ACTEW'S ELECTRICITY, WATER & SEWERAGE CHARGES FOR 1999/2000 to 2003/2004

PRICE DIRECTION

MAY 1999

INDEPENDENT PRICING AND REGULATORY COMMISSION

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May 1999

Foreword

The Independent Pricing and Regulatory Commission (IPARC) has the task of providing independent oversight of prices for the regulated component of electricity, water and sewerage services in the ACT. This is the final report for the price direction to apply to ACTEW Corporation for these services for the five year period from 1 July 1999 to 30 June 2004. I have produced this report as required by the Terms of Reference issued for the review.

This final report follows on from the draft price direction report released in February 1999. ACTEW submitted a public response to the draft price direction. Submissions were also received from other interested parties. Following receipt of submissions a public hearing was held on 23 March 1999.

Major issues raised in relation to the draft report and taken into consideration in determining this final price direction were:

- A request from ACTEW for substantially higher electricity, water and sewerage prices in order to generate higher rates of return on its asset base.
- Support from some sectors of the community for higher prices to sustain relatively high standards of service.
- The trade off between ACTEW's relatively high service standards and the cost of meeting them.
- Further productivity gains that ACTEW could achieve.
- Introduction of a 'water abstraction charge' to reflect the scarcity value of water.
- The status of the environmental works charge.
- The impact of higher prices on low income earners and welfare recipients.

With regard to the latter, the Commission wishes to bring to the Government's attention, the ACT Council of Social Services' concern regarding appropriate support for those low income earners who are adversely affected by the price increases proposed in this direction.

As stated in my foreword to the draft report, this direction is being made at a time of significant change in the provision, and associated regulation, of electricity, water and sewerage services. The ACT Government has released a '*Statement of Regulatory Intent for Utilities in the ACT*' detailing the Government's proposed new regulatory arrangements.

Also, the National Electricity Law together with the National Electricity Code now prescribes the approach to the regulation of network pricing for electricity distribution systems. Revised national guidelines on the regulation of water and sewerage prices have recently been approved by COAG. Compliance with these requirements is important because under the 'Agreement to Implement the National Competition Policy and Related Reforms (11 April 1995)', the ACT receives funds from the Commonwealth if it is able to demonstrate that it has introduced various reforms, including pricing reform.

As required by the terms of reference, the Commission has determined prices for the five years from 1999/2000 to 2003/2004. However, as detailed in the report the Commission is aware of several possible business, legislative and regulatory developments in the interim, that could significantly impact on the outcomes of this direction. Accordingly, the Commission is of the view that this final direction should possibly be reviewed at the end of

2000 in the light of these developments. Therefore, I wish to advise that at the end of 2000, the Commission will consider whether it may seek further terms of reference to reconsider these matters.

In making its final price direction, the Commission has balanced the commercial interests of the management and owners of ACTEW with the interests of other stakeholders including customers, creditors and the environment.

The price direction detailed in this report provides ACTEW with the incentive and flexibility to enhance its business viability and provide adequate returns to its shareholder, by delivering electricity, water and sewerage services to its customers at acceptable prices with relatively high standards of service, over the next five years.

I wish to thank everyone who has contributed to this process.

Paul Baxter
Commissioner
May 1999

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1 INTRODUCTION

The Independent Pricing and Regulatory Commission (IPARC) has conducted an investigation into charges for electricity, water and sewerage services supplied by ACTEW Corporation Limited in the Australian Capital Territory (ACT), for the period from 1 July 1999 until 30 June 2004. The terms of reference for the investigation are included as Attachment 1.

The terms of reference establish the tasks to be undertaken by the Commission for this investigation and the various matters to be considered by the Commission in making the price direction. The following requirements are specified in relation to the conduct of the investigation:

The Commission is to review and report on appropriate pricing and pricing methodology for the following:

- the regulated electricity distribution services provided by ACTEW for the 5-year period from 1 July 1999
- the regulated electricity retail services provided to franchise customers by ACTEW for the period from 1 July 1999
- the regulated water services and sewerage services provided by ACTEW for the 5 year period from July 1999, including a bulk water charge and including the option of absorbing the Environmental Works Charge and any other designated item in the pricing structure
- the principles that should apply for any price reset at the end of the period of the initial and subsequent price paths.

In addition, the Commission is required to:

- advise on the approach to establishing an appropriate water abstraction charge that reflects sound economic and environmental principles as well as to provide advice on the structure and level of charges that will apply if that approach is implemented.

2 INVESTIGATIVE PROCESS

The release of this price direction represents the final stage in the public process for determining ACTEW's prices for electricity, water and sewerage. The schedule below lists stages leading to this report. The Commission first released a draft price direction report, taking into account pricing proposals from ACTEW and a policy statement from the Office of Financial Management. Submissions were then received from ACTEW and the public in response to the draft price direction. Following this, public hearings were held in Canberra. This price direction takes into account submissions received from ACTEW and the public, and comments made at public hearings.

Activity	Date
Release of draft price direction	12 February 1999
Public Submissions received (including ACTEW's)	12 March 1999
Public hearing	23 March 1999
Release of Final Price Direction	3 May 1999

All communication with the Commission in relation to this investigation should be directed to:

Independent Pricing and Regulatory Commission
GPO Box 447
Canberra ACT 2601

Telephone (02) 6273 0655
Facsimile (02) 6273 0654
E-mail paul.baxter@au.pwcglobal.com

Public submissions received by the Commission and transcripts of the public hearings may be obtained by contacting the Commission at the above address.

3 SUMMARY OF FINAL PRICE DIRECTION

The final price direction provides for:

- ***A variation in electricity network revenue of CPI[1]-2.0% a year over the five years.***

Representing an increase of 0.5 percent to that proposed in the draft price direction, this will enable ACTEW to achieve projected real pre tax return on assets throughout the regulatory period. This return is comparable to ACTEW's estimated risk adjusted rate of return on an adjusted depreciated optimised replacement cost value for network assets.

- ***An average retail electricity price of 9.6c/kWh.***

This equates to a retail electricity revenue of $134.6m for franchise customers in 1999/2000. This activity will not be subject to price regulation following the opening of the market to full competition from 1 January 2001. However, ACTEW will be required to offer "supplier of last resort" facilities to any customers unable to contract with a retail supplier. The price paid to ACTEW to operate this facility will be the quoted retail price prior to the introduction of competition adjusted for CPI+10%.

- ***A variation in water revenue per property of CPI+4% per year for the first two years followed by CPI+3% for the remaining three years.***

This will further improve returns to the poorest performing of ACTEW's business operations.

- ***A variation in sewerage revenue per property of CPI+1% for the first three years followed by CPI for the remaining two years***.

This represents an increase of 1 percent per annum over the proposal in the draft price direction for the first three years and will ensure the financial viability of the sewerage operations.

- ***The environmental works charge of $40 a year will not be maintained as a separately identifiable component. However, this amount will continue to be included in ACTEW's sewerage revenue per property and still form part of the charge.***

- ***Miscellaneous fees to be adjusted by CPI-2%.***

This represents an increase of 0.5 percent over the proposal in the draft price direction.

- ***ACTEW will negotiate bulk water charges with individual customers on the basis that prices do not fall below the avoidable costs of supply.***

- ***The Commission recommends to the Government that the proposed water abstraction charge be initially of the order of 10 cents per kilolitre of water consumed, to recover the identified $935,000 spent on managing the Cotter and Googong catchments, identifiable environmental work which is not part of ACTEW's normal business operations and an estimate for the scarcity value of water.***

- ***To encourage ACTEW to continue to seek productivity improvements the Commission directs that any out performance be retained by ACTEW in the current regulatory period and be phased out over the subsequent regulatory period in accordance with a prescribed glide path.***

- ***It should be noted that the above variables relate to the weighted average prices for those services. The impact on individual customers may vary from these.***

[1] Australian Bureau of Statistics, *Consumer Price Index*, Canberra, All Groups.

The following table compares the proposals put to the Commission by ACTEW with the Commission's final price direction.

Table 3.1 Final pricing proposals

		1999/00	2000/01	2001/02	2002/03	2003/04
Electricity Network	**ACTEW**	CPI + 2%	CPI + 2%	CPI	CPI	CPI
	IPARC	CPI – 2%	CPI – 2%	CPI – 2%	CPI – 2%	CPI – 2%
Water	**ACTEW**	CPI + 6%	CPI + 6%	CPI + 6%	CPI + 6%	CPI + 6%
	IPARC	CPI + 4%	CPI + 4%	CPI + 3%	CPI + 3%	CPI + 3%
Sewerage	**ACTEW**	CPI + 3%	CPI + 3%	CPI + 3%	CPI + 3%	CPI + 3%
	IPARC	CPI + 1%	CPI + 1%	CPI + 1%	CPI	CPI
Miscellaneous Charges	**ACTEW**	CPI	CPI	CPI	CPI	CPI
	IPARC	CPI – 2%	CPI – 2%	CPI – 2%	CPI – 2%	CPI – 2%

In addition, ACTEW has proposed a gross margin of $10m for its retail electricity business. For 1999/2000, the Commission has determined a gross margin of $7.5m for ACTEW's regulated retail electricity business. For subsequent years, until full retail contestability is introduced in the ACT, this gross margin will be indexed by the CPI.

ACTEW will be free to structure its tariffs as long as the side constraints (detailed in section 6.2.5) are not exceeded. **The tariffs so structured must be accompanied by a full customer impact analysis and must be approved by the Commission prior to implementation**.

4 STATUTORY REQUIREMENTS AND REGULATED SERVICES

The requirements of the IPARC Act 1997 apply to the full range of ACTEW's regulated services throughout the regulatory period, 1 July 1999 to 30 June 2004. *The Electricity (National Scheme) Act 1997,* is intended to apply to the regulation of network pricing for distribution systems from 1 January 2001.

Issued under the IPARC Act 1997, the terms of reference specify matters referred to the Commission (see Attachment 1).

4.1 Current statutory position

The following table lists the regulated services of ACTEW and the relevant statutes.

Table 4.1 Regulated services

Regulated Service	Legal Instrument 1/7/99 to 30/6/2004	Legal Instrument 1/1/2001 to 30/6/2004
Electricity Distribution	Energy and Water Act 1988 IPARC Act 1997	Electricity (National Scheme) Act 1997 (ACT) National Electricity (ACT) Law National Electricity Code
Electricity Retail (franchise customers)	Energy and Water Act 1988 IPARC Act 1997	
Water	Energy and Water Act 1988 IPARC Act 1997	
Sewerage	Energy and Water Act 1988 IPARC Act 1997	

The Commission has received legal advice that to invest IPARC with the necessary powers and functions to administer Chapter 6 of the National Electricity Code, amendments will be required to either the *Independent Pricing and Regulatory Commission Act 1997*, or the *Electricity (National Scheme) Act 1997.* In the absence of such amendments, it is necessary to adopt transitional provisions which deem any determination made as a consequence of the current price direction to have been made in accordance with Parts D and E of Chapter 6 of the Code.

In the draft price direction, the Commission advised that it was seeking further clarification as to whether there is a need for such an amendment. Subsequently, the ACT Government's Office of Financial Management has advised:

> …the amendments, consistent with those recommended by the legal opinion to IPARC, will be inserted as part of the legislative amendments to the IPARC Act being prepared for tabling in the legislative assembly by June 1999.[2]

For the time being, this implies that in framing the final price direction, the Commission is required to ensure compliance with both the IPARC Act and the National Electricity Code.

[2] Chief Minister's Department submission in response to draft price direction, 23 March 1999, p 3.

This is complicated by the fact that different phrasing is used in the IPARC Act and the National Electricity Code to describe how price regulation should be implemented.

Under the IPARC Act 1997:

> … the Commission shall decide on the level of prices for services … and give a price direction accordingly to each person providing regulated services. [3]
>
> A price direction may specify, in relation to the supply of a regulated service, any or all of the following:
>
> (a) a price;
> (b) a maximum price;
> (c) a maximum price and a minimum price;
> (d) a formula for calculating a price referred to in paragraph (a), (b) or (c);
> (e) a method, by reference to price indices or otherwise, by which a price referred to in paragraph (a), (b) or (c) is to be ascertained;
> (f) a period or periods during which the direction, or any provision of the direction, is to apply. [4]

The IPARC legislation lists a number of matters the Commission shall have regard to in making a price direction. These include:

- the protection of consumers from the abuse of monopoly power …
- standards of quality, reliability and safety …
- the need for greater efficiency …
- an appropriate rate of return …
- the cost of providing the regulated services …
- the principles of ecologically sustainable development …
- the social impacts of the decision;
- considerations of demand management and least cost planning;
- the borrowing, capital and cashflow requirements …
- the effect on general price inflation over the medium term; and
- any arrangements that a person providing regulated services has entered into for the exercise of its functions by some other person. [5]

In addition to these requirements of the Act, the terms of reference for this investigation also require the Commission to have regard to:

> (l) the need for a transparent methodology that clearly explains on a quantitative basis the determinants of the proposed price path and has regard to the methodological developments in other jurisdictions. [6]

In contrast, clause 6.10.5 of the National Electricity Code specifies that:

> In respect of distribution services subject to economic regulation …
>
> (a) economic regulation shall be of the prospective CPI-X form, or some incentive-based variant …
> (b) the Jurisdictional Regulator shall specify the form of economic regulation … to be in the form of either:
> a revenue cap; or
> a weighted average price cap; or
> a combination of the above
> (c) … the regulatory control period which is to be a period of not less than 3 years

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[3] Australian Capital Territory, *Independent Pricing and Regulatory Commission Act, 1997*, S20(1).
[4] ibid, S20(4).
[5] ibid, S20(2).
[6] Australian Capital Territory, *Reference for Investigation under Section 15 and Specified Requirements in relation to Investigation under Section 16.*

(d) … the Jurisdictional Regulator must take into account each Distribution Network Owner's revenue requirements … having regard for:
  (1) the demand growth … using any appropriate measure including but not limited to:
    (i) energy consumption by categorisation of Distribution Customers …
    (ii) demand by categorisation of Distribution Customers …
    (iii) numbers of Distribution customers …
    (iv) length of the distribution network
  (2) the service standards applicable to the Distribution Network Owner
  (3) price stability
  (4) the Jurisdictional Regulator's reasonable judgement of the potential for efficiency gains
  (5) … weighted average cost of capital
  (6) the provision of a fair and reasonable risk adjusted cashflow rate of return …
  (7) any reduction or increase in energy losses
  (8) any other relevant financial indicators

The National Electricity Code has a different emphasis than the IPARC Act and is far more specific in its requirements. For example, whilst there is no explicit reference to social impacts in the National Electricity Code, it does refer to the 'public interest'. It could be reasoned that the latter is wider in scope than 'social impacts'. The IPARC Act refers to *an appropriate rate of return* while the National Electricity Code refers to a *fair and reasonable risk adjusted cashflow rate of return.* Where there is overlap between the two regulatory instruments, the implications have to be considered carefully.

There is also a National Gas Code. While this does not affect ACTEW directly, differences between that code and the National Electricity Code have the potential to impact on the price regulation of two competing segments of the energy sector.

There is no equivalent to the National Electricity Law in respect of regulation of the water and sewerage operations of ACTEW. However, revised pricing guidelines have been approved by COAG[7]. Compliance with these guidelines will be important to the National Competition Council's recommendations to the Commonwealth Treasurer regarding whether the ACT has complied with its COAG commitments and is therefore entitled to receive the competition payments[8].

These revised pricing guidelines are:

1. Prices will be set by the nominated Jurisdictional Regulators (or equivalent) who, in examining full cost recovery as an input to price determination, should have regard to the principles set out below.
2. The deprival value methodology should be used for asset valuation unless a specific circumstance justifies another method.
3. An annuity approach should be used to determine the medium to long term cash requirements for asset replacement/refurbishment where it is desired that the service delivery capacity be maintained.
4. To avoid monopoly rents, a water business should not recover more than the operational, maintenance and administrative costs, externalities, taxes or TERs[9], provision for the cost of asset consumption and cost of capital, the latter being calculated using a WACC.
5. To be viable, a water business should recover, at least the operational, maintenance and administrative costs, externalities, taxes or TERs (not including income tax), the interest cost on debt, dividends (if any) and make provision for future asset refurbishment/replacement (as noted in (3) above). Dividends should be set at a level that reflects commercial realities and simulates a competitive market outcome.

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7 Council of Australian Governments.

8 Agreement to Implement the National Competition Policy and Related Reforms, 11 April 1995.

9 tax equivalent regimes.

6. In applying (4) and (5) above, economic regulators (or equivalent) should determine the level of revenue for a water business based on efficient resource pricing and business costs. Specific circumstances may justify transition arrangements to that level.
7. In determining prices, transparency is required in the treatment of community service obligations, contributed assets, the opening value of assets, externalities including resource management costs, and tax equivalent regimes.

A number of terms used require further comment in the context of these guidelines:

- The reference to 'or equivalent' in principles 1 and 6 is included to take account of those jurisdictions where there is no nominated Jurisdictional Regulator for water pricing.
- The phrase 'not including income tax' in principle 5 applies only to organisations which do not pay income tax.
- 'Externalities' in principles 5 and 7 means environmental and natural resource management costs attributable to and incurred by the water business.
- Efficient resource pricing in principle 6 includes the need to use pricing to send the correct economic signals to consumers on the high cost of augmenting water supply systems. Water is often charged for through a two-part tariff arrangement in which there are separate components for access to the infrastructure and for usage. As an augmentation approaches, the usage component will ideally be based on the long-run marginal costs so that the correct pricing signals are sent.
- Efficient business costs in principle 6 are the minimum costs that would be incurred by an organisation in providing a specific service to a specific customer or group of customers, or the minimum amount that would be avoided by not providing the service to the customers or group of customers. Efficient business costs will be less than actual costs if the organisation is not operating as efficiently as possible.

These guidelines establish floor and ceiling levels of revenue. Above the ceiling, the water supplier would earn monopoly rents. Below the floor, the water supplier would not generate sufficient cash to meet commitments (ie would not be financially viable). The guidelines provide no direction as to where the level of revenue should fall between the floor and ceiling. That is left to the discretion of the regulator.

4.2 Proposed regulatory approach

The Commission is fully aware of the need for increased regulatory certainty. A five year price path would provide this. However, as outlined above, a number of problematic issues are associated with the determination of a five year price path at the present time. These include:

1. Lack of legislative clarity in relation to the applicability of the National Electricity Code in the ACT.
2. Lack of legislative clarity in relation to the jurisdiction of IPARC in relation to the National Electricity Code.
3. The outcome of the ACT Government's call for 'expressions of interest' in relation to appropriate opportunities for ACTEW's development as well as the review in relation to the possibility of merging ACTEW and Great Southern Energy.
4. The outcomes of the process currently underway in the ACT in relation to the Government's Statement of Regulatory Intent and its impact on, for example, ACTEW's 'cost of regulation' and 'supplier of last resort' requirements.
5. The impact of the introduction of a Goods and Services Tax on ACTEW's prices
6. Consistency with proposals for benefit sharing, which have yet to be finalised, in the NSW and Victorian jurisdictions.

7. The possibility that the introduction of full retail contestability in the ACT electricity market might be delayed if alignment with developments in other states in this regard is considered to be necessary.
8. The development of ring-fencing guidelines as required of the Jurisdictional Regulator, by the National Electricity Code.

The Commission considers that whilst it is clearly desirable that a five year price path be implemented, there should be some flexibility in the final determination to allow for impending major regulatory developments. As required by the terms of reference, the Commission has determined prices for the five years from 1999/2000 to 2003/2004. However, the Commission is of the view that this final direction should possibly be reviewed at the end of 2000 in the light of business, legislative and regulatory developments in the interim. At the end of 2000, the Commission will consider whether it may seek further terms of reference to reconsider these matters.

5 FORM OF REGULATION

To the greatest extent possible, the Commission has attempted to be consistent in the form of regulation applied to the electricity, water and sewerage operations of ACTEW.

The Commission has adopted an incentive form of regulation, by applying a prospective CPI-X approach.[10] ACTEW has supported this approach[11] which is consistent with the National Electricity Code.[12]

Under this approach, ACTEW is not guaranteed a specific rate of return on its invested capital. Rather, it is encouraged to improve productivity for a given level of outputs (including satisfying service quality and environmental standards). To the extent that it is able to improve its productivity levels at a faster rate than that assumed in the price direction, then it is able to retain the higher returns so earned for a specified period. Conversely, if the improvement in productivity levels is less than that assumed in the price direction, then ACTEW will earn lower returns. This approach would also apply to ACTEW's sales revenues based on, for example, forecast GWh sold and customer numbers. ACTEW would carry the risk of any errors in forecasts, whereby ACTEW would gain (or lose) from increased (or decreased) sales volumes and customer numbers.

5.1 Revenue determination

The Commission has determined to apply prospective CPI related variations to ACTEW's electricity distribution network, water and sewerage revenues. Any differences between prospective CPI and actual CPI in a year will be adjusted for in the following year's revenue.

The process will be:

1. The Commission has received from ACTEW forecast revenue figures for the 1998/99 year based on normal weather conditions. It has also received forecast kWh consumption for ACTEW's electricity franchise area and the number of properties provided with water and sewerage services.
2. On the basis of these figures the Commission has calculated a per unit revenue figure for each of these services. The following table reflects this calculation:

Table 5.1 Unit revenue for 1998/99

Service	Revenue ($m)	Unit	Revenue /Unit
Electricity	84.830	2,311,379 MWh	3.670c/kWh
Water	38.100	119,783 properties	$318.08/property
Sewerage	45.500	116,948 properties	$389.06/property

3. For each service, the allowed revenue per unit in 1999/2000 will be the above figures varied for the forecast CPI[13], plus or minus a factor ('X') reflecting the matters considered under s20 of the IPARC Act and the National Electricity Code.
4. Upon the release of the March quarter 2000 CPI[14] figure by the Australian Bureau of Statistics, a CPI adjustment amount will be calculated. This CPI adjustment factor will

[10] See National Electricity Code, 6.10.5 (a).
[11] Response to IPARC draft price direction, ACTEW Corporation, March 1999, p 53.
[12] See National Electricity Code, 6.10.5 (a).
[13] ACT Government Office of Financial Management forecast.

reflect the difference between the forecast CPI change for 1999/2000 and the actual CPI for the four quarters to March 2000 divided by the actual CPI for the four quarters to March 1999. An example for electricity is shown in the table below.

5. This adjustment amount will be added (or deducted as in the case of the example below) to the allowed unit revenue for 2000/01.
6. This process will then be repeated in each subsequent year.
7. In each case the unit revenues will be applied to ACTEW's forecast MWh sales (in the case of electricity) or property numbers (in the case of water and sewerage) for that year. No adjustments will be made for differences between ACTEW's forecast and actual MWh and property numbers.

Table 5.2 Example calculation: CPI adjustment to electricity revenue for 1999/2000 and 2000/2001

1998/99 Unit Revenue	1999/2000 Forecast CPI	1999/2000 Forecast Unit Revenue* (for tariff setting)	1999/2000 Actual CPI (say)	1999/2000 Unit Revenue Based on Actual CPI*	1999/2000 CPI adjustment	2000/2001 Forecast CPI (say)	2000/2001 Forecast Unit Revenue*	2000/2001 Forecast Unit Revenue after 1999/2000 CPI adjustment (for tariff setting)
3.670 c/kWh	2.5%	3.688 c/kWh	1.5%	3.652 c/kWh	-0.036 c/kWh	3.5%	3.707 c/kWh	3.671 c/kWh

*Includes annual price direction variation of – 2%

Table 5.3 Example calculation: CPI adjustment to electricity revenue for 2001/2002

2000/2001 Actual CPI (say)	2000/2001 Unit Revenue Based on Actual CPI*	2000/2001 CPI adjustment	2001/2002 Forecast CPI (say)	2001/2002 Forecast Unit Revenue*	2001/2002 Forecast Unit Revenue after 2000/2001 CPI adjustment (for tariff setting)
2.8%	3.681 c/kWh	-0.026 c/kWh	1.8%	3.674 c/kWh	3.648 c/kWh

*Includes annual price direction variation of – 2%

It is the Commission's intention that the CPI adjustment for 2003/2004 will be made in 2004/2005 irrespective of the form of regulation prevalent in that year.

