

3. The need also for abundant and very economic energy in a world of diminishing natural resources where such energy may well determine how many people can be supported and at what living standard.

Let me expand briefly on each of these.

The current electric generating capacity of the United States is about 325 million kilowatts. If we look ahead a mere 30 years to the year 2000, our projected capacity is about 1.5 billion kilowatts. What is required in the way of generating facilities and fuel to keep such a capacity operating? As a hypothetical illustration of the magnitude of this requirement, consider a power economy derived solely from coal. Fifteen hundred generating plants, each with a capacity of one million kilowatts, operating at an assumed three-quarters load factor, would burn about ten million tons of coal per day. Such a requirement, by the way, would involve the daily movement of 100,000 railroad cars and the dumping of coal into billions of cubic feet of storage space. Should we go the nuclear route to generate the same amount of electricity, roughly the same number of nuclear plants would consume all of three tons of fissionable material per day, and, I might add, the nuclear plants using such fuel would require reloading only once every two or three years.

What I have just pointed out, let me remind you, involves only *one day's* generation of electricity only 30 years from today. I do not think, therefore, that anyone can seriously believe we could rely on coal as our major source of power as we enter the twenty-first century or that we should not develop with all due urgency the best systems for producing nuclear power.

Even if our projected coal reserves should be sufficient to fill our furnaces for a few centuries, long before we dig for that last lump of coal we will have far better uses for this valuable resource than to burn it. Here I have reference to its use as a unique source of material for the chemical industry. From this standpoint alone I think the advent of nuclear energy will prove to be a historical necessity for man.

The same thing, I think, will hold true from an environmental standpoint. The pollution load that would result from the burning of all the fossil fuels in massive amounts and as rapidly as we would need them going into the next century would pose a disastrous environmental hazard. I am thinking here, as I believe we must when we speak of long-range future energy requirements, on an international scale. In considering such requirements we must recognize that there is a world