2005 Price Controls Review

Final Proposals for PC3

14 November 2005

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Foreword

In August 2004, the Bureau commenced a review of the price controls that apply to the following companies:

- Al Ain Distribution Company (AADC);
- Abu Dhabi Distribution Company (ADDC);
- Abu Dhabi Water and Electricity Company (ADWEC);
- Abu Dhabi Company for Servicing Remote Areas (more commonly known as the Remote Area Services Company, or "RASCO"); and
- Abu Dhabi Transmission and Despatch Company (TRANSCO).

These price controls determine the Maximum Allowed Revenues (MARs) that each company can recover in respect of its licensed activities in any year.

The present price controls for all five companies are due to expire on 31 December 2005. In the case of RASCO, the Bureau has decided to extend the present price controls for a further two years (2006 and 2007). New price controls for the other four companies are required to take effect from 1 January 2006 ("the PC3 period").

This document sets out the Bureau's Final Proposals for the PC3 controls. A separate document containing details of the proposed modifications of each company's licence to give effect to these proposals is also being issued to each company.

Each company is requested to communicate to the Bureau its acceptance or otherwise of the proposed licence modifications **by 17 December 2005**, to the following address:

Mark Clifton
Director of Economic Regulation
Regulation and Supervision Bureau
P.O. Box 32800, Abu Dhabi
Fax: 642-4217; Email: mpclifton@rsb.gov.ae

If accepted by the licensee by the above date, these proposals will come into effect on 1 January 2006. Otherwise, the existing licence will remain in force until such time as it is modified.

NICK CARTER
DIRECTOR-GENERAL
REGULATION AND SUPERVISION BUREAU

1 Summary of PC3 Final Proposals

1.1 Introduction

This document describes the Bureau's Final Proposals for PC3 for AADC, ADDC, ADWEC and TRANSCO taking into account the responses to the Draft Proposals issued by the Bureau in July 2005.

In the case of RASCO, the present price controls will be extended for a further two years (2006 and 2007).

1.2 Form of Controls (Section 3)

The form of controls will remain as at present – that is, a CPI-X revenue cap linked to "revenue drivers" with a Performance Incentive Scheme (PIS). However the PC3 controls will incorporate some new structural features compared to the existing controls:

- all controls to be of four years duration (2006 – 2009 inclusive);
- separate price controls for the water and electricity businesses of ADWEC;
- all income from licensed activities (from whatever source) to be included within "regulated revenue" (note: this is a change from the Draft Proposals); and
- ADWEC will be required to produce a formal report to the Bureau if its unit production costs (water or electricity) increase compared to the previous year.

Due to concerns expressed by respondents, the Bureau has decided to postpone the separation of distribution and supply business controls. The Bureau will work closely with the distribution companies to ensure the separation can occur at the next price controls review.

1.3 Framework for Price Control Calculations (Section 4)

Consistent with the approach taken to date, a net present value (NPV) framework is adopted to establish the level and profile of price-controlled revenue for each business:

- the net present value (NPV) of required revenue over the control period is calculated for the network companies using the "building-block" approach as the sum of the NPVs of:
  - opex;
  - depreciation;
  - return on capital; and
  - the financial adjustments described in Section 9;
- 70% of revenue is assumed to be recovered via the fixed term ("a"). The remaining 30% of revenue is recovered from the variable revenue drivers ("b" and "c"), equally apportioned between the two revenue drivers;

- for ADWEC, the weight for the fixed term ("A") for both water and electricity businesses is 100%, and the NPV of required revenue over the control period is calculated as the sum of the NPVs of:
  - opex;
  - capex,
  - allowed profits on turnover; and
  - the financial adjustment described in Section 9.
- "X" has been set at zero for all businesses, which means that the notified values ("a", "b", "c" and "A") increase by CPI each year from 2007 onwards.

1.4 Revenue Drivers (Section 5)

The definitions of revenue drivers are unchanged from the PC2 period except for the peak demand-related revenue drivers for TRANSCO (for both water and electricity), which will in future be based only on metered units.

The projections for the variable revenue drivers are summarised in **Table 1.1**.

Table 1.1: Revenue Driver Projections – Final Proposals

		2006	2007	2008	2009
AADC					
Electricity customer accounts	Customers	93,944	97,274	100,122	102,802
Metered electricity units distributed	GWh	6,604	7,233	7,922	8,765
Water customer accounts	Customers	48,525	50,048	51,217	52,238
Metered water units distributed	MG	20,965	31,660	41,470	51,048
ADDC					
Electricity customer accounts	Customers	205,554	210,008	214,557	218,863
Metered electricity units distributed	GWh	14,842	16,106	17,478	18,957
Water customer accounts	Customers	176,468	180,324	184,264	188,290
Metered water units distributed	MG	69,154	80,137	104,965	129,208
TRANSCO					
Metered electricity peak demand	MW	4,397	4,824	5,073	5,632
Metered electricity units transmitted	GWh	23,419	27,043	28,443	31,573
Metered water peak demand	MGD	526	557	587	622
Metered water units transmitted	MG	175,056	197,206	207,827	220,219

The approach to projecting revenue drivers has been as follows:

- the distribution companies' forecasts of customer numbers have been adopted, as they are consistent with past trends;
- overall peak demands, and total units transmitted and distributed, have, in general, been assumed to increase in line with ADWEC's sector peak demand forecasts;

- the metering of transmission system exit points is assumed to be complete by the time of the 2006 peak demands; and
- distribution companies are assumed to have metered 97% of all final customer demands (water and electricity) by 2009.

1.5 Operating Expenditure (Section 6)

Operating expenditure (opex) for 2006-2009 has been projected at the level (in real terms) of each business in 2004, with the following adjustments:

- opex is assumed to increase by 0.75% for each 1% increase in demand; and
- assumed efficiency improvements of 5% a year in real terms.

Further adjustments have been made for the following factors:

- for AADC's water business, an additional AED 25 million spread across 2006 and 2007 for costs associated with upgrading customers' water installations;
- for ADWEC, an additional AED 7 million per year for additional responsibilities during PC3 such as those relating to the Emirates National Grid and GCC Interconnection; and
- for TRANSCO's water business, an additional AED 30 million per year for water pumping costs in relation to production plant located outside the Emirate of Abu Dhabi used to supply customers within the Emirate. Furthermore, for water pumping requirements within the Emirate, it is assumed that TRANSCO receives a large user electricity tariff from ADDC and AADC effective from 1 January 2007.

The resulting projections of operating expenditure for 2006-2009 are summarised in **Table 1.2**:

Table 1.2: Opex Projections for PC3 – Final Proposals

AED million, 2006 prices	**2006**	**2007**	**2008**	**2009**
AADC Electricity	165.673	164.656	163.645	162.640
AADC Water	89.517	88.766	75.522	74.785
ADDC Electricity	248.646	245.999	243.380	240.789
ADDC Water	138.404	136.701	135.019	133.358
ADWEC Electricity	11.084	11.161	11.239	11.318
ADWEC Water	6.941	6.986	7.031	7.076
TRANSCO Electricity	115.878	117.373	118.888	120.422
TRANSCO Water	261.301	228.031	231.832	235.707
Electricity – Total	541.281	539.189	537.152	535.170
Water - Total	496.194	460.484	449.404	450.926
Grand Total	1,037.445	999.673	986.556	986.096

Notes: (1) Excludes depreciation in all cases. (2) Includes capital expenditure for ADWEC.

1.6 Capital Expenditure (Section 7)

1.6.1 PC1 Capital Expenditure (1999 – 2002)

The results of the PC1 capital expenditure (capex) review were as summarised in **Table 1.3**:

Table 1.3: PC1 Capex Efficiency – Final Proposals

Company	Capex Efficiency
AADC	84%
ADDC	89%
TRANSCO	94%

These results have been applied to actual capex for the PC1 period, for both water and electricity. For this purpose, the Bureau has used accruals-based capex (including advances to contractors) as shown in the cash flow statements in the audited accounts, as audited data is not readily available for a purely cash-based measure.

