

ESB

Fifty second Annual Report For year ended 31st March 1979

ELECTRICITY SUPPLY BOARD
IRELAND

ELECTRICITY SUPPLY BOARD
Lower Fitzwilliam Street, Dublin 2, Ireland.
Telephone: Dublin 765831 and 771821

Board Members

PROFESSOR C. T. G. DILLON, M.E., C.Eng., F.I.E.I., F.I.E.E., F.I.Mech.E., **Chairman**

L. BOYD, F.C.I.T.

J. COHALAN, M.Sc. (Econ.)

T. GILMARTIN

R. B. GODSIL

D. HATCH

C. KELLEHER

J. J. KELLY, M.E., LL.D., C.Eng., F.I.E.I., F.I.Mech.E., **Chief Executive**

G. N. POWER, F.C.A.

J. A. RYAN, M.A., LL.D.

A. RYDER

J. P. WYLEY, B.Comm.

Directors

Personnel **P. J. MORIARTY**, F.C.I.S., M.I.P.M., **Assistant Chief Executive**

Commercial **M. J. SHIEL**, B.E., B.Sc., C.Eng., F.I.E.E., M.I.E.I.

Generation-Transmission **S. TINNEY**, B.E., B.Sc., M.I.E.E.

Finance **J. B. O'DONOGHUE**, F.C.C.A., A.C.M.A.

Secretary

J. F. WILLIAMS, F.C.I.S.

Cover picture: At all E.S.B. Service Centres customers can obtain a selection of energy conservation literature.

Significant Facts

	1978/79	1977/78
REVENUE		
Electricity	**£222,768,000**	**£210,029,000**
Appliance Sales (Net of Taxes)	**£6,111,000**	**£4,895,000**
Installations	**£2,923,000**	**£2,023,000**
ASSETS	**£600,058,000**	**£532,363,000**
PAYROLL	**£74,527,000**	**£62,974,000**
SALES (million units)	**7,965**	**7,330**
GENERATION CAPACITY (MW)	**2,895**	**2,540**
PEAK DEMAND (MW)	**1,934**	**1,802**
LOAD FACTOR	**56.8%**	**56.1%**
CUSTOMERS	**1,015,636**	**986,256**
EMPLOYEES	**11,297**	**10,845**

(Cash figures are rounded off to the nearest thousand)

Prl. 8102

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To the Minister for Industry, Commerce and Energy

In accordance with the provisions of the Electricity Supply Acts 1927/79, the Board presents its Annual Report and Accounts for the year ended 31st March, 1979.

Finance:

The outcome of the year was a deficit of £7.37m., a serious setback especially when viewed against the background of the previous year when the accumulated deficit had been reduced from £8.6m. to £4.56m. The accumulated deficit brought forward to 1979/'80 stands at £11.93m.

Increased expenditure on generation fuel was the main reason for the deficit. This arose from a serious disruption in the planned generation programme and from the higher costs of oil supplies experienced from December 1978 onwards. Factors which contributed to the disruption of the generation programme were:

- industrial action causing, *inter alia,* a delay in the commissioning of the natural gas plant at Marina and interruption of the generation maintenance programme. The delay in being able to avail of the natural gas alone accounted for extra costs of £3.5m.;
- poor quality of peat supplies, requiring heavy supportive oil burning in peat stations;
- lower output from hydro stations because of low water inflows;
- loss of key plant due to breakdown.

Management action in curtailing expenditure under other main headings yielded economies and these contributed to reducing the impact of the extra fuel costs.

In the final quarter of the year there was an upheaval in energy markets following increases announced for oil by the OPEC countries and the general disruption in oil supplies following the political troubles in Iran. Previously, fluctuations in fuel prices above a base figure had been automatically adjusted in the electricity charges through the Fuel Cost Variation Clause. This Clause has, however, been set at zero since April 1978, on the recommendation of the National Prices Commission. At that time an electricity price reduction of 5% was implemented following an earlier reduction of 2½% in October, 1977. These reductions reflected decreases in fuel oil costs achieved through prudent forward currency contracts.

The price of fuel oil has shown a progressive and dramatic increase in recent months and today's prices bear little relationship to those pertaining a year ago. The increased prices had a significant and immediate effect on generating costs which should be recovered in the overall rates of charge. The Board accordingly submitted a price application for an increase in basic rates, with the recommendation that the Fuel Cost Variation Clause be re-activated. The Government approved, in early June, 1979, a 19.5% average increase in tariffs but the re-introduction of the Fuel Cost Variation Clause was not agreed. At a time when fuel prices are highly unstable a Fuel Cost Variation Clause must be an essential element in tariffs to recoup expenditure on fuel.

Previous annual reports have emphasised that the E.S.B. should have a strong financial base if it is to undertake the massive capital investment programme required to provide the plant, networks and services to meet the electricity demand which will arise from advancement in national economic development and in general standards of living. To maintain the requisite financial capability there is a continuing requirement that the E.S.B. should:

- make significant contributions to capital investment from internal resources, as required to secure finance in the international markets;
- apply timely and adequate electricity price increases to offset the pressure of inflation on fuel, wages, material, interest and other costs.

These financial conditions combine to give an immediate advantage to E.S.B. customers of having adequate standards of electricity supply and a longer term advantage in lower electricity prices. There are additional national benefits of reducing dependence on foreign borrowings and of ensuring that the E.S.B. does not become dependent on the Exchequer.

The intensive capital investment required over the next decade to keep pace with the country's demand for electricity will seriously depress the level of contribution from internal sources if timely action is not taken. To avoid the consequential increase in borrowings and the inevitable extra reliance on foreign sources for funds an additional amount should be secured and set aside from revenue income each year to restore the amount of contribution to acceptable international levels. Over the past twelve months, an inter- departmental Working Party, led by senior officers of the Department of Industry, Commerce and Energy, have studied this question as well as the basic financial structure of the E.S.B. It is expected that the Working Party will have completed its report for submission to the Minister by mid-Summer of the current year.

Supply Position:

During the year there was serious and continuing difficulty in maintaining electricity supplies due to industrial action.

The Board wishes to record its thanks to its customers who responded so well to the public appeals to curtail demand during the peak hours in the Winter months. The consequences to the general public of a break in supply are extremely serious and every effort was made to minimise interference.

There continues to be substantial buoyancy in the demand for electricity in the agricultural sector. This is putting increasing pressure on the rural networks which were not originally designed for such heavy use. Reinforcement of the rural network is being accelerated to meet this situation.

Electricity demand increased dramatically around the end of the year due to the general shortage of oil in the country. This resulted in an energy transfer to electricity, thus adding to supply problems. Peak demand was running at up to 20% over the same period last year. The implications of this transfer in demand have been studied with urgency with a view to the formulation of recommendations to the Minister.

Energy:

Recent world events have again reinforced the dangers of having to rely on imported fuel and have brought a new emphasis to the need for energy conservation. Since 1973, conservation has been a principal corporate priority in the Board. The Board has been a leader in the campaign to create a public awareness of the consequences of wasteful use of energy and every opportunity continues to be taken to publicise the value to the community of the wise use of energy.

Planning for the future continues within two main parameters. There must be adequate plant for national economic development and there must not be excess generating plant because of the very high capital costs involved.

The Board's strategy continues to be the diversification of primary energy sources and the incorporation of as much flexibility in its generation development programme as is practicable.

During the year, Ministerial approval was obtained for the construction of a new generating station on the Shannon estuary designed primarily for coal but with the added facility of burning oil or gas. Two units of 300 MW each have been approved to date.

Combustion turbines will provide the necessary flexibility in meeting normal peak demand in the years before the coal station will be available in 1985. Ministerial approval was obtained for the installation of three such units for commissioning in 1981/'82. Preparatory work on the extensions to the Shannonbridge and Lanesboro' peat power stations was in hand and the tests on the combustion of Arigna coal using the fluidised bed technique were continuing. The new combustion turbine using natural gas at the Marina power station was commissioned during the year. The Board is pleased to welcome this new source of primary energy. The existing boilers in the Marina station have also been changed over to use this new fuel.

Research continued by the Board on the development of renewable energy resources such as biomass, tidal and wave energy, hydro power in small rivers and direct solar energy. At their present stage of development, however, these will only have a minor impact on the basic decisions regarding generating plant in the next decade.

International Link:

The E.S.B. system is at present entirely isolated from the European electricity grid. In that regard Ireland is unique amongst the countries of Europe. The possibility of an interconnecting link with Europe has been under examination for some time. This is technically feasible and could be made via the Central Electricity Generating Board networks in Britain which are already linked with mainland Europe. An international project of this nature is inherently one for Government decision. If approval by both Governments were obtained in the near future a link could be provided by the mid-1980's.

Nuclear Power:

During the year the Government authorised the Board to complete the preparatory process of planning a nuclear power station at Carnsore, County Wexford, to the stage of having a complete draft specification ready. No contractual commitment will be made until such time as the Government decides whether or not a nuclear station should go ahead. The Minister for Industry, Commerce and Energy has advised the Board that he proposes to introduce legislation providing for the building of a nuclear station, and for the holding of a public inquiry to cover planning and all other relevant considerations in relation to such a station such as those required by the provisions of the Local Government Planning and Development Acts, 1963 and 1976 and the Local Government (Water Pollution) Act, 1977. The proposed legislation will provide for the setting up of a special Tribunal to hold a single comprehensive inquiry in public into all aspects of the proposal and will cover not only environmental and planning aspects, but also such matters as health, economics, safety and security. The report of the Tribunal will be published. In addition, the Government has set up an Inter-Departmental Committee, comprising representatives at senior level of all interested Government Departments, whose terms of reference include the assessment of the proposed nuclear station from the environmental, financial and energy viewpoints. This Committee will submit a report to the Minister and it is intended that this report will be published and presented to the Tribunal.

Legislation and Consultancy:

During the year the Electricity Supply (Amendment) Act, 1979, was passed. Under the Act the Board's borrowing powers were increased to £1,200 million. In addition, formal legislative provision was made to

cover the Board's involvement in consultancy services both at home and abroad. A separate income and expenditure account on consultancy is published in accordance with the legislation. Considerable success has been achieved by the Board to date and, apart from the direct financial out-turn and the enhanced international status which has been acquired, the Board's involvement in these large foreign assignments has drawn attention to the possibilities for Irish exporters of developing further business. The Board is very pleased to record satisfactory financial results from consultancy on all projects; apart from surpluses achieved on all individual projects, the activity is a notable earner of foreign currency.

Board Membership:

During the year an election for four Worker Members of the Board took place. Those elected, and subsequently appointed by the Government to the Board were, Thomas Gilmartin, Denis Hatch, Anthony F. Ryder and John P. Wyley. In addition, the Board's Chief Executive, Dr. James J. Kelly, was appointed a Member of the Board, bringing the total number of Board Members to 12 as laid down by Statute

Mr. Seamus Scally, who was a member of the Board during the period of this report, completed his term of office on 30th April, 1979, and Mr. John Cohalan was appointed by the Government to be a Member of the Board from 15th May, 1979.

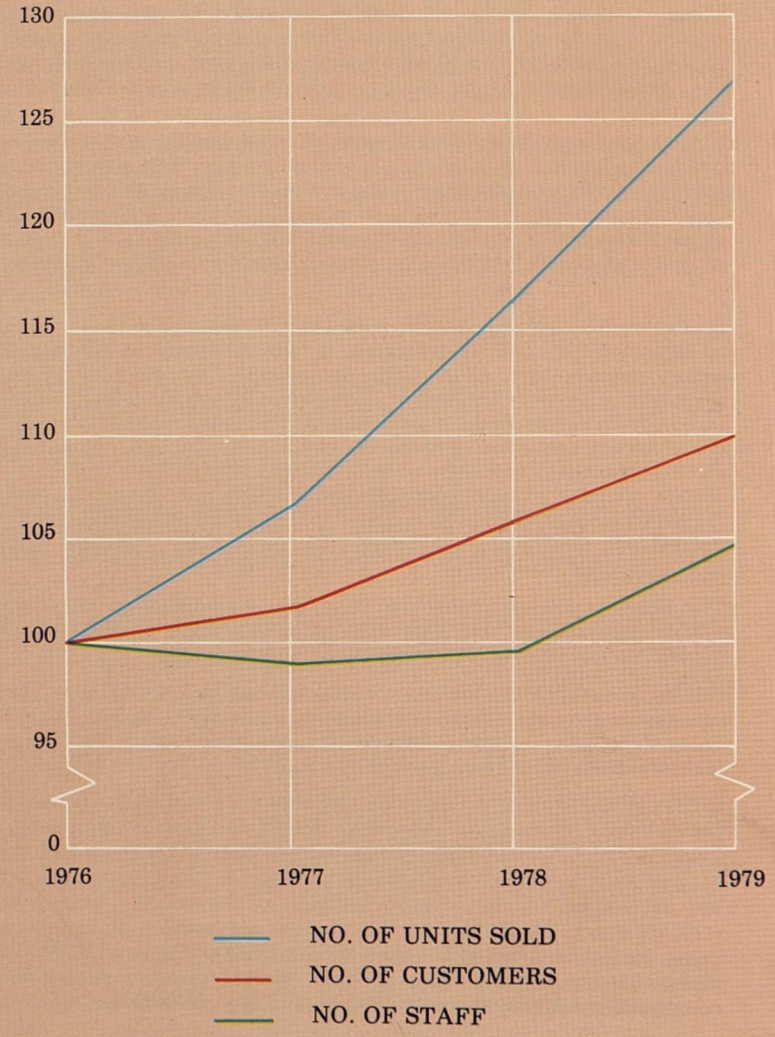
Staff:

The staff of the Board at the year end numbered 11,297 and the Board, once again, records its thanks to all its staff for the manner in which they performed their duties in a very difficult year.

(*Signed*) *Charles T. G. Dillon*, Chairman
Liam Boyd
J. Cohalan
Thomas M. Gilmartin
R.B. Godsil
Denis Hatch
Con Kelleher
James J. Kelly
Gerard N. Power
J.A. Ryan
Anthony Ryder
John P. Wyley

(*Signed*): *J.F. Williams*, Secretary
10th July, 1979.

GROWTH OF E.S.B.
IN 1976-1979



Electricity Production

System Demand required the generation of 9,603 million units, an increase of 8.8% over the previous year.

The peak demand of 1,934 MW was 7.3% higher than last year and occurred on Tuesday, 9th January. The annual load factor was 56.8%.

Hydro inflows during the year were 90.4% of normal. Inflows were below normal from the beginning of the year being only 60% of standard up to the end of November. Total hydro generation for the year was 87.1% of standard.

There were supply difficulties throughout the year due to a combination of industrial disputes, low hydro inflows and a fire affecting a large set at Tarbert. It was necessary to disconnect supply to customers on five days during the year (one was on the occasion of the P.A.Y.E. strike in March). Voltage was reduced on 42 days to maintain supply and on six other occasions some load was automatically disconnected for short periods due to the sudden loss of plant.

