

February 1, 1977

The Natural Resources Committee convened in room 437, at 10 a.m., on February 1, 1977, with Chairman Sheldon presiding and all members present (except Reps. Harper, Bengtson, Burnett, Cooney, Curtiss, Hirsch, Huennekens, Nathe who were excused) for an informational meeting by JERRY D. PLUNKETT, Managing Director, The Montana Energy & MHD Research and Development Institute, Inc.

MR. PLUNKETT: This is the most important topic we have to deal with in the United States. My remarks are essentially a personal matter and don't reflect any policy statement of the institute. I would like to share a point of view developed over the past 6 or 7 years as I have participated in the energy problems of the United States and in the energy concerns as they deepened. There are many people in the energy field and it is perfectly legitimate they have their own personal points of view. I'll be as optimistic as possible. We do have a great wealth of material in terms of human resources to address this problem.

This week there are over one million people unemployed because of the lack of fuel. I would like to point out that this is the second major crises and they are coming with increasing severity. People predicted these crises for some period of time. The first occurred in 1970 (oil production crisis) but wasn't felt by the public until 1973. Our present emergency situation has occurred absolutely without any outside intervention. It is us and we have to address the problem. The notion that our difficulties lies outside our society is the first problem we have to set at rest. We are blessed with enormous resources--but both of these crises have picked on production of two of our major fuel systems.

The price of natural gas has been kept too low through the functioning of the FPC. The argument of what the price should be are manifold and I don't want to get involved in that--it is to lose sight of larger issues. There is no reason to expect that we'll every again see a substantial increase in the amount of natural gas.

The fact is we do have certain resources in the short term and in the past we have made conversion from one fuel to another. Wood first--converted over to coal--and about the turn of the century petroleum and natural gas became convenient and inexpensive and it was developed to a large extent. Now that production has peaked. I would say in the case of both of these fuels increasing the price will never again restore production to its peak. Eighty percent of the deposits have been found and in the 10 largest fields--while we can spend more money drilling in smaller fields the idea that you can simply pay a few more dollars to supply these natural fuels is a dubious argument. It should be looked on as a transitional thing--the energy utilization looked on as only a holding action. It is not a long term solution--to depend on fuel reserves is perilous.

Petroleum and natural gas are not the only fuels. We do have coal. The common argument is we should ship it immediately. We should look at coal as being a second transitional fuel. It will be inceasing in supply. There are many statements to the fact that

we have 800 to 1000 years of supply. On the other hand we have really a two fold national policy--meet the energy needs and furthermore continue the historic growth of energy production as it has been--this means production and energy consumption doubling every twenty years. With this in mind assuming no additional conservation, no assumption to efficiency, we have 65 years supply of coal. If you start burning coal gasification plants which reduces efficiency the coal will run out faster. Coal is essential to the country--essential to Montana. Montana will have to supply some to the country. Perfectly possible that within the lifetime of people born today the coal will be gone.

Some changes involves the fact that people must become more conservation minded. Malignant consumption has become distinctive of society. The very institutions that have built the country and made it rich becomes destructive--growth processes without control. It utilizes and destroys the basic resources of the country. We have to go back to the positions of our parents and grandparents who really looked on thrift as being one of the greatest values. This does not mean a lower standard of living. People in Europe have a similar standard but a different style of living. Our priority should be to reduce in half our energy consumption over a period of time. There needs to be the right incentives--increases in price will go a long way. Agriculture in Montana is an example of conservation that other industries would do well to try to emulate.

If coal is a transitional fuel, we should be looking forward to a complex energy system that comes increasingly to depend on renewable resources. We must look to wind, solar, etc--these systems can in fact deliver what we need if we start preparing now. How do we do this? Implement a program for the alternative resource development? Federal program along this line is misdirected--wouldn't know an innovation if they saw one. ERTA rejected people because of preconceived notions and also didn't recognize innovations. \$40,000,000 has been spent on research and development and the resulting product has been low. We do not have a system which leads to problem solving. We have developed a generation of bright and literarily prolific people--with a policy of publish or perish. This distresses me no end, and therefore I am not one for simply putting money into research and development to solve problems--it simply ignores innovation and tends to work on the problems that are easily quantitative and makes good papers. Professional societies have not developed a system for developing technology. A study has been made on the innovations since WW II that have had the largest impact on the country--21 of those were developed by individuals and only 4 came out of the large research developments. This is not to say we have to reorganize the whole research area--just establish certain methods and procedures whereby new innovations can be recognized and supported. In my judgement there is a lot of technology which has never been developed and can be developed cost effective compared to the increasing price of nonrenewable fuels. The quicker we can come up with transitional energy sources the more stable our society will be.

