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A COAL DEVELOPMENT  
POLICY FOR ALBERTA

DEPARTMENT OF ENERGY AND NATURAL RESOURCES

GOVERNMENT OF ALBERTA

JUNE 15, 1976



Preface

This statement of a coal development policy for Alberta is in four parts:

1. An Introduction which touches on the nature and importance of Alberta's coal resources.
2. A General Statement or Summary which summarizes the overall policy.
3. Detailed Elements of the Policy which deal more fully with the individual aspects of the policy.
4. Administrative Procedures which highlight the actual procedures of application, consideration and decision-making respecting individual coal development proposals.

Two appendices supplement the document.

Although not reviewed in this document, several statutes of Alberta and regulations issued under them define specific requirements with respect to environmental protection, land reclamation, exploration rights, development rights, leasing, royalty, conservation, safety, etc. The most important of these statutes are:

- The Clean Air Act
- The Clean Water Act
- The Coal Conservation Act
- The Coal Mines Safety Act
- The Forests Act, 1971
- The Forest and Prairie Protection Act
- The Freehold Mineral Taxation Act
- The Land Surface Conservation and Reclamation Act
- The Mines and Minerals Act
- The Public Highways Act
- ✓The Public Lands Act
- The Surface Rights Act
- The Water Resources Act

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1. Introduction

Alberta's coal resources constitute an enormous potential source of energy, comparable at least to that of the Alberta Oil Sands.

Extending from the International Boundary on the south to the Peace River region in the northwest, coal deposits of variable seam thicknesses underlie large areas of the Alberta Plains, Foothills and Rocky Mountains. In the Plains the depths of the deposits increase from east to west from less than 100 to 10,000 feet and over. In the Foothills and Mountains the depth is extremely variable due to the folding and repetition of strata. The quality and heating value of the deposits also vary markedly, from lignite and subbituminous thermal coals of the Plains to bituminous thermal and coking coals of the Foothills and Rocky Mountains. Alberta coals have a uniformly low sulphur content and constitute a clean, low-polluting source of thermal energy.

As with the Oil Sands, only a small fraction of Alberta's coal resources is commercially accessible at the present time with existing technology. The accessible deposits are those which are at or near the land surface and which generally are amenable to surface mining techniques, or are at depths to about 2,000 feet and may be recovered by more or less conventional underground mining methods. However, a substantial part of Alberta's coal resources is buried at depths greater than 2,000 feet; these deposits are not economically accessible at the present time, although conceivably they may be utilized in the future by some type of in-situ technology which has yet to be developed.

An energy resource of this magnitude cannot be ignored or remain undeveloped indefinitely, especially in view of the fact that Alberta's

existing supplies of relatively low cost energy sources -- conventional crude oil and natural gas -- are being steadily depleted. At the same time, Canadian demand for energy supplies -- especially fossil fuels -- is growing at a steady rate, and firm steps must be taken to ensure that new energy resources are found and developed to meet future domestic requirements. This means, in addition to accelerating the search for conventional oil and natural gas, we must look to alternative fossil fuel resources, which in the shorter term are the economically accessible, mineable deposits of oil sands and coal.

2. General Statement or Summary

The Government's overall policy for the development of Alberta's coal resources is designed to bring and maintain the maximum benefits, now and in the future, to the people of Alberta who own this resource. Exploration and development will be encouraged in a manner that is compatible with the environment and at times which will best suit Alberta's economy and labour force.

No development will be permitted unless the Government is satisfied that it may proceed without irreparable harm to the environment and with satisfactory reclamation of any disturbed land. Neither exploration nor development will be permitted in certain designated areas. Limited exploration and development will be permitted in other areas while some areas will be broadly open for both exploration and development under controlled conditions.

On private lands right of entry to the surface will continue to be based on negotiation between the surface owner and the developer. If agreement is not reached, application may be made to the Surface Rights Board which may grant the right of entry setting the appropriate compensation.

X Development will be first for the purpose of meeting Alberta's own growing demands for electric energy and serving its other industrial requirements. Constant surveillance will be maintained to ensure a long-term adequacy of supply for all Alberta uses.

The Government will ensure that a fair price is received for this depleting non-renewable resource and that the people of Alberta, by way of a royalty on Crown-owned coal and a tax on freehold coal, obtain a proper share of this revenue while leaving attractive returns to the industry as an incentive to explore for and develop the resource.

All future developments will be required to make the maximum practical use of Alberta's skilled and professional manpower, Alberta services and Alberta materials and equipment.

All operations will be under strict inspection and regulation to ensure full compliance with standards and requirements relating to safety and industrial health, environmental protection and resource conservation.

Wherever appropriate opportunities will be made available for Albertans to participate in the equity ownership of future projects.

The Government's policy will continue to be administered by the Department of Energy and Natural Resources, the Energy Resources Conservation Board and the Department of the Environment, with other Government departments participating as appropriate. Modifications to the procedure of considering applications for new developments will result in a four-step screening and evaluation process:

1. Preliminary disclosure of a development proposal to the Government, and the Government's initial response.
2. Disclosure and detailed descriptions of the proposal by the applicant to the public.
3. Consideration of formal applications including the basic Technical Application, a Cost-Benefit and Social Impact Analysis, an Environmental Impact Assessment and a Land Surface Reclamation Plan through a public hearing.
4. Final decision by the Government in the light of the findings of the Energy Resources Conservation Board, the Department of the Environment and the other concerned departments.

3. Elements of the Policy

3.1 Protection of the Environment

The Government's environmental protection policy for surface and sub-surface operations applies equally to public and private land, whether located on the Plains, in the Foothills or in the Mountains.

The Government is committed to maintaining a balance between resource development and environmental protection in order to maintain a desirable quality of life for future Albertans.

Reconnaissance surveys will only be permitted in environmentally sensitive areas under carefully controlled conditions. Detailed exploration and development operations will not be permitted in areas where the environment and plant and wildlife cannot be properly protected and where reclamation of any disturbed land is not possible.

Environmental impact assessments will be required from those proposing major developments and these will be available to public scrutiny and discussion at both specially convened public disclosure meetings and formal public hearings conducted by the Energy Resources Conservation Board. All operations will be subject to the environmental standards and conditions of The Clean Air Act, The Clean Water Act, The Land Surface Conservation and Reclamation Act and The Water Resources Act. Approvals under environmental legislation will be granted only under conditions where all appropriate measures are taken for the protection of the environment and where environmental standards and criteria are not exceeded. A developer will be expected to absorb all costs attributable to his project of protecting the environment both during and upon completion of operations.

### 3.2 Compatibility with other Land Uses

The Government recognizes the importance of Alberta's land resources for agriculture, recreation, forest products and wildlife, and is determined that proper attention be given to these alternative uses in the consideration of coal development projects. Some coal developments may be carried on with little disturbance of the land surface; others may involve the progressive disturbance of several square miles at any one time with reclamation immediately to follow production operations. Only where the temporary withdrawal of the land from agricultural, recreational or other use for coal development is judged to be in the public interest, and where full reclamation is assured, will the Government authorize developments which would cause land disturbance.

### 3.3. Rights of Owners of Surface Land

The rights of the owners of surface land are recognized and will be respected along with those of owners or lessees of coal resources. Holders of rights to coal who do not own the surface will be expected to negotiate with the owners and occupants of the surface for consent to enter and for the temporary use of the land. Should negotiations fail, application may be made under The Surface Rights Act to the Surface Rights Board. The Board would hold a hearing on the application at which representations from the surface owner, lessee or occupant and any other interested party would be received. Where the Board grants a right of entry order it also determines what compensation should be paid and to whom. In determining the compensation the Board may consider a variety of matters, including the value of the land, the loss of use by the owner or occupant, adverse effects on the owner or occupant and damage to the land.

### 3.4 Land Surface Reclamation

The primary objective in land reclamation is to ensure that the mined or disturbed land will be returned to a state which will support plant and animal life or be otherwise productive or useful to man at least to the degree it was before it was disturbed. In many instances the land can be reclaimed to make it more productive, useful, or desirable than it was in its original state; every effort will be made towards this end.

The Land Surface Conservation and Reclamation Act requires the filing of an Environmental Impact Assessment as well as acceptable detailed mining and reclamation plans before approval to proceed with mining is granted. In addition, a security deposit based on the degree of disturbance and the quantity of coal produced will be required to ensure complete and satisfactory compliance with the regulations and approvals.

Land reclamation will include the contouring of the mined or disturbed lands, the replacement of the top soil, revegetation for soil stabilization, biological productivity and appearance, and suitable maintenance of the vegetation or, where appropriate, the conversion of the land to agricultural or other desirable use. Where applicable it will also include the replacement or rehabilitation of those facilities or features which were disrupted during the mining process and which are required to return the land to its former use. Since each reclamation program will be especially designed to suit the projected future use of the land, it will be necessary to establish this future use early in the review process. Representations will be invited from interested persons, especially any affected landowners and municipal governments.

The Government will accelerate its current reclamation program on lands which were mined prior to effective reclamation legislation in 1973 with the objective of rendering the lands suitable for further beneficial uses. It will expect the coal industry to assist in this program.

### 3.5 Use of Alberta Manpower, Services, Materials and Equipment

As a matter of policy the Government requires the maximum practical development and use of Alberta manpower, services, materials and equipment in all aspects of resource development, from initial planning and design through construction to final operation. Companies planning new coal developments must demonstrate that all efforts have been made to comply with the Government's policy in this regard.