The North/South interconnection was again unavailable throughout the year.

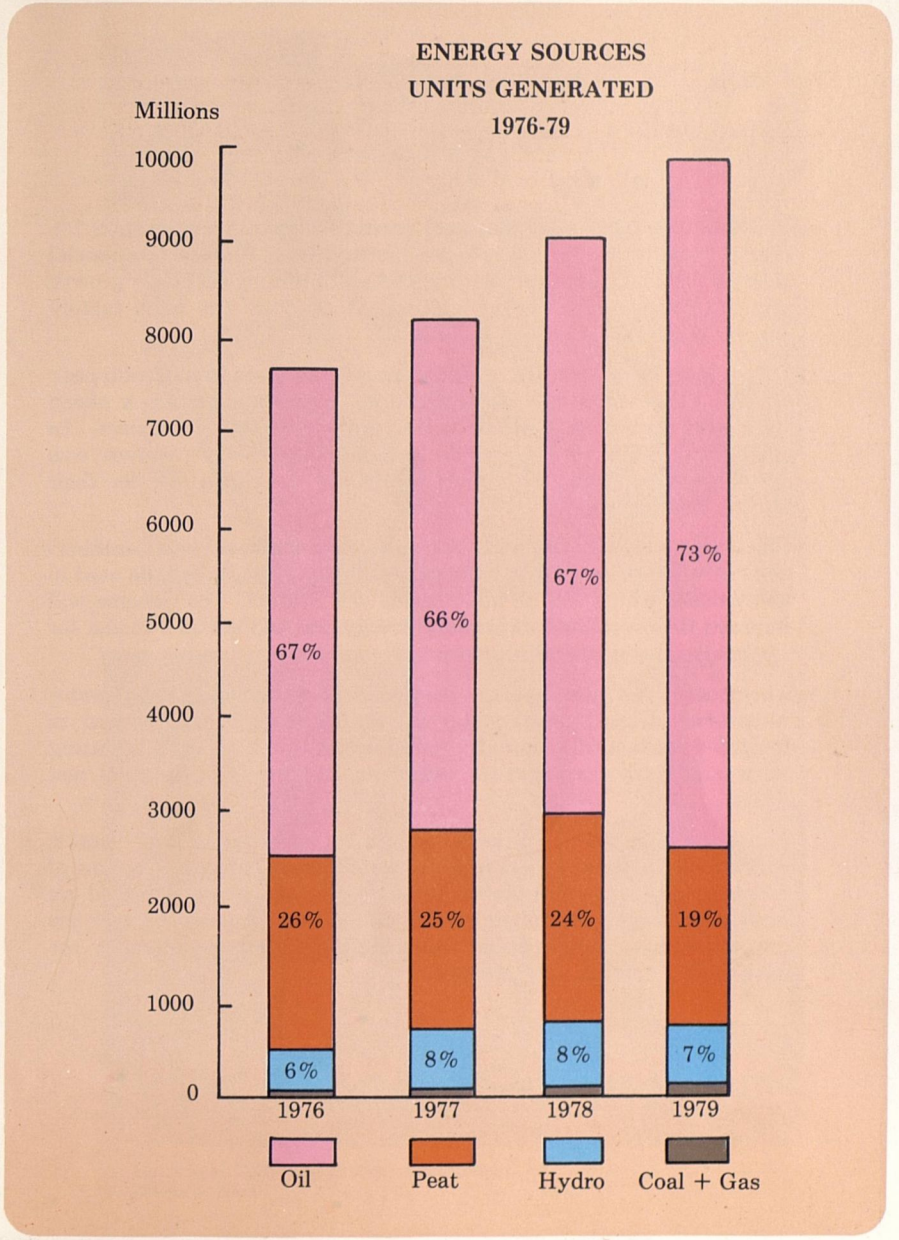
System frequency was maintained between 49.78 Hz and 50.22 Hz for 95% of the time.

The overall thermal efficiency of conversion of primary energy to electricity was 32.1% compared with 32.0% last year.

During the year the existing boilers in Marina station (120 MW) were changed over to burn natural gas and a new combustion turbine also using natural gas was synchronised there in February. A small quantity of electricity (66.2 GWhr.) was generated using natural gas before the end of the year.

A new 270 MW oil fired unit was commissioned at Poolbeg station Dublin and the total installed capacity at 31st March, 1979 was as follows:

Hydro plant (conventional)	219 MW
Hydro plant (pumped storage)	292 MW
Steam plant (sod peat)	117.5 MW
Steam plant (milled peat)	330 MW
Steam plant (oil)	1,688 MW
Steam plant (coal)	15 MW
Steam plant (natural gas)	120 MW
Combustion turbine plant (natural gas)	85 MW
Combustion turbine plant (oil)	28 MW
	2,894.5 MW



Electricity Sales

The total amount of electricity sold during the year increased by 8.7% (See Appendix 3). Domestic sales increased by 10.1%, commercial sales by 9% and industrial sales by 6.9%. Continuing economic growth and improvements in the agricultural sector were the main factors which contributed to increased sales.

During the year action was taken in a number of areas to constrain peak demand. Night and day rates of charge, which incorporate a cheap night rate, were introduced as an option for all customers. In conjunction with these rates, a waterheating control system was developed which helps customers to avail of the cheap rate for their electric waterheating.

The Board is participating in a scheme to provide heat from Lanesborough Power Station for horticultural purposes. The heat will be used in glasshouses which will be built beside the Station. The Scheme will improve the overall use of primary energy and will act as a model for further developments of this nature.

The Board has developed a central heating system using water radiators. In the system water is heated at night and stored in insulated tanks until required. Several prototypes have been operating for a number of years and the latest modification is in the final test phase.

The larceny of electricity continued to be a matter of considerable concern to the Board. Apart from the serious loss of revenue (the cost of which must be borne by other customers) some of the methods used are extremely dangerous and can result in loss of life. During the year the number of investigation teams was increased in order to intensify the campaign to eliminate the practice.



A 600kW channel type induction furnace. This electrically operated furnace improves quality and increases production in an Irish foundry.



The swimming pool at the new Sportsco complex in Dublin where energy saving is achieved by the use of a heat pump (inset) and ozone water treatment plant.

Trading

The three activities — Appliance Sales, Appliance Repairs and Installations Contracts — showed a combined net loss of £197,587 on a turnover of £10,100,577. In the previous year there was a combined net loss of £314,192 on a turnover of £7,844,324.

During the past year the objectives of the activities were revised to meet the needs of energy conservation and the wiser use of energy. These policy modifications impose new constraints on the business and it is encouraging, therefore, that the Appliance Sales business returned to profitability during the year. There was continued progress in the reduction of losses in Appliance Repairs.

Appliance Sales:
Turnover increased from £4,894,520 to £6,111,358 and the result was a net profit of £70,906 compared with a net loss of £39,649 in the previous year.

During the year the Board contributed significantly to energy conservation through its advertising campaign in the media on the promotion of insulation and through the sale for the first time of attic insulation material in its shops. It is estimated that more than 2,000 homes were insulated as a result of direct sales by the Board.

Appliance Repairs:
Further progress was made towards the objective of breaking even on this activity. The turnover for the year was £1,066,337 resulting in a loss of £109,141 compared with a turnover of £926,557 and a loss of £117,471 in 1977/'78.

Installations Contracts:
The turnover for the year was £2,922,882 compared with £2,023,247 in 1977/'78. The outcome for the year was a loss of £159,352 compared with a loss of £157,072 in 1977/'78.

The implementation of revised policies for this activity has resulted in a further movement of work to the higher technology areas of the market. Low tension work is now adequately catered for by independent contractors and the Board's involvement in this area is largely confined to supporting technical standards of safety, workmanship and methods.

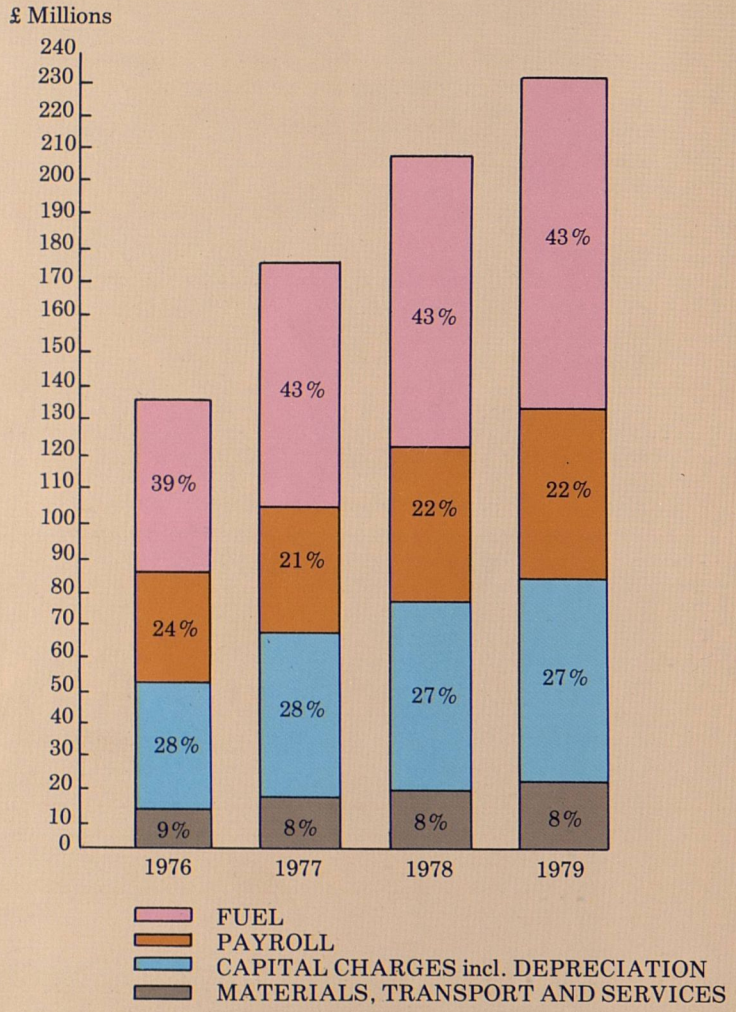


The ESB offers a nationwide attic insulation service.

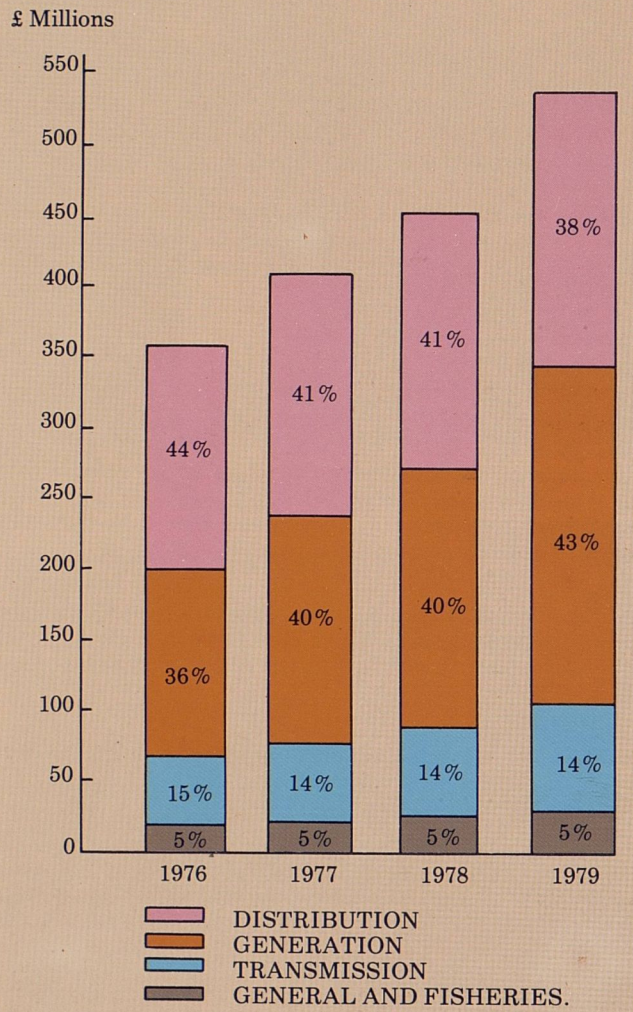


A display at an ESB Shop of attic, wall and floor insulation material.

EXPENDITURE



CAPITAL INVESTMENT IN FIXED ASSETS



Finance

Revenue Income and Expenditure

Revenue Income was £223,300,480, an increase of £12,399,718 over the previous year while expenditure at £230,677,445 showed an increase in the year of £23,848,153.

Summarised figures are as follows:

	Year Ending 31st March, 1979 £	*Preceding Year* £
Expenditure:		
Fuel	98,982,157	87,996,276
Payroll and other direct costs	69,612,959	62,122,849
Capital Charges including depreciation	62,082,329	56,710,167
	230,677,445	206,829,292
Revenue Income	223,300,480	210,900,762
	7,376,965 (Deficit)	4,071,470 (Surplus)

After taking account of capital appreciation on temporary investment and of the results of the trading and consultancy activities and deducting expenses on new borrowings, the result for the year was a deficit of £7,373,709 which increases the total deficit carried forward to 1979/80 from £4,563,763 to £11,937,472.

Capital Expenditure

Expenditure in the year was £69,768,660. After allowing for retirements of assets of £2,073,597 investment in capital assets increased to £600,058,033 (See Schedule F).

Assets brought into commission during the year were £83,116,153 bringing the total value of assets in service at year end to £532,973,142. Work in progress was £67,084,891; work approved amounted to £1,086,348,851 leaving £486,290,818 of approved work to be completed.

The Electricity Supply (Amendment) Act, 1979 authorises capital expenditure of £1,200 million for general purposes.

Expenditure in the year was financed by balance of funds forward, borrowings and internal resources.

Borrowings

Irish Pounds
: issues of redeemable public stocks.
: private placements with Banks.

Other Currencies
: project finance from Banks.
: private placements with Banks.

Internal Resources
: charge for depreciation of assets.
: supply contributions.
: proceeds of sales of retired capital assets.
: deferred instalment of rural subsidy from Minister for Finance.

Financial Structure

The Board participated with representatives of relevant Government Departments in the Working Party established by the Minister for Industry, Commerce and Energy to review and recommend on ESB Accounting Practice. An agreed report has been submitted to the Minister.

In line with these developments the Board will be examining the implications of the accounting standard on Current Cost Accounting which is due to be issued by the Accounting Standards Committee for application as from 1st April, 1980. (The relevant Exposure Draft was published in April of this year.)

The Board has made certain amendments in its Depreciation practice in line with the new Accounting Standard on Depreciation (SSAP 12). For this purpose the 1978/'79 Accounts incorporate a transfer of £8m. from accumulated depreciation to a new Asset Renewal Reserve.

