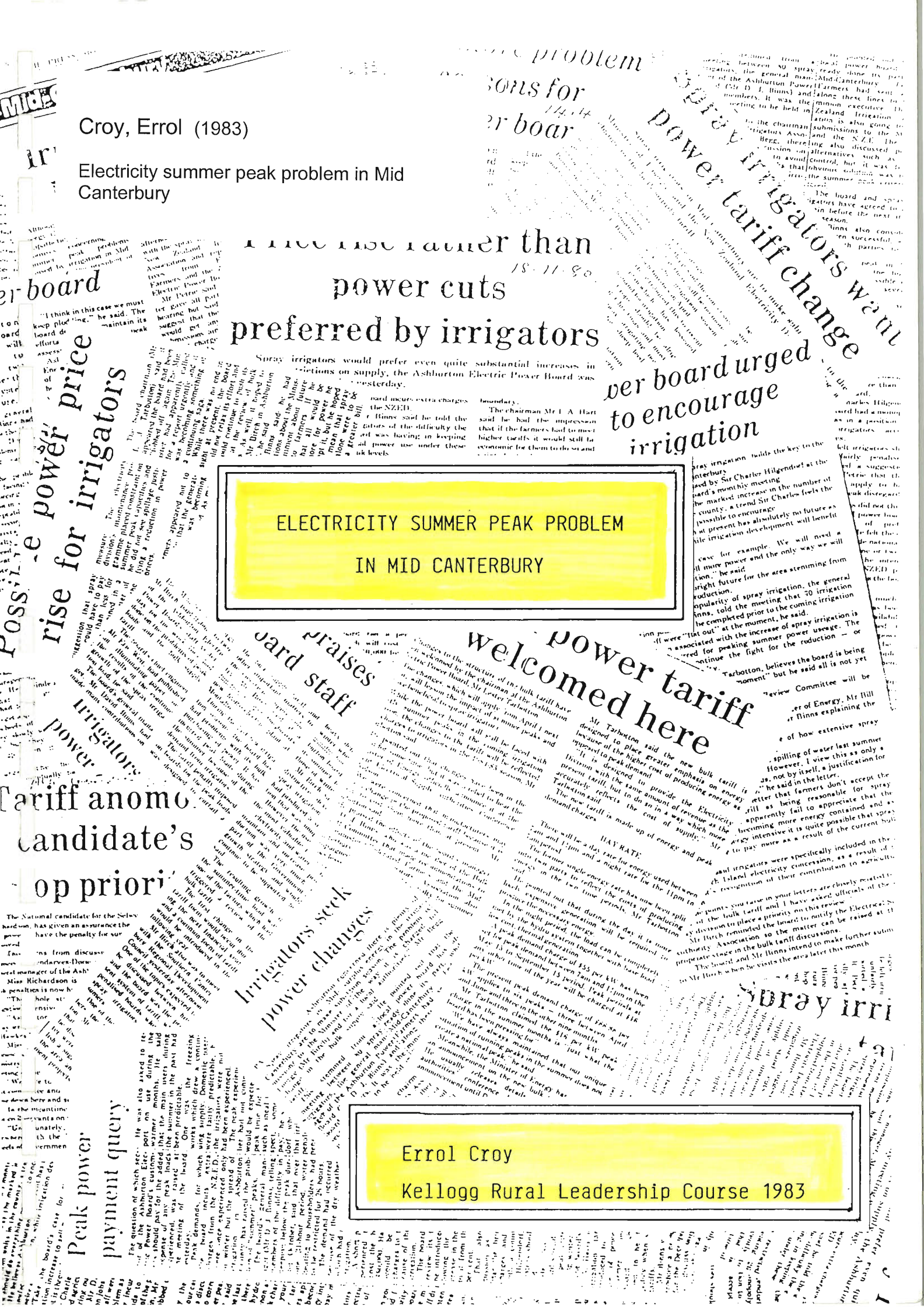


Croy, Errol (1983)

Electricity summer peak problem in Mid Canterbury

ELECTRICITY SUMMER PEAK PROBLEM

IN MID CANTERBURY

This paper attempts to explain the problems of peak load as they have occured and grown in the Ashburton region.

Land area served by Ashburton Electric Power Board

The Ashburton Electric Power Board serves an area of 6 600 km squared of which about half is located on the flat Canterbury plains between the Rakaia River and the Rangitata River. Consequently, within the Board's area of supply there are more than 300 000 ha of flat plains.

The area includes an extensive variety of soil types with a consequent variety of land uses, the main ones being pasture for sheep farming and the cropping of grain and small seeds. Much of the area is already irrigated but there is potential for considerable further development.

Irrigation Methods

(a) Gravity-operated Flood Irrigation

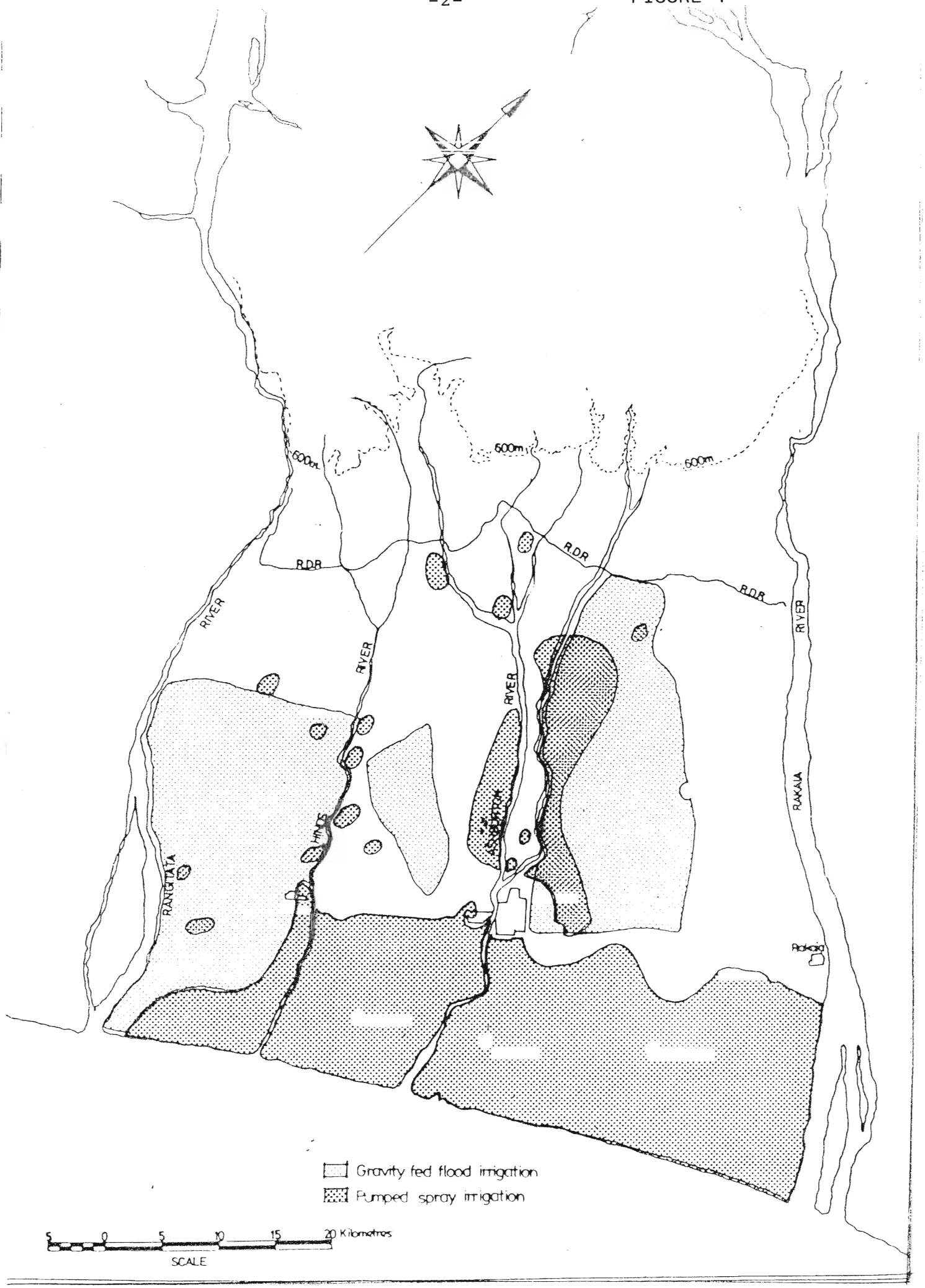
Some 40 years ago a canal of 30m cubed per second capacity known as the Rangitata Diversion Race (R.D.R.) was constructed from Klondyke on the Rangitata River to Highbank on the Rakaia River. The canal was constructed to serve two purposes to provide irrigation water for New Zealand Electricity's Highbank power station. (Part of the way along the race, at Montalto, the canal drops in level by 7m and the Ashburton Electric Power Board has constructed a small hydro station which makes use of this available head).

The R.D.R. supplies a network of water races, which together with a number of other minor gravity operated schemes, provides flood irrigation of 29 000 ha of farmland. The area served is indicated in Fig 1. **(page 2)**

(b) Pumped Spray Irrigation

Diesel-powered pumped spray irrigation is understood to have been first installed in the Board's area during the mid 1950s and the first electric pump towards the end of that decade. The number of installations then increased gradually through until the early 1970s. From 1975 to 1981, there have been substantial increases in the number and size of pumping plants installed.

FIGURE 1


600m
600m
600m
R.D.B
R.D.B
R.D.B
RIVER
RIVER
RIVER
RIVER
RAKAIA
RANGITATA
HINDS
ASHBURTON
Rakaia
Gravity fed flood irrigation
Pumped spray irrigation
5 0 5 10 15 20 Kilometres
SCALE

Most of the spray irrigation water is pumped from underground. Pumping depths are typically in the order of 20m to 30m but depths of 80m are not uncommon. There is also a significant proportion of water (perhaps 10%) pumped from gravity-fed water-race systems.

About 30 000 ha are currently irrigated by pumped spray systems. The areas covered are shown in Fig 1.

The growth of spray irrigation load in Mid Canterbury during the past decade has had a marked effect on the operations of the Ashburton Electric Power Board. Indications are that the load will continue to grow during the foreseeable future.

The total connected load of spray irrigation pumps has grown in the following manner.

Year ended 31st March	Total Connected Load kW	Connected During Year kW
1975	3,602	1,555
1976	5,760	1,558
1977	7,206	2,046
1978	8,495	1,289
1979	10,075	1,580
1980	11,345	1,270
1981	12,690	1,345
1982	16,329	3,639
1983	19,417	3,088

These figures are also reflected in graph Fig 4. As at September 1983 90 farmers have indicated they want connections for 1983/1984. It is expected that about a further 3,000 kW will be connected as a result of this.