This means, for example, that Alberta-based engineering and construction firms are to be given every opportunity to participate in the planning and conduct or operation of coal exploration and development projects, in the design and construction of equipment and plants, and in the related environmental protection and reclamation programs. Where local expertise is lacking or is only partly developed, developers will be expected to work with trade and professional associations and the Government to ensure that Albertans are given the opportunity to acquire the necessary skills and build their capability for future needs.

The same principle applies to the provision of services, materials and equipment, including the design, construction and operation of facilities for manufacturing or fabricating essential materials and equipment in Alberta.

### 3.6 Townsites and Infrastructure

The Government is aware of the critical importance to any expansion of the coal industry of the availability of townsites, residences and commercial activities as well as schools, hospitals and community services. Also the Government is aware of the impact on a community of the kind of industrial development represented by the coal industry. The Government will encourage the improvement and growth of existing towns and

facilities rather than the development of entirely new ones. It recognizes the weaknesses of "one-company" or even "one-resource" based communities and will promote economically feasible diversification wherever possible. The Government solicits the support of the coal industry in this regard and requests potential developers to propose projects which incorporate diversified activities. It agrees with the report of the Grande Cache Commission (Crump report) in recognizing that "reincarnation of the company town would .... be extremely unwise but the assumption of some of the financial risk of building the town by the company might not be."

### 3.7 Transportation

The Government recognizes the vital role of transportation in the marketing of coal and will continue to support industries' efforts with the railways and the Government of Canada to ensure that planning and development of rail capacity keeps pace with needs and that freight rates are realistic. While some extension and upgrading of existing roads, bridges and railways will be inevitable, the Government believes that most of the desirable new developments can be approved for areas now reasonably well provided with transportation service. Where entirely new facilities are needed primarily for the use of a coal development, the Government would expect the developer to pay their full cost. In keeping with the concept of diversification of economic activity for improved stability of the towns which will serve the expanded coal industry, the transportation system will be developed having in mind diversified industrial growth.

### 3.8 Royalty on Crown Coal - Taxes on Freehold Coal

Alberta will levy a realistic royalty on all coal produced from Crown leases and will levy a property tax on coal contained in producing freehold properties.

A new schedule of royalties payable on all coal produced from Crown leases and used or marketed becomes effective July 1, 1976. Barring any major disruption of the economy or action of another government having a major impact upon revenues to the producer, the Government will plan to continue the use of the basic formula without change for a ten-year period.

Under The Mines and Minerals Act royalty is payable at the discretion of the Crown in kind as a percent of the quantity of coal used or marketed or in dollars as a percent of the deemed value of the coal used or the revenue received from the coal marketed. Where the Government is satisfied with the conditions of sale arranged by a lessee for the lessee's share of production, the Government may not take its royalty in kind and may request the lessee to market the royalty share of production along with the lessee's share.

To recognize the high expenditures which must be made by a developer before revenues are produced, there will be a "phase-in" period of 36 months from the start of commercial operations during which the rate of royalty will be increased in steps from a low initial level to the normal level. The royalty will increase each 12 months over this period from 25 to 50, to 75 and finally to 100 percent of the normal level.

The normal royalty rate will be determined by a formula designed to ensure a fair share of revenues both to the developer and to the Alberta Crown under any reasonably foreseeable combination of investment level, operating costs, production levels and coal prices.

The formula will provide for a normal royalty rate which;

- (a) will not seriously restrict the rate of return to the investor in viable projects when total revenues only marginally exceed costs,
- (b) will provide the Crown with approximately a one-third share of the total revenue under circumstances where the total revenue sufficiently exceeds the costs to provide a rate of return to the developer adequate to stimulate further exploration and development, and

(c) will provide the Crown with an increasing share of the total revenue when the return to the developer exceeds the rate mentioned above. Details of the formula are given in Appendix 1.

To ensure that the people of Alberta receive appropriate revenue from those coal reserves which are privately held, the Government will act under The Freehold Mineral Taxation Act and, effective January 1, 1977 will levy a property tax on those coal resources which are generating revenues to their owners. The tax will be based upon an assessed value of freehold coal property. Details of the assessment procedure will be developed in the near future and presented in regulations.

### 3.9 Opportunity for Equity Participation by Albertans

The Government has recognized the need to provide individual Albertans with an opportunity to invest in the development of the Province's energy and natural resources through creation of the Alberta Energy Company. As a matter of principle it believes that Albertans should be able to participate in the equity ownership of such resource developments.

The Government expects that many Albertans would welcome the opportunity to invest in the growth of Alberta's coal industry either directly or through the Alberta Energy Company. Consideration will therefore be given to the degree to which a developer proposes to provide this opportunity and, for developments involving Crown leases, project approval will be conditional upon the manner and degree of equity participation available to Albertans. It is assumed that such equity participation would commence immediately following project approval and would share in both the risk and profit.

### 3.10 Timing of Developments

The Government recognizes that it may not be in Alberta's best interests that each major industrial development proceed within the time frame which the developer proposes and that some Government adjustment

of the scheduling of projects may be necessary in recognition of such factors as the market situation, the assurance that Alberta's own requirements for coal are met, the prevention of a peaking of demand for capital available for Alberta projects, the supply for manpower, services, materials and equipment available in Alberta and the availability of adequate infrastructure. For these reasons the Government will exercise an overall control on the time when major coal (and other) developments are permitted to proceed.

Should the Government find it desirable in the public interest to require the deferral of a proposed development meeting other requirements of this policy, lease rentals and work requirements on affected Crown properties would be suspended for the period of the deferral.

### 3.11 Overall Benefit to Alberta

A fundamental feature of the Government's policy is that no coal development will be permitted to proceed unless in its overall economic and social impact it is clearly beneficial to Alberta. This will be ensured by requiring that any proposal for a significant coal development be supported by a detailed Cost-Benefit and Social Impact Analysis which will be assessed by the appropriate departments and agencies of the Government and finally by the Executive Council. The analysis and assessment will incorporate the results of an Environmental Impact Assessment and will evaluate and weigh all significant direct and indirect benefits against all significant direct and indirect costs or adverse effects. Consideration will be given not only to those costs and benefits which are measurable in dollars but also to the more subjective, social costs and benefits.

In order that consideration of proposals for development may proceed on a co-ordinated basis and that worthy projects will not be unduly delayed, an applicant for project approval will be required to file a <sup>①</sup> Cost-Benefit and Social Impact Analysis, an <sup>①</sup> Environmental Impact Assessment and a

<sup>2</sup> Development and Reclamation Plan simultaneously with the Technical Application under The Coal Conservation Act. The Environmental Impact Assessment and the Development and Reclamation Plan will be reviewed by all concerned departments with the appraisal being co-ordinated by the Department of the Environment. The Department will also be responsible for considering the specific applications under the environmental legislation.

Appraisal of the Cost-Benefit and Social Impact Analysis will involve all concerned departments of the Government and the Energy Resources Conservation Board and will be co-ordinated by the Department of Energy and Natural Resources.

### 3.12 Granting of Rights to Explore for Coal

Rights to explore for coal under public lands may be granted whether or not an applicant has the leasehold right to produce the coal from under the lands but will only be granted under conditions which will ensure no significant adverse environmental impact.

The right to enter on the surface of public lands is granted under The Public Lands Act; approval must be obtained from the Local Authority to use public roads or road allowances. Control of the actual exploration activity and all associated operations on public lands is exercised primarily through The Coal Conservation Act, The Geophysical Regulations (under various acts), and The Land Surface Conservation and Reclamation Act. The provisions of The Clean Air Act, The Clean Water Act, The Water Resources Act, The Forests Act 1971 and The Forest and Prairie Protection Act must also be complied with.

Rights to explore for coal under private lands (whether the coal is owned by the Crown or otherwise) may also be granted separately from the right to produce the coal. The right of entry to the surface must be negotiated with the surface owner. The actual exploration activity and associated operations in the field will be made subject to much the same control as on public lands.

3.13 Classification of Lands for Coal Exploration and Development

Having regard to the questions of environmental sensitivity, alternate land uses, potential coal resources and the extent of existing development of townsites and transportation facilities, the Government has classified Provincial lands into four categories with respect to coal exploration and development:

\* Category 1 in which no exploration or commercial development will be permitted. This category includes National Parks<sup>a</sup>, present or proposed Provincial Parks<sup>b</sup>, Wilderness Areas<sup>c</sup>, Natural Areas<sup>d</sup>, Restricted Development Study Areas<sup>e</sup>, Watershed Research-Study Basins<sup>f</sup>, Designated Recreation Areas<sup>g</sup>, Designated Heritage Sites<sup>h</sup>, Wildlife Sanctuaries<sup>i</sup>, settled urban areas and major lakes and rivers. These are areas for which it has been determined that alternate land uses have a higher priority than coal activity. Category 1 also includes most areas associated with high environmental sensitivity; these are areas for which reclamation of disturbed lands cannot be assured with existing technology and in which the watershed must be protected.