Major Construction Works

Work continued on the construction of new Generating Stations. The position of each project at the end of the year was as follows:

Poolbeg Generating Station Extension, Dublin (Oil Fired) 1-270 MW Set: (The capacity of the existing station is 2-120 MW Sets).

This unit was commissioned on target in November 1978. Site restoration and landscaping was in progress.

Aghada Generating Station, Co. Cork (Gas fired) 1-270 MW Set:

Work on the construction of this station continued during the year.

The station is scheduled to be completed in 1980/'81.

Marina Generating Station Extension, Cork (Gas fired) 1-85 MW Set: (The capacity of the existing station is 2-30 MW Sets and 1-60 MW Set).

The combustion turbine was commissioned in February 1979. Commissioning of the waste heat recovery boiler was well advanced.

Site restoration and landscaping was almost completed.

Extension to Shannonbridge Generating Station, Co. Offaly (Milled Peat fired) 1-40 MW Set: (The capacity of the existing station is 80 MW).

Tenders for the main foundations and Blending Bunker Contract were sought and construction was due to commence. The main plant has been ordered.

The extension is due to be completed in 1982/'83.



The 270MW natural gas-fired generating station under construction at Aghada, Co. Cork.

Extension to Lanesborough Generating Station, Co. Longford (Milled Peat fired) 1-40 MW Set: (The capacity of the existing station is 60 MW).

Planning permission for the construction of this project was being sought. The main plant has been ordered.

The extension is due to be completed in 1983/'84.

Moneypoint Generating Station, Co. Clare (Coal fired) 2-300 MW Sets:

The Minister for Industry, Commerce & Energy approved the construction of this station during the year.

The site was acquired and planning permission for the first phase was obtained. The site development contract, which involves moving over 3 million cubic metres of earth and rock, was due to commence in mid-1979; the boiler plant has been ordered.

The scheduled completion dates are 1985/'86 and 1986/'87.

Parteen Weir, Co. Tipperary (Hydro) 0.6 MW Set:

Civil engineering work was on target and the main plant was delivered.

The set is due to be commissioned in late 1979.

Nuclear Generating Station Project:

The Government decided to hold a Public Enquiry on the question of Nuclear Power in Ireland; it also established an Inter-Departmental Committee to examine the proposed Nuclear Project at Carnsore. This matter is dealt with in more detail elsewhere in the Report.

Work on site investigation continued.

Investigations:

The experimental work continued into the possible use of low grade "crow coal" from the Arigna, Co. Leitrim area for electricity generation. Tests using the fluidised bed combustion technique are expected to be completed in the Summer of 1979 and if these are successful the construction of a 40 MW Generating Station would be considered. The investigations are being carried out in conjunction with Arigna Collieries Ltd.

The Board decided to participate in the International Energy Agency's Wave Energy Project which will involve sea trials of a large wave energy conversion device in the Sea of Japan.

Work continued on the research project on biomass conversion at Cahirciveen 5 MW Station.

The Board continued to monitor developments in wind power, tidal power and other natural sources of energy.

An information display unit was mounted in Kilrush to provide details of the proposed coal-fired generating station at Moneypoint, Co. Clare.





Shannonbridge turf-fired generating station which will be extended by the addition of a further 40MW unit.

Transmission

220kV Transformer Stations

The new station at Finglas, Co. Dublin was commissioned. The development included large-scale uprating and renewal of the existing 110kV Station, originally commissioned in 1951, giving it a new lease of life.

The Board's first 220kV metalclad switchgear installation was commissioned at Poolbeg, Dublin. Amongst the advantages of this type of switchgear are freedom from atmospheric pollution, greatly reduced site space and reduced maintenance costs.

The new station at Cashla, Co. Galway was completed during the year and will be commissioned in Summer 1979.

Site work commenced on the new stations at Flagford near Carrick-on-Shannon and Aghada, Co. Cork and on extensions to three existing stations. Preliminary design work commenced on three new stations and on extensions to two existing ones.

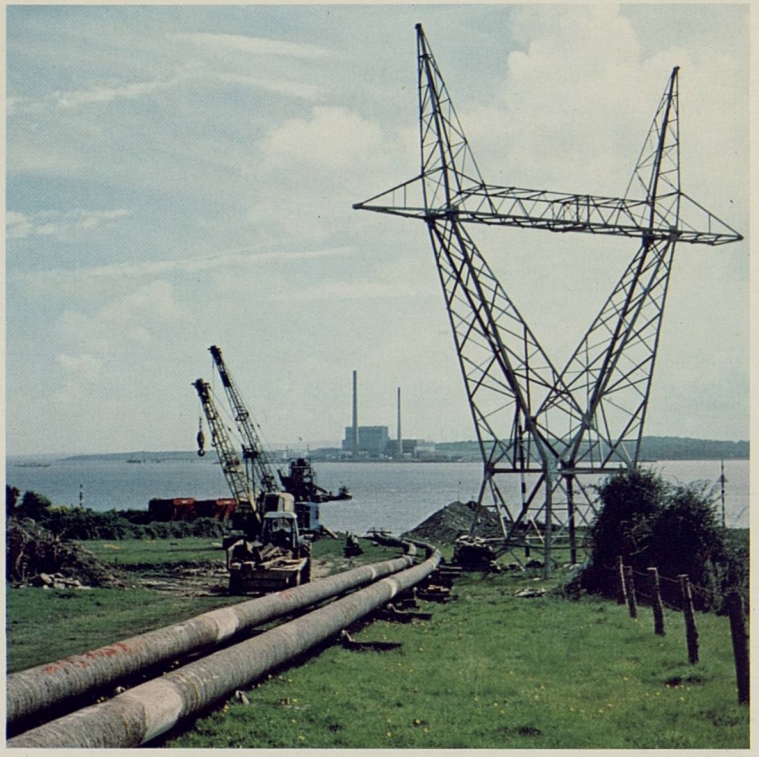
110kV Transformer Stations

The extension for the Combustion Turbine set at Marina was commissioned. Work was in progress on extensions at Mullingar, Rathkeale and Thurles and also on the uprating of equipment at Ringsend. Construction work commenced on new stations at Enniscorthy and Fermoy. New stations at Listowel, Longford and Waterford were at the design stage. Site acquisition for four other stations was at an advanced stage. Switchgear and relay protection changes associated with the direct earthing of the 110kV system were completed.

Lines

The Tarbert-Cashla 220kV Line (96 kms. approx.) was completed and commissioned this year. Construction of the lines from Aghada to Knockraha (26 kms. approx.), Knockraha to Raffeen (21 kms.) and Cashla to Flagford (88 kms.) was well advanced and should be virtually completed in the coming year. Construction of the line from Flagford to Louth (110 kms.) had commenced. Survey work is in progress on the line from Great Island to Arklow (85 kms.).

During the year a total of 58 kms. of new 110kV lines were erected and commissioned. A further length of 50 kms. was under construction at the end of the year. 88 kms. of new lines were being surveyed and 48 kms. of old lines, including 37 kms. of 95 mm² copper lines were decommissioned. The advent of new industrial loads continues to form a significant part of the new lines required.



Work on the construction of the 220kV cable pipe crossing of the River Shannon — the longest pipe-type underwater cable in Europe.

Cables

Two major 220kV cable installations were completed during the year, the Poolbeg-Finglas 220kV cable and the Shannon Crossing cable at Tarbert. Both cables were of the high pressure oil pipe-type design. Preliminary work has commenced on a new 220kV outlet from Poolbeg Generating Station to Inchicore, and materials were purchased for 220kV and 110kV cable work at Aghada, Co. Cork and Shannonbridge.

Distribution

Total expenditure in the Distribution area during the year was £41m. of which some 85% was spent in Ireland. This large expenditure was incurred in the construction of new networks to supply additional customers (26,800 during the year) and also in the operation, maintenance and renewal of existing networks, some of which are fifty years old. The high demand experienced during the year, including the very high growth rates in the Rural sector, placed considerable pressure on the resources of the organisation.

The Board co-operates closely with foreign utilities, manufacturers and international groups to ensure that its distribution practice is maintained in the forefront of technology and to contribute to international conferences on problems of standardisation and co-ordination. At home there is a continuing series of technical investigations with a view to resolving the wide range of problems associated with the operation and maintenance of the Distribution system. Preventive safety programmes are an important element of this work.

Increased use is being made of computerisation, new materials and methods and sophisticated diagnostic equipment to improve customer service and keep costs to a minimum. Staff training and updating is an integral part of this process.

Work of significance carried out during the year included:—

- preparation of a combined Transmission/Distribution Plan for the greater Dublin Area covering the period up to 2000 A.D.;
- initiation of a programme to tackle the growing difficulties of voltage regulation on the ageing Rural Electrification network;
- investigations designed to reduce the cost of transformer damage caused by lightning strokes which at present cost £300,000 per annum;
- study of new designs with a view to reducing the difficulties associated with 38,000 volt overhead lines in suburban areas;
- introduction of a new system to optimise the replacement costs associated with the Board's transport fleet which now exceeds 2,000 vehicles.

In line with the Board's policy of supporting Irish Industry the Board purchases as many wood poles as possible in Ireland. Sufficient quantities of such poles have, however, become increasingly difficult to obtain within the country, as a result of which it is now necessary to purchase a greater proportion abroad.

Irish forests contain extensive stands of spruce which until now could not be used as poles because they are impermeable to wood preservatives. The Board is at present co-operating with the Institute for Industrial Research and Standards in an experiment which, if successful, will overcome this problem and make it possible to use these trees as poles.

Rural Electrification

Work continued on the provision of electricity supply to the 1,500 applicants who qualified for supply under the terms of the Electricity Supply (Amendment) Act, 1976.

Approximately 850 houses had been connected at the end of the year and construction work was at an advanced stage on the provision of supply to a further 300 premises.

The use of a network data bank helps to improve the planning and maintenance of the distribution system.



Personnel

There were two major issues in ESB industrial relations which affected supply in 1978/'79. A protracted work-to-rule by mechanical fitters in the early part of the year caused difficulties in carrying out annual overhauls and routine maintenance in generating stations. This in turn caused a precarious supply position during the critical winter months but load shedding was only necessary on one occasion. The co-operation of the public in reducing demand was a major factor in avoiding further power cuts.

Craft & General staff made continuous demands during the year for new agreements on a category basis and rejected ESB proposals for a comprehensive agreement covering all staff. Although the dispute was processed through all the agreed procedures, the major Trade Union representing General staff introduced a work-to-rule and ban on overtime in August in pursuit of their claim. This action resulted in power cuts. Eventually, with the assistance of the President and officials of the Irish Congress of Trade Unions, a formula was devised for the development of category agreements and negotiations took place on this basis. Agreement with the various categories was nearing completion at the end of the year.

ESB disputes which threaten supply receive wide publicity; however, many more claims and disputes are dealt with strictly in accordance with agreed procedures and resolved through direct negotiations, or through use of the joint Industrial Council under the chairmanship of Mr. Con Murphy.

The great majority of ESB staff act responsibly in Industrial Relations and demonstrate high commitment to their public service role.

Because of the continued expansion of the Board's activities, and the increased demand for electricity, it was necessary to recruit 452 additional staff. At 31st March, 1979, the Board's staff totalled 11,297.

The Board's training and development programme continued during the year. Some 1,200 employees received special training on courses designed by the Board's Training Organisation while 400 employees received training on external courses. There are 370 apprentices in training including those sponsored by AnCO.



The first worker-members to be elected to the Board, (from left) Mr. D. Hatch, Mr. J. Wyley, Mr. T. Gilmartin and Mr. A. Ryder.

The election to the Board of employee members under the Worker Participation (State Enterprises) Act, 1977, was held during the year. The staff elected were appointed Board Members by the Government on 1st February, 1979.

Consultancy

The Board's involvement in the consultancy business expanded during the year with increased involvement in the Bahrain and Saudi Arabia assignments and also in the Bilateral Aid Programme in African countries.

Recognition has been given to this aspect of the Board's activities in the Electricity Supply (Amendment) Act, 1979. The debates on the Bill in the Dail and Senate suggested that overseas involvement by the ESB was welcomed for its part in improving the National image abroad and in the creation of jobs in Ireland.

At the peak of activity during the year 144 members of the Board's staff of all disciplines were engaged on consultancy assignments abroad and in planning and design offices in Ireland. The development of staff involved in consultancy is a major benefit of working overseas.

An important development has been the growing involvement in the Department of Foreign Affairs Bilateral Aid Programmes in the African States. In co-operation with that Department, Board staff have expanded the assignment with the Lesotho Electricity Corporation and have agreed to undertake a major manpower development and training programme for the Public Electricity and Water Corporation of Sudan.

Bahrain: Consultancy services were provided for the Bahrain Electricity Directorate in Engineering, Accountancy and Commerce. A major network of transmission stations and cables, for which the Board acted as Consultant, was successfully commissioned on target and design work commenced on the second phase of the programme. There was also progress on the design of a System Control Centre. A total of 40 ESB staff worked in Bahrain during the year.

Saudi Arabia: The supervision of the construction of the Baha Region Generation and Distribution network continued to an advanced stage in preparation for the target commissioning date in mid 1979. Work commenced on a similar project in the Al Kharj Region. A total of 31 ESB staff were engaged in Saudi Arabia during the year.

Training: The policy of inviting overseas power utilities to participate in the Board's training programme in Ireland was further expanded. 85 staff members from Nigeria, Saudi Arabia, Tanzania and Bahrain attended extended courses under this programme. A major training contract was agreed with the Electricity Corporation of Saudi Arabia and 32 members of their staff commenced an 18 month training programme in Ireland.

Others: Further advancement was made in the Management Consultancy Contract with the National Power Corporation of the Philippines and the work will be completed in June 1979.

At home the Board continued to provide Organisation and Methods services to a Regional Health Board.

ESB and contractors' staff discussing the construction of a distribution network in Al Kharj, Saudi Arabia.



Fisheries and Conservation

The total expenditure on Fisheries and Conservation amounted to £429,264. Income from the sale of salmon and eels was £120,800 and miscellaneous income amounted to £10,547.

Salmon stocks continued to decline during the year and the Board decided, in the interest of stock conservation, to suspend commercial fishing on the Shannon; similar measures which had already been introduced on the Rivers Erne and Clady some years ago, were continued. The Board maintained its salmon hatchery operations on the Rivers Shannon and Lee as these have contributed significantly to the salmon runs of both rivers in recent years.

The salmon count on the River Shannon (3102) was the lowest ever recorded; the commercial catch was equally low. The run on the Erne continued to decline and only 297 escaped up river to propagate. The Board's counter on the Clady recorded only 42 fish.

The salmon counts on the Liffey and Lee were relatively satisfactory.

The Board regrets that its forecasts of declining salmon stocks have proved correct; it welcomes the decision of the Government to introduce the Fisheries Bill, 1978 and hopes that when the Bill is passed all the necessary enforcement procedures will be utilised.

