The Economics of Energy Supply, Demand and Conservation

We have already stressed that, notwithstanding Canada's present self-sufficiency in energy in an aggregate sense, this country faces a growing shortfall in the commodity that matters most — oil. Minimizing our petroleum imports in the 1980s would be reason enough to institute a vigorous program of energy conservation in view of the economic and strategic problems involved in such dependence. But conservation pays other dividends as well. We already know a considerable amount about energy-conserving technologies, which reduces the "trial and error" aspect of new initiatives. Restraining demand will in many situations be less costly than extending supply. Conservation technologies can often be more rapidly deployed than supply technologies. And energy conservation reduces some of the indirect costs of energy use such as environmental contamination.

Conserved energy represents a special class of alternative energy, not dependent on bringing forth new supplies. Conservation saves consumer dollars and capital, and contributes to an improved balance of payments through reduced expenditures on foreign oil. Conservation programs will likely create employment and income through expansion of that part of industry which supplies conservation goods and services. Other important and extensive benefits will derive from a conservation-oriented economy as well, not the least of which is the reward of long-term energy self-sufficiency.

The consequences of conservation decisions and policies are complex and numerous but a successful program of conservation would moderate the rate of growth in energy demand and lessen the pressure to find alternatives to present means of supplying energy. Conservation programs and energy supply programs require long-term planning, but through providing time, conservation increases the range of energy alternatives which may be evaluated and pursued. In other words, conservation can increase Canada's supply options if we seize the opportunity.

1. CONSERVATION DEFINED

Conservation has many connotations. To some it may imply a backwoods life style. To others the term may be associated with the imposition of strict controls on resource use, or even non-use. Certainly, the way in which Canadians view conservation will influence how Canada formulates a method for determining the best schedule of resource use in the future. Through a greater understanding of the market and institutional forces which influence conservation practice, we will be better able to assess the appropriateness of incentives and regulatory measures, "carrots and sticks", for encouraging enlightened energy use.

Conservation may be thought of as reducing the consumption of a resource in the near future so as to have more of it available in the more distant future. Conservation has also been defined as the

> ...careful use of renewable and non-renewable resources to ensure their greatest long-term benefit to society... (Crane, 1980, p. 67)

Conservation does not mean non-use, nor "wise" use, nor does it necessarily mean use at a constant rate. It is not synonymous with maximum sustained use nor maximum cumulative use. Conservation economics considers both demand and supply, and producers may (and frequently do) practice conservation as well as consumers. Deciding whether conservation or its opposite, depletion, is appropriate in a given situation is not always easy.

An Economist's Definition of Conservation and Depletion

Conservation is defined in a strictly economic sense as the redistribution of use rates of resources towards the future. Thus conservation always implies a comparison of two or more time distributions of use rates; that is, the supply and consumption of energy per unit of time over a number of units of time. The opposite of conservation is depletion — the redistribution of use rates toward the present.

2. WHAT FACTORS AFFECT CONSERVATION?

Many institutional and economic forces affect conservation. Among the most powerful influences are habits. Does one drive at moderate or at excessive