Compared to the provisional PC1 capex allowances set at the last review (AED 6.5 billion in total), the additional capex (AED 0.75 billion in total) for the PC1 period is shown in **Table 1.4:**

Table 1.4: Efficient PC1 Capex over and above Provisional PC1 Capex – Final Proposals

AED m, 1999 prices	1999	2000	2001	2002
AADC Electricity	-76.044	50.785	37.039	-48.605
AADC Water	19.509	91.675	-12.295	80.769
ADDC Electricity	23.864	68.824	51.635	48.409
ADDC Water	25.718	-12.871	-13.255	-139.746
TRANSCO Electricity	119.453	224.729	206.178	-367.220
TRANSCO Water	-1.923	-0.767	94.147	285.532
Electricity – Total	67.272	344.337	294.852	-367.416
Water – Total	43.304	78.038	68.596	226.555
Grand Total	110.576	422.375	363.448	-140.861

The NPVs of the foregone financing costs (depreciation and return on capital) up to 2006 in respect of the above amounts, calculated using a discount rate of 6% (the cost of capital for the PC1 period, to which the adjustment relates), have been added to the opening 2006 Regulatory Asset Values (RAVs). For all companies combined, this adjustment amounts to about AED 542 million (in 2006 prices). In addition, efficient PC1 capex (as determined above, and net of accumulated depreciation) is incorporated into the RAVs for 2006 onwards.

1.6.2 PC2 Capital Expenditure (2003 – 2005)

For PC2 capex, for which provisional allowances of AED about 8 billion in total were made in the PC2 controls, the assessment of efficiency (water and electricity) will be undertaken in 2006, once audited data for all PC2 years will be available. The Bureau intends to appoint independent

consultants for this exercise. Any adjustment for differences between efficient and provisional PC2 capex will then be incorporated at the 2009 price controls review.

1.6.3 PC3 Capital Expenditure (2006 – 2009)

In the absence of reliable forecasts from licensees of their future capex, the Bureau is obliged to continue with the 'ex post' approach to capex for PC3. The provisional PC3 capex allowances (AED 13 billion in total) are shown in **Table 1.5**:

Table 1.5: Provisional Allowances for PC3 Capex – Final Proposals

AED m, 2006 prices	**2006**	**2007**	**2008**	**2009**
AADC Electricity	305	305	305	305
AADC Water	153	153	153	153
ADDC Electricity	536	536	536	536
ADDC Water	315	315	315	315
TRANSCO Electricity	1,200	1,200	1,200	1,200
TRANSCO Water	750	750	750	750
Electricity – Total	2,041	2,041	2,041	2,041
Water - Total	1,218	1,218	1,218	1,218
Grand Total	3,259	3,259	3,259	3,259

The provisional allowances are generally based on average capex over the last four years (2001-2004).

RAVs for the next price control period have been projected by rolling forward the PC3 provisional capex (net of depreciation) into the RAVs for each year of the PC3 period. The Bureau has retained the assumption of 30 years for the average asset lives for network companies and the straight-line method of depreciation.

Actual PC3 capex will be reviewed against the Bureau's efficiency criteria upon availability of audited data, and appropriate adjustments to remunerate efficient capex will be made at the subsequent price controls review, using the PC3 cost of capital. For PC3 capex, it is proposed that the efficiency of the companies will be assessed relative to each other, so that the effect of such a review is cost-neutral for the sector, subject to a general efficiency improvement. This is to provide more positive incentives for capex efficiency improvement.

The Bureau has retained its established efficiency criteria for PC3 capex with the additional guidance on the interpretation of these criteria provided in the Bureau's PC1 capex review reports. These criteria are that capital expenditures:

- are required to meet growth in customer demand or the relevant security standards; and
- are efficiently procured.

In addition, there will be a new licence requirement on the distribution companies to produce an annual 5 year planning statement.

1.7 Cost of Capital and Profit Margin (Section 8)

The Bureau's proposals in respect of the cost of capital are summarised in **Table 1.6**:

Table 1.6: Cost of Capital or Profit Margin – Final Proposals

	Cost of Capital (%, real, post-tax)	Margin on Turnover (%)
AADC / ADDC (distribution) – for information only	5.3%	-
AADC / ADDC (distribution and supply combined)	5.5%	
ADWEC (both businesses)	-	0.021%
TRANSCO (both businesses)	5.0%	-

The sector's cost of capital is assessed at 5% in real terms, as per the Draft Proposals.

For the distribution companies, a 0.3% premium was proposed in the Draft Proposals. In these Final Proposals the overall cost of capital (distribution and supply combined) has been further increased from 5.3% to 5.5%, to allow additional financing for the supply businesses compared with the Draft Proposals.

For ADWEC, which has few capital assets, the Bureau has allowed a margin of 0.021% on projected total turnover.

1.8 Financial Adjustments (Section 9)

A number of additional adjustments to the PC3 revenue requirement are necessary:

- for certain costs incurred by AADC and ADDC in 2001 and 2002 which have previously not been financed associated with distribution and supply assets inherited from RASCO (a positive adjustment);
- for TRANSCO's economic despatch performance during PC2 (negative adjustment);
- for amendments to audited Price Control Returns (PCRs) for AADC, ADDC and TRANSCO for PC1 (negative adjustments);
- for ADWEC's Information Submissions in 2003 and 2004 (negative adjustment); and
- for TRANSCO's income from unlicensed activities erroneously financed within the PC1 controls (negative adjustment).

The total financial adjustments for all businesses amount to a reduction of about AED 200 million, which is equivalent to less than 1.5% of the total NPV of MARs projected for the PC3 period.

1.9 Price Control Calculations (Section 10)

Section 10 presents the price control calculations for each business. The resulting notified values are given in **Table 1.7**:

Table 1.7: Notified Values for PC3 – Final Proposals

		Values for 2006		
	X	**a or A**	**b**	**c**
AADC Electricity	0.00	344.74 AEDm	751.22 AED/customer account	0.97 fils/kWh metered
AADC Water	0.00	127.63 AEDm	542.40 AED/customer account	0.77 AED/TIG metered
ADDC Electricity	0.00	641.94 AEDm	649.02 AED/customer account	0.82 fils/kWh metered
ADDC Water	0.00	262.68 AEDm	309.15 AED/customer account	0.60 AED/TIG metered
ADWEC Electricity	0.00	11.80 AEDm	n/a	n/a
ADWEC Water	0.00	7.56 AEDm	n/a	n/a
TRANSCO Electricity	0.00	729.33 AEDm	31.53 AED/kW metered	0.57 fils/kWh metered
TRANSCO Water	0.00	626.69 AEDm	235.16 AED/TIGD metered	0.67 AED/TIG metered

The annual Maximum Allowed Revenues (MARs) projected for each business over the PC3 period in respect of its "own costs" are summarised in **Table 1.8**:

Table 1.8: Projected MARs for PC3 Period (Excluding Pass-Through Costs) – Final Proposals

AED million, 2006 prices	**2006**	**2007**	**2008**	**2009**
AADC Electricity	479.66	488.29	497.13	507.35
AADC Water	170.05	179.09	187.26	195.17
ADDC Electricity	897.20	910.47	924.69	939.63
ADDC Water	358.43	366.16	382.17	397.85
ADWEC Electricity	11.80	11.80	11.80	11.80
ADWEC Water	7.56	7.56	7.56	7.56
TRANSCO Electricity	1,001.22	1,035.30	1,051.14	1,086.55
TRANSCO Water	868.40	890.63	904.84	921.43
Electricity – Total	2,389.88	2,445.85	2,484.75	2,545.33
Water – Total	1,404.44	1,443.44	1,481.82	1,522.00
Grand Total	3,794.32	3,889.29	3,966.58	4,067.33

Overall, the Final Proposals for MAR are about 5% higher than in the Draft Proposals. As a result, total annual price-controlled revenue during the PC3 period, excluding pass-through costs, is expected to increase to over AED 4 billion by 2009. This compares to combined MARs in 2005 of about AED 3 billion under the existing control. However, due to growth in demand, unit costs for electricity and water are expected by 2009 to be, respectively, 12% and 27% lower (in real terms) than in 1999.

