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ENERGY COSTS AND PRICES
NORTHWEST TERRITORIES, 1980

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EXECUTIVE SUMMARY

OBJECT:

The object of this report is to determine what the true costs of energy are in the Northwest Territories. The particular forms of energy to be examined are P-50 (heating fuel), gasoline and electric energy. The study concentrates on those settlements where P.O.L. (Petroleum, Oil and Lubricants) and/or Norther Canada Power Commission are involved in distributing or producing energy.

METHODOLOGY:

The study uses information obtained directly from P.O.L. and from a Norther Canada Power Commission application before the Northwest Territories Public Utilities Board. The time frame in question is the fiscal year, 1980-81.

DATA PRESENTATION:

For P-50 (heating fuel) and Gasoline the following tables show the price charged to the customer and what has been determined to be the true cost of the products. The two areas where implicit subsidies flow from the Territorial Government to the end user are an inventory carrying cost and an annual charge for the capital associated with the storage and distribution systems.

P-50 HEATING OIL

Region	P.O.L. Price/Gallon	True Cost or Price/Gallon	Subsidy/ Gallon
FORT SMITH	$1.9154	$2.4952	.58
INUVIK	$1.7163	$2.0736	.35
BAFFIN	$1.87	$2.32	.45
KEEWATIN	$2.116	$2.716	.60

GASOLINE

Region	P.O.L. Price/Gallon	True Cost or Price/Gallon	Subsidy/ Gallon
FORT SMITH	$2.152	$2.8713	.72
INUVIK	$1.948	$2.471	.52
BAFFIN	$2.05	$2.556	.50
KEEWATIN	$2.273	$2.856	.58

The total annual value of this subsidy on heating fuel and gasoline is estimated to be $4,490,700 of which $3,858,667 is a charge to cover the annual amortized costs of providing 17,558,772 gallons of storage capacity (valuated at a replacement cost of $1.75 per gallon).

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For electrical energy the following is determined:

DOMESTIC NON-GOVERNMENT CONSUMERS:

	N.C.P.C. COST	CONSUMER PRICE	DIFFERENCE ¢/KWH
FORT SMITH	8.4027	6.2498	2.1519
INUVIK	16.3590	8.2505	8.1085
BAFFIN	20.4265	11.0868	9.3397
KEEWATIN	20.8280	14.0790	6.75

COMMERCIAL NON-GOVERNMENT CONSUMERS:

	N.C.P.C. COST	CONSUMER PRICE	DIFFERENCE ¢/KWH
FORT SMITH	10.1138	9.3799	.7339
INUVIK	14.8284	10.4852	4.3432
BAFFIN	18.7097	15.8075	2.9022
KEEWATIN	18.8026	16.3559	2.4467

The total subsidy that flows to the domestic non-government consumer is $1,017,167, while to the commercial non-government consumer it is $832,792.

This $1,849,959 comes from two sources: the Government accounts and the accounts of the wholesale and industrial customers of N.C.P.C. There is an excess of revenues over expenses in N.C.P.C.'s government and industrial/wholesale accounts of approximately $2.8M. This money provides a subsidy to non-government consumers and also provides an operating surplus for N.C.P.C. In addition to this implicit form of subsidization there is a Federal Power Support

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Program, which provides for all diesel serviced settlements to receive the first 700 KWH per month at the Yellowknife Rate. This is estimated to provide an additional $200,000 of subsidization to the domestic user and reduces the annual average cost of power.