5.2 Approach to implementation of incentive regulation

For the purpose of the final price direction, this approach has been implemented as follows. A revenue figure was established for 1999/2000. This was derived from the addition of the various cost components (after efficiency adjustments), including a rate of return, for each of the regulated services. Regard was had for the requirements of the terms of reference. For subsequent years this revenue requirement is adjusted for:

- variations in demand/customer numbers
- the anticipated movement in the consumer price index less an efficiency factor

[14] Australian Bureau of Statistics, *Consumer Price Index*, Canberra, All Groups.

- 'reasonable and well defined regulatory discretion which permits an acceptable balancing'[15] of the interests of stakeholders.

The assumed 1999/2000 cost levels and the efficiency factor to be applied to subsequent years are based on information sourced from ACTEW, the outcomes of the public hearing process, and various consultants plus the Commission's own analysis.

The Commission is cognisant of the need to link the revenue requirement to customer service and environmental standards. Where possible, these need to be measurable and able to be monitored. The Commission has previously requested ACTEW and the ACT Government to suggest appropriate indicators that would be suitable for this purpose. Although the ACT Office of Financial Management has advised that it "anticipates setting performance benchmarks that contained incentives for ACTEW to provide greater efficiency and higher service standards"[16], the Commission has not received a definitive response to its request. However, it is evident from the submissions received and the public hearing process that there is considerable community support for the maintenance of ACTEW's current standards.[17] Accordingly, for the final price direction, the Commission has maintained the assumption it made in the draft price direction that current standards are appropriate over the five year price path to 2004.

The Commission wishes to allow ACTEW an appropriate level of discretion in how a revenue requirement is translated into specific prices. The Commission's ability to do this is constrained by the National Electricity Code and the need for the Commission to comply with the full requirements of the IPARC Act 1997.[18]

The National Electricity Code specifies in some detail the pricing of prescribed distribution services for distribution networks[19]. ACTEW is required to undertake this work for final approval by the Commission. ACTEW's analysis will commence with the outcomes of the Commission's assessment of the aggregate annual revenue requirement.[20]

The Government has implemented a policy on community service obligations, under which ACTEW is reimbursed for the cost (or revenue foregone) of non-commercial activities undertaken at the direction of the Government. An example is pensioner concessions.

Not all social impacts can be addressed in this way. Accordingly, as detailed in section 6.2.5, the Commission has imposed side constraints on the rate of change in prices for particular customer groups. This is permitted under the National Electricity Code 6.14.4 (a). In some circumstances this may result in ACTEW's foregoing revenue, albeit for only a limited time.

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15 See National Electricity Code, 6.10.2 (k).

16 Chief Minister's Department submission in response to draft price direction, 23 March 1999, p 3.

17 See for example; Electronic Mail from Mr David Wade 25 March 1999; ACT Council of Social Service submission to the IPARC draft price direction March 1999, p 2; Mr John Robertson, Director GBE Management Branch, ACT Chief Minister's Department at, Transcript of Public Hearings, 23 March 1999, p 38.

18 eg IPARC Act, 1997, S(20)(2)(g) and the Terms of Reference 2 (g).

19 National Electricity Code, Part E- Distribution Network Pricing and Schedule 6.6- Categories of Distribution Network Cost.

20 ibid, 6.12.

5.3 Ability to charge a different price

Prices determined under the National Electricity Code *are the maximum prices which a Network Service Provider is entitled to charge.* In addition, *if a Network Service Provider agrees to provide another Code Participant with prescribed distribution services to higher standards…. the prices payable…. are to be those agreed between the Network Service Provider and the relevant Code Participant.*[21]

Under S20.(4) of the IPARC Act 1997, the Commission may specify a maximum price, but other options are available (eg a price, or a maximum price and a minimum price). Under the IPARC Act, a service provider may agree a different price based on higher standards.

The Commission determines that ACTEW may in circumstances where the quality of the service sought by the customer is higher than that generally available, charge a price different to that set out in or calculated in accordance with the Price Direction subject to that price being agreed to by the customer in question.

However, the Commission wishes to ensure that both ACTEW and customers have some degree of certainty as to the circumstances in which ACTEW may seek to obtain a customer's agreement to pay higher price. Therefore, it is required that ACTEW specify its quality of service to the satisfaction of the Commission prior to the implementation of such pricing.

5.4 Price resets

The terms of reference for this investigation require the Commission to review and report on "the principles that should apply for any price reset at the end of the period of the initial and subsequent price paths".[22]

In practical terms, there are two sets of issues for the Commission to address:

- the transition between current revenue and price levels and the post–1999 revenue caps
- the rules for benefit sharing within the regulatory control period, 1999-2004, and beyond.

5.4.1 Benefit sharing

The Office of the Regulator-General (ORG), Victoria, has released a series of discussion papers on aspects of the proposed Victorian approach to price regulation of electricity services from 2001. More papers are to follow. The Victorian Government has determined the prices to apply prior to that period.

In releasing these papers the Office has established a number of principles.[23] In relation to 'no retrospectivity' the Office has stated:

> … the distribution licensees should be able to retain all the profits earned within each review period by out-performing the relevant benchmarks. That is, there will be no retrospective adjustments to 'claw back' the benefits of out performance of the regulatory benchmarks achieved within each regulatory period.

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21 ibid, 6.14.6.

22 Australian Capital Territory, *Reference for Investigation under Section 15 and Specified Requirements in relation to Investigation under Section 16.*

23 Office of the Regulator-General, Victoria, *2001 electricity distribution price review finalising the framework,* December 1998, p 12.

> Future prices will be set irrespective of the different potential sources of out performance, or additional returns. In other words, profit variations in the past regulatory period arising from windfall events, from misjudgments in the cost and revenue forecasts which underpinned the original benchmarks, and from management induced efficiency gains, will all be retained by the licensees.
>
> The only circumstances under which there would be grounds for departing from the principle of no retrospectivity are those described in clause 6.3.1 of the Tariff Order. This clause affirms the right of the Office to reopen a price review if it emerges that a determination had been made on the basis of information given or representations made which were misleading, or if there has been a material error of fact, or if a distribution licensee is materially affected by an event beyond its control which was not contemplated at the time of the review.

The Commission endorses this principle proposed by the Office of the Regulator-General. The ACT Office of Financial Management has in turn endorsed this approach to benefit sharing outlined.[24] ACTEW has requested that the Commission specifically endorse these principles in its final direction.[25]

The Commission is concerned that the National Electricity Code may be more restrictive in listing events that may trigger a revocation of a price direction.

The National Electricity Code states that:

> … the Jurisdictional Regulator may revoke a determination during a regulatory control period only where it appears to the Jurisdictional Regulator that:
>
> (1) the determination was set on the basis of false or materially misleading information provided to the Jurisdictional Regulator; or
> (2) there was a material error in the setting of the determination and the prior written consent of parties affected by any proposed subsequent reopening of the determination has been obtained by the Jurisdictional Regulator.[26]

There are also practical limitations to the operation of Clause 6.10.5 (e) (2) quoted above. If there was a material error in the setting of a determination, the Commission would be required to have the written consent of all ACTEW's customers to reopen the determination. Given the number of customers of ACTEW, and the associated time delays of such action, this clause appears to rule out, in any practical sense, the revocation of a determination under these circumstances.

The principles set out below reflect the Commission's current views in respect of the most appropriate regulatory approach to "benefit sharing". These views do not pre-empt or fetter the future exercise of regulatory powers under the IPARC Act and or National Electricity Code. Future regulatory decisions will be based upon the information available to the Commission at that time and the legal framework in which those future decisions are made.

Sharing the benefits of efficiency gains

The matter of benefit sharing is the key to providing on going incentives to ACTEW to seek continuous improvement. The issues are:

- How to assess the level of out performance (or under-performance)?
- What proportion of gains / losses should be shared with customers?

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[24] Chief Minister's Department submission in response to draft price direction, 23 March 1999.
[25] Response to IPARC draft price direction, ACTEW Corporation, March 1999, p 52.
[26] ibid, 6.10.5 (e).

- When should gains/losses be shared with customers?

In examining these issues, the Commission's aim is to minimise the regulatory uncertainty faced by ACTEW. However, the Commission is also mindful that the Commission of today should not bind or limit the discretion of the Commission of the future.

In section 6, this report sets out the assumptions underlying the final price direction, including assumed revenue and expenditure levels. The actual results are compared with these outcomes to measure the extent of out performance or under-performance.

The Office of the Regulator-General, Victoria has drawn a distinction between[27] variations in costs and revenues due to the efficiency enhancing actions of management (controllable gains) and those due to variables largely determined by factors outside the licensee, such as demand growth or changes in market interest rates (windfall gains). The Office has suggested that incentives for pursuing continuous efficiency improvements could be strengthened by allowing licensees to retain the benefits of controllable efficiencies achieved during the current regulatory control period and to phase these out in the next period. It also takes the view that windfall gains and losses from the current period could be passed through to customers at the beginning of the next regulatory period without any sacrifice of incentive to pursue controllable efficiencies.

The arguments for differentiating controllable gains (and losses) from windfall gains (and losses) stem from the desire to provide incentives for the service provider to seek continuous improvement, while at the same time, not allowing the service provider to retain (suffer) gains (losses) outside its control beyond the current regulatory control period. The adoption of such an approach reduces the risks borne by the regulated entity. This approach must be reflected in the allowed return.

However, such distinctions may require substantial analysis and generate an excessive workload. A key consideration in the form of regulation adopted is the cost of regulation, and the effort required by the regulator to undertake such an analysis.

With this in mind, the Office has analysed the various revenue and expenditure components of a service provider in order to test the Office's ability to differentiate between controllable and windfall gains (and losses).[28] The Office has formed a preliminary view that "simple, practicable, cost-effective methods are available for distinguishing between the controllable and uncontrollable components of the licensees' financial out performance (or under-performance) against the regulatory benchmarks".[29]

For this reason, the Office has proposed simplifying the analysis by making clear distinctions between various items on the basis of their likelihood of falling into the controllable or windfall categories. The Office has proposed initial working assumptions that:[30]

- ❖ variations between forecast and actual revenues and debt service costs would be assumed to be exogenous to the licensee and be adjusted for at the beginning of each review period;

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27 ibid, p 13.

28 Office of the Regulator-General, Victoria, consultation paper no. 2, *2001 electricity distribution price review, efficiency measurement and benefit sharing*, December 1998, p 20.

29 ibid, p 31.

30 ibid, p 31.

- variations between forecast and actual operation and maintenance expenditures would be assumed to result from efficiency gains and be carried forward into the next review period; and
- variations between forecast and actual capital expenditures would be assumed to result from underspending or deferrals and (in the absence of evidence that they represent capital efficiencies) be adjusted for at the beginning of each review period.

The Office has recognised that capital expenditure warrants additional study "in order to be sufficiently satisfied that any underspending represents capital efficiencies, which should be carried forward and phased down during the next regulatory period".[31]

At the time of the draft price direction, it was anticipated that the Office would have finalised its position[32] prior to the release of this final price direction. However, this has not eventuated.

OFWAT, the United Kingdom water industry regulator, currently operates a benefit-sharing scheme. Preceding its 1999 review, it has expressed the following opinion:[33]

> Those companies that become efficient quickly should enhance shareholder value more than those that are slow to improve their performance, even though they will pass on these benefits at a subsequent price review. However, there is a business case for allowing the best companies, and those which have out-performed the Director's assumptions, to retain the benefits beyond the price review. Conversely, those that under-perform should continue to be penalised. There is also a business case for making such adjustments asymmetrically, so that the penalty for an under-performing company is greater than the benefits to those that over-perform.
>
> Such an adjustment would be to the benefit of customers, who have a crucial interest in companies achieving cost reductions that can lead to lower prices for them at subsequent price reviews.

By making adjustments asymmetrically, OFWAT proposes to increase the incentive for under-performing companies to at least reduce the extent of such under-performance.

The NSW price regulator, IPART, has released a discussion paper covering similar issues.[34] The paper calls for public comment. IPART is now due to report to the NSW Premier in late May 1999.

The IPART paper supports a glide path (phasing down) approach to benefit sharing but without a distinction between management-induced efficiency gains and windfall gains and losses. This is primarily based on the premise that making such a distinction has the disadvantages of:[35]

- greater risk of micro-management
- information requirements and complexity in application
- greater scope for gaming
- possibility of asymmetrical application.

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31 ibid, p 31.

32 Ibid, p 31.

33 OFWAT, 1999 Periodic Review, *Prospects for Prices*, a consultation paper on strategic issues affecting future water bills, p 49.

34 IPART, R*egulation of Electricity Network Services Providers, Incentives and Principles for Regulation, January 1999.*

35 Ibid, p 28.

A principal advantage cited by IPART for its approach is the reduced risk of price and revenue shocks. This is tempered by the recognition that such an approach may extend revenue/cost dislocation.

The IPART paper leaves open the question of the shape of the glide path (phase down). This may introduce greater uncertainty for the service provider. Such uncertainty could be reduced if the regulator indicated that any glide path introduced for the adjustment of gains and losses will provide a given percentage (or percentage range) of the NPV[36] of full retention of the out performance (or under-performance) for the following period.[37] In its response to the draft price direction ACTEW states that:

> … there must be a specific set of criteria covering implementation of a glide path, in order to minimise regulatory risk and uncertainty. Reset principles are less meaningful if the regulator maintains full discretion over the length of any glide path adjustments. ACTEW would expect that that any gains from operational efficiency should be phased out over the entire regulatory period. Similar demonstrated gains from capital 'efficiencies' should be phased out over the entire period.[38]

The Commission sees merit in the various approaches proposed by the other regulators. It is desirable that there be consistency of approach by the ACT, Victoria and NSW. However, in the absence of definitive views from the other jurisdictions, the Commission intends to build on the procedure that was outlined in the draft price direction for public comment.

Subject to the conditions of the IPARC Act 1997 and the National Electricity Code, it is not intended to make adjustments within a regulatory control period for gains and losses incurred within that period. IPARC considers that it would be appropriate for gains and losses to be phased out according to a glide path over the following regulatory control period. It is not intended that the service provider be disadvantaged by the approach adopted to phasing out gains or losses, however, a key concern is the impact on customers. Therefore, it is possible that there may be certain types of gains and losses which will need to be adjusted for by different means.

The Commission considers a straight line glide path[39] to be the most appropriate mechanism for sharing benefits. Subject to the caveats below, the Commission proposes that a straight line glide path be adopted in the future too, because it provides appropriate incentives and reduces the impact of price shocks on customers.

The Commission wishes to emphasise the comments made by IPART that:[40]

- ***the current Commission cannot pre-empt the decisions of a future Commission, nor fetter the discretion of a future Commission***
- ***regulatory decisions taken in 2004 will need to be based on the information placed before the Commission in the course of that review.***

Adjustment for CPI differences will be made immediately at the commencement of the following year.

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36 Net Present Value.

37 For example, a one-off (P_0) adjustment of all differences provides 0% retention. No phase-out until the following period would provide 100% retention. A straight line glide path would provide for retention of >50% of the performance gap.

38 Response to IPARC draft price direction, ACTEW Corporation, March 1999, p 52.

39 The straight line glide path will be determined such that the net present value of the glide path is equivalent to a one-off (P_0) adjustment at the end of the regulatory period.

40 ibid, p 30.

Capital expenditure

As detailed in Section 6.1.1, the final price direction is based on ACTEW's projected capital expenditure (as varied by the Commission) over the regulatory period. At the end of the regulatory period the Commission will compare ACTEW's actual capital expenditure with that allowed for in the price direction. ACTEW's allowed electricity, water and sewerage revenues will then be revised in line with actual capital expenditure.

The Commission's intention is to provide ACTEW with an incentive to better manage its capital expenditure. ACTEW will thus be able to benefit from savings in its forecast capital expenditure by retaining the equivalent revenue for a time.

Goods and services tax

ACTEW has raised the valid point that the price direction may need to be reconsidered if a Goods and Services Tax (GST) is introduced. The introduction of such a tax could impact on ACTEW's input costs and be an addition to the charges set by the Commission for electricity, water and sewerage services.

The National Electricity Code does not appear to allow for an external shock such as the introduction of a GST, the impact of which is unknown at this time. Of course, general conditions could be included in the Commission's price direction to cover such contingencies. In the absence of specific details, final impacts are uncertain. This can be contrasted with the Victorian Tariff Order which provides for a situation when "a distribution licensee is materially affected by an event beyond its control which was not contemplated at the time of the review".

In its draft price direction, the Commission proposes allowing ACTEW to adjust prices for the net impact of the introduction of a Goods and Services Tax and any changes in other taxes (including any change in the statutory rate for corporate tax). The calculation of the net impact would be subject to independent audit and approval by the Commission.

ACTEW has advised that it is satisfied with the Commission's approach, but would be prepared to accept an arrangement with the Commission for pass through of GST changes, with the Commission approving the process of implementation.[41]

The impact of GST on ACTEW's prices is one of the matters that the Commission may review at the end of 2000 as proposed in section 4.2. In the interim, the Commission will adopt the approach it proposes in the draft price direction.

Upon the introduction of a Goods and Services Tax ACTEW may adjust prices by an amount calculated to reflect the **net** effect of the introduction of taxation reforms associated with and including the Goods and Services Tax where the amount of the adjustment has been verified by an independent auditor

5.4.2 Transition from current regulatory control period

To date, the Commission has issued two single year price directions for ACTEW. ACTEW anticipates that significant cost reductions will be achieved for the 1998/99 year without any deterioration in service standards. These cost reductions are greater than those provided for in the 1998/99 price direction.

[41] Response to IPARC draft price direction, ACTEW Corporation, March 1999, p 56.

Consistent with the approach outlined above, there will be no retrospective adjustment (clawback) for ACTEW's out performance in 1998/99. An additional issue is whether ACTEW should be entitled to retain the benefits of any 1998/99 out performance over the regulatory control period 1999-2004 by allowing returns greater than the cost of capital over that period.

The Commission's assumptions in relation to ACTEW's future performance are not contingent on ACTEW's performance to date. Accordingly, the Commission does not intend to make any special allowance in the 1999-2004 regulatory control period for claimed out performance in 1998/99. This should not be seen as setting a precedent for future regulatory control periods, but merely as a reflection of the transition (and associated social impacts) from past pricing arrangements and the level of price adjustments already provided for over the 1999-2004 period.

To date, ACTEW's network revenue has been regulated on the basis of a network revenue cap formula[42]. Accordingly, for the transition to the next regulatory period, ACTEW's unit revenue in 1998/99 has been derived using ACTEW's customer classes as at 30 June 1998/99.

5.5 TUOS charges

Transmission use of system (TUOS) charges fall outside the control of ACTEW. TUOS charges are levied on ACTEW by TransGrid. They are added to ACTEW's revenue cap as a pass through cost. As a pass through cost, TUOS charges fall outside the annual CPI-X adjustment mechanism. While this limits ACTEW's overall revenue excluding TUOS, it does not place any limits on the tariffs ACTEW may impose. As such, ACTEW is not limited in how TUOS charges are recovered from customers. But ACTEW's final tariff schedules are subject to approval by the Commission.

The National Electricity Code Administrator (NECA) is currently undertaking a review of transmission and distribution network pricing as required by clause 6.1.6 of the National Electricity Code[43]. These requirements are contained in Parts C (transmission pricing) and E (distribution pricing) of Chapter 6 of the Code.

The level of TUOS charges that ACTEW is required to pass through to customers may be affected by the transmission pricing regime eventually adopted. As TUOS charges are a pass through cost, any changes to Part C of Chapter 6 of the National Electricity Code may result in changes to ACTEW's tariffs.

ACTEW has expressed its satisfaction with this arrangement.[44]

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42 Investigation into ACTEW's Electricity, Water & Sewerage Charges for 1998/99, Draft Price Direction, March 1998 p 43.

43 A draft report entitled, *Transmission and Distribution Pricing Review, Draft Executive Summary*, March 1999.

44 Response to IPARC draft price direction, ACTEW Corporation, March 1999, p 20.

6 REQUIREMENTS UNDER SECTION 20, IPARC ACT

Under s20 of the IPARC Act 1997, in giving a price direction the Commission shall have regard to a number of matters. These have been grouped under four main headings. The following discussion indicates the regard which the Commission has had regard to them.[45]

6.1 Costs and efficiencies

* *the need for greater efficiency in the supply of regulated services to reduce costs to consumers and taxpayers (s20(c))*
* *the cost of providing the regulated service (s20(e))*
* *any arrangements that a person providing regulated services has entered into for the exercise of its functions by some other person (s20(k))*

The following information was used as a basis for assessing ACTEW's efficiency levels and the opportunity for additional productivity gains.

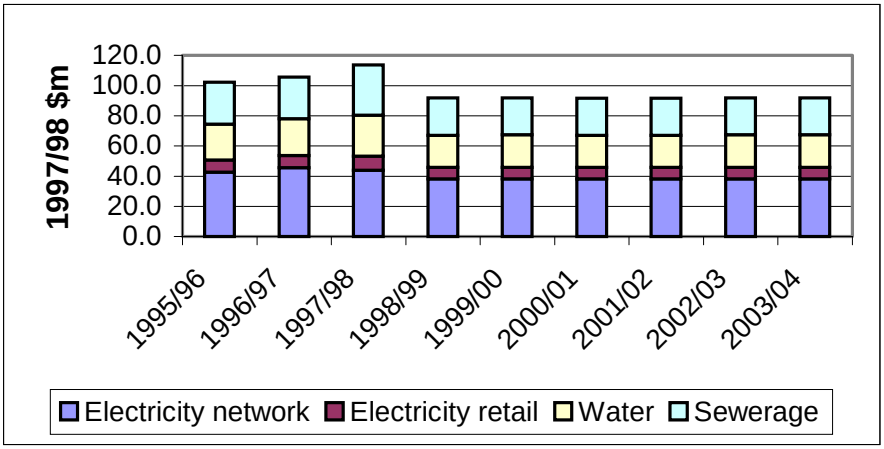
- For the purpose of previous price directions, the Commission reviewed ACTEW's cost levels for each of the regulated services. The information sources were ACTEW, the Commission's own analysis, work undertaken interstate and a consultant's report commissioned by the ACT Auditor-General.
- ACTEW has provided the Commission with updated forward estimates of its expenditure for each of the regulated services.
- The estimates of capital expenditure were reviewed by a consultant engaged by ACTEW and agreed to by the Commission.
- ACTEW has provided the Commission with a summary of the latest review of its electricity operating costs which was undertaken by an external consultant. This review draws conclusions concerning ACTEW's performance based on comparisons with other electricity network operators. This complements a study by the same consultant completed in 1997 for electricity, water and sewerage services and provided to the Commission in late 1998.
- ACTEW has provided the Commission with estimates of the depreciated optimised replacement cost (DORC) of its assets for the regulated water, sewerage and electricity services. The approach adopted has been assessed by consultants engaged by ACTEW, and the outcomes adjusted accordingly.
- ACTEW has provided the Commission with the audited workings for the application of the recoverable amount test to its asset values.
- The Commission has independently derived what it considers to be an appropriate rate of return for ACTEW's regulated services. This has been compared with ACTEW's own assessment.
- ACTEW has provided the Commission with a consultant's review of the appropriateness of the allocation of revenues and costs to regulated and non-regulated services.

[45] IPART Act 1997, s20 (3).

6.1.1 Operating expense

The following graph compares ACTEW's past operating expenses with its projections to 2004.