FIGURE 4

ASHBURTON ELECTRIC POWER BOARD

EFFECT OF IRRIGATION ON MAXIMUM DEMAND

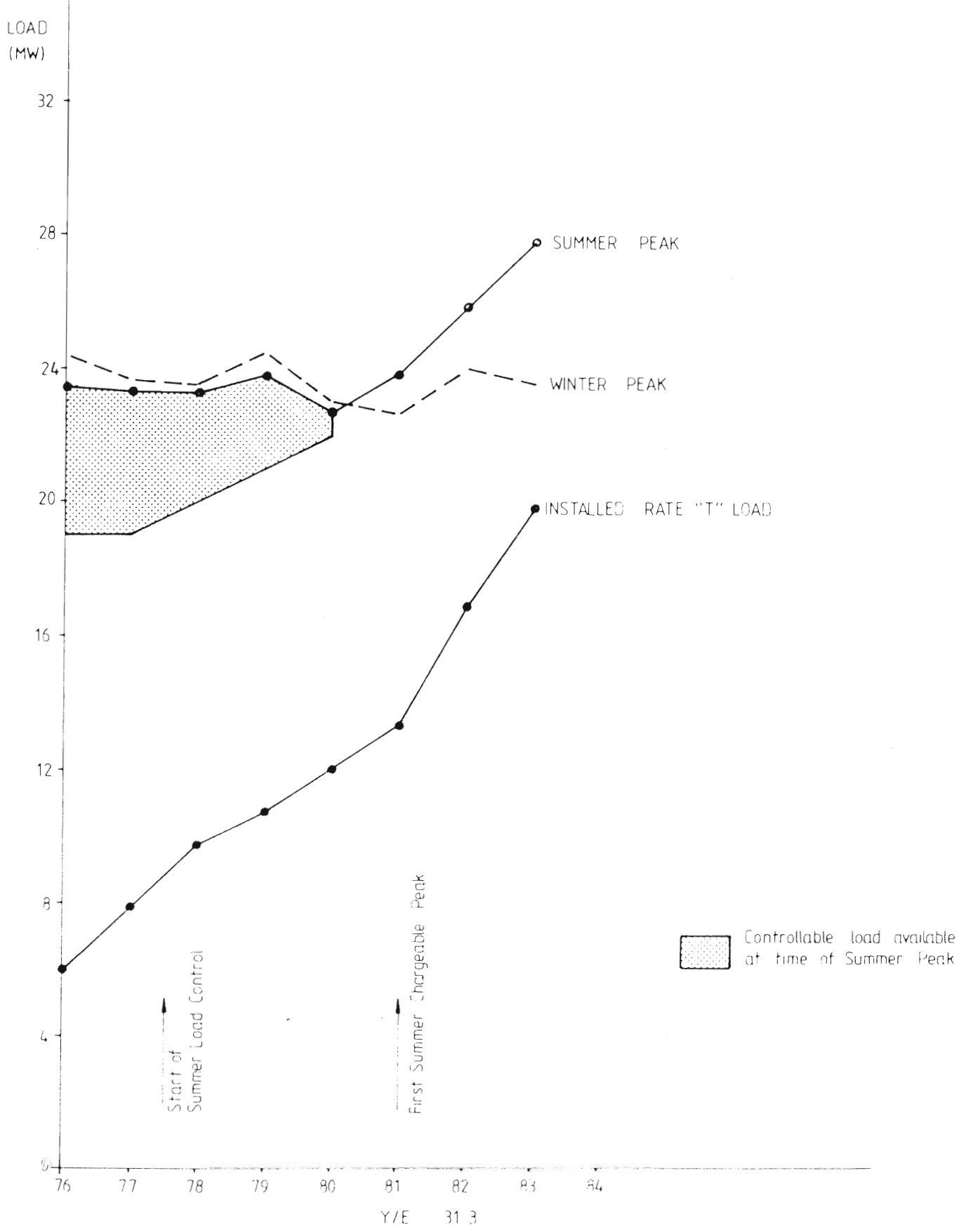
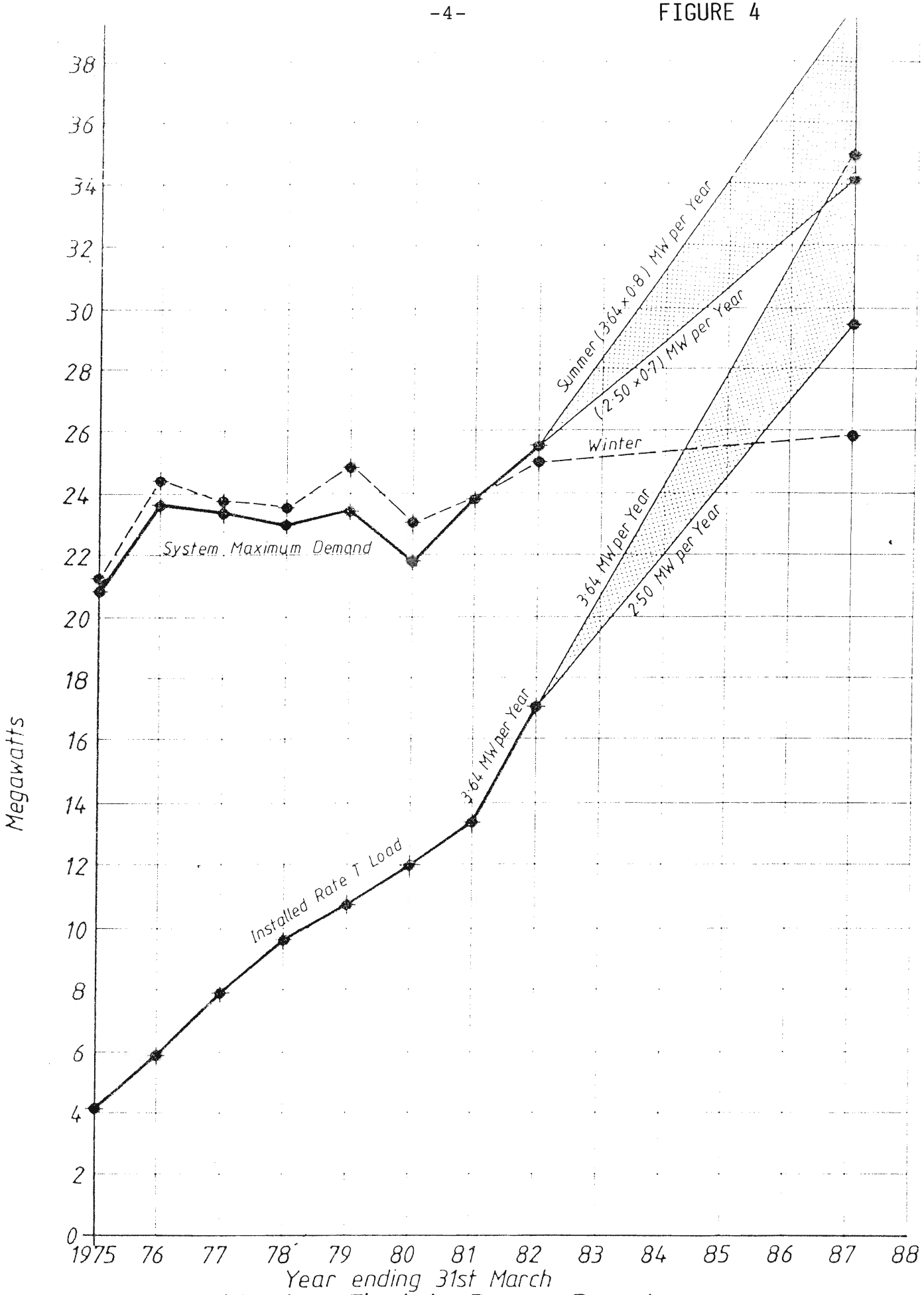


FIGURE 4



Ashburton Electric Power Board

SUMMER AND WINTER SYSTEM MAXIMUM DEMANDS AND INSTALLED IRRIGATION LOAD

Recorded 1975-82 and projected to 1987

Diversity Factor

In a dry year, the overall maximum demand diversity factor on installed irrigation load is estimated to be about 80%. This varies from 65% in heavy soil areas to 90% in light soil areas. A major part of the expected future load growth will be in light soil areas. Consequently with so little diversity, every kilowatt of additional installed load must be almost matched by a kilowatt of system capacity.

Load Control

Since 1977, the Power Board has regularly controlled water-heating load during summer months in order to contain the total system load within the peaks set during July/August. The potential for water-heating control is now fully utilised and, with continuing irrigation load growth, summer total system peaks can be expected to exceed winter peaks. (Refer Fig. 4).

With the potential for water-heating control fully utilised, the only other avenue for reducing peak loads would appear to be in improving the load factor of the total irrigation load. However, during dry periods at critical times in the irrigation season, the daily load factor is already quite high and a restriction on operating hours would be inconvenient, if not unacceptable, to many irrigators.

To date the Power Board has imposed no restriction on the operating hours of irrigation plants. If supply is to be remotely controlled by, for example, an injection-frequency control system, then there are difficulties which are not present with controlling water-heating load. An irrigation pump normally starts against a closed valve which is then opened manually. Stopping a pump by remote ripple control is relatively simple, but starting would require an automatic power-operated valve on the water system. This is technically quite feasible but such a system for a typical installation could cost in the order of $4 000.

How do we understand Peaks

In order to understand what a Peak is it is necessary to understand the method that the New Zealand Electricity Division (N.Z.E.) uses to charge Power Boards for their purchase of bulk electricity.

You will note that the charge for bulk electricity by N.Z.E. is in two parts namely the demand charge and energy charge.

(a) Demand

1) The Power Board and N.Z.E. financial year for charging purposes commences on 1 April and ends on 31 March. What has happened during the previous financial year has no effect on the current year. In other words, on 1 April each year we start with a clean slate.

2) The year for demand purposes is in two parts (refer above)

a)	April - June	3 months
b)	July - March	9 months

3) The N.Z.E. charge for this demand portion is calculated on an annual basis and is equal to the average of the 3 highest demands during the first 3 month period together with the 3 highest demands during the remaining 9 month period.

(b) Energy

This is a simple matter and represents the cost on a per kWh (unit) basis of all purchases made during any given financial year. The rate during 1980/1981 was 1.51 cents, 1.65 cents during 1982/1983 and 1.85 cents during 1982/1983.

Basis of Demand Charge

- each day is divided into 48 half-hour periods
- the demand for each half hour is recorded by N.Z.E. and is also checked by the Board
- only the highest demand in any one day can be used in establishing the charge. The remaining 47 half-hour periods are ignored for charging purposes.
- therefore, at the end of the first 3 month period, N.Z.E. will have recorded the highest demand for each day; in other words 92 demands. The 3 highest of these 92 demands are then used for establishing our charge.
- the same applies during the remaining 9 month period.

The 3 highest demands during this 9 month period are combined with the 3 highest from the previous 3 month period and averaged. The result is then used in establishing the final demand charge.

What is this Demand?

This kilowatt demand or peak as it is often called represents the total purchase of electricity by the Board from N.Z.E. during any given half-hour. The more electricity purchased during any half-hour period, the greater the demand or peak during that half-hour period.

As an example, we could use a demand of say 24,000.0 kW (very similar to the existing peaks during the 9 month period). Because the period used is only a half hour, we must divide the 24,000.0 kW's of demand purchased by 2 to give us kilowatt hours (kWh). Therefore during our half-hour period we would have purchased the equivalent of 12,000.00 kilowatt hours of electricity.

A 100 watt light bulb going for 10 hours would require 1 kilowatt hour of electricity (i.e. 1,000 watts - 1 kilowatt).

Therefore you could say that a kilowatt demand or peak during any given half hour period of 24,000.00 kW (12,000 kWh) is the equivalent of 240,000 100 watt bulbs turned on for a half hour period.

In order to simplify this I have used as an example, the Ashburton Electric Power Board's purchases and charges for the 12 months ended 31st March 1983 and these in summary form are as follows:-

(a) Demand

	Date	Time	Kilowatt Demands
3 Months ended June 1982			
	02 April	7.00 p.m.	23.455.6
	01 April	7.00 p.m.	23,423.6
	03 April	12.30 p.m.	23,389.6
9 Months ended March 1983			
	29 Nov	12.00 p.m.	27,075.0
	30 Nov	6.30 p.m.	26,919.0
	11 Feb	12.00 p.m.	26,725.6

Average of these 6 highest demands 25,164.7 kW

Therefore 25,164.7 kW at $88.88 per kW = $2,236,638.54

(b) Energy

149,577.302 kWh (Units) at 1.85 cents =	$2,767,180.08
Therefore, total cost to the Board	$5,003,818.62

You will note that the charge for bulk electricity by N.Z.E. is in two parts namely the demand charge and energy charge.

System Load

Until the mid 1970's the system load in virtually all areas of supply conformed to the normal pattern of peak loading during winter months and lighter loading at other times of the year.

However, in recent years a completely different pattern has emerged. In all rural areas which include significant spray irrigation load, summer peak loads, exceed winter peak loads.

Figures 2 and 3 show examples of daily load curves when a winter and summer peak have occured.

Figure 4 also shows the winter and summer maximum demands recorded during the period 1976 - 1983. (Refer page 4)

On 4th November 1980 with all controlled water heating switched off, the first chargeable peak was recorded and this was subsequently exceeded on a number of occasions during the 1980/1981 summer and further again during the 1982/1983 summer.

If we look to graphs Figures 7 and 8 prepared in 1981 and 1982, we can see how the peaks have been anticipated and how it was considered they would behave in the period ahead. 1981/1982 and 1982/1983 turned into years of serious drought. As a result, the installed irrigation load grew dramatically.

Figures 7 and 8 show the projected growth compared with Figure 4 which shows the actual growth.

The result of all this irrigation growth served to lift the base load in the summer period.

