[Chairman: Mr. Ady] [10:02 a.m.]

MR. CHAIRMAN: I'd like to call the meeting to order. We'd like to welcome the Hon. Rick Orman with us, the Minister of Energy. Mr. Yurko is with him today. We welcome him with us.

To the minister. I assume that you have met with this committee before. The format will be much the same as in previous years. We'll entertain questions from the committee after your opening comments, and each member is allowed to ask one question with two supplementaries. We expect the committee members to stay within the projects that are funded under the Alberta Heritage Savings Trust Fund.

Prior to proceeding with the meeting, we'd like to digress for just a moment, Mr. Minister, and allow the members of the committee to read in recommendations that they may have prepared for the committee so that they can be recorded in *Hansard*.

Yes, Member for Calgary-Fish Creek.

MR. PAYNE: Thank you, Mr. Chairman. I'd like to read into the committee record this morning five resolutions, for subsequent discussion of course.

1. Be it resolved that the goals, objectives, and performance of the Alberta Heritage Savings Trust Fund be reviewed by the select committee and that private-sector consultants be retained to assist the select committee in its review.
2. Be it resolved that the Alberta Heritage Savings Trust Fund liquidate its equity position in Syncrude and that the resultant proceeds be used to increase the principal of the fund and to expedite additional heavy oil and oil sands projects.
3. Be it resolved that a new division be created in the Alberta Heritage Savings Trust Fund, the economic diversification division, and that investments from this division be made in projects designed to expedite the diversification of the economy of Alberta.
4. Be it resolved that the Alberta Heritage Savings Trust Fund Alberta investment division invest in a comprehensive, multifaceted recycling program in Alberta.
5. Be it resolved that the Occupational Health and Safety heritage grant program co-ordinate with AADAC and the Alberta Family Life and Drug Abuse Foundation in research into use of alcohol and drugs in the workplace.

Mr. Chairman, I look forward to discussing these resolutions with all the members of the committee later on in our deliberations, and thanks for the opportunity to read them into the record this morning.

MR. CHAIRMAN: Thank you.

Now, Mr. Minister, we would be happy to have whatever opening comments you might wish to make to the committee, and then we'll move into the question portion of our meeting.

MR. ORMAN: Thank you very much, Mr. Chairman.

MR. CHAIRMAN: You can remain seated if you like.

MR. ORMAN: I'll stand if you don't mind.

It's a pleasure for me to be here, Mr. Chairman, and discuss with this distinguished committee some of the areas of my responsibility that emanate from the Alberta Heritage Savings Trust Fund. You indicated that you assumed I have been here before; I have not. I think I am the only person in the room who has not been here before. Even Mr. Yurko, as a member of this government and as Minister of the Environment, I'm sure has been here, and I know he was last year with my predecessor, Dr. Webber.

I'd like to, first, Mr. Chairman, comment on the annual report 1988-89 of the Alberta Heritage Savings Trust Fund presented to the people of Alberta. I refer to that document because it is a good, informative package, particularly from my point of view, that outlines particularly the background and the current status of the access that my responsibilities have into the Heritage Savings Trust Fund. Certainly on page 3 there is a good background concerning the Alberta Energy Company, the Lloydminster biprovincial upgrader, and other areas. There are also in this document some references to the financial situation, and I am particularly pleased with some of the footnotes that are provided on pages 37 and 43 that really give the details as to how we relate to the OSLO project, the biprovincial upgrader, our interest in Syncrude, and our interest in the Alberta Energy Company.

By way of introductory remarks, Mr. Chairman, I'd like to go through the projects that I have responsibility for, give you some current information together with some historical data that will give you a perspective as to how your investment is working in my area of responsibility.

I'd like to begin with the Syncrude project. As many members of this committee know, in the fiscal year 1988-89 the project produced 54.4 million barrels of synthetic crude oil. This averages about 150,000 barrels per day. The direct operating costs were $14.82 a barrel for the calendar year 1988, and they have been lowered significantly since 1985, which at that time was $17.74 a barrel. Production has steadily increased over the years, from 46.9 million barrels a year in 1985 to 54.9 million barrels in 1988. I should point out at this juncture, Mr. Chairman, that many members of this committee know that there has been a decline in the production of conventional crude oil, particularly this year, and I wanted to point out to the members that synthetic crude oil production has increased. Certainly our commitment to projects such as Syncrude and OSLO are based on the anticipation that was there by the previous government and previous administrations, recognizing that conventional crude oil would come to a decline at some point and that a commitment to synthetic crude oil was important in an attempt to make up the differential. Certainly we've seen that crude oil and equivalent – for synthetic crude oil in 1980, it amounted to 9.6 percent of total production, in 1985 12.9 percent of total production. It's estimated in 1990 to make up 13.25 percent of total production, rising in 1995 to 15.7 percent of total production.

Now, if I may, Mr. Chairman, I'll return to my comments, specifically to Syncrude. Production for Syncrude is expected to be 56 million barrels in 1989, and in 1990 it's expected to be about 60.4 million barrels. This dramatic increase is the result of the start-up of the capacity addition project that came on stream in mid-1988. As you know, oil prices have an effect on the profits of this project and other projects. The price on November 8, 1988, as we recall, was $15.58 per barrel. This was the lowest price since the start-up of the project in 1979. Prices for the fiscal year 1988-89 averaged slightly over $18 per barrel. As a result, Alberta's 16.74 percent equity share reported a loss of $3.1 million. Profitability for the project for the first six months of 1989-90: there was a profit of $17.6 million as compared to $3.4 million profit for the same six-month period in 1988-89. Prices for this six-month period averaged $22.40 Canadian per barrel. Profits for Alberta's equity investment since the plant started up in 1979 to the end of August 1989

were $430.7 million, and the total royalty paid to the government of Alberta Treasury since plant start-up in 1978 has reached a total of $1.063 billion.

With regard to employment, an important component and important in the consideration given to the participation of government in these megaprojects, in 1989 Syncrude provided direct employment of 4,600 employees and another 2,000 contract people. It is the largest private-sector employer in the province of Alberta. It generates 16,000 direct and indirect jobs annually in Canada and $1 billion annually in spending in the Canadian economy. In addition, Syncrude is one of the major innovators in applied technology, with one of the largest research and development departments in western Canada. I'm pleased to report that the plant is currently operating very well. There were some problems with the cokers during this period that resulted in some downtime, a decline in production. Syncrude is now back on stream, and we're pleased to see that. The Syncrude project is moving along very well, and we're all very pleased to see that.

Mr. Chairman, you'll recall that there was some consideration given to the Syncrude expansion, and there was a study that was completed in early 1989. It was budgeted, as I recall, for about $85 million, and it came in under budget at $81 million. The study concluded that an expansion of approximately 30 million barrels per year was an optimum increment and that the expansion would be at a cost of about $4 billion, which is about equivalent to the cost of the OSLO project, and the operating cost would be about $15.81 per barrel in 1988 dollars. The Syncrude partners are not at this time intending to proceed with the Syncrude expansion, preferring to focus on the OSLO commercial project. It is hoped, however, that the Syncrude expansion will be one of the future major oil sands projects. It was deemed to be too big a chunk to bite off together with the OSLO project. At least now we have the study in place, and it's on the shelf when OSLO is under way. Maybe even prior to OSLO being under way, there will be reconsideration of that expansion.

With regard to the OSLO project, I don't believe I need to spend too much time, Mr. Chairman, with OSLO. I had the opportunity to table in the Legislature the terms of the agreement for OSLO. Simply may I report that the governments together with the private sector have finalized the principles of agreement, and the commercial project will proceed on lease 31 to the extent that it can proceed prior to the final determination date of whether or not it will go to a commercial stage. In the event the project does proceed, it is expected to produce 77,000 barrels per day of synthetic crude oil at a cost of just over $4 billion.

The partners now are moving to finalize the definitive agreement arising out of the statement of principles. The statement of principles provided for payment of development incentives to the owners to a maximum of $850 million, and it also provides for additional incentives indexed to the price of oil to a maximum of $160 million. The owners will also be provided with government guarantees to a maximum of $1.285 million, and the province of Alberta is to be provided with a normal oil sands plant royalty.

Alberta's equity investment is expected to be $309 million, and the heritage fund's investment, which began in the current fiscal year, presently stands at $1.9 million. The operator now is proceeding with engineering studies. There will be a go/no-go decision made, and it must be made no later than July 1, 1991. The project is currently employing 125 people, and this phase of the project is expected to cost about $140 million. In the event the project is constructed, we would achieve at a minimum 80 percent Canadian content of the construction costs.

With regard to employment, the life of the project is expected to create 400,000 work-years of employment, and during the construction phase more than 20,000 work-years of direct employment will be created. As members of this committee know, the project will use conventional mining technology but will use advanced extraction technology to improve the economics and minimize the environmental problems. The type of upgrading that will occur is called hydrogen addition. The owners reviewed a variety of upgrading techniques, and this was seen to be the one with the highest degree of reliability. It is the Veba process, and we have high hopes for its technological applications to other areas of upgrading.