Our Center for Innovation is to help individual inventors with innovations which appear to have economic potential. It is our belief that through the development of such projects we can also help address the problems the state faces.

In addition to this you people in the legislature have to be creative and innovative in your own way. We as technologists can develop solutions that can be improper. You have to decide which innovations are going to be developed. If you allow the country to be run by technologists you would have a country you can't live in as a free person. The kind of thing I would suggest--laws instituted here in the state to increase the efficiency of transportation. We have at the moment a law in the state for a speed limit of 55 miles per hour. We had suggested that in an emergency that is a good thing to do. But if you slow them all down no feedback to buy cars that take a small amount of petroleum. The law is being violated increasingly and I think it is actually a losing thing. Law really penalizes people in terms of time. The law should encourage people to drive smaller cars that save gasoline. Obvious thing to do is have a speed limit on the size of car. People with small cars would be able to drive faster. People would make a rational decision on how they see their comfort, cost and time. Knowing the people I would see the rapid adoption of small cars. Increases in price is not going to be effective until it is really high. I do think it is the kind of thing we have to consider--new options. Things like enforcement and safety problems--clearly lose safety (air bags mandatory) would need consideration.

We must realize all of these changes is going to make some change in our lifestyles. We must orderly plan now the kind of lifestyle we want. People haven't had a chance to have this orderly change--such crises can be avoided by simple planning, a good government policy, and energy conservation. Perfectly possible for us to live in a peaceful society that is reasonably comfortable. If we ignore the first two signals we have received in our pattern of consumption the country will run off a cliff at some point in the future. I would point out that the answers are complicated, any policies made should be workable. There were problems about the natural gas in the eastern United States--for 30 years there has been a price differential between interruptible and noninterruptible gas. A choice as to whether you are going to have a warm house or a job. It is easy to make mistakes--no easy solutions--but in the long run there are solutions. Renewable energy development--Montana is the only state in the union that has a program of renewable energy. The reason I am here is that I think there is an opportunity for Montana to be an example. Montana sells wheat to those people and if they freeze to death they won't be customers. The amount of fuel should be subject to review--based on what can be done on the other end to conserve energy. Important for Montana to set the example for energy conservation. We should keep in balance both in the short range and long range--remember the thrift principles of our grandparents. We don't need to go back to poverty.

REP. COONEY: Can we use alternative forms of energy to solve our problem now?

MR. PLUNKETT: In a short frame of time it is impossible to go to alternative energy forms. In a period of five to ten years it would make a relatively small contribution. We don't need oil or coal--we need energy--and 50% of all energy needed is for low heat. The technology will be available for this low heat in house heating in about 5 years and the rate of adoption will depend on capital. High heat will cost more and the technology not as available yet. But this then can make a contribution of 30 to 50% of our total need. What we need now is to cut energy demand by smaller cars and conservation in the homes.

Role of the state: in my judgement the renewable resources program is better organized and more productive than the national program. The money spent by the state of Montana in this area is enormously valuable to the whole country. The federal government would do well to study ERTA. At some point we need programs that will allow people to have various kinds of subsidies for energy production.

REP. METCALF: Most of our thinking has been on small scale systems. What about larger scale suppliers turning to alternative energy and what can we do to supply incentives?

MR. PLUNKETT: I do think alternate energy can be developed on a large scale. The reason I have stressed small scale is that systems like that are so costly and this I feel is not a wise way to spend money as it is better to emphasize diversity. However, if you are willing to put up the \$50,000,000 I could tell you how to spend it.

REP. QUILICI: Will Montana have to supply the rest of the nation with gas and coal?