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- a. *National Parks are those areas established under The National Parks Act.*
  - b. *Provincial Parks are those areas established by Order in Council under The Provincial Parks Act. Also included is Willmore Wilderness Park which is established by The Willmore Wilderness Park Act.*
  - c. *Wilderness Areas are those areas established under The Wilderness Areas Act.*
  - d. *Natural Areas are those areas set aside for that purpose by Order in Council under either The Public Lands Act or The Provincial Parks Act.*

- e, f. *Restricted Development Study Areas and Watershed Research Study Areas are lands set aside by Alberta Energy and Natural Resources at the request of other departments and agencies for the purposes of conducting research or preparing detailed land use plans. Examples are the Cooking Lake Study, the Cache Percotte Forest Reserve and the Marmot Basin Watershed Study Area.*
- g. *Designated Recreation Areas include Alberta Forest Service Recreation Areas, Alberta Transportation Campgrounds, municipal and regional parks and intensive recreation facilities such as ski hills.*
- h. *Designated Heritage Sites are those lands designated as registered heritage sites, classified heritage sites and heritage monuments by Ministerial Order or Order in Council under The Alberta Heritage Act, 1973.*
- i. *Wildlife sanctuaries are those lands set aside as bird sanctuaries and game preserves by Order in Council under The Public Lands Act.*

X

Category 2

in which limited exploration is desirable and may be permitted under strict control but in which commercial development by surface mining will not normally be considered at the present time. This category contains lands in the Rocky Mountains and Foothills for which the preferred land or resource use remains to be determined, or areas where infrastructure facilities are generally absent or considered inadequate to support major mining operations. In addition this category contains local areas of high environmental sensitivity in which neither exploration or development activities will be permitted. Underground mining or in-situ operations may be permitted in areas within this category where the surface effects of the operation are deemed to be environmentally acceptable.

X

Category 3

*Marmot Basin*  
*→*  
*to 1974*

in which exploration is desirable and may be permitted under appropriate control but in which development by surface or underground mining or in-situ operations will be approved subject to proper assurances respecting

protection of the environment and reclamation of disturbed lands and as the provision of needed infrastructure is determined to be in the public interest. This category covers the Northern Forested Region and eastern portions of the Eastern Slopes Region shown in Map 1 of Appendix 2. It also includes Class 1 and Class 2 agricultural lands<sup>a</sup> in the settled regions of the Province. Although lands in this category are generally less sensitive from an environmental standpoint than the lands in Category 2, the Government will require appropriate assurances, with respect to surface mining operations on agricultural lands, that such lands will be reclaimed to a level of productivity equal to or greater than that which existed prior to mining.

Category 4

in which exploration may be permitted under appropriate control and in which surface or underground mining or in-situ operations may be considered subject to proper assurances respecting protection of the environment and reclamation of disturbed lands. This category covers the parts of the Province not included in the other three categories.

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a. *As classified by the Canada Land Inventory soil capability for agriculture system.*

Table 1 presents a summary of the classification system and the extent of exploration and development permitted in the four land categories. A further description of the Categories and two maps related to them are given in Appendix 2.

The Government emphasizes that the present classification, while based upon the best available knowledge, is subject to review in the light of changing knowledge and new technology related to environment protection, reclamation and mining methods. The Government will consider documented applications for reclassification of lands from any interested persons. Such applications should be addressed to the Minister of Energy and Natural Resources with a copy to the Minister of the Environment.

It is also important to note that lands in Category 2, 3 or 4 are not automatically open to exploration nor are lands in Category 3 or 4 automatically open to exploration and development. Each application for rights to explore, for leases to Crown coal rights and for authorization for development will be considered on its own merits through the procedure outlined in Section 4.1, 4.2 and 4.3. Particular care will be taken in the appraisal of applications for exploration or development in productive or potentially productive agricultural areas.

	CATEGORY 1 (Mountains & Other)	CATEGORY 2 (Mountains & Foothills)	CATEGORY 3 (Plains & Northern)	CATEGORY 4
<i>CRITERIA</i>	<p><i>Includes areas for which:</i></p> <ol style="list-style-type: none"> <li>Alternative land uses have been established not reconcilable with coal operations.</li> <li>Environmental sensitivity is high.</li> </ol>	<p><i>Includes areas in the Foothills and Mountains for which:</i></p> <ol style="list-style-type: none"> <li>The preferred land or resource use remains to be determined.</li> <li>Environmental sensitivity is moderate, except for specific situations of high sensitivity.</li> <li>Infrastructure facilities are generally absent.</li> </ol>	<p><i>Includes areas outside of the Foothills and Mountains for which:</i></p> <ol style="list-style-type: none"> <li>Potential land use conflicts remain to be resolved, especially with respect to agricultural lands.</li> <li>Environmental sensitivity is not critical, except for specific situations.</li> <li>Infrastructure facilities are generally absent or only partly developed.</li> </ol>	<p><i>Includes all areas not placed in Categories 1, 2 and 2A</i></p>
<i>EXPLORATION</i>	None	Limited exploration permitted under strict control.	Exploration permitted under normal approval procedures.	Exploration permitted under normal approval procedures.
<i>DEVELOPMENT</i>	None	Restricted development - underground or in-situ only.	Restricted development.	Development permitted under normal approval procedures.
<i>EXISTING LEASES</i>	<ol style="list-style-type: none"> <li>Sell back to Government</li> </ol> <p style="text-align: center;"><u>or</u></p> <ol style="list-style-type: none"> <li>Continue to expiration of term. *</li> </ol>	<ol style="list-style-type: none"> <li>Sell back to Government</li> </ol> <p style="text-align: center;"><u>or</u></p> <ol style="list-style-type: none"> <li>Continue with option to renew.</li> </ol>	<ol style="list-style-type: none"> <li>Sell back to Government</li> </ol> <p style="text-align: center;"><u>or</u></p> <ol style="list-style-type: none"> <li>Continue with option to renew.</li> </ol>	Continue with option to renew.
<i>NEW DISPOSITIONS</i>	None	<ol style="list-style-type: none"> <li>Applications for leases accepted where exploration approved.</li> <li>Leases issued where development approved.</li> </ol>	<ol style="list-style-type: none"> <li>Applications for leases accepted where exploration approved.</li> <li>Leases issued where development approved.</li> </ol>	Leases issued.

\* but without option to renew except in certain leases originally granted by Canada.

TABLE 1

SUMMARY OF CLASSIFICATION OF ALBERTA LANDS FOR PURPOSES OF COAL EXPLORATION AND DEVELOPMENT

3.14 Submission of Results of Exploration

The Coal Conservation Act and regulations under it require the full submission to the Energy Resources Conservation Board of the results of exploration activity. This includes samples, cores, test data, surveys logs and other relevant data or information. These data are of vital importance in appraising the extent of Alberta's coal reserves. This information is kept confidential for a period of time and then becomes available to the public.

3.15 Restrictions on Existing Leases; Lease Purchase by the Government

The Government recognizes that the restrictions now imposed on exploration and development in the areas classified as Category 1, 2 or 3 will affect persons holding Crown leases in areas in those categories and is prepared to purchase such leases for sums commensurate with expenditures which have been made with respect to them by the lessees. The Government requests holders of such leases in Category 1 to sell them back to the Government on this basis. Leases not sold will be subject to normal rental payments but will not be renewed<sup>\*</sup> on expiry of their terms.

Holders of Crown leases in Categories 2 and 3 may also sell their leases back to the Government. Alternately, they may continue to hold them on payment of normal rentals, recognizing the restrictions on development, and may expect them to be renewed on application.

Where the Government buys back Crown leases in areas in Categories 1, 2 or 3 it will do so on the basis of approved expenditures, adjusted to a current dollar basis, plus interest.

Where freehold rights to coal and leases of such rights are affected by the restrictions on exploration and development imposed by Categories 1, 2 and 3, the Government is prepared to purchase the lessor rights at fair value determined by agreement or arbitration, and to acquire any lessee rights on the same basis as for lessees of Crown rights.

Where the Government purchases leases as described above the results of any exploration work done on the leases will immediately be released to the public.

\* *except for certain leases originally issued by Canada.*

### 3.16 Granting of Leases for Development

About 80 percent of the coal resources of Alberta are owned by the Crown in the right of Alberta. The remaining privately owned 20 percent are located mainly in the central and southern settled regions of the Province.

Leases of Crown coal rights granting the right to produce the coal (subject to all applicable regulatory requirements) are issued under the provisions of The Mines and Minerals Act; such leases have an initial term of 21 years and require payment of an annual rental of \$1 per acre per year.

The Government has recognized that the leasing of Crown coal rights must accord with general land use and resource development policies applicable to all public lands in Alberta. Consequently since June, 1973 Crown coal leases have not been granted in areas such as the Eastern Slopes where long-term resource development policies have been under review. Elsewhere in the Province, leases of Crown coal rights have been granted only after review by an inter-departmental referral committee, and only in areas where it seems likely that exploration and development activities can meet strict environmental protection and reclamation standards.

In keeping with this policy, new coal leases will be granted only in areas where a reasonable likelihood exists that commercial mining operations will be permitted in the foreseeable future, subject to normal approval and regulatory procedures. Time-dated applications for new leases in Category 2 or 3 lands will be received and given preference in the order of receipt if and when the lands are reclassified as Category 4 or a specific development is approved. The possible need for the issuance of exploration permits will be considered.

The effect of the land classification system on existing leases and new dispositions is summarized in Table 1.

New leases and renewals will be issued for initial or renewal terms of 15 years.\* The right of lease renewal will be assured to lease holders who

\* *except with respect to certain lands originally issued by Canada where the renewal term will remain 21 years.*

commence or receive approval for commercial development. This will apply to all leases covered by the project approval. New leases and renewals will be subject to annual rental payments at the present rate of \$1 per acre, but holders of them may be required to conduct satisfactory programs of detailed reserves appraisal unless commercial operations are underway. The results of the appraisal would be submitted both to the Department of Energy and Natural Resources and to the Energy Resources Conservation Board.