1.10 Performance Incentive Scheme (Section 11)

The Bureau proposes to extend the Performance Incentive Scheme (PIS) for additional "Category A" indicators. The overall cap on the revenue adjustments for performance on Category A indicators will be increased to 4% of MAR in respect of "own costs" in that year.

The proposed Category A measures are as follows (note: '*' indicates new Category A indicators, for which the first year of assessment will be for performance in 2007):

- Timeliness of Audited Separate Business Accounts (SBAs) (all businesses);
- Timeliness of Audited Price Control Return (PCRs) (all businesses);
- Timeliness of Annual Information Submission (AIS) (all businesses);*
- Accuracy of Annual Peak Demand Forecasts (ADWEC's water and electricity businesses);*
- Water Quality (network water businesses);*
- Availability and Energy Lost (Unsupplied) (TRANSCO's electricity business);* and
- Number of Interruptions per Customer ("SAIFI") and Customer Minutes Lost per Customer ("SAIDI") (ADDC/AADC's electricity businesses).*

Definitions, incentive rates and targets for the above indicators are detailed in Section 11 (there are some minor changes from the Draft Proposals). Data for each indicator will be required to be audited as part of the annual PCR.

There will be a new requirement for licensees to commission a "Technical Assessor" - an independent consulting engineer, approved by the Bureau - to verify the accuracy of technical information, although the overall PCR will ultimately still need to be signed off by the auditors.

For those indicators relating to network interruptions, the Bureau has defined an "Interruption" as having a duration in excess of 3 minutes.

In the case of those new indicators which relate to network performance, "Exceptional Events" which can be shown by the licensee, to the satisfaction of the Technical Assessor, to be outside of its control will be excluded from the assessment of performance. However, in the case of the SAIFI and SAIDI measures for the distribution companies, an Interruption may be considered as potentially resulting from an Exceptional Event only for Interruptions involving more than 100,000 customer minutes lost.

The Bureau has also proposed a number of "Category B" performance indicators, with positive or negative financial adjustments at the next review for performance over the PC3 period. The overall Category B adjustment for each business will not exceed 2% of the MAR (excluding pass-through costs) in any year and will be limited to indicators where the performance is found to be exceptionally good or poor.

1.11 Changes from Draft Proposals

Differences between the Draft Proposals and the Final Proposals are summarised in **Table 1.9**.

Table 1.9: Summary of Main Differences from Draft Proposals

Main Feature	Company	Draft Proposals	Final Proposals
UAE CPI 2004	All	3% (estimate)	5.04% (actual)
UAE CPI 2005	All	3% (estimate)	5.04% (estimate)
Separation of controls	AADC & ADDC	Separate controls for distribution and supply	Single controls for distribution and supply
Definition of "Regulated Revenue"	AADC, ADDC & TRANSCO	Income of licensed businesses excluding income from contractors	All income of licensed businesses (all sources)
Opex for water pumping costs within Emirate of Abu Dhabi	TRANSCO	Reduced electricity costs from 2006	Reduced electricity costs from 2007 - additional AED 37.0 million (2006 prices) in 2006
Additional opex for new responsibilities	ADWEC electricity	AED 4 million (2006 prices)	AED 5 million (2006 prices)
Additional opex for new responsibilities	ADWEC water	AED 1 million (2006 prices)	AED 2 million (2006 prices)
Increased BST forecasts	ADWEC	Bureau estimate	ADWEC estimate
Cost of Capital	AADC & ADDC	5.3%	5.5%
Adjustment for PC1 water customer accounts	AADC	AED 28.36 million (2006 prices)	AED 27.95 (2006 prices) (correction of minor error in calculation)
Water Demand Forecast PIS Indicator	ADWEC	Tolerance band: + / - 10 MGD	Tolerance band: + / - 20 MGD
Water Quality PIS Indicator	AADC, ADDC & TRANSCO	Benchmark set at 100% compliance	Benchmark set at 80% (2007), 85% (2008), 90% (2009) compliance
Customer Minutes Lost PIS Indicator	AADC & ADDC	Customer Minutes Lost	Customer Minutes Lost per customer (SAIDI)
Number of Interruptions PIS Indicator	AADC & ADDC	Number of Interruptions	Number of Interruptions per Customer (SAIFI)
Customer Satisfaction PIS Indicator	AADC & ADDC	Not defined	To be assessed against OSS & GSS performance (once implemented)
PIS Exceptional Events	AADC & ADDC	No materiality lower limit	Materiality lower limit of 100,000 customer minutes lost, where relevant

2 Background

2.1 Price-Controlled Companies

The Abu Dhabi water and electricity sector is characterised by a 'single-buyer' structure and independent regulation by the Bureau established by Law No (2) of 1998. The following five sector companies are monopolies and hence are subject to controls on their prices set by the Bureau to protect customers from market power and to promote economic efficiency:

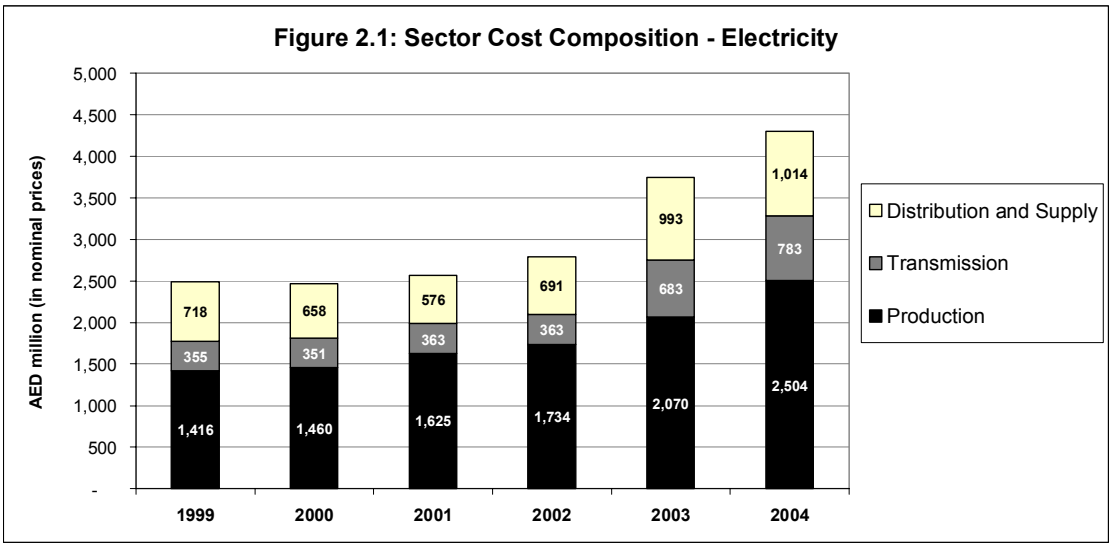
- **ADWEC**, the "single buyer", is responsible for planning and contracting for new production capacity for the sector. It purchases capacity and output from Generation and Desalination Companies (GDs) under the terms of Power and Water Purchase Agreements (PWPAs) and also purchases fuel for supply to GDs. ADWEC then sells bulk supplies of water and electricity to the distribution companies at the Bulk Supply Tariffs (BSTs).
- **TRANSCO** is responsible for the transmission and despatch of both electricity and water and earns revenue from the distribution companies in the form of Transmission Use-of-System (TUoS) charges and, potentially, connection charges.
- **ADDC** and **AADC** undertake the distribution and supply of water and electricity in the municipality areas of Abu Dhabi and Al Ain, respectively. They purchase water and electricity from ADWEC and RASCO, pay TUoS charges to TRANSCO, and receive revenue from final customers and subsidy from the Government.
- **RASCO** undertakes electricity generation and water production in remote areas.[1] While RASCO has contracted out the operation of these activities to the two distribution companies, they remain RASCO's legal responsibility.