DOMESTIC NON-GOVERNMENT CONSUMERS: (Average Annual Figures)

	FEDERAL SUPPORT ¢/KWH	N.C.P.C. PRICE	ACTUAL CONSUMER PRICE	N.C.P.C. COST	ACTUAL PRICE/ N.C.P.C. COST %
FORT SMITH	.28	6.2498	5.9698	8.4027	71%
INUVIK	1.2658	8.2505	6.9847	16.3590	43%
BAFFIN	2.5971	11.0868	8.4897	20.4265	41.5%
KEEWATIN	3.7953	14.0790	10.2837	20.8280	49%

CONCLUSIONS AND COMMENTS:

Costs have been used to derive a full cost price for P-50 heating fuel, gasoline and electrical energy. It has been shown that these forms of energy are subsidized by private enterprise, the Federal Government and the Territorial Government. The report and its numeric conclusions have been predicated on several assumptions, these assumptions are thought to be reasonable. The author feels that the results are representative in a generalization of energy pricing within the Northwest Territories. Results for individual communities can be derived from the appended work sheets.

INTRODUCTION:

The production of energy and its distribution within the Northwest Territories is a mix of private enterprise and territorial and federal government involvement.

In the private sector, the electrical production and distribution system in Hay River or the heating fuel market in Yellowknife, it can reasonably be assumed that the price of the product reflects its cost, that is, the price is true (see Appendix "A" for private sector fuel costs in the Northwest Territories).

With the production of power by N.C.P.C. (the Northern Canada Power Commission) and the distribution of petroleum products by P.O.L. (the Petroleum, oil and Lubricants Branch of the Department of Government Services, Government of the Northwest Territories) it cannot be assumed that the user-price fully reflects all costs and is hence a "true price".

This study reviews those communities and regions where N.C.P.C. and/or P.O.L. are the suppliers of energy and examines the user-price of products to determine if they truly reflect the full costs of providing that product and if not, what the price is as compared to the user-price.

This study is presented in four section; first, an introduction, followed by an outline of the methodology used to determine what the full costs are of home heating fuel, gasoline and electricity. The next section presents the data analysis

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on a regional basis. The concluding section presents a written summary and observation on the data. A final appendices "B" and "C" are included to show working figures used to derive the findings.

METHODOLOGY:

Two sources of data were used in this study; (1) for petroleum products the records and files of P.O.L. were used as well as direct contact with Mr. M. Lawlor, Head of P.O.L. The other source of information was "Northern Canada Power Commission Proposed Rate Adjustments, Northwest Territories Rate Zone, April, 1980", which was obtained from the office of the Northwest Territories Public Utilities Board. All information collected was for the 1980-81 fiscal year, which serves as the base-line period.

In examining the present pricing system of P.O.L., it appeared that two elements were absent:

(1) the inventory cost of carrying a year's supply of fuel was not a component of the price structure, and

(2) no capital costs were included as components of the pricing structure. These capital items were the tank farms and physical distribution system in each settlement.

The existing pricing structure for petroleum products has several components, as outlined below:

Product Cost - bid price F.O.B. point of origin

Freight Cost - transport cost from point of origin to point of delivery.

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Loss Allowance	- spillage, leakage, evaporation, etc.
Territorial and Federal Taxes	- as per legislation
Commissions	- local delivery and sales charges
Bad Debt Levy	- for uncollectable debt
Subsidy Levy	- to average over all users of petroleum product, the frequent movement of petroleum product by aircraft into settlements inaccessible due to ice conditions (these are primarily Trout Lake, Pelly Bay and Colville Lake)
O & M Levy	- to cover operation costs of the P.O.L. division
Extraordinary Levy	- this covers many miscellaneous and non-recurring items
Insurance	- to cover annual premium costs

In order to impute a carrying cost of heating fuel and gasoline over the space of a year and an appropriate annual capital cost, the following assumptions were made:

HEATING FUEL:

(1) 25% of annual consumption is retained as a safety factor from one year to the next.

(2) Fuel consumption was cyclical in nature with November, December, January and February being those months with the greatest demand (demand arbitrarily assumed as 2) and that June and July experienced the least demand (demand arbitrarily assigned as 1) and that between these months demand changed in a linear manner.

(3) All fuel was delivered in July and carrying charges started at that time.

(4) Financing of inventory was done on a 30-day (monthly basis) at an annual rate of 11% or .92% monthly. Compounding of interest charges was not taken into account.