1. From 1975 to 1981 the summer load was slightly less than th winter load.

2. From 1981 the summer load exceeded the winter load.

ASHBURTON ELECTRIC POWER BOARD

DAILY LOAD CURVE 25-5-83

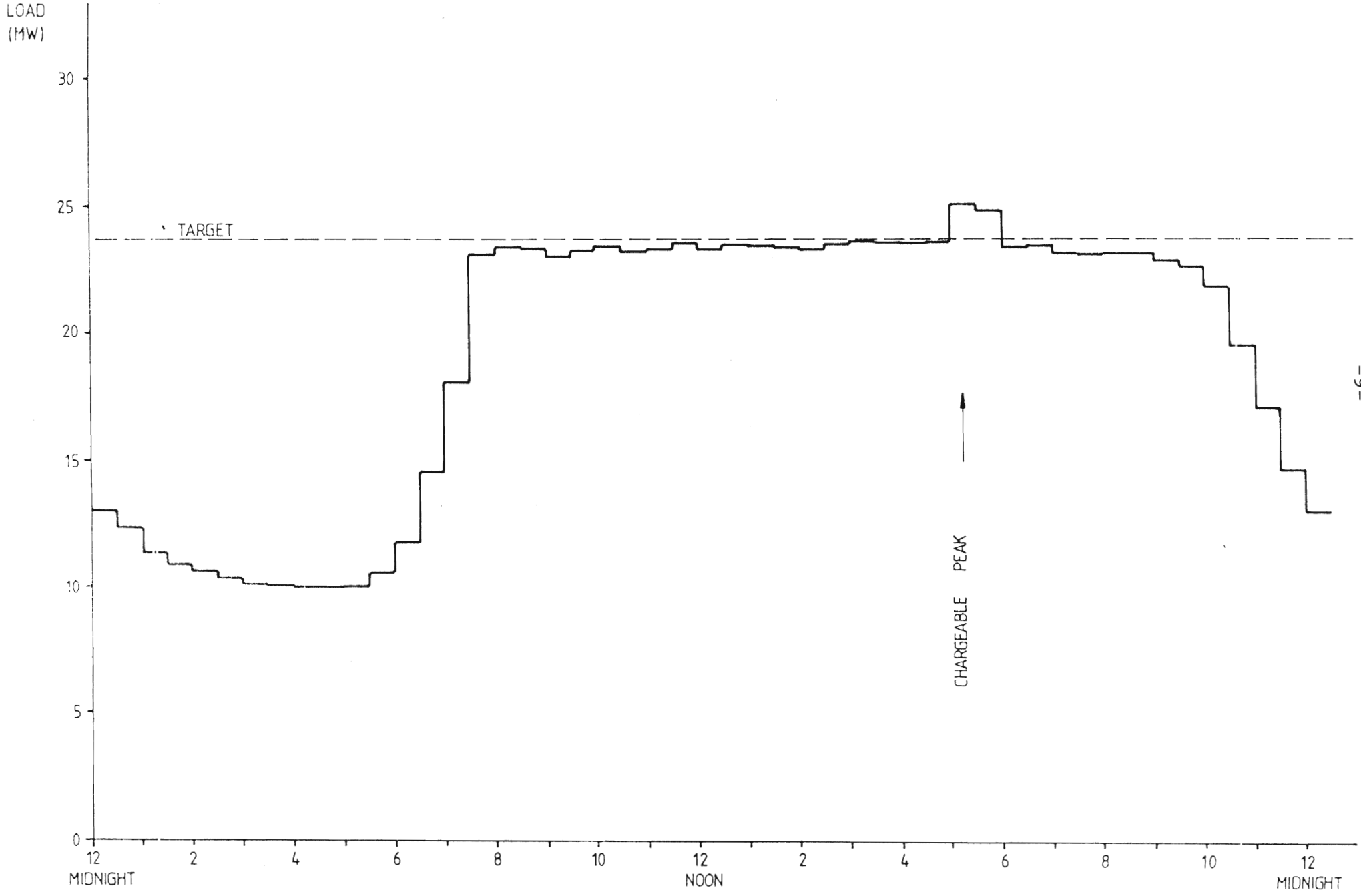


FIGURE 2

ASHBURTON ELECTRIC POWER BOARD

DAILY LOAD CURVE 29-11-82

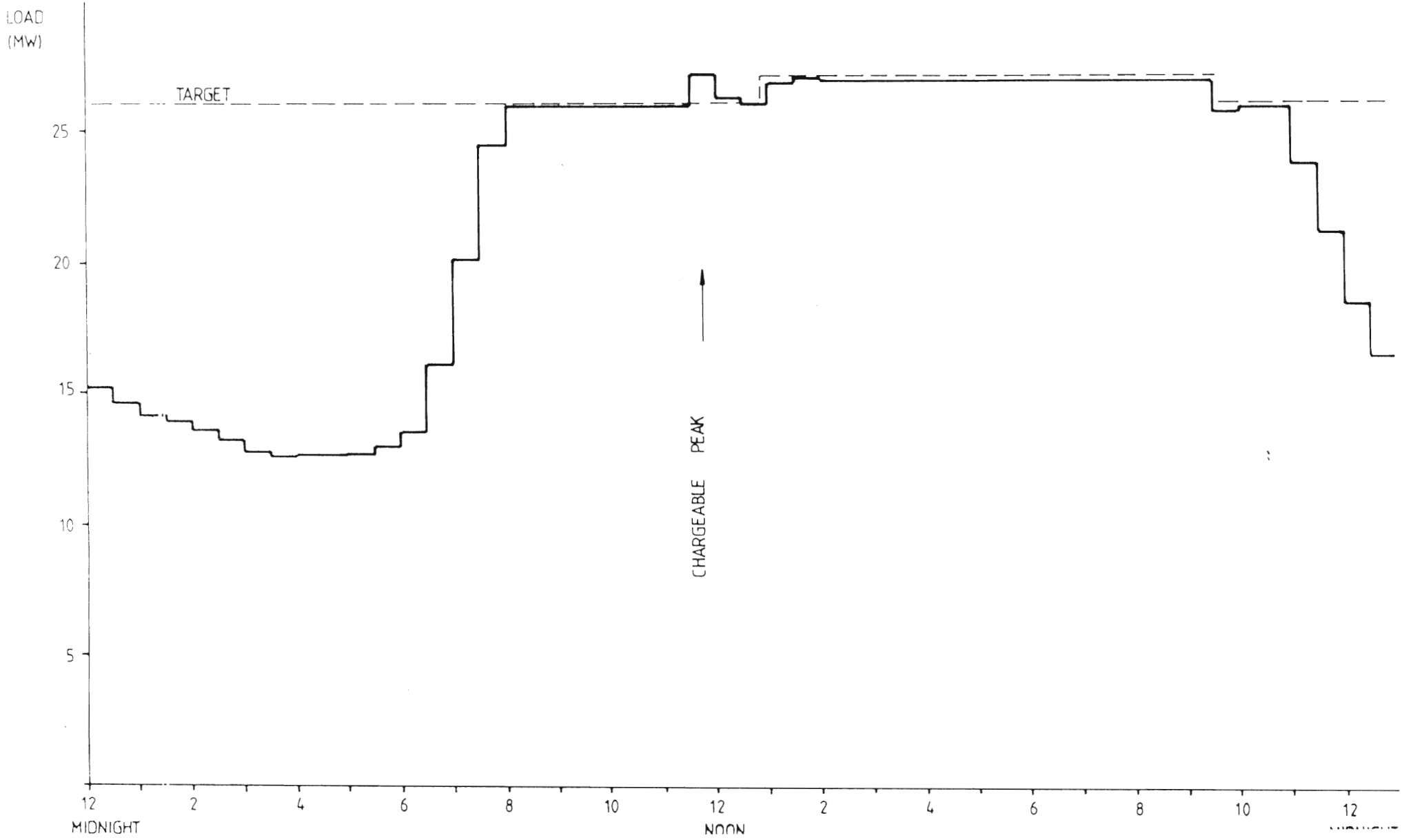
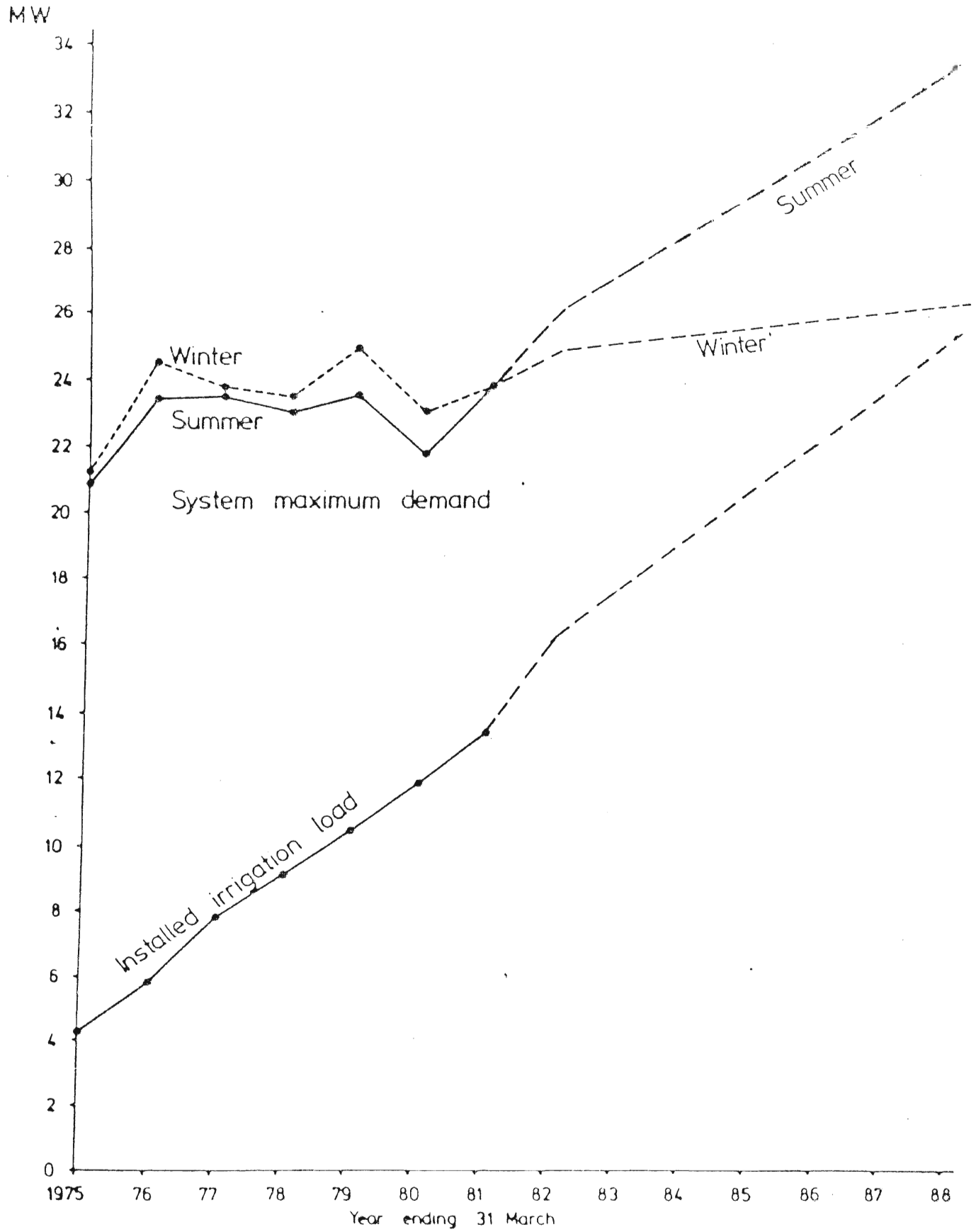


FIGURE 3

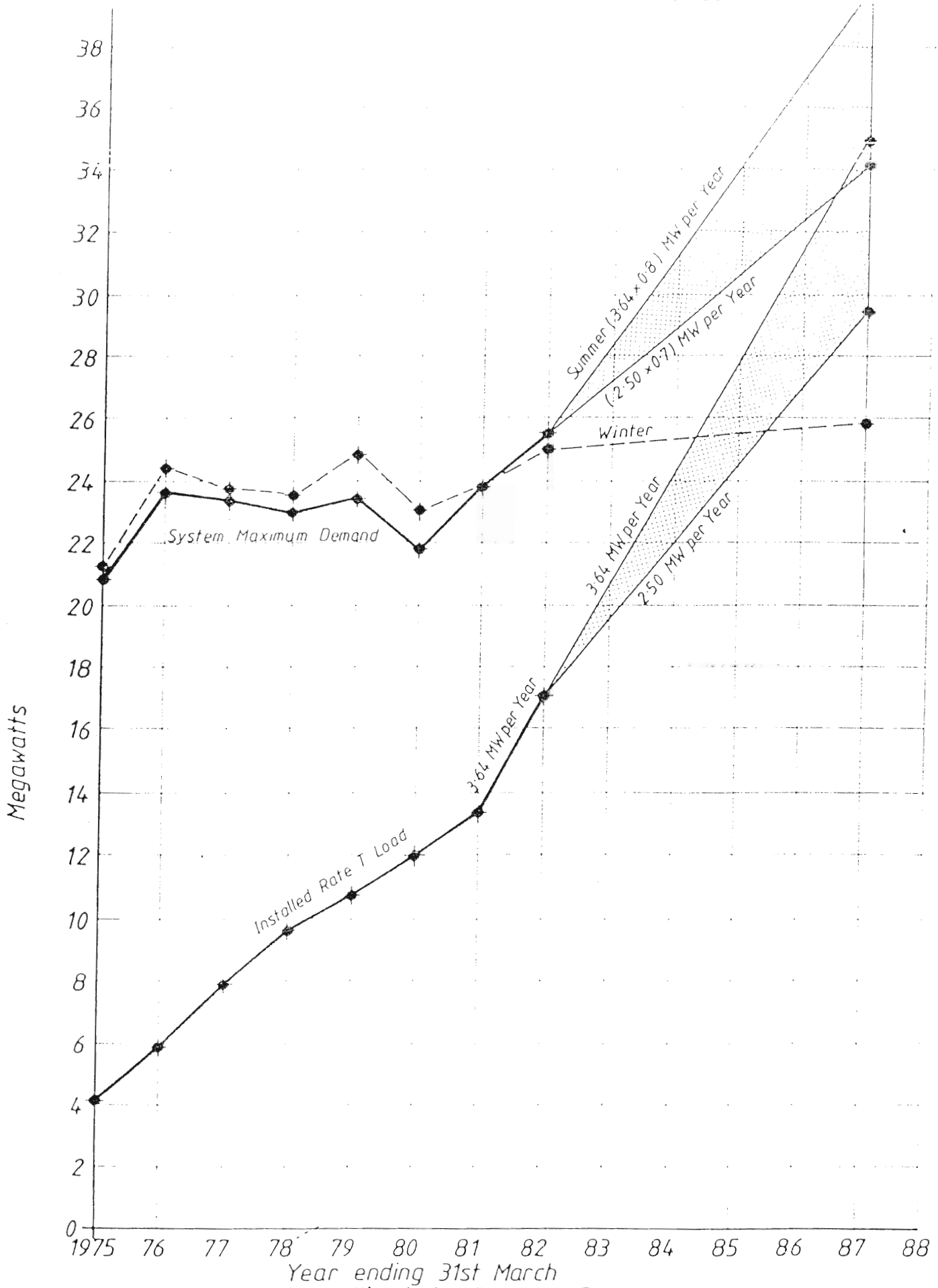
FIGURE 7



SUMMER AND WINTER SYSTEM MAXIMUM DEMANDS
AND INSTALLED IRRIGATION LOAD

(Recorded 1975-81 and Projected to 1988)