Figure 6.1 Trend in operating expenses (1997/98 $m)

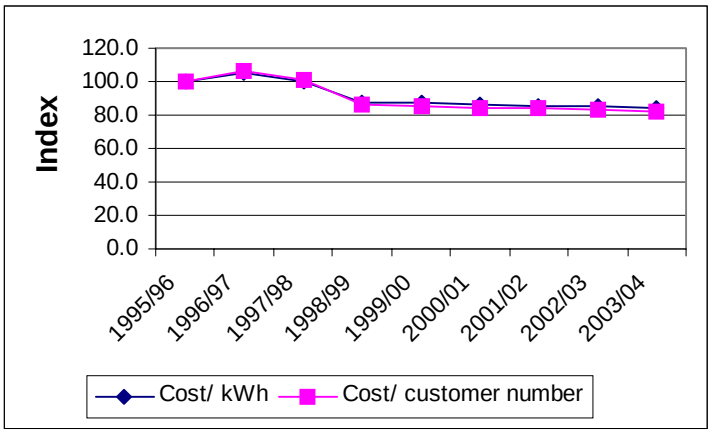


In its submission to the Commission, ACTEW is projecting no change in real terms to its operating expense over the period 1998/99 to 2003/04. However, this was varied by ACTEW's Chief Executive at the public hearing[46]. This follows an anticipated fall in expense in 1998/99 after real increases in the preceding two years.

Electricity network

Movements in real costs per number of customers and physical units sold (kWh) are illustrated below:

Figure 6.2 Index of electricity network real cost movements



The efficiency of use of ACTEW's electricity network may be gauged by the partial productivity measures of real costs per kWh and real costs per customer numbers. This shows a substantial improvement in 1998/99 of around 13 percent. The rate of improvement is not sustained in subsequent years.

[46] Mr John Mackay, Chief Executive Officer of ACTEW, Independent Pricing and Regulatory Commission, Public Hearings on ACTEW, Transcripts, p 17

ACTEW has provided the Commission with a summary of a consultant's benchmarking study for ACTEW's electricity distribution activities. An initial high level study covering the entire electricity network business was completed in late 1997. A more focussed but less comprehensive study was undertaken in 1998. The later study excluded such activities as sub-transmission and meter installation, maintenance, reading and management. Both studies were based on pre 1998/99 data. The Commission's reading of the outcomes is:

- ACTEW provides distribution services at a high service level and high cost.
- ACTEW's electricity network costs are 39 percent higher than the Australian average after normalising for factors such as customer density, wage differentials and the impact of backyard reticulation. (This implies a significant gap compared with those network providers that are more efficient than the average, and compares with ACTEW's forecast 13 percent reduction in network costs anticipated for 1998/99 and constant real total operating costs thereafter.)
- After collecting data for the consultant's report, ACTEW reduced its staff numbers by 15 percent and has introduced substantial initiatives to reduce fleet and property costs.
- The opportunity for productivity improvements lies with the redesign of operational practices, process structures and organisational structures. To achieve cost savings, ACTEW should look beyond a reduction in staff numbers.
- The consultant is of the view that ACTEW's service (reliability) levels are too high to be cost efficient. The consultant has noted that political imperatives may limit ACTEW's ability to reduce its service levels.

There is a trade off between cost and service levels. ACTEW proposes substantial reductions in cost in 1998/99. The long term implication for service levels is unclear.

In applying the recoverable amount test to the value of its electricity network assets[47], ACTEW has provided for productivity gains of 6 percent a year in operating expenses in the period 1998/99 to 2003/04 and 2 percent a year thereafter. Substantial productivity improvements are anticipated in 1998/99. However, there is still a significant difference between ACTEW's current operating expense projections and forecasts of the amount recoverable for its electricity network assets, as published in the 1997/98 annual report.

There is also a gap between ACTEW's cost levels and those of the most efficient distributors. This outcome is consistent with the Commission's analysis for prior years price directions.

On the balance of information received, it is the Commission's judgement that ACTEW's forecast cost levels are conservative. In its draft price direction, the Commission requested ACTEW to provide better information on the relationship between service levels and costs. The Commission also set ACTEW a target of a real productivity improvement of 4 percent per year over the regulatory control period. When an allowance is made for ACTEW's forecast customer growth of about 1.12 percent, this implies a real reduction of 5.12 percent per annum.

During the public hearing process ACTEW argued that it would be unable to achieve the proposed efficiency targets. Instead, ACTEW has proposed productivity improvements of 5 percent in 1999/2000 and a further 5 percent in aggregate over the remaining four years of

[47] Refer ACTEW's 1997/98 Annual Report, p 58.

the regulatory period (ie a total of about 10 percent).[48] The Commission has considered ACTEW's proposal, and for the final price direction has assumed productivity improvements of 5 percent in 1999/2000 and 3 percent in 2000/2001 to be followed by 2 percent per annum thereafter (ie a total of about 14 percent).

Electricity retail

ACTEW's electricity retail operating costs show a substantial increase in 1997/98 (19 percent real) and are expected to fall by a similar margin in 1998/99. ACTEW has forecast that they will remain at the 1998/99 level (in real terms) over the regulatory control period.

ACTEW's retail functions have changed with the gradual opening of the retail market to competition. The Commission regulates charges for the component that is not subject to competition. On current timetables, all of ACTEW's retail market will be subject to competition from 2001.

The basis for sharing the costs of the retail operations between the regulated and non-regulated components is important. ACTEW has provided a supportive consultant's report on the reasonableness of its cost allocations between regulated and non-regulated operations. However, the Commission notes that while the total number of retail customers not subject to competition has declined, charges to the declining customer base have remained the same.

There is little publicly available information on electricity retail margins.[49] Different states have adopted different bases for the allocation of costs between the network and retail functions (eg costs of metering). ACTEW has proposed that its retail margin in 1999/2000 be $10m based on operating costs of $8m. The Commission has obtained more detail from ACTEW on the costs of its retail operations. In the draft price direction, the Commission determined ACTEW's retail margin as $7.5m and advised that it would be seeking verification from ACTEW as to the validity of its retail operating costs prior to making its final direction.

In response ACTEW has advised that:[50]

> ACTEW's retail costs are just 5.5 percent of total costs. This is the same proportion as found in the UK, after adjusting for the fossil fuel levy[51]. In making comparisons, it should be noted that ACTEW is a multi-utility that does benefit from being able to share retail costs across the water,

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48 Mr John Mackay, Chief Executive Officer of ACTEW, Independent Pricing and Regulatory Commission, Public Hearings on ACTEW, Transcripts, p 17.

49 A report in the *Australian Financial Review*, 2 February 1999, p 48, indicates that the cost of servicing a single customer for an energy utility is about $80 per annum for a single service (either electricity or gas). However, the cost of providing the customer with an additional service (ie both electricity and gas) is an additional $20. Hypothetically, for illustrative purposes, if it is assumed that ACTEW's customers in general take all three of its services (ie electricity, water and sewerage) the total cost of servicing these customers would be $120. The electricity component of this would arguably be about $40. Allowing for the loss of, say, most of its larger electricity customers through competition, ACTEW would be left with a total customer base of about 123,000 (compared with 118,000 domestic customers in 1997/98). The cost of servicing these customers would then be about $4.9m. In its response to the draft price direction (p 8) ACTEW has disagreed with this comparison, arguing that customer billing costs should be determined on the basis of revenue raised because higher revenues are raised from customers requiring more frequent meter reading and billing. But ACTEW's response could also be taken to imply that the cost of sending out a bill is dependent on the face value amount of the bill (ie revenue raised). This is obviously not the case.

50 Response to IPARC draft price direction, ACTEW Corporation, March 1999, p 53.

51 Office of Electricity Regulation, *The Distribution Price Control: Proposals*, August 1994, (para 2.1 p 5).

> sewerage and electricity (franchise) businesses. However, ACTEW is a small utility and disadvantaged relative to other utilities that can reap economies of scale. These larger utilities can spread their retail costs across a larger sales base. In ACTEW's case, approximately half of its retail costs are fixed and relate to information technology and call centre infrastructure.

Based on the available information, the Commission is not persuaded that ACTEW's efficient costs justify a higher retail margin than is proposed in the draft price direction. Accordingly, the Commission has determined ACTEW's retail margin for 1999/2000 as $7.5m. This implies a charge of about $61 per customer. In subsequent years, the Commission determines that the margin should be increased by the CPI[52] until such time as full retail contestability is introduced in the ACT.

A major component of the final price to electricity customers is the wholesale price of electricity. The Commission does not regulate the price charged to retail customers subject to competition. The Commission is concerned to ensure that electricity purchase costs passed through to the remaining (franchise) customers are appropriate.

Unlike distributors in NSW and Victoria, ACTEW has the freedom to purchase electricity in the competitive market on behalf of franchise customers. In NSW, however, the Government has established a vesting contract price for franchise customers that has remained above the competitive market price.

The benefits available to ACTEW's franchise customers depend on the success of ACTEW's purchasing policy. The Commission considers that the best way to provide ACTEW with an incentive to purchase wisely is to let ACTEW retain the benefits if it outperforms the market, and bear the cost if it under performs. In this way, ACTEW's customers are protected from adverse purchasing decisions.

In the draft price direction, the Commission states that to enable this assessment to be made, ACTEW will have to approach the market at the commencement of the regulatory control period. ACTEW will have to obtain indicative competitive bids for the purchase of electricity for franchise customers over suitable contract periods.

ACTEW has since advised the commission of its electricity purchasing requirements for the period from 1999/2000 to 2003/2004.[53]

> It is ACTEW's view that the Commission should allow ACTEW to pass through its purchase price of energy where this price is the outcome of a competitive market process endorsed by the Commission.

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52 Australian Bureau of Statistics, *Consumer Price Index*, Canberra, All Groups. actual CPI for the four quarters to March that year divided by the actual CPI for the four quarters to March of the previous year

53 "…ACTEW already has in place an energy purchase contract covering 1999/2000. This is the third and final year of ACTEW's energy purchase contract with Yallourn Energy. ACTEW has proposed to apply the purchase price of $42 per MWh. … With respect to ACTEW's approach to purchasing energy from 1 July 2000, ACTEW Energy approached five suppliers in September 1998 to bid for ACTEW's energy load (this was later reduced to four suppliers as one failed to meet the bid timetable). … These suppliers bid for ACTEW's franchise customer load, estimated to be at 1400GWh. The contract period was initially set for a one year period commencing 1 July 2000, but was later extended to five years to coincide with the regulatory review period. After an initial review of purchase arrangements by ABN-AMRO, the ACT Government advised ACTEW that only a maximum of 50 percent of the load from 1 July 2000 should be covered by contract to avoid locking in any potential new owner of the Corporation. At this point ACTEW is close to finalising a contract on this basis." (Response to IPARC draft price direction, ACTEW Corporation, March 1999, p 10).

Accordingly, for 1999/2000, the last year of its existing three year contract with Yallourn Energy, the Commission has determined that ACTEW be allowed to pass through its purchase price of $42/MWh.

Having examined the process by which ACTEW entered into its new electricity purchasing agreements, the Commission is satisfied with the appropriateness of ACTEW's approach in respect of the purchasing agreement which it has obtained 50 percent of its load from 2000/2001 to 2004/2005. Accordingly, the Commission has determined to pass through ACTEW's electricity purchasing costs in full for the proportion of the load covered by this new agreement (ie 50 percent) for the period from 2000/2001 to 2003/2004 of the regulatory period.

The Commission will now have to examine the process whereby ACTEW manages the remainder of its exposure from 2000/2001 to 2003/2004. The Commission will need to be satisfied as to the appropriateness of ACTEW's remaining purchases prior to determining a pass through price for the remainder of ACTEW's load. However, given the satisfactory outcome of the above competitive process, and its consistency with the Commission's draft price direction proposal, it is the Commission's intention that this result be used for comparing ACTEW's management of its remaining exposure as well.

ACTEW may be required to act as a retailer of last resort for those customers within the ACT who are unable to contract with an electricity retailer. In such circumstances, ACTEW has requested that prices not be regulated. In its draft price direction the Commission determined that the price paid to ACTEW to operate this facility shall be the retail price quoted prior to the introduction of competition adjusted for CPI plus a 10 percent margin. ACTEW has responded that:

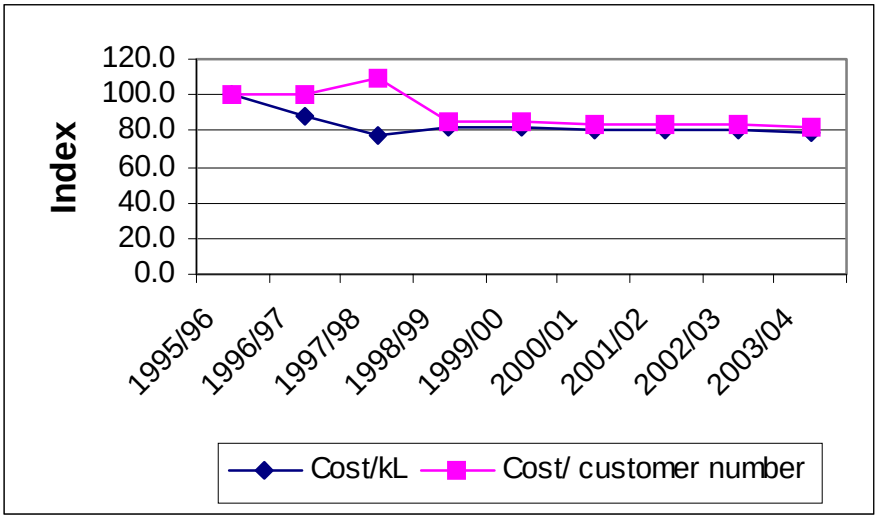
> The ACT Government, as a condition of the ACT's entering the national electricity market, was required to produce a retailer of last resort Code. This Code places local distributors (ACTEW and Great Southern Energy) under an obligation to provide retail electricity to contestable customers whose retailer of choice is unable to supply them (for example, because of the loss of their retailing licence). The retailer of last resort code also sets out the tariffs that would apply in these situations.

The ACT Office of Financial Management has advised that retailer of last resort pricing (in terms of obligation to supply) is being deferred for consideration by the ACT's regulatory taskforce until full contestability is introduced in 2001. In the interim, the Commission has determined to maintain the 10 percent margin proposed in the draft price direction.

Water

Movements in real costs per number of customers and physical units sold (kilolitres) are illustrated below.

Figure 6.3 Index of water services: real cost movements



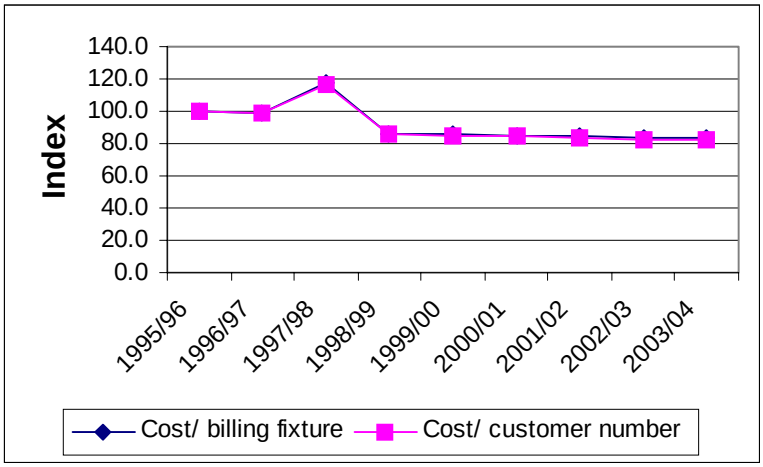
As with electricity, ACTEW has forecast a significant improvement in productivity for its water operations in 1998/99, with little variation thereafter. Real costs per kilolitre sold are forecast to be 18 percent below the 1995/96 level.

The variation between the partial productivity measures in 1997/98 and 1998/99 stems from the fluctuation in water consumption. ACTEW recorded a 25 percent increase in water consumption in 1997/98 due to the drought and high summer temperatures. It has a forecast a reduction of a similar size in 1998/99. Future years' water consumption is assumed to increase broadly in line with growth in customer numbers.

Sewerage

The following graph illustrates movement in real costs per number of customers and per billing fixture.

Figure 6.4 Index of sewerage services real cost movements



As with electricity and water, ACTEW's sewerage operations show an increasing trend in costs after 1995/96 with a sharp decline in 1998/99. Costs for 1998/99 are about 15 percent lower than for 1995/96.

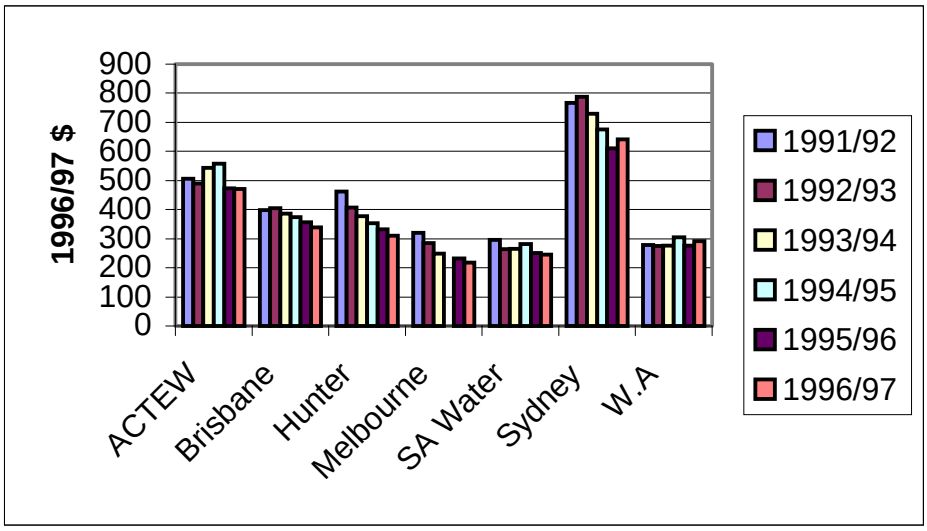
The increase in costs per customer number (and billing unit) in 1997/98 presumably reflects an increase in the volume of sewerage processed. In its draft price direction, the Commission infers from this that a significant component of the extra drought induced water sold by ACTEW in that year ended up in the sewer. The Commission advises that if the additional water was used outdoors (ie on gardens), further explanation is required. ACTEW has not responded to this query. However, the Master Plumbers', Drainers' and Gasfitters' Association of the ACT has responded to the draft price direction and has advised as follows:[54]

> The Association questions the correlation between water use and the cost of providing sewerage services as explained on page 21 and 22 of the draft outline. This matter requires further clarification for the following reasons:
>
> - Excess water use in dry periods to a large extent relates to use in the garden or for outdoor recreation.
> - It is not expected that persons' ablution and sanitary habits would change dramatically as a result of drier weather.
> - This may have something to do with the cross connections to the sewer.

Combined water and sewerage

The following statistics from the Water Services Association of Australia compare the cost of ACTEW's water and sewerage operations with other service providers for the period 1991/92 to 1996/97.

Figure 6.5 Comparative water & sewerage operating costs per property



Source: The Water Services Association of Australia, WSAA Facts '97, p 81.

It should be noted that the Water Services Association has qualified the use of cross business analysis using this data because of different operating conditions and discharge standards in each state. For example, ACTEW treats 100 percent of its sewage to tertiary standard, which

[54] Submission to IPARC regarding ACTEW's Water & Sewerage Charges, 1999/2000 to 2003/2004, p 9.

is higher than elsewhere. The Water Services Association has suggested that the trend line is of most importance.

While ACTEW recorded only a modest reduction in costs over the five years to 1996/97, a substantial reduction, as described above, is anticipated in 1998/99. As with electricity, ACTEW maintains high service standards in the provision of water and sewerage services. Service standards are discussed below.

In absolute terms, ACTEW's water operating costs compare reasonably with the other major water suppliers in Australia. As could be expected, its sewerage treatment costs are higher, because of the higher level of treatment.[55] The exception is Sydney Water, which has both high water and sewerage operating costs.

In applying the recoverable amount test to the value of its water assets in its 1997/98 annual accounts, ACTEW has provided for productivity gains of 2 percent a year in operating expenses in the period 1998/99 to 2003/04, and 1.5 percent a year thereafter. After allowing for the substantial productivity improvements anticipated in 1998/99, ACTEW's operating expense projections for water appear challenging.

In applying the recoverable amount test to the value of its sewerage assets, ACTEW has assumed productivity improvements of 3 percent a year to 2004, and 1.5 percent a year thereafter. Overall, this appears consistent with ACTEW's operating expense forecast provided to the Commission, based on the substantial reduction assumed in 1998/99.

For the purposes of the draft price direction, the Commission accepted ACTEW's forecast operating expenses for water and sewerage for the five years to 2004. However, at the public hearings ACTEW advised that it was now capable of achieving productivity improvements of 5 percent in 1999/2000, to be followed by a further 5 percent in aggregate in the next four years across its business as a whole[56].

The Commission has based its final determination on an initial 5 percent productivity improvement in 1999/2000, with a further a 5 percent improvement in the year following.

6.1.2 Capital expenditure

ACTEW's capital expenditure is a key driver of its cash needs. ACTEW's proposed capital expenditure is shown in Table 6.1:

[55] The Water Services Association of Australia, *WSAA facts '97*, p 83.

[56] Mr John Mackay, Chief Executive Officer of ACTEW, Independent Pricing and Regulatory Commission, Public Hearings on ACTEW, Transcripts, p 17.

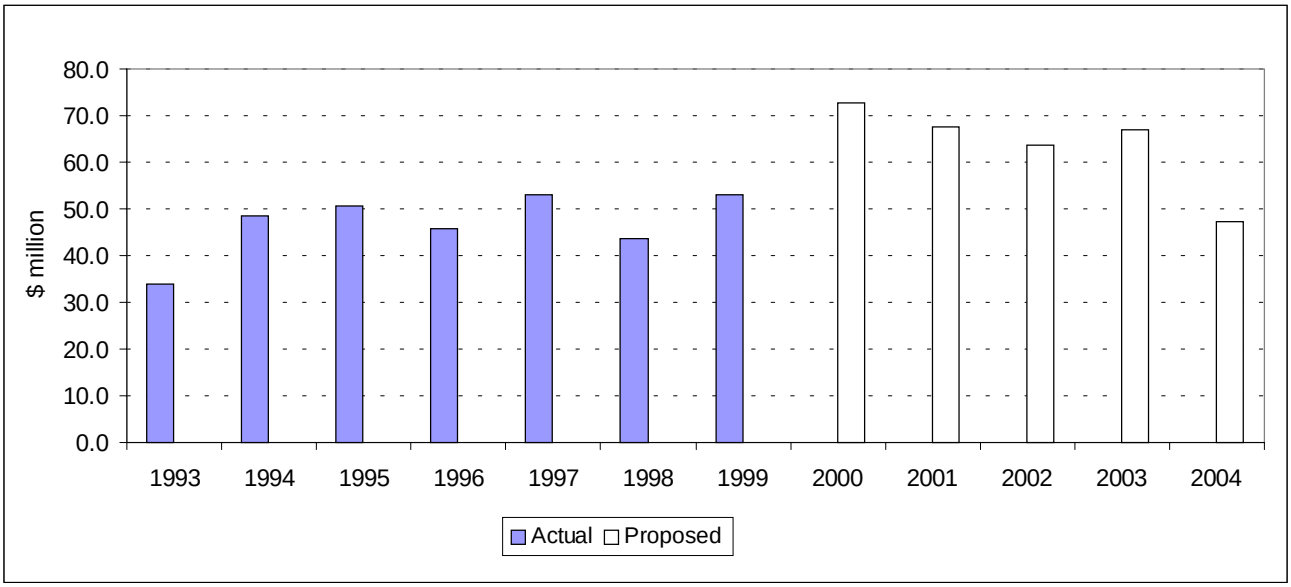
Table 6.1 ACTEW's proposed capital expenditure summary (1997/98 $m)

	1997/98 Actual	1998/99 Budget	1999/00 Budget	2000/01 Budget	2001/02 Budget	2002/03 Budget	2003/04 Budget
Net Capital Expenditure							
Electricity Network	10.0	9.2	10.2	9.9	9.6	16.7	9.7
Water	3.3	4.4	13.9	8.2	13.7	14.7	2.0
Sewerage	6.4	15.9	21.3	18.4	11.1	4.5	6.4
Non infrastructure	13.7	14.8	8.3	8.8	5.6	5.7	5.3
	33.5	44.3	53.8	45.3	40.0	41.5	23.4
Plus gifted assets and contributions							
Electricity Network	5.3	3.2	5.2	5.6	5.6	5.6	5.5
Water	2.3	2.0	5.3	6.1	6.3	6.5	6.3
Sewerage	2.7	3.0	5.2	6.0	6.1	6.3	6.2
	10.3	8.1	15.8	17.6	18.0	18.4	18.0
Total	43.7	52.4	69.5	62.9	58.1	59.9	41.4

Regulation should discourage ACTEW from over investing in the network, (ie gold plating) and, on the other hand, from deferring investment essential to maintaining adequate service standards. The Commission recognises that alternatives to capital expenditure may include increased operating expenditures on maintenance or on demand side management options. There is also the need to recognise the trade offs between capital expenditure, operating expenditure and reliability. In its draft price direction, the Commission acknowledges that ACTEW, rather than itself, is best placed to determine the appropriate mix of operating expenditure to capital expenditure, but requests additional information from ACTEW on how it has taken account of these factors.

