

and promotes research and development into renewable biomass energy sources.

A major step in the co-ordination process was taken with the sponsoring of the first international biomass energy conference in 1973, when 18 speakers dealt with the three major questions facing biomass energy. They are, first, is it available in useful quantities? Second, can it be easily and efficiently converted to useful forms? Third, is its implementation and use economically feasible? I say that it is, Mr. Speaker.

Our energy requirements will also increase with food requirements; but, theoretically, if all biomass were collected in western Canada and used for energy in 1980, it could amount to almost all our Canadian natural gas requirements, or 25 per cent of our total requirement. Projecting our figures to the year 2000, we could expect easily to double the 1980 figure.

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Crops will never be grown exclusively for energy production because of the projected high demand for food, but straw and other crop residues from food production will be used for energy production. These residues can now be collected easily and farmers will do so if the economics are attractive. In heavy crop years these residues cannot be incorporated into the soil and regulations may soon prohibit their burning.

I would also like to point out the problem that certain industries are experiencing because of fuel shortages, in particular natural gas. The cement industry can use alternate fuels in the manufacture of cement, namely, oil or coal. However, it is becoming increasingly apparent that Canada's domestic production of oil will be hard pressed to meet normal oil demand, let alone any shift in energy consumption from natural gas to oil. The same argument can be used with respect to coal. In other words, the over-all diminishing fuel picture cannot hope to meet the growing demand for energy in the future.

Even if assumptions were made that alternate fuels were available to allow for a shift in energy consumption from natural gas and that the price of fuels will be equivalent on a BTU-content basis, the increased capital and operating costs associated with converting the Inland-Ocean cement plants would be significant. For example, the initial capital costs to convert the four western Canadian plants to coal systems would total approximately \$9 million. Operating cost would be higher with a coal system because of the handling and coal processing required.

If Inland-Ocean were required to convert to coal, the increased capital and operating costs would have to be passed on to the consumer. Since cement is a basic building material, increased cement prices would naturally result in increased construction costs. The point here, and the concern of the cement industry, is that they are not going to have enough natural gas to operate their plants.

On a number of occasions in the past I have urged the government to promote the polar pipeline through Manitoba. The government has a 45 per cent interest in the Panarctic pipeline. I certainly hope the minister and the government are making every effort to promote this pipeline. Let me point out that Manitoba faces a serious short-

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age of natural gas. New homes and businesses must find alternative fuels to supply heat and power.

Two alternative routes have been suggested for this pipeline. One route would put it through eastern Keewatin and Manitoba; the other, across Hudson Strait and down through northern Quebec. May I list my reasons for thinking the Manitoba route is the cheapest and most logical alternative. Consider the matter of construction. The Manitoba route would be an all-land route, while the Quebec route would involve the spanning of a large body of water, Hudson Strait. The building of pipelines on land involves, of course, a well understood and much practised technology; building under water does not involve any well understood technology. Surely problems would arise in connection with the under water route.

Let us also consider construction aids. In this regard the Manitoba route is far ahead of the Quebec route. The main aid to construction would be the Hudson Bay railway, which would run parallel to the pipeline from Churchill to The Pas for 510 miles. That route would provide the builders of the pipeline with cheap transportation help. The very presence of a railway and highway means that supplies could be transported quickly and cheaply to construction areas.

In the first phase of construction, materials would be taken to Churchill and loaded on supply boats, which would deliver materials to points along the Hudson Bay coast where construction would be taking place. In the later phases of construction, materials would simply be unloaded along the railway and highway at a point where construction had proceeded. As a sideline, this would provide a much needed shot in the arm for the port of Churchill and the railway.

In my remaining few moments I wish to point out that we must do all that we can to promote solar energy. It was certainly encouraging to read today that the government is going to be using solar energy to heat partially some of its new buildings.

A recent United States committee report said that country could already have been saving about three million barrels of oil a day—about half its current oil imports—if it had heeded the advice of a presidential commission in 1952 to develop solar energy. Even without a strong government program, however, solar technology has been developed and there is in place a small but significant manufacturing capacity. "With appropriate and wise government action, the industry could and would take off," the report said. "The nation could and should establish immediately the goal of providing at least 30 per cent of its building heating and cooling, and water heating increases each year from now until then," the committee report urged.

To achieve such a goal the report recommended enactment of tax incentives, and perhaps low-interest or guaranteed loans, to encourage rapid application of solar heating and cooling.

On a recent trip to Israel I noted that the majority of homes use solar energy to heat their water supply. They are certainly showing leadership in that area. However, I see very little being done in this country with regard to solar energy. I hope the minister will be pursuing that.