The eel catch was 28% lower than the previous year. The demand for eels was again firm and this was reflected in increased prices. The Board has been experimenting with the rearing of eels in the warm water discharged from generating stations; the initial results have been satisfactory and it is proposed to expand this activity in the coming year.

The Board has decided to continue its involvement in the joint salmon sea rearing project with Gaeltarra Eireann. The operation was expanded during the year with the successful rearing of rainbow trout in the sea.

The Board carried out an extensive salmon angling maintenance and improvements programme in the Shannon at Castleconnell. Preparations were completed for the rearing in cages of 200,000 brown trout annually from ova hatched at Parteen for restocking in Pollaphuca reservoir.

Although the Local Government (Water Pollution) Act, 1977 is in operation, the Board's involvement in the control of water pollution was at a higher level than anticipated and a number of offenders were prosecuted.

The Board's annual Fisheries Report, published separately, deals with these activities in more detail.

The scenic Pollaphuca Lake where the ESB has provided many amenities including landscaped picnic sites.





Rearing of brown trout in cages for re-stocking Pollaphuca reservoir.

Social Responsibility

The Board accepts the social dimension, arising from its position, as an important element in the national economy and continues to play its part in the national developments outside its primary function of producing an electricity service.

To help meet the national need for job creation, 452 extra positions were created directly during the year in the Board and, through services being provided for the Board in building and construction, a wide number of jobs was created. The need for energy conservation is a primary strategy in the Board's planning and the steps taken to help achieve this may be referred to elsewhere in this report. Encouragement to Irish industry was also provided and opportunities for Irish industry in export business were identified through the consultancy service.

An electricity undertaking has, of necessity, a considerable impact on the environment and steps are taken to improve the visual impact of the stations and lines. As part of its continuing care for the environment in which it operates directly, the Board took steps during the year to reduce its commercial cropping of the wild salmon stocks in the interests of conservation. It is hoped that the steps which were taken by the Board will contribute significantly to the conservation of the species and encourage a wider appreciation of the need for conservation throughout the salmon industry at the present time.

The Board mounted a major information programme at Kilrush in Co. Clare to inform the community there about the new coal-fired project at Moneypoint. This comprised an exhibition, audio-visual presentation and staff to answer questions. Visits from schools were organised and transport was provided. The event was attended by over 15,000 people and continued for two weeks.

Safety on the farm, in the factory and in the home was the subject of extensive advertising campaigns in the mass media. Liaison was maintained with farming organisations and transport operators to sustain awareness of hazards associated with overhead lines and underground cables. Particular emphasis was placed on childrens' safety and films were shown on RTE and through schools and colleges.

Lectures and meetings were arranged throughout the year with schools and womens' groups at which both safety and wise use of energy were discussed. These meetings provided an opportunity for E.S.B. advisors to promote the more efficient use of electricity in the home and on the farm.

The postal dispute affected delivery of customers' bills from mid-February on, resulting in a serious shortfall in incoming cash. Advertising was directed at inviting customers to enquire how much they owed, and making payments accordingly, in order to avoid accumulated bills at the end of the strike. It is gratifying to note that two-thirds of all customers co-operated.

The impact of higher costs for energy is recognised and the Board continued to promote both conservation and special payment schemes for electricity accounts, for example, saving stamps and budget payment plans. A campaign for the promotion of the wise use of electricity was launched throughout the country and an easy payment scheme for the insulation of attics has been introduced and has met with considerable success.

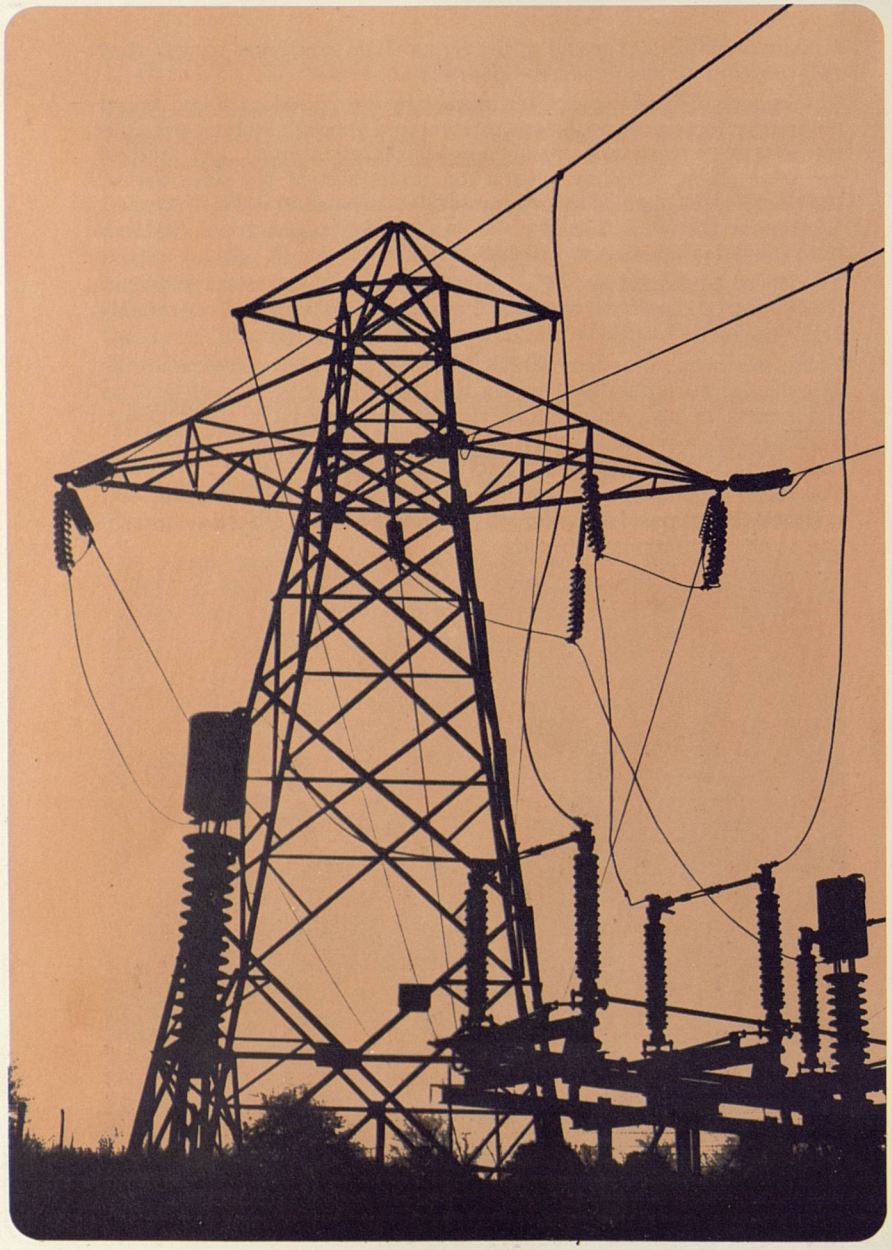
The Board continued its series of pre-retirement courses for staff and these courses have been attended by a number of people from outside organisations.

There has been a further growth in the use of Board reservoirs for recreational purposes. Boating continues to play a prominent part on the reservoirs and sailing and rowing regattas have taken place. Fishing and water skiing are other sports actively pursued. In addition, the Board has constructed car parks and amenity areas.

The social responsibility of the role of the Board is well recognised and it is an inherent part of the Board's approach to its staff, its customers and to the community generally.



Lectures on electrical safety are given to school children by ESB staff.

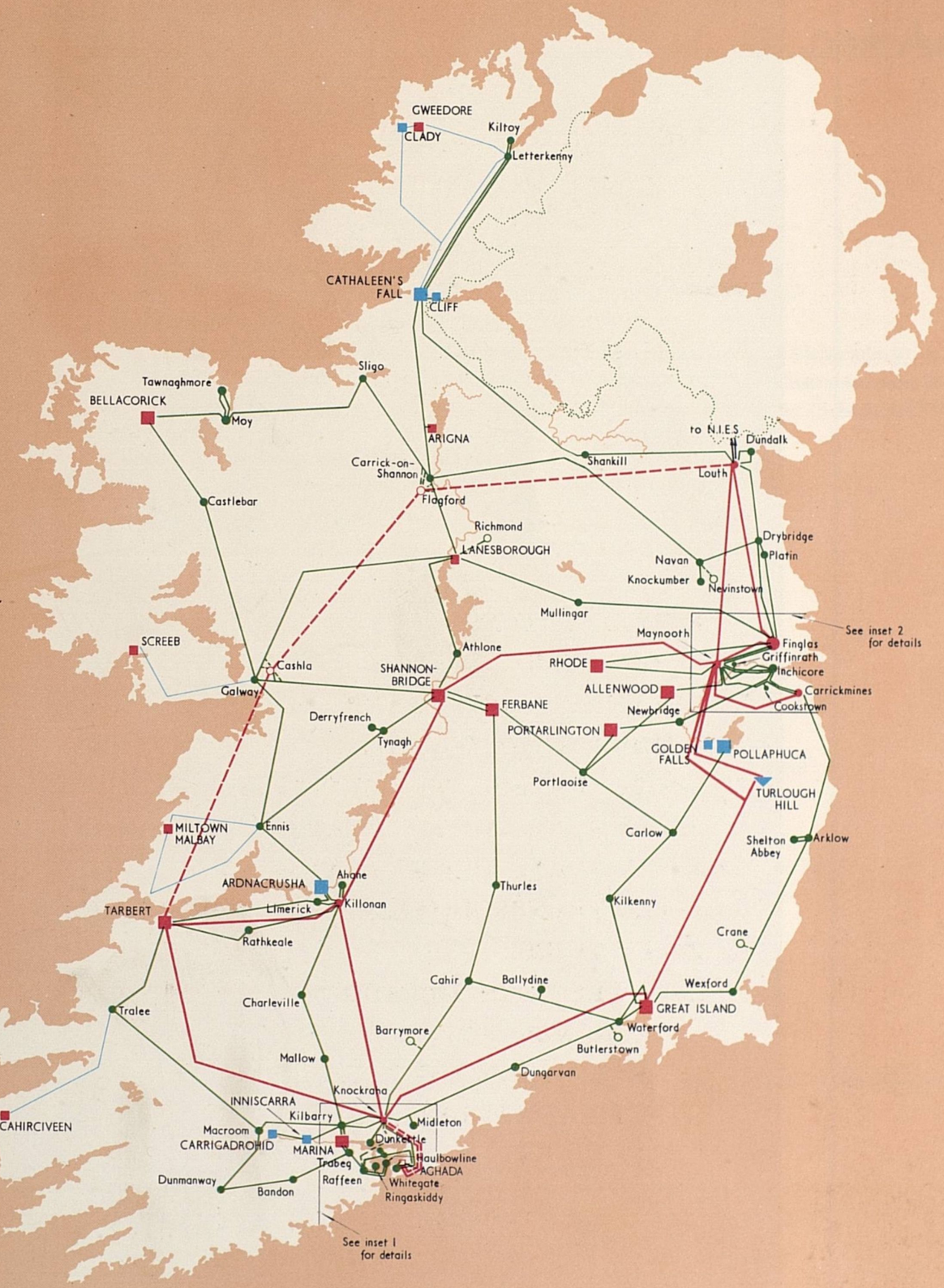


General outline of the

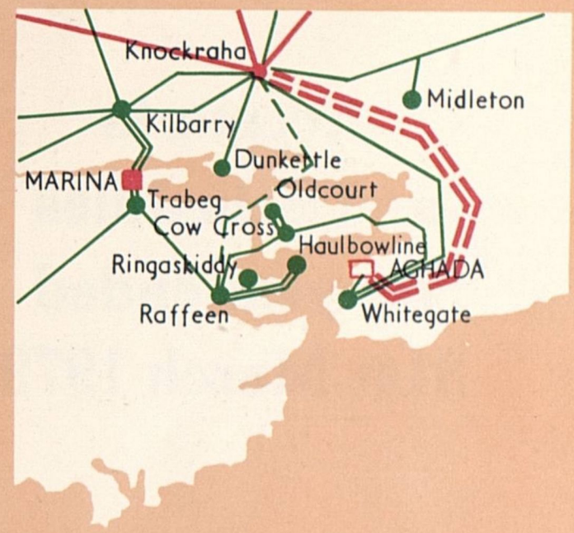
GENERATION and TRANSMISSION SYSTEMS

31st March, 1979

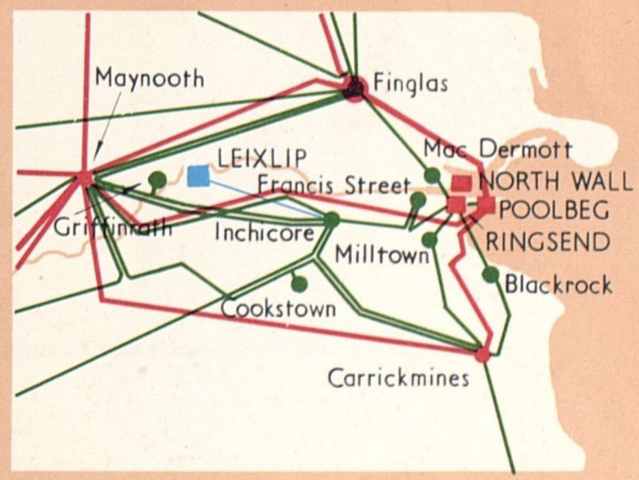
HYDRO STATIONS
STEAM STATIONS
STEAM STATIONS PROJECTED
PUMPED STORAGE STATION
220 KV TRANSFORMER STATIONS
220 KV TRANSFORMER STATIONS PROJECTED
110 KV TRANSFORMER STATIONS
110 KV TRANSFORMER STATIONS PROJECTED
220 KV LINES
220 KV LINES PROJECTED
110 KV LINES
110 KV LINES PROJECTED
OTHER HIGH VOLTAGE LINES
275 KV LINES



INSET 1



INSET 2



Accounts and Schedules for year ended 31st March 1979

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Profit and Loss Account

Account No. 1

1977/1978 IR.£000's		1978/1979 IR.£000's	1978/1979 IR.£000's
	Operations		
23,011	Electricity Income and Expenditure Account (Schedule A)		11,162
(314)	Appliance and Contracts Income and Expenditure Account (Schedule B)		(197)
—	Consultancy Income and Expenditure Account (Schedule C)**		530
22,697			11,495
574	Appreciation of Temporary Investments		106
(258)	Expenses on New Borrowings		(435)
23,013	Operations Surplus/(Deficit)		11,166
(18,940)	Amortisation Charge (Schedule A)		(18,539)
	Non-Operating Items		
6,159	Income and Credits (Net)*	19,297	
(6,159)	Transferred to Capital Reserves and Sinking Fund	(19,297)	
			—
	Accumulated Depreciation Adjustment	8,369	
	Transferred to Asset Renewal Reserve (Schedule K)	(8,369)	
			—
4,073	Surplus/(Deficit) for Year		(7,373)
(8,637)	Surplus/(Deficit) brought forward from previous year		(4,564)
£(4,564)	Surplus/(Deficit) carried forward to next year		£(11,937)

* Details in Schedule E.
** See Note 16 Schedule N.