The capital costs associated with the P.O.L. operation were

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determined as follows:

(1) P.O.L. provided an estimated replacement cost on tank farm operations of $1.75 per gallon of storage capacity. This figure included tanks, building, pipeline, delivery vehicles and stations.

(2) By community, the amount of storage dedicated to P-50 (heating fuel) and gasoline was determined from P.O.L. records.

(3) The total value of capital at replacement cost was then determined by community.

(4) This was assumed to amortize over an average useful life of 20 years at an annual interest rate of 11% and from this, the annual payment necessary to service the debt and repay the principal was determined (i.e. an annuity).

All figures for carrying cost and capital costs were given on an annual per gallon basis as well as in absolute terms.

The inclusion of the two figures derived above enable a true cost to be placed on the price of heating fuel (P-50) and gasoline in communities served by P.O.L. As fuel prices remain constant throughout the year, any reference date would prove a valid comparison to southern Canada but dates closes to the delivery would provide a more credible and truer picture of actual price comparisons.

GASOLINE:

The assumptions made to impute a carrying charge and annual capital charge for gasoline were essentially the same as for heating fuel, except that useage was assumed constant throughout the year without seasonal variations.

ELECTRICAL FNERGY:

In accordance with N.C.P.C.'s mandate to produce electrical

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power at costs, the information provided by N.C.P.C. has been assumed to be correct and accurate. As the rate zone is operating at slightly more than 100% of the full cost of service, all costs are met in the aggregate. This, though, does not mean that all classes of customers in all places bear their full costs of service. The rate structure that N.C.P.C. has developed in general provides that government and large industrial-wholesale users pay more than the full cost of service while non-government domestic and commercial services pay less than the full cost of service.

The end result of this rate structure is that various customer classes in specific areas enjoy subsidized rates. To determine the degree and extent of subsidization in each settlement serviced by N.C.P.C. the following matrix of information was extracted from N.C.P.C.'s cost-of-service study:

	Annual KWH	Annual Total Cost	Annual Total Revenue	No. of Customers
NON-GOVERNMENT				
Domestic	x	x	x	x
Commercial	x	x	x	x
GOVERNMENT				
Domestic	x	x	x	x
Commercial	x	x	x	x
WHOLESALE - INDUSTRIAL	x	x	x	x

This information in turn was used to determine the average cost of a KWH of electricity as compared to the average revenue from a KWH of electricity, for each customer grouping within each region of the Northwest Territories. These two figures in turn indicated the levels of subsidization.

The information presented by N.C.P.C. for its 1980-81 fiscal year was based on 1979 fuel prices. Through a regional fuel clause adjustment the rates are varied to cover the increasing cost of fuel oil, consequently a fuel clause adjustment factor for each region was determined and appropriate adjustments made to the revenue and cost sides of the equation.

The impact of the Federal Power Support Program on the fuel price of domestic energy was determined on a regional basis, using 5.5¢/KWH as the Yellowknife base price and again assuming a seasonal consumption pattern (Pattern implied from material supplied to the Public Utilities Board by N.C.P.C.). The Federal Power Support Program applies to domestic non-government consumers only and gives them the first 700KWH of electricity a month at the prevailing Yellowknife rate. There are no carry overs or banking of credits between months. The subsidy is added to the consumer's bill as a credit, reducing the actual payment by the end user.

Within the content of this study several factors have not

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been taken into account, a prime one is that of profit. For petroleum products, no account has been taken to impute a reasonable return for P.O.L. if it were a normal private enterprise.

Similarly, no attempt has been made to impute a rate of return for N.C.P.C. as Alberta Power would obtain in Hay River. Additionally, in the rates of Alberta Power and Plains Western Gas & Electric, there are provisions for Federal Income Tax and Franchise Tax (flows to the municipality concerned).