Mr. Chairman, in conclusion, I would like to just briefly touch on the Lloydminster biprovincial upgrader. The upgrader will produce 46,000 barrels of synthetic crude oil per day, and as you know, it uses a heavy oil and bitumen feedstock from reserves that are located in both the province of Alberta and the province of Saskatchewan. This project is currently under construction, and there's a completion date in late 1992. The upgrader is expected to cost $1.267 billion, with the Alberta government's 24.17 percent share totaling approximately $305 million. The heritage fund investment was $2.4 million at the end of March 1989 and is $13.6 million as of today. The construction project will create 5,800 person-years of employment, and there will also be 1,800 permanent jobs created during the operations. As one of the project operators indicated to me, they are pleased to see a project of such magnitude proceeding with so little difficulty. So I was very pleased to hear that comment, Mr. Chairman.

I just wanted to briefly talk about the Alberta Oil Sands Technology and Research Authority, and I have with me Mr. Bill Yurko, who is the chairman of that authority. I will not go into great detail because Mr. Yurko as that chairman has been before this committee on a number of occasions. But there is something I would like to highlight about AOSTRA, and that is their commitment to dealing with environmental concerns that are facing us as a province in the area of upgrading heavy oil, in situ recovery of oil sands, and the Underground Test Facility, together with their commitment to technologies that improve our environmental circumstances generally. They do, I believe, a very good job, and the very first formal discussion that the chairman and I had dealt with some of the environmental concerns that I wanted set out as a priority with AOSTRA. I think it's appropriate, and it's reflective of the concerns that Albertans, Canadians, and people globally have for the environment. I'm very pleased to see that AOSTRA has taken up this challenge and is moving in a very positive direction. We'd be pleased to ask any questions you have in that connection.

There were questions, Mr. Chairman, the last time that the Minister of Energy was before this committee, and it had to do with commercialization. There are some substantial gains being made in commercialization, reflective of the fact that we want to have our investment from the heritage fund working for us in a commercial way. It works not only for a return on our investment, but it also advances the ability of the industry and the participants in the sharing of this technology to upgrade our resources in this province. There has been a substantial investment made by both the private sector and the government of Alberta through the heritage fund, and it has been pretty much a 50-50 cost-shared arrangement. Over the life of the Alberta Oil Sands Technology and Research Authority we have

seen that to the end of March 31, 1988, the industry has invested $444.434 million in cost-shared ventures with AOSTRA, and the Alberta Oil Sands Technology and Research Authority has provided $496.539 million. So you can see that it works very well. There is a good relationship between AOSTRA and the industry in an effort to upgrade and maximize our resources on the oil side in the province of Alberta.

That brings my comments to a conclusion, Mr. Chairman, and I'd be pleased to answer any questions that members of your committee may have for myself or Mr. Yurko.

MR. CHAIRMAN: Thank you, Mr. Minister, for a good overview of the projects that are funded under the Heritage Savings Trust Fund.

We'll now move to questions from the committee members. We'll call on the Member for Calgary-Forest Lawn for the lead question.

MR. PASHAK: Thank you, Mr. Chairman. I, too, am very pleased that AOSTRA has taken up the environmental challenge, and I am personally quite impressed by this discussion paper, The Greenhouse Effect and the Alberta Fossil Fuels Industry, which came out under the chairmanship of Mr. Yurko, and I guess Dr. Wiggins participated in drafting the study.

But it leads to a critical question for the province, and I want to raise this question. I don't want anyone to think in terms of my putting this question that I'm opposed to the OSLO project going ahead, but it certainly requires, I think, an answer from the minister as to how he can square kind of a contradiction between public support for a project such as OSLO and the concern that's expressed, not only in this report but I guess by the Prime Minister as well, that we must reduce CO_2 emissions.

MR. ORMAN: Well, Mr. Chairman, certainly we as a resource-based province have two responsibilities. One is to maximize the development of our resources in the province of Alberta and at the same time make sure that we maximize the environmental compatibility of development in the province of Alberta. That does not go just for oil sands, heavy oil, and conventional oil production; it also goes for other areas of nonrenewable resources, and the forestry area, of course, is the first one that comes to our mind.

I have in my responsibility recognized the dramatic impact that the oil sands plants together with natural gas production have on CO_2 production into the atmosphere, and as I attended my first energy ministers' conference at the end of August, I felt that I might as well have had my Minister of the Environment there because the whole conference virtually was taken up with the issue of CO_2 and global warming. There are a couple of things to be said about it. First, there has to be obviously more work done to determine the definitive impact that CO_2 has on global warming together with the definitive impact of global warming on the planet. Although we do not have the type of data that we would like to have to draw the conclusions that we would like to draw, that has not prevented us from moving forward. We are assuming that CO_2 into the atmosphere makes as major an impact as it does without having that definitive agreement. From my point of view I want to proceed until I'm proven differently rather than sit back and not do anything until I can be proven that it does make an impact.

There has been some very good work done on CO_2. Leading into the energy ministers' conference, I had prepared an inventory of CO_2 contribution into the atmosphere, which I tabled with my energy minister colleagues in Toronto at the energy ministers' conference. We were the only province that had completed an inventory, and that inventory basically sets out what sectors, both in our personal life-styles and in terms of the industry, contribute CO_2 to the atmosphere. There is no question Alberta is one of the biggest contributors in Canada. Recognize, however, that Canada is 2 percent of the global problem for CO_2 emissions.

There was a study done that was commissioned by the energy ministers. We are reviewing it now. We will be meeting again in April, and at my suggestion the other provinces will bring back their inventory of CO_2 contribution to the atmosphere. Then I think we have to set out from there some reasonable goals that we can realistically achieve. I don't mean that we have to be absolutely realistic. I think there's something to be said for setting unachievable goals at some times and striving towards them, but we have identified it as an important aspect, something that we must deal with here in the province.

AOSTRA, as you've indicated, has provided a very good document on global warming and CO_2 as has the Alberta Research Council, which released theirs yesterday. The Department of the Environment is working in that particular direction, as is my department. It's a difficult area to deal with because on the natural gas side – which brings us to the Syncrude project, because of the use of natural gas at the project. The contribution that the process itself makes to CO_2 is significant. We must, as I've indicated, first understand the impact and then move in whatever direction we can to deal with it.

On the natural gas production side about 48 percent of CO_2 into the atmosphere comes from the venting of CO_2. As our geological friend from Westlock-Sturgeon knows, 48 percent of CO_2 into the atmosphere comes from the venting process at the gas plant stage, while we must recognize that we export about one-third of our natural gas production to Ontario. So basically our contribution of CO_2 in the atmosphere is to make a clean-burning fuel in the province of Ontario. My point to my energy minister colleagues and to the federal minister of energy is that that should not be part of Alberta's total inventory for CO_2 and that we have to look at it on a Canada-wide strategy basis. That also includes the oil sands projects, which do make a contribution to CO_2 in the atmosphere. There is no technology today that can successfully eliminate CO_2 production. We do use it in enhanced oil recovery; CO_2 is injected as an enhanced oil recovery mechanism. But that simply postpones the venting of the molecules into the atmosphere.

I hope that with the commitment to CO_2, we can draw on our experience with SO_2. Elected representatives before us had a like concern for the impact of SO_2 in the atmosphere and thereafter followed technology that successfully dealt with SO_2. This brings me to the Member for Calgary-Forest Lawn's point, that I'm sure is that what we should be doing is pooling our resources and moving in as quickly a fashion as possible towards developing technologies that can deal with CO_2 into the atmosphere.

So that's a long answer to an important issue, Mr. Chairman. Maybe Mr. Yurko would like to respond on that particular issue as to his approach at AOSTRA.

MR. YURKO: Thank you, Mr. Minister. First of all, I'd like to say unequivocally that the CO_2 problem and the greenhouse effect is a worldwide problem, and the amount of coal burned and CO_2 released in some areas of the world is vastly greater than anything that we possibly put out in Alberta or Canada.

China is the largest coal utilizer in the world. It has 1.2 billion population, and it expects to double its coal utilization by the year 2000.

My own view is that there is a vital need for an international conference on this whole CO_2 question at the earliest opportunity on an international basis. However, that doesn't mean that Canada, and particularly Alberta, can't lead in some areas, and that's really what we're trying to do here in Alberta by effectively, first of all, documenting all the various sources of CO_2. I should also tell you that at the World Energy Conference there was some doubt as to the effect of CO_2 on global warming and that there is no real concrete data, as yet, indicating very effectively scientifically what this effect is. There are a lot of conjectures, a lot of postulations, and so forth, but no real concrete data. But this is going to be put together before very long, this concrete data, because of the interest in this area.