3.17 Regulation to Ensure Safe and Efficient Development Without Waste

In addition to ensuring against adverse environmental impact the Government, through the provisions of The Coal Conservation Act and The Coal Mines Safety Act, and regulations, orders, permits and licences under them, will ensure that all coal mining and processing operations are carried out with full regard for safety and industrial health, efficiency, and the maximum practical recovery without waste of the coal resources being tapped.

Proper operations are ensured not only by the requirements of regulations and orders and the conditions of permits and licences but by actual field inspection by trained personnel of the Energy Resources Conservation Board. These inspectors co-operate with personnel of the Departments of the Environment and Energy and Natural Resources to ensure compliance with conditions relating to the protection of the environment and of the renewable resources.

3.18 Efficient Use of Coal in Alberta - Maximum Upgrading

In order to secure maximum benefit to Alberta from coal mining and processing activity, Government policy will require that so far as practical and beneficial to the Province, processing for the purpose of upgrading coal or any coal product to market specifications be undertaken in Alberta. This policy will apply to all types of coal as well as to secondary processing of all major products that are or may in future be obtained from coal by gasification, liquefaction or other forms of treatment.

The extent of processing that should be undertaken in Alberta in connection with any particular development will be assessed under the provisions of The Coal Conservation Act, having regard both for market opportunities and for all relevant environmental, technical, economic and social aspects of the proposals. The Energy Resources Conservation Board will determine to what extent potentially useful by-products from any project, if not immediately saleable, should be stockpiled and conserved for future marketing.

### 3.19 Appraisal and Protection of Alberta's Requirements

The protection of a supply of coal of suitable quality and suitably located which may be recovered at reasonable cost and which is adequate for Alberta's present and all foreseeable future needs will be assured. This applies to requirements for present and future thermal power plants; future metallurgical operations; future other industrial requirements including petrochemical operations; future surface and in-situ gasification operations; and future coal liquefaction operations.

The protection will be assured under the provisions of The Coal Conservation Act by the Energy Resources Conservation Board through periodic assessments of Alberta's coal requirements made following public hearings and continuing appraisals of the proved and available reserves of coal in each of its major types. The Board will also ensure that the most appropriate deposits, having regard for location and costs, are made available for the generation of electric energy for Alberta. Permits for mining developments to serve markets outside Alberta will only be granted where it is found in the public interest, having regard to the present and future requirements for coal in Alberta.

If for the protection of Alberta's future requirements it should be found necessary to deny a proposed earlier development meeting other require-

ments of this policy, lease rentals and work requirements on affected Crown properties would be suspended until development was authorized.

3.20 Supply for Canadian Markets Beyond Alberta

The Government recognizes that Alberta's coal resources will play an increasing important role in meeting essential energy demands in other parts of Canada. The Government will therefore be prepared under the provisions of The Coal Conservation Act to consider proposals for development of new coal mining and processing facilities that may from time to time be needed in order to help meet Canadian demands.

Developments to meet Canadian markets beyond Alberta will be authorized only if they meet all normal requirements, are in the Alberta public interest and provided that they are compatible with the protection of Alberta's present and future requirements.

To ensure stability of supply and avoid unduly rapid depletion of a particular grade of coal, or of a particular coal deposit, preference may be given to projects designed to produce and market an appropriate blend of different coals.

3.21 Supply to Foreign Markets

Where it appears to be in the Alberta public interest, the Government will consider proposals for new coal mining and processing development from which thermal and metallurgical coal can be supplied to foreign markets under suitable contractual arrangement. These will be considered under the provisions of The Coal Conservation Act.

Developments for foreign markets will also have to meet all normal requirements as described elsewhere and be compatible with the protection of Alberta's present and future requirements.

3.22 Pricing and Marketing

It is not the Government's intention at this time to intervene in prices or other marketing arrangements determined by contract between the producer and buyer of coal, provided they are compatible with overall government policy and the provision of applicable legislation, regulations and orders. The Government will however require that provision be made, in all future contracts for the sale of coal for delivery outside the province, for price review and possible redetermination at two-year intervals. The Government will arrange for a regular confidential monitoring by the Department of Energy and Natural Resources or the Energy Resources Conservation Board of the prices of coal sold under contract for markets outside Alberta. Should a situation develop where in the Government's view a fair price is not being received for coal shipped from Alberta, the Government will intervene as appropriate.

3.23 Manpower Training

In order to enable Albertans to avail themselves of employment and career opportunities in coal exploration and development activities, and to alleviate potentially serious shortages of qualified manpower the Government will keep itself informed on the projected manpower needs for the industry and take such measures as may be required to assure the adequacy of training facilities.

The Government will expect the coal industry and related enterprises to develop or expand on-the-job training programs and to afford employees suitable opportunities of skill-upgrading programs.

3.24      Research and Development

The Government recognizes that efficient development and use of Alberta's coal resources will depend on continued and increased research and on the exchange of scientific and technical information with the coal industry and government agencies elsewhere:

To help generate up-to-date information on the location, extent and characteristics of Alberta's coals, and to assist the development of new or improved technologies for extracting, processing, transporting and using the various kinds of coal found in the province, the Government will therefore continue to support resource appraisal programs by the Energy Resources Conservation Board and coal-related research projects at the Alberta Research Council. Through detailed discussions with industry, the Government will also assess what additional investigations and test facilities may from time to time be required to meet Alberta's needs and, where desirable, participate in specific studies and in the establishment of additional facilities.

The Government will take steps to ensure that Alberta is an active party to current and future international technology exchanges, and that relevant scientific and technical advances made elsewhere are available for detailed assessment and possible use in Alberta.

4. Administrative Procedures

4.1 Acquisition of Exploration Rights

Subject to the overall policy guidelines discussed in Section 3.12 rights to explore for coal underlying public lands may be granted, whether or not an applicant has the leasehold right to produce coal, following:

- ⇒ 1. application under The Public Lands Act to enter on the surface;
2. application under The Coal Conservation Act for approval of the exploration program if it involves the drilling of holes 500 feet or greater in depth or the driving of adits;
3. application under The Land Surface Conservation and Reclamation Act and The Water Resources Act where applicable;
4. application to the appropriate Local Authority for the use of public roads or road allowances.

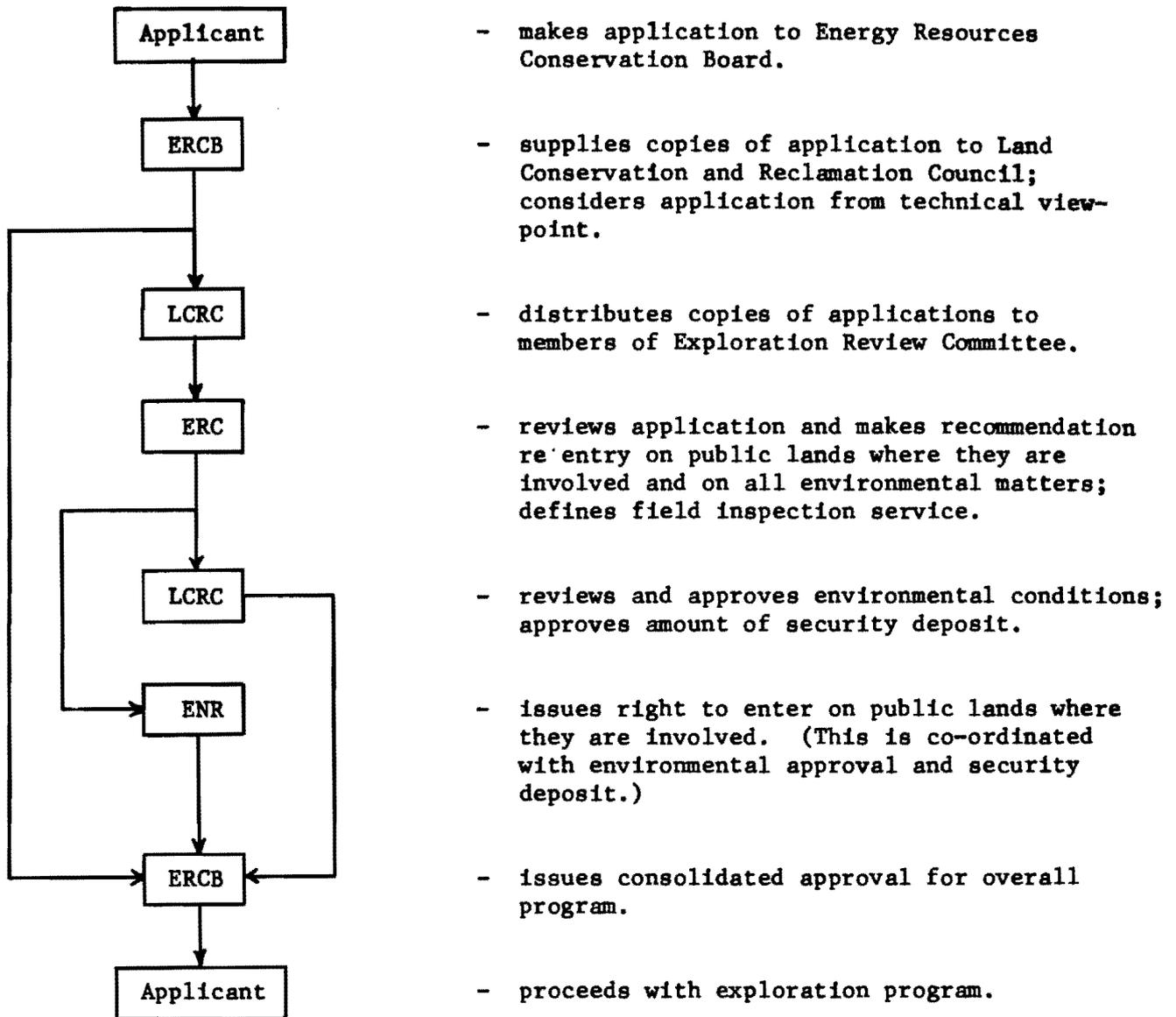
Compliance with the provisions of The Geophysical Regulations of The Mines and Minerals, The Public Lands, The Forest, and The Public Highways Acts is required for any exploration program which involves geophysical testing.