FIGURE 8



Ashburton Electric Power Board

SUMMER AND WINTER SYSTEM MAXIMUM DEMANDS AND INSTALLED IRRIGATION LOAD

Recorded 1975-82 and projected to 1987

Peaks

How does a peak occur ?

If we refer back to Figures 2 & 3, we will see what happens when the target maximum load - which has been set out for a given day cannot be maintained even though all avenues of controlling load have been utilized. Figure 5, in the mid November to mid December period shows a good example of load controlling. However if we look to Figures 6 and 4, we can ascertain that with all load control in operation, the demand continued to rise. Figure 6 shows that the weekly maximum during the winter period has not varied a lot but come to November and the irrigation load comes on and we find an increase of approximately 4 megawatts.

In simple terms the Irrigation Load during the summer period lifts the base load and couple this with a very cold day and you find the peaks occuring around meal times, consumers switching on heaters and stoves.

The Effect of Summer Peaks

Example (Using Year Ended 31 March 1983 rates)

	Case A Actual result	Case B Increase two summer Peaks by 2 MW	Case C Increase three summer peaks by 2 MW
	kW	kW	kW
	23.455.6	23,455.6	23,455.6
	23,423.6	23,423.6	23,423.6
	23,389.6	23,389.6	23,389.6
	27,075.0	29,075.0*	29,075.0*
	26,919.0	26,919.0	28,919.0*
	26,725.6	28,725.6*	28,725.6*
Average	25,164.7 kW	25,831.4 kW	26,164.7 kW
Rate	$88.88	$88.88	$88.88
Cost	$2,236,638.54	$2,295,894.83	$2,325,518.54
Increase	Nil	$59,256.29	$88,880.00

Therefore, by increasing the Board's summer peaks by only 2 MW (2,000 kW) the additional cost to the Board would be $88,880.00.

ASHBURTON ELECTRIC POWER BOARD

WEEKLY MAXIMUM DEMAND - 1978 / 79

FIGURE 5

ASHBURTON ELECTRIC POWER BOARD

WEEKLY MAXIMUM DEMAND 1982/83

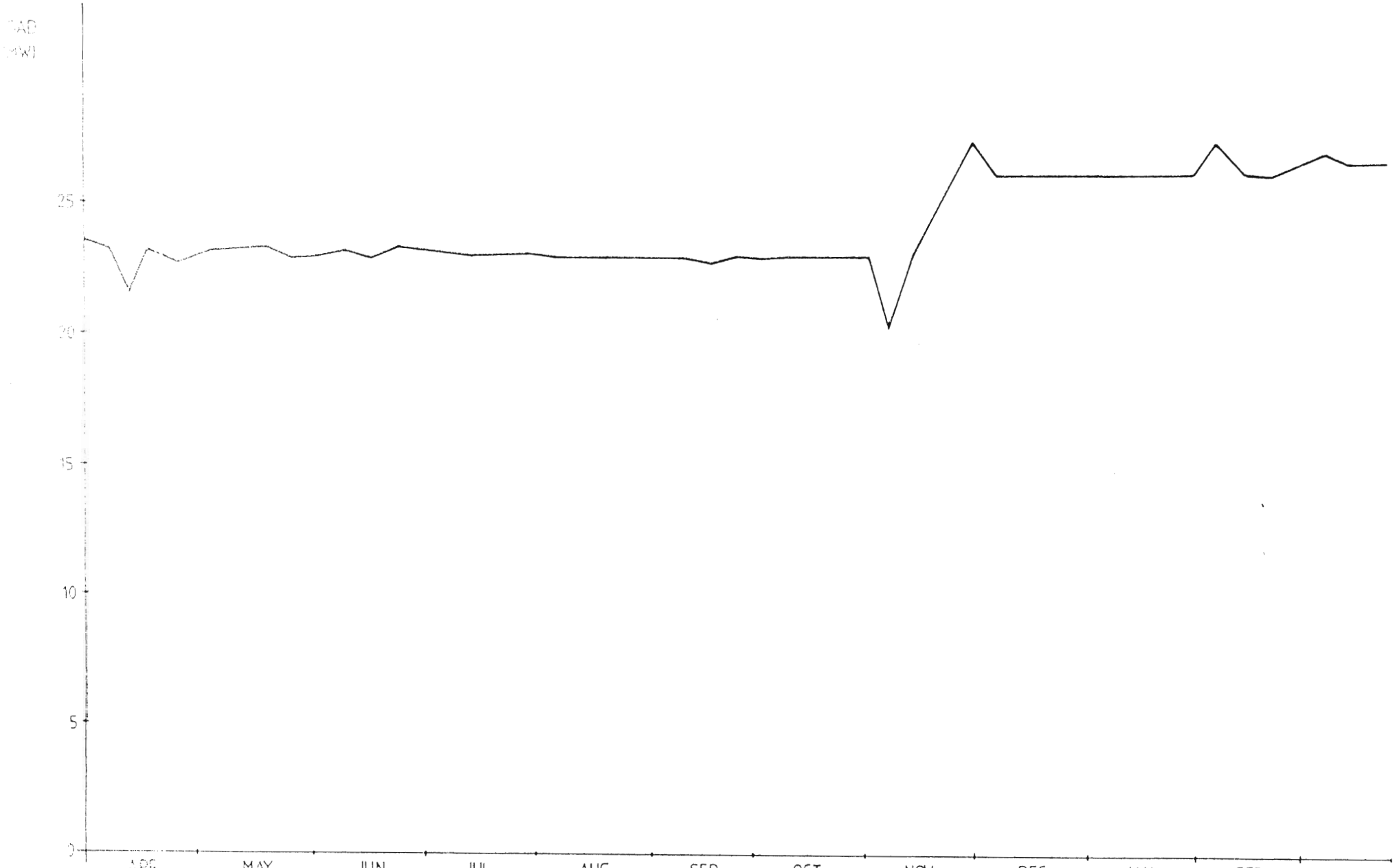


FIGURE 6

Estimated Cost of Summer Peaks for the year ended 31 March 1983

The summer peaks i.e. those occuring during the nine months ended 31 March 1983, have already been identified as follows:-

Date	Time	Demand kW
24 November	12.00 p.m.	27,075.0
30 November	6.30 p.m.	26,919.0
11 February	12.00 p.m.	26,725.6

Additional summer peaks occurred during early April i.e. during the three month period ended June 1982, as a result of continued irrigation and these have also been identified as follows:-

Date	Time	Demand kW
02 April	7.00 p.m.	23,455.6
01 April	7.00 p.m.	23,423.6
03 April	12.30 p.m.	23,389.6

The total cost of the N.Z.E. bulk electricity demand charge based on the above figures was $2,236,638.54. Winter peaks during the same priod have been estimated at 22,500.0 kW and at current N.Z.E. rates would cost the Board $1,999,800.00. Therefore summer peaks during the financial year ended 31 March 1983 have cost the Board an estimated additional $237,000.00. During the year ended 31 March 1981 summer peaks cost the Board approximately $25,000.00. This increased to approximately $85,000.00 during the year ended 31 March 1982 and it is expected that summer peaks will cost the Board approximately $350,000.00 during the current financial year.

With the advent of summer peak-load conditions, some review of the tariff situation was necessary. There were several alternatives, including:-

(a) Obtaining some modification of bulk supply charges. For example peaks incurred during summer months could be disregarded by N.Z.E for charging purposes.

(b) Maintaining a similar tariff to the present one but increasing the price.

(c) Restricting supply to irrigation consumers.

(d) Offering restricted and unrestricted supply options at different prices.

Of the above, alternative (a) is the only one which would not increase consumers' costs. The suggestion of buying summer peak power from either of the Power Board's two neighbours would have merit, if it were not for drawbacks which include the following. The neighbouring boards' systems would not be capable of supplying additional loading without the construction of long lengths of new line and the provision of additional substation capacity. This would be expensive - perhaps in the order of $1,000,000 to take say 5 MW from a neighbour's 33 kV system. Near the authority boundaries, each neighbouring board's system is supplying similar summer irrigation load. Consequently even if a neighbour has spare overall system peak capacity to "sell", there is unlikely to be spare peak capacity within a reasonable distance from the boundary.

Initially there was no peak component in the Irrigation Tariff but the Ashburton Electric Power Board in 1982/1983 season included an amount of almost $12 per kW connected and this will continue into the 1983/1984 season.

Mid Canterbury Spray Irrigators and Federated Farmers had realised early that this was the likely outcome if the Minister and N.Z.E. & Bulk Tariffs Committee could not be persuaded to modify the Bulk Tariff.

Action Taken

In 1979 the Ashburton Electric Power Board informed the Electrical Supply Authorities Association, N.Z.E. and the Minister of the impending problem and suggested that maximum demands between 1st October and 31st March which exceed the winter demands be not charged.

Mr Birch replied on the 11th October 1979. (Refer page 18).

The Mid Canterbury Spray Irrigators Association and Mid Canterbury Federated Farmers also communicated their concern to the same authorities.

On 4th November 1980 the Power Board's first chargeable peak occured.

On 10th November the Board met the Spray Irrigators

On 1st December the Spray Irrigators called a public meeting between the Spray Irrigators, Federated Farmers and the Power Board to discuss the problem. All groups agreed to do all that was possible to help alleviate this growing problem of summer peaks. The N.Z. Irrigation Association also supported the claim. The appropriate authorities had been informed of the chargeable peak.

Part of those submissions included

> "The concern of the Board, Mid-Canterbury Federated Farmers and the Ashburton Spray Irrigators' Association is that very

OFFICE OF THE
Minister of Energy
WELLINGTON, NEW ZEALAND

11 October 1979

Mr I.A. Hart,
Chairman,
Ashburton Electric Power Board,
P.O. Box 40,
ASHBURTON

Dear Mr Hart,

Further to my earlier acknowledgement, I have considered the advice you have offered on the question of encouragement for irrigation.

In the more general case, we have in mind an extension of the 25% concession to certain South Island industries, to include irrigation with a comprehensive range of industries. This is currently being discussed in principle by the Electricity Division with the E.S.A.A.

In your special circumstances I appreciate that the fact that you are likely to incur chargeable peaks in summer is an added difficulty leading to the need for increasing irrigation tariffs which is contrary to Government's wishes.

You have suggested that the difficulty would be overcome by not charging for peaks between 1 October and 31 March. This does indeed ease your difficulties but the proposal in this simple form could cause difficulties elsewhere.

I am advised that over the last few years a small number of authorities apart from Ashburton Electric Power Board have been incurring chargeable summer peaks. Any changes in the terms of the bulk supply tariff must necessarily be available to all authorities; and moreover in the longer term an advantage to one authority is at the expense of the other authorities.

In these circumstances it is essential that all changes made reflect as closely as possible the true costs of bulk supply. Some thought has already been given to a reduced rate for summer peaks but as yet the nature and magnitude of a number of proposed changes to the form of the bulk supply tariff have not yet been resolved.

I would like to thank you sincerely for the positive contribution you have made and assure you that my Electricity Division will be working closely with the E.S.A.A. to see whether reduced peak rates for summer loads are equitable in terms of a new bulk supply contract.