If one chose to derive a profit and tax function for N.C.P.C. and P.O.L., then an additional area of concern would have to be addressed, that being overall efficiency. It would have to be assumed that these government agencies were as efficient at their private sector counterparts. No opinions are herein expressed on the question of overall efficiency as it is not within the terms of reference.

Within the cost structure of the fuel there is a Territorial tax of $.0318/gallon on heating oil and $.1591/gallon on gasoline. Additionally, gasoline has a federal tax of $.1405/gallon.

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Another factor that has been ignored because of the time element is N.C.P.C.'s purchase of petroleum product from P.O.L.

Two areas of subsidization are evident in this purchase:

(1) P.O.L. does not add on its mark-up as it does to other customers. N.C.P.C. purchases P-50 at landed price plus a small discharge fee, and

(2) the carrying and annual capital charges are absent.

Although the total impact of the two above may be significant, it is felt that the effect on N.C.P.C.'s costs would be noticable but not very significant. Again the limited time to undertake this study has prevented a close examination of this point.

ERROR FACTORS:

Within the analysis several areas are present where errors may occur and affect the results:

(1) Discounting the vintage of capital associated with petroleum products is one such area. Proper review of vintage and useful lives of capital would probably reduce the annual capital charges.

(2) 11% carrying charges are assumed (sample calculations at 1% on either side of 11% indicate no significant sensitivity to the results) as a reasonable cost to the government of monies.

(3) In some cases, storage capacity greatly exceeded the annual consumption and safety margins. No attempt was made to assess the prudency of these storage

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capacities and therefor inclusion in annual capital charges.

(4) The material presented by N.C.P.C. relies heavily on estimated consumptions, if the estimates are incorrect then the per unit cost would vary.

(5) In cases where airlifts are used for P.O.L. resupply, no account is taken, the costs of this has been spread over its Northwest Territories operation by P.O.L.

(6) In some cases there is periodic resupply rather than annual (Tuktoyaktuk and Fort Resolution are examples), This has been ignored and carrying costs calculated on a yearly resupply basis. This was done as time did not allow an in-depth assessment of the resupply methods and the volume of P-50 and gasoline involved was not enough to significantly effect the overall outcome of the exercise.

(7) In aggregating P.O.L. figures for regional comparisons, the method used did not allow for weighting of the figures by the consumption pattern. This tends to distort the picture somewhat but again it is not considered significant. The aggregate electrical figures are weighted as to consumption patters and do not show this type of distortion.

DATA PRESENTATION:

PETROLEUM PRODUCTS

From the material obtained from P.O.L. the following

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baseline information was collected and is presented in the appended working papers for both fuel oil and gasoline:

a) Product Cost - suppliers bid cost

b) Transport Cost - by bid

c) Final cost per unit (a and b)

d) Gallons to be used, 1980

e) Storage capacity

f) Users price

The data was then analyzed to yield an inventory carrying cost and an amortized capital cost which were both added on to the user-price to give the true cost or price of the product.

The following illustrates by tables for each region the true cost of fuel and its various components.

TABLE 1*

P-50 - Heating Fuel

Per Gallon	Fort Smith	Inuvik	Baffin	Keewatin
Average on site cost	1.2779	.8082	1.1364	1.4306
P.O.L. Price	1.9154	1.7163	1.87	2.116
Carrying Cost	.11	.06	.09	.13
Annual Capital Costs	.47	.29	.36	.47
True Cost or Price	2.4952	2.0736	2.32	2.716

* all figures given in dollars per gallon (Imperial)

TABLE 2
Gasoline

Per Gallon	Fort Smith	Inuvik	Baffin	Keewatin
Average on site cost	1.2832	.946	1.1023	1.3511
P.O.L. Price	2.152	1.948	2.05	2.273
Carrying Cost	.12	.10	.11	.13
Annual Capital Costs	.60	.42	.39	.45
True Cost or Price	2.8713	2.471	2.556	2.856

As a general statement, the P.O.L. price to the consumer of the petroleum products studied reflect from 70 to 80% of the true price or cost of those products. These percentages range widely, for example, in Pelly Bay the consumer price of gasoline represents only 55% of the true cost or price, while in Arctic Red River the consumer price for heating fuel represents 93% of the true price or cost.