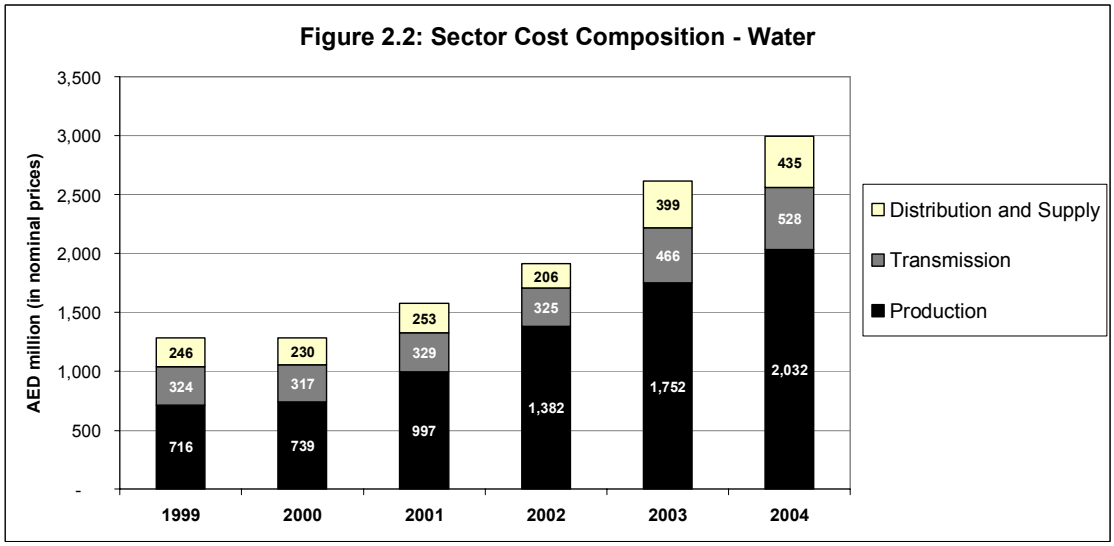
The first price controls (PC1) for AADC, ADDC, ADWEC and TRANSCO ran from 1999 to 2002. The second price controls (PC2) were set in 2002 to apply for three years (2003-2005).

A set of price controls was established for RASCO in 2003 to apply for two years (2004 and 2005). Previously, some activities of RASCO were subject to tariffs approved by the Bureau.

Sector turnover in 2004 was AED 7.3 billion, 60% of which relates to electricity. **Figures 2.1 and 2.2** indicate the composition of electricity and water costs, respectively, in terms of revenue from production, transmission, and distribution and supply businesses. Production costs account for about 60% of electricity costs and 65% of water costs. The remaining costs are subject to the price controls set by the Bureau.

[1] RASCO's distribution and supply assets were transferred to the distribution companies in 2001.





2.2 Main Features of Current Price Controls

The main features of the current price controls are summarised below:

1. ***CPI-X Revenue Caps:*** All of the present price controls are of the CPI-X type and determine the Maximum Allowed Revenue (MAR) that each of the businesses can recover from its customers in any year (or from government subsidy, in the case of distribution companies).

2. ***Structure of Controls:*** The formulae for MARs include a fixed term but (other than for ADWEC) are also partly determined by "revenue drivers" (such as peak demands, metered units transmitted or distributed, and number of customers). These are set to reflect the cost structure of the companies and to provide desirable incentives.

3. ***Separation of Controls:*** To date, there have been separate price controls for the water and electricity businesses of all the companies except ADWEC, which has been subject to a single price control. For the distribution companies, the price controls (separate for water and electricity) cover both distribution and supply activities.

4. ***Pass-Through Costs:*** Price controls apply directly to companies' "own costs", which are considered to be within their control. Costs which are subject to competition, or to regulation elsewhere in the supply chain, are treated on a pass-through basis. These include: PWPA and fuel costs for ADWEC; and power/water purchase costs and transmission costs for AADC and ADDC. Licensees are also protected against the effects of general price inflation via the CPI-X type of control.

5. ***Efficient Levels of Costs:*** The price controls were set to allow the companies to recover an efficient level of costs, comprising allowances for operating expenditure, depreciation and a return on capital.

6. ***Treatment of Opex:*** While setting the current price controls, total operating expenditure (opex) was projected to remain constant in real terms. Effectively this meant that the costs of demand growth were assumed to be financed out of efficiency improvements amounting to 5% a year.

7. ***Treatment of Capex:*** With the exception of RASCO, allowances for capex have been set on the basis of *'ex-post'* assessment – i.e., allowed capital expenditure is determined after the event (based on efficiency criteria established by the Bureau). While the PC1 controls made no allowance for capex over 1999–2002, the PC2 controls included *provisional* capex allowances for both 1999-2002 and 2003-2005. It was agreed that once the Bureau receives audited data on actual capex over 1999-2002 and 2003-2005, it will be reviewed against its efficiency criteria. Any difference between efficient past capex and the provisional allowances will be reflected in a financial adjustment (to future revenues) at the subsequent price controls review.

8. ***Cost of Capital:*** A real post-tax cost of capital of 6% has been used for PC1 and PC2 in setting the price controls for all companies. In the case of ADWEC, which has few physical capital assets, the return was expressed as a return on turnover (profit margin of 0.025%).

9. ***Performance Incentive Scheme:*** A Performance Incentive Scheme (PIS) was introduced as part of the PC2 price controls to incentivise the companies to improve their performance on various aspects of their operations. Certain output measures (termed "Category A" indicators) are directly linked to the price controls while other output measures (termed "Category B" indicators) are monitored by the Bureau for possible financial adjustment for good or poor performance at a later date.

2.3 Present Price Controls for AADC, ADDC, ADWEC and TRANSCO

The PC2 price controls for AADC, ADDC, ADWEC and TRANSCO are summarised below:

ADDC & AADC (separate water and electricity price controls)

MAR = Electricity or Water Purchase Costs + Transmission Charges + DSR + Q - K

DSR = a + (b × Number of Customers) + (c × Metered Units Distributed)

ADWEC

MAR = PWPA Costs + Fuel Costs + A + Q – K

TRANSCO (separate water and electricity price controls)

MAR = a + (b × Peak Demand) + (c × Metered Units Transmitted) + A + Q - K

Where:

'**A**' for ADWEC means its maximum allowed procurement cost;

'**A**' for TRANSCO's electricity business means its allowed ancillary services costs;

'**a**' is the notified value for the fixed amount;

'b' and **'c'** are the notified values for first and second variable revenue drivers respectively;

'**DSR**' is the allowed distribution and supply revenue for ADDC and AADC;

'**K**' is the correction factor adjusting any over- or under-recovery in the preceding year; and

'**Q**' is the revenue adjustment for performance under the PIS.

The notified values of, 'a', 'b' and 'c', and of 'A' for ADWEC, were determined for the first year of the PC2 control period (2003) as shown in **Table 2.1**.

Table 2.1: Notified Values for PC2

		Notified Values for 2003		
	X	**A or a**	**b**	**c**
ADWEC Procurement	0.0	10.72 AED m	n/a	n/a
TRANSCO Electricity	0.0	522.77 AED m	44.28 AED/kW	1.05 fils/kWh
TRANSCO Water	0.0	347.75 AED m	305.57 AED/TIG	0.44 AED/TIG
ADDC Electricity	0.0	442.01 AED m	761.40 AED/customer account	0.45 fils/kWh
ADDC Water	0.0	197.56 AED m	382.74 AED/customer account	0.69 AED/TIG
AADC Electricity	0.0	235.68 AED m	1,028.83 AED/customer account	0.57 fils/kWh
AADC Water	0.0	92.74 AED m	586.50 AED/customer account	1.75 AED/TIG

The notified values are then automatically adjusted by CPI-X for each subsequent year of the period (up to and including 2005), according to the following formula:

$$a_t = a_{t-1} \times (1 + (CPI_t - X) / 100))$$

(same formula for 'b' and 'c', and for 'A' for ADWEC)

Here, CPI_t reflects the UAE inflation in the previous year (ie, in year t-1) according to the Consumer Price Index (CPI) published by the Ministry of Planning.