Note: Adjustments in year-end parities of foreign borrowings have been reflected in Repaid Capital Reserve (Schedule K)

Account No. 2

Balance Sheet

31st March, 1978					31st March, 1979
IR.£000's	*Reference*		IR.£000's	IR.£000's	IR.£000's
532,363	Schedule F	**Total investment in Capital Assets** including work-in-progress		600,058	
168,948	Schedule F	Less Accumulated Depreciation		179,942	
363,415					420,116
114,542	Schedule G	**Current Assets**		140,035	
		Less:			
66,395	Schedule G	**Current Liabilities**		80,685	
48,147		**Net Current Assets**			59,350
24,879	Schedule H	**Sinking Fund Investments**, at cost			36,217
£436,441					£515,683
		Financed as follows:			
356,707	Schedule I	**Borrowings**			384,704
		Reserves			
58,445	Schedule K	Capital	105,498		
25,278	Schedule H	Sinking funds for borrowings	36,843		
		Revenue Reserves:			
500	—	Plant, self-insurance	500		
75	—	Others	75		
				142,916	
(4,564)	Account No. 1	Profit and Loss Account balance (deficit)		(11,937)	
79,734					130,979
£436,441					£515,683

Note: At 31st March, 1979 contractual capital commitments amounted to approximately £80,000,000 (1978 — £43,500,000)

Signed: Charles T. G. Dillon *Chairman*

Signed: J. J. Kelly *Chief Executive*
J. B. O'Donoghue *Director, Finance*

Electricity Income and Expenditure Account

Schedule A

1977/1978 IR.£		IR.£	IR.£	IR.£	IR.£	1978/1979 IR.£
210,028,777	**Income** — Electricity Sales	222,767,560				
871,985	— Miscellaneous (See Note 16 Schedule N)	532,920				
210,900,762						223,300,480
	Expenditure:	**Generation**	**Transmission**	**Distribution**		
87,996,276	Fuel	98,982,157				
50,884,925	Operation, maintenance and local charges	24,118,549	2,766,333	29,007,346		
10,969,188	General charges	5,380,861	1,787,810	6,257,077		
17,301,500	Depreciation	8,626,695	2,476,338	7,741,467		
268,736	Fisheries net cost	294,983				
167,420,625		137,403,245	7,030,481	43,005,890	187,439,616	
20,468,916	Interest	10,686,513	3,819,365	10,192,664	24,698,542	
187,889,541		148,089,758	10,849,846	53,198,554		212,138,158
23,011,221						11,162,322
18,939,751	Amortisation Charge (Schedule N — Note 9)	7,736,049	3,028,652	7,774,586		18,539,287
£4,071,470	Surplus/(Deficit)					£(7,376,965)

Notes:

Charges include: Local Rates £965,225 (£869,482), Central Transport and Stores Depot Costs £997,705 (£922,361), General Publicity £480,506 (£455,277), Bad Debts £411,125 (£220,178), Audit Fee £25,000 (£21,000), Board Members' Remuneration (including full-time Chairman) £22,203 (£20,370), Depreciation of Tools and Vehicles £1,129,606 (£951,903).

Fuel includes purchased electricity £33,680 (£34,611).

The previous year's figures are shown in brackets.

Schedule B

Appliance and Contracts Income and Expenditure Account

1977/1978					1978/1979			
Appliance Sales	Appliance Repairs	Installations Contracts	Total		Total	Appliance Sales	Appliance Repairs	Installations Contracts
IR.£	IR.£	IR.£	IR.£		IR.£	IR.£	IR.£	IR.£
4,894,520	926,557	2,023,247	7,844,324	Income, exclusive of VAT	10,100,577	6,111,358	1,066,337	2,922,882
3,803,646	737,927	1,757,608	6,299,181	Direct Costs	8,197,807	4,815,761	852,137	2,529,909
1,090,874	188,630	265,639	1,545,143	Gross Profit	1,902,770	1,295,597	214,200	392,973
				Overheads:				
640,680	301,038	260,469	1,202,187	Payroll costs	1,289,292	685,848	319,052	284,392
76,927	—	—	76,927	Publicity	52,555	52,555	—	—
133,671	—	—	133,671	Premises costs	159,471	159,471	—	—
58,355	5,063	23,529	86,947	Sundry expenses	80,043	44,798	4,289	30,956
220,890	—	138,713	359,603	General charges and interest, as apportioned	518,996	282,019	—	236,977
1,130,523	306,101	422,711	1,859,335		2,100,357	1,224,691	323,341	552,325
£(39,649)	£(117,471)	£(157,072)	£(314,192)	Surplus/(Deficit) transferred to Profit & Loss Account	£(197,587)	£70,906	£(109,141)	£(159,352)

Consultancy Income and Expenditure Account

Schedule C

	Consultancy and Advisory Services	Training		
	IR.£	IR.£	IR.£	IR.£
Income:	3,662,946	473,136	—	4,136,082
Expenditure:				
Direct Costs	2,913,839	352,008	3,265,847	—
Overheads:				
Directly allocated	134,226	16,470	150,696	—
General charges and interest as apportioned	168,700	20,700	189,400	3,605,943
Surplus transferred to Profit & Loss Account				£530,139

See Note 16 Schedule N.

Schedule D

Statement of Source and Application of Funds

1977/1978 IR.£	*Reference*		1978/1979 IR.£
		Source:	
23,012,971	Account No. 1	Operations before Amortisation Charge	11,165,578
572,742	Schedule J	Provision towards premium on Stock Redemption	1,443,982
18,260,403	Schedule F	Depreciation	19,981,106
1,168,573	Schedule F	Credits on disposal of assets	1,456,308
1,725,301	Schedule E	Interest on sinking fund investments	3,354,211
44,739,990			37,401,185
3,107,518	Schedule E	Non-repayable supply contributions	15,176,881
40,032,373	Schedule I	Borrowings *	85,253,973
£87,879,881			£137,832,039
		Application:	
67,358,564	Schedule F	Capital expenditure	69,768,660
18,956,547	Schedule H	Redemption of borrowings (net) *	45,522,401
9,398,768	Schedule H	Increase in sinking fund investments	11,337,763
(7,833,998)	Schedule G	Net movement in current assets/current liabilities	11,203,215
£87,879,881			£137,832,039

* Includes £31.46m. used for prepayment of existing Borrowings.

Statement of Non-Operating Items — Profit and Loss Account

Schedule E

1977/1978 IR.£			1978/1979 IR.£
	Income and Credits		
3,107,518	Non-Repayable Supply Contributions (Schedule K)	15,176,881	
1,326,377	Credits arising on ESB Stock Cancellations (Schedule H)	765,631	
1,725,301	Interest on Sinking Fund Investments (Schedule H)	3,354,211	
6,159,196			19,296,723
(4,433,895)	To Capital Reserves	(15,942,512)	
(1,725,301)	To Sinking Fund	(3,354,211)	
			(19,296,723)

Schedule F

Statement of Capital Assets

	Total at 31st March, 1978 IR.£	Additions Less Retirements during year IR.£	Total at 31st March, 1979 IR.£
Generation	181,163,746	45,198,104	226,361,850
Transmission	61,388,801	13,283,627	74,672,428
Distribution	185,454,924	18,674,216	204,129,140
General Buildings, Transport and Working Equipment	23,747,323	3,885,179	27,632,502
Fisheries	175,792	1,430	177,222
	451,930,586	£81,042,556	532,973,142
Work-in-Progress, including payments on account	80,432,384		67,084,891
Total Investment in Capital Assets (at cost)	532,362,970		600,058,033
Deduct Accumulated Depreciation, as below	168,947,607		179,942,424
Net Investment in Capital Assets	£363,415,363		£420,115,609

Note: Work carried out in the year amounted to £69,768,660 (1977/78 £67,358,564)

Accumulated Depreciation:	IR.£	IR.£	IR.£
Provision for depreciation of assets together with proceeds of disposal or stores value of assets retired, less assets retired, as at 31st March, 1978		168,947,607	
Movements in year:			
Depreciation of assets	19,981,106		
Credits arising on disposal of assets retired	1,456,308		
Assets retired	(2,073,597)	19,363,817	188,311,424
Accumulated Depreciation Adjustment as per Note 3, Schedule N			(8,369,000)
Total as at 31st March, 1979			£179,942,424

	Accumulated Depreciation as at 31st March, 1979 IR.£
Generation:	78,808,483
Transmission:	20,823,908
Distribution:	73,258,791
General Buildings, Transport and Working Equipment:	6,959,437
Fisheries:	91,805
	£179,942,424

Statement of Current Assets and Current Liabilities

Schedule G

31st March, 1978 IR.£						31st March, 1979 IR.£
	Current Assets			IR.£	IR.£	
675,494	Cash at bank and in hand				(2,149,311)	
10,653,066	Temporary cash deposits				11,099,901	
11,328,560						8,950,590
		Nominal Value				
	Investments at cost:	IR.£				
1,840,333	ESB Stocks	2,957,821	(1977/1978 £2,048,126)		2,634,757	
5,550,736	Government Stocks	—	(1977/1978 £7,605,766)		—	
658,292	Units of Account	742,495	(1977/1978 £684,689)		718,672	
8,049,361						3,353,429
	Accounts Receivable:					
	Electricity: billed			26,168,161		
	unbilled			28,469,943		
37,886,755					54,638,104	
10,121,375	Appliance and Contracts including Hire Purchase				12,368,422	
10,331,203	Others				15,343,078	
58,339,333						82,349,604
	Inventories:					
18,929,532	Fuel				23,860,430	
14,711,955	Plant/Network Stocks and Miscellaneous Spares and Sundries				17,940,871	
1,553,144	Appliances				1,689,014	
35,194,631						43,490,315
1,630,434	Repayable Work-in-Progress at cost					1,891,481
£114,542,319						£140,035,419
	Current Liabilities					
28,525,861	Accounts Payable					32,482,104
1,514,052	Progress Payments on Repayable Work-in-Progress					1,840,788
5,331,838	Borrowings — To finance Trading debtors					6,173,630
—	— Less than Twelve Month Term					5,000,000
11,826,048	Supply Contributions and Deposits					5,579,686
11,675,360	Accrued Charges and Provisions					18,604,953
7,522,415	Accrued Interest on Borrowings					11,004,298
£66,395,574						£80,685,459

Schedule H

Statement of Redemption of Borrowings and Sinking Fund Investments

1977/1978 IR.£		1978/1979 IR.£
	Redemption:	
1,174,008	Sinking Fund utilised in year	1,112,633
10,479,754	Funded redemption — Schedule J	10,660,272
1,326,377	Credits arising on ESB Stock cancellations	765,631
12,980,139	Reflected in Repaid Capital Reserve — Schedule K	12,538,536
7,302,785	Non-funded redemption	33,749,496
£20,282,924	Total redeemed during year — Schedule I	£46,288,032

Sinking Fund Investments:

		Nominal IR.£	Market IR.£	Cost IR.£	
	Opening Balance:				
1,731,299	ESB Stocks	6,250,489	6,769,656	6,073,671	
8,342,051	Government Stocks	19,996,034	19,353,085	18,805,429	
5,406,982	Bank Deposits			—	
15,480,332					24,879,100
1,540,037	Interest Received				3,127,399
9,032,739	Addition in year — Schedule J				9,322,997
26,053,108					37,329,496
	Utilised in year:				
	Towards redemption of borrowings			1,112,633	
1,174,008					1,112,633
	Closing Balance:				
	ESB Stocks	9,962,988	9,797,156	9,792,922	
	Government Stocks	29,576,800	25,924,527	26,423,941	
£24,879,100					£36,216,863

The Closing Balance £36,216,863, plus interest accrued £625,442, (1977/78 £398,630), represents the full Sinking Fund Reserve of £36,842,305 (1977/78 £25,277,730).