The subsidy provided for these petroleum products flows from the Territorial Government to the consumer in a direct, before purchase, reduction in price. The subsidies are implicit and are not recognized as such.

The total magnitude of the subsidy can be estimated as follows:

1) $527,000 Carrying charges for 9,390,737 gallons of P-50 valued @ $1.075/gallon on site at 11% per annum.

2) $105,054 Carrying charges for 1,736,434 gallons of gasoline at 11% per annum.

3) $3,177,101 Annual capital costs for 14,457,317 gallons of P-50 storage capacity valued at $1.75 per gallon, amortized over 20 years at 11%.

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4) $681,567 Annual capital costs for 3,101,455 gallons of gasoline storage capacity valued at $1.75 per gallon and amortized over 20 years at 11%.

which yields a total implicit subsidization of $4,490,700 per annum for P-50 heating fuel and gasoline. As the form of their subsidy is essentially uncollected capital costs, it does not form a direct and obvious cost to the Territorial Government but nevertheless it is a real cost borne by the Territorial and Federal Governments through the carrying of the debt.

ELECTRICAL ENERGY:

From the financial and cost allocation material obtained from N.C.P.C. it was possible to determine the true cost of a kilowatt hour of electrical consumption for the Northwest Territories as a whole and for each region of the Northwest Territories. Although N.C.P.C.'s operations within the Northwest Territories break even (there is an operating surplus of $850,000) the allocation of revenue to costs is not uniform, consequently specific customer groups in various locations do not bear the full cost of providing their service.

In the context of this report, it is presumed that any difference between the cost of providing the service and the price paid for that service represents either a subsidy or excess revenue.

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The following tables present the information as derived and show those subsidizations that are inherent in the rate structure.

TABLE 3

DOMESTIC NON-GOVERNMENT CONSUMERS:

	N.W.T.	FORT SMITH	INUVIK	BAFFIN	KEEWATIN
Sales KWH (000)	25,941	17,282	5,772	493	1,944
Av. Cost/KWH* True Price	9.0941	6.0723	15.1683	17.8444	15.7039
Av. Revenue/KWH* Consumer Price	5.1038	3.9204	7.0598	8.5047	8.9539
Subsidy/KWH*	3.9903	2.1519	8.1085	9.3397	6.7500
Subsidy % of Cost	44%	35%	53%	52%	43%
Dollar Value of Subsidy	1,017,167	371,886	468,016	46,045	131,220

* All figures in cents per KWH

TABLE 4

DOMESTIC GOVERNMENT CONSUMERS:

Sales KWH (000)	56,741	12,794	22,061	8,465	13,421
Av. Cost/KWH* True Price	16.5813	13.9601	15.6850	18.3975	19.4078
Av. Revenue/KWH* Consumer Cost	17.3617	13.3261	14.3249	22.4272	23.0057
Subsidy/KWH* (Excess Revenue KWH)	(.7859)	.6340	1.3601	(4.0297)	(3.5979)
Subsidy % of Cost (Excess Revenue % of Cost)	(4.7%)	4.5%	8.6%	(21.9%)	(18.5%)
Dollar Value of Subsidy (Excess Revenue)	(442,829)	81,114	300,050	(341,110)	(482,874)

* All figures in cents per KWH

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TABLE 5

COMMERCIAL NON-GOVERNMENT:

	N.W.T.	FORT SMITH	INUVIK	BAFFIN	KEEWATIN
Sales KWH (000)	29,931	8,418	12,058	3,506	5,949
Av. Cost/KWH* True Cost	12.2911	7.7844	13.6377	16.1276	13.6775
Av. Revenue/KWH* Consumer Cost	9.5087	7.0505	9.2945	13.2254	11.2308
Subsidy/KWH* (Excess Revenue/KWH)	2.7824	.7339	4.3432	2.9022	2.4467
Subsidy % Cost	22.6%	9.43%	31.8%	18%	17.9%
Dollar Value Subsidy	832,792	61,777	523,709	101,753	145,553