A procedure which permits a co-ordinated review by the Energy Resources Conservation Board and the departments most directly concerned has been developed over the past several years. This will be continued. The Energy Resources Conservation Board will continue to issue the consolidated approvals. The approvals will be subject to terms and conditions designed to meet the individual circumstances. A security deposit will be required for each program to ensure satisfactory reclamation of disturbed sites.

The overall procedure is indicated in Chart 1.

4 P.1 ( Approval to explore for coal underlying private lands requires the consent of the surface owner to enter the lands or, where the rights to the

coal are held by the explorer, the consent of the owner of the surface or an authorizing order of the Surface Rights Board. Applications as described under items 2, 3 and 4 above are also required. The procedure for handling the applications is the same as that for public lands, as described in Chart 1, except that no application is required under The Public Lands Act.



ABBREVIATIONS

ERCB *Energy Resources Conservation Board*  
LCRC *Land Conservation and Reclamation Council*  
ENR *Department of Energy and Natural Resources*  
ERC *Exploration Review Committee representing Departments of Energy and Natural Resources, Environment, Recreation, Parks and Wildlife, the Energy Resources Conservation Board and others.*

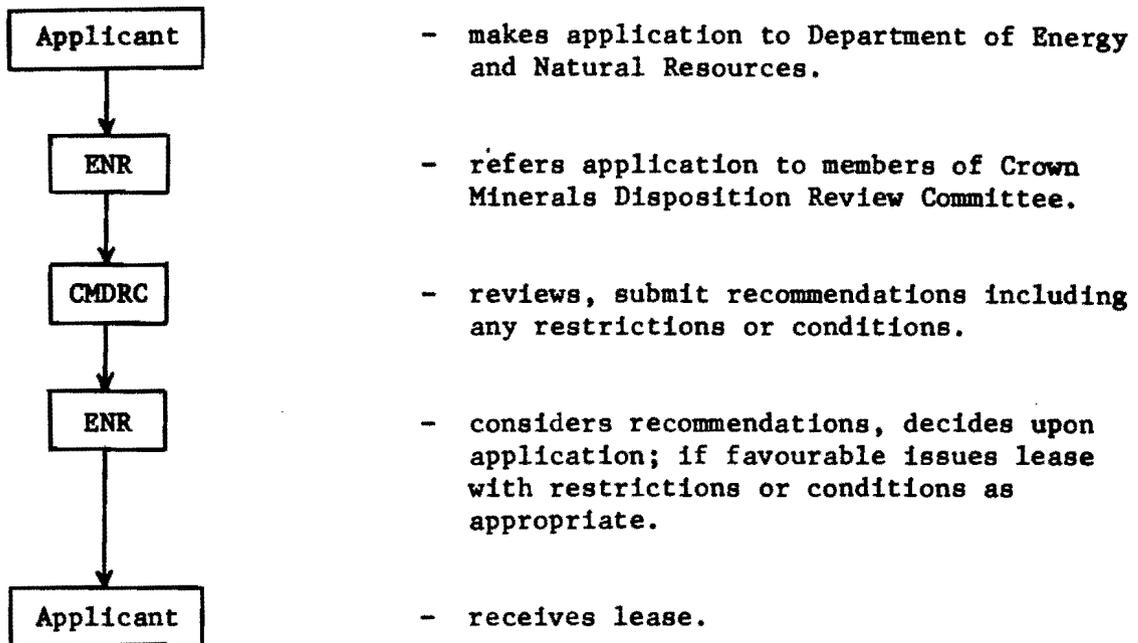
CHART 1

PROCEDURE FOR OBTAINING AUTHORIZATION TO CONDUCT EXPLORATION FOR COAL

4.2 Acquisition of Leases of Crown Coal Rights

Applications for leases of Crown coal rights, which convey the right to produce coal from Crown lands, subject to all applicable legislation and regulations, are made to the Department of Energy and Natural Resources under the provisions of The Mines and Minerals Act. When the rights applied for are available for disposition and their granting conforms with the general policy on leasing described in Section 3.12, the Department would, as now, refer the application for a recommendation to a Crown Mineral Disposition Review Committee representing the Department, the Energy Resources Conservation Board, the Department of the Environment and other concerned departments. The Department reviews the recommendation, and subject to any appropriate restrictions on exploration or development activities on the lands, may issue the lease in conformance with the provisions of The Mines and Minerals Act. Should there be wide interest in the acquisition of available rights the Department may establish a system of competitive bidding for them.

The procedure is illustrated in Chart 2.



ABBREVIATIONS

ENR *Department of Energy and Natural Resources*  
CMDRC *Crown Minerals Disposition Review Committee representing the Energy Resources Conservation Board, the Departments of Energy and Natural Resources and Environment, and other concerned Departments.*

CHART 2

PROCEDURE FOR OBTAINING LEASE OF CROWN COAL RIGHTS

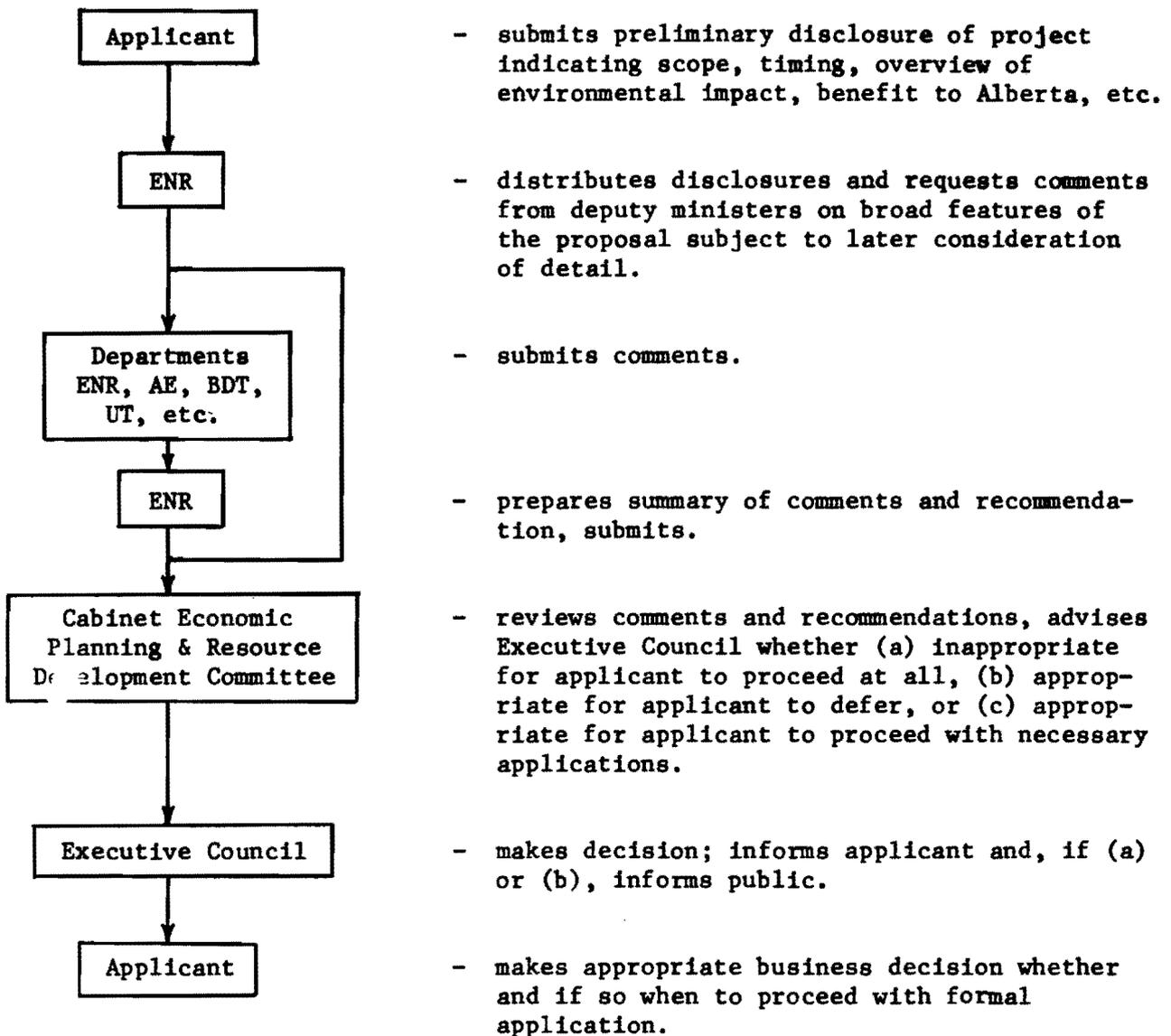
#### 4.3 Authorization for Development

##### 4.31 Preliminary Disclosure of Development Plan to Government

The Government recognizes the long lead time between the initial formulation of a plan to develop a coal mine and the first commercial production from it. It is also aware that a good portion of the lead time relates to the preparation and consideration of applications to government departments and agencies and finally to the decision of the Government on the overall aspects of the project. There is little which can be done to shorten the time for the necessary detailed consideration of applications by departments and agencies of the Government. On the other hand the Government believes that it could be helpful to potential developers if, on the basis of a preliminary disclosure of the development plan, the Government were to indicate whether it had objections in principle to the plan, its timing or any of its essential features; or alternatively whether it found the plan generally satisfactory providing it could meet the various tests of the departments and agencies. Accordingly the Government is prepared to receive, review and comment upon a Preliminary Disclosure. The Preliminary Disclosure in no way supplants the need for the Disclosure to the Public (Section 4.32) or the formal applications under the controlling legislation (Section 4.33). The purpose of the Preliminary Disclosure is to indicate whether, assuming all departmental and agency requirements were met, the Government would give consideration to the project in the general form and at the time proposed.