The figure below shows ACTEW's actual gross capital expenditure compared with that proposed over the period of the review. It would appear that on average, recent annual expenditure has been significantly less than that forecast for the period ahead.

Figure 6.6 ACTEW's total capital expenditure ($ of the year)



The figure for 1998/99 is as budgeted.

ACTEW has provided the Commission with the results of capital expenditure audits conducted by consultants in February 1998 and December 1998. Following the second audit, the consultants express increased confidence in the recently formulated capital works program. They conclude, “ACTEW has applied processes that can be relied upon to produce a Capex program that effectively projects the capital expenditure requirements of the period covered by the program”.

Of concern to the Commission is the comment made by the consultants on the "quality of economic evaluation completed". The consultants conclude:

> This aspect was generally weak, as in only a few cases had any economic evaluation of the project proposal been undertaken.
>
> The process within ACTEW appears to be to undertake this task when formal approval is being sought to the tender construction phase, and this occurs after the capital works program has been formulated.

This comment appears contrary to the overall conclusion reached by the consultant and raises questions about the degree of confidence the Commission can have in the program provided to it by ACTEW.

Water, sewerage and non-infrastructure projects comprise the major source of variations between the level of ACTEW’s past capital expenditure and that forecast for future periods.

According to ACTEW, the major driver for its water capital expenditure program is compliance. For example, ACTEW proposes to install filtration facilities at Stromlo (in the wake of the recent Sydney Water incidents and more generally to improve water quality) and to upgrade capacity at Googong as back up for the Cotter catchment being off line. The major cost driver for the sewerage capital works program is efficiency. However, that is not necessarily reflected in the projected operating expenditure figures within the regulatory control period. The major outlay in the non-infrastructure capital works is for information systems development, which should also improve future efficiency levels.

In its draft price direction, the Commission concludes that ACTEW has not established a strong link between its capital expenditure program and its operating expenditure. Also, the outcome of the inquiry into the Sydney Water incidents would appear to place greater emphasis on protecting the catchments, rather than installing expensive filtration systems. The Commission concludes that these matters need to be explored further. Prior to the final price direction, the Commission requested that ACTEW provide the Commission with the economic analysis for the major projects in ACTEW’s proposed capital expenditure program. ACTEW has not addressed this issue in its response to the draft price direction or in the public hearings.

On this basis, the Commission has provided for a reduced capital works program over the regulatory control period. During the past five years ACTEW’s total capital expenditure averaged a total of approximately $49m per year. However, its forecast capital expenditure for the next five years averages about $63m per year. This (29 percent) increase in average capital expenditure is evident in the previous figure. ACTEW has yet to provide the Commission with economic justification for the substantial increase in capital expenditure. Accordingly, for the purposes of this final direction, the Commission has maintained its draft price direction assumption of a reduction from the forecast levels of ACTEW’s capital expenditure, of 5 percent across the board.

The following table compares ACTEW's forecast capital expenditure with that allowed by the Commission in the draft price direction:

Table 6.2 Allowed capital expenditure ($1997/98)*

	1999/00	2000/01	2001/02	2002/03	2003/04
ACTEW	69.5	62.9	58.1	59.9	41.4
IPARC	66.1	59.8	55.2	56.9	39.4
Difference	(3.5)	(3.1)	(2.9)	(3.0)	(2.1)

*Including capital contributions.

ACTEW's actual expenditure may vary from these figures. Nevertheless, these figures indicate the allowance for capital expenditure made by the Commission in its final price direction.

6.2 Consumer protection

* *The protection of consumers from abuses of monopoly power in terms of prices, pricing policies (including policies relating to the level or structure of prices for services), and standard of regulated services (s20(a))*
* *Standards of quality, reliability and safety of the regulated services (s20(b))*
* *The social impacts of the decisions (s20(g))*
* *The effect on general price inflation over the medium term (s20(j))*

6.2.1 Monopoly power

ACTEW retains monopoly power for the supply of certain services either through legislation, or because it would be uneconomic for an alternative service provider to duplicate ACTEW's electricity, water and sewerage networks.

Potentially, ACTEW could abuse that monopoly power by:

- earning monopoly rents, ie charging prices that yield a return greater than its cost of capital
- not being efficient in the provision of its services, (lacking the incentives which competition provides)
- providing service levels below those commensurate with its charges
- discriminating between customers through differential charging for equivalent services.

Section 6.3, "Financial viability", examines ACTEW's past and proposed rate of return. ACTEW does not currently earn an excessive rate of return relative to the costs it incurs.

The Commission has reviewed ACTEW's cost projections and established targets for electricity, water and sewerage below those sought by ACTEW. In establishing revenue caps for electricity, water and sewerage, the Commission has discounted ACTEW's cost projections for those efficiency targets.

ACTEW maintains service levels that compare favourably with those of other service providers. Nonetheless, additional work is required to determine the most appropriate

standards, and associated levels of performance. The draft price direction seeks support from ACTEW and the Government as well as from service users.

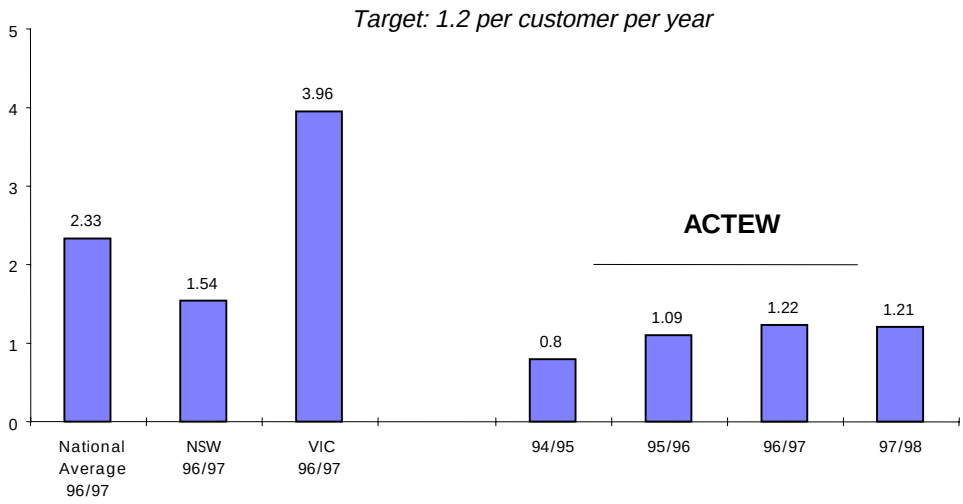
The following is a range of measures of service standards that are already available to the Commission. The electricity measures and associated commentary were supplied by ACTEW. The water and sewerage measures were sourced by the Commission from the Water Services Association of Australia publication, WSAA facts'97.

6.2.2 Electricity service standards

The frequency of outages is about half the Australian average. The length of the outages, when they did occur, was less than half the Australian average.

As shown below, the reliability of electricity supply in the ACT is significantly better than the national average. Over recent years, the average number of outages per customer per year in the ACT has been below or equal to the target of 1.2 per customer. This compares with significantly higher number of outages per customer in Victoria and New South Wales in 1996/97. In this context, the Commission questions whether ACTEW's results have been adjusted for factors such as the smaller size of its franchise area, age of system and regional weather. The Commission also questions whether all ACTEW's customers receive the same level of reliability and, if so, is this appropriate, especially given the consultant's view referred to previously that service (reliability) levels were too high to be cost efficient.

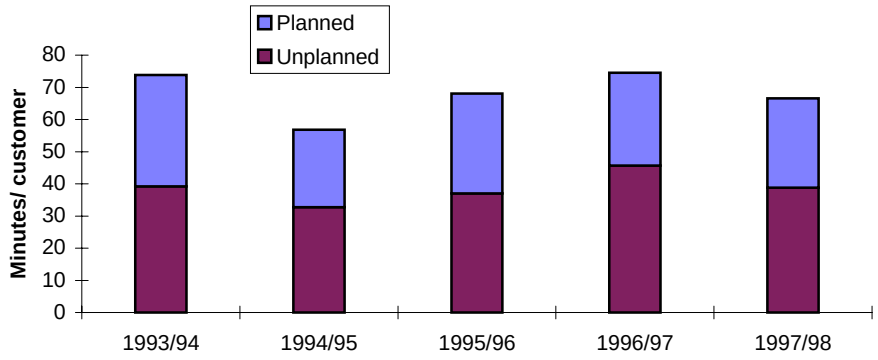
Figure 6.7 Electricity: average number of outages per year



Source: ESAA 1998, *Electricity Australia 1998.*

ACTEW has achieved its target duration of unplanned outages of less than 40 minutes in the majority of recent years.

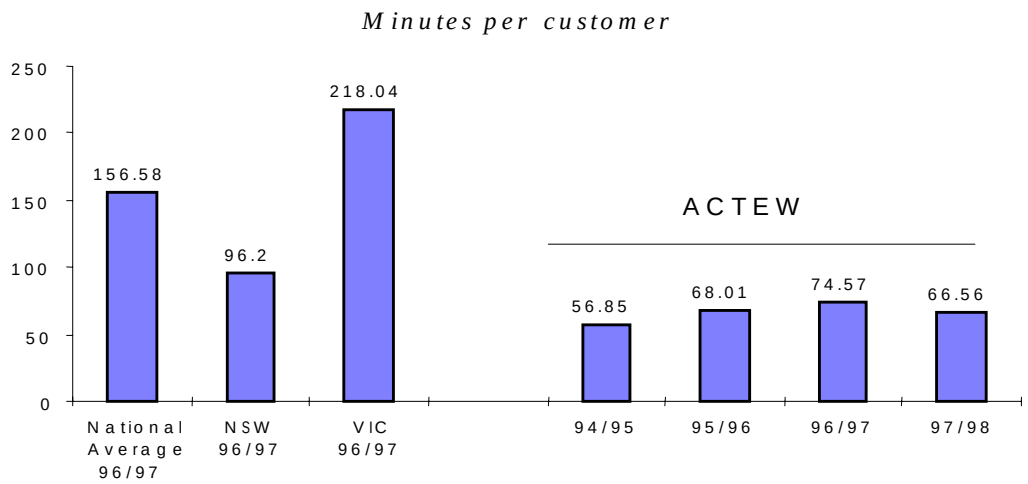
Figure 6.8 Electricity outages: average duration



Source: ACTEW Annual Report 1997/98.

ACTEW's average outage duration is also significantly below the national average. In particular, ACTEW's 1996/97 average duration of 74.6 minutes is particularly low compared to the figure for Victoria of 218 minutes.

Figure 6.9 Electricity: average number of outages per customer year



Sources: ACTEW Annual Report 1997/98; ESAA 1998, *Electricity Australia 1998*.

6.2.3 Water and sewerage service standards

As with electricity, ACTEW has achieved high delivery service standards for its water and sewerage operations. The interruption frequency for sewerage operations is high (ACTEW claims this is because of the greater number of trees per property and the associated tree root problem). Nevertheless, ACTEW achieves 100 percent restoration of services within five hours. This compares favourably with the other service providers.

Table 6.3 Water and sewerage service standards

	ACTEW	City West	Yarra Valley	Sydney	Hunter
Water					
Interruption frequency/ '000 properties	76.02	580.85	551.04	98.00	264.37
Average duration of interruptions hours	2.10	3.20	1.85	5.50	4.00
Restoration of service within 5 hours (%)	99.50	96.20	98.20	99.48	89.40
Sewerage					
Interruption frequency/ '000 properties	63.75	12.07	3.58	0.71	12.93
Average duration of interruptions hours	1.00	2.83	1.25	2.16	2.50
Restoration of service within 5 hours (%)	100.00	100.00	99.00	94.30	97.00

Source: Water Services Association of Australia, WSAA facts'97, p 58

It is difficult for the Commission to establish whether these service standards are reasonable, and whether customers are prepared to pay a premium price for a premium service. In its draft price direction, the Commission invites comments from customers on these issues. The Commission advises that it will ask ACTEW to provide customer satisfaction surveys for the purpose of establishing future price directions. Most responses received to date indicate that stakeholders believe ACTEW's levels of service are appropriate.[57] However, the Property Owners Association contends that ACTEW customers are not prepared to pay "premium prices" for services which can be provided at a significantly lesser cost.[58]

6.2.4 Price discrimination

The Commission seeks to ensure that ACTEW's pricing policy does not disadvantage one group of customers relative to others. In the draft price direction, the Commission has given ACTEW freedom to set prices within an overall revenue cap for each service. However, the Commission requires ACTEW to provide it with a detailed pricing schedule that matches these revenue caps, and requires ACTEW to demonstrate that no individual customer group is disadvantaged.

Where one customer group currently pays lower prices for a given service relative to others, then the Commission may establish side constraints to ensure that there is no price shock. Thus, the Commission must regard any price increase as reasonable.

Examples of where one group of customers may be paying lower prices for a given service are:

- Low water users. ACTEW currently has an inclining block tariff for water usage charges. The unit price for the first block, up to 300 kilolitres a year, is very low relative to that charged for higher consumption levels. This is justified on the basis that a minimum level of water consumption is essential for public health (ie non-discretionary use) while imposing higher per kilolitre charges for higher consumption will discourage wasteful water use. However, non-discretionary water use varies with size of household. Thus, any average figure selected for non-discretionary water use may discriminate against large families and may reduce the incentive for appropriate water use by smaller families.

[57] See Conservation Council of the South-East Region and Canberra submission, 7 April 1999. Making submissions for Edwards Valley Plumbing, and the Master Drainers and Gasfitters Association of the ACT, Mr Robert Edwards maintains that ACTEW's current service levels are actually inadequate (letter dated 6 November 1998 and submission, p 3.

[58] Submission from Property Owners Association of the ACT Inc, p 1.

- Charges for sewerage services tied to number of fixtures. There may be no direct relationship between the volume of sewage treated and the number of fixtures. For example, such a charge may discriminate against the accommodation industry.
- Residential electricity users benefit from lower electricity charges for the same level of services received by other electricity consumers. ACTEW seeks to introduce greater increases for residential customers. The Commission is concerned how ACTEW calculates any imbalance in charges and how it sets the rate of increase for any particular customer group. The Commission is concerned that there may be adverse social impacts.

In its draft price direction, the Commission seeks input from community groups on any adverse social impacts that may arise through increases in charges. It also seeks to ascertain acceptable increases in charges. In its submission, the ACT Council of Social Services (ACTCOSS) recognises there is an "economic argument for an increase in the price of water and sewerage". ACTCOSS recommends that "there be a transition period of at least twelve months during which water supply cannot be restricted due to failure to pay". ACTCOSS believes "significant attention should be given to the development of appropriate repayment schedules for low income earners".[59]

In this context the Commission notes that ACTCOSS has advised it will pursue the issue of community service obligations with the ACT Government. The Commission wishes to bring to the Government's attention, the ACT Council of Social Services' concern regarding appropriate support for those low income earners who are adversely affected by the price increases proposed in this direction.

The Commission has sought to minimise the impact of price increases by applying side constraints on price increases as detailed below.

6.2.5 Side constraints

The purpose of establishing side constraints on the price increases that ACTEW may introduce in any given year, is to minimise the impact of increases on customers as well as to protect customers from any abuse of monopoly power.

Domestic electricity prices

Subject to the retail margin cap, ACTEW has proposed that for 1999/2000 no single household bill (for the same level and pattern of consumption of electricity) will increase by more than the greater of $2.41 per month or 3.2 percent in real terms. If it is assumed that inflation will be of the order of 2.5 percent, the increase will be approximately 5.8 percent in nominal terms.

The ESAA[60] has estimated that ACTEW's domestic electricity charge in 1998/99 is 9.25c/kWh at a total annual consumption level of 7,500kWh per annum. This is equivalent to an annual charge of $693.75. Thus, a maximum increase of $2.41 per month (ie $28.92 per annum) is equivalent to a nominal increase of 4.2 percent per annum or 1.7 percent in real terms.

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59 ACT Council of Social Service submission to the IPARC draft price direction, March 1999, p 2.

60 Energy Supply Association of Australia, *Electricity Prices in Australia*, 1998/99, Table 3, p 8.

Accordingly, the Commission determines that no single household bill (for the same level and pattern of consumption of electricity) shall increase by more than the greater of $2.41 per month or 1.7 percent in real terms over the bill for the same period of the previous year.

Small business prices in 1999/2000

Subject to the retail margin cap, ACTEW has proposed a 3 percent real increase in its general tariff which is used by most small commercial customers. At an assumed inflation rate of 2.5 percent, this would be equivalent to a nominal increase of 5.5 percent. The ESAA[61] has estimated ACTEW's small business electricity charge in 1998/99 to be 12.30c/kWh at a total annual consumption level of 30,000kWh per annum. This is equivalent to an annual charge of $3,690 per annum. A 5.5 percent nominal increase would amount to $202.95 per annum. A 4.2 percent nominal increase, comparable with that of domestic customers, would amount to $154.98. The Commission considers an increase of this magnitude (ie 1.7 percent in real terms) to be more suitable for ACTEW's non-contestable small business customers, than the 3 percent real increase proposed by ACTEW.

Accordingly, the Commission determines that ACTEW's General Tariff (or equivalent) shall increase by no more than 1.7 percent in real terms.

Water

ACTEW proposes that the constraint in water price increases for 1999/2000 be set at 6 percent real terms.

ACTEW's proposed water prices are shown below

Table 6.4 ACTEW water prices

WATER PRICES	CURRENT (1998/99)	PROPOSED (1999/00)
Fixed charge ($/pa)	$125	$125
Usage Charge (c/kL)		
Consumption up to step	37	38
Consumption thereafter	76	83
Step (kL pa)	301	275*

*ACTEW proposes to lower this step to 175 kL over the regulatory period.

ACTEW claims that for most customers the impact of its proposed price structure would be much less than 6 percent. It claims, for example, that around 70 percent of customers using less than 350kL will face an impact of 4.5 percent or less in real terms, and that average customers using 280kL pa will receive a reduction (in real terms) in their annual water bills.[62]

The Commission has verified ACTEW's claim (based on an assumed CPI of 2.5 percent). Accordingly, the Commission has determined that the constraint in water price increases for 1999/2000 be set at 6 percent in real terms.

[61] Ibid, Table 4, p 15.

[62] Response to IPARC draft price direction, ACTEW Corporation, March 1999, p 33.

Sewerage

In response to the Commission's draft price direction to increase sewerage revenue by the CPI, ACTEW has proposed a maximum increase for a domestic sewerage bill of the CPI. Given that the Commission has now determined that sewerage revenues should rise by up to the CPI+1% per annum during the regulatory period, the Commission considers it appropriate that sewerage prices be allowed to rise by up to 1 percent per annum in real terms.

6.2.6 General price inflation

Electricity, water and sewerage services make up a small, but important, component of overall outlays by households. The significance of these charges varies between households, based on disposable income.

The total contribution of electricity, water and sewerage to the 1998 December quarter CPI[63] index of 121.9 was 3.27 points or 2.7 percent. Consequently, the revenue caps and side constraints determined by the Commission will have a negligible impact on general inflation. For some customers electricity, water and sewerage prices will increase respectively by a up to 1.7 percent, 6 percent and 1 percent more than the consumer price index.

6.2.7 Cost of regulation

In its response to the draft price direction ACTEW has states that:[64]

> The ACT Government is developing a new regulatory regime to apply to ACT utilities. Under this regime, regulations, operating licences, industry codes and standard form contracts will be issued by the Commission under the provisions of the Utilities Act. This will impose additional costs on ACTEW which have not been addressed in the draft price direction. These costs will be likely to include operating licence fees, monitoring and compliance costs.

The Commission has allowed for $250,000 per annum as an additional expense to cover the cost of regulation in each of ACTEW's electricity, water and sewerage businesses.

6.3 Financial viability

* *An appropriate rate of return on any investment in the regulated industry (s20(d))*
* *The borrowing, capital and cashflow requirements of persons providing regulated services and the need to renew or increase relevant assets in the regulated industry (s20(i))*

In order to assess an appropriate rate of return for ACTEW, The Commission must determine the capital base to which the return is to be applied, and the percentage return. There is no single, universally accepted approach to either of these problems.

In making its assessment, the Commission has considered recent reports from the ACCC, the Office of the Regulator-General, Victoria, and the Independent Pricing and Regulatory Tribunal of NSW.

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63 weighted average of eight capital cities, quoted in *Consumer Price Index Australia*, December Quarter 1998, Australian Bureau of Statistics, p 5 and p 15. (The index for Canberra was 121.7.)

64 Response to IPARC draft price direction, ACTEW Corporation, March 1999, p 53.

6.3.1 Regulatory asset base

The inclusion of costs related to the capital base recognises the owner's investment in the regulated utility, and the capital-intensive nature of infrastructure businesses. Failure to include adequate capital costs as part of the revenue requirement of the utility risks an inappropriate reduction in investment in the industry. This could ultimately lead to reductions in coverage, service levels, and reliability.

The Commission notes that economic analysis provides important input for the valuation of existing assets for the purposes of regulation. However, economic analysis does not suggest that one specific methodology is clearly superior to another. Economic principles provide lower and upper bounds. Within these bounds the regulator must exercise judgement. Asset value issues must be considered with regard to overall profitability, cashflows, and equity considerations.

Asset valuation

Through the Council of Australian Governments' (COAG) Agreements, Australian governments have given support to the deprival value methodology for asset valuation. Originating in the insurance industry, this methodology relates to the recompense one would require if deprived of an asset (eg through theft or fire). Under this methodology three bases for valuing assets have to be considered. These are:

- **Replacement cost**. What would it cost to replace the existing stock of assets with identical assets in the same condition? For regulatory purposes, an additional condition is applied, that is, to adjust such costs for technological change and past poor investment decisions (eg bad location). This process is called optimisation. The term used to describe the value so derived is *depreciated optimised replacement cost* (DORC).
- **Economic value (recoverable amount).** What is the future revenue stream, less cash operating costs, that the assets will generate? The figure derived is adjusted to today's dollars to exclude future inflation and to allow for the time value of money (interest cost). If the resulting amount is less than the DORC, the assets are worth less than the cost of replacement.
- **Net realisable value**. If the assets are surplus to requirements they are valued at what they could they be sold for on the open market.

ACTEW has calculated the DORC and the recoverable amount for its regulated assets. Considerable judgement is required under both these approaches.

Calculating the DORC requires the service provider to judge whether it could improve productivity by reconfiguring the system. Similarly, calculating the recoverable amount requires judgement on future productivity gains. Because of these factors, ACTEW's calculations must be closely examined.

ACTEW has engaged external expertise to develop approaches to the resolution of these problems. ACTEW reports these figures, or their equivalent in its annual report, which is subject to external audit. Depending on the regulator's determinations in relation to matters such as depreciation, asset lives and productivity gains, values adopted for regulatory purposes can differ from those used for statutory reporting.

ACTEW originally calculated the DORC valuations for its regulated activities as $2,060m as at 30 June 1997. If the approaches suggested by consultants are applied, this figure can vary between $1,807m and $1,936m.