Statement of Borrowings

Schedule I

Amount of Borrowing IR.£			Balance Outstanding 31st March, 1978 IR.£	Borrowed during year IR.£	Redeemed during year IR.£	Adjustment for currency changes IR.£	Balance Outstanding 31st March, 1979 IR.£
	Irish Pounds:						
68,450,236	Advances	— Minister for Finance	46,935,601	—	1,347,002	—	45,588,599
500,000	Loan	— New Ireland Assurance Co. Ltd. 6% — 1962/87	267,268	—	23,171	—	244,097
14,865,000	Loan	— Central Bank of Ireland 7¼% — 1972/87	10,716,551	—	880,601	—	9,835,950
4,791,500	Loan	— Central Bank of Ireland 5½% — 1973/79	684,500	—	684,500	—	—
5,000,000	Stock	— 6% — 1968/78	2,039,930	—	2,039,930	—	—
12,000,000	Stock	— 6% — 1982/87	4,386,549	—	347,000	—	4,039,549
16,500,000	Stock	— 6% — 1984/89	8,461,484	—	1,396,083	—	7,065,401
13,000,000	Stock	— 7% — 1986/91	8,650,130	—	200,000	—	8,450,130
7,000,000	Stock	— 7¼% — 1988/93	4,859,306	—	150,000	—	4,709,306
9,250,000	Stock	— 9½% — 1985/90	7,722,102	—	150,000	—	7,572,102
12,000,000	Stock	— 9% — 1992/95	8,931,225	—	200,000	—	8,731,225
11,300,000	Stock	— 13% — 1983/85	10,363,496	—	496,746	—	9,866,750
10,750,000	Stock	— 10% — Premium (20%) 1980	10,080,000	—	69,091	—	10,010,909
6,000,000	Stock	— 9½% — Premium (20%) 1981	5,158,022	—	125,494	—	5,032,528
8,200,000	Stock	— 9% — Premium (20%) 1983	7,600,890	—	150,587	—	7,450,303
16,800,000	Stock	— 13% — 1988	15,994,906	—	669,928	—	15,324,978
6,000,000	Stock	— 9% — Premium (20%) 1984	—	6,000,000	—	—	6,000,000
12,000,000	Stock	— 13% — 1990/92	—	12,000,000	—	—	12,000,000
19,500,000	Revolving Credits	— Domestic Banks — 1981/88	—	19,500,000	—	—	19,500,000
			152,851,960	37,500,000	8,930,133	—	181,421,827
	Other Currencies:						
30,000,000$*	Revolving Credit	— Banking Syndicate — 1981/88	16,103,059	—	—	(—) 769,421	15,333,638
40,000,000$*	Revolving Credit	— Banking Syndicate — 1978/82	21,470,746	—	21,582,493	111,747	—
30,000,000$*	Revolving Credit	— Banking Syndicate — 1978/80	9,661,836	—	9,220,367	(—) 441,469	—
40,000,000$*	Revolving Credit	— Banking Syndicate — 1980/88	21,470,746	—	—	(—) 2,032,854	19,437,892
14,500,000$*	Project Finance	— International Bank for Reconstruction and Development 6½% — 1974/94	9,219,029	—	475,067	(—) 394,999	8,348,963
20,000,000$*	Project Finance	— International Bank for Reconstruction and Development 7¼% — 1976/87	10,982,170	—	1,012,676	(—) 603,564	9,365,930
15,000,000$*	Project Finance	— International Bank for Reconstruction and Development 7¼% — 1977/88	8,548,289	—	614,245	(—) 362,412	7,571,632
2,000,000$	Project Finance	— Irish Bank — 1976/81	644,122	—	653,061	8,939	—
30,000,000$	Registered Notes	— Japanese Banks 7¾% — 1973/92	12,077,295	—	793,651	(—) 1,065,163	10,218,481
12,000,000$	Registered Notes	— U.S. Syndicate — 1983/92	6,441,224	—	—	(—) 602,092	5,839,132
15,000,000UA	Bearer Bonds	— Units of Account 8¼% — 1972/86	10,590,679	—	1,128,729	(—) 185,131	9,276,819
50,000,000Sw.Fr.	Bearer Notes	— Swiss Banks 4⅝% — 1985	14,662,757	—	—	(—) 274,682	14,388,075
1,338,080Sw.Fr.	Project Finance	— Swiss Bank 6½% — 1975/81	224,228	—	56,855	(—) 2,352	165,021
1,000,000,000B.Fr.	Registered Bonds	— Belgian Banks 7½% — 1983	17,123,288	—	—	(—) 1,365,330	15,757,958
700,000,000B.Fr.	Registered Bonds	— Belgian Banks 7½% — 1983	11,986,301	—	—	(—) 955,731	11,030,570
1,000,000,000B.Fr.	Registered Bonds	— Belgian Banks 8¾% — 1980/89	17,123,288	—	—	(—) 1,365,330	15,757,958
192,177,330F.Fr.	Project Finance	— French Banks	12,167,017	4,809,225	876,399	(—) 617,947	15,481,896
32,909,875Sp.Pes.	Project Finance	— Spanish Bank	153,881	72,498	31,724	8,070	202,725
£9,342,467	Project Finance	— British Banks/Suppliers	3,205,180	2,805,186	912,632	25,616	5,123,350
£20,500,000*	Revolving Credits	— Domestic Banks — 1981/88	—	20,500,000	—	80,985	20,580,985
27,710,000$	Project Finance	— European Investment Bank 9.2% — 1983/88	—	13,533,050	—	(—) 49,522	13,483,528
11,310,000Dm.	Project Finance	— European Investment Bank 9.2% — 1983/88	—	2,990,546	—	(—) 44,390	2,946,156
12,295,000D.G.	Project Finance	— European Investment Bank 9.2% — 1983/88	—	3,043,468	—	(—) 71,436	2,972,032
			203,855,135	47,753,973	37,357,899	(—) 10,968,468	203,282,741
	TOTAL		£356,707,095	£85,253,973	£46,288,032	(—) £10,968,468	£384,704,568

* Multi-Currency Facilities

Schedule J

Statement of Interest and Amortisation of Borrowings

1977/1978 IR.£		IR.£	IR.£	1978/1979 IR.£
	Interest on:			
	Advances from Minister for Finance		2,111,124	
	Borrowings in Irish pounds	11,531,589		
	Add: Provision for funding of premium on redemption of ESB Stocks (below)	1,443,982		
			12,975,571	
	Borrowings in other currencies		15,335,865	
			30,422,560	
	Less interest from temporary investment		1,175,101	
23,419,986				29,247,459
	Amortisation of Borrowings:			
	Redemptions:			
	Minister for Finance		1,347,002	
	Others		9,313,270	
			10,660,272	
	Investments for sinking funds	9,322,997		
	Less: Provision for funding of premium on redemption of ESB Stocks	1,443,982	7,879,015	
18,939,751				18,539,287
£42,359,737				£47,786,746
	Allocated as follows:			
	Interest:			
	Income and Expenditure Accounts:			
	— Electricity		24,698,542	
	— Appliance and Contracts		274,639	
	— Consultancy		59,400	
	Fisheries		5,978	
	Capital Works		4,208,900	
23,419,986				29,247,459
	Amortisation:			
18,939,751	Electricity Income and Expenditure Account			18,539,287
£42,359,737				£47,786,746

Statement of Capital Reserves

Schedule K

	IR.£	IR.£	IR.£
Non-Repayable Supply Contributions:			
Contributions from State under Electricity (Supply) Acts towards capital cost of supplying rural areas — as at 31st March, 1978	26,839,826		
Received in year	1,050,000		
		27,889,826	
Other contributions — as at 31st March, 1978	8,673,625		
Transferred in year*	14,126,881		
		22,800,506	
			50,690,332
Repaid Capital Reserve:			
Amortisation of Borrowings, less write-off of intangible assets, adjustment for changes in currency parities and discounts on stock issues — as at 31st March, 1978		22,931,695	
Movements in year:			
Amortisation of Borrowings	12,538,536		
Adjustment for changes in currency parities (Schedule N — Note 8)	10,968,468		
		23,507,004	
			46,438,699
Asset Renewal Reserve:			
Accumulated Depreciation Adjustment (Schedule N — Note 3)			8,369,000
Total as at 31st March, 1979			**£105,498,031**

*Reflects impact of increasing contributions in recent years.

Schedule L

Statement of Generation Costs

Generation	Fuel	Operation	Maintenance	Local Charges	WORKS COST 1978/1979	WORKS COST Per Unit Sent Out	WORKS COST 1977/1978	WORKS COST Per Unit Sent Out	Depreciation	TOTAL COST 1978/1979	TOTAL COST 1977/1978
	IR.£	IR.£	IR.£	IR.£	IR.£	Pence	IR.£	Pence	IR.£	IR.£	IR.£
Coal/Oil/Gas											
Marina	6,897,509	774,514	754,305	157,607	**8,583,935**	1.960	5,057,543	2.341	269,682	**8,853,617**	5,326,333
Ringsend	10,297,045	1,269,873	1,214,729	245,017	**13,026,664**	1.798	10,423,730	2.255	633,457	**13,660,121**	11,057,749
Arigna	1,089,431	244,044	145,705	39,717	**1,518,897**	3.484	1,423,994	2,871	44,987	**1,563,884**	1,469,066
Great Island	15,113,930	643,899	689,845	146,406	**16,594,080**	1.284	16,552,208	1.375	704,995	**17,299,075**	17,256,591
Tarbert	27,219,149	948,785	1,295,747	232,466	**29,696,147**	1.240	29,617,610	1.269	2,623,763	**32,319,910**	32,101,884
Poolbeg	21,234,211	855,583	1,037,181	362,601	**23,489,576**	1.180	18,097,426	1.230	1,538,507	**25,028,083**	19,080,281
Sod Peat (Machine)											
Portarlington	285,649	359,343	822,809	97,479	**1,565,280**	7.562	1,602,865	2.220	79,166	**1,644,446**	1,680,527
Allenwood	1,360,963	517,074	454,060	82,297	**2,414,394**	2.019	2,625,168	1.582	116,442	**2,530,836**	2,741,078
Lanesborough	802,991	264,035	172,640	39,618	**1,279,284**	1.512	1,241,624	1.471	48,123	**1,327,407**	1,289,677
Milled Peat											
Ferbane	3,779,793	753,030	1,014,255	154,087	**5,701,165**	1.542	5,604,019	1.274	276,281	**5,977,446**	5,879,857
Rhode	3,459,762	563,174	954,071	123,920	**5,100,927**	1.417	4,697,235	1.266	219,766	**5,320,693**	4,917,012
Bellacorick	1,915,534	407,409	546,526	79,382	**2,948,851**	1.385	2,289,209	1.357	122,365	**3,071,216**	2,412,376
Shannonbridge	3,113,889	504,800	658,427	103,494	**4,380,610**	1.271	3,980.018	.953	498,041	**4,878,651**	4,464,432
Lanesborough	1,470,541	264,035	255,438	44,598	**2,034,612**	1.047	2,124,299	.804	135,140	**2,169,752**	2,259,078
Sod Peat (Hand-Won)											
Four 5MW Stations	441,951	343,701	249,988	49,174	**1,084,814**	5.479	1,068,079	3.956	68,498	**1,153,312**	1,136,359
Peak Station											
North Wall	466,129	279,705	105,114	62,764	**913,712**	—	1,088,612	—	124,767	**1,038,479**	1,213,418
Total — Fuel Stations	98,948,477	8,993,004	10,370,840	2,020,627	**120,332,948**	1.393	107,493,639	1.382	7,503,980	**127,836,928**	114,285,718
Hydro											
Shannon	—	308,070	742,088	128,642	**1,178,800**	.410	876,967	.257	141,552	**1,320,352**	1,017,602
Erne	—	163,686	253,529	67,676	**484,891**	.229	412,296	.165	195,661	**680,552**	608,788
Liffey	—	34,547	193,727	24,139	**252,413**	.663	145,787	.329	48,526	**300,939**	195,018
Lee	—	96,416	107,444	31,500	**235,360**	.343	206,749	.242	123,251	**358,611**	329,948
Clady	—	27,355	21,655	2,312	**51,322**	.395	44,135	.337	27,068	**78,390**	71,186
Pumped Storage											
Turlough Hill	—	225,024	199,133	67,227	**491,384**	—	459,595	—	586,657	**1,078,041**	1,044,378
Total — Hydro Stations	—	855,098	1,517,576	321,496	**2,694,170**	.661	2,145,529	.405	1,122,715	**3,816,885**	3,266,920
Total — All Stations	98,948,477	9,848,102	11,888,416	2,342,123	**123,027,118**	1.361	109,639,168	1.319	8,626,695	**131,653,813**	117,552,638
Electricity Purchased in bulk (net)										**33,680**	34,611
Central Transport and Stores										**39,908**	36,894
General Charges (net of Insurance Claims £1.9m.*)										**5,380,861**	5,277,175
Fisheries (Net Cost before Amortisation)										**294,983**	268,736
TOTAL COST										**£137,403,245**	£123,170,054

* Principally the increased cost of generating arising from fire at Tarbert Station.

Fisheries — Commercial and Conservation Operations

Schedule M

Total Cost 1977/1978 IR.£		IR.£	Total Cost 1978/1979 IR.£	Commercial IR.£	Conservation IR.£
323,267	Direct Costs		**339,997**	115,822	224,175
	Overheads and General Charges:				
74,115	Payroll expenses and charges	73,355			
7,000	Depreciation	7,000			
6,085	Interest on Borrowings	5,978	**86,333**	27,131	59,202
410,467			**426,330**	142,953	283,377
	Less:				
141,731	Sales of fish, letting of fishing rights and miscellaneous income		**131,347**	120,800	10,547
268,736	Net Cost before Amortisation, as per Electricity Income and Expenditure Account		**294,983**	22,153	272,830
2,828	Amortisation Charge		**2,934**	1,486	1,448
£271,564	**Net Cost for Year**		**£297,917**	£23,639	£274,278

NOTES ON AND FORMING PART OF THE FINANCIAL ACCOUNTS AND SCHEDULES

1. The Accounts are prepared under the terms of the Electricity (Supply) Acts, 1927-1979.

2. **Capital Assets:**
Capital Assets are valued at cost. Cost includes prime cost, overheads and interest costs during construction.

3. **Depreciation of Capital Assets:**
Depreciation policy is designed *within the limits of the historic cost convention* to meet minimum statutory requirements. Methods used are appropriate to the nature of the Board's business and to the character and extent of its capital assets. Assets are grouped and allotted lifespans in line with international practice. Major asset classifications and their allotted lifespans are:—

: Generation Plant (including Thermal Station Structures)	20 years
: Transmission and Distribution Plant and Structures	25 years
: General Buildings and Hydro Station Structures	50 years

Depreciation is provided
: on the straight line method
: on all assets in commission on 1st April each year, other than on new generation stations in respect of which depreciation commences from the date of commissioning, if this is prior to the 31st December.
: throughout working lifetimes, irrespective of allotted lifespans, to balance average life expectancy.

Assets when retired from service, are charged against, and proceeds of disposal or stores value are credited to Accumulated Depreciation. For total Capital Assets in commission of IR.£532.9m. the latter fund stands at IR.£188.3m. approximately IR.£8.4m. higher than a strict historic cost calculation would indicate.
Provision of depreciation beyond allotted lifespans and the treatment of disposals and shortfalls in asset lives have been technically at variance with a rigid interpretation of the detail of Statement of Standard Accounting Practice No. 12. The cumulative Figure of IR.£8.4m. has been adjusted through the Profit and Loss Account to facilitate the fuller application of the Statement from 1st April, 1979.

4. **Inventories:**
Stocks are valued at average cost.

5. **Repayable Work-in-Progress:**
Installations Contracts are valued at direct cost together with appropriate overheads; sundry works at direct cost.

6. **Accounts Receivable:**
The figure for Accounts Receivable in the Statement of Current Assets and Current Liabilities is net of a provision for doubtful debts, considered adequate in relation to the size and nature of the business. Bad debts are written off as they arise.

7. **Capital Borrowings:**
The Statement of Borrowings includes borrowings initially contracted for a period in excess of twelve months, irrespective of phased repayment arrangements, and of the lapsed portion of repayment period.
Discounts on Stock issues have been charged against the Repaid Capital Reserve. Other borrowing costs are charged against Profit and Loss Account.

8. **Borrowings in Foreign Currencies:**
Irish Pound Equivalent is at exchange rates ruling at year end. Changes are reflected in the Capital Reserve.

9. **Amortisation of Borrowings:**
This charge is made to reflect certain provisions of Section 21 (2) of the Electricity (Supply) Act, 1927.
It is determined as follows:
: Stock Issues and Long Term Borrowings (15 years and over) — in line with contractual agreements
: Other Borrowings — in line with policy of achieving within the lifetime of the borrowing, full retirement at maturity for maturity terms 10-15 years and at least half retirement at maturity for maturity terms less than 10 years.

Where Borrowings are drawn down in full, for a period in excess of six months, proportionate amortisation is charged in the year. The sinking fund provision towards the premium element payable on redemption of ESB Premium Stock is included in the charge for interest.

10. **Temporary Investment:**
Transfers of temporary investments in stocks/securities to Sinking Fund Investments are costed at prices current at the time of transfer.

11. **Non-Repayable Supply Contributions:**
Non-Repayable Supply Contributions are credited to Capital Reserves (Schedule K) via the Profit and Loss Account (Account No. 1).

12. **Hire Purchase Transactions:**
Profit on Hire Purchase sales is taken in the year of sale. Credit for interest is taken in equal instalments over the Hire Purchase term.