Where the Government rejects a development proposal following the Preliminary Disclosure, it will be prepared to buy back the Crown leases affected on the basis discussed in Section 3.15. If the Government requires that the project be deferred it will waive lease rentals and any work requirements during the period of the deferral.

An outline of the procedure for submission and consideration of a preliminary disclosure is given in Chart 3.



ABBREVIATIONS

ENR *Department of Energy and Natural Resources*  
AE *Alberta Environment*  
BDT *Department of Business Development and Tourism*  
UT *Department of Utilities and Telephones*

CHART 3

PROCEDURE OF PRELIMINARY DISCLOSURE

4.32 Disclosure to Public

After receiving the Government views following the Preliminary Disclosure, a potential developer is required to make a fairly detailed disclosure of his proposed project to the general public at a suitable convened meeting. This must be done after the Preliminary Disclosure to Government is made and at least 45 days before the formal hearing of an application and supporting material by the Energy Resources Conservation Board. It may suitably be done at the same time as the filing of the detailed technical applications referred to in Section 4.33. Further it may appropriately be supported by much the same documents as are required in support of the technical applications. The supporting documents would be made available to all interested persons well in advance of the meeting.

The public disclosure will be scheduled by, and suitable notice of it will be given by the company after approval of the Deputy Minister of Energy Resources. The Deputy Minister after consultation with the company will select the Chairman of a Public Disclosure Meeting at which representatives of the proposed developer will describe the project and answer questions from the public. No decisions will result from the public disclosure. Its purpose is to provide information to the public so that any interested person will be in a position to later submit his views to the Department of the Environment, the Energy Resources Conservation Board or the Minister of Energy and Natural Resources or other appropriate Minister for consideration at the time of decision-making.

4.33 Detailed Technical Application to the Energy Resources Conservation Board for Permit and Licence under The Coal Conservation Act and Applications to the Department of the Environment for Approvals under Environmental Legislation

Applicants are required to file the following material with the Energy Resources Conservation Board:

1. A detailed technical application under the provisions of The Coal Conservation Act as described in the Regulations;
2. For all major proposed developments, a detailed Cost-Benefit and Social Impact Analysis;
3. For all major or environmentally sensitive proposed developments, an Environmental Impact Assessment under the provisions of The Land Surface Conservation and Reclamation Act and guidelines agreed to by the appropriate departments;
4. A Development and Reclamation Plan under the provisions of The Land Surface Conservation and Reclamation Act as described in the regulations.

Copies of this material are forwarded to the Department of the Environment which then arranges for appropriate interdepartmental review and assessment of the Environmental Impact Assessment and the Development and Reclamation Plan.

For any major or environmentally sensitive development the Board will call a public hearing at which the views of any interested person will be considered. Where important environmental issues are involved, a senior officer of the Department of the Environment will sit as an Acting Member of the Board in the hearing. At the hearing the applicant must be prepared to deal with questions related to the technical aspects of the application, the Cost-Benefit and Social Impact Analysis, the Environmental Impact Assessment and the Development and Reclamation Plan.

Following the hearing the Board reviews the evidence, makes its own analysis as appropriate and comes to its decision on the technical aspects of the application. With respect to the Cost-Benefit and Social Impact Analysis, the Department of Energy and Natural Resources will convene an interdepartmental-agency group representing the Board and appropriate departments of the Government. This group will appraise the Cost-Benefit and Social Impact Analysis. The Board will not make decisions related to the Environmental Impact Assessment or the Development and Reclamation Plan but will advise the Department of the Environment of any views it may have reached on the matter as a result of the hearing and its own technical appraisal.

Where the Board decides that a permit and licence should be issued under The Coal Conservation Act, the Board determines the conditions related to conservation, safety, efficiency and those environmental matters which could affect conservation, safety and efficiency, which should be attached to the permit and licence. Any permit or licence which may be issued by the Board is subject to any further conditions related to matters affecting the environment that may be required by the Minister of the Environment. For projects involving an annual production of over 50,000 tons of coal, the permit and licence of the Board is issued only with the approval of the Lieutenant Governor in Council and such approval may be made subject to further terms and conditions.

The Environmental Impact Assessment and the Development and Reclamation Plan will be considered by the Departments of the Environment, Energy and Natural Resources and all other concerned departments along with any evidence related to it which resulted from the public hearing and any comments on it forwarded by the Energy Resources Conservation Board. The Department of

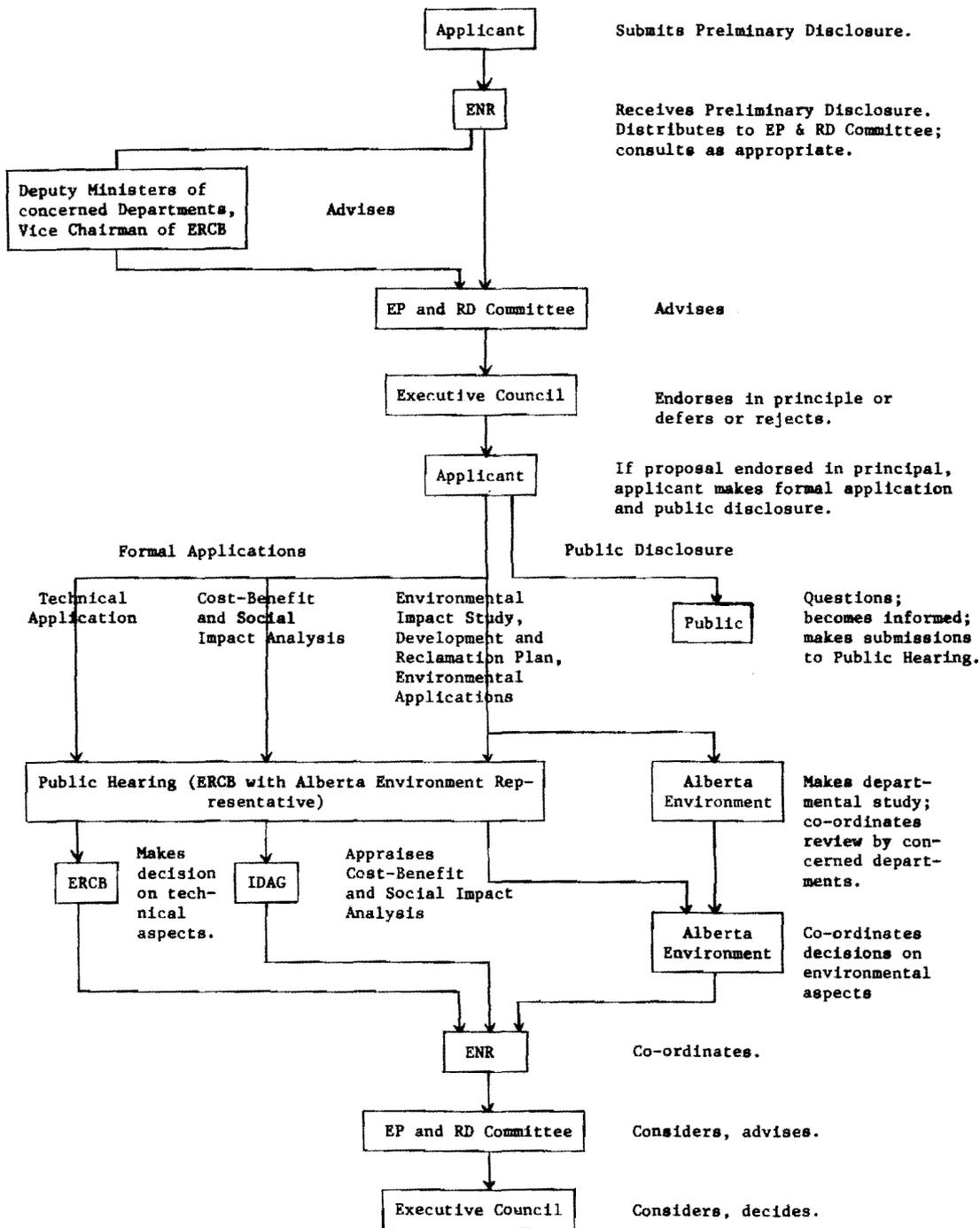
the Environment will co-ordinate the review and conclusions concerning the environmental aspects of the matter. These take the form of:

- (a) possible conditions proposed in connection with the approval of the Minister of the Environment of any permit or licence proposed to be issued by the Energy Resources Conservation Board;
- (b) permits, subject to the specific conditions, issued under:
  - The Clean Air Act
  - The Clean Water Act
  - The Land Surface Conservation and Reclamation Act
  - The Water Resources Act where applicable.
- (c) the requirement of a suitable security deposit to be fixed in each individual case (depending upon location, topography, overburden and other features) in the range of \$0.25 to \$2.00 per ton of marketable coal produced subject to some appropriate limit on the total deposit. The portion of the deposit deemed as guarantee for normal land surface reclamation may be accepted in the form of promissory notes, bonds or other like security; any further deposit which may be required because of special features of the situation including the need for any special investigations or field operations may be required in the form of cash or securities.