Again I just want to say, as the minister has said, that there are areas that Alberta can lead. This is one area, and ARC has put out a report. I think this is just the beginning of some subsequent action, and I'm sure the minister has indicated that we'll probably have a committee of the various government agencies and departments put together to see what actually can be done. We've listed in our report certain areas where, in fact, CO_2 can be reduced or reinjected and so forth. But it's not a minor problem; it's a massive problem, and from my perspective I don't anticipate any massive action like a reduction of 20 percent in the use of hydrocarbon fuels in Canada whatsoever. I expect a reduction gradually as we move into the future, but I don't expect a massive reduction in the consumption of hydrocarbon fuels as an immediate project. There are other ways of dealing with the matter.

MR. CHAIRMAN: A supplementary.

MR. PASHAK: I got a half an hour answer. No, that's good. I think it's an important issue, and I appreciate the comprehensiveness of the replies.

In a way, though, I did ask for a justification of putting public moneys into a project like OSLO when we haven't resolved these environmental concerns, particularly with respect to CO_2 emissions. Maybe the minister might touch on that again.

MR. ORMAN: Well, I think that . . .

MR. PASHAK: That was just a comment. I haven't asked my question yet. I'm glad that Alberta's prepared to take a leading role, but that leading role may mean that down the road we may have to see Alberta as an energy producing province as opposed to an oil and gas producing province. We may have to look at renewable forms of energy production and this kind of thing, especially if we're to meet the Prime Minister's target of reducing Canadian emissions by some 20 percent, I guess, over the next 15 to 20 years. I think he's indicated some time line like that would be a desirable goal for Canada. I, too, recognize that Alberta doesn't, on a global basis, make the same contribution to CO_2 production that other nations do, but still I think it's incumbent on all parts of the globe, if we do find out in fact that CO_2 production is responsible for the global warming trend, for everyone to take part in the solution to that problem.

So I guess my question is: is AOSTRA prepared to commission any studies or to look at how Alberta's basic economy might survive if we begin to make a transition from producing energy from nonrenewable resources to maybe producing energy from a more renewable base such as solar, thermal, geothermal, and that kind of . . .

MR. ORMAN: Actually, I said in my opening remarks that we have two responsibilities, and really we have three as a province being rich in energy resources. The third one I think is, as the Member for Calgary-Forest Lawn has pointed out, that we should, too, take some of the revenue from our conventional, nonrenewable side and put it into research into bringing on alternative uses of energy resources such as wind and solar. I have at the present time a recommendation in the system that will give a fairly substantial commitment in that particular area. So it is something that we are cognizant of, and we have participated in other areas in the province, particularly in the area of enhancing the use of coal. I cannot speak to it at great length today, Mr. Chairman, but I can assure the member that we are moving in that direction, and we will be making a fairly substantial commitment to looking into and the development of alternative energy sources.

Do you have a comment from AOSTRA's point of view, Bill?

MR. YURKO: From AOSTRA's point of view, we are primarily attempting to move the hydrocarbon cycle gradually from the carbon end towards the hydrogen end. It's not a case of moving dramatically overnight but moving on a gradual basis so that we will be doing the maximum upgrading on all our bitumen heavy oil resources and so forth. But we're also involved and beginning to work in the hydrogen end of the cycle, so that there is a need and there is a desire and there is allocated money in terms of tending to move the entire hydrocarbon cycle gradually towards the hydrogen end. This isn't going to be done over a period of five years or 10 years; it's a much longer term process. But we are moving dramatically in research and development in that area.

MR. PASHAK: The minister in his comments mentioned the significance of natural gas, in part in terms of its contribution to gas plants, to CO_2 production, but on the other side of the coin, natural gas burns in vehicles with less CO_2 production per unit/volume, I guess, than refined gasoline, et cetera. So it's going to be a much more desirable fuel in the future for that and a number of other reasons. I wonder if the minister would care to comment, then, on why we're so committed to exporting what I think is a very limited volume of natural gas when it's really such a premium energy fuel.

MR. ORMAN: Well, there's no question it is a premium fuel, Mr. Chairman, but at the same time, it is in vast quantities in this province and in the northern part of this country. There may be a time when natural gas becomes a premium in terms of supply, but it is not a premium in terms of supply today. It may come, and we would have to rethink our strategy with regard to export and the uses of natural gas.

There are a variety of ways in which natural gas is used and maximized in an optimum way, but we are looking – we are participating in alternative uses for natural gas. Just earlier this month I did participate, together with my colleague Jake Epp, the Minister of Energy, Mines and Resources federally, in a pilot project in the city of Medicine Hat, where their civic vehicles will run on natural gas. I am very optimistic about the potential for the success of that project, and I am quite frankly hoping it is the thin edge of the wedge. There are companies such as Canadian Hunter who have substantial gas reserves in this

province and, at the same time, have a commitment to doing just as you suggested, and that is upgrade the use of natural gas in terms of its end use. There are pilot projects on this continent. Certainly, with President Bush's Clean Air Bill and the desirability of reducing the use of gasoline, we will certainly see more initiatives that will encourage the use of natural gas as a transportation fuel.

There's no question that all nonrenewable energy sources have some type of environmental wart. Some of those warts are bigger than others. The smallest wart today seems to be on natural gas, and if we can deal with this challenge of CO_2 in association with natural gas production, we will have, obviously, the cleanest burning fuel from a nonrenewable side that is known to us today. We moved to the use of natural gas because of the pressures on the use of oil by-products and SO_2 emissions for oil by-products as well as coal production. That's how natural gas became so attractive. But as I've pointed out, there are problems with the production of natural gas, and I'm hopeful and confident that technology will catch up on CO_2 the same way it did on SO_2.

MR. CHAIRMAN: Thank you.
The Member for Wainwright.

MR. FISCHER: Thank you, Mr. Chairman. Good morning to the minister and his staff.

I would like to ask you a question about the Lloydminster biprovincial upgrader. You had mentioned that the heritage trust fund will invest $305 million as the 24 percent partner. The return on investment has always been left a little bit in the dark. Has there been a base price on a barrel of oil to project the earnings, or how long will it be before the $305 million is returned? Have there been projections or studies done on that?

MR. ORMAN: Certainly, as I've indicated in my opening remarks, Mr. Chairman, price is a major factor on the viability of these projects, and it is one of the reasons why I spend a great deal of my time and energy on the world energy pricing scene. I think it's important for us to know as much as we possibly can on the future prospects for price, because we do have substantial investments in projects such as the Member for Wainwright has pointed out, in the Lloydminster provincial upgrader.

As the member knows, and as was filed with the Legislature, the upgrader has a somewhat complicated business structure and has associated two classes of shares in the joint venture, and for me to try and project a rate of return on our investment is somewhat difficult, not knowing what prices were. So I would have to assume some future pricing scenarios – something that has been done, but it is crystal ball gazing to a large extent. What we have put in place is a business plan that basically recognizes the need of the operator, Husky Oil, to get an after-tax, stand-alone, nominal rate of return on the excess in the class A equity contributions over its initial equity of $100 million. That is assuming that the province of Saskatchewan have not exercised their options to acquire all of their class B participating interests. Husky is entitled to approximately 53.3 percent, and the fund is approximately 16.19 percent of the net operating revenue of the venture. So basically we're recognizing a payout situation by the operator, and then our interest will kick in after that. All we can do is structure the best business deal that we possibly can, and then, of course, the factor of price comes into it.

So I can't give you an absolute rate of return, but I can tell you that the way the deal is structured lends itself to maximizing the return to the province on their investment at a particular stage of payout to the operator.

MR. FISCHER: Another question on that. How far-reaching will the upgrader go in obtaining their feedstocks? Have you got a bit of an estimate on that? We are going to be taking them from Saskatchewan and Alberta. How big an area are we going to be using to get that 46,000 barrels a day?

MR. ORMAN: Well, it is a fairly vast area, and as the Member for Wainwright knows, he has in his area some substantial reserves of oil that in some cases will require upgrading. One of the things about the upgrader and about upgrading our oil sands is that by making it a lighter crude, it makes it more conducive for Canadian refineries. In the past the heavy oil has been more conducive to United States refineries, so by making a commitment to the upgrader, this allows us to use the upgraded product in Canadian refineries. There are substantial heavy oil deposits in the province of Alberta, particularly in that segment that surrounds the Lloydminster area, and there are two on the Saskatchewan side, so it is quite a wide range. I can't give you the total area, Mr. Chairman, but as I indicated in my opening remarks, there is substantial potential in the future, after the plant is constructed, for production of oil from the province of Alberta.

MR. FISCHER: Thank you.

MR. CHAIRMAN: Member for Edmonton-Avonmore, followed by the Member for Ponoka-Rimbey.