13. **Apportionments:**
(a) Capital Expenditure bears interest on the average value of (1) work-in-progress (2) stocks held and (3) advances made to suppliers in respect of capital works at the rates appropriate to the financing of individual projects, and a proportion of general overhead expenses calculated at a percentage rate on the prime cost of work paid for during the year.
(b) The proportion of Appliance Sales and Installations Contracts overhead

expenses related to the promotion of sales of electricity is included in the overhead expenses charged to Electricity Income and Expenditure Account.

(c) Appliance Sales, Installations Contracts, Consultancy and Fisheries bear their relevant proportion of general overhead expenses and interest.

14. **Taxation:**
The Board is liable for Corporation Tax at the reduced rate specified in Section 79 of the Corporation Tax Act 1976. Because of large continuing capital expenditure, liability to tax will not arise in the foreseeable future and a tax equalisation reserve is not deemed necessary (unutilised capital allowances at 31st March 1979, are estimated at IR.£196m.). Had a Tax Equalisation Reserve been provided, the accumulated figure would now be an estimated IR.£30.2m. (31st March, 1978 — IR.£25.5m.).

15. **Exceptional Expenditure:**
Essential maintenance and repairs are charged to the Electricity Income and Expenditure Account in the year in which the liability arises, on an estimated basis if necessary. Costs incurred to improve system efficiency are charged to the Electricity Income and Expenditure Account over the number of years corresponding to the benefits secured.

16. **Consultancy Income and Expenditure Account:**
Results of smaller scale activity in previous year are reflected in miscellaneous income.

17. **Accounting Year:**
Income and Expenditure are aligned on a 52 or 53 week year as appropriate. The year 1978/79 is a 52 week year (1977/78 — 52 weeks).

Auditors' Report

As Auditors appointed by the Minister for Industry, Commerce and Energy, with the consent of the Minister for Finance, we have examined the Profit and Loss Account, Balance Sheet, and attached Schedules A to N of the Electricity Supply Board.

In our opinion, the Profit and Loss Account and Balance Sheet together with the Statement of Source and Application of Funds (Schedule D), when read in conjunction with the other Schedules and the Notes appearing thereon, give, under the historical cost convention, a true and fair view of the results of the Board for the year ended 31st March, 1979, and of the state of the Board's affairs as at that date.

Harcourt House,
Harcourt Street,
Dublin 2.
29th June, 1979.

Stokes Kennedy Crowley & Co.
Chartered Accountants

Appendix 1

Number of Customers and Electricity Sales

District	No. of Customers at 31st March		Electricity Sales Units sold in year ended 31st March	
	1979	1978	1979 (millions)	1978 (millions)
Athlone	56,818	55,163	297.9	265.1
Cork	114,502	111,173	1,017.6	911.6
Dublin City	143,071	141,142	1,235.0	1,160.1
Dublin North West	119,294	113,697	1,057.0	961.5
Dublin South	64,456	62,487	514.9	476.1
Dundalk	78,699	76,265	776.7	684.4
Galway	59,607	57,331	336.1	321.4
Limerick	91,505	89,448	783.5	760.0
Portlaoise	67,810	65,973	499.9	456.1
Sligo	91,195	88,616	463.1	390.5
Tralee	48,477	46,941	305.7	270.7
Waterford	80,202	78,020	677.9	672.4
Total	1,015,636	986,256	7,965.3	7,329.9

Growth of Electricity Sales and Number of Customers

Appendix 2

Year Ended 31st March	Units Generated (and Purchased)* Millions	Units Sold to Customers Millions	Revenue From Electricity Sales Thousands	Average Price per Unit sold Pence	Total Customers
			£		
1930	60.9	43.2	478	1.108	48,606
1935	206.1	157.0	1,258	0.800	103,037
1940	407.0	318.6	1,946	0.612	172,545
1945	406.3	319.0	2,458	0.771	228,008
1950	784.8	626.2	4,774	0.763	310,639
1955	1,461.7	1,192.2	9,522	0.800	461,901
1960	2,096.0	1,692.2	14,724	0.871	610,946
1965	3,240.2	2,682.6	22,488	0.838	697,491
1966	3,546.2	2,953.3	24,077	0.817	716,113
1967	3,851.0	3,238.1	26,690	0.825	726,561
1968	4,246.4	3,570.1	29,898	0.838	745,430
1969	4,749.0	4,012.3	34,457	0.858	765,213
1970	5,245.7	4,411.6	39,400	0.892	786,500
1971	5,921.0	4,862.1	44,082	0.907	805,736
1972	6,234.2	5,271.7	51,750	0.982	818,516
1973	6,749.1	5,705.1	60,321	1.057	845,119
1974	7,253.1	6,152.0	73,063	1.188	873,764
1975	7,298.7	6,153.1	111,261	1.808	901,000
1976	7,534.6	6,259.0	136,277	2.177	931,469
1977	8,160.5	6,783.2	173,429	2.557	959,428
1978	8,828.4	7,329.9	210,029	2.865	986,256
1979	9,602.7	7,965.3	222,768	2.797	1,015,636

The above table shows, quinquennially from 1930 to 1965 and for each year since, the number of units generated and sold, the revenue, the average price per unit, and the number of customers.

* Excluding units absorbed by storage pumping.

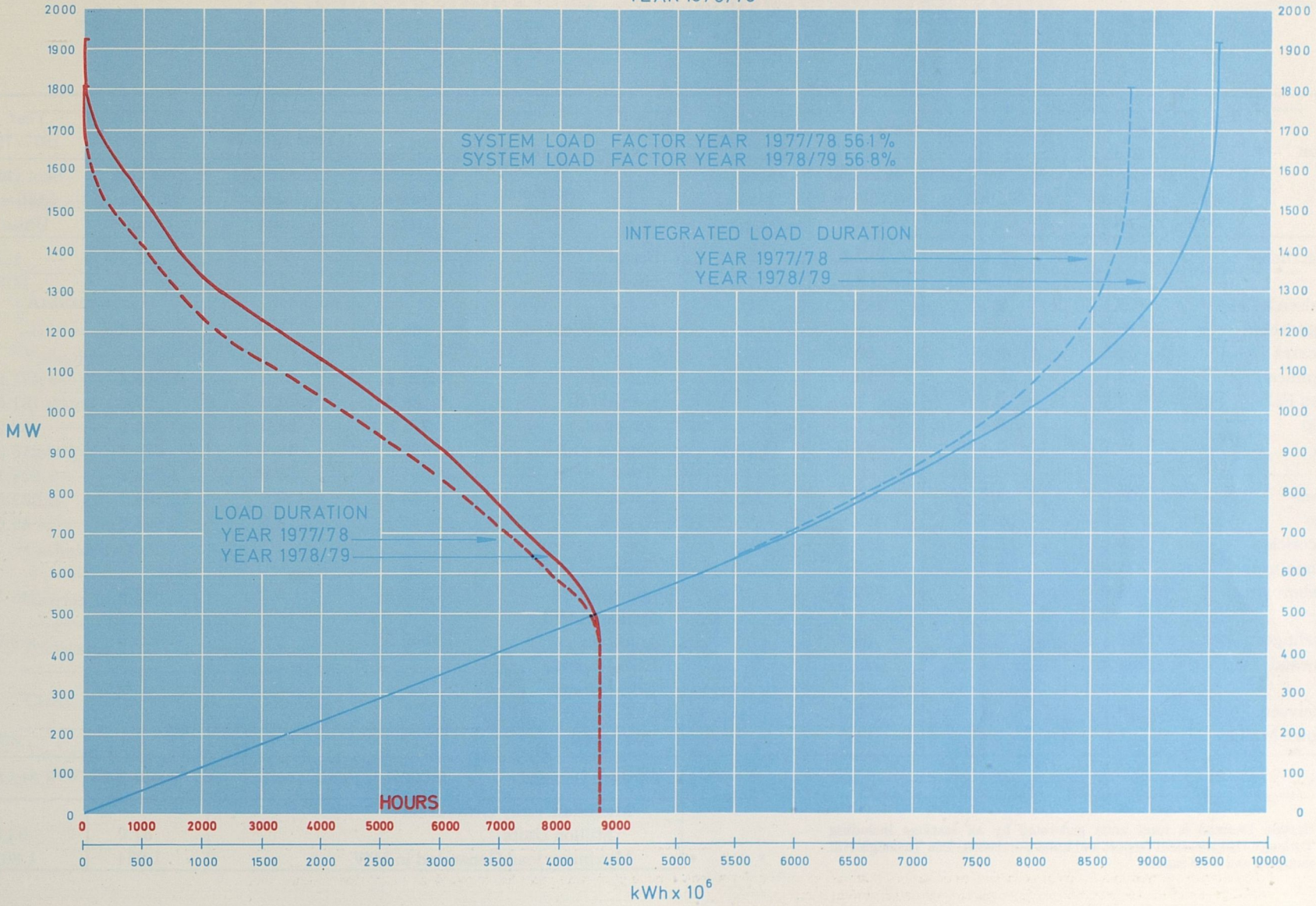
Appendix 3

Analysis of Units Sold

Class of Supply	Year ended 31st March 1979 (millions)	Year ended 31st March 1978 (millions)	Increase (millions)	Percentage Increase
DOMESTIC				
General Supply	3,207.8	2,894.2	313.6	10.8
Night Space Heating	195.8	197.3	— 1.5	— 0.8
	3,403.6	3,091.5	312.1	10.1
COMMERCIAL				
Lighting	259.6	244.0	15.6	6.4
Heating, Cooking and Waterheating	353.0	334.4	18.6	5.6
Motive Power	246.9	240.5	6.4	2.7
Night Space Heating	208.9	212.1	— 3.2	— 1.5
Public Lighting	99.4	93.4	6.0	6.4
Maximum Demand	225.8	146.4	79.4	54.2*
Miscellaneous	230.5	219.7	10.8	4.9
	1,624.1	1,490.5	133.6	9.0
INDUSTRIAL				
Maximum Demand				
High Tension	2,133.2	1,985.6	147.6	7.4
Low Tension	658.7	617.6	41.1	6.7
Miscellaneous	145.7	144.7	1.0	0.7
	2,937.6	2,747.9	189.7	6.9
TOTAL	7,965.3	7,329.9	635.4	8.7

* The increase arises mainly from transfer to maximum demand of customers whose consumption was recorded in previous years under other headings; and from the connection of new customers on maximum demand.

SYSTEM LOAD DURATION AND INTEGRATED LOAD DURATION CURVES
YEAR 1978/79



Appendix 5

Generation Statistics for the Year 1978/79

Station	Year 1978/79			Year 1977/78	Station	Year 1978/79			Year 1977/78
	Generated Million Units	Station Use Million Units	Sent Out Million Units	Sent Out Million Units		Generated Million Units	Station Use Million Units	Sent Out Million Units	Sent Out Million Units
Ardnacrusha	289.9	2.7	287.2	340.6	Screeb	1.4	0.3	1.1	1.2
Cliff	59.8	1.0	58.8	71.0	Gweedore	9.3	1.1	8.2	14.3
Cathaleen's Fall	155.4	2.0	153.4	178.3					
Carrigadrohid	19.2	0.5	18.7	22.4	Marina (Gas)	66.2	3.0	63.2	—
Inniscarra	50.8	0.8	50.0	63.0					
Pollaphuca	20.1	0.7	19.4	22.4	Poolbeg	2,080.4	91.0	1,989.4	1,471.2
Golden Falls	7.4	0.3	7.1	8.4	NorthWall	29.8	2.6	27.2	31.6
Leixlip	12.0	0.4	11.6	13.5	Ringsend	775.8	51.3	724.5	462.2
Clady	13.1	0.1	13.0	13.1	Marina (Oil)	394.5	19.7	374.8	216.0
					Great Island	1,361.2	68.9	1,292.3	1,204.1
Ferbane	403.6	33.9	369.7	440.0	Tarbert	2,554.0	159.3	2,394.7	2,333.5
Rhode	389.6	29.7	359.9	370.9	Arigna	47.1	3.5	43.6	49.6
Bellacorick	228.7	15.8	212.9	168.7					
Shannonbridge	375.3	30.7	344.6	417.5	Turlough Hill				
Lanesborough	298.4	19.5	278.9	348.9	(generation)	353.2	5.2	348.0	248.5
					Turlough Hill				
Portarlington	23.3	2.6	20.7	72.2	(pumping)	559.9	—	559.9	450.9
Allenwood	128.0	8.4	119.6	165.9	ESB Import	—	—	—	—
					ESB Export	—	—	—	—
Cahirciveen	10.1	1.1	9.0	10.4					
Milltown Malbay	1.9	0.4	1.5	1.1	Purchased	3.1	—	3.1	3.2
					System Demand	9,602.7	556.5	9,046.2	8,312.5
					Maximum daily Generation Million Units			37.0	33.0
					Maximum load Generated in MW			1,934	1,802

Note: System Demand is total units generated by all stations including Turlough Hill plus ESB Import and units purchased, less Turlough Hill pumping and ESB export.

Particulars and Performance of Generating Plant

Hydro Stations

Station	Location	Average annual generation million units	Plant Particulars		Plant Performance for year ended 31/3/'79		
			Generating Sets		Units sent out millions	Plant load factor %	Works cost per unit sent out (pence)
			No.	Capacity (MW)			
Ardnacrusha	Shannon	310	4	85	287.2	39.0	0.410
Pollaphuca	Liffey	45	2	30	38.1	7.7	0.663
Golden Falls			1	4		21.2	
Leixlip			1	4		34.3	
Cliff	Erne	275	2	20	212.2	34.2	0.229
Cathaleen's Fall			2	45		39.5	
Carrigadrohid	Lee	77	1	8	68.7	27.5	0.343
Inniscarra			2	19		30.6	
Clady	Clady	13	1	4	13.0	37.5	0.395
Turlough Hill — Pumped Storage	Co. Wicklow	—	4	292	348.0	—	—

Appendix 6 contd.