* All figures given in cents per KWH

TABLE 6

COMMERCIAL GOVERNMENT:

Sales KWH (000)	51,188	13,253	16,824	7,546	13,631
Av. Cost/KWH* True Cost	13.5996	10.7946	14.6432	15.9765	13.6516
Av. Revenue/KWH* Consumer Cost	15.4754	11.7974	14.9594	19.3100	17.4852
Subsidy/KWH* (Excess Revenue/KWH)	(1.8759)	(1.0028)	(.3162)	(3.3335)	(3.8336)
Subsidy % Cost (Excess Revenue % Cost)	(13.8%)	(9.29%)	(2.16%)	(20.87%)	(28.08%)
Dollar Value of Subsidy (Excess Revenue)	(960,208)	(132,904)	(53,207)	(251,545)	(522,552)

* All figures given in cents per KWH

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TABLE 7

WHOLESALE AND INDUSTRIAL:

	N.W.T.	FORT SMITH	INUVIK	BAFFIN	KEEWATIN
Sales KWH	275,556	273,190	255	0	2111
Av. Cost/KWH* True Cost	3.9157	3.8399	19.4071	0	11.8523
Av. Revenue/KWH* Consumer Cost	4.448	4.3673	16.3922	0	13.0365
Subsidy/KWH* (Excess Revenue/ KWH)	(.5323)	(.5274)	3.0149	0	(1.1842)
Subsidy % Cost (Excess Revenue)	(13.6%)	(13.73%)	15.5%	0	(9.9%)
Dollar Value of Subsidy or Excess Cost	(1,458,126)	(1,440,817)	7,688	0	(24,997)

* All figures given in cents per KWH.

As mentioned previously the N.C.P.C. costs are based on 1979 fuel prices, therefore, to adjust the per kilowatt figures accordingly, it is necessary to produce a regional fuel clause adjustment. This will be accomplished from the following formulae:

$$\frac{\text{Total KWH's*}}{\text{Total Gallons*}} = \text{KWH/gallon}$$

* based on 5-year average

KWH/gallon is the historical efficiency of fuel in producing electricity for that region. The inverse of this or Gallons/KWH is the price that one KWH would have to be raised in price to compensate for a 1¢/gallon increase in the cost of fuel. It should be noted that the fuel clause adjustment is a symmetrical

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adjustment as it adds to the cost and revenues equally, changing the total amounts paid but leaving unchanged the relative positions of the figures.

TABLE 8

REGIONAL FUEL CLAUSE ADJUSTMENTS (based on 5-year average):

	N.W.T.	FORT SMITH	INUVIK	BAFFIN	KEEWATIN
Gallons consumed	7,937,544	2,709,816	2,940,225	1,308,164	979,339
KWH Produced(000) (Thermal)	104,125	40,168	36,882	15,300	11,775
Fuel Clause Adjustment*	.0762	.0675	.0797	.0855	.0832

* All figures in cents per gallon.

Within each region the price of oil is 1978/79 as given by N.C.P.C., but the 1980/81 cost of oil was unknown at the time N.C.P.C. prepared the report for the Public Utilities Board. Since N.C.P.C. either buys directly from N.C.P.C. at unit cost plus a moderate delivery charge or buys directly from P.O.L., then P.O.L.'s unit cost for 1980/81 can be used as an estimate of N.C.P.C.'s fuel costs. The only error factor in this assumption is that N.C.P.C. would have inventory fuel at lower cost, hence the average cost of fuel would be reduced. This, though, is ignored as it can not be properly estimated. The effect is transitory and in actuality detracts from a true price of energy.