Yours sincerely,

W.F. Birch,
Minister of Energy

> substantial maximum demand charged may be incurred because of spray irrigation under the present method of charging for bulk supply, in addition to those already incurred during the winter period.
>
> Farmers just do not accept the present bulk supply tariff as being reasonable for spray irrigators, particularly in view of the Government's manifesto promise on encouragement of special summer season electricity charges for approved irrigation pumping in areas designed as multi-purpose water regions."

Federated Farmers Energy Committee petitioned Mr Birch and suggested an alternative pricing structure.

Power Board and Spray Irrigators continued to communicate with Mr Birch and N.Z.E.

During August 1981 Mr Birch and Mr Underhill visited Ashburton County to discuss the problem and on 24th November he replied

> "You may be assured that after such comprehensive lobbying the peculiar circumstances of your summer electricity consumption are being considered in the reformation of the Bulk Supply Tariff. The Government cannot consider abolishing chargeable summer peaks until the Electricity Division has presented its review of the Bulk Supply Tariff."

Peaks continued to occur, N.Z.E. was to monitor the problem.

Mr Binns was elected to Bulk Tariff Committee. The Spray Irrigators and South Canterbury Regional Division Council lobbied the Electrical Supply Authority Association and Bulk Tariff Committee as they were to meet in September.

Following the September meeting Mr Birch advised the Spray Irrigators of proposed changes.

1983 saw peaks costing $237,000.00 accumulate and Federated Farmers and Spray Irrigators continued to communicate with the Minister.

Then in July, Mr Birch announced to Irrigators. (Refer page 20).

August 1983 Federated Farmers were provided with background material about the proposed changes to the tariff.

If we applied these proposed charges to the past years' operation of the Power Board the following is the probable charge.

OFFICE OF THE
Minister of Energy
WELLINGTON, NEW ZEALAND

11 July 1983

Mr E Croy
Secretary
Mid Canterbury Spray Irrigators
No. 7 R.D.
ASHBURTON

Dear Mr Croy

Thank you for your letter of 20 June 1983 concerning electricity tariffs.

At the annual conference of the Electrical Supply Authorities Association in September 1982 I announced that, at the time of the next increase in the bulk supply tariff, there would be a change from the present 1:1 peak to energy ratio to a 4:6 ratio. As the regulations pertaining to the current wage-price controls are now to remain in force until 29 February 1984, the ratio will not change before that date.

Since September last year there has been positive progress in the development of a new form of bulk tariff. A four-part tariff has been proposed containing two energy components and two peak components, the details of which are currently under discussion with the Bulk Tariff Committee of the Electrical Supply Authorities Association. An investigation of the response to this proposed tariff from a sample comprising 25 percent of the country's electrical supply authorities has been of considerable assistance in these deliberations.

I hope that the form of the tariff will be resolved by the time I address the 1983 conference of the Electrical Supply Authorities Association in September. The precise timing of the introduction of the new tariff form will depend to some extent on circumstances following the lifting of the present wage-price controls.

I trust that these comments have provided some clarification of the action being taken in the current review of the bulk supply tariff.

Yours sincerely

W F Birch
MINISTER OF ENERGY

Demand

Demand Charge at New Rates	$1,668,000.00
Existing tariff	$2,236,638.54
Decrease in Peak Cost	$ 568,638.54

Energy

149,577,302 kWh at (say) 2.22c	$3,320,616.10
Existing tariff	$2,767,180.08
Increase in Energy Cost	$ 553,436.02
Total Decrease in cost of bulk electricity to the Board	$ 15,202.52

Summer Peaks

(Say) 4,406.0 kW at $16	$ 70,496.00
Actual (Say)	$ 237,000.00
Decrease	$ 166,504.00

Finally in September 1983 at the New Zealand Supply Authorities Conference in Nelson, Mr Birch announced the new form of the bulk tariff. An explanation of the new form of tariff and a copy of the relevant sections of Mr Brich's speech are included later in my paper.

It is possible that the rates stated may alter as from the 1st April 1984 to take into account any increase in the tariff.

The problem of increasing costs associated with summer peaks will on the 1st April 1984 be to some extent a thing of the past.

ERROL CROY

APPENDICES

COPY OF ADDRESS ON BULK SUPPLY TARIFF STRUCTURE BY THE HON. W.F. BIRCH, MINISTER OF ENERGY AT 1983 SUPPLY AUTHORITIES CONFERENCE

BULK SUPPLY TARIFF : STRUCTURE

Earlier I spoke of the Government's commitment to improving the way our economy functions, to removing economic distortions and ensuring the accurate allocation of economic costs so as to enhance our international competitiveness and so achieve high and sustainable rates of growth. In the electricity sector this commitment is reflected in the recently completed review of the bulk supply tariff structure and the extent to which it reflects the electricity system's cost structure.

As I noted last year, the economics of the system have been undergoing relatively rapid change in recent times. No longer is the electricity system completely hydro based, constrained only by the ability to supply peak capacity requirements. Today we depend on thermal generation not just to meet peak demands but to meet energy requirements as well. Today the system is clearly energy constrained.

At the same time consumption patterns have changed, influenced in particular by industrialisation and by improved load control. There no longer exists distinct evening peaks. The system load now increases rapidly in the early morning and, apart from a gentle fall-off in the middle of the day, remains steady until late evening. The ability to store water from one season to another, together with summer plant maintenance, means that there is very little seasonal variation in generating patterns despite greater consumption of energy through the winter months. The Electricity Division is operating the same generating plant at the margin throughout the year.

From an energy planning viewpoint, generating plant is planned to be installed to meet a potential energy shortfall, throughout the fifteen year planning period. The peak capacity associated with all new generating plant installed will be more than sufficient to meet peak capacity requirements.

Over the years the bulk tariff structure has evolved in order to reflect the system's changing cost-structure. The trend began in the time of the late Tom Shand when the bulk tariff, previously a simple peak demand charge, became a two-part tariff designed to recover two thirds of revenue from peak demand charges from the average supply authority. In 1976 this ratio was changed to place equal weight on the peak demand and energy components.

last year I announced at the Conference the first step of what was planned to be a two-step change to the bulk tariff. This first step, designed to increase the energy component of the bulk tariff to reflect the system's increasing energy-intensiveness, was postponed because of the wage/price freeze, as you know.

Since then, much work has been carried out to determine any further changes to the bulk tariff structure that are necessary. The Electricity Division has employed a sophisticated computer model of the operation and development of the electricity system to pinpoint very precisely the areas most in need of review. The development by the Electricity Division of a soundly-based conceptual framework capable of providing practical solutions, and guidance in deriving the most appropriate form of the bulk supply tariff, is a notable achievement.

I must stress that there have been very comprehensive consultations between the Division and your Association's bulk tariff committee. An engineer, Mr John Errington of the Central Canterbury Electric Power Board was retained to undertake a detailed survey to determine reaction and likely response to the proposed tariff. Twentyfive percent of all authorities were canvassed.

In addition discussions with major consumer groups have also taken place and eight of New Zealand's largest industrial consumers have been surveyed to determine the impact of the new tariff form on them.

I am pleased to report that there was substantial agreement on the new tariff structure. The final effect on authorities is, for the most part, relatively minor. The structure change has been carefully worked out so that the Electricity Division recovers the same amount of revenue as under the existing structure.

I trust that I have the industry's total support in announcing the new tariff structure which seeks to better match the tariff form to the electricity system's cost structure and consumption patterns today.

From next April 1 the new bulk tariff form will look like this. Firstly, two energy rates will apply; a day rate applying between 7.00 am and 11.00 pm and a night rate applying between 11.00 pm and 7.00 am. Secondly, peak charges will be broken into those occurring between 7.00 am and 11.00 pm during a winter zone period between 15 May and 15 September, and those occurring at any time of the year.

Without taking into account any change in the level of the bulk tariff which may be announced, or the fine tuning that will be necessary to meet revenue targets at the time the structure is changed, the charges based on 1982/83 costs would be 2.32 and 1.86 cents per kilowatt hour for the day and night energy rates respectively, and $55 and $16 per kilowatt for the winter zone and anytime peak charges respectively. It should be noted that these are illustrative figures only.

A special case is created by the five supply authorities presently on the variant three-part tariff which contains an incentive to reduce system load demand in the early evening hours of winter week days. Such a tariff can no longer be justified under present generating and transmitting conditions. Today we no longer necessarily see peaks at this time.

Government has now confirmed that these authorities will move onto the new four-part tariff, though this transition will be phased. Details of these transition arrangements were carefully devised by the Electricity Division and the Bulk Tariff Committee and I am satisfied that we can ensure that the interests of the three-part authorities are looked after.

Similarly the transition of a limited number of high load factor industrial consumers, which are likely to see higher increases than most, is to be eased through compensation for a proportion of additional charges on a declining scale over three years. This transition scheme, it should be noted, will be funded through the Trade and Industry Vote and will not involve any cross-subsidisation among electricity consumers.

Some very strong points were expressed by the Manufacturers Federation in our discussions with them. The manufacturers are keen to see a cost of supply study, similar to that being considered by your Association, which will determine the costs incurred at the retail level of distributing electricity to each class of consumer. While I appreciate the very great difficulties involved in framing the terms of reference for such a study - that is, in defining methodology - I believe that such a study is imperative. It has my wholehearted support.

The manufacturers and others also believe that there is a need for annual consultations between major consumer groups and the electricity industry on current and proposed retail tariff issues.

I agree there is more need for discussion between consumer groups and the industry. I have agreed to facilitate such a dialogue.

Having established the basic structure of the bulk supply structure it now makes sense to examine means of more closely integrating local hydro, cogeneration, major industrial loads and supply authority load management with the operation of the national supply system. With a system of this size, savings to individual consumers and supply authorities can be quite significant. I know I can rely on your full support.

I believe that it is important that the structure of the bulk tariff maintains its relevance to the system costs and consumption patterns in the future so that the gains of the present exercise are not lost. Although I do not expect really significant changes to be necessary at the first review, I am proposing that the bulk tariff form is reviewed every five years in the future.

I would like to stress the critical importance of incorporating the planned changes in the bulk tariff into retail tariffs. There is widespread concern among major consumers that supply authorities will not allow these changes to flow through into retail tariffs. I trust that this concern will prove unfounded. The success of the whole exercise depends on supply authorities critically examining their tariffs to see how these changes can be reflected, particularly in tariffs for medium and large consumers.

Obviously, where the costs of reflecting the new bulk tariff features outweigh the benefits, I would not expect to see this flow-through. So I don't expect to see much, if any, change in tariff form for small consumers.

However, there are areas where improvements can be made. For example, consumers who only consume electricity predominantly during the spring summer and autumn period - freezing works, dairy companies and spray irrigators amongst others - should see the benefits of those components of the proposed tariff that apply at that time.

Explanation of the Proposed Change to the Bulk Electricity Supply Tariff

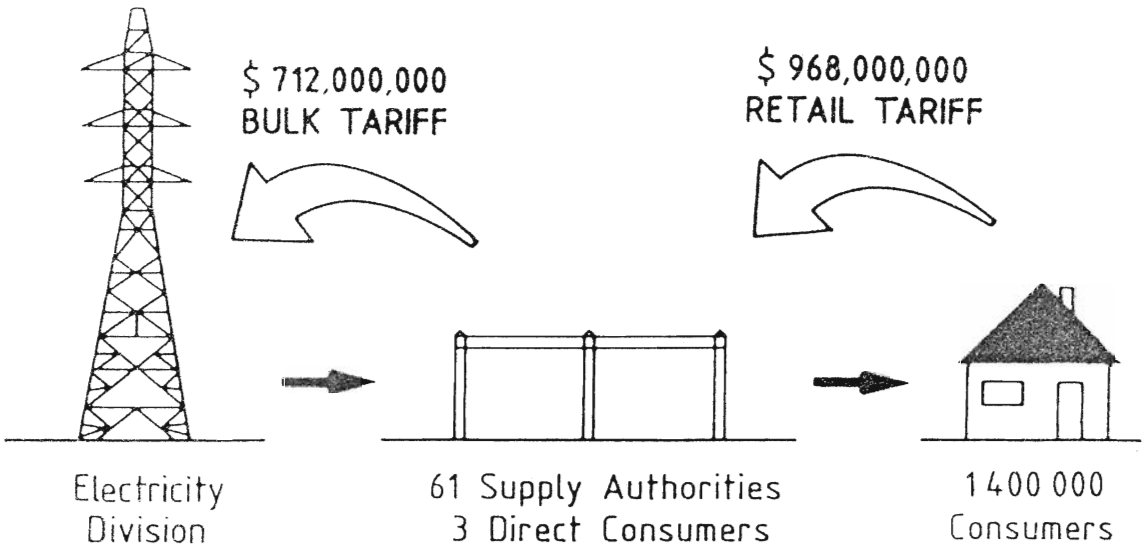
ELECTRICITY DIVISION
MINISTRY OF ENERGY
SEPTEMBER 1983

THE BULK SUPPLY TARIFF

What is the tariff?