Particulars and Performance of Generating Plant

Steam Stations

Station	Location	Plant Particulars					Plant Performance for year ended 31/3/'79			
		Generating Sets		Boilers			Units sent out millions	Plant load factor %	Fuel cost per unit sent out (pence)	Works cost per unit sent out (pence)
		No.	Total Capacity MW	No.	Total Capacity Tonne/hour	Fuel Type				
Arigna	Co. Roscommon	1	15	1	75	Coal	43.6	35.9	2.498	3.484
Great Island	Co. Wexford	3	240	3	853	Oil	1,292.3	64.9	1.170	1.284
Marina	Cork City	3	120	4	522	Oil/Gas	438.0	40.1	1.575	1.960
		1	85 *	Combustion Turbine		Gas				
North Wall (Peak Station)	Dublin City	3	48	3	225	Oil	27.2	7.1	1.712	—
Poolbeg	Dublin City	2	240	2	760	Oil	1,989.4	65.9	1.067	1.180
		1	270 *	1	800	Oil				
		2	28	Gas Turbines		Oil				
Ringsend	Dublin City	6	270	7	1114	Oil	724.5	32.9	1.421	1 798
Tarbert	Co. Kerry	2	120	2	473	Oil	2,394.7	47.2	1.137	1.240
		2	500	2	1600	Oil				
			620							

* In commission for part of year

Particulars and Performance of Generating Plant

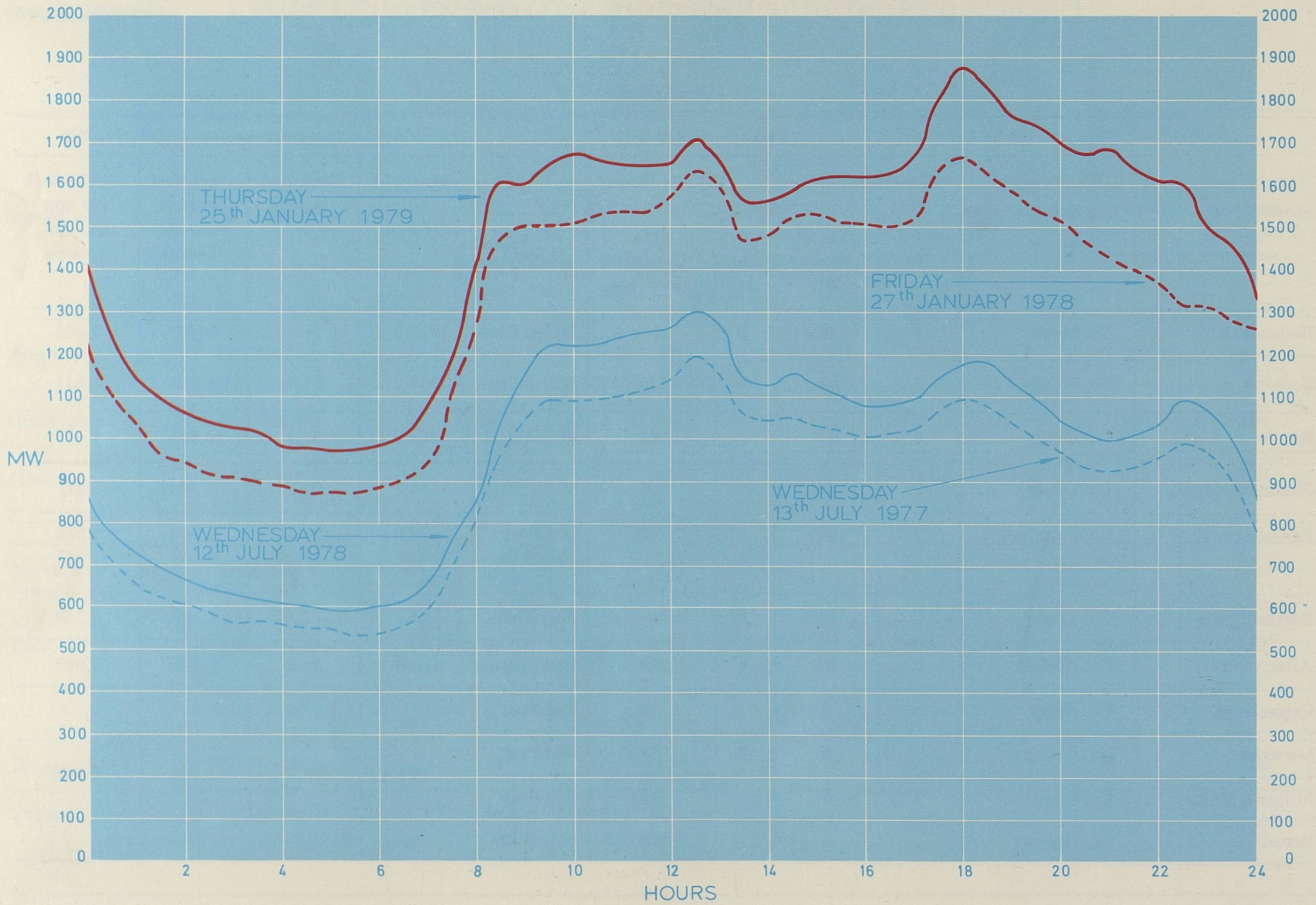
Appendix 6 contd.

Steam Stations

Station	Location	Plant Particulars					Plant Performance for year ended 31/3/'79			
		Generating Sets		Boilers			Units sent out millions	Plant load factor %	Fuel cost per unit sent out (pence)	Works cost per unit sent out (pence)
		No.	Total Capacity MW	No.	Total Capacity Tonne/hour	Fuel Type				
Bellacorick	Co. Mayo	2	40	2	191	Milled Peat	212.9	65.4	0.900	1.385
Ferbane	Co. Offaly	4	90	4	430	Milled Peat	369.7	51.3	1.022	1.542
Rhode	Co. Offaly	3	80	3	364	Milled Peat	359.9	55.7	0.961	1.417
Shannonbridge	Co. Offaly	2	80	2	346	Milled Peat	344.6	53.7	0.904	1.271
Lanesborough	Co. Longford	2	60	1 1	100 173	Sod Peat Milled Peat	84.6 194.3	51.3 59.7	0.950 0.757	1.512 1.047
Portarlington	Co. Laoise	3	37.5	3	205	Sod Peat	20.7	7.1	1.380	7.562
Allenwood	Co. Kildare	2	40	4	273	Sod Peat	119.6	36.6	1.138	2.019
Cahirciveen	Co. Kerry	1	5	1	28	Sod Peat	19.8	13.0	2.239	5.479
Gweedore	Co. Donegal	1	5	1	28	Sod Peat				
Miltown Malbay	Co. Clare	1	5	1	28	Sod Peat				
Screeb	Co. Galway	1	5	1	28	Sod Peat				

Appendix 7

SYSTEM DAILY LOAD CURVES YEAR 1978/79



Transmission System at 31st March, 1979

Transmission Stations

Transformer/Switching Stations	No. in commission	Increase for year	Total capacity in kVA	Increase or decrease in capacity for year in kVA
220 kV Stations	11	1	600,000 at 275/220 kV	Nil
			2,128,000 at 220/110 kV	−125,000
			870,000 at 20/220 kV	+310,000
			420,000 at 13/220 kV	Nil
			397,000 at 10/220 kV	Nil
			410,000 at 110/ 38 kV	+410,000
			357,000 at 10/110 kV	Nil
			20,000 at 110/ 6 kV	Nil
110 kV Stations	67	−2	2,373,500 at 110/ 38 kV	−410,000
			184,000 at 110/ 10 kV	+125,000
			80,000 at 110/ 6 kV	Nil
			110,400 at 38/ 10 kV	Nil
			1,151,000 at 10/110 kV	Nil
			88,000 at 10/38/110 kV	Nil
			5,000 at 10/ 38 kV	Nil

Transmission Lines and Cables

Lines and Cables	Length kms.	Increase or decrease for year kms.	Description
275 kV lines	10.5	Nil	6 × twin 485 sq. mm. double circuit SCA
220 kV lines	25.8	Nil	6 × 600 sq. mm. double circuit SCA
220 kV lines	826.3	+ 96.2	3 × 600 sq. mm. single circuit SCA
220 kV lines	276.8	Nil	3 × 425 sq. mm. single circuit SCA
220 kV lines	3.9	Nil	3 × 425 sq. mm. twin, SCA
110 kV lines	1.8	Nil	6 × 95 sq. mm. double circuit copper
110 kV lines	103.0	− 36.8	3 × 95 sq. mm. single circuit copper
110 kV lines	100.9	+ 0.1	6 × 200 and 6 × 300 sq. mm. double circuit SCA
110 kV lines	3129.1	+ 47.4	3 × 200 to 3 × 425 sq. mm. single circuit SCA
220 kV cables	16.5	+ 16.5	High pressure oil pipe-type
220 kV cables	30.9	+ 0.1	3 single core oil filled
110 kV cables	22.9	Nil	3 single core oil filled
110 kV cables	17.9	Nil	3 core oil filled
110 kV cables	25.6	Nil	3 core pipe compression

Appendix 9

Distribution System in Commission at 31st March, 1979

A. Distribution System (Excluding Rural Networks)

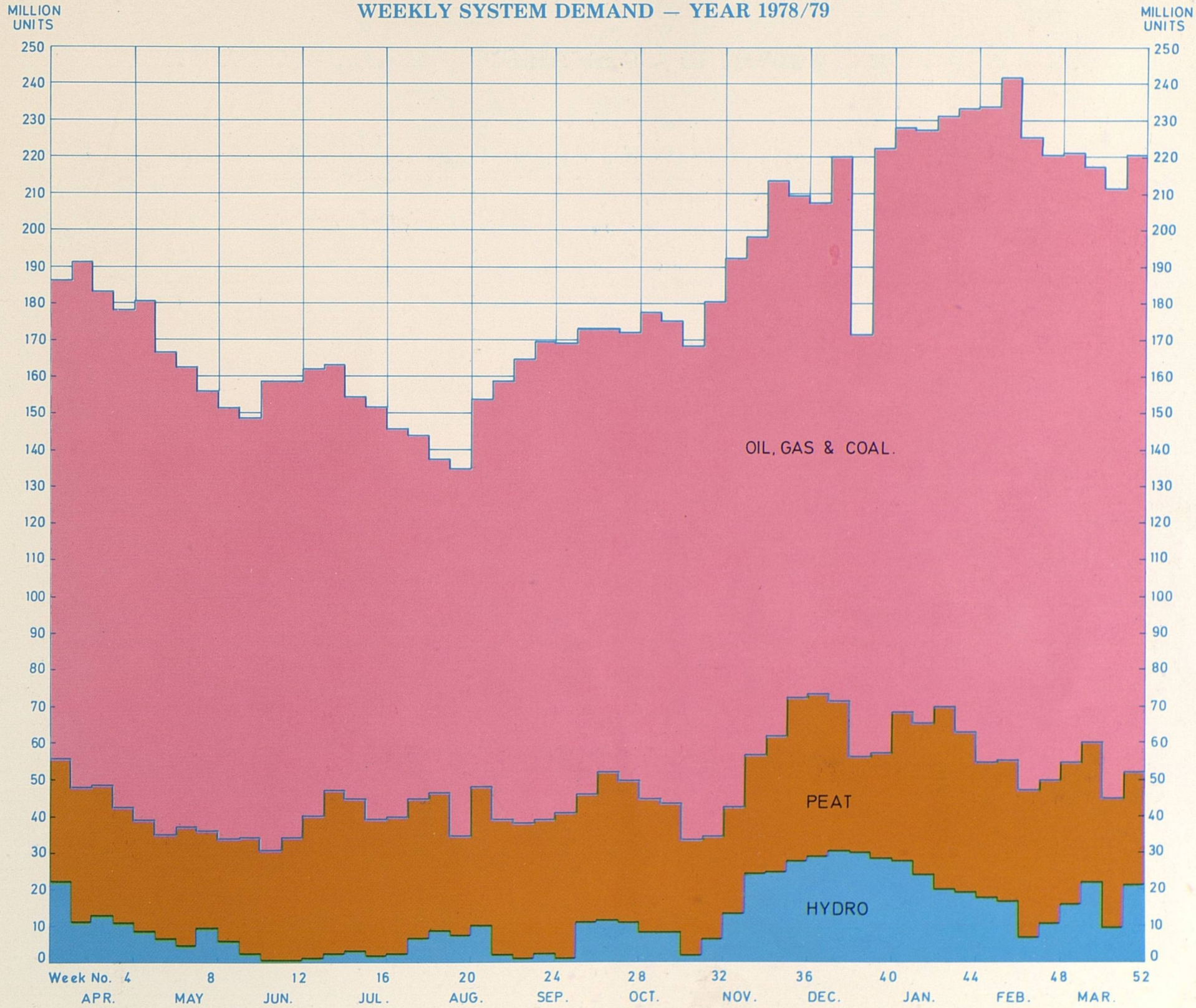
Transformer Station	No. in commission	Increase (+) or Decrease (—) for year	Total Capacity in kVA	Increase (+) or decrease (—) for year in kVA
38kV Stations	334	+3	2,309,900	+54,000
10kV Stations (excl. U.R.D.)	9,787	+333	2,200,971	+73,188
10kV Stations U.R.D.	1,879	+3	108,436	+255
5kV Stations	53	Nil	32,590	Nil

Distribution Lines and Cables	Length kM	Increase (+) or Decrease (—) for year kM.	Description
38kV Lines	5,196.5	+82.7	3 × 25 to 3 × 300 sq. mm. Cu. & SCA.
38kV Cables	247.9	Nil	3 × 95 to 3 × 680 sq. mm. copper and aluminium.
10kV Lines	6,703.0	+98.8	Single and three phase
10kV & 5kV Cables	2,580.0	+112.6	2 × 16 to 3 × 240 sq. mm. copper and aluminium.
3.3kV Cables	3.7	Nil	3 × 185 sq. mm.

B. Rural Networks (approximate extent)

Length of 10kV lines Single & Three phase kM	10kV Stations No. in Commission	10kV Stations Single and Three phase Total Capacity in kVA.
63,300	96,000	1,150,900

WEEKLY SYSTEM DEMAND — YEAR 1978/79



DISTRICT OFFICES AND DISTRICT MANAGERS

ATHLONE 6-8 Church Street Telephone: Athlone 2611	T. P. Haugh, B.E., B.Sc., D.P.A., M.I.E.E.
CORK 113 Patrick Street Telephone: Cork 26851	T. V. Fahy, B.E.
DUBLIN CITY 49 Fleet Street Telephone: Dublin 772961	J. J. McEvoy, B.E., C.Eng.
DUBLIN NORTH-WEST Clanwilliam House Mount Street Bridge Telephone: Dublin 688933	S. Nolan, B.E., M.I.E.E.
DUBLIN SOUTH Leopardstown Road Stillorgan Telephone: Dublin 881683	T. C. Costello, B.E., C.Eng.
DUNDALK Chapel Street Telephone: Dundalk 32211	V. Gallagher, B.E.
GALWAY Sean Mulvoy Road Telephone: Galway 7641	P. Osborne, B.E., B.Sc., C.Eng., M.I.E.I.
LIMERICK 41 O'Connell Street Telephone: Limerick 45599	D. P. Greene, B.E., M.I.E.I.
PORTLAOISE Abbeyleix Road Telephone: Portlaoise 21327	J. F. Heslin, B.E., B.Sc.
SLIGO Castle Street Telephone: Sligo 5261	D. Gallagher, B.Sc.
TRALEE Edward Street Telephone: Tralee 21333	A. F. Kelly, B.E., B.Sc.
WATERFORD The Mall Telephone: Waterford 3301	B. Rafferty, B.Sc., C.Eng., M.I.E.I.

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