The following outlines the fuel cost increases by region:

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TABLE 9

FUEL CLAUSE INCREASES:

	Reported 1978 Price ($)	1980 P.O.L. ON-SITE PRICE ($)	DIFFERENCE $
FORT SMITH	.9328	1.2779	.3451
INUVIK	.6588	.8082	.1494
BAFFIN	.8344	1.1364	.302
KEEWATIN	.8146	1.4306	.616
N.W.T. (Average)	.7970	1.1632	.3663

This then gives a regional fuel clause adjustment factor of:

TABLE 10

FUEL CLAUSE PRICE ADJUSTMENT:

	N.W.T.	FORT SMITH	INUVIK	BAFFIN	KEEWATIN
Fuel Clause Adjustment	.0762	.0675	.0797	.0855	.0832
Price Difference	.3663	.3451	.1494	.302	.616
Price Adjustment in ¢/KWH	2.7912	2.3294	1.1907	2.5821	5.1251

It should be noted that these figures effect the average cost and average revenue figures in Tables 3 through 7, but not the absolute dollar value of subsidies or excess revenue.

A further complication in the pricing of electricity arises in that the Federal Government has a power support program aimed at the Domestic Non-Government Consumers. This program provides a subsidy on the first 700 KWH of electricity a month,

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to equalize it to the Yellowknife rate.

In order to assess its impact on a regional basis the following procedure is used:

(1) The average annual consumption per domestic non-government consumer is determined.

(2) It is assumed that monthly consumption in November, December, January and February is twice that of June and July and that the other months vary in a linear function between the high and the low.

(3) From the inferred monthly consumption and known KWH charge an assessment is made of the impact of the Federal subsidy on the final annual billing of the average consumer in the region. This is then transformed to determine its impact on the average annual charge.

(4) The N.C.P.C. rate structure provides for the first 300KWH of consumption at the rate of 5¢/KWH therefore, the assumed Yellowknife rate will only apply to the next 400KWH's.

From the above information the following is derived:

TABLE 11

KWH's PER CUSTOMER (DOMESTIC NON-GOVERNMENT) TO WHICH FEDERAL SUBSIDY APPLIES ON AN ANNUAL BASIS:

REGION	KWH/CUSTOMER/YEAR
FORT SMITH	4732
INUVIK	4112
BAFFIN	3952
KEEWATIN	4300

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TABLE 12

SUBSIDY PAID PER KWH BY FEDERAL GOVERNMENT:

Region	Base Price	Fuel Clause Adjustment	Total Price	Total Price less Yellowknife Base Price
FORT SMITH	3.9204	2.3294	6.2498	.7498
INUVIK	7.0598	1.1907	8.2505	2.7505
BAFFIN	8.5047	2.5821	11.0868	5.5868
KEEWATIN	8.9539	5.1251	14.0790	8.579

TABLE 13

TOTAL PER CUSTOMER VALUE OF FEDERAL POWER SUPPORT PROGRAM:

	KWH	Power Support Contribution ¢KWH	Value Customer
FORT SMITH	4732	.7498	$ 35.48
INUVIK	4112	2.7505	$113.10
BAFFIN	3952	5.586	$220.76
KEEWATIN	4300	8.579	$368.90

TABLE 14

TOTAL VALUE OF FEDERAL POWER SUPPORT SUBSIDY PER REGION PER YEAR:

	No. of Customers	Value/Customer	Total Value
FORT SMITH	1,364	35.48	48,394
INUVIK	646	113.10	73,062
BAFFIN	58	220.76	12,804
KEEWATIN	200	368.90	73,780
TOTAL VALUE			$ 208,040

... 24

TABLE 12

SUBSIDY PAID PER KWH BY FEDERAL GOVERNMENT:

Region	Base Price	Fuel Clause Adjustment	Total Price	Total Price less Yellowknife Base Price
FORT SMITH	3.9204	2.3294	6.2498	.7498
INUVIK	7.0598	1.1907	8.2505	2.7505
BAFFIN	8.5047	2.5821	11.0868	5.5858
KEEWATIN	8.9539	5.1251	14.0790	8.579

