Either Above or Below Ground

In the absence of specific siting criteria, all of Canada is theoretically available for the construction of a centralized storage facility. Specific criteria required for a centralized storage facility will have to be developed. This may include minimizing transportation distance, maximizing distance from populated areas, specifying required geologic or hydrologic conditions, obtaining support from a potential host region and/or community and/or minimizing costs.

CONCLUSION

A reading of the *Act* seems to give NWMO little room to manoeuvre; the requirement to use economic regions is clearly spelled out. A possible strategy may be for NWMO to initially select a particular management option (i.e. geologic disposal on the Shield, centralized storage or on-site storage) then at the next stage identify possible regions/locations.

A proposed solution may involve more than one management option and hence may involve numerous economic regions and locations. For example, a management strategy can be envisioned that progresses from on-site storage of NFW to centralized storage on the Canadian Shield to ultimately the construction of a disposal facility (perhaps with a retrievability option) either adjacent to the centralized storage facility or in a different location.

While the selection of economic regions may be potentially useful, the selection of a region of any scale will not “reduce” the issues associated with NFW management. For example, “larger scale” considerations such as Canada’s commitment to nuclear energy, risks imposed on unborn generations, potential new breakthroughs such as transmutation, importation of NFW from abroad and weapons production will continue to be important considerations for many stakeholders.