an outer area, and with clashes between the centre and the outer area. This is another of those stresses which we see.

I should like to deal for a few minutes with two or three major problems facing this country to illustrate its fragile nature and to stress what I think is needed, namely, a much stronger federal initiative. We must listen to the provinces, but then we must make our stand.

I should like to deal briefly with the whole matter of our energy policy as it has been laid down and as it is developing. Sometimes when we deal with a topic as large as this it is well perhaps to dig ditches and build bridges. In other words, I would like to stop at a certain point and deal intensively with one matter, then go over other parts rather quickly.

There are three basic elements to our energy policy. The first one is an adequate and secure supply for all of Canada. I think that we must deal with an adequate supply both in the long and in the short run. In the short run, we were very concerned in the latter part of the last session and in this session with the possibility of an emergency this winter. For many reasons this emergency has not occurred, and I hope it will not occur. Of course, the energy allocation bill was the result of that concern. However, I should like to spend a good deal more time on the long-run aspects of our energy policy, because I think the situation is much more grave in the long run. I believe, too, there has been far too little concern about this aspect.

First, I will talk about oil. Early in 1972, the Canadian geological survey indicated that Canada had 135 billion barrels of ultimately recoverable reserves of conventional crude oil. A year later, early in 1973, this figure was reduced to 99 billion barrels, but not because we had used anything like that quantity in that period. In fact, we had used less than a billion barrels, but the figure was reduced because the information that the government had was changed. The information was changed, I think, because the department itself was a little more careful about checking its sources and was doing more work in arriving at these figures.

A year has passed since these figures were published. It is my estimate that the figure now is closer to between 60 and 70 billion barrels. In other words, our estimate of reserves ultimately recoverable of conventional crude oil has gone from about 135 billion to about 60 to 70 billion, or about half of what it was two years ago. Also, I think it is very significant that there have been no significant finds of conventional crude oil in the offshore areas or in the north since this 135 billion barrels figure was posed. So, we are still speculating so far as this is concerned.

Now, we do have a very large source of oil which we know exists. Perhaps the exact quantity is not available, but it is certainly very significant. I refer to the tar sands in Alberta and Saskatchewan. We do not have to spend time to explore or find these tar sands. We know where they are. For instance, we know that perhaps 50 billion to 60 billion barrels could be obtained through strip mining, but there would be great problems associated with it.

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We are told that by 1985 Canada will require approximately 2 billion barrels of crude oil per year, and that our conventional western reserves will be used up by that time. At present, we have about 10 to 12 years of ultimately recoverable conventional western crude in our reserves, and I repeat that by 1985 these reserves will be just about depleted. As a result, we will be dependent on the conventional crude we find in the interval, and on the tar sands. I think it behooves us to realize that the tar sands are the significant area upon which we must concentrate. The problems involved in getting 2 billion barrels per year out of the tar sands will be tremendous. I am told that Canada will require something like 17 extraction plants using a strip mining process which would entail an investment of something like $30 billion.

Even if that amount of money were available, there would still be a problem in bringing the plants into production at a rate much faster than one every year and a half, or one every two years. As a matter of fact, an Alberta government interdepartmental study of the tar sands suggested that four years might be the minimum period for bringing each plant into production. I am told the industry suggests it could be done once every two years or once every year and a half. Obviously, this means that we could not get 17 plants into operation by 1985. As a matter of fact, the small Syncrude plant now in operation will not be on full schedule until 1978. In addition to the job of getting the plants on stream in time there is a significant environmental problem in that the process requires a great deal of water. Water has to be converted into steam, and the steam is then used to extract the oil and gas from the sands.

Considering these factors, it seems to me that the very large body of oil, possibly 200 billion or 300 billion barrels, that is *in situ* below the area that can be strip mined, is the one that can be of most benefit to us in the long run if we can develop the right extraction processes, particularly in terms of the environmental considerations. But at this particular point in time, no really worthwhile research has been done on how that significant body of oil could be recovered and put on stream.

So far as natural gas is concerned, we can assume that we have about 20 to 25 years supply in normal positions, that is, in areas from which it can be delivered fairly simply, with fair quantities of gas in other areas where its extraction will require tremendous investment. Here I mention the north in particular.

We also have massive reserves of coal. But there are problems attendant on the use of coal in large quantities, environmental problems, sulphur problems, dust problems. As an example, for the community of Thunder Bay, Ontario Hydro is now proposing to erect a thermal plant which would use lignite shipped in from the west. The Thunder Bay residents have expressed strong opposition to this proposal, opposition which I support, because this means that a significant amount of dust will be spread through the atmosphere wherever the coal is landed. Environmental problems will arise also from burning the coal, and these, too, will affect the community.

We are coming to the end of the road in generating electricity from water power. Now we have embarked on projects such as James Bay and South Indian Lake. One possibility which disturbs me very much is that rumours are afloat that work might be undertaken in the future on the Albany River. When such diversions occur, we do