TABLE 13

TOTAL PER CUSTOMER VALUE OF FEDERAL POWER SUPPORT PROGRAM:

	KWH	Power Support Contribution ¢KWH	Value Customer
FORT SMITH	4732	.7498	$ 35.48
INUVIK	4112	2.7505	$113.10
BAFFIN	3952	5.586	$220.76
KEEWATIN	4300	8.579	$368.90

TABLE 14

TOTAL VALUE OF FEDERAL POWER SUPPORT SUBSIDY PER REGION PER YEAR:

	No. of Customers	Value/Customer	Total Value
FORT SMITH	1,364	35.48	48,394
INUVIK	646	113.10	73,062
BAFFIN	58	220.76	12,804
KEEWATIN	200	368.90	73,780
TOTAL VALUE			$ 208,040

... 24

TABLE 15

IMPACT ON PRICE PER KILOWATT:

	Total Value	KWH(000)	¢/KWH *
FORT SMITH	48,394	17,282	.2800
INUVIK	73,062	5,772	1.2658
BAFFIN	12,804	493	2.5971
KEEWATIN	73,780	1,944	3.7953

* Figure given in cents per kilowatt per year

It can be seen that the total subsidy flowing to the private sector consumers of electricity (domestic and commercial) is approximately $2,059M. (Tables 3 and 5)

By region it can be seen that the domestic consumer can pay as little as 41% of the true cost of producing that power. This 41% represents an average consumer charge of 8.4897¢ per kilowatt. In another region, the consumer pays 71% of the actual full service cost, representing an average annual kilowatt charge of 5.9698. The subsidy that flows to the private consumer (domestic and commercial) is attributable to both levels of Government and large industrial and wholesale customers on the N.C.P.C. system. Of the $1.8M flowing to these two customer groups (through the rate structure), 65% can be attributed to Government accounts paying in excess of the full cost-of-service. This is approximately $900,000. To this figure must be added the Federal Power Support Price of $200,000, to give a total annual government subsidy of $1.1M to domestic and commercial consumers.

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CONCLUSIONS AND DISCUSSION:

The report, qualified by its assumptions, has demonstrated that significant subsidies exist for P-50 heating fuel, gasoline and electricity. The total value of these subsidies is estimated to be in the neighbourhood of $6.3M annually. The report by illuminating those subsidies also made it possible to determine a true cost of providing the forms of energy studied. These costs can be compared to equivalent southern costs.

APPENDIX "A"

PRIVATE INDUSTRY

RETAIL PRICE

FOR

P-50 and GASOLINE

August 26, 1980

GOVERNMENT SERVICES
PETROLEUM PRODUCTS
PRIVATE INDUSTRY RETAIL PRICES
AS ON AUG. 26th 1980

CITY/TOWN/SETTLEMENT	P-50 HEATING	GASOLINE
Yellowknife		
price per litre	$0.22	$0.33
price per gallon	.995	1.50
Hay River		
price per litre	.199	.26
price per gallon	.903	1.182
Fort Smith		
price per litre	.223	.288
price per gallon	1.014	1.311
Fort Simpson		
price per litre	.213	.273
price per gallon	.967	1.243
Inuvik		
price per litre	$0.195	$0.249
price per gallon	.886	1.13
Cambridge Bay		
price per litre	.459	.53
price per gallon	2.086	2.41
Aklavik		
price per litre	.2034	.294
price per gallon	.925	1.336
Sanikiluaq		
price per litre	.305	.28
price per gallon	1.387	1.27
Frobisher Bay		
price per litre	.279	.40
price per gallon	1.265	1.82

APPENDIX "B"

GUIDE TO WORKING PAPERS

APPENDICES B & C

available on request

from

Ministry of Energy
Government of the Northwest Territories
Yellowknife, N. W. T.
X1A 2L9