MS M. LAING: Thank you. I'm looking at the estimates of proposed investments, and I'm on page 14 in terms of renewable energy research. I note there is proposal for wind and solar research being done in southwestern Alberta. I'm wondering if there's a reason for limiting it to that part of the province.

MR. ORMAN: Well, certainly the climate down there is conducive to that area. I don't recall the exact numbers, but on the North American continent the wind velocity in that part of the province is as high or almost as high as anywhere on this continent. As I've indicated, I have not totally fleshed out the nature of our commitment to renewable energy. That will be coming forward very shortly. But I would like to point out to the hon. member that it will not be limited to southwestern Alberta. There will be a component of the program that will allow for access in other parts of the province. It's a good question, because originally the concept was limiting it to that area, but we don't think that as a provincewide government that strategy is appropriate. So we will be looking at ways in which other parts of the province can access the program.

MS M. LAING: I would just raise this question, because somebody has raised it with me. Is there a possibility of thermal energy development in this province?

MR. ORMAN: Thermal energy?

MS M. LAING: Geothermal energy.

MR. ORMAN: Geothermal. I'll ask my technocrat.

MR. YURKO: I'm not in a position to be prepared to answer the question at this particular point in time.

MR. ORMAN: Okay. I have heard reference to geothermal production viability in the province, but it has not been brought to my attention as something that would be economically viable on a commercial basis.

MS M. LAING: Okay. So would you consider looking into it, even in a preliminary . . .

MR. ORMAN: It's certainly worth looking into. I'd be pleased to do that.

MS M. LAING: Okay.

I guess what I'm hearing from you, and I'd like to confirm it, is that there is a commitment to alternative energy forms. What we've heard in this committee on some departments is that there seems to be lots of research and very little action that comes out of that research, so I guess I'm asking about a commitment flowing from the research that would be done.

MR. ORMAN: I think one of the things we've seen is a watershed in an approach to alternative energy sources. It used to be, not long ago I might add, that it was approached strictly and solely on its economic viability as a comparison to other energy sources, renewable or nonrenewable. And certainly the public's concern for the environment on a global basis I believe is advancing the desirability of exploring alternative energy sources not necessarily isolated to their cost competitiveness. I think that's positive, and it's something we as a government are examining. Certainly I have a high degree of interest in my area of responsibilities, and I think we've touched on a few of them here today. It may not be to the extent that some members would like to see, but I can tell you that we are moving in that direction and it's a positive direction to go for the reasons the hon. member has suggested and for the reasons I have indicated.

MR. CHAIRMAN: Member for Ponoka-Rimbey, followed by the Member for Edmonton-Meadowlark.

MR. JONSON: Yes, Mr. Chairman. To the minister. Last year the committee made the following recommendation, and if it's acceptable, I'd just like to refresh everybody's memory with respect to it. The recommendation was:

> That an investigation be done into the feasibility of selling the shares held through the Alberta Oil Sands Equity in Syncrude and that the proceeds from the sale be used in the future to fund the capital required in the upgrader at Lloydminster,

which the member from Wainwright has been talking about, and the OSLO projects.

Now, Mr. Chairman, when the Premier was before the committee on October 5, he mentioned that some consideration was being given to the sale of the government's share in Syncrude, and my initial question would be: has any progress been made towards making that decision, or is there a time line that could be shared with the committee?

MR. ORMAN: Mr. Chairman, it is a matter that I have had the opportunity to discuss with the Premier, and certainly, from where I sit, it's something I support. It is, I think, conducive to the principles of a Progressive Conservative government. Understand that part of our principles of getting involved in these projects, which may not appear Progressive Conservative at the outset, are really designed to assist the projects in getting off the ground, because many times they are not economically viable or the size of the project is such that it requires support from governments, and we've seen that in some of the projects we've talked about here today.

Our philosophy, I believe – my philosophy certainly, and I know it's the Premier's philosophy – is that once we have achieved that objective, it is then appropriate for us to consider whether or not we should continue on in the investment side on all these projects, not just on Syncrude, not just through Alberta Oil Sands Equity, but on all of our investments. There certainly is now a review being conducted, and there will be some recommendations made as to whether or not we should continue our investment, apropos the question asked by the Member for Ponoka-Rimbey.

There is nothing definitive now. I cannot give a definitive answer at this point, but I can certainly indicate to the member that it's under active consideration.

MR. JONSON: Mr. Chairman, some industry publications – and I think to some degree there has been media coverage from the information offered in these publications – are of the opinion that this next year or two may not be a good time to move into the disposal of the government's share in Syncrude. If I recall correctly, they are saying that the mid-1990s would be more appropriate, given that oil prices are expected to rise at that particular time. Does the minister have any information to offer vis-à-vis this particular contention?

MR. ORMAN: It's a difficult question to answer, and it certainly will be the nub of the thought process that goes into whether or not we do sell our interest in projects such as Syncrude. Basically, sale prices are determined on the present market value, which is one of the components of discounting future cash flow based on a projection of price into the future. Certainly it's a better time to consider this year, when prices are in the $19 U.S. range, as opposed to this time last year when prices were in the $13 U.S. range. The return on our investment has substantially increased during that period of time.

With regard to your question on the price of oil for the future, the current sentiment today is that there will be a return of stability within the OPEC members and that they will move from geopolitical considerations for setting price to traditional supply/demand economics. By that I mean that historically the price for oil has basically fluctuated based on who's fighting with whom in the gulf and who is producing over their quota and how that impacts on the world call on OPEC crude. It seems there is relative stability now that there is a sense of common sense amongst the OPEC members, and that is that they look at supply/demand; they look at U.S. growth figures, at OECD growth figures, and try and match that up with a level of reasonable call on OPEC crude. If in fact that approach is pervasive and is long term, I believe we will see a consistent, albeit moderate, increase in the price of crude oil into the mid-1990s: 1995, 1996. If that's the case, it makes it obviously easier to project what prices are going to be.

The longer we see stability, the longer we have confidence in our abilities to project a stable price, therefore makes the marketability of our interest in Syncrude, and other projects we may consider, more viable and attractive. But as the hon. member knows, it comes down to a willing seller and a willing buyer, and then negotiations start there. We're not even at that stage, so I wouldn't preguess whether or not we would have

successful negotiations or find a group or an individual that's interested in the purchase of that interest, but it certainly doesn't hurt to explore the possibilities, and that's what we'll be doing.

MR. JONSON: Mr. Chairman, one final question then. In light of the recommendation introduced earlier today by the Member for Calgary-Fish Creek, it seems now to be a given that we'll be returning to the topic of the possible disposition of the government share in Syncrude. Therefore, I'd like to ask the minister: what is the estimated market value of Syncrude at this point in time? I think this would be useful to the committee in future deliberations.

MR. ORMAN: Again, it's a difficult question to answer. Market value is basically a reflection of what a willing buyer is willing to pay for it. I would not hazard a guess, not even an academic hazard of a guess, Mr. Chairman. It may be useful from an academic point of view – with respect, Member for Ponoka-Rimbey – but certainly I would not want to prejudge any negotiations we may enter into with a willing buyer. If I gave you a market price, then we would be setting either a ceiling or a floor for that price, an opening in terms of a price, and I would prefer not to do that. Obviously, through the annual report of the AHSTF we can see how much money we have into the project, government dollars into it, but that would not give you a meaningful reflection of market value.

MR. CHAIRMAN: Thank you.

The Member for Edmonton-Meadowlark, followed by the Member for Calgary-Fish Creek.

MR. MITCHELL: Thanks, Mr. Chairman.

Mr. Yurko mentioned a little earlier his feeling that the use of hydrocarbon fuels wouldn't drop dramatically, at least not by 20 percent. I'm not trying to interpret on his behalf, but in my mind that could be a dangerous statement for this government, if it is a widespread belief, for two reasons: one, in fact it may be dangerous to our environment if it doesn't drop by 20 percent or even more; and two, if it does and we're not prepared for it, it may be dangerous to our economy. I'd like to explore that to some extent. Does that statement reflect this government's decision, then, not to participate in the international interest in the resolution to reduce hydrocarbon use by 20 percent of today's standards by the year 2005?

MR. ORMAN: Mr. Chairman, a couple of comments. Firstly, the Toronto accord that dealt with global warming set a 20 percent reduction over the 1988 level of CO_2 production, which by the year 2005 will require a 50 percent reduction in CO_2 emissions. I can tell you, Mr. Chairman, that that is a substantial reduction of the use of fossil fuels to achieve that objective. I am not suggesting that it is not an admirable objective. As I indicated in my comments earlier, sometimes it is wise to set unattainable objectives, because by doing that, you then stretch yourself and achieve something that is meaningful in the long run.