MR. PLUNKETT: Absolutely, it will happen. The tax that has been imposed on the coal is a fair one. If the country feels that the coal will solve a problem they will take it. We are going to have all kinds of crises situations if we don't get going on a very conservative policy--one that emphasizes thrift and reduction in demand.

REP. COONEY: Has private industry done their utmost to help?

MR. PLUNKETT: They are doing as much as I could expect. If I were in the natural gas business, I would be before you arguing for higher prices. I have seen substantial changes in the past three years in their attitude toward conservation. Many of the people in the utility business see solar systems as a threat to their business. It is too easy to criticize companies for not doing this or that. They carried out their role too well which is why we have the problem we have today. Competition should be enhanced--just as well they don't get involved.

REP. METCALF: Concerning the conversion of coal to gas--should the legislature do anything specifically? What should state policy be?

MR. PLUNKETT: I have received a lot of information on this. The chances of Montana getting a demonstration plant are small. I do not feel it is of high priority--gasification as a major fuel system is not efficient. 70% of energy is lost in the conversion, and then the average home furnace system operated over a season tends to be 50 to 55% efficient, so this would result in only 35% of the original energy in the coal delivered. Electricity approaches 60%. A heating pump in the home has a performance of 1.8 and if you put in a small storage unit in the home you can boost it up from 1.8 to 2 plus. There is small capital cost. I would suggest homeowners do the following: insulate; have a solar collector; have a backup electrical system; use a heat pump; and have a furnace to backup the system. If you go such a route then you would have a system which is properly designed to take 10 to 20 times as much energy out of the coal.

No, I don't look with much favor on gas plants because of the low efficiency. We might incur a large debt and it might become a white elephant. We don't need the gas for industrial purposes.

REP. FRATES: If you have a source of running water use it.

CHAIRMAN SHELDEN: What about problems with backups?

MR. PLUNKETT: There is a problem of backup. If you depend entirely on gas or electricity for backup it will be sitting idle most of the time. We don't know what the price will be--to what extent we have to depend on existing systems. Prices should be based on a peaking system if that is the way we are going to use them. If a consumer knows that there is a peak period approaching he can switch from one energy source to another--electrical signal can come over the wire warning that the price is going to be doubled. If you increase the price people with backup can drop off line. Pricing power when its used as well as amount would make the backup system well worthwhile. Choice is the key to having an energy system that is really competitive, otherwise we are going to be caught in a situation--the utilities will hook up only so many customers. Montana Power could be caught in a situation where they would have to deliver peak power for a few months of the year just for a few winter days. Storage of heat at low temperatures--the firm I was with looked at several storage systems. Incentive to increase by filling in the valleys to store up energy during slack times.

Home insulation is such a good buy--and a good saving of energy. Dollars are important but so in energy. Solar systems can also be an excellent investment as once in place they are not subject to continued price increases.

REP. METCALF: Backup system--understand there is a small coal furnace in the works which will burn coal directly.

MR. PLUNKETT: With a solar collector a backup system was needed and so we started developing a furnace that would serve that purpose. Coal had the largest reserves so we decided we needed a better coal furnace--in my judgement poor policy not to fund this area and other areas. There are a number of coal furnaces--I think mine is best. The emission propellant of coal burning approaches or exceeds that of natural gas--a fluidized combustion bed. It reduces the sulfur to acceptable limits. The coal would be delivered in tanks by delivery trucks. It would take about a cubic foot of gas to start it and I think it is technically applicable to large plants. I don't think it can be retrofitted into present boiler systems.

CHAIRMAN SHELDEN: What about coal slurry pipelines?

MR. PLUNKETT: Railroads are more energy efficient--and they are not being used to capacity--society should utilize what it has first. More jobs could also be created in that area--building railroad cars, etc. We have worked on a piece of technology for burning of coal directly on railroads --this would be radically different than the old way. Otherwise railroads should go to electricity. I do believe in competitive free enterprise.

Chairman Shelden expressed the thanks of the committee to Mr. Plunkett for appearing before the committee.

Meeting adjourned at 10 a.m.

Respectfully submitted,

  
ARTHUR H. SHELDEN, Chairman

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