The bulk supply tariff is the method of charging the Electricity Division's consumers — the electrical supply authorities and three large industrial consumers — for the operation, maintenance and development of the state's electricity system.

The bulk tariff is the basis on which electricity is sold to electrical supply authorities and the retail tariff is the basis on which the electricity is sold to the final consumer (fig. 1).



Any change to the bulk tariff directly affects the supply authorities but only indirectly affects final consumers as the supply authorities must recover their own additional costs of distributing the electricity.

Typically the bulk tariff accounts for 70 percent of a supply authority's total costs.

Legislative authority

Under section 34 of the Electricity Act 1968 the Electricity Division is required to set the tariff to recover the costs of operating the electricity system. It must also recover a margin of 25 to 50 percent above the operating costs to contribute to capital development.

In the 1982–83 financial year the division's revenue was distributed in the following way:

Charges and expenses	$M		Income	$M
Generation	147		Sale of electricity	712
Supply	46		Other	12
Administration and general	76			
Depreciation	41			
Interest	229			
		539		
Loan repayments and contribution to capital works	185			
Totals		724		724

Energy – Peak demand – Load factor

The Electricity Division has to meet 2 goals in the operation and development of its system. It must provide the required quantity of electricity (energy) both on a daily and an annual basis. It must also be capable of supplying that energy fast enough to meet the load at times when the demand is heaviest (peak demand).

The bulk supply tariff is based on these 2 components.

Energy represents the useful work that can be done by electricity. The energy is measured in kilowatt-hours (kWh) and is sometimes called units.

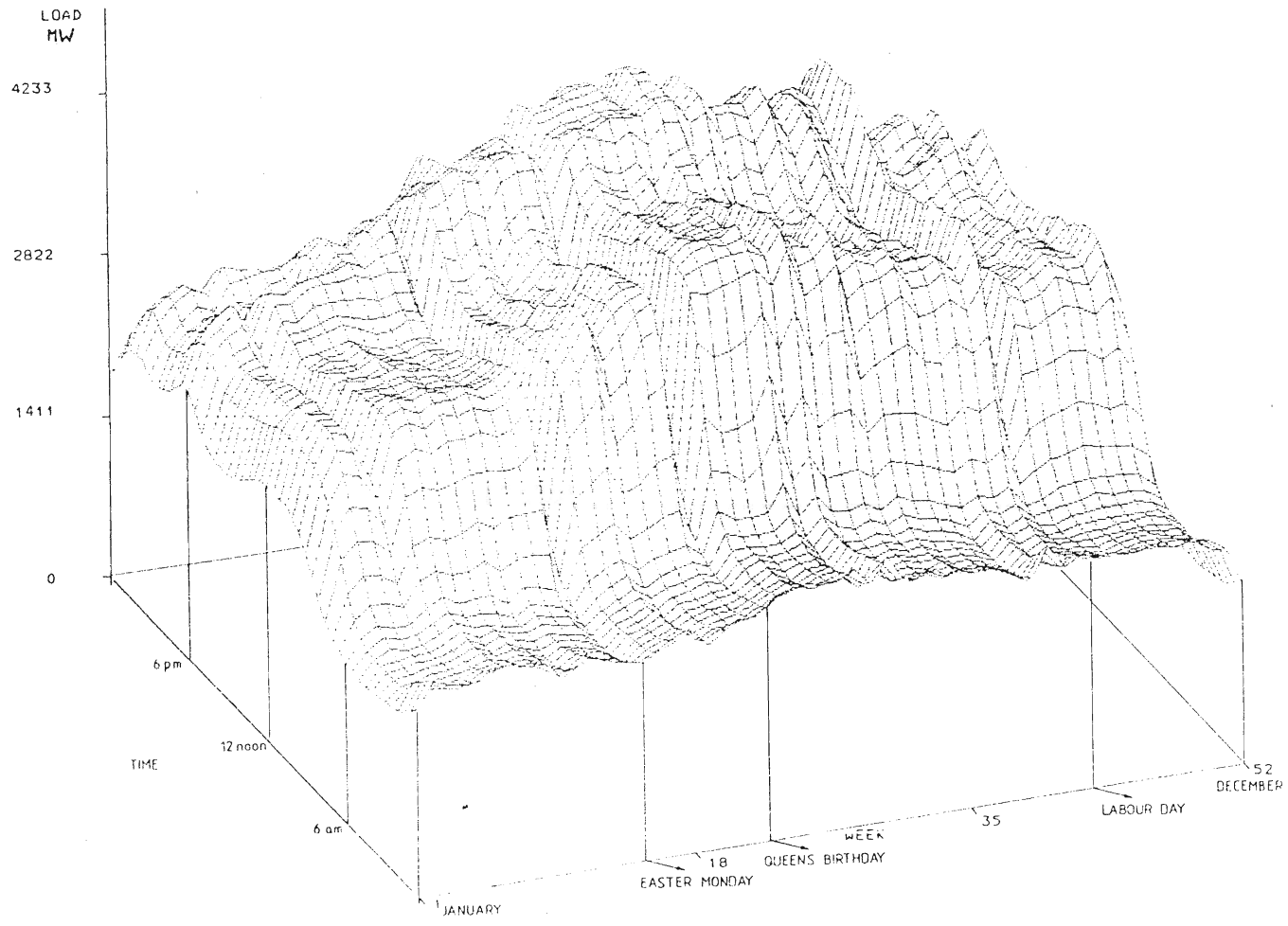
A one-bar heater (of 1000W or 1kW) when left running for one hour will produce 1kWh of heat energy.

Traditionally the domestic consumer has had his peak demand (which is measured in kilowatts – kW) in the early evening when he has the greatest number of appliances connected.

The New Zealand system has its peak demands on cold winter days and in the 1982–83 financial year the peak was 4 269 000kW which occurred at 9am on July 8.

A profile of the total New Zealand consumption for Mondays in 1982 is shown in figure 2.

LOAD ON MONDAYS IN 1982



Energy and peak demand of electricity can be likened to running water where the maximum flow (litres per second) is equivalent to peak demand and the total volume of water supplied (number of litres) is equivalent to energy.

To obtain a relationship between peak demand and energy consumption a term called load factor is used.

Load factor is usually expressed as a percentage and is the average demand divided by the peak demand. The average demand is determined by dividing the total energy consumption by the number of hours over which it was consumed.

An aluminium smelter which consumes electricity continuously at a constant rate has a load factor approaching 100 percent but an industry working a 5-day week, operating for no more than 40 out of the 168 hours in a week has a load factor of less than 25 percent.

History

Before 1967 the division recovered its operating costs by a peak demand charge only.

During the 1960s it became apparent that the costs of operating and developing the system were no longer solely related to meeting the peak demand. For example the fuel costs associated with operating a thermal station are quite clearly an energy cost.

In 1967 a 2-part tariff which charged for energy and peak demand was introduced.

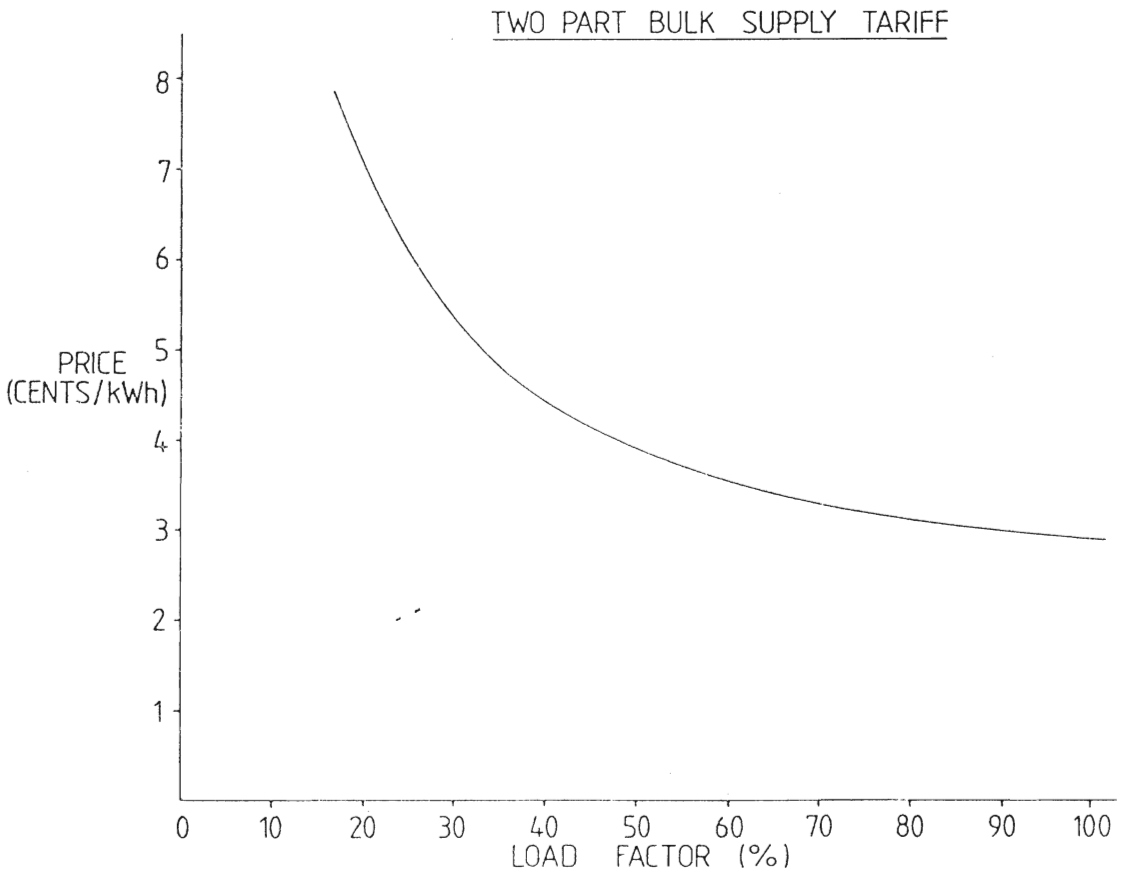
A further change was made in 1976 to place greater emphasis on the energy charge and less on the peak demand.

The present tariff is 1.85cents/kWh for energy consumed and $88.88 per kilowatt of peak demand.

The structure is such that a supply authority with a load factor of 55 percent pays 50 percent in energy charges and 50 percent in peak demand charges.

Under the present system the average price per kilowatt-hour paid by supply authorities with a high load factor is less than for those with a low load factor.

A supply authority with a load factor of 75 percent pays 3.2cents/kWh while one with a load factor of 45 percent pays 4.1cents/kWh (fig. 3).

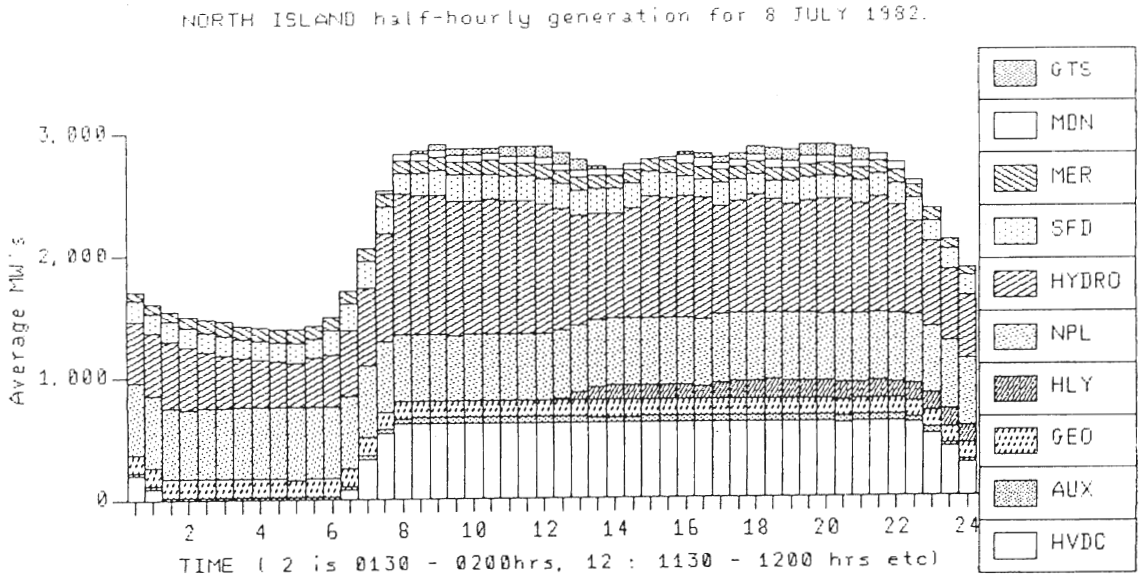


Operation and development

The general increase in load factor has changed the operational strategy from one of having to concentrate on providing for peak demands to one where energy is more important.