I guess a rhetorical question to the Member for Edmonton-Meadowlark. If he has a substantial commitment to CO_2 emissions, I would ask him if he drove his car to work today and if he was the only one in that car. I would ask him if he turned on the heat last night in his home as the temperature dropped in Edmonton or if he threw a log on the fire to supplement the heat in his home. If he did, Mr. Chairman, he is a substantial part of the problem with CO_2 emissions into the atmosphere. Now, I make that as an example that we as citizens of this planet cannot turn around and start pointing fingers at somebody else to achieve the levels that must be achieved to address this issue.

We refer to the fact that Canada contributes 2 percent of the global problem. If Canada is able to halve the amount of CO_2 into the atmosphere, that means we are 1 percent of the problem. Mr. Yurko aptly pointed out that the Soviet Union and China are going to be increasing substantially their contribution of CO_2 into the atmosphere. So if our Prime Minister would like to be statesmanlike and to continue his commitment to reducing CO_2 emissions and the global warming issue, I would hope that part of that would be, in addition to encouraging the provinces to comply with a certain achievable level, that they put pressure on the countries that are really making the substantial contribution.

Now, as I indicated in my remarks, I do not want to be a part of the finger-pointing game either, Mr. Chairman. We all must recognize that we have to make a major modification in our lifestyles to achieve the levels that are set out in the Toronto accord. I certainly have had discussions with the industry. As a matter of fact, as recently as Monday morning I met with the Canadian Petroleum Association task force on CO_2 into the atmosphere, which I encouraged them to set up as a result of a letter I wrote to them following the energy ministers' conference, because I'm looking for ways in which they are going to address CO_2 emissions at the gas plant stage. With that initiative we will be getting recommendations, and we'll be seeing the level of their commitment to it. But we must then engender a commitment from the citizens of this province and this country, because they are going to have to make major life-style modifications to achieve those levels. So I throw that out, Mr. Chairman, because I have a like concern for it, but I do not think we should indulge in academia. I think we should indulge in realism, and that's what I hope to be able to accomplish over the next period of time, particularly leading up to the next energy ministers' conference on this issue in April.

MR. MITCHELL: It's also important that we don't indulge in rhetoric. What we want to do is see some concrete action.

I should point out as well and thank the minister for responding to the initiative, the letter from my colleague from Westlock-Sturgeon, asking you to pursue with IPAC the question of returning CO_2 to the ground in the refining process of natural gas. That's very encouraging, and I'm pleased to see that you are pursuing IPAC. Could the minister please give us some indication as to what timetable he has for requiring gas producers to deal with their CO_2 emissions in an environmentally sound manner?

MR. ORMAN: Our commitment as energy ministers is to reconvene in April, and my hope is that reconvening will occur in the province of Alberta at my offering to my colleagues. Understand that this is not an annual conference of energy ministers; this is a conference that will basically be a reconvening of an adjourned conference that was the annual conference in August, and it will deal specifically with the CO_2 global warming issue.

My time line is to do what we can, from every possible angle, to address this issue. As I've indicated earlier, although CO_2 is not definitive in terms of its impact on global warming, my approach will be to assume that it is until I'm proven otherwise, and I think that's going to be the approach of the provinces.

We must look and see what the impact is going to be on us as citizens of this province, the impact on the economy. But as I indicated to the previous questioner from Edmonton-Avonmore, we cannot look at it from a totally fiscal point of view when we're talking about the environment, and I undertake not to do that. We are now on the leading edge of getting a handle on the inventory, who makes the contribution and to what extent, and we must go through that exercise before we set in place a concrete game plan. But it will follow fairly soon, and I hope that by the time we reconvene as energy ministers in April, all provinces come to the table with a game plan to deal with this important issue.

MR. YURKO: Just one brief comment, Mr. Minister. Alberta and Canada to a large degree are leading the world in technological development, research, and understanding in this area of dealing with hydrocarbon resources and the release of CO_2. And it is in this area that we are involved, literally, with 21 different nations now in terms of exchanging technology to decrease the carbon dioxide release, if you wish, and move the hydrocarbon cycle towards the hydrogen end. Most of our technology under our AOSTRA Act is very specifically to be made available not only nationally but internationally, and so we're having massive relations with the world in regards to our technological development in the province.

MR. CHAIRMAN: Final supplementary.

MR. MITCHELL: That's very good, of course. The concern is that if we don't find a way to handle the CO_2, then one of our critical economic resources may become increasingly despised in the world.

I'm very interested in that idea and in the specific comment made by the minister that, as with sulphur emissions in this province – they were seen to be a problem, and industry and government focused on that problem and are overcoming it with technology, and he said the same should be done with CO_2. I wonder whether, one, he could give us some inventory or assessment of the research that is being done at this time in the area of burning hydrocarbon fuels but reducing the impact of their emission of CO_2, and two, whether there is room here for the Heritage Savings Trust Fund to support this initiative in ways that it's not already doing.

MR. ORMAN: Maybe I'll ask Mr. Yurko, who, as a result of the work that went into the report he's recently released on this issue, might be able to respond. My understanding is that there ain't none, to use a colloquialism, but maybe Mr. Yurko can speak to some of the initiatives that are part of the inventory on dealing with the issue.

MR. YURKO: The issue is not simple; it's very complex, as everybody knows. Certainly if you go through the review of the report that we put together in terms of handling hydrocarbon resources and the manner in which CO^2 can be reduced, you will find a series of charts at the back which give you various ways in which this can be reduced. They're complex, I know, but this is a complex matter. But we are working in a number of areas – coal, heavy oil processing, for example – to generate a fuel that has a higher hydrogen-to-carbon ratio for generating electricity. We are working on various methods of, indeed, burning coal, such that you add certain additives which reduce the sulphur dioxide directly in terms of the effluent gasses. We are working in several ways in terms of reducing the NO_xs, which may have an influence in terms of warming as well as CO_2. So there are a large number of areas where we are now beginning to move in a rather dramatic way, in terms of research and development, and exchanging this information on a worldwide basis.

I don't want to indicate that we've found the solutions to the CO_2 problem. We haven't, but we think we are progressing very well in terms of eventually finding a solution. But I want to say again that the solution is not a Canadian solution, though we'll take initiatives in technological development and so forth. It's a worldwide problem of immense proportions, and the world will have to deal with it. We'll have to get together in terms of conferences like the 1972 conference on the human environment that I attended in Stockholm, Sweden. We're going to have to have an international conference on CO_2 emissions and the greenhouse effect at the earliest opportunity on a worldwide basis.

It was interesting at the World Energy Conference to get some idea from Mr. Schlesinger's speech as to the demand for hydrocarbon resources in the United States, and the consumption is going up rather dramatically, even with the reduction of, you know . . . In a few years it suddenly started to go up again on the basis of 15 percent, I think, over the last four or five years. Their intent for the importation of hydrocarbon fuels is going up massively. It's not a reduction; it's just a straight line going up like this.

So it is massively a worldwide problem. We can lead in technological development, we can lead in certain areas, but I don't think reducing our 2 percent of the world ejection of CO_2 by a half percent or a quarter percent is going to make much difference to the world reduction of CO^2 into the atmosphere.

MR. CHAIRMAN: Thank you.

Member for Calgary-Fish Creek, followed by Calgary-Foothills.

MR. PAYNE: Thank you, Mr. Chairman. On page 156 of the October 20, 1988, *Hansard*, Mr. Yurko said:

> We're going to be placing more and more emphasis in a number of areas to push our pilot facilities into a semicommercial or commercial facility in the next few years.

I'm wondering, Mr. Chairman, if the minister or possibly the AOSTRA chairman could bring the committee up to date as to what progress has been made regarding the commercialization of pilot projects.

MR. YURKO: This certainly is an exciting area. As you know, the Shell Peace River project, which is now a commercial project intended for expansion before too long in the future, resulted from a pilot facility which was 50 percent funded by AOSTRA. You also know that the BP Canada Marguerite Lake project, which has become a commercial project, resulted from a pilot facility with AOSTRA. The VIKOR plant and enhanced oil recovery in Red Deer is again a project that has gone into commercialization as a result of AOSTRA's work, and we're moving to commercialization in several other areas. We have the AWAC technology which was developed at the Suffield heavy oil project and will be used in the AEC commercial project. It has now generated an extensive amount of interest throughout the United States in terms of enhanced oil recovery of existing reservoirs that are depleted.

Our Underground Test Facility in Fort McMurray is in the precommercial stage, and we have six companies joining with us in terms of moving that towards commercialization. Our Kearl

Lake pilot project is exceeding all our expectations, and as a result of our recent agreement, we expect it to move towards commercialization before too long. Also, I would like to indicate that the AOSTRA Taciuk Processor has been commissioned for waste disposal, and the first 22-foot diameter unit is going to Waukegan harbour in Illinois to clean up a contaminated site with PCBs and hydrocarbon contamination. We have a proposal in Australia for using our AOSTRA Taciuk Processor for extracting oil from shale – they have on tap right now a demonstration facility in the order of 6,000 barrels a day – which we hope to get launched before very long in Australia.