On the basis of preliminary information provided by ACTEW, the Commission indicated that in establishing the opening regulatory asset base, it would apply an adjusted DORC valuation for electricity assets, and an economic valuation for water and sewerage assets. In the case of electricity, ACTEW's assessed DORC valuation is less than ACTEW's calculated economic value. The opposite is true for water and sewerage. Under the deprival valuation rules, the DORC valuation is adopted only where it is below the recoverable amount.

On this basis, ACTEW has proposed the following as the opening regulatory asset base for its electricity, water and sewerage operations.

Table 6.5 ACTEW's proposed asset valuation

	Electricity	Water	Sewerage
	$m	$m	$m
DORC value rolled forward to 30/6/98*	447.8		
Economic Values		436.2	381.6
Less contributed Assets**	(12.8)	(11.7)	(12.7)
	435	424.5	368.9
Plus work in progress (June 1998)	15.4	3.5	7.8
Total System Assets	**450.4**	**428**	**376.7**
Plus corporate assets	31.9	12	14.4
Total	**482.3**	**440.0**	**391.1**

*by adjusting for depreciation and additions.
**ACTEW claims that its records for contributed assets extend back only to 1994/95.

Contributed assets (and in the case of electricity, *customer funded* assets) are excluded to ensure that customers do not pay ACTEW a rate of return on assets that customers themselves have provided or directly funded. ACTEW claims it has no record of such assets prior to 1994/95. The Commission requested that the ACT Government and ACTEW attempt to reconstruct such records, to provide an appropriate asset base. In the absence of such information, the Commission advised that it would be compelled to make an arbitrary adjustment to protect customers from overcharging by ACTEW.

For the electricity network ACTEW has constructed the following method of estimating its contributed assets since 1988 (when self government in the ACT was introduced):

- split the DORC asset valuation into the value attributable to assets constructed pre 1988 and those constructed post 1988
- determine the amount of electricity network capital expenditure in the years 1988/98
- determine the amount of capital contributions received in the years 1988/98
- calculate the weighted percentage of contributions received to the gross capex for the period 1988/98
- apply the above percentage to the DORC value of assets constructed since 1988.

The total value of capital contributions received since 1988 so derived by ACTEW amounts to $38.4m. Of this total, ACTEW has already allowed $12.8m, as shown in the preceding

table, for assets contributed from 1994/95 onwards. A further reduction of $25.6m (being the difference between $38.4m and $12.8m) in ACTEW's proposed electricity DORC value is therefore required for assets contributed between 1988 and 1994.

In relation to contributed assets prior to 1988, ACTEW has advised that capital contributions were received by the ACT Energy Authority (ACTEA) during this period. Relating to the undergrounding of reticulation in new suburbs, contributions represent the difference between the costs of underground and overhead construction. The contributions were funded by the National Capital Planning Authority (NCPA) and its equivalent predecessors, who were responsible for land release, planning and standard setting within the ACT. The NCPA (and its predecessors) is a Commonwealth owned, funded and controlled body.

The Commission considers that these amounts should also be treated in the same way as the customer funded contributions. Accordingly, in the draft price direction it requests the ACT Office of Financial Management (with the assistance of ACTEW) to determine this amount. Pending receipt of this information, the Commission has assumed an amount of $20m as a representative value for electricity assets contributed prior to 1988. In response, ACTEW states that:

> … ACTEW believes that whilst capital contributions may have been received prior to 1988, they were received from a fellow Federal Government organisation, ie they were effectively a contribution from the then shareholder of ACTEW and were not contributions directly from customers. On this basis, no reduction in the asset base is appropriate for assets constructed prior to 1988, as the shareholder of ACTEW/ACTEA has effectively funded in full the construction of these assets.[65]

ACTEA's annual reports of the time indicate that this work was undertaken for aesthetic reasons. They also indicate that the total value of contributions from all sources for undergrounding prior to 1988 would be about $32m. Thus, the value of $20m assumed in the draft price direction for contributions by the NCPA alone, seems quite reasonable, especially when depreciation is taken into consideration.

The Commission remains of the view, that these contributions were made on behalf of the community as a whole, and considers therefore, that these amounts should be treated in the same way as the customer funded contributions.

Thus, for the final direction the Commission has retained the approach adopted in the draft price direction, adjusting ACTEW's DORC value of its electricity assets by a total of $45.6m. This equals the sum of $25.6m for assets contributed between 1988 and 1994, and $20m for assets contributed (by the NCPA for undergrounding) prior to 1988.

A summary of ACTEW's economic valuations (recoverable amounts) is presented in Attachment 2. The Commission has examined the assumptions underlying ACTEW's asset valuations and recalculated the figures using different assumptions. As with ACTEW's analysis, the Commission has not allowed for any residual value of the assets on the assumption that the period of analysis covers the average economic life of the asset.

Initially, no allowance was made in the Commission's calculations for augmentation of the assets. Therefore, no growth was allowed for. This general approach is in contrast to ACTEW's RAT-asset economic valuation, which, in consistently allowing for growth in all three businesses, has resulted in a valuation of the on-going *business as a whole* instead of the

[65] Response to IPARC draft price direction, ACTEW Corporation, March 1999, p 14.

existing pool of assets. Subsequently, in the case of water and sewerage, ACTEW has advised that it is possible for substantial growth to be accommodated by the existing infrastructure without significant further augmentation. Accordingly, this has been modelled separately and adjustments made, as shown in the table below.

The opening cashflows adopted by the Commission in its valuations are those projected for 1998/99 by ACTEW in its financial model. The results of this analysis are compared with ACTEW's proposed asset valuations below. (See Attachment 3 for details.)

Table 6.6 Comparison of ACTEW's asset values

	Electricity $m	Water $m	Sewerage $m
ACTEW proposal*	**482.3**	**440.0**	**391.1**
Less capital contributions between 1988 and 1994	25.6		
Less NCPA contributions prior to 1988 for undergrounding	20.0		
Adjusted electricity DORC	436.7		
IPARC economic valuation	**462.1**	**258.1**	**311.7**
Adjustment for growth		71.5	55.6
Adjusted economic valuation		329.6	367.30

*excludes capital contributions from 1994/95 onwards.

It is clear that the valuations are very sensitive to the underlying assumptions. ACTEW has expressed its concern that:

> … the Commission's valuation undervalues ACTEW's asset base for the following reasons:
>
> - … the Commission's model effectively assumes that the cashflows all occur at the end of each financial year… ACTEW has adjusted the discount factors … by assuming that on average the cashflows are received in the middle of each year
> - the asset values for water and sewerage proposed by the Commission do not allow for the inclusion of corporate assets in their asset bases
> - the Commission's *valuation* is based on 1998/99 revenues with no allowance made for price increases in future years.

The Commission has assumed in its valuation that the net cashflows occur at the end of the financial year. This is in keeping with standard practice for discounting cashflows which have uncertain timing. Unless it is certain that cashflows occur midyear, discounting cashflows on any other basis would introduce further uncertainty into the process.

The economic valuation adopted by the Commission values the discounted cashflows generated by the regulated business as a whole. Consequently, the value derived represents the value of the regulated business's total assets (and not just the infrastructure assets). The regulated business's corporate assets are therefore already included in the Commissions valuation and should not be allowed for separately.

The Commission has based its valuation on cashflows generated by ACTEW's existing prices as at 1998/99. To base the valuation on proposed prices would introduce the well known 'circularity' conundrum whereby projected asset values are based on proposed prices which, in turn, are determined to generate a rate of return on the projected asset value.

ACTEW cannot provide the Commission with a historic cost valuation (ie actual purchase price) broken down by regulated business. Therefore, the Commission is unable to compare the current valuations with a value based on historic costs.

Regulatory asset base (RAB)

In the absence of better information, the Commission adopted the following opening regulatory asset bases for ACTEW in its draft price direction. The Commission advised that these figures would need to be confirmed for the final price direction based on better information from ACTEW and the Government.

- Electricity $436.7m
- Water $329.6m
- Sewerage $367.3m.

Taking into account ACTEW's response to the draft price direction as discussed above, as well as the outcomes of the public hearing process, the Commission has determined to adopt these asset values for ACTEW's opening regulatory asset bases.

Asset roll forward

The term, *roll forward* refers to how the initial capital asset base, once determined, is adjusted over time to reflect changes in the value of the productive capability of the existing asset base and new investment in the business. This complex matter is the subject of a recent discussion paper by IPART[66], which canvasses the issues involved in detail. The electricity code has no specific requirements for rolling forward the asset base. The following excerpts from IPART's paper summarise the issues:

> In considering the revenue requirement and the roll-forward of the asset base, it is essential to clarify what the initial regulatory asset base represents. The approach adopted for the initial asset valuation, and the subsequent income required to generate a required rate of return on those assets, will be influenced by the view of the nature of the asset base.
>
> The question which arises is whether the regulatory asset base represents shareholder financial investments in the firm (ie the maintenance of the financial equity of the business in real terms), or the physical assets of the firm (ie the ability of the enterprise to maintain production of the same level of goods and services over time).[67]
>
> Within the requirements of the electricity and gas codes, once the regulator has made a decision regarding whether the regulatory asset base represents *financial investments* in the firm or the *physical assets* of the firm, regulatory decisions on 'rolling forward' the asset base such as indexation, redundant or stranded assets and return of capital should be consistent with this decision.
>
> Particular issues for consideration under the *physical capacity* view of RAB include:
> - How should return of capital be recognised (eg economic depreciation, renewals annuity); what value should be used (ie should return of capital be calculated on the deemed regulatory asset base, current cost of the assets, or the actual cost of the assets); what are the implications for regulatory accounts as against statutory accounts; and are any other adjustments required?
> - The treatment of future capital expenditure on new assets within a regulatory period.
>
> Particular issues for consideration under the *financial investment* view of RAB include:

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66 IPART, *Rolling Forward The Regulatory Asset Bases of the Electricity and Gas Industries*, Discussion Paper, January 1999.

67 ibid, p 9.

- Should the components of the asset base be indexed for inflation, and if so by what method (eg general inflation index or asset specific index)?
- The treatment of future capital expenditure on new assets raises further difficulties:

Which criteria should be used for including capital expenditure in the asset base? What is the appropriate timing for recognising capital expenditure in the asset base? Does the regulator sign off on capital expenditure ex ante or ex post? If ex ante, is this revisited during the regulatory period? What are the implications for capital efficiency?

Each option has significant implications in terms of the incentives and cashflows of regulated entities over time. The method of rolling forward the asset base also has implications for the reconciliation of regulated entities' accounting and regulatory financial statements and future asset values.[68]

It is clear from the above that the Commission has several options in relation to how it can roll forward the regulatory asset base over the regulatory period. To estimate ACTEW's financial outcomes for the draft price direction, the Commission rolled forward the asset base by adjusting the opening asset base for inflation (based on forecast CPI), estimated depreciation, and projected capital expenditure.

The Commission received no further input on this matter from stakeholders during the public hearing process. For the purpose of this first regulatory period, the Commission will roll forward ACTEW's assets each year on the basis of the following adjustments:

- actual inflation for the year to March, based on the Australian Bureau of Statistics, Consumer Price Index, Canberra, All Groups[69]
- depreciation on a straight line basis using ACTEW's projected asset lives
- capital expenditure actually incurred during the year.

6.3.2 Rate of return

ACTEW has estimated its expected rate of return on capital separately for the electricity network, water and sewerage businesses. For each business ACTEW has adopted the estimated weighted average cost of capital (WACC) as its expected rate of return on assets. The estimates for water and sewerage are identical. A summary of ACTEW's estimates is presented below:

Table 6.7 ACTEW's estimated cost of capital

	Lower %	Upper %
Electricity Network		
Nominal pre tax	9.7	12.3
Real pre tax	7.1	9.7
Nominal post tax	6.2	7.9
Real post tax	3.7	5.4
Water and Sewerage		
Nominal pre tax	10.3	12.8
Real pre tax	7.7	10.1
Nominal post tax	6.6	8.2
Real post tax	4.1	5.7

[68] Ibid, p 15.

[69] the CPI for the four quarters to March, divided by the CPI for the four quarters to March of the previous year.

ACTEW is seeking higher returns from its water and sewerage businesses than from its electricity network business. It can be inferred from this that ACTEW considers its water and sewerage businesses to be more risky than its electricity business. In support of this approach, ACTEW has provided the Commission with information relating to the relative riskiness of electricity, water and sewerage from ABN AMRO.

The Commission has independently estimated ACTEW's WACC. Based on information received from ABN AMRO and other sources, the Commission too, determined the WACC separately for the electricity business and the water and sewerage businesses for the draft price direction.

Pursuant to the public hearing process, the Commission is unconvinced that the risk associated with ACTEW's water and sewerage businesses is greater than that of its electricity business. Accordingly, for the final direction the Commission has estimated a single WACC range for ACTEW's electricity, water and sewerage business.

In estimating each WACC, the Commission has benefited from, and drawn on, the extensive recent examination of WACC in regulatory forums in Australia.[70] The discussion which follows draws, in particular, on IPART's discussion paper on the *Rate of Return for Electricity Distribution Networks*.

The Commission has determined the nominal post tax WACC for each business using the following formula:[71]

$$\text{WACC} = R_e * \frac{(1 - T)}{1 - T(1 - \gamma)} * \frac{E}{(E + D)} + R_d * (1 - T) * \frac{D}{(E + D)}$$

R_e	=	required rate of return on equity after company tax
R_d	=	pre tax average cost of debt
D	=	market value of debt
E	=	market value of equity
T	=	effective corporate tax rate
γ	=	franking credit utilisation

It is important that the rate of return be applied to the appropriate valuation of the asset base. For consistency, a nominal rate of return should be applied to a historical value asset base. A real rate of return should be applied to an asset base valued at DORC.

The parameters used by the Commission, and the results obtained, are shown in Attachment 4. The nominal post tax WACC has been grossed up by the tax rate to obtain the nominal pre tax rate. Real pre tax and post tax rates were determined by deflating the respective nominal rates using the Fisher equation and an estimate of the CPI.

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70 See, ORG/ACCC final decision on gas arrangements for Multinet Westar and Stratus, and associated submissions and research papers, and IPART, *Rate of return for Electricity Distribution Networks*, Discussion Paper, November 1998. These documents are available on the respective web sites.

71 This formula was developed by Officer (1994), *The cost of capital of a company under an imputation tax system*, Journal of Accounting and Finance, 34. This formula is widely accepted as a tool of business valuation.

The cost of equity component of the WACC was determined using the Capital Asset Pricing Model (CAPM). The general formula for CAPM is:

$$Re = Rf + [\beta e\ (Rm - Rf)]$$

Where:

Re	=	return on equity, being the return after corporate tax but before personal tax
Rf	=	risk free rate of return
Rm-Rf	=	market risk premium
βe	=	levered Beta, ie the relative volatility of the specific stock to the market, a measure of systematic risk.

Capital structure

The WACC is directly dependent on the ratio of debt to equity or capital structure employed. There is no completely satisfactory theory to predict the optimal capital structure for an organisation. However, empirical evidence suggests that in practice, firms tend to operate as if there is such a structure. Whilst there is clearly some gain from using a proportion of debt, because the cost of debt is less than the cost of equity, the appropriate level of debt cannot be determined theoretically. However, at higher debt levels, the costs of debt and equity increase significantly, reflecting the increased likelihood of insolvency and associated costs.

The following discussion on capital structure is taken from IPART's paper.[72]

> Businesses tend to gear up as much as possible to a level where agency costs, penalties and risk premiums imposed by the capital markets constrain further borrowing. Relatively high levels of gearing are typically associated with lower risk projects such as regulated monopolies.
>
> The current gearing level of some large Australian companies is around 34 percent based on book equity, and 24 percent based on market capitalisation (see Appendix 1). Acquisition statistics for the Victorian electricity distributors indicate debt levels of the low risk electricity utilities are significantly higher than those of the listed companies. Presently, observable gearing levels in utility companies are as follows:

Table 6.8 Gearing of Australian utility companies

Utilities	Debt/Assets(%)	Rating
United Energy	62	A-
CitiPower (owned by Entergy Corp)	78	--
Solaris Power (now wholly owned by AGL)	68	BBB+
PacifiCorp Australia (holding company for Powercor Australia)	55	BBB+
Eastern Energy	56	A-
AGL	40	A
Envestra	64	BBB

Source: Standard & Poors: April 1998, Rating Memorandum.

[72] IPART, *Rate of return for Electricity Distribution Networks*, Discussion Paper, November 1998, p 6.

> The current capital markets appear to regard a gearing level as high as 60 percent debt to total assets as acceptable, and are prepared to provide debt to a 60 percent geared business at a price commensurate with an investment grade rating.
>
> The 1997/98 regulatory financial statements returned by the NSW electricity distributors show that the gearing levels of the six network businesses average 44 percent with a range of zero to 56 percent.
>
> The gearing levels of the consolidated (regulated and non-regulated businesses combined) NSW electricity distributors are as follows:

Table 6.9 Gearing of NSW distributors

Distributors	Debt/Debt+Equity(%)
Energy Australia	45
Integral	55
North Power	21
Great Southern Energy	20
Advance Energy	15
Australian Inland Energy	(debt negotiable)
Overall	41

Source: 1997/98 Audited financial statements of the NSW Distributors.

The gearing levels of the NSW network businesses are lower than recommended by the capital structure study and significantly below the Victorian distributors. In the recent gas access determinations, IPART, ORG and ACCC used a benchmark gearing of 60 percent to assess the regulatory rate of return for the regulated entities.

In its draft price direction, the Commission adopted a representative gearing range of 40 - 60 percent. This range has been maintained for the final direction.

Beta

A key factor in determining the cost of equity using the CAPM approach is Beta. The following discussion on Beta is taken from IPART's paper.[73]

> Beta is the measure of the expected volatility of a particular stock relative to the market as a whole. It measures the systematic risk of a stock, ie the risk that cannot be eliminated in a well-balanced, diversified portfolio. Generally, application of CAPM in Australia is based on the Australian Stock Exchange (ASX) as a proxy for the whole market. If returns are not sensitive to the market against which they are measured, Beta will be low. When risk is low, the excess return relative to the market as a whole is low, hence the return to shareholders.
>
> Where a company is not listed, conventional practice is to use other companies or sector averages as proxies. This requires a subjective adjustment to account for differences between the reference stocks and the particular stock in question.
>
> Using overseas proxies which operate under different regulatory regimes, economic environments and markets could give rise to estimation errors. Also, since Beta is measured with reference to a specific stock exchange, measured correlation coefficients are not necessarily appropriate for other environments. Deriving Beta proxies from stocks not listed on the ASX may cause estimation errors.
>
> In theory, the debt/equity mix assumed in calculating the WACC must be consistent with the debt/equity mix applicable to the reference stocks. The debt/equity mix is likely to vary from one reference stock to another. Similarly, a debt/equity mix of a particular reference stock can vary during the measurement period.

[73] IPART, *Rate of return for Electricity Distribution Networks*, Discussion Paper, November 1998, p 17.

To ensure consistency between the capital structure and equity Beta, the Beta of the reference stock must be adjusted from a geared Beta to an asset (ungeared) Beta. The asset Beta is then re-geared to produce an estimated equity Beta for a given level of financial leverage.[74]

ACTEW provided the Commission with information based on research completed by ABN AMRO in August 1998. According to ACTEW, ABN AMRO found the average electricity distribution Beta (for five utilities in New Zealand and the UK) to be 0.45. For water utilities (14 in France, UK and US) the asset Beta averaged 0.48. Based on the foregoing, for the purposes of the draft price direction, the Commission used an asset Beta range of 0.35 to 0.45 for electricity ('medium' of 0.40) and 0.40 to 0.50 ('medium' of 0.45) for water.

For the final direction the Commission has used a single asset Beta range for electricity, water and sewerage. The revised range is 0.30 to 0.50. The Commission believes this corresponds better with the ABN AMRO data presented by ACTEW. The resulting equity Betas are still consistent with the range of equity Betas proposed in the draft price direction.

Treatment of taxation

The Capital Asset Pricing Model (CAPM) provides a basis for calculating the post tax cost of equity which is the after tax return to equity investors. The required post tax rate of return can be transformed to a pre tax return by reference to a tax rate.

There is continuing debate as to the appropriate reference tax rate which should be used. The Commission is of the view that utilities should be free to manage their own tax affairs.

Whilst the most common approach is to use the corporate or statutory tax rate as the reference rate another approach is to use the entity's effective tax rate. With regard to the latter however the effective tax rate appears to vary among utilities depending on their approach to tax planning.

Considering the practical difficulties of establishing an estimate of the long term effective tax rate, the Commission has used the statutory tax rate as the reference rate for the final direction. The Commission has determined the final revenue/price paths using the real pre tax rate of return on ACTEW's capital base where the pre tax return has been determined based on the statutory tax rate.

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[74] For the final direction the Commission has used the formula shown below.

$$B_e = B_a \times (1 + (1 - t_c(1-\gamma)) \times \frac{D}{E} + B_d \times \frac{D}{V}$$

B_a	=	asset Beta
B_e	=	equity Beta
γ	=	the value of imputation credits
B_d	=	debt Beta
t_c	=	corporate tax rate
D	=	debt
E	=	equity

Risk free rate

Another key parameter in determining the cost of equity is the risk free rate. The ten year government bond rate is commonly used as a proxy for the *nominal* risk free rate in CAPM (the capital asset pricing model.) There is considerable disagreement as to the most appropriate way to determine the actual rate to be used. Proposed methods range from using a long term average rate (say an average of daily rates over the preceding year) to using the most recent rate available.

In the draft price direction, the Commission proposed setting the risk free rate as an average of the daily rate for the 20 trading days immediately preceding the public hearing date of 23 March 1999. While reducing the effects of short term volatility, this method eliminates uncertainty as to the date on which the rate is to be set. The corresponding ten year nominal government bond rate average is 5.53 percent.

An alternative to using the nominal government bond is to use the indexed government bond as a proxy for the *real* risk free rate (also determined as an average of 20 trading days). The 20 day average of the 2010 indexed bond to 23 March 1999 is 3.54 percent.

For the final direction the Commission has estimated ACTEW's WACC based on both the above rates. The CPI implied by the difference in the two rates was used to convert estimated nominal rates to corresponding real rates.

Given the uncertainty associated with the parameters used in the methodology, the Commission has chosen to estimate a range for ACTEW's WACC. The details of the Commission's analysis are given in Attachment 4 and the results are summarised below.

Table 6.10 Weighted average cost of capital

WACC	Low	Medium	High
Nominal Pre Tax	8.42%	9.56%	11.13%
Real Pre Tax	6.38%	7.49%	9.04%
Nominal Post Tax	5.39%	6.12%	7.13%
Real Post Tax	3.40%	4.11%	5.11%

Clause 6.10.5(d) of the National Electricity Code requires that, in setting each network owner's regulatory cap, the Jurisdictional Regulator have regard to a number of financial indicators. One of these financial indicators is:

> … the Distribution Network Operator's WACC applicable to the relevant network service, having regard to the risk adjusted cashflow rate of return required by investors in commercial enterprises facing similar business risks to those faced by the Distribution Network Operator in the provision of that network service.

The term 'weighted average cost of capital' is defined in the Code as meaning "an amount determined in a manner consistent with Schedule 6.1." Schedule 6.1 sets out the procedure for calculating WACC. Clause 3 of Schedule 6.1 states: "The Network Owner's required rate of return on equity is estimated using the CAPM." Schedule 6.1 of the National Code indicates that the limitations of the CAPM model should be recognised. It should be regarded as providing an indication of the cost of equity, rather than a firm or precise measurement.

As well as requiring the regulator to have regard to the network owner's WACC, the National Code requires the regulator to have regard to the provision of a fair and reasonable risk-adjusted cashflow rate of return on efficient investments (including sunk assets). In particular, the National Electricity Code requires that the Jurisdictional Regulator conduct the regulation of distribution network service pricing according to a number of principles. One of these principles is that the Jurisdictional Regulator must have regard to the need to:

> … provide a fair and reasonable risk-adjusted cashflow rate of return to Distribution Network Owners on efficient investment given efficient operating and maintenance practices …[75]

The Commission considers that regulated revenue should provide a rate of return consistent with the relevant clauses set out in the code. In order to achieve the best balance between stakeholders' expectations and an efficient outcome, the regulator must exercise judgement. The outcomes of the Commission's final direction are detailed in the following section.