4.34 Final Approval of Government

To ensure a properly co-ordinated consideration of all aspects of an application by the Government, the decision of the Energy Resources Conservation Board on the technical aspects of a matter, the views of the interdepartmental-agency group on the Cost-Benefit and Social Impact Analysis, and the conclusions of the Department of the Environment will be brought together by the Department of Energy and Natural Resources for the consideration of the appropriate cabinet committees and of the Cabinet itself. The review by the Cabinet Committees and the Cabinet will consider not only the matters dealt with in the formal applications and supporting material but any other matters considered relevant. The Cabinet may decide to approve the project on the terms and conditions set out by the Energy Resources Conservation Board and the Department of the Environment; it may approve it subject to further conditions; or it may not approve it.

The overall procedure for the authorization of a major coal development is shown graphically in Chart 4.



ABBREVIATIONS

EP and RD Committee	<i>Economic Planning and Resource Development Committee</i>
ENR	<i>Department of Energy and Natural Resources</i>
ERCB	<i>Energy Resources Conservation Board</i>
IDAG	<i>Interdepartmental-agency Group co-ordinated by the Department of Energy and Natural Resources</i>

CHART 4

PROCEDURE FOR CO-ORDINATED CONSIDERATION OF PROPOSALS FOR MAJOR DEVELOPMENTS

APPENDIX 1

## ROYALTY FORMULA FOR COAL PRODUCED FROM ALBERTA CROWN LEASES

EFFECTIVE JULY 1, 1976

The royalty formula is:

$$X = K\left(1 - \frac{C}{R}\right)^2 \text{ or } 5.0 \text{ or whichever is greater.}$$

Where

X = normal royalty rate expressed as percent of total products or of gross revenues;

C = allowed annual direct and indirect costs including depreciation at allowed rate;

R = annual gross revenue from the sale at the point of production of all products;

K = a project characterizing factor defined by the equation:

$$K = \frac{50}{1 + \frac{C}{R} \left(0.30 \frac{I}{C} - 1\right)}$$

in which I = allowed cumulative investment including working capital.

Allowed investment and costs including depreciation will be defined in regulations. Table 1 and Figure 1 illustrate the range of the royalty rate X for the full range of  $\frac{C}{R}$  and part of the range of  $\frac{C}{I}$ .

Regulations will provide that, under special circumstances including where it is so recommended by the Energy Resources Conservation Board in the interest of conservation and the prevention of waste or loss of recovery of coal, the Minister may waive the requirement of a minimum royalty of 5.0 percent, in which case the royalty would be determined by the formula alone.

Royalty is payable monthly, on actual revenue, 15 days in arrears at a rate of X percent based on estimated values of C, R and I for the calendar year. Royalty adjustment for a calendar year is payable April 30th following, and is based upon the lessee's verified values of C, R and I for the year, the royalty thereupon due, and the royalty actually paid. Shortfalls in payment carry a penalty at an appropriate interest rate. Overpayments will be credited to the royalty due in subsequent months.

		RATIO OF ANNUAL COSTS TO ANNUAL GROSS REVENUE, $\frac{C}{R}$								
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
RATIO OF ANNUAL COSTS TO TOTAL INVESTMENT, $\frac{C}{I}$	0.1	33.7	22.9	15.3	10.0	6.3	5.0 (3.6)	5.0 (1.9)	5.0 (0.8)	5.0 (0.2)
	0.2	38.6	29.1	21.3	15.0	10.0	6.2	5.0 (3.3)	5.0 (1.4)	5.0 (0.3)
	0.3	40.5	32.0	24.5	18.0	12.5	8.0	5.0 (4.5)	5.0 (2.0)	5.0 (0.5)
	0.4	41.5	33.7	26.5	20.0	14.3	9.4	5.5	5.0 (2.5)	5.0 (0.6)
	0.5	42.2	34.8	27.8	21.4	15.6	10.5	6.2	5.0 (2.9)	5.0 (0.8)
	0.6	42.6	35.6	28.8	22.5	16.7	11.4	6.9	5.0 (3.3)	5.0 (0.9)
	0.7	43.0	36.1	29.6	23.3	17.5	12.2	7.5	5.0 (3.7)	5.0 (1.0)
	0.8	43.2	36.6	30.2	24.0	18.2	12.8	8.0	5.0 (4.0)	5.0 (1.1)
	0.9	43.4	36.9	30.6	24.5	18.7	13.3	8.4	5.0 (4.3)	5.0 (1.3)
	1.0	43.5	37.2	31.0	25.0	19.2	13.8	8.8	5.0 (4.5)	5.0 (1.4)

Table 1

New Royalty Rates (per cent) applicable to Gross Revenue from Coal Production from Alberta Crown Leases effective July 1, 1976. Figures are approximate only - Formula is to be used for exact figures.

Bracketed numbers below entries for minimum royalty of 5 per cent are royalty rates computed from formula.

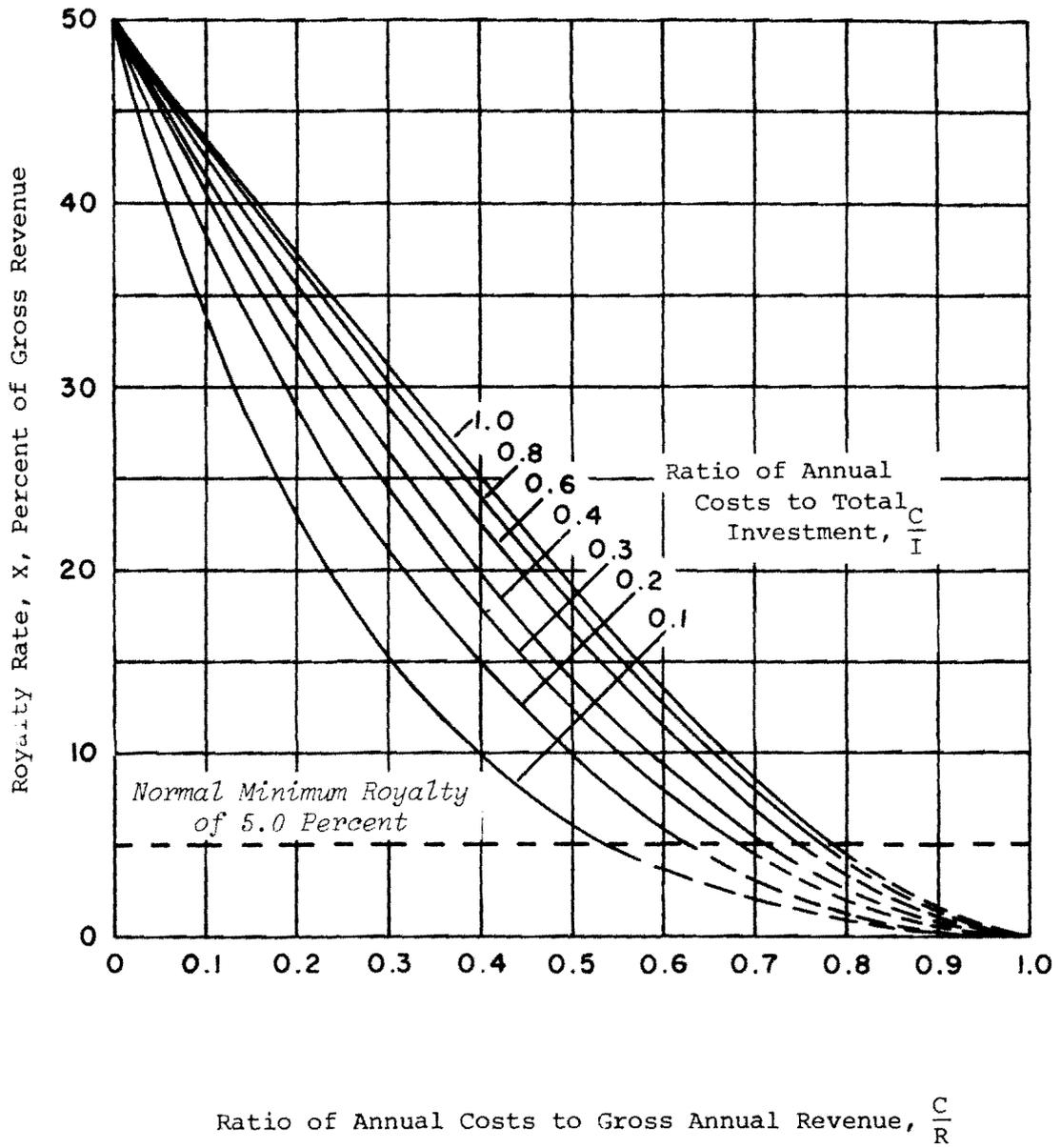


Figure 1

New Royalty Rates Applicable to Coal Production from Alberta Crown Leases effective July 1, 1976. Figures are approximate only - Formula is to be used for exact figures.