There are other areas where AOSTRA technology is gradually moving towards commercialization. It is an exciting area, and it's an area where we are effectively pushing more and more of our technology towards commercialization.

MR. PAYNE: Thank you.

Mr. Chairman, I certainly don't want to appear preoccupied with AOSTRA's balance sheet, but last year Mr. Yurko reported to the committee that AOSTRA's board of directors had put a priority on the sales of technology. I'm wondering what details the minister or the chairman could share with the committee as to what progress was made in technological sales in the past year.

MR. YURKO: Very briefly, we've reorganized AOSTRA to some degree in this area. We've put into effect the AOSTRA technological transfer and commercialization organization; it's now in full operation. We've had 29 technology exchange agreements worth some $10 million which have been executed; six worth $7.9 million are pending. Fifty companies are now interested in our anti water coning technology. We have 18 companies now associated with us in our AOSTRA university research program, on which we just had a conference in Banff just last week. This area is growing rather dramatically, but again, we can't change the picture overnight; it takes some time.

I should indicate that we'll be having a major conference with a major display of our technology on our 15th anniversary, which will be held on March 26, 27, and 28 here in Edmonton. We will be laying out massive reports in terms of what technology is available for sale through AOSTRA. We expect, internationally and nationally, an awful lot of companies coming in to see the technology and purchasing it. I should also indicate that we're one of the basic organizations sponsoring the UNITAR conferences in the world. We had last year a massive conference here. This was the second such conference held in Edmonton. The other two were held in Venezuela and in California. The fifth one is going to be held in Venezuela in February of 1991, and we hope that the sixth one might be held in the Soviet Union. So here again is a way of disseminating our technology and selling it and making it available internationally.

MR. PAYNE: Mr. Chairman, in view of the latitude you have extended to other members with respect to ministerial speculation, I would like to mention to the minister that about two weeks ago the *Edmonton Journal* carried a story about a pilot project that was using space-age technology to burn coal which could reduce acid rain emissions by up to 90 percent. If this or a similar project were successfully commercialized, obviously it would have tremendous environmental and economic impact. I'm wondering if the minister feels that this is the kind of project the heritage trust fund should consider future participation in.

MR. ORMAN: Well, Mr. Chairman, it gets back to some of the other discussion, and I think it's all very appropriate that discussions on the use of fossil fuels revolve around discussions on the environment. I think that's appropriate, particularly in today's day and age. It indicates a responsiveness on behalf of us as legislators to what the demands and expectations of the public really are with regard to the environmental issues. Yeah, I would say that if there are any projects, and with regard to the one that the hon. member mentioned, that can substantially reduce the levels of sulphur dioxide or carbon dioxide or nitrogen oxide into the atmosphere and at the same time upgrade our hydrocarbons or make our hydrocarbons more attractive as a fuel, then I think it is appropriate that we do examine those. I indicated to you earlier that one of the priorities Bill Yurko and I put on AOSTRA was on the environmental side as it relates to his responsibilities concerning the upgrading of our heavy oil, oil sands, and enhanced recovery of our oil resource. We will certainly continue to do that, and as you may have noted, as a result of a similar discussion at the last meeting of the Heritage Savings Trust Fund committee and the previous minister and Mr. Yurko, there has been an increase in dollars in his budget towards environmental considerations. We'll certainly hope to keep it that way for the coming year.

MR. PAYNE: Thank you, Mr. Chairman.

MR. CHAIRMAN: Thank you.

Member for Calgary-Foothills, followed by the Member for Redwater-Andrew.

MRS. BLACK: Thank you, Mr. Chairman. Good morning, Mr. Minister.

My question goes back, I guess, similar to the question from Ponoka-Rimbey with regard to the sale or the potential sale of Syncrude. He dealt with many of the areas that I would like to have dealt with, but one thing I was uncertain with was that in your opening remarks you talked about the $4 billion expansion at Syncrude, if and when the decision is made as to what we will do with Syncrude. What, in the meantime, happens to the $4 billion expansion plans at Syncrude?

MR. ORMAN: Mr. Chairman, I did touch briefly on that issue in my opening comments, but let me expand, because it's obviously of interest to the committee in that it's been raised again.

With regard to the expansion of Syncrude, we advanced to Syncrude partners a budget of about $85 million to pursue the possibility, the engineering and study, of an expansion of the existing Syncrude plant. Basically, with the $4 billion OSLO project under consideration at that time and another consideration of a $4 billion investment for Syncrude expansion, the conclusion was quite simple. That's a heck of a lot of money to be investing at one time in a relatively uncertain environment with regard to future pricing.

[Mr. Jonson in the Chair]

I'm pleased, basically, with the result. They did conduct a basic engineering study for the major expansion. With the price shock that we experienced recently, it did stall consideration of future oil sands plants, and the loan was intended to preserve some momentum on the research and design side, because certainly there was $12, $13 pricing. There was a substantial

reduction in momentum in furthering consideration for oil sands projects. As the prices recovered, there was more attention paid to a third plant, and it was felt that further consideration should be given to the expansion. As I indicated in my opening remarks, they did come in under budget. Eighty-one million dollars is what their actual expenditure was, and I might point out that 90 percent of that – to the hon. Member for Calgary-Foothills – was spent in the province of Alberta. The study has resulted in design development that will improve oil sands excavation and transportation, bitumen extraction and upgrading, and the technology that was garnered from that study will be used in the OSLO project, so it was applicable.

We must now wait, I believe, for the furthering of the OSLO project before there is further consideration given to Syncrude expansion. I should also point out that if Syncrude does expand, the loan that we advanced to Syncrude will be repaid to the government. But as I indicated, we wanted to maintain some momentum in the research and development side. We successfully did that. There were some technological innovations that came out of that study. Some of it is being deployed in the construction of the OSLO project, but the bulk of it will be on the shelf. Once there is further initiative towards consideration of an expansion of Syncrude, then they have gone through that critical engineering phase of study that they did for the expansion, and I think that will be very useful.

MRS. BLACK: A supplementary based on that. If the other partners involved in Syncrude wanted to proceed, would we be prepared to let them proceed without us as a partner on the expansion?

MR. ORMAN: Well, we have an equity interest in the Syncrude project and, therefore, would be entitled to participate in the expansion of the Syncrude project to the extent of our equity and whatever other commercial terms can be negotiated amongst the partners. It is somewhat premature to say whether or not the government would participate, and it is premature also in the sense that if we have under active consideration the sale of our interest in Syncrude, then that may pre-empt the requirement for further investment in the expansion of that project. As I've indicated, our willingness and our desire to participate in these major projects are basically motivated by our desire to get them off the ground based on our forward thinking. Once they become commercial and viable, then that's the time to consider withdrawing from our participation and selling our equity. And as I've indicated a couple of times here today, that's under consideration.

MR. DEPUTY CHAIRMAN: The Member for Redwater-Andrew.

[Mr. Ady in the Chair]

MR. ZARUSKY: Thank you, Mr. Chairman, and good morning, Mr. Minister and Mr. Yurko.

I have a couple of questions here today, both of them in regard to AOSTRA. One has to do with the funding of AOSTRA. I know that the funding of AOSTRA has been shifting to more from general revenue instead of the heritage trust fund, and I gather this year it's at 86-14 percent in favour of the general fund. I understand that it's going to be phased out at the end of this fiscal year or next. Now, my question – I guess this would be to the minister – is: what criteria are used when determining the percentage of funding, whether it's going to come from the general fund or the heritage fund? Why is it now more appropriate to fund AOSTRA from the general fund rather than the heritage trust fund?

MR. ORMAN: Well, Mr. Chairman, let me first acknowledge the Member for Redwater-Andrew and the very capable and meaningful contribution he made during the period he sat on the board for the Alberta Oil Sands Technology and Research Authority. I can say that not from my experience but from an unsolicited comment that Mr. Yurko and other members of the board made to me about the member's contribution. I thank him, and I know that in the long run the citizens of Alberta will recognize his substantial contribution to that board.

We are now, as the member indicated, at the end of our investment through the Alberta Heritage Savings Trust Fund. The average annual AOSTRA investment of expenditures was about $35.7 million over the life of its access to the fund. The balance of our budget this year is $5.1 million, a balance which will be withdrawn in the '89-90 budget. Then our balance will be down to zero, I believe, Mr. Yurko.

There is, I guess, a variety of considerations given to whether or not funding of this nature should come from the Heritage Savings Trust Fund or whether it should come from general revenue. I guess the current thinking is that AOSTRA has a long record of association with the heritage fund and is more or less an institution of government. Therefore, moving it into the general revenue side of government would make the most sense for that particular reason.

Bill, you may have a comment in that regard.