6.3.3 Financial outcomes

The Commission has examined ACTEW's financial forecasts for the regulatory control period on the basis of the above analysis. The tables below illustrate how ACTEW has determined its results using nominal returns on an asset base that is not inflated by the CPI. For consistency, the Commission has examined ACTEW's real rates of return on assets by indexing the opening asset values in line with the CPI. The Commission has also allowed for the proposed capital withdrawal of $300m from ACTEW by the ACT Government prior to 30 June 1999.

Electricity network

ACTEW has provided the Commission with its asset valuations and forecast revenue requirements for the regulatory control period. These are based on an increase in revenue (average prices) of CPI+2% for 1999/00 and 2000/01 and CPI thereafter. In making its projections, ACTEW has forecast growth in franchise area electricity sales of 0.8 percent per annum and customer growth of 1.12 percent per annum. The projected financial outcomes are shown in the following table:

Table 6.11 Electricity network - ACTEW's forecast revenue requirements (pre tax, excluding TUOS and capital contributions)

	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04
Opening asset value ($m)	482.3	481.7	476.0	470.7	463.6	464.7
Plus capital expenditure ($m)	17.2	15.2	15.5	13.7	21.9	14.3
Less depreciation ($m)	-17.8	-20.9	-20.9	-20.8	-20.8	-20.4
Closing asset value ($m)	481.7	476.0	470.7	463.6	464.7	458.6
Operating expenditure ($m)		40.1	41.1	41.9	42.8	43.8
Depreciation ($m)		20.9	20.9	20.8	20.8	20.4
Expected return ($m)		32.9	37.1	39.3	41.5	44.3
Less unregulated revenues ($m)		-3.9	-3.9	-4.0	-4.1	-4.2
Expected revenue ($m)		90.2	95.2	98.0	100.9	104.3
Return on assets (%)		6.9	7.8	8.4	8.9	9.6

[75] Clause 6.10.3(e)(5). This clause also deals with asset valuation.

The following table presents the outcome of the Commission's assessment for the same period. For the purposes of the draft price direction, the Commission proposed a revenue adjustment of CPI-2.5% per annum for the regulatory control period.

This adjustment was based on productivity improvements of 4 percent per annum (ie a total of about 20 percent over the regulatory period). During the public hearing process ACTEW argued that it would be unable to achieve the proposed efficiency targets. ACTEW proposed productivity improvements of 5 percent in 1999/2000 and a further 5 percent over the remaining four years of the regulatory period (ie a total of about 10 percent). The Commission has considered ACTEW's proposal, and for the final direction has assumed productivity improvements of 5 percent in 1999/2000, and 3 percent in 2000/2001 to be followed by 2 percent per annum thereafter (ie a total of about 14 percent). Accordingly, for the final direction the Commission has determined a revenue adjustment of CPI–2% over the regulatory period.

Table 6.12 Electricity network- Regulated revenue determination[76] (pre tax, excluding TUOS and capital contributions)

	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04
Opening asset value ($m)	436.7	442.7	448.9	455.2	459.6	471.3
Plus Capital expenditure ($m)	17.2	14.5	14.7	13.0	20.8	13.6
Less depreciation ($m)	-17.8	-19.3	-19.7	-20.1	-20.5	-20.6
Plus indexation ($m)	6.6	11.1	11.2	11.4	11.5	11.8
Closing asset value ($m)	442.7	448.9	455.2	459.6	471.3	476.1
Operating expenditure ($m)		38.2	38.2	38.7	39.2	39.6
Depreciation ($m)		19.3	19.7	20.1	20.5	20.6
Expected return ($m)		32.5	33.4	34.0	34.5	35.4
Less unregulated revenues ($m)		-3.9	-3.9	-4.0	-4.1	-4.2
Expected revenue ($m)		86.1	87.5	88.8	90.1	91.5
Return on assets (%)		7.3	7.4	7.4	7.4	7.5

The above table incorporates the adjustments detailed above relating to asset valuation, depreciation (asset consumption), operating expenses, and targeted return. Depreciation is based on the adjusted DORC value and indexed for inflation. If achieved, the outcomes will provide ACTEW with the desired real pre tax return over the regulatory control period.

Over time, the Commission will expect a broad equivalence between the levels of depreciation expense and replacement expenditure. For the regulatory period 1999/2000 to 2003/2004, ACTEW's depreciation charges substantially exceed the level of capital expenditure. Noting that this could reflect either ACTEW's relationship to its investment cycle (eg relatively new assets), or factors such as depreciation of assets over a period shorter than their economic life, in the draft price direction, the Commission seeks a response from ACTEW in this regard. ACTEW has recently advised the following reasons for this.

1. The major portion of ACTEW's electricity network was constructed in the 1960's, 70's and 80's, a period of substantial growth in the ACT. Given the expected useful lives of the assets (40 to 50 years for most major asset categories) ACTEW expects that substantial replacement expenditure, at much greater levels than is currently being experienced, will be required during the next decade and beyond.

[76] The values shown in this table for depreciation are less than those shown in the draft price direction due to a numerical correction since the draft.

2. ACTEW does not currently capitalise all replacement expenditure. Substantial expenditures in relation to replacement programs are currently being expensed. Such replacement programs include wooden poles, service conductors, cable terminations and switchgear. It is estimated that $4-5m per annum is incurred in relation to such programs.

The Commission has analysed financial ratios commonly used by credit rating agencies.[77] The outcomes under the Commission's final direction are as follows:

Table 6.13 Electricity network ratios[78]

	1999/00	2000/01	2001/02	2002/03	2003/04
Gross earnings interest coverage	4.9	5.4	6.1	7.0	7.7
FFO gross interest coverage	8.7	9.7	10.7	12.2	13.1
FFO / total debt (%)	44	50	59	65	80
Internal funding(%)	145	146	162	117	163
Gearing(%)	26.6	24.4	21.7	20.4	17.5

Table 6.14 Electricity network credit ratings [79]

	1999/00	2000/01	2001/02	2002/03	2003/04
Gross earnings interest coverage	AA	AA	AA	AA	AA
FFO gross interest coverage	AA	AA	AA	AA	AA
FFO/total debt	AA	AA	AA	AA	AA
Internal funding	AA	AA	AA	AA	AA

The table below shows the cash and debt profile resulting from the draft price direction for the electricity network. Despite having a lower revenue entitlement than it requested, ACTEW's electricity network will be able to fully fund all capital expenditure internally over the period while repaying some debt. This situation is due to estimated annual cash surpluses reflected in the declining debt values shown in the table below:

Table 6.15 Electricity network cash and debt profile ($m)

	1999/00	2000/01	2001/02	2002/03	2003/04
Cashflow from operations	86.1	87.4	88.8	90.1	91.5
Capital Expenditure	14.5	14.7	13.0	20.8	13.6
Dividend	21.7	22.9	23.8	24.8	25.5
Total Debt	102.7	93.3	81.7	77.1	64.7

These outcomes reflect a very healthy financial position for a regulated monopoly, low risk business.

Water

ACTEW has requested a revenue (average price) increase of CPI+6% a year over the regulatory control period. The Commission proposed a revenue increase of CPI +3% in the draft price direction. The implications of ACTEW's revenue request are shown below.

[77] Standard and Poor's Corporate Credit Ratings, AAA – Extremely strong capacity to meet financial commitments, B - More vulnerable to adverse business, financial and economic conditions, but currently has the capacity to meet financial commitments.

[78] A description and interpretation of the ratios is included in Attachment 5.

[79] A description and interpretation of the ratios is included in Attachment 5.

Table 6.16 Water – ACTEW's forecast revenue requirements (pre tax and excluding capital contributions)

	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04
Opening asset value ($m)	440.0	437.8	444.8	446.0	452.6	460.6
Plus Capital expenditure ($m)	7.4	16.3	10.6	16.2	17.6	3.4
Less depreciation ($m)	-9.5	-9.3	-9.5	-9.5	-9.6	-9.8
Closing asset value ($m)	437.8	444.8	446.0	452.6	460.6	454.2
Operating expenditure ($m)		22.3	22.8	23.3	23.7	24.3
Depreciation ($m)		9.3	9.5	9.5	9.6	9.8
Expected return ($m)		15.2	18.7	22.5	26.5	31.1
Expected revenue ($m)		46.8	51.0	55.2	59.9	65.2
Return on assets (%)		3.4	4.1	4.9	5.7	6.6

ACTEW has forecast annual growth in, total customer numbers of 0.8 percent, and in consumption of 0.7 percent. The Commission has adjusted ACTEW's asset values and reduced allowed capital expenditure.

During the public hearing process ACTEW argued that the return on assets generated by the Commission 's proposal was substantially lower than ACTEW's weighted average cost of capital. Also, whereas the Commission had not factored any productivity gains into its analysis for the draft price direction, ACTEW considered it would be able to generate productivity gains of 5 percent in 1999/2000, to be followed by a further 5 percent over the remainder of the regulatory period.

ACTEW has also advised that, it is expecting a reduction in revenue of approximately $700,000 per annum from falls in consumption caused by the ACT Government's proposed water abstraction charge.[80]

Taking all these factors into consideration, for the final direction the Commission has determined water revenue increases of CPI+4% in each of 1999/2000 and 2000/2001 to be followed by increases of CPI+3% each year for the remainder of the regulatory period.

The financial outcomes of the Commission's final direction are:

Table 6.17 Water - Regulated revenue determination

	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04
Opening asset value ($m)	329.6	335.0	351.8	363.3	380.1	398.3
Plus Capital expenditure ($m)	7.4	15.5	10.1	15.3	16.7	3.3
Less depreciation ($m)	-6.9	-7.0	-7.4	-7.6	-8.0	-8.4
Plus indexation ($m)	4.9	8.4	8.8	9.1	9.5	10.0
Closing asset value ($m)	335.0	351.8	363.3	380.1	398.3	403.1
Operating expenditure ($m)		21.3	20.8	21.3	21.8	22.4
Depreciation ($m)		7.0	7.4	7.6	8.0	8.4
Expected return ($m)		16.7	20.0	22.2	24.5	26.9
Expected revenue ($m)		45.0	48.2	51.2	54.3	57.7
Return on assets (%)		4.8	5.5	5.9	6.2	6.6

[80] Response to IPARC draft price direction, ACTEW Corporation, March 1999, p 36.

This outcome generates returns comparable with ACTEW's targeted cost of capital. In the Commission's judgement, this assessment balances ACTEW's revenue needs with social impacts and the interests of other stakeholders. It should be noted that in addition, the Government proposes to impose a water abstraction charge (a tax, not regulated by the Commission) that will impact on water consumers.

Credit rating ratios for ACTEW's water services under the Commission's proposals are:

Table 6.18 Water ratios

	1999/00	2000/01	2001/02	2002/03	2003/04
Gross earnings interest coverage	1.7	1.9	2.1	2.2	2.3
FFO gross interest coverage	3.4	3.6	3.8	3.9	4.1
FFO/total debt (%)	9.1	10.8	11.5	12.1	13.6
Internal funding(%)	30.1	51.9	37.3	38.0	225.9
Gearing(%)	44.6	44.9	46.0	47.0	46.0

Table 6.19 Water credit ratings

	1999/00	2000/01	2001/02	2002/03	2003/04
Gross earnings interest coverage	BB	BB	BBB	BBB	BBB
FFO gross interest coverage	A	AA	AA	AA	AA
FFO/total debt	BB	BB	BB	BB	BB
Internal funding	BB	BBB	BB	BB	AA

While not as favourable as the electricity outcome, the ratios improve over the regulatory control period and preserve ACTEW's financial position.

The table below shows the cash and debt profiles resulting from the draft price direction for water. In spite of a substantial increase in cashflow from operations over the regulatory period, ACTEW's target dividend payment of 100 percent of profits, and proposed capital expenditure result in rising debt levels. However, these stabilise towards the end of the regulatory period.

Table 6.20 Water - cash and debt profile ($m)

	1999/00	2000/01	2001/02	2002/03	2003/04
Cashflow from operations	45.9	49.0	52.0	55.1	58.4
Capital Expenditure	15.5	10.1	15.3	16.7	3.3
Dividend	9.5	12.1	13.9	15.4	16.7
Total Debt	155.5	160.4	170.0	180.4	176.3

Sewerage

ACTEW had requested an annual revenue (average prices) increase of CPI+3% for sewerage services and permission to incorporate the environmental works charge (EWC) in the normal sewerage charges. In the draft price direction, the Commission proposes a CPI increase each year plus the inclusion of the EWC in the sewerage charges where appropriate.

ACTEW has assumed a decline in the annual growth of the number of billable fixtures from 1.0 percent to 0.6 percent over the regulatory period, and customer growth of 1.0 percent. The financial outcomes of ACTEW's proposals are:

Table 6.21 Sewerage – ACTEW's forecast revenue requirements (pre tax and excluding capital contributions)

	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04
Opening asset value ($m)	391.1	399.9	413.1	423.3	424.7	418.8
Plus Capital expenditure ($m)	19.7	24.4	22.0	13.6	6.5	8.8
Less depreciation ($m)	-10.9	-11.2	-11.8	-12.3	-12.4	-12.2
Closing asset value ($m)	399.9	413.1	423.3	424.7	418.8	415.3
Operating expenditure ($m)		25.7	26.3	26.8	27.4	28.0
Depreciation ($m)		11.2	11.8	12.3	12.4	12.2
Expected return ($m)		22.4	24.3	26.3	28.8	31.9
Expected revenue ($m)		59.2	62.4	65.4	68.6	72.1
Return on assets (%)		5.4	5.7	6.1	6.7	7.5

During the public hearing process, ACTEW argued that the return on assets generated by the Commission 's proposal was substantially lower than ACTEW's weighted average cost of capital. Also, whereas the Commission had not factored any productivity gains into its analysis for the draft price direction, ACTEW considered it would be able to generate productivity gains of 5 percent in 1999/2000, to be followed by a further 5 percent over the remainder of the regulatory period.

Taking both these factors into consideration for the final direction, the Commission has determined water revenue increases of CPI+1% in each of the first three years of the regulatory period to be followed by CPI increases in each year for the remaining two years. The Commission's final direction incorporates amended asset valuations and a capital expenditure program as follows:

Table 6.22 Sewerage - regulated revenue determination

	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04
Opening asset value ($m)	367.3	385.8	410.0	431.6	444.9	451.3
Plus Capital expenditure ($m)	19.7	23.2	20.9	12.9	6.2	8.3
Less depreciation ($m)	-6.6	-8.6	-9.6	-10.4	-10.9	-11.1
Plus indexation ($m)	5.5	9.6	10.2	10.8	11.1	11.3
Closing asset value ($m)	385.8	410.0	431.6	444.9	451.3	459.8
Operating expenditure ($m)		24.5	23.9	24.5	25.1	25.8
Depreciation ($m)		8.6	9.6	10.4	10.9	11.1
Expected return ($m)		24.8	26.7	27.4	28.1	29.2
Expected revenue ($m)		58.0	60.1	62.4	64.2	66.0
Return on assets (%)		6.1	6.2	6.2	6.2	6.3

As with water, the outcomes are less favourable for sewerage than for electricity. However, they represent the Commission's judgement on balancing various matters as required under the IPARC Act, including social impacts. The credit rating ratios that flow from the final price direction are as follows:

Table 6.23 Sewerage - ratios

	1999/00	2000/01	2001/02	2002/03	2003/04
Gross earnings interest coverage	2.5	2.5	2.4	2.5	2.6
FFO gross interest coverage	4.4	4.4	4.4	4.4	4.6
FFO/total debt (%)	14.6	14.8	15.1	16.1	17.2
Internal funding(%)	36.2	44.3	74.2	164.0	130.2
Gearing(%)	41.3	42.6	42.6	41.6	40.8

Table 6.24 Sewerage credit ratings

	1999/00	2000/01	2001/02	2002/03	2003/04
Gross earnings interest coverage	BBB	BBB	BBB	BBB	BBB
FFO gross interest coverage	AA	AA	AA	AA	AA
FFO/total debt	BB	BB	BBB	BBB	BBB
Internal funding	BB	BB	BBB	AA	AA

Showing significant improvement over the regulatory control period, these ratios compare favourably with other Australian metropolitan water and sewerage service providers.

The figure below shows the cash and debt profiles resulting from the final price direction for sewerage. As in the case of water, in spite of increasing cashflow from operations, ACTEW's target dividend payments of 100 percent of profits, and proposed capital expenditure result initially in rising debt levels. However, these stabilise early in the regulatory period before declining towards the end.

Table 6.25 Sewerage - cashflow and debt profile ($m)

	1999/00	2000/01	2001/02	2002/03	2003/04
Cashflow from operations	58.0	60.1	62.3	64.1	66.0
Capital Expenditure	23.2	20.9	12.9	6.2	8.3
Dividend	15.2	16.3	17.0	17.6	18.4
Total Debt	161.2	172.9	176.2	172.3	169.8

6.3.4 Financial indicators comparison

The table below compares financial indicators for ACTEW as a whole, for 1997/98 and for 1998/99, with those of other comparable utilities.[81]

[81] See Attachment 5 for definitions of financial indicators.

Table 6.26 Financial indicators comparison*

	energy Australia 1997/98	AGL 1997/98	Sydney Water 1997/98	ACTEW 1997/98	ACTEW Final Direction 1998/99
Lenders					
Fund flow adequacy	1.1	0.7	1.0	1.2	0.8
Funds flow interest coverage (times)	5.4	7.8	3.0	25.1	6.3
Funds flow net debt payback (years)	3.3	3.3	6.2	0.8	1.8
Internal financing ratio	121%	58%	93%	157%	70%
Pre-tax interest coverage (times)	3.5	7.0	2.8	13.0	3.7
Total Debt/Total Capital	45%	39%	14%	8%	10%
Funds from operations/Total Debt	31%	30%	16%	126%	28%
Regulator					
EBIT/Total revenue	23%	22%	40%	24%	24%
EBITD/Total revenue	32%	28%	54%	39%	34%
EBIT/Funds employed	13%	11%	4%	6%	4%
Shareholder					
EBIT ($ 000)	428,300	288,700	491,012	85,276	55,300
Profit after tax ($ 000)	232,200	196,500	230,998	58,211	33,700
Total dividends and tax ($ 000)	306,100	199,600	335,533	91,641	52,700

Source: Commission estimates based on published financial statements.
*For the business entities a whole. This table has been revised since the draft price direction.

ACTEW's funds flow adequacy is comparable with that of the other utilities, as is the internal financing ratio. Funds flow interest coverage and pre tax interest coverage are also within the range of the other authorities. ACTEW's earnings before tax (EBIT), as well as before depreciation (EBITD), relative to revenue, are in line with the other comparators. On the basis of funds employed, ACTEW's EBIT is relatively low, but still comparable to that of Sydney Water.

6.4 Environmental considerations

* *The principles of ecologically sustainable development (s20(f))*
* *Considerations of demand management and least cost planning (s20(h))*

Pricing policy has a role to play in ensuring desired environmental outcomes are achieved. Pricing policies should encourage activities that generate the best overall outcome for the community. Cost reflective pricing can help ensure scarce resources are not wasted and can promote more efficient investment in infrastructure. Such costs should include environmental as well as financial imposts.

To achieve these environmental outcomes, government may impose taxes on resource use. These taxes should be passed directly through to the customer. In this case, the utility performs the role of the tax collector on behalf of the Government.

Alternatively, the utility may incur costs to improve its environmental outcomes. In these situations, only actual efficient costs should be passed on to customers.

ACTEW has an environmental works charge. Relating to sewerage use, this charge is a levy applied to customers to fund capital works in order to achieve certain environmental standards. The terms of reference also refer to a water abstraction charge. The following sections discuss the merits and the Commission's views on each of these charges.

6.4.1 Environmental Works Charge

To fund environmental works, ACTEW levies an environmental works charge (EWC) on sewerage customers.

In the draft price direction, the Commission doubts the practicality of distinguishing between environmental works and other works performed by ACTEW. All expenditure has some impact on the environment. In the draft price direction, the Commission is inclined to the view that such a charge, if it is to continue, should be absorbed into normal charges. Furthermore, unless the charge relates to works performed by ACTEW, the Commission is of the view that the nature of the environmental charge is akin to a tax and that setting the level of the charge should be a matter for the ACT Government. If, in the future, the charge is not to be spent by ACTEW on genuine cost of business activities, the Commission believes the charge should be paid to and set by the Government.

In its Statement of Regulatory Intent, the Government notes its concern that:

> The expenditure of the EWC continues to be in accord with the Territory's environmental priorities and that the charge not only supports identified environmental priorities, but (that) it also provides an incentive to reduce environmental impacts. The current arrangement of a fixed charge on sewerage rates provides no incentive for behaviour change.[82]

It is the Commission's view that the EWC does not meet its intended objectives. It provides no incentive to change behaviour and ACTEW has failed to use all the funds for improving the environment. Other non-price mechanisms may be more appropriate for ensuring that the Government's environmental goals are achieved.

For these reasons, in the draft price direction the Commission recommends that the EWC be removed as a separate category of charges.

An EWC has been charged since 1993. In the draft price direction the Commission notes that ACTEW has received in excess of $12m and has spent or allocated only $3m.[83] A portion has been spent on projects that could otherwise have been paid for from operational expenditure.

The Office of Financial Management raised the possibility of the balance of accumulated funds (some $9m) being repatriated to government so that it could be applied to the environmental improvements for which it was intended. However, the Commission noted in the draft price direction that ACTEW has a capital expenditure program which will expend the accumulated funds over time. On this basis, the Commission now believes is reasonable for ACTEW to keep the funds. However, the Commission recognises that ultimately this is a decision for the Government.

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82 ACT Government, Statement of Regulatory Intent, p 24.

83 Advice from Office of Financial Management.

In response to the Commission's draft price direction, ACTEW has provided the following table which shows historical and projected movements in ACTEW's so-called 'Environmental Improvement Plan Reserve'

ACTEW Corporation
Summary of movements in Environmental Improvement Plan Reserve

	Jun-95 $'000	Jun-96 $'000	Jun-97 $'000	Jun-98 $'000	Dec-98 $'000	Jun-99 $'000	Jun-00 $'000	Jun-01 $'000	Jun-02 $'000	Jun-03 $'000	Jun-04 $'000
Opening Balance	4,655	-653	1,943	7,458	5,479	5,479	265	-11,925	-17,525	-20,425	-23,425
EWC Revenue	5,982	6,092	6,174	4,864	2,449	4,857	0	0	0	0	0
EWC Expenditure	11,290	3,496	659	6,843	2,258	10,071	12,190	5,600	2,900	3,000	3,000
Amount held in Reserve/(Expenditure in excess of reserve)	-653	1,943	7,458	5,479	5,670	265	-11,925	-17,525	-20,425	-23,425	-26,425

Note: Figures from Jun-00 to Jun-04 are based on forecast expenditure.

The Property Owners Association has submitted that:[84]

> The scrapping of the EWC is not supported, it should be continued as is with ACTEW accounting for its use.

In the draft price direction, the Commission notes that ACTEW proposes adding the full amount of the charge ($40 per customer per year) to the existing fixed charge. The Commission's Statement of Regulatory Intent states that the charge will be replaced by the water abstraction charge.

In its draft price direction, the Commission advised that it did not see a need to automatically increase the fixed sewerage charge by $40. The Commission directs that costs for any capital works required to meet environmental requirements should be identified by ACTEW and included in its capital expenditure program. If the Commission considers that these works are appropriate, they should form part of the calculation of the revenue requirement for financial viability in the same way as other capital works. The Commission requested additional information from ACTEW in support of the retention of the full $40 in charges.

ACTEW has since provided the Commission with information including the above table which satisfactorily reconciles funds received under the environmental works charge with elements of its capital expenditure program. Therefore, the Commission has included revenue from the $40 EWC in ACTEW's total sewerage revenue in order to fund ACTEW's normal operations including the existing capital expenditure program.