2.4 Present Price Controls for RASCO

Following the restructuring of RASCO in 2001, its business is now solely that of electricity generation and water production. Although the operation of these activities is sub-contracted to ADDC/AADC, they remain RASCO's legal responsibility and the revenues which RASCO can earn from the sale of water and electricity to ADDC/AADC is subject to price controls.

During 2003, the Bureau established price controls for RASCO's production activities to apply for two years (2004-2005). The structure of those controls is similar to that for the other companies, as follows:

$$\mathbf{MAR = a + (b \times Revenue\ Driver) + F + Q - K}$$

Where

F is the allowed fuel cost, as defined below, and other terms are as defined above for the other companies.

The revenue drivers for RASCO are as follows:

- for the electricity business, total electricity generation capacity at the year end; and
- for the water business, total annual water production.

The notified values 'a' and 'b' set out in the following table were determined for the first year of the control period (2004) and are adjusted by CPI-X for the following year (2005) using the same formula as applies under PC2 for the other companies.

Table 2.2: Notified Values for RASCO Price Controls

		Notified Values for 2004	
	X	**a**	**b**
Electricity Generation Business	0.0	32.57 AED m	62.76 AED/kW
Water Production Business	0.0	79.35 AED m	3.89 AED/TIG

To incentivise RASCO to improve its fuel consumption efficiency, the allowed fuel cost 'F' is calculated as the weighted average of actual fuel costs and a benchmark level of fuel costs, as follows:

$$F = (0.95 \times AF) + (0.05 \times Z \times BUF)$$

Where:

AF = Actual fuel costs of RASCO for electricity or water in the relevant year.

Z = For the electricity business, means the quantity of electricity produced from any source in the relevant year (expressed in kWh); and for the water business, the quantity of water produced from distillers only in the relevant year (TIG).

BUF = The benchmark unit fuel costs for electricity and water (20 fils/kWh and 8 AED/TIG respectively) were set by the Bureau based on realistically achievable levels of fuel consumption efficiency by RASCO.

Draft licence modifications giving effect to the above were issued by the Bureau in November 2003. The controls were accepted by RASCO in December 2003. Although the Bureau has not formally issued the licence modifications, there is an understanding between the Bureau and RASCO (in the form of an agreed draft licence modification) that the agreed controls will apply. As explained in the Draft Proposals, the Bureau now proposes to extend the existing RASCO controls for a further two years, to end-2007.

2.5 Progress on the 2005 Price Controls Review

Table 2.3 below sets out the progress on the 2005 price controls review to date against the final PC3 timetable.

Timely responses to the Draft Proposals were received from all companies and are discussed in detail in the relevant sections of this paper.

In this connection, the Bureau has given due consideration to the companies' responses and modified its Final Proposals on the new price controls as necessary.

Proposed licence modifications that would give effect to these Final Proposals have been issued to licensees under separate cover. Each company is requested to communicate to the Bureau its acceptance or otherwise of the proposed licence modifications **by 17 December 2005**. If accepted by the above date, these proposals will come into effect on 1 January 2006. Otherwise, the existing licence will remain in force until such time as it is modified.

In parallel to the issue of these Final Proposals, the Bureau is also scheduled to make a presentation of the Final Proposals to interested parties, including the price-controlled licensees, on 14 November 2005.

Table 2.3: Progress to Date on 2005 Price Controls Review		
Target Date	**Task**	**Actual Date**
First Phase – Issues and Data		
30 August 2004	Bureau published First Consultation Paper	30 August 2004
15 September 2004	Bureau made presentation to Companies	15 September 2004
15 September 2004	Bureau issued First Information Request	15 September 2004
13 October 2004	Responses to First Consultation Paper: AADC ADDC ADWEC RASCO TRANSCO	 13 October 2004 13 October 2004 19 October 2004 No response 16 October 2004
10 November 2004	Responses to First Information Request: AADC ADDC ADWEC RASCO TRANSCO	 17 January 2005 (partial) 18 December 2004 (partial) No response No response 5 December 2004 (partial)
Second Phase – Analysis and Assessment		
2 February 2005	Bureau published Second Consultation Paper	2 February 2005
16 February 2005	Bureau made presentation to Companies	14 February 2005
16 February 2005	Bureau issued Second Information Request	15 February 2005
16 March 2005	Responses to Second Consultation Paper: AADC ADDC ADWEC RASCO TRANSCO	 15 March 2005 19 March 2005 20 March 2005 No response 26 March 2005
13 April 2005	Responses to Second Information Request: AADC ADDC ADWEC RASCO TRANSCO	 4 May 2005 3 May 2005 30 March 2005 No response 14 April 2005
Third Phase – Proposals and Implementation		
31 July 2005	Bureau published Draft Proposals	27 July 2005
20 September 2005	Responses to Draft Proposals AADC ADDC ADWEC TRANSCO	 20 September 2005 21 September 2005 20 September 2005 20 September 2005

3 Form of Controls

3.1 Draft Proposals

In relation to the form of controls, the Draft Proposals included the following:

- continuation of CPI-X type of regulation;
- continuation of existing form of controls (revenue caps comprising a fixed component and up to two variable components linked to "revenue drivers");
- a 4-year control duration for all businesses (2006-2009 inclusive);
- separate price controls for ADWEC's water and electricity businesses;
- separate price controls for distribution and supply businesses (AADC and ADDC);
- income outside of "regulated revenue" to be explicitly defined in advance within a new term, "Excluded Income" (except ADWEC[2]);
- continuation of existing revenue drivers, except for the TRANSCO peak demand measures, which in future would be based only on metered units; and
- ADWEC would be required to produce a formal report to the Bureau if its unit purchase costs (water or electricity) increase compared with the previous year.

3.2 Responses to Draft Proposals

AADC and ADDC repeated their concerns, previously expressed in their responses to the First and Second Consultation documents, about the proposed separation of the distribution and supply price controls. In particular, they argued that the separation of controls may expose the supply businesses to additional risks, which would require additional returns. AADC also objected to the Bureau's attempt, subsequent to the Draft Proposals, to enquire into the apparently high costs of the electricity supply business of AADC.

ADDC additionally commented on the Bureau's proposal to exclude certain income items from the definition of "regulated revenue". It argued that further items ought to be excluded also, namely: "Interest on Bank Accounts", "Income on Other Investment", "Foreign Exchange Gains/Losses" and "Income from Suppliers".

ADDC also sought confirmation that metered units in relation to the electricity supply agreement that it had recently signed with Abu Dhabi Company for Onshore Oil Operations (ADCO) would be included as part of the metered units distributed measure in the price controls.

For its part, ADWEC requested clarification as to how it would be in a position to submit a formal report to the Bureau explaining a unit purchase cost increase if ADWEC is not responsible for economic dispatch.

[2] ADWEC's regulated revenue already excludes any income received from production companies in the form of damages, claims, late payments or events of default.

3.3 Bureau's Views

Following the views of respondents, the Bureau has concluded that it is premature to separate the distribution and supply business price controls at the present review. In particular, further time is required to assess licensees' claims as to the level of risks of the supply businesses on a stand-alone basis. The level of supply business risks will also depend on the precise form of the upcoming privatisation of the distribution companies (eg, the extent of any subsidy from the government).

In addition, further analysis is required of the methods used by the distribution companies to allocate costs between distribution and supply. ADDC and AADC appear not to have implemented an agreement reached with the Bureau in February 2002 to adopt a common basis for cost allocation between distribution and supply. During 2006, the Bureau will commence a formal review of the cost allocation methods used by the distribution companies, in preparation for the separation of supply and distribution controls at the next review.

Therefore single controls covering both distribution and supply (separately for water and electricity) will continue for the PC3 period. The requirement for the distribution companies to produce separate business accounts for distribution and supply will remain.