MR. YURKO: AOSTRA's administrative funding, as you know, Mr. Zarusky, has always come from GRF. Our capital funding for capital projects has, except for the last couple of years, generally come from the Alberta Heritage Savings Trust Fund. By virtue of that we had set up a trust fund within AOSTRA so we had the flexibility to deal with longer term projects which covered four or five years and also projects which varied from year to year. This gave us the flexibility in terms of our capital budget. Under our GRF funding for our capital budget, we will lose some of this flexibility, because if we need additional funds in any particular year after the budget is passed, we will have to come in for a special warrant. So there is some loss of flexibility. This flexibility we had with capital funding from the Heritage Savings Trust Fund was something that was very well appreciated within AOSTRA over the last 14 years. To some degree we will be losing this flexibility, and it's a question of whether or not it will affect AOSTRA seriously. I don't know as yet. But I think the nature of AOSTRA and its objectives are such that the government will fund through GRF the capital funding required by AOSTRA without too much difficulty. From my own experience today our current budget and our budget suggested for next year will be adequate to cover our capital requirements.

MR. ZARUSKY: Well, thank you. I've got a supplementary here. I just want to thank the minister for the kind words and say that it's been a pleasure working with Mr. Yurko and the rest of the board members. I think we've got some very knowledgeable people on the board. I enjoy going over to the office once in a while and meeting with the fellows just for some updating, but lately I haven't had the time. This is why I'm asking some of these, and I see that . . . [interjection] Well,

maybe the Member for Edmonton-Avonmore could be an addition to the board. Anyway, I don't know. That would be up to the minister and Mr. Yurko, I gather.

MR. MITCHELL: Why don't you resign and open a business?

MR. ZARUSKY: Well, I'm not on the board any more, hon. member. This is why I'm asking some of these questions.

Anyway, my supplementary is: there was a recommendation made last year, and I'll read it, to

> endorse a plan to provide incentives and to encourage private-sector companies involved in heavy oil activities to reclaim and clean up sites

with technology available from AOSTRA projects, and there's been a lot of it available. Either to the minister or the chairman, could you tell me if there has been any progress in these recommendations?

MR. YURKO: I told you earlier that we have commissioned or constructed an AOSTRA Taciuk Processor, which we're shipping to Illinois for cleaning up the sites over there. We're giving some serious consideration in the budgetary process and also technologically to build a mobile unit for Alberta use. It would be a smaller unit which we could transport throughout Alberta without too much difficulty to clean up sites, or roadways if you wish, contaminated with oil. In some cases we can extract and concentrate the PCBs for subsequent handling at the waste disposal site. But we think that with the development of the heavy oil industry and the oil sands industry in the province, there will be a need for a portable AOSTRA Taciuk Processor for cleaning up spills and contaminated sites throughout the province. This is under very active consideration.

MR. ZARUSKY: Thank you, Mr. Chairman.

MR. CHAIRMAN: Member for Lacombe, followed the by Member for Westlock-Sturgeon.

MR. MOORE: Thanks, Mr. Chairman. I'd like to follow up on the previous member's question in regard to the funding of AOSTRA and generally all heritage trust fund programs. I have a concern that when we set up these programs, there was no emphasis on just where they would end up and go, and there's a greater and greater demand being made for additional funding from the fund or other sources. It's interesting to note that in the case of AOSTRA, general revenue is being considered in the funding area.

I'd like to know the criteria we arrived at saying that this would be funded from general revenue to a greater extent than the heritage trust fund. I'd like to know that criteria because I'd like to see if we can apply it in other areas where there are demands made on the heritage trust fund for additional funding down the road.

MR. ORMAN: Mr. Chairman, I must be candid and admit to the hon. member that I am not totally familiar with the reasoning that went into moving AOSTRA from the Heritage Savings Trust Fund into the General Revenue Fund, and that may be a question you pursue with the Provincial Treasurer. It was really a decision that was made prior to my coming on the scene as Minister of Energy.

Having said that, however, I would underline my earlier comment in this connection, and that is that this authority has basically become an institution, and a very fine institution, of government. By moving it into the budgetary process of my department and the government, there are some counterbalances; there are some pros and some cons. I would assume, without having the total answer for the member, that this is basically the primary reasoning that went into it. But it is certainly something I will pursue, to get greater knowledge on that from the Provincial Treasurer. I'm sure if you see the Provincial Treasurer before this committee again, you may put it to him.

MR. MOORE: Supplementary, Mr. Chairman. Last year I was very pleased when Mr. Yurko indicated that two pilot programs had moved toward commercialization and he expected others to follow suit. I would like to hear if we have proceeded with other projects moving into that area, because I think we all should see a lot of these programs go away from government support and go out into commercialization and return some investment.

MR. ORMAN: Mr. Chairman . . .

MR. CHAIRMAN: Go ahead. I believe you did deal with that to some extent, but perhaps there's something you could enlarge on.

MR. ORMAN: Just let me say that the AOSTRA pilot plant program has resulted in three very significant projects going commercial. One is the Shell-Peace River steam pilot. The other is the BP Canada-Marguerite Lake-Wolf Lake project and the Vikor pilot in Red Deer, an enhanced oil recovery project. Those are three that have moved through commercialization, and it is a priority of AOSTRA, as the Chairman had indicated. There are others that are coming forward. I think, as the Chairman indicated, some of them have been dealt with.

Bill, do you have any supplementary to that?

MR. YURKO: As I indicated, the Kearl Lake pilot project is one in which we expect, and requested in our agreement, to bring forth a commercial proposal by the end of '90. It'll be a study for transferring the whole pilot facility to a commercial project. The other one is the Underground Test Facility, which is now in a precommercial phase, and we hope to move it toward commercialization within the next short period of time.

Besides that, we have some of our technology which is being used for enhanced oil recovery. As I indicated, our AWACT, which is our anti water coning technology, is now under consideration by some 50 companies in terms of its use to extract more oil from existing conventional reservoirs. But primarily the two major projects we have, as we look ahead, are the Kearl Lake project and the UTF project, which we hope to push forward toward commercialization within the next short period of time.

MR. CHAIRMAN: The Member for Westlock-Sturgeon, followed by the Member for Athabasca-Lac La Biche.

MR. TAYLOR: Thank you, Mr. Chairman and Mr. Minister. Also, I'd like to add my welcome to Mr. Yurko. I happen to be old enough to remember when he was the best Environment minister in Canada, and probably still is the best one we've had in the province. He was certainly a very proactive one and annoyed the Tories so much they talked him into running federally. He was a good minister.

Now, on the CO_2, Mr. Chairman, I can't help but think,

listening to those two gentlemen say, "Well, really, we're not sure it causes harm; it's all over the world," that that's the same type of song and dance we've been getting out of the cigarette manufacturers for the last five or 10 years about the danger of cancer from nicotine, that it really hasn't been proven and, until it's proven, go ahead and have another package. Now, what bothers me here on CO_2 emissions is not the fact that Alberta is probably emitting on a per capita basis more than any other political entity in the world. After all, if Canada is one of the highest in per capita and we in Alberta make up one-quarter of Canada, since we're only 10 percent of the population, we're obviously emitting one hell of a lot of CO_2.

What bothers me, Mr. Chairman – and I want to come back to the minister on it – is that CO_2 is now already separated from natural gas before we sell it, because it's noncombustible. I see him nodding, and he agrees. So it's separated, technology and all that, but it's emitted into the air the same way we used to emit natural gas from 1910 to 1930 into the air because we didn't think it was worth anything. CO_2 is not worth anything. Add to that the fact . . .

MR. CHAIRMAN: Do you want to lead to the question?

MR. TAYLOR: I'm just giving you a very brief lesson, and it does go on that CO_2 separation, the handling of CO_2 under the system where we calculate royalties under natural gas, the Jumping Pound formula – the cost of handling or treating or cleaning up a gas comes out of the government's share. So I charge you over there in the government as being the laggards, not the corporations, when you allow CO_2 into the air, because you know that if you ask the corporations to put the CO_2 back in the ground the way we made them put natural gas back in the ground in the 1930s, it would come out of your royalty share. But I submit . . . And this is what I want; this is my first question to you: will you admit that 80 to 90 percent of the cost of putting CO_2 back in the ground, bringing us in line for CO_2 emissions, would come out of our royalty share and therefore we . . . That's one of the reasons why I got a letter back from the ERCB the other day, with a copy to the minister, saying that they will not suspend three gas plants that are going to be constructed until they get rid of their CO_2, because the government has informed the ERCB and the corporations that they cannot put it back without . . .

MR. PAYNE: Point of order, Mr. Chairman.

MR. CHAIRMAN: Hon. member, a point of order.
The hon. Member for Calgary-Fish Creek on a point of order.

MR. PAYNE: Mr. Chairman, I'm having some considerable difficulty relating the oratorical outburst of my colleague to the matters before the committee this morning and would welcome your assessment of that.