6.4.2 Water abstraction charge

The Terms of Reference for this review require that:

> In addition, the Commission is to advise on the approach to establishing an appropriate water abstraction charge that reflects sound economic and environmental principles as well as providing advice on the structure and level of charges that would apply if that approach were applied.

[84] Submission from Property Owners Association of the ACT Inc, p 2.

Such a charge is consistent with COAG requirements and the ARMCANZ guidelines. These require that utilities charge the full economic cost including cost of externalities. 'Externalities' in principles 5 and 7 of the guidelines means environmental and natural resource management costs attributable to and incurred by the water business. Ernst and Young states that water businesses should include externalities in determining full economic cost only when there is an existing charge or levy, such as a resource management charge or an environmental levy.[85]

The statement of regulatory intent states that:

> [The] charge will be identified as a component of the fee for ACTEW's licence to take water proposed in the Water Resources Bill[86] and will flow through into water use accounts. In this way, and on the basis of current consumption levels, the incentive for efficient use of water could be increased without an overall increase in charges.

In an ideal situation, water charges would include all costs, including the environmental costs, of resource use. As these (external) costs are not charged for, consumption of the relevant resource is higher than it would otherwise be. Failure to include these costs means that consumption and investment decisions are made without considering the full economic costs of using resources. If environmental costs were included, customers' decisions could be made with an appreciation of the economic and environmental considerations of their consumption of water. However, this implies that environmental costs can be readily measured in financial terms.

The Commission has previously stated that given the scarcity of water in the region, a water abstraction levy may well be desirable from a demand management and environmental perspective.

ACTEW proposes that any abstraction charge imposed by government be treated as a pass through cost to its customers. ACTEW would separately identify this charge in its water bills and remit any revenues collected to government. However, given the relative price elasticity of water at higher levels of consumption, ACTEW would expect an allowance in the revenue cap calculation for the price elasticity effect of any abstraction charge on reduced water consumption. ACTEW reserves the right to provide further proposals to the Commission on this impact and related pricing issues if/when a water abstraction charge is imposed.

ACTEW has advised that[87],

> … would expect an allowance in the revenue cap calculation for the price elasticity effect of any abstraction charge on reduced water consumption. For the information of the Commission, ACTEW advises this will be around $700,000 per annum.

The Commission has factored this amount into its analysis of ACTEW's water revenue over the regulatory period.

Whether the water abstraction charge should be passed through depends on the effect the pass through has on incentives. The primary reason for a water abstraction charge is to

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85 SCARM Water Industry Asset Valuation Study, *Draft Guidelines on Determining Full Cost Recovery*, Ernst and Young, August 1997, p 11.

86 The ACT Government recently passed the Water Resources Act, gazetted 11 December 1998.

87 Response to IPARC draft price direction, ACTEW Corporation, March 1999, p 36.

signal impact on the environment. If these signals are to reach end use consumers, the charge must be passed through.

The Commission recommends that ACTEW treat the water abstraction charge as a pass through cost and show the charge separately on the water bill.

In its response to the draft price direction, ACTEW has endorsed the Commission's recommendation.[88]

The terms of reference call on the Commission to provide guidance to the Government on the size of the water abstraction charge. In its proposal, ACTEW states that the appropriate level of a water abstraction charge is a matter for the owner of the property right, the ACT Government. However, the Government has sought the Commission's guidance on this matter.

ACTEW has proposed a water abstraction of 5c/kL on all water sales from 1 July 1997. The total consumption in 1996/97 was 61,810 ML.[89] On this basis, the revenue generated would have been almost $3.1m.

In a recent draft report, the Tasmanian Government Prices Oversight Commission (GPOC) notes that Hobart Water is charged a $26 per megalitre commissional water rights charge. However, the Tasmanian Chamber of Commerce and Industry (TCCI) states that the figure is "related more to Treasury revenue targets than it is to costs associated with water management or asset values".[90]

The charge is to cover the cost of such things as:

- maintaining water quality
- maintaining and managing the catchment
- dealing with environmental impacts
- establishing a scarcity value for water.

Calculation of the water abstraction charge must be considered in the light of the Water Resources Act and COAG requirements. In calculating the charge, consideration must be given to:

- the extent that abstraction reduces the quality of water in the catchments
- actual costs of water quality maintenance and the maintenance and management of the catchment
- environmental management costs
- information and evidence on the scarcity effects of water.

Environment ACT undertakes management of the catchment. The Commission sought information from *Environment ACT* on its costs of management and was advised that the catchment management charges for Googong and Cotter combined are $935,000. To influence consumer behaviour this should be expressed as a cents per kilolitre and charged

88 Response to IPARC draft price direction, ACTEW Corporation, March 1999, p 36.
89 ACTEW Annual Report, p 69.
90 GPOC, Water Pricing Draft Report, p 34.

to customers based on their kilolitre consumption. Based on the previously quoted 1996/97 total consumption of 61,810 ML the catchment management charges amount to 1.5c/kL.

The key issue in measuring the costs of external environmental effects is to determine which costs water users impose on the environment. Environmental impacts include water quality, environmental flows, and the damage to the environment from construction of a dam.

Putting a price on the scarcity of water is even more problematic. One approach may be to use water trading prices as a guide. Recently, temporary water trades in the Murray Darling Basin have been occurring at prices ranging from $70/ML (up to $150/ML) or 7c/kL.[91] These trades are occurring for value added purposes and the higher values may overstate the price. The Commission also recognises that this represents the marginal cost of water (and not the cost of all the water extracted). However in the absence of better information, the Commission considers that 7c/kL could be a reasonable proxy for the scarcity value of water within the catchments.

The ACT Office of Financial Management had proposed a direct pass through of the funds collected by ACTEW through the environmental works charge as a proxy for the water abstraction charge. In the draft price direction the Commission is concerned to ensure that funds are not recovered by ACTEW, as well as by the Government, for the same projects. Government expenditure on environmental projects may be justified if the projects are not already part of ACTEW's on-going business and capital expenditure program. Therefore, to the extent that such projects are already included in ACTEW's proposed capital expenditure, there should be a commensurate reduction in the amount of funds recovered through the water abstraction charge.

In its response to the Commission's recommendations in relation to the water abstraction charge, the ACT Government Office of Financial Management advises it will:[92]

> … include reference to the cost of maintaining catchments, restoring damage caused to the environment as a consequence of collecting, storing, and delivering water and a value that reflects the scarcity of water as a resource. For the current price path inquiry the terms of reference request that the Commissioner provide an opinion about the quantum that might properly reflect the scarcity value of water in the ACT. … The Commissioner's views were sought as an informed observer, rather than as a determiner of the charge.

For the reasons detailed section 6.4.1, the Commission has subsequently determined to allow ACTEW to retain the equivalent of the funds recovered by means of the environmental works charge in its sewerage revenue. Accordingly, the Commission is now satisfied that there will not be an over recovery of funds to be used for environmental purposes, by the Government. On this basis, the Commission suggests that the 1.5c/kL representing the catchment management cost may now be added to the 7c/kL representing the scarcity value of water resulting in a total of 8.5c/kL.

The Commission is also aware that the actual billable customer consumption on which the water extraction charge may be levied is significantly less than the consumption figure quoted in ACTEW's annual report (which is based on water released from its catchments). In 1996/97 the billable water consumption in the ACT was 48,431 ML. On this basis the 8.5 c/kL would be equivalent to about 10.8 c/kL.

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91 Informal advice from the Murray Darling Basin Commission.

92 Chief Minister's Department submission in response to draft price direction, 23 March 1999, p 2.

In addition to the catchment management cost and the scarcity value (included in the 8.5c/kL) some allowance should also be made for environmental costs as discussed above. Setting the water abstraction at around 10c/kL would also make a contribution towards environmental management costs.

Taking all the above factors into consideration the Commission finally recommends that the water abstraction charge should be of the order of 10c/kL

6.4.3 Bulk water charge

The terms of reference require the Commission to calculate a bulk water charge.

The issues to be resolved in determining ACTEW's bulk water price are the efficient cost of providing bulk water and how prices should be structured. The Commission is of the view that the price of bulk water should reflect the efficient cost of delivery. In relation to price structure it favours a two part tariff, the usage component of which should reflect the marginal cost of supply.

The following questions need to be addressed:

- What is the nature of bulk water in the ACT?
- Can bulk water be extracted by river pumping (before treatment)?
- Can bulk water be sourced direct from the dams, or must it be obtained only from treated sources?
- Will the demand for bulk water lead to accelerated need for capacity augmentation?

ACTEW has made two proposals in relation to bulk water:

1. That IPARC determine a maximum charge for bulk water supplied by ACTEW ($1.10).
2. That supply contracts to be used for bulk water, with negotiation of the actual bulk water price to the customer, within the constraint of the maximum price.

The extent to which prices are below the maximum will depend on whether the water has to be treated, and the actual delivery requirements.

The short run avoidable costs[93] should set the floor price.

OFM notes that it is not desirable that ACTEW provide bulk water at discounted prices that are below the efficient cost. It neither assists ACTEW's competitiveness, nor sends the appropriate signals to users:

> Abstracting water from dams or directly from the river system involves issues of abstraction licences, water allocations and the application of water abstraction charges that are taken up in the context of the Water Resources Bill. It is unlikely that small users will seek to access supply directly, with the possible exception of some users at Pialligo, and consequently regulating ACTEW prices will probably be effective. For some businesses, direct access may be an option, as is the case with primary producers who abstract irrigation water directly from the river system.

The extent to which negotiation may be effective will depend on the source of the water.

[93] Avoidable costs are those costs which could be avoided if a particular service was not provided.

The Commission sets the maximum price for potable water. The Commission recommends that ACTEW be free to negotiate with bulk water customers, provided they are charged no less than the avoidable costs of supply.

Both ACTEW[94] and the ACT Government's Office of Financial Management[95] have endorsed this recommendation.

6.4.4 Water recycling charge

ACTEW argues that the potential for recycling is small, but believes there should be no artificial barriers to recycling. Due to substitutability effects and the non-economic and non environmental price for treated water, ACTEW argues that the bulk treated water cost is the de facto maximum charge for recycled water.

Two issues raised by ACTEW are that potable water is underpriced and that recycled water can be costly to produce.

ACTEW has developed a five step approach to recycled water:

1. assess viability (for each scheme)
2. negotiate price negotiated on a site by site basis
3. in sites not developed, establish a starting price which is 75 percent of potable price
4. charge at least the avoidable costs for developed sites not at potential
5. develop a two-part tariff in suburbs with dual infrastructure.

OFM considers that there is often an environmental benefit to using recycled water for purposes other than human consumption. Prices should discriminate between water of various qualities wherever possible, but often the costs of supplying recycled water may be a disincentive.

Costs of providing recycled water come from additional treatment and distribution costs. Any charge should reflect this.

The Commission recommends that ACTEW be allowed to negotiate with customers to provide recycled water on the basis that customers pay at least the avoidable costs.

Both ACTEW[96] and the ACT Government's Office of Financial Management[97] concur with the above recommendation.

6.4.5 Electricity

In the longer term, the only regulated component of electricity operations will be the network (wires). The environmental impacts of the network and network pricing are:

- The undergrounding of the wires improves the general amenity of the ACT. Although this also improves reliability of supply (eg restricts damage from storms), there is a net financial cost. Planning laws establish requirements for new developments. For

[94] Response to IPARC draft price direction, ACTEW Corporation, March 1999, p 36.
[95] Chief Minister's Department submission in response to draft price direction, 23 March 1999, p 4.
[96] Response to IPARC draft price direction, ACTEW Corporation, March 1999, p 42.
[97] Chief Minister's Department submission in response to draft price direction, 23 March 1999, p 4.

ACTEW to recover the cost of any retro-fitting of wires which are currently overhead require a substantial levy on existing customers. The Commission must be convinced of customers' willingness to pay.

- Network pricing can influence the economics of embedded generation and energy saving devices (eg heat pumps). Often there can be cost savings to the network owner from these operations (eg lower line losses). **ACTEW is to prepare detailed pricing schedules in line with final price direction. In doing so, ACTEW will also be required to demonstrate that such prices do not discriminate against demand side options, energy storage and generation.**

7 NATIONAL ELECTRICITY CODE

As indicated in Section 4, the Commission has received legal advice that amendments to existing statutes are required to confer on IPARC any statutory powers or functions in respect of the National Electricity Code.

In its response to the draft price direction, the ACT Government's Office of Financial Management states:[98]

> The Government advises that the amendments consistent with those recommended by the legal opinion to IPARC will be inserted as part of the legislative amendments to the IPARC Act being prepared for tabling in the legislative assembly by June 1999.

On the presumption that such matters will be resolved, this chapter deals with how the Code may be applied. This is not intended to be comprehensive, as the Code is relatively complex, new, and still under review.

Where appropriate, references to the relevant clauses of the code are given in brackets with each heading.

7.1 Scheme of regulation

The Commission's legal advisers have provided the following summary of steps involved in the scheme of regulation for distribution services under the code.

(a) determination by the Jurisdictional Regulator of distribution services that are to be deemed "prescribed distribution services

(b) specification by the Jurisdictional Regulator of a form of economic regulation, being a revenue cap, a price cap or a combination of the two (Regulatory Cap)

(c) application of the Regulatory Cap to a Distribution Network Owner (DNO) for a Regulatory Control Period (being not less than three years)

(d) determination by the Jurisdictional Regulator of the Distribution Network Service Provider's (DNSP) Aggregate Annual Revenue Requirement;

(e) application of the form of economic regulation (eg revenue/price cap or regulatory cap) by the DNSP through the allocation of the Aggregate Annual Revenue Requirement to assets and cost pools within classes of distribution services

(f) calculation and publication of maximum prices applicable to Distribution Customers and Embedded Generators.

7.2 Formulation of rules and guidelines (6.10.1)

At this stage, the Commission has not formulated guidelines and rules to apply to distribution service pricing other than the code. Discussions are still in progress with national and other state regulators on what would be appropriate in this regard.

7.3 Prescribed distribution services (6.10.4)

Prescribed distribution services are those services performed by ACTEW that are associated with, or ancillary to, access to the network and the delivery of electricity within the ACT

[98] Chief Minister's Department submission in response to draft price direction, 23 March 1999, p 3.

with the exclusion of those services subject to effective competition. In addition, some other services may be excluded (eg see section 5 schedule 6.6 in chapter 6 of the Code). In making such a determination, the Commission will be required to have regard to the matters listed in the code's clause 6.10.4 (a) (1) to (4).

In the draft price direction the Commission foreshadows that it may impose some light-handed form of regulation on particular services that will not be prescribed distribution services. In response, ACTEW states:

> Services that are currently treated as excluded distribution services include:
> - moving mains, services or meters at the customers request;
> - temporary supply;
> - higher quality and reliability standards than required in general practice (usually cost of supplementary supply cables); and
> - maintenance of public lighting assets.
>
> In relation to the Commission's proposal for regulation of non-prescribed distribution services[99], ACTEW would be concerned if this implied any form of price regulation for contestable services.

The Commission does not intend to impose any form of regulation on services that are not prescribed distribution services during this regulatory period. It should be noted, however, that the Commission may well decide to do so for future regulatory periods.

7.4 Form of economic regulation (6.10.5)

Economic regulation shall be of the prospective CPI-X form (6.10.5 (a)) consistent with the objectives and principles outlined in clauses 6.10.2 and 6.10.3. The prospective CPI over the regulatory control period will be that nominated for this purpose by the ACT Government's Office of Financial Management (OFM), and agreed to by the Commission. For the purpose of the draft price direction, the Commission has applied prospective CPI figures nominated by ACTEW, pending receipt of estimates from the OFM. The OFM has now advised an expected CPI of 2.5 percent. The Commission has accepted this figure for the final direction

'X' factors to apply to the prescribed services are those described in section 6 of this report. The Commission has determined a revenue cap (6.10.5 (b)), as designated in section 6 of this report, related to forecast customer numbers and kWh sales provided by ACTEW and agreed to by the Commission. In doing so, the Commission has sought to achieve the outcomes required under the Code as detailed in clause 6.10.2[100], in accordance with the principles listed in clause 6.10.3[101] of the Code. The Commission considers that the final direction provides ACTEW with a fair and reasonable risk adjusted cashflow rate of return on efficient investment. This depends on ACTEW's achieving given efficient operating and maintenance practices. The approach adopted to value ACTEW's network assets is deprival value.

Section 6 describes the regard the Commission has had for various matters as required under s20 of the IPARC Act 1997.

For the final direction, the Commission has given full consideration to the various matters listed in 6.10.5 of the Code. In its draft price direction, the Commission indicates that it

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99 IPARC, draft price direction 1999/2000 - 2003/2004, February 1999, p 56.

100 Objectives of the distribution service pricing regulatory regime to be administered by the Jurisdictional Regulators.

101 Principles for regulation of distribution service pricing.

requires additional information from ACTEW regarding for example, "payments made to embedded generators" (6.10.5(7) (iii)), and, "any reduction or increase in energy losses in the distribution network". In the absence of further information from ACTEW, the Commission is unable to comment further on those issues for this regulatory period.

The specified form of regulation described above, is to apply over the full regulatory control period from the intended operative date of the Code, 1 January 2001, to 30 June 2004.

Form and mechanism of economic regulation

The following table lists the manner in which the Commission has considered and addressed the various requirements of clause 6.10.5 of the National Electricity Code.

Table 7.1 National Electricity Code requirements

Code Clause	Reference to final report
6.10.5 (a) economic regulation shall be of the prospective *CPI* minus X form, or some incentive-based variant of the *CPI* minus X form which is consistent with the objectives and principles outlined in clauses 6.10.2 and 6.10.3.	**Section 3** The draft price direction provides for a variation in electricity network revenue of CPI[102]-2.5% per annum for five years. Based on the outcomes of the public hearing process, the Commission's final direction is that electricity network revenue be varied by prospective CPI–2% as detailed in section 5.

[102] Estimate of the Australian Bureau of Statistics, Consumer Price Index, Canberra, All Groups to be provided by the ACT Government.

Code Clause	Reference to final report
6.10.5 (b) the *Jurisdictional Regulator* shall specify the form of economic regulation to be applied to the *Distribution Network Service Provider* to be in the form of either: (1) a *revenue cap*; or (2) a weighted average *price cap*; or (3) a combination of the above.	**Section 5.1**. The Commission considers that the methodology adopted for the purposes of the final direction is a combination of the revenue cap and weighted average price cap methodology. This approach has been implemented as follows: a revenue requirement has been established for 1999/2000. This was derived from the addition of the various cost components (after efficiency adjustments), including a rate of return, for each of the regulated services. Regard has been had for the requirements of the terms of reference. For subsequent years this revenue requirement is to be adjusted for: • Variations in demand/customer numbers • Anticipated movement in the consumer price index less an efficiency factor. The efficiency factors proposed in the draft price direction have been adjusted for the final direction based on the outcomes of the public hearing process. • "reasonable and well defined regulatory discretion which permits an acceptable balancing"[103] of the interests of stakeholders.
6.10.5 (c) The *Jurisdictional Regulator* is to apply the form of economic regulation specified in clauses 6.10.5(a), and (b) to each *Distribution Network Owner* for the *regulatory control period* which is to be a period of not less than 3 years.	**Section 3** In this final direction, IPARC, being the *Jurisdictional Regulator i*n the ACT[104] has applied the form of economic regulation specified in clauses 6.10.5(a), and (b) to ACTEW Corporation Ltd being the sole Distribution Network Owner in the ACT for the regulatory control period 1999/2000 to 2003/2004.

[103] National Electricity Code, 6.10.2 (k).
[104] Subject to legal amendments.

Code Clause	Reference to final report
6.10.5 (d) In setting a separate regulatory cap to be applied to each *Network Owner* in accordance with clause 6.10.5(b), the *Jurisdictional Regulator* must take into account each *Distribution Network Owner's* revenue requirements during the *regulatory control period*, having regard for: **(1)** the demand growth which the *Distribution Network Owner* is expected to service using any appropriate measure including but not limited to: (i) energy consumption by categorisation of *Distribution Customers* or other relevant groups of persons who consume energy; (ii) demand by categorisation of *Distribution Customers* or other relevant groups of persons who consume energy; (iii) numbers of *Distribution Customers* or other relevant groups of persons who consume energy by categorisation of *Distribution Customers*; and (iv) length of the *distribution network*;	**Section 6.1.1** In the draft price direction, the Commission has determined ACTEW's overall revenue requirement based on information supplied in ACTEW's financial model. Demand growth in the model is measured in terms of growth in the franchise area, electricity sales. The Commission has required ACTEW to provide additional information direction linking the growth in demand to: (i) energy consumption by categorisation of *Distribution Customers*, or (ii) demand by categorisation of *Distribution Customers* (iii) numbers of *Distribution Customers* and (iv) length of the *distribution network*. ACTEW has provided the following information to date which has been taken into consideration (as stated) in determining ACTEW's revenue requirement: (i) expected energy consumption by categorisation of distribution customers 1998/99 to 1999/2000 inclusive. Total franchise area energy consumption by distribution customers is projected to grow by 0.80 percent per annum over the regulatory period (used in determining revenue projection). *(ii)* numbers of distribution customers. The number of distribution is projected to grow by 1.12 percent per annum over the regulatory period (used in determining revenue projection). (iii) length of the distribution network. The total length of ACTEW's overhead mains in service is 2,863km. The total length of ACTEW's underground mains in service is 2,152km. (used in determining asset value).

Code Clause	Reference to final report
6.10.5.(d) (2) the service standards applicable to the *Distribution Network Owner* under the *Code* and any other standards imposed on the *Distribution Network Owner* by any regulatory regime administered by the *Jurisdictional Regulator* and by agreement with the relevant *Network Users*;	**Section 6.2.1 and Section 6.2.2** For the draft price direction, the Commission has taken into consideration the service standards already achieved by ACTEW. Input has been requested from ACTEW, the Government, and service users. As detailed in section 5.1 the outcomes of the public hearing process indicates that ACTEW's current levels of service are not out of step with community expectations. Nonetheless, the Commission considers that additional work is required to confirm the most appropriate standards and associated levels of performance.
6.10.5.(3) price stability;	**Section 3 and 5.1** In adopting an incentive approach to regulation, the Commission wishes to allow ACTEW an appropriate level of discretion as to how to translate the revenue requirement into specific prices. However, in order to promote price stability the Commission has directed a constant 'X' factor to apply for all five years of the review period. In addition, the Commission will promote price stability through the requirements of clause 6.14.5 – publication of distribution network prices whereby, (a) *Distribution Network Service Providers* in conjunction with the *Jurisdictional Regulator* must publish by 31 May each year: (1) a schedule of prices for all classes of *distribution services* at each *voltage* level, *load class* and *pricing zone* where the schedule prices are to be the maximum price charged; and ……. (b) Price variations other than on an annual basis can be made only with the approval of the *Jurisdictional Regulator,* who will also determine the amount of notice which should be given before implementation of the new price.

Code Clause	Reference to final report
6.10.5.(4) the *Jurisdictional Regulator's* reasonable judgment of the potential for efficiency gains to be realised by the *Network Owner* in expected operating, maintenance and capital costs, taking into account the expected demand growth and service standards referred to in clauses 6.10.5(d)(1) and (2);	**Section 6.1.1** On the balance of information, it is the Commission's judgement that ACTEW's forecast cost levels are conservative. The Commission has requested ACTEW to provide better information on the relationship between service levels and costs. For the draft price direction, the Commission set ACTEW a target of a real productivity improvement of 4 percent a year over the regulatory control period. Based on the outcomes of the public hearing process, the Commission now considers efficiency gains of 5 percent in 1999/2000, 3 percent in 2000/2001 and 2 percent in 2001/2002 to 2003/2004 to be reasonable.
6.10.5.(5) the *Distribution Network Owner's weighted average cost of capital* applicable to the relevant *network service*, having regard to the risk adjusted cashflow rate of return required by investors in commercial enterprises facing similar business risks to those faced by the *Distribution Network Owner* in the provision of that *network service*;	**Section 6.3.2** The Commission has independently determined ACTEW's WACC as detailed in Attachment 4, based on the approach outlined in Schedule 6.1 of the Code.
6.10.5 (6) the provision of a fair and reasonable risk-adjusted cashflow rate of return on efficient investment including sunk assets subject to the provisions of clause 6.10.3 (e) (5);	**Section 6.3.1** For the final direction on pricing, the Commission has examined ACTEW's valuation of its assets based on an optimised deprival valuation approach. In the case of electricity, the Commission has accepted ACTEW's DORC based valuation with some adjustment for capital contributions. ACTEW's resulting rates of return an assets over the review period are detailed in Table 6.11.