The Bureau has also decided, in view of ADDC's comments, that it is impractical to define "excluded items" from the definition of "regulated revenue". Each of the licensees has a different set of "other income" items, which it is not possible to define sufficiently accurately in advance to ensure the integrity of the price control formulae. For the sake of clarity, "regulated revenue" will therefore include all income, from whatever source, of the licensed business. Only income from unlicensed activities for which the licensee has received the Bureau's consent will be excluded. This will be consistent with the cost projections used to set the PC3 controls, which include costs of all activities except consented activities. This amendment will avoid any future dispute as to the definition of "regulated revenue", as has occurred in PC1 and PC2.

ADDC requested confirmation that units distributed to ADCO would be included in the metered units distributed measure. While this matter was discussed earlier between the Bureau and ADDC in view of metering issues outside of ADDC's control, the Bureau has given further thought to it in view of the combined price controls for distribution and supply. ADCO is directly connected to the electricity transmission network, and the role of ADDC in this case relates only to supply, not to distribution. Since the ADCO units do not satisfy the requirement of the definition of the metered units distributed revenue driver, and ADDC is not undertaking any distribution activity for ADCO, ADCO units will not be included in the metered units distributed measure. Supply costs for large users are instead covered by the cost allowances for the distribution companies.

In response to ADWEC's comments, the Bureau is pleased to clarify that unit purchase costs may rise for many reasons other than uneconomic despatch by TRANSCO. However, if ADWEC considers that any rise in unit purchase costs is due, wholly or in part, to uneconomic despatch by TRANSCO, it should justify this with supporting analysis in its report on the unit cost increase.

3.4 Final Proposals

Based on responses to the Draft Proposals, the Bureau now proposes only one change to the basic structure of the price control formulae: the separation of ADWEC's price control into separate controls for electricity and water. This will be accompanied by a new licence requirement for ADWEC to produce separate accounts for its electricity and water businesses. These changes will ensure that ADWEC, in common with other licensees, will produce audited information on its costs separately for electricity and water. The price control formulae for PC3 are summarised below:

ADDC & AADC (separate water and electricity price controls)

MAR = Electricity or Water Purchase Costs + Transmission Charges + DSR + Q - K

DSR = a + (b × Number of Customers) + (c × Metered Units Distributed)

ADWEC (separate water and electricity price controls)

MAR = PWPA Costs + Fuel Costs + A + Q – K

TRANSCO (separate water and electricity price controls)

MAR = a + (b × Metered Peak Demand) + (c × Metered Units Transmitted) + A + Q - K

where the terms are as defined in Section 2.3 above.

These controls will be of four years duration (2006-2009) and will continue to be of the existing CPI-X type. The licence modifications have been drafted such that, where applicable, amounts in relation to 'K' and 'Q' will be carried forward from the PC2 controls to the PC3 controls.

No objection was raised to the proposal to amend the licence definition of TRANSCO's peak demand-related revenue drivers to be based solely on metered units, so the revenue drivers for PC3 will be as defined as proposed in **Table 3.1** (changes from the PC2 definitions shown in bold).

As explained above, other than for ADWEC (for whom the existing licence definition will continue to apply), the term "regulated revenue" used in the licence to monitor compliance with the price control will be redefined for PC3 to include all income, from whatever source, of the licensed business in question. Only income from unlicensed activities for which the licensee has received the Bureau's consent will be excluded.

Finally, the Bureau confirms its earlier proposal for ADWEC to produce a formal report if its unit purchase costs (water or electricity) increase compared with the previous year for any reason.

Table 3.1: Definitions of Revenue Drivers for PC3 – Final Proposals

Company	Revenue Driver	Proposed Definition
ADDC/AADC		
Electricity	**Electricity Customer Accounts**	The number of electricity customer accounts registered with the Licensee as of 31 December of relevant year t for the supply of electricity by the Licensee in that relevant year.
	Metered Electricity Units Distributed	The aggregate quantity of electricity units distributed (expressed in kilowatt-hours) through the Licensee's electricity distribution system in relevant year t metered at exit points on leaving the Licensee's distribution system.
Water	**Water Customer Accounts**	The number of water customer accounts registered with the Licensee as of 31 December of relevant year t for the supply of water by the Licensee in that relevant year.
	Metered Water Units Distributed	The aggregate quantity of water units distributed (expressed in imperial gallons) through the Licensee's water distribution system in relevant year t metered at exit points on leaving the Licensee's distribution system.
TRANSCO		
Electricity	**Metered Peak Electricity Demand**	The maximum average electricity demand in an hour (expressed in kilowatts) as metered ~~**or otherwise measured**~~ **(in compliance with the Metering and Data Exchange Code)** at exit points on leaving the Licensee's electricity transmission system in relevant year t.
	Metered Electricity Units Transmitted	The aggregate quantity of electricity units transmitted (expressed in kilowatt-hours) through the Licensee's electricity transmission system in relevant year t metered (in compliance with the Metering and Data Exchange Code) at exit points on leaving the Licensee's transmission system.
Water	**Metered Peak Water Demand**	The maximum average water demand in a day (expressed in imperial gallons per day) as metered ~~**or otherwise measured**~~ **(in compliance with the Metering and Data Exchange Code)** at exit points on leaving the Licensee's water transmission system in relevant year t.
	Metered Water Units Transmitted	The aggregate quantity of water units transmitted (expressed in imperial gallons) through the Licensee's water transmission system in relevant year t metered (in compliance with the Metering and Data Exchange Code) at exit points on leaving the Licensee's transmission system.

4 Framework for Price Control Calculations

4.1 Draft Proposals

The Draft Proposals explained the framework adopted for price control calculations. This involved, for each business, determining the values of the co-efficients of the fixed and variable terms in the MAR formulae ('A' or 'a', 'b' and 'c') , and the 'X' factor.

The weight used for the fixed term in the Draft Proposals was 70% and that for the variable term(s) was 30% (equally apportioned where there were two revenue drivers), and the X factor was set at zero. This was in contrast to the fixed term weight of 65% and variable terms weight of 35% used for PC2. For ADWEC, a weight of 100% for the fixed term was proposed to be retained.

Allowed revenues were calculated by setting the net present value (NPV) of the forecast MARs for each business equal to the NPV of its required revenue (sufficient to finance an efficient business) over the control period (2006-2009). That is:

Over the control period:

NPV of projected annual MARs = NPV of Required Revenues

All calculations were carried out in real (2006) price terms. For the purposes of this calculation, pass-through costs and Q terms were excluded and the correction factor was assumed to be zero.

The required revenue was calculated using the "building block approach", as follows:

For each year (summed over control period in NPV terms):

Required Revenue = Operating Expenditure + Depreciation + Return on Assets

This required projections of operating expenditures (opex), capital expenditures (capex), depreciation and regulatory asset values (RAVs); and a decision on the cost of capital to be used as the rate of return on RAVs and as the discount rate to calculate the NPVs.

4.2 Responses to Draft Proposals

Few respondents commented in detail on the above framework (as distinct from their comments on individual components of the calculation, which are addressed elsewhere in these Final Proposals). AADC, however, pointed to the fact that the supply businesses were in some cases projected to make a negative profit in 2006, which was mainly due to the profiling of revenue over time as a result of the chosen X factor (of zero).

AADC also doubted whether the net present valuation (NPV) approach used to account for the time value of money was applicable in its case. In its view, "current returns far outweigh future returns in the minds of investors".

4.3 Bureau's Views

The choice of 'X' factor impacts mainly on how allowed revenues are profiled across different years of the price control period. For example, a higher X factor (eg, CPI-5) would give higher revenue in the early years and lower revenue in latter years of the price control period, but would be calculated so as to give the same revenues overall in NPV terms. The choice of X factor is not to be confused with the efficiency assumptions which have been incorporated elsewhere into the Bureau's price control calculations (within the opex and capex calculations).

An X value of zero was chosen in the Draft Proposals mainly for continuity with the PC2 controls. Due to the high operational gearing of the supply businesses (high turnover in comparison to their net profits), this had the effect in the Draft Proposals of slightly distorting projected year-to-year profitability of the supply businesses, to the extent that profitability was projected to be negative in 2006 (although this was offset by higher profits in later years). The risk of any such distortion is now removed by the proposal for combined distribution and supply price controls, and so an X of zero is retained.