On cold winter days it is the quantity of energy required rather than the peak demand which is important.

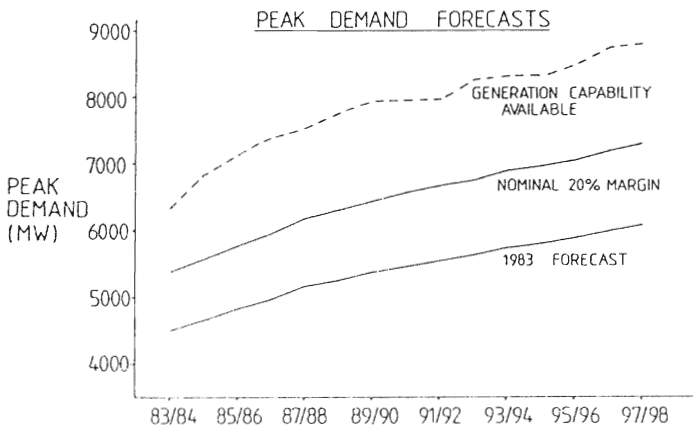
Oil-fired and gas turbine stations, which are peaking stations and were designed to generate for only a few hours a day at peak times, are now operated to meet energy requirements rather than the peak demand (fig. 4).

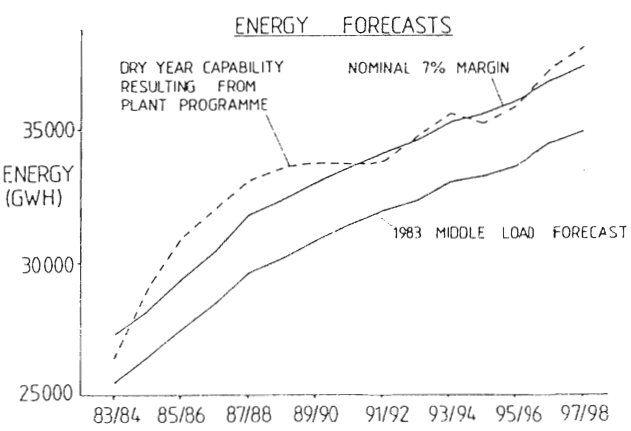


Forecasts show the high load factor will continue in the future, producing a need to concentrate on energy production. The division is therefore planning to build power stations to meet energy needs.

The New Zealand system will have a more than adequate margin for coping with peak demands into the late 1990s.

The normal margins required to ensure an adequate electricity supply are 15 to 20 percent for peak demand (fig. 5) and 7 percent for energy (fig. 6).





While planned energy generation development is near the normal margin of 7 percent the capacity to meet peak demand is considerably greater than necessary.

The electricity system must have the peak demand and energy margins to allow for various contingencies such as breakdowns of generating plant, delays in construction of plant, low storage lake inflows and fuel availability.

The proposed tariff

The proposed new bulk tariff is designed to place a greater emphasis on energy because of the greater cost of providing energy as opposed to peak demand.

It is designed to provide the division with the same amount of revenue as the present tariff, but to do so in a way which more accurately reflects the cost of supply.

It is made up of energy and peak demand charges.

Energy charges:

- Day energy rate of 2.32cents/kWh applying for energy used between 7am and 11pm on every day of the year.
- Night energy rate of 1.86cents/kWh applying for energy used between 11pm and 7am on every day of the year.

The former single energy rate has now been split into two to more accurately reflect the costs of producing energy in the two time periods.

During the day is is more likely that expensive generation will be required to produce the necessary energy. In the night period the load can be completely met by the hydro system together with base load, low-cost thermal generation.

Additional night-time load can therefore be provided for little more than the cost of fuel so a lower tariff can be offered.

Peak demand charges:

- Peak demand charge of $55 per kW for peak demands which occur between 7am and 11pm between May 15 and September 15.
- Peak demand charge of $16 per kW for peak demands at any time during the year.

The peak demand rate has also been split into two time periods to reflect the costs of producing peak output at various times of the year.

The supply system must have sufficient capacity to meet the maximum demand imposed on it during the winter season. The winter peak demand charge of $55 per kW is intended to reflect the cost of providing this generation capacity.

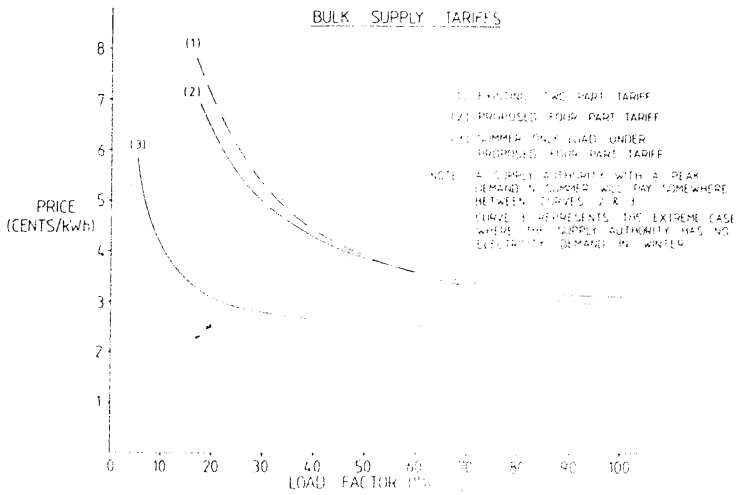
The other peak charge of $16 per kW has been calculated to recover the costs associated with providing transmission facilities to individual supply authorities.

Those supply authorities whose yearly peak occurs in winter will pay higher overall peak charges than those whose yearly peak occurs in summer.

For example a supply authority with a yearly peak of 20kW occuring in winter will pay for it at $71 ($55 plus $16), a total cost of $1420.

A supply authority with a yearly peak of 20kW occuring in the summer and a winter peak of 15kW will pay for the summer peak at $16 per kW and the winter peak at $55 per kW, a total cost of $1145.

Under the new tariff suply authorities with a load factor greater than 55 percent will pay slightly more while those with a lower load factor will pay slightly less than at present (fig. 7).



Supply authorities with a high load factor, though paying increased charges because of their energy intensiveness, will still pay considerably less than those with a low load factor.

Retail tariffs

Since the bulk tariff accounts for about 70 percent of a supply authority's total costs any change to the form of the tariff will have an effect on the retail tariffs. This does not mean that every retail consumer should change to a 4-part retail tariff just as domestic and other small consumers are not supplied under a 2-part tariff today.

It is expected that the largest consumers will quickly have all the components of the bulk tariff passed on to them. As the size of consumer reduces so the reflection on the new tariff form will be less. It is not expected that the classes of smallest consumers will see a change in the form of their tariff as the cost of implementing the change will probably exceed the benefits.

Since the proposed bulk tariff is placing more emphasis on energy large high load factor industries will pay slightly more for their electricity. Pulp and paper mills are an example of this type of industry.

A large industry such as a freezing works that operates solely or predominantly in the summer has the potential for reduced electricity charges because it will escape the winter zone peak demand charges.

SUMMARY

The bulk supply tariff is the method the Electricity Division uses to recover from its customers the costs of operating, maintaining and developing the state's electricity system.

In 1967 the tariff was changed from a peak demand only to a peak demand/energy tariff.

In 1976 the tariff was adjusted to place even greater emphasis on the energy component.

The change now proposed continues the trend started in 1967 and continued in 1976 of reflecting the way costs incurred by the division are moving to the energy component.

The proposed tariff is designed to provide the division with the same amount of revenue as the present tariff, but to do so in a way which more accurately reflects the cost of supply.

The proposed tariff recognises the difference in the costs of producing energy at different times of the day and makes different charges for peak demands which occur at different times of the year.

DEC 2ND 1980

Spray irrigators want power tariff change

Spray irrigators in Mid Canterbury are to make submissions to the Minister of Energy and the New Zealand Electricity Department for a change in the bulk supply tariff.

This stemmed from a meeting last night between 80 spray irrigators, the general manager of the Ashburton Power Board Mr D. J. Binns and board members.

It was the second meeting to be held in the past month.

According to the chairman of the Spray Irrigators Association, Mr Errol Begg, there was 'fruitful' discussion on what could be done to avoid summer peaks — peaks that are the result of heavy irrigation usage.

Mr Begg said the consensus was that there will be no more peaks this irrigation season which finishes in April.

He attributed this to recent rainfall which has lessened demand for irrigation.

"Crops should be alright until Christmas and most of the spray irrigating now is mainly for sheep feed," Mr Begg said.

The association's submissions to Government will be aimed at having the summer peaks disregarded or altered to suit spray irrigation requirements.

"As far as the nation is concerned there is plenty of surplus energy in the irrigation season. The problem is the way it is charged to local authorities," Mr Begg said.

He pointed out that the local Power Board has already done its part, while Mid Canterbury Federated Farmers has sent a remit along these lines to the dominion executive. The New Zealand Irrigation Association also intends to make submissions to the Minister and the NZED.

Last night's meeting also discussed possible alternatives such as ripple control, but it was felt the obvious solution was to get the summer peak criteria altered.

The board and spray irrigators have agreed to meet again prior to the next irrigation season.

Mr Binns also considered last night's meeting had been successful as it allowed both parties to air their views.

A half hour peak in November had cost the board $10,000 and it is possible for this figure to be several times higher.

"The community just can't afford that," Mr Binns said.

The board wrote to the appropriate authorities 13 months ago and intends to follow this up with a view to having the bulk supply tariff altered, he said.

Irrigators seek power changes

PA Ashburton

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Price rise rather than power cuts preferred by irrigators

18.11.80

Spray irrigators would prefer even quite substantial increases in charges to restrictions on supply, the Ashburton Electric Power Board was told at its monthly meeting yesterday.

The general manager, Mr D. J. Binns said this was the impression he took from a recent meeting between board representatives and 40-50 spray irrigators.

The board will soon review its tariff charges for next year after the nine per cent increase in the cost of bulk electricity supplied from the New Zealand Electricity Department.

Mr Binns said that some irrigators suggested they could stand cuts in their supply at unknown times, some could tolerate night spraying and some could drop spraying for one day a week, or fortnight, when supply was assured.

But the consensus, he said, was in favour of unrestricted supply.

The irrigation load has been cited as causing the board problems. The added power demand caused by irrigation pushes the overall summer loads near peaks beyond which the board incurs extra charges from the NZED.

Mr Binns said he told the irrigators of the difficulty the board was having in keeping total power use under these peak levels.

The board has restricted domestic water heating 26 days out of 31 recently to compensate, and that is "pretty tough for this time of year."

Peaks normally run only in winter, but locally the extensive use of spray irrigation has been enough to push summer power use up to the same levels.

The board struck its worst such problem on November 4, when it had to restrict water supply for 12 hours that day "far too long", according to Mr Binns.

Despite these measures the board ran a peak that day which will cost it something over $10,000 for the half hour power use was over the boundary.

The chairman Mr I. A. Hart said he had the impression that if the farmers had to meet higher tariffs it would still be economic for them to do so and pointed at that some suply authorities charge considerably more than the Ashburton Board.

Mr Charles Hilgendorf said the board had a monopoly, and so was in a position to make the irrigators accept the charges.

He felt irrigators should not be unfairly penalised, and supported a suggestion from Mr R. Petrie that the board formally apply to have the summer peak disregarded.

Mr Binns did not think "this small, rural power board" had any hope of preferential treatment. He felt the changes would be made nationally over a matter of one or two years. But he said he intended to write to the NZED pointing out the problems the board has experienced.

Mr Hart said much of the irrigation load has been built up through the availability of a low rate, designed to encourage summer power use. The board should be careful not to encourage people at one time and then hit them hard, he said.

Mr Binns will draw up a new set of tariffs to be discussed and approved next month before coming into force in February.

Nov 18TH 1980

Peak power payment query

The question of which sector of the Ashburton Electric Power Board's customers should pay for the added expense of any peak loads experienced, was raised at the meeting of the board yesterday.

Peak demands, for which the board incurs extra charges from the N.Z.E.D., were once experienced only in winter but the spread of irrigation in Ashburton County has raised the problem of "summer" peaks.

The board's general manager (Mr D. J. Binns), telling members of the difficulty in keeping below the peak during October, said that over one 31-hour period, water heating to householders had to be restricted for 26 hours.

The demand had occurred because of the dry weather which had necessitated much irrigation.

A short peak had been experienced then and it had cost the board more than $80,000. Hardly any of that would be recovered in charges to the consumer because of the lower rate for irrigation.

The board is also due to review its tariff charges to be introduced next year following the announced increase in the bulk tariff rate to it from the N.Z.E.D. of 9 per cent.

That also caused discussion as to who should bear the brunt of increased charges and peak charges with a county member, Mr C. Hilgendorf, saying that irrigators should not be penalised.