APPENDIX 2

ALBERTA LAND CLASSIFICATION FOR PURPOSES OF  
COAL EXPLORATION AND DEVELOPMENT

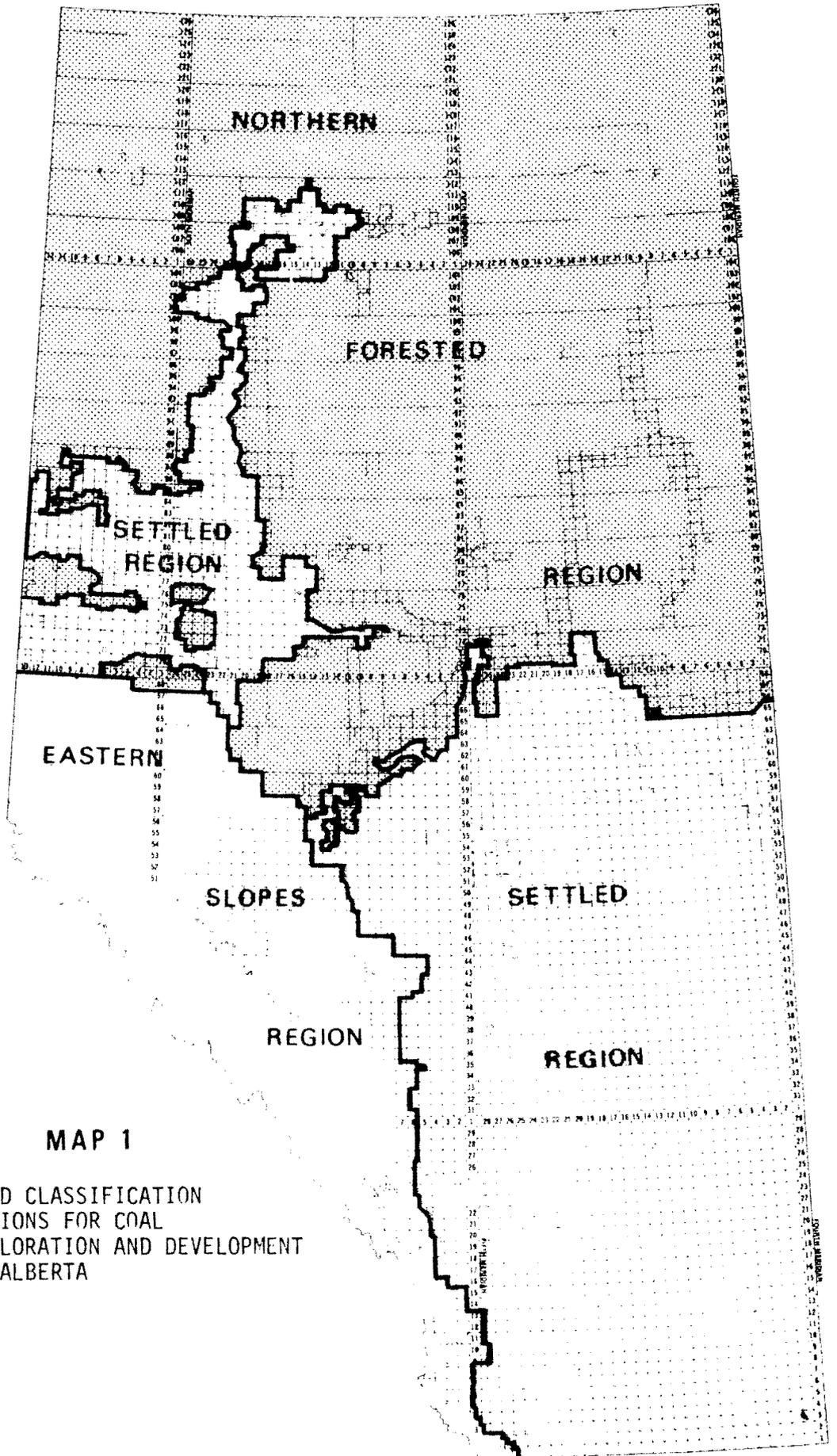
Details of the land classification system are shown on Maps 1 and 2. Map 1 is a small scale map of Alberta indicating:

- (a) the Settled regions;
- (b) the Northern Forested region; and
- (c) the Eastern Slopes region defined by an arbitrary boundary on the east.

The Settled regions include local areas of Category 1 for reasons discussed in Section 3.13 but otherwise are classed as Category 4.

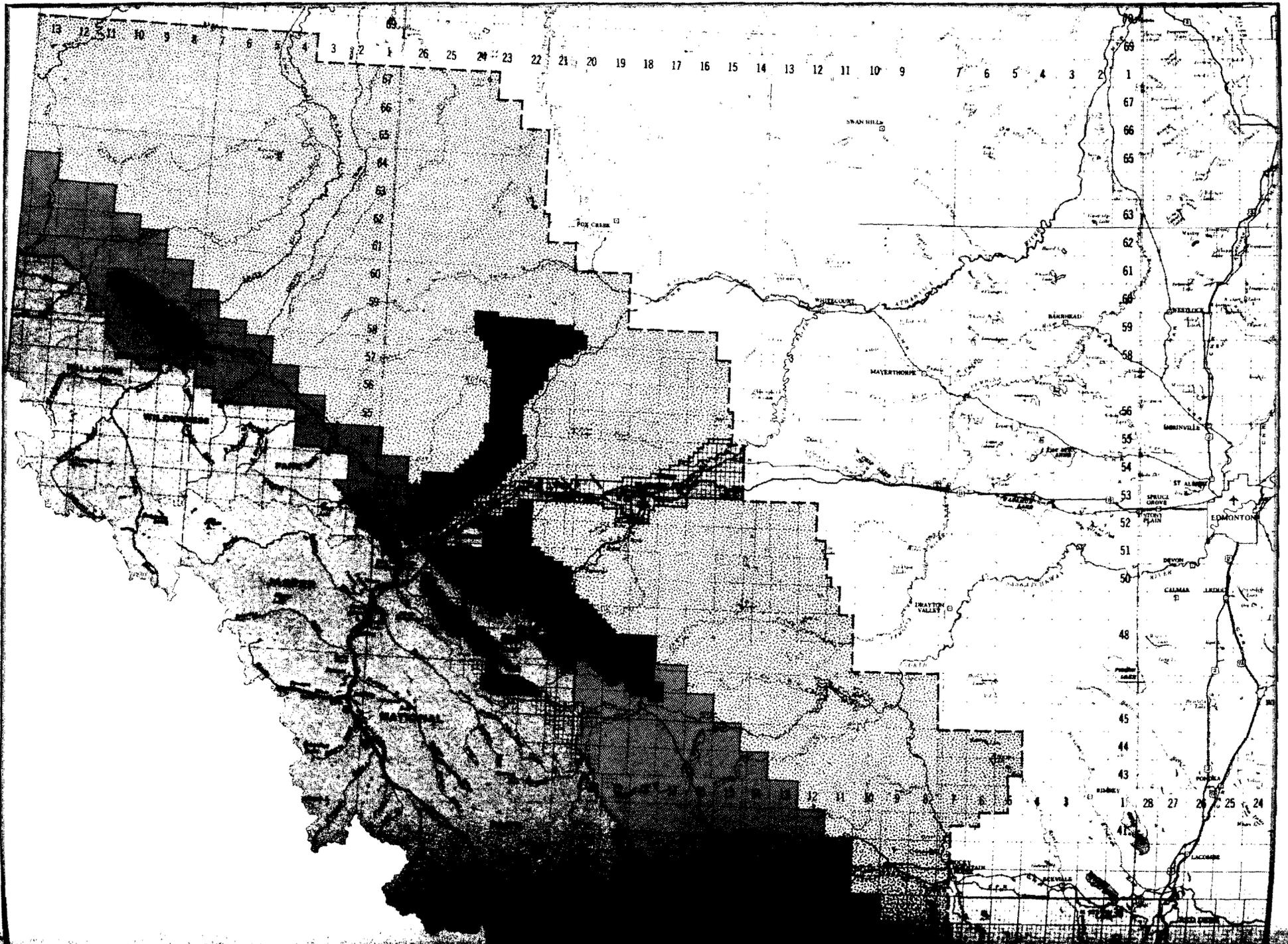
The Northern Forested region also includes local areas of Category 1 but for the most part falls into Category 3.

The lands within the Eastern Slopes region include large areas in Category 1, areas in Categories 2 and 3 and some areas in Category 4. Lands between the true physiographic eastern limit of the Foothills and the arbitrary eastern boundary of the Eastern Slopes region are placed in Category 3. Details of these are given on Map 2.



MAP 1

LAND CLASSIFICATION  
REGIONS FOR COAL  
EXPLORATION AND DEVELOPMENT  
IN ALBERTA



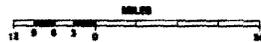
MAP 2

Alberta

LAND CLASSIFICATION FOR COAL  
EXPLORATION AND DEVELOPMENT IN  
THE EASTERN SLOPES OF ALBERTA

-  CATEGORY 1
-  CATEGORY 2
-  CATEGORY 3
-  CATEGORY 4
-  OPERATING UNDERGROUND MINE
-  OPERATING OPEN PIT MINE
-  BOUNDARY OF EASTERN SLOPES

\* NOTE: This map identifies only the general areas of Category 1. Reference should be made to the report for a complete listing of the types of lands included in Category 1.



JUNE, 1976

ALBERTA ENERGY AND NATURAL RESOURCES  
ALBERTA ENERGY RESOURCES CONSERVATION BOARD  
ALBERTA ENVIRONMENT  
CARTOGRAPHY BY AERIAL SURVEYS AND MAPPING BRANCH  
BASE MAP PROVIDED BY ALBERTA TRANSPORTATION