In response to AADC's concerns relating to the use of an NPV approach to valuing future income streams, the approach of discounting future cash flows using the appropriate cost of capital is standard practice in regulated sectors and in financial markets more generally and is therefore retained in these Final Proposals. This theory can be explained by the fact that most individuals would prefer to receive, for example, AED 100 million with certainty today than to be promised AED 100 million to be received in a year's time. However, if the amount of promised future income is increased (perhaps to AED 105 million), there will come a point at which, despite the uncertainty, and depending on the risk, that option would be chosen over the certain AED 100 million today. This trade-off determines the "discount rate" at which an investor discounts uncertain future income against certain present income.

4.4 Final Proposals

The Bureau does not propose any change to the framework for price control calculations from that used in the Draft Proposals. In particular, for the Final Proposals:

- an appropriate discount rate, based on the cost of capital, has been used to ensure the equivalence of costs and income in different time periods in net present value terms (see Section 8 for a discussion of the cost of capital);
- the weight used for the fixed term is 70% (100% for ADWEC) and that for the variable terms is 30%, equally apportioned between the two revenue drivers; and
- X has been set at zero.

Respondents' comments on individual components of the calculations are discussed elsewhere in this paper.

5 Revenue Driver Projections

5.1 Draft Proposals

In order to set the price controls, projections of revenue drivers are required for TRANSCO and the distribution companies.

In the case of TRANSCO, whose revenue drivers are metered peak demand and metered units transmitted, the Bureau adopted the company's own revenue driver projections for the Draft Proposals. This is because they were generally consistent with ADWEC's forecasts for future demand growth for water and electricity, which the Bureau regards as a relatively reliable source (ADWEC's forecasts are reviewed and approved by the Bureau each year), and they assumed reasonable levels of metering.

In the case of the distribution companies, whose revenue drivers are customer accounts and metered units distributed, the Bureau adopted the companies' forecasts in the case of customer accounts. However, the Bureau was concerned that the distribution companies' forecasts of units distributed were not reliable and, in some cases, assumed levels of metering which were too low. For the Draft Proposals, therefore, the Bureau generally projected units distributed based on growth in line with ADWEC's forecasts of peak demand growth. The Bureau's projections were based on customer metering of 97% of demand by 2009 for AADC and ADDC, for both water and electricity. This is based on the metering coverage already achieved by ADDC's electricity distribution business.

The projections adopted for each revenue driver in the Draft Proposals are summarised below:

Table 5.1: Revenue Driver Projections – Draft Proposals

		2006	2007	2008	2009
AADC					
Electricity customer accounts	Customers	93,944	97,274	100,122	102,802
Metered electricity units distributed	GWh	6,604	7,233	7,922	8,765
Water customer accounts	Customers	48,525	50,048	51,217	52,238
Metered water units distributed	MG	20,965	31,660	41,470	51,048
ADDC					
Electricity customer accounts	Customers	205,554	210,008	214,557	218,863
Metered electricity units distributed	GWh	14,842	16,106	17,478	18,957
Water customer accounts	Customers	176,468	180,324	184,264	188,290
Metered water units distributed	MG	69,154	80,137	104,965	129,208
TRANSCO					
Metered electricity peak demand	MW	4,397	4,824	5,073	5,632
Metered electricity units transmitted	GWh	23,419	27,043	28,443	31,573
Metered water peak demand	MGD	526	557	587	622
Metered water units transmitted	MG	175,056	197,206	207,827	220,219

Detailed descriptions of how the revenue driver projections were derived are contained in Section 5 of the Draft Proposals.

5.2 Responses to Draft Proposals

Only TRANSCO commented on the revenue driver projections. It queried the Bureau's statement made in the Draft Proposals that it will have 100% metering of both water and electricity during the first half of 2006. TRANSCO thought the reference should be to during the first half of 2007, not of 2006.

5.3 Bureau's Views

As stated above, the Bureau adopted TRANSCO's projections of the revenue drivers in the Draft Proposals, which indicated that units transmitted will be fully metered for 2007 onwards. For TRANSCO's peak demand revenue drivers, the Bureau adopted TRANSCO's expectation that peak demands for 2006 onwards would be fully metered.

5.4 Final Proposals

For the Final Proposals, the Bureau has made no changes to the revenue driver projections, so these remain as summarised in **Table 5.1** above.

6 Assessment of Operating Expenditures

6.1 Draft Proposals

For the Draft Proposals, the Bureau adopted the same basic methodology for projecting future operating expenditures (opex) as it used at the 2002 price controls review. [3] This involved:

- determining a base level of opex by using the recent actual level of opex;
- adjusting the base level of opex to reflect increased costs for future demand increases;
- modifying the demand-adjusted opex for expected efficiency improvement; and
- making further adjustments to opex projections which may be appropriate – for example, one-off costs which are known about in advance.

This approach takes account of the current opex levels of the companies while providing strong incentives for future efficiency improvement.

For the Draft Proposals, the Bureau projected opex for 2006 at the level of each business in 2004 in real terms. For this purpose, inflation (CPI) was assumed at 3% for 2005 and for 2006. For subsequent years, the following adjustments were made:

- opex was assumed to increase by 0.75% for each 1% increase in demand, based in part on a World Bank study of economies of scale for water service providers worldwide; and
- assumed efficiency improvements of 5% a year in real terms, based on the achievements of regulated industries in the UK.

Further adjustments were made in the Draft Proposals for the following factors:

- for AADC's water distribution business, an additional AED 25 million spread across 2006 and 2007 for costs associated with upgrading customers' water installations.
- for ADWEC, an additional AED 5 million per year for additional responsibilities during the PC3 period, such as those relating to the Emirates National Grid (ENG) and GCC Interconnection; and
- for TRANSCO's water business, an additional AED 30 million per year for water pumping costs in relation to production plant located outside the Emirate of Abu Dhabi used to supply customers within the Emirate.

Consistent with the "responsibility-based approach" proposed by ADWEC and described in earlier consultation papers, where such adjustments are made on the assumption of new responsibilities being acquired by the licensee, the extent to which such new responsibilities materialise in practice will be assessed at the next price controls review, with appropriate

[3] "Opex", in this document generally refers to operating costs excluding depreciation. The exception to this is ADWEC, which has few capital assets and for which (for ease of price control calculations) we have defined "opex" to include a small capital expenditure amount.

financial adjustments made at that review in case such responsibilities do not materialise in full or in part.

The resulting projections of operating expenditure for 2006-2009 from the Draft Proposals are summarised in **Table 6.1**. In this table, the opex of the distribution and supply businesses has been combined.

Table 6.1: Opex Projections for PC3 – Draft Proposals

AED million, 2006 prices	2006	2007	2008	2009
AADC Electricity	157.808	156.120	154.46	152.828
AADC Water	86.100	85.163	71.741	70.836
ADDC Electricity	237.148	233.703	230.325	227.015
ADDC Water	131.567	129.227	126.94	124.704
ADWEC Electricity	9.849	9.924	9.999	10.075
ADWEC Water	5.751	5.794	5.837	5.881
TRANSCO Electricity	111.418	112.856	114.312	115.787
TRANSCO Water	216.823	220.409	224.064	227.789
Electricity – Total	516.223	512.602	509.097	505.706
Water - Total	440.240	440.593	428.583	429.210
Grand Total	956.463	953.195	937.680	934.915

Notes: (1) Excludes depreciation in all cases. (2) Includes capital expenditure for ADWEC.

In the Draft Proposals, the Bureau also presented benchmarking analysis of the costs of AADC, ADDC and TRANSCO compared with similar companies in the UK and Australia. While the Bureau did not rely on the benchmarking results in determining an appropriate level of opex, the results support the view that there is significant scope for efficiency improvement.