He also said that the board should agitate to have the peak criteria apply only during winter.

The board's chairman (Mr I. A. Hart) noted that the irrigation tariff was introduced to encourage the use of power during the warmer months. The board should be seen to be following that policy when setting its new tariffs.

Mr Binns was asked to introduce a new set of tariffs for the December meeting to be discussed and approved before they would be needed in February.

He was also asked to report on use during the warmer months. He said that the main users during the summer in the past had been predictable.

One was the freezing works which drew a continuing supply. Domestic users were fairly predictable, but the irrigators were not, as had been experienced.

The peak experienced earlier had not come at what would be expected to be a peak time for householders, such as meal time. "With respect, somebody has to pay," he said to Mr Hilgendorf who had commented that irrigators should not be penalised for the extra expense.

Tariff anomoly candidate's top priority

The National candidate for the Selwyn electorate, Miss Ruth Richardson, has given an assurance that she will do everything in her power to have the penalty for summer peak electricity useage removed.

This stems from discussions she has had recently with farmers in Pendarves-Dorie and a meeting yesterday with the general manager of the Ashburton Power Board, Mr D. J. Binns.

Miss Richardson is adamant that the removal of summer peak penalties is now her 'number one' priority.

"The whole structure of bulk tariffs works against an irrigation intensive power authority.

"Ashburton is unique in that its summer peak stems from spray irrigation useage, although small summer peaks also occur in Hawkes Bay and Taranaki," she said.

Miss Richardson pointed out that the Bulk Supply Tariff Review Committee, which comprises representatives of the Ministry of Energy, Treasury and power supply authorities, is meeting at the moment.

"We have to to introduce some agriculture perspective onto that committee and even try to encourage committee members to come down here and see for themselves."

In the meantime Miss Richardson intends to lobby three or four civil servants on the committee.

"Unfortunately, until you can sway them you won't get anywhere with the Minister of Energy. Its just the way the wheels of Government work," she said.

Possible power price rise for irrigators

A suggestion that spray irrigators could have to pay more rather than less for power, was contained in a letter from the Minister of Energy (Mr Birch) to the Ashburton Electric Power Board yesterday.

The board had spoken to the Minister as a result of its concern at running power peaks during summer due to the demands of spray irrigation. It had opened new substations to cope with that demand and the general manager (Mr D. J. Binns) said yesterday it had a waiting list of 70 spray irrigations awaiting connections.

Mr Birch in his letter acknowledged that last summer some South Island lakes had water spilled but he saw that as a short-term measure. The electricity division's maintenance programme placed constraint on summer peak capacities and he did not see spillage justifying a reduction in power prices.

Farmers appeared not to appreciate that the generating system was becoming energy constrained. As more irrigators were energy intensive, it was possible that spray irrigators would have to pay more after the review of bulk tariffs, he said.

He understood that spray irrigators were prepared to accept some form of load control, but technical considerations associated with restarting irrigation equipment may make it not feasible to instal local control, Mr Birch said.

The board chairman (Mr I. J. Tarbotton) said it appeared the board had been "fobbed off" again. The Minister had apparently called for a report urgently and it was becoming something of a continuing saga.

While there was no end in sight at present, the board would not relax its effort and it would continue to push its case at the review of bulk tariffs. As well, it hoped to meet Mr Birch in Ashburton shortly, he said.

Mr Binns said he had reservations about the Minister's comment about future prices to farmers. If he meant that all would be paying more for power he could accept it, but he hoped it did not mean that spray irrigators alone were to be faced with a greater bill.

Power board urged to encourage irrigation

Irrigation, particularly spray irrigation, holds the key to the future development of Mid Canterbury.

That opinion was expressed by Sir Charles Hilgendorf at the Ashburton Electric Power Board's monthly meeting.

Under discussion was the marked increase in the number of spray irrigation units in the county, a trend Sir Charles feels the board should do everything possible to encourage.

He believes Ashburton at present has absolutely no future as a manufacturing town, while irrigation development will benefit t' entire area.

"Take the board's case for example. We will need a population increase to sell more power and the only way we will get that is through irrigation," he said.

Sir Charles sees a bright future for the area stemming from increased agricultural production.

Bearing out the popularity of spray irrigation, the general manager Mr D. J. Binns, told the meeting that 70 irrigation installation jobs must be completed prior to the coming irrigation season. Staff were "flat out" at the moment, he said.

A problem associated with the increase of spray irrigation is the penalty incurred for peaking summer power useage. The board intends to continue the fight for the reduction — or abolition — of the penalty.

Chairman, Mr Lester Tarbotton, believes the board is being "quite well fobbed off at the moment" but he said all is not yet lost.

"Hopefully the Bulk Tariff Review Committee will be sympathetic to our cause."

A letter was discussed from the Minister of Energy, Mr Bill Birch, in reply to correspondence from Mr Binns explaining the problem of summer peaks in the area.

The Minister said he was aware of how extensive spray irrigation was in the last dry summer.

"As you state there was some spilling of water last summer from South Island hydro lakes. However, I view this as only a ·t-term phenomenon and thus, not by itself, a justification for reduced summer peak charges," he said in the letter.

"You explain in your letter that farmers don't accept the present bulk supply tariff as being reasonable for spray irrigators. The farmers apparently fail to appreciate that the generating system is becoming more energy contained and as spray irrigation is energy intensive it is quite possible that spray irrigators will have to pay more as a result of the current bulk tariff review."

Mr Birch said irrigators were specifically included in the 25 per cent South Island electricity concession, as a result of the Government's recognition of their contribution to agricultural production.

"The points you raise in your letters are closely related to the review of the bulk tariff and I have asked officials of the electricity division to place a priority on this review."

Mr Birch reminded the board to notify the Electrical Supply Authority Association so the matter can be raised at the appropriate stage in the bulk tariff discussions.

The board and Mr Binns intend to make further submissions to Mr Birch when he visits the area later this month.

Two more problem seasons for power board

14·4·81

The Ashburton Electric Power Board has been told it will probably have to weather at least two more summers under the present penalty system for peaks in power use.

The board's general manager Mr D. J. Binns had written two letters to the New Zealand Electricity Department over the problems it is facing in running summer peaks.

One outlined the problem which the board is facing with irrigation use forcing total power consumption in summer at times over acceptable power use levels. The second letter requested assistance in meeting the penalty payments for the peaks already incurred.

The department has replied that it appreciates the board's concern and said it expects to receive submissions from it when it reviews the present system.

The department said there will probably be two more summer periods before a new tariff formula could be produced.

AEPB chairman Mr L. J. Tarbotton said the reply gave little encouragement for the near future. He reminded the board that the general manager had felt it would be difficult to get a quick change.

"The wheels of legislation move very slowly when they want to, but they can be speeded up when it suits them."

He urged the board members to individually make their feelings felt with their MP and the powers-that-be when the situation arose.

"I think in this case we must keep plodding," he said. The board decided to maintain its efforts to have the peak assessment formula altered.

Asked if the Minister of Energy, Mr Birch, was aware of the problem Mr Binns said he had spoken to the Minister when he was in the district recently.

VAGUE

Mr Birch had been aware that such a problem existed somewhere in the South Island, but was vague on the area and didn't know it was Ashburton, he said.

The board is expecting a reply to a letter written to Mr Birch as a follow-up to his discussions with the general manager here.

Mr Binns said he had also spoken to Ashburton MP Mr Rob Talbot. Mr Tarbotton said spray irrigators themselves were attacking the problem from a different angle — "and I think that they need to."

Mid-Canterbury

Irrigators put case before Mr Birch

Although the Minister of Energy (Mr Birch) appeared sympathetic, he made no promises concerning the summer peak problems caused by irrigation in Mid-Canterbury, the president of the Spray Irrigators Association (Mr D. W. Petrie) said at the week-end.

Mr Birch visited Rakaia and Pendarves on Friday afternoon for discussions with the spray irrigators, the New Zealand Irrigators Association and representatives from Federated Farmers and the Ashburton Electric Power Board.

Mr Petrie said the minister gave all parties a good hearing but said nothing to suggest that the association would get anywhere with submissions aimed at reducing the charges for summer power peaks its members helped cause.

On one hand the country wanted farmers to increase production and to do that, they were forced to install irrigation systems. If they added to the demand for power, then they were helping force up the summer peaks on which bulk tariff prices were calculated.

There were 70 irrigators awaiting connection to the system, and the power board was so committed to connecting those on the waiting list, that it wanted to use private contractors for line work between Cairnbrae and Overdale. There would ultimately be about 400 spray irrigators using power in Mid-Canterbury when the 70 were connected.

"Nothing can apparently be done this year since the price is already set through to April and the end of our irrigating season. If anything does happen, it will have to be done after that," Mr Petrie said.

Mr Birch agreed that spray irrigation posed a problem that could only get worse and promised to see what could be done. He could not offer the Ashburton Power Board anything individually as the bulk tariff was set for all supply authorities, but he hoped a way could be found around the problem.

Minister praises two board staff

The Minister of Energy, Mr Birch, paid tribute to two of the Ashburton Electric Power Board's staff yesterday for the work they had done on the problems of peak loads and the bulk supply tariff.

The board's chief engineer, Mr Eric Weir, had published an "illuminating paper" on the results of the continue growth of the spray irrigation load, he said.

The board's general manager, Mr David Binns, had made many contributions on the bulk supply tariff and other important matters to the electricity supply industry, Mr Birch said at a function to open the board's new hydro-electric plant at Montalto.

During the last few irrigation seasons, the board has had problems with its bulk purchasing of power. It has incurred peak loads during the summer because of the demand from irrigators.

The tariff penalty imposed on boards for the peak loads was designed to curtail a heavy demand through the winter when hydro lakes are usually lower. But the Ashburton board has found that its summer peaks surpassed those of winter.

Mr Birch said that a the distinctive development of spray irrigation in the area had produced a supply situation that was unique.

However, the use of two of the most valuable resources — electricity and water — to maintain and increase production was very much a part of the Government's growth strategy and would continue to be supported, he said.

The resulting growth in the summer-time load was one of the factors which had triggered a review of the bulk tariff.

The first change in the tariff form would occur during the next financial year, and a common form of tariff would be introduced in the following year.

Mr Birch also was to meet with the Southern Canterbury Regional Development Council yesterday afternoon. One of the topics expected to be discussed between him and the board was the present system of tariff, which penalised boards which had spray irrigators as consumers.

One of the council's members, the Mayor of Ashburton, Mr G. J. Geering, said that other subjects likely to be discussed with the Minister were the hopes to establish a sugar beet industry in the area and other development projects.

Bulk power tariff welcomed here

27-9-83.

Changes to the structure of the bulk tariff have been welcomed by the chairman of the Ashburton Electric Power Board, Mr Lester Tarbotton.

The changes, which will apply from April 1 next year, will lesson the impact of summer peaks and prove beneficial to spray irrigators.

While the power board will still be faced with costly summer peaks in the coming irrigation season, the changes to the tariff will be reflected in charges to irrigators in the 1984-85 season, Mr Tarbotton said.

He pointed out that changes have been in the wind for some time, but it was a relief to hear the Minister of Energy officially announce it at the recent Electrical Supply Authorities' Conference in Nelson.

"We were concerned that manufacturers may force a change in the proposed tariff because it is likely to cost them more than at present," Mr Tarbotton said.

He praised the efforts of the board's manager, Mr D. J. Binns, who was a member of the Bulk Tariff Committee that made recommendations to the minister. Federated Farmers and the Mid Canterbury Spray Irrigators' Association also campaigned hard to have the penalty for summer peaks lessened.

Mr Tarbotton said the new bulk tariff is designed to place greater emphasis on energy because of the higher cost of producing energy as opposed to peak demand.

"It is designed to provide the Electricity Division with the same amount of revenue as the present tariff, but to do so in a way which more accurately reflects the cost of supply," Mr Tarbotton said.

The new tariff is made up of energy and peak demand charges.

DAY RATE

There will be a day rate for energy used between 7am and 11pm and a night rate for the 11pm to 7am period.

The former single energy rate has now been split into two parts to reflect the costs of producing energy in the two time periods, Mr Tarbotton said.

He pointed out that during the day it is more likely expensive generation will be required to produce the necessary energy.

In the night period, the load can be completely met by the hydro system together with base load, low cost, thermal generation.

A peak demand charge of $55 per kW has been set for peak demand between 7am and 11pm in the May 15 to September 15 period. Peak periods at any other time of the year will be charged at $16 per kW.

The present peak demand charge of $88.88 per kW applies to six peaks — three between April and June and three in the other nine months.

Mr Tarbotton claimed the $16 per kW peak charge in the summer months is "just what the board has been pressing for".

"We have always maintained that our unique situation of running peaks in the summer does not create a national peak," he said.

Meanwhile, the Minister of Energy has delayed an announcement on the new bulk supply tariff. He usually releases details at the supply authorities' conference but has delayed an announcement until December.