MR. TAYLOR: I'm asking – the present regulations read – the cost of putting CO_2 back in the ground, which AOSTRA is researching. I'm just plain asking him: under the present Jumping Pound formula and the system for formulating natural gas, wouldn't it fall on the government's back to do it?

MR. CHAIRMAN: Based on your tying it into AOSTRA research, I'll allow the direct question.

MR. ORMAN: Mr. Chairman, I'm having the same difficulty my colleague from Calgary-Fish Creek is having, and that is trying to understand the question. Any time you get lectured to by an engineer, you run the risk of being totally confused, with all due respect to Mr. Yurko, of course. But as I've indicated to the Member for Westlock-Sturgeon and other members of this committee, whether or not CO_2 is a major contributor to global warming and whether or not global warming is good or bad for the environment of this planet, we are moving to deal with the issue. So for him to suggest that we are stalling because of the lack of definitive data is actually contrary to what I've said here on a number of occasions in the last hour.

The Member for Westlock-Sturgeon has a particular problem in his constituency that I see he is trying to tie to the estimates of this committee, but I should point out to him that we are looking at . . . I'll let Mr. Yurko talk about the reinjection of CO_2. My feeling on reinjection is that we are just postponing the problem by reinjecting CO_2 into the reservoir, and that cannot be looked at as a be-all and end-all to the CO_2 issue. And I'm sure he doesn't either. I'm sure he's much more responsible than that, Mr. Chairman.

Having said that, maybe I could ask Mr. Yurko to respond on AOSTRA's side on injecting CO_2.

MR. YURKO: There are ways and areas where we can use CO_2 for injection to increase the recovery of oil and assist in the recovery of bitumen and heavy oil on an in situ basis. Certainly the Vikor plant in Red Deer is an excellent example where we take the CO_2 from a commercial facility and inject it back into the ground and fix the CO_2 and get more oil out. In other words, we're putting CO_2 and getting a higher hydrogen/carbon ratio fuel, if you wish. Though this is a partial solution, it is certainly not a substantive or major solution to the CO_2 problem in the province or, for that matter, the nation or worldwide.

I don't mind saying that all energy has got a nuclear base. Hydrocarbon energy has been fixed by the sun in the form of life – trees and so forth. Hydropower is caused by the sun. There's a nuclear reactor in space, so all this energy is related effectively to nuclear energy and space. And it's a case of balance. To a large degree over the last number of years we've cut down the ability to fix CO_2 by cutting forests dramatically, and then we tell other countries to save their forests when we've cut ours dramatically. So we've changed dramatically the ratio between carbon dioxide absorption and carbon dixoide release, and we're moving dramatically in terms of putting carbon dioxide in the air by virtue of burning our oil.

But you know, the oil reserves of the world are only about 85 years' supply, so it's not that much in terms of going into the future. Coal is considerably more. But this balance between CO_2 and the air and CO_2 fixation on the ground has got many implications, and only one is the suggestion of injecting it back into the ground. As I said, we've got technology indicating that this can be used effectively in certain ways, but it's certainly not the massive solution, for example, in China where they're burning carbon to a massive degree or, for that matter, in Europe. But it is a partial solution here. We are working on it, doing the research work, and it's quite successful, for example, in the Vikor facility.

MR. CHAIRMAN: A supplementary from the Member for Westlock-Sturgeon, and please hold it to projects that are funded by the heritage fund.

MR. TAYLOR: You're ruling me out of order for bringing a Westlock-Sturgeon problem up, and the answer I get is about China. For some reason China's in and Westlock's out. I know it's as far for you, Mr. Chairman, and for the member for Calgary. If he's been north of Edmonton in his life, I'd be surprised.

I want to get across, though, that CO_2 – and in a comment on the next question, I charge our minister with abusing and throwing away a natural resource. CO_2 appears useless now, or a large part, but it may be just as valuable to have in the ground down the road. Just to put it off in the air so that we can accelerate our gas sales is the wrong way to go.

That leads me to the next question. As AOSTRA mentioned – and this is in research – AOSTRA is here to try to look at our energy uses down the long run. Since free trade, since we're flaring off the CO_2 – I mean, letting it go off into the air – is AOSTRA doing any thinking or does AOSTRA have a curve where the depletion of our cheap natural gas resources by the rest of the world and the whole idea of the accelerated depletion of our natural resources reaches a point where we would then have to tap into the pipeline going from the Beaufort Sea to the Americans for our gas supplies? In other words, have you reached a curve point there where we're going to have to depend on Beaufort or non-Alberta gas to replace the cheap gas we're now selling abroad?

MR. YURKO: We haven't studied that matter, but . . .

MR. ORMAN: I don't even understand the question.

MR. CHAIRMAN: Hon. member, in fairness, I believe you're stretching it a little beyond the mandate of AOSTRA.

MR. TAYLOR: I'm not surprised it's beyond, but I thought I'd ask him anyway, Mr. Chairman.

Let me go on to the third one then. The minister did say – and he was looking at [inaudible], and we have talked about investments from the heritage trust fund in OSLO to look down the road for oil. I might compliment him; he's looking far down the road for oil. But I want to know what he's doing when he looks far down the road for natural gas. Has the minister considered in any way, shape, or form investing in the proposed superstructure that's going to move Beaufort gas through Alberta to the southern markets so we will have a replenishment for natural gas down the road from our frontiers, maybe through the heritage trust investment? Have you looked at an investment in that area? Are you considering that?

MR. ORMAN: I haven't, but it's not a bad suggestion, Mr. Chairman. Maybe the hon. member would like to flush out some of his suggestions in a memo to me. I'd be more than pleased to consider them and return with recommendations, if appropriate to the Heritage Savings Trust Fund.

MR. CHAIRMAN: Thank you.
Member for Athabasca-Lac La Biche.

MR. CARDINAL: Thank you, Mr. Chairman.

Due to the time, I'll make my questions reasonably short. First of all, I want to commend the hon. minister and his staff for the fine job they're doing in playing a major part in continued diversification of our province and, at the same time, ensuring you are sensitive to the environment. I commend you for that. You're doing a fine job, and wherever we can support you in the future, we sure will.

The part I want to question you on is renewable energy research. I see the '89-90 current fiscal year investment is $500,000. My question is: what is the future of this program, say, in the next 10 years?

MR. ORMAN: I'm sorry. I missed the last sentence. What is the what?

MR. CARDINAL: The future of this program as far as continued investment in research, that particular portion.

MR. ORMAN: I did touch briefly on that, Mr. Chairman. We do have a budget item and a project under active consideration now to access the $500,000 budget item we have in the department. It will address a solar/wind project. We are developing an overall strategy on renewable energy, particularly in southwest Alberta, as we indicated earlier. There was an advisory committee struck by my predecessor Dr. Webber in March of 1989 – it was struck earlier than that, but the report they presented to us came in March 1989 – to consider ways in which we can give a long-term commitment, a seven- to 10-year commitment, to renewable energy initiatives. That active consideration has resulted in a recommendation to government. The government is now giving it full consideration, and we will be making a decision and a recommendation to my colleagues in Cabinet and caucus as to whether we will or will not proceed with this initiative. My inclination is that we will. There certainly seems to be broad support here in this committee, and I think in the public, to pursue renewable energy options. The hon. Member for Athabasca-Lac La Biche will certainly be made aware of that project during the active consideration stage.

MR. CHAIRMAN: Supplementary.

MR. CARDINAL: Yes. I presently have a major project of about $90 million proposed by Southview Fibre Tech, which is proposing to develop a plant north of Athabasca to utilize topsoil from muskeg and also poplar, which is abundant in the area. Millions of dollars are going to waste presently. [interjections]

MR. CHAIRMAN: Hon. member, does this tie into one of the particular projects that . . .

MR. CARDINAL: Yeah. My question is: could the minister ensure that the research money that's being provided could be part of that project in Athabasca?

MR. ORMAN: Mr. Chairman, there is a good link between this initiative and the Fibre Tech initiative that the member brings to our attention. During the development of the request for decisions that I will be seeking from my colleagues, it does include a co-ordinated component with the small power research and development program through the Department of Transportation and Utilities. I have met with the minister of that portfolio, and he has an obvious interest in this initiative because it does cross over into the small power producer's area. So the recommendation that does come forward will certainly take into account the initiative that is part of Transportation and Utilities.

MR. CHAIRMAN: Thank you, hon. Minister. We appreciate

you being with us today. We'll ask the Member for Athabasca-Lac La Biche to forego his final supplementary so we can adjourn our meeting on time. We appreciate your frankness and the direction you've indicated your department is going. It certainly will assist the committee in formulating recommendations that will be coming forward from them at a later date. Thank you for being with us, and I would entertain a motion for adjournment.

[The committee adjourned at 12 p.m.]