Code Clause	Reference to final report
6.10.5 (7) the right of the *Distribution Network Owner* or *Distribution Network Service Provider* (as appropriate) to recover reasonable costs arising from but not limited to: (i) any State and Commonwealth taxes which it has paid in connection with the operation of its business as a provider of *distribution services*; (ii) charges paid to *Transmission Network Service Providers* and other *Distribution Network Service Providers* arising from the provision of *distribution services*; (iii) payments made to *Embedded Generators* for demand side management programs and local energy storage *facilities* which provide *distribution service* of a kind set out in or similar to those set out in part 4.5 of schedule 6.6 or in accordance with clause 5.6.2 where the *Jurisdictional Regulator* determines that this is appropriate;	With reference to clause, 6.10.5 (7) (i) The Commission has allowed for the fact that although ACTEW is exempt from federal income tax, it is required to pay income tax equivalents to the ACT Government. The Commission proposes allowing ACTEW to adjust prices for the net impact of the introduction of a Goods and Services Tax and changes in other taxes (including any change in the statutory rate for corporate tax). Calculation of the net impact will be subject to independent audit and approval by the Commission. 6.10.5.(7) (ii) The Commission has allowed for the full pass through of transmission charges paid by ACTEW. 6.10.5.(7) (iii) There are presently no embedded generators within ACTEW's distribution network.
6.10.5.(8) any correction factors arising from the previous *regulatory period*;	The period from 1999/2000 to 2000/2004 covered by this final direction is the first regulatory period in relation to the National Electricity Code. Consequently, the Commission has not estimated any correction factors. ACTEW's compliance with the Commission's 1998/99 direction will be examined at the end of the regulatory period and an appropriate adjustment made if required.
6.10.5.(9) any reduction or increase in energy losses in the *distribution network*	The Commission has based its final price direction on a system loss factor (as advised by ACTEW) that is constant over the regulatory period.
6.10.5.(10) the on-going commercial viability of the *distribution* industry; and	**Section 6.3** The Commission has sought to ensure the on-going viability of ACTEW by basing its final direction on appropriate rates of return on assets as well as other relevant financial indicators as referred to below.
6.10.5 (11) any other relevant financial indicators	**Section 6.3.3** In addition to the rate of return on ACTEW's assets, the Commission has considered the following financial indicators for its final direction: gross earnings interest coverage, funds flow from operation (FFO) gross interest coverage, FFO/total debt, internal funding, and gearing.

7.5 Information requirements

The Commission will publish information requirements needed for future regulatory control periods, including comments on effective ringfencing of regulated and non-regulated services, and compliance checking.

However, such matters have been subject to communication between ACTEW and the Commission since the Commission was established.

7.6 Calculation of maximum prices

Under Part E of Chapter 6 of the code, the distribution network service provider is required to gain the agreement of the Jurisdictional Regulator for various matters relating to the establishment of maximum prices. These include:

- asset categories for classes of distribution services (6.13.2)
- locational prices or pricing zones (6.13.2)
- method of allocating aggregate annual revenue requirements for classes of distribution service to asset categories (6.13.3)
- method of allocating aggregate annual revenue requirements for asset categories to cost pools (6.13.5)
- method of allocation of distribution use of service (DUOS) costs to distribution customers (6.13.6)
- method of allocation of common service costs to distribution customers (6.13.6)
- method of allocation of payments to other DNSPs and transmission network service providers (TNSPs).

In response to the draft price direction ACTEW has provided the Commission with information in relation to the above categories on a confidential basis.

In addition, in the calculation of prices:

- The Jurisdictional Regulator may place limits on the annual variation in published distribution service prices. Limits must be specified prior to the commencement of the regulatory control period and are to apply for the duration of that period (6.14.4).
- Prices must be consistent with any applicable jurisdictional requirements and any applicable price cap determined in accordance with part D (6.14.4).
- The Jurisdictional Regulator, in conjunction with the DNSP, must publish a schedule of maximum prices and a statement providing details of principles and methods for determining connection charges (6.14.5).
- The Jurisdictional Regulator must approve any price variations on other than an annual basis (6.14.5).

To satisfy these requirements, ACTEW will need to provide the Commission with substantially more information than it has supplied for past price directions.

SCHEDULE 1 PRICE DIRECTION FOR ACTEW'S REGULATED SERVICES

METHODS FOR ASCERTAINING MAXIMUM PRICES TO BE CHARGED UNDER THE INDEPENDENT PRICING AND REGULATORY COMMISSION ACT, 1997

This Price Direction specifies the methods for ascertaining maximum prices for ACTEW's regulated, electricity, water and sewerage services applicable from 1 July 1999 to 30 June 2004.

All other prices or charges for regulated services provided by ACTEW not referred to specifically in this direction, shall remain at 1998/99 levels. ACTEW cannot levy any new or additional charges for any of its regulated services, other than in accordance with this direction, or with the approval of IPARC in future directions.

1. ELECTRICITY

This determination sets out the maximum charges that are payable to ACTEW for, or in, connection with the supply of electricity to consumers.

Subject to the regulation of the network revenue (1.1), CPI adjustment thereof (5), and regulated retail margin (1.2), ACTEW will be free to structure tariffs as long as the side constraints (1.3) are not exceeded. **The tariffs so structured must, to comply with the National Electricity Code, be accompanied by a full customer impact analysis and must be approved by the Commission prior to implementation**. Customers' bills will need to show network and energy components where retail competition has been introduced.

1.1 Network revenue

The revenue received from network use-of-system charges (network revenue cap) for the network business of ACTEW, as defined by the revenue in cents per kWh of sales, will be determined each year as follows.

Maximum revenue per kWh of sales each year =
(revenue per kWh of sales in the previous year) * (CPI+X)

where, X = - 2% in all years from 1999/2000 to 2003/2004.

The network revenue cap excludes the transmission use of system charge (TUOS) which is to be passed straight through to customers.

1.2 Regulated retail margin

Regulated retail margin =
(sales) – (electricity purchases) - TUOS - DUOS – (market and system fees)

The regulated retail margin for 1999/2000 is $7.5 million.

The regulated retail margin will be allowed to vary by CPI[105] each year thereafter, till such time as full retail contestability is introduced in the ACT.

In calculating the regulated retail margin, electricity purchase costs are to be calculated on the basis of ACTEW's deemed electricity purchase price. ACTEW's deemed electricity purchase price in 1999/2000 is $42 per MWh. The amount for subsequent years will be advised separately by IPARC.

The regulated retail margin does not include market operations and system control costs and ancillary charges, miscellaneous charges, capital contributions, recoverable works and ACTEW's other ancillary services. Market and system fees are to be the actual costs incurred by ACTEW.

1.3 Side constraints on retail prices

- No single domestic household bill (for the same level and pattern of consumption of electricity) is to increase by more than the greater of (a) $2.41 per month or (b) 1.7 percent in real terms, over the same bill in the same period of the previous year.
- No General Tariff (or equivalent) customer's bill is to increase by more than 1.7 percent in real terms, over the same bill in the same period of the previous year.
- Network tariffs are not to increase for customers who change from ACTEW to other electricity suppliers.

1.4 Capital contributions

The maximum prices for capital contributions are to be calculated on the basis of the methodology in use as at 30 June 1998.

1.5 Different prices

ACTEW may in circumstances where the quality of the service sought by the customer is higher than that generally available, charge a price different to that set out in or calculated in accordance with the Price Direction subject to that price being agreed to by the customer in question. It is required that ACTEW specify its quality of service to the satisfaction of the Commission prior to the implementation of such pricing.

2. WATER

This determination sets out the maximum water charges that are payable to ACTEW for or in connection with the supply of water in accordance with the Water Rates Act 1959. In this determination, "supply" includes "or the availability of supply".

Subject to the regulation of the maximum average water revenue per property each year (2.1), and CPI adjustment thereof (5), ACTEW will be free to structure tariffs as long as the side constraints (2.2) are not exceeded. **The tariffs so structured must be accompanied by a full customer impact analysis and must be approved by the Commission prior to implementation**.

[105] Australian Bureau of Statistics, *Consumer Price Index*, Canberra, All Groups. actual CPI for the four quarters to March that year divided by the actual CPI for the four quarters to March of the previous year.

2.1 Water Revenue

Maximum average water revenue per property each year =
(Average water revenue per property in the previous year) * (CPI + X)

where, X = 4% in 1999 / 2000, 2000 / 2001 and 3% in 2001 / 2002, 2002 / 2003 and 2003 / 2004.

2.2 Side constraints on water prices

No single domestic household bill (for the same level and pattern of consumption of water) is to increase by more than 6 percent real over the same bill in the same period of the previous year, for consumption up to 850kL per annum.

3. SEWERAGE

This determination sets out the maximum sewerage charges that are payable to ACTEW for or in connection with the supply of sewerage services in accordance with the *Sewerage Rates Act 1968*. In this determination, "supply" includes "or the availability of supply".

Subject to the regulation of the maximum average sewerage revenue per property each year (3.1) and CPI adjustment thereof (5), ACTEW will be free to structure tariffs as long as the side constraints (3.2) are not exceeded. **The tariffs so structured must be accompanied by a full customer impact analysis and must be approved by the Commission prior to implementation**.

3.1 Sewerage Revenue

Maximum average sewerage revenue per property each year =
(Average sewerage revenue per property in the previous year) * (CPI + X)

where, X = 1% in 1999 / 2000, 2000 / 2001, 2001 / 2002, and 0% in 2002 / 2003 and 2003 / 2004.

3.2 Side constraints on sewerage prices

No single domestic household bill (for the same number of fixtures or pattern of consumption) is to increase by more than 1 percent in real terms over the same bill in the same period of the previous year.

4. MISCELLANEOUS MONOPOLY CHARGES

The maximum prices for ACTEW's miscellaneous monopoly charges are not to exceed the equivalent charges as at 30 June 1999 plus CPI–2% each year thereafter.

5. CPI ADJUSTMENT

The Commission has determined to apply prospective CPI related variations to ACTEW's electricity distribution network, water and sewerage revenues. Any differences between prospective CPI and actual CPI in a year will be adjusted for in the following year's revenue.

The process will be:

1. The Commission has received from ACTEW forecast revenue figures for the 1998/99 year based on normal weather conditions. It has also received forecast kWh consumption for ACTEW's electricity franchise area and the number of properties provided with water and sewerage services.
2. On the basis of these figures the Commission has calculated a per unit revenue figure for each of these services. The following table reflects this calculation:

Table S 5.1 Unit revenue for 1998/99

Service	Revenue ($m)	Unit	Revenue /Unit
Electricity	84.830	2,311,379 MWh	3.670c/kWh
Water	38.100	119,783 properties	$318.08/property
Sewerage	45.500	116,948 properties	$389.06/property

3. For each service, the allowed revenue per unit in 1999/2000 will be the above figures varied for the forecast CPI[106], plus or minus a factor ('X') reflecting the matters considered under s20 of the IPARC Act and the National Electricity Code.
4. Upon the release of the March quarter 2000 CPI[107] figure by the Australian Bureau of Statistics, a CPI adjustment amount will be calculated. This CPI adjustment factor will reflect the difference between the forecast CPI change for 1999/2000 and the actual CPI for the four quarters to March 2000 divided by the actual CPI for the four quarters to March 1999. An example for electricity is shown in the table below.
5. This adjustment amount will be added (or deducted as in the case of the example below) to the allowed unit revenue for 2000/01.
6. This process will then be repeated in each subsequent year.
7. In each case the unit revenues will be applied to ACTEW's forecast MWh sales (in the case of electricity) or property numbers (in the case of water and sewerage) for that year. No adjustments will be made for differences between ACTEW's forecast and actual MWh and property numbers.

Table S 5.2 Example calculation: CPI adjustment to electricity revenue for 1999/2000 and 2000/2001

1998/99 Unit Revenue	1999/2000 Forecast CPI	1999/2000 Forecast Unit Revenue* (for tariff setting)	1999/2000 Actual CPI (say)	1999/2000 Unit Revenue Based on Actual CPI*	1999/2000 CPI adjustment	2000/2001 Forecast CPI (say)	2000/2001 Forecast Unit Revenue*	2000/2001 Forecast Unit Revenue after 1999/2000 CPI adjustment (for tariff setting)
3.670 c/kWh	2.5%	3.688 c/kWh	1.5%	3.652 c/kWh	-0.036 c/kWh	3.5%	3.707 c/kWh	3.671 c/kWh

*Includes annual price direction variation of – 2%

[106] ACT Government Office of Financial Management forecast
[107] Australian Bureau of Statistics, *Consumer Price Index*, Canberra, All Groups.

Table S 5.3 Example calculation: CPI adjustment to electricity revenue for 2001/2002

2000/2001 Actual CPI (say)	2000/2001 Unit Revenue Based on Actual CPI*	2000/2001 CPI adjustment	2001/2002 Forecast CPI (say)	2001/2002 Forecast Unit Revenue*	2001/2002 Forecast Unit Revenue after 2000/2001 CPI adjustment (for tariff setting)
2.8%	3.681 c/kWh	-0.026 c/kWh	1.8%	3.674 c/kWh	3.648 c/kWh

*Includes annual price direction variation of – 2%

It is the Commission's intention that the CPI adjustment for 2003/2004 will be made in 2004/2005 irrespective of the form of regulation prevalent in that year.

6. Goods and Services Tax

Upon the introduction of a Goods and Services Tax ACTEW may adjust prices by an amount calculated to reflect the **net** effect of the introduction of taxation reforms associated with and including the Goods and Services Tax where the amount of the adjustment has been verified by an independent auditor.

ATTACHMENT 1 TERMS OF REFERENCE

AUSTRALIAN CAPITAL TERRITORY
INDEPENDENT PRICING AND REGULATORY COMMISSION ACT 1997

REFERENCE FOR INVESTIGATION UNDER SECTION 15 AND SPECIFIED REQUIREMENTS IN RELATION TO INVESTIGATION UNDER SECTION 16

No. OF 1998-09-18

Pursuant to subsection 15(1) of the *Independent Pricing and Regulatory Commission Act 1997*, (the "Act"), I refer to the Independent Pricing and Regulatory Commission ("the Commission") the matter of the provision of directions about prices for regulated services, in electricity, water and sewerage, supplied by ACTEW Corporation Limited in the ACT ("regulated ACTEW charges"), for the period from 1 July 1999 until 30 June 2004, together with certain other matters.

Pursuant to subsection 15(3) of the Act, the Commission's directions will cover charges determined under section 48(1) of the *Energy and Water Act 1998*.

Pursuant to subsection 16(1) of the Act, I specify the following requirements in relation to the conduct of the investigation:

1. The Commission is to review and report on appropriate pricing and pricing methodology for the following:

   - the regulated electricity distribution services provided by ACTEW for the 5 year period from 1 July 1999

   - the regulated electricity retail services provided to franchise customers by ACTEW for the period from 1 July 1999

   - the regulated water services and sewerage services provided by ACTEW for the 5 year period from July 1999, including a bulk water charge and including the option of absorbing the Environmental Works Charge and any other designated item in the pricing structure

   - the principles that should apply for any price reset at the end of the period of the initial and subsequent price paths.

2. In addition, the Commission is to advise on the approach to establishing an appropriate water abstraction charge that reflects sound economic and environmental principles as well as providing advice on the structure and level of charges that would apply if that approach were applied.

3. In undertaking the review the report should have regard to the following:

(a) the protection of consumers from abuses of monopoly power in terms of prices, pricing policies (including policies relating to the level or structure of prices for services) and standard of regulated services;

(b) standards of quality, reliability and safety of the regulated services;

(c) the need for greater efficiency in the supply of regulated services to reduce costs to consumers and taxpayers;

(d) an appropriate rate of return on any investment in the regulated services, including achieving a commercial return on the assets of the businesses and having regard to a commercially appropriate capital structure for ACTEW;

(e) the cost of providing the regulated services, including the need for pricing reform that ensures prices reflect full economic costs and provides an effective means to allocate scarce resources and reflect environmental and other externalities and the need to ensure timely, appropriate capital expenditure in future years.

(f) the principles of ecologically sustainable development;

(g) the social impacts of the decision;

(h) considerations of demand management and least cost planning;

(i) the borrowing, capital and cashflow requirements of persons providing regulated services and the need to renew or increase relevant assets in the regulated industry;

(j) the effect on general price inflation over the medium term;

(k) any arrangements that a person providing regulated services has entered into for the exercise of its functions by some other person;

(l) the need for a transparent methodology that clearly explains on a quantitative basis the determinants of the proposed price path and has regard to the methodological developments in other jurisdictions;

(m) any applicable requirements of the National Electricity Law and the National Electricity Code, in particular, Code provisions relating to distribution network pricing;

(n) the desirability for appropriate incentives to improve performance both within each regulatory period and between regulatory periods.

4. The Commission is to investigate and provide a draft report by 12 February 1999 that is to be made available for public examination and consultation by 23 March 1999. The final report is due by 3 May 1999.

ATTACHMENT 2 ACTEW RECOVERABLE AMOUNT TEST

SUMMARY RESULTS OF TEST OF RECOVERABLE AMOUNT - 30 JUNE 1998

Variables - Based on 1998 SCI	Electricity Network	Water	Sewerage
Free Cash Flow ($ ' 000)	19,758	14,653	12,893
Average Remaining Asset Lives	31	56	48
Inflation	3.00%	3.00%	3.00%
Customer Growth - Yrs 1 to 5	1.00%	1.00%	1.00%
Customer Growth - Yrs after 5	1.00%	1.50%	1.50%
Revenue Cap - Yrs 1 to 5	-2.50%	-2.00%	-2.00%
Revenue Cap - Yrs after 5	-1.00%	1.00%	1.00%
Productivity Gain - Yrs 1 to 5	6.00%	2.00%	3.00%
Productivity Gain - Yrs after 5	2.00%	1.50%	1.50%
Discount Rate (Post Tax WACC)	8.95%	8.95%	8.95%
Recoverable Amount Test DCF Value ($ ' 000)	**410,738**	**457,456**	**383,382**
30 June 1998 Book Value ($ ' 000)	**410,318**	**436,256**	**381,652**
Variance ($ ' 000)	**420**	**21,200**	**1,730**
Variance (%)	**0.10%**	**4.86%**	**0.45%**
Book Value in Excess of Recoverable Amount	**NIL**	**NIL**	**NIL**

ATTACHMENT 3 IPARC ECONOMIC VALUATION

	Electricity Network	Water	Sewerage
Opening cash flow ($'000)	41,459	19,895	24,023
Remaining asset life (years)	25	50	50
Real discount rate	7.5%	7.5%	7.5%
Economic value ($'000)	462,141	258,138	311,698
Growth rate		1.0%	0.8%
Adjustment for growth		71,495	55,599
Total ($'000)	462,141	329,632	367,296

ATTACHMENT 4 ESTIMATION OF ACTEW'S WACC

Parameter	ACTEW Proposal				IPARC Final Direction		
	Electricity		Water & Sewerage		Electricity, Water & Sewerage		
	Lower	Upper	Lower	Upper	Low	Medium	High
Nominal risk free rate (Nom. Bond)	6.17%	6.70%	6.17%	6.70%	5.53%	5.53%	5.53%
CPI	2.40%	2.40%	2.40%	2.40%	1.92%	1.92%	1.92%
Real risk free rate (Index. Bond)					3.54%	3.54%	3.54%
Real risk free rate (Fisher)	3.68%	4.20%	3.68%	4.20%			
Market risk premium	6.00%	6.00%	6.00%	6.00%	5.00%	5.50%	6.00%
Debt Margin	0.63%	0.35%	0.63%	0.35%	1.00%	1.10%	1.20%
Market return (nominal)	12.17%	12.70%	12.17%	12.70%	10.53%	11.03%	11.53%
Proportion of debt funding	50%	40%	50%	40%	60%	50%	40%
Proportion of equity funding	50%	60%	50%	60%	40%	50%	60%
Dividend imputation factor	0.45	0.25	0.45	0.25	0.5	0.4	0.25
Asset beta	0.3495	0.5220	0.4385	0.5890	0.30	0.40	0.50
Debt beta	0.06	0.06	0.06	0.06	0.12	0.12	0.12
Tax rate for debt ('corporate')	36%	36%	36%	36%	36%	36%	36%
Tax rate for equity ('effective')	36%	36%	36%	36%	36%	36%	36%
Equity beta	0.660	0.800	0.820	0.900	0.74	0.77	0.79
Cost of equity (nominal post tax)	10.13%	11.50%	11.09%	12.10%	9.24%	9.78%	10.27%
Cost of equity (real post tax - Fisher)	7.55%	8.89%	8.49%	9.47%	7.18%	7.71%	8.19%
Cost of debt (nominal pre tax)	6.80%	7.05%	6.80%	7.05%	6.53%	6.63%	6.73%
Cost of debt (nominal post tax)	4.35%	4.51%	4.35%	4.51%	4.18%	4.24%	4.31%
Cost of debt (real post tax - Fisher)	1.91%	2.06%	1.91%	2.06%	2.21%	2.28%	2.34%
WACC post tax (nominal)	6.22%	7.85%	6.60%	8.17%	5.39%	6.12%	7.13%
WACC post tax real	3.73%	5.33%	4.10%	5.63%	3.40%	4.11%	5.11%
WACC pre tax nominal	9.71%	12.27%	10.31%	12.76%	8.42%	9.56%	11.13%
WACC pre tax real	7.14%	9.64%	7.73%	10.12%	6.38%	7.49%	9.04%

ATTACHMENT 5 DEFINITION OF FINANCIAL INDICATORS

FINANCIAL INDICATORS	GENERAL DESCRIPTION	DEFINITION/COMPONENTS
Funds Flow Adequacy	Ability to generate funds to cover primary cash requirements	(Net Profit after Tax + Depreciation & Amortisation + Increase in Long Term Provisions) / (Dividends + Capex)
Funds Flow Interest Coverage (FFO Gross Interest Coverage)	How many times funds flow covers interest payments (controlled for depreciation)	Net Profit after Tax + Depreciation & Amortisation + Interest + Tax + Increase in Long Term Provisions) / Interest
Funds Flow Net Debt Pay Back	How many years will it take to payback total debt	(Total Debt – Cash) / (Net Profit after Tax + Depreciation & Amortisation + Increase in Long Term Provisions)
Internal Financing Ratio (Internal Funding)	Funds retained as a proportion of capital expenditure	(Net Profit after Tax + Depreciation & Amortisation + Increase in Long Term Provisions – Dividends) / Capex
Pre-tax Interest Coverage (Gross Earnings Interest Coverage)	How many times profit before tax covers interest payments (including depreciation)	Profit before Interest and Tax / Interest Expenses
Total Debt / Total Capital (Gearing)	Proportion of debt to capital (gearing ratio)	Total Debt / (Total Debt + Shareholders Funds)
Funds From Operations / Total Debt (FFO/Total Debt)	Proportion of funds from operations to total debt	(Net Profit after Tax + Depreciation & Amortisation + Increase in LT Provisions) / Total Debt
EBIT / Total Revenue	Ratio of profit realised per total revenue	Profit before Interest and Tax / Total Revenue
EBITD / Total Revenue	Ratio of profit plus depreciation per total revenue	(Profit before Interest and Tax + Depreciation. & Amortisation) / Total Revenue
EBIT / Funds Employed	Return on funds employed	Profit before Interest and Tax/ (Total Assets - (Current Liabilities-Current Borrowings))
EBIT	Earnings before interest and tax	Profit before Interest and Tax
EBITD	Earnings before interest, tax and depreciation	Profit before Interest and Tax + Depreciation. & Amortisation