6.2 Responses to Draft Proposals

AADC responded as follows:

- evidence from Australian regulators may be more relevant than UK evidence, because of similarities with the operating environment in the UAE. AADC stated, without providing references, that Australian regulators has assumed efficiency improvements in the range of 0% to 3%;
- the Draft Proposals do not make sufficient allowance for increases in costs associated with increases in service levels, such as providing new customer bill payment options;
- analysis of past movements in its own costs was more relevant than international benchmarking. It stated that it had reduced its unit costs by 50% and it would be unreasonable to expect the same could be achieved in the future;
- it disagreed with the proposed value of the adjustment to base level opex for demand increases, which needed to be "far higher" to reflect the relative immaturity of its business; and

- AADC expressed concern that no allowance had been made for bad debt and stock write-offs in the Draft Proposals.

ADDC responded as follows:

- it disagreed with the Bureau's treatment of the bad debt and stock provisions, arguing that total removal of the provisions was inappropriate. ADDC did not consider that the discussions the Bureau had held with TRANSCO on the stock provision should be automatically applied to ADDC and to bad debts. ADDC considered that there was no supply business in the world that had zero bad debt. Further, it thought bad and doubtful debts would increase in PC3 as the revenue stream from customers increases;
- the Bureau's benchmarking analysis did not support the scope for further efficiency improvement, as the comparisons were not appropriate. ADDC has an expanding network and greater load growth than the UK companies. There were also differences in accounting policies that made comparisons inconclusive;
- the Bureau has misinterpreted the World Bank study into economies of scale, as ADDC was in the 'large' company category, which suffered from diseconomies of scale. It cited the World Bank study and a report commissioned by Ofwat from consultants Stone and Webster as the reasons why, in principle, it should suffer from diseconomies of scale;
- ADDC also did not support how the growth assumption had been applied, because it believed this unfairly penalises companies and its application should be delayed by one year; and
- it considered the 5% efficiency assumption to be too demanding, given the efficiency improvements it had already made and the impact of service improvements. Future efficiencies would be harder to achieve and smaller in size.

TRANSCO responded as follows:

- the Bureau had not made sufficient allowance for water pumping costs (mainly electricity). In particular, it queried the Bureau's assumption that TRANSCO could benefit from a large user electricity tariff effective from the start of PC3, whereas in fact practical considerations (eg, metering requirements) made it more reasonable to assume the tariff would be effective from 2007. TRANSCO presented detailed calculations in support of an additional AED 37.32 million in 2006 to make up the shortfall; and
- since the Draft Proposals, the UAE Ministry of Planning had published official UAE CPI data for 2004, which was considerably higher than the 3% assumed by the Bureau. TRANSCO thought the 2005 figure might be close to 6%. It felt that if a dedicated construction price index was available, the difference would be even more pronounced.

ADWEC responded as follows:

- it welcomed the Bureau's proposal to increase its opex allowance by AED 5 million to finance new responsibilities but felt that this still under-estimated future costs. In

particular, it considered that the use of 2004 as the base level of costs under-estimated future costs. ADWEC provided a detailed analysis of additional 'professional fees and expenses' which it expected to incur in the PC3 period; and

- ADWEC also identified that the CPI assumed by the Bureau for 2004 was too low and quoted a 5.5% – 6.5% forecast for 2005.

6.3 Bureau's Views

The Bureau's views on the points raised by respondents are as follows:

CPI in 2004 and 2005

The Bureau agrees with the comments of TRANSCO and ADWEC regarding UAE CPI for 2004 and 2005, which is required in order to convert the base level of costs from 2004 prices to 2006 prices. Since the publication of the Draft Proposals, UAE CPI data for 2004 has been published by the UAE Ministry of Planning. This indicates the UAE CPI is 5.04% for 2004. This has now been incorporated into the Final Proposals for all licensees. The same figure has been adopted as the forecast of 2005 CPI.

In addition to their impact on the opex projections, the revised CPI figures for 2004 and 2005 have also been incorporated into other parts of these Final Proposals; for example, in relation to the updating of RAVs in Section 7 and to the financial adjustments in Section 9.

5% Efficiency Assumption

The Bureau remains of the view that the scope for efficiency improvements is substantial, and that the 5% a year efficiency assumption from a base level of costs pegged against 2004 actual costs allows scope for outperformance by the licensees.

The Bureau's research, presented at length in the Second Consultation Document, indicates that opex efficiency improvements in the range 2.5% - 7.7% a year have been achieved by comparable businesses in similar circumstances in the UK. The Bureau does not agree that the UAE operating environment necessitates a lower target, as suggested by one respondent. Rather, the opposite may be true: historical inherited inefficiencies may actually increase the scope for efficiency improvements.

Similarly, no evidence has been put forward to support the argument that efficiencies and service improvement made to date by licensees have exhausted the potential for further improvements in the future.

Further, where licensees have taken a realistic view of future efficiencies in their PC3 projections, such as in the case of TRANSCO, the Bureau's projections are very close to those of the company.

0.75% Adjustment for Demand Increase

Both distribution companies queried the Bureau's interpretation of the results of the World Bank study into economies of scale which had been presented earlier.[4] The study contains detailed results based on various measures of firm "size" which show AADC and ADDC are comparable to some groups on certain measures of size and to other groups on certain other measures. It is therefore debatable as to which group's economies of scale should be applicable to AADC and ADDC. The final results of the study (expressed in the form of percentage cost increase for every 1% size increase) are summarised in **Table 6.2**:

Table 6.2 : Results of World Bank Study into Economies of Scale

Africa	Indonesia	Peru	US	Vietnam
0.53% - 1.18%	0.5% - 1.13%	0.76% - 1.09%	0.86% - 1.04%	0.73% – 0.98%

Note: A figure of x% implies a 1% increase in size leads to an x% increase in costs

As the above table shows, the study supports a broad range of results, from 0.5% to 1.18%. ADDC alluded to its response to the Second Consultation Paper, which suggested the results supported an assumption that opex should increase by 1.18% for each 1% increase in demand. However, ADDC appears to have taken an extreme outlying observation while the Bureau has adopted a more reasonable median figure.

ADDC's proposal is also difficult to reconcile with the arguments put forward by the distribution companies in response to earlier consultation documents for a higher weight for the fixed term in the MAR, based on their cost structure, and for a *small company* premium for the cost of capital (see Section 8).

The Bureau has therefore retained its assumption that opex may increase by 0.75% for each 1% increase in demand. Further, the Bureau has applied the adjustment as previously discussed and has found no evidence to support ADDC's concern in this regard. This assumption may be compared with that adopted for the PC2 control period, when it was assumed that costs would increase by 0.5% for each 1% increase in demand.

Benchmarking

The Bureau notes ADDC's reservations regarding the benchmarking analysis. We acknowledge that benchmarking results may not always be conclusive and so (as stated in the Draft Proposals) have not relied on the benchmarking results in reaching any conclusions.

TRANSCO Water Pumping Costs

The Bureau agrees with TRANSCO that it may not be feasible for the metering to be in place to enable TRANSCO's large user electricity tariff to take effect by 1 January 2006. However, the Bureau anticipates the tariff and associated metering will be in place before 2007. We have therefore accepted TRANSCO's request for additional costs in 2006 (compared with the Draft

[4] "Optimal Size for Utilities? Returns to Scale in Water: Evidence from Benchmarking", Note Number 283, Public Policy for the Private Sector, The World Bank, January 2005.

Proposals) and have made additional allowance of AED 37 million (in 2006 prices) for this purpose.

Movement in Provisions for Bad Debt and Stock

ADDC and AADC are not correct to state that the Bureau assumed zero bad debt in the Draft Proposals. Rather, the Bureau excluded from the opex allowances the bad debt *provision* which is shown in the Income Statement in their accounts.

The reason for this treatment is the Bureau's understanding, subsequently confirmed by the distribution companies, that the bad debt provision represents the *increase in the stock* of bad debts. If the provision is assumed to be zero it means there is no net increase in bad debts; it does not mean that there are zero bad debts.

For AADC and ADDC, the bad debt provision has historically varied from year to year between a positive and a negative amount, as shown in their audited accounts. A negative provision indicates a cost to the business, while a positive provision shows that the licensee has been able to recover income for which a bad debt provision had previously been made. The overall figure is a net figure.

For ADDC, the bad debt provision was positive in 1999 and 2000 but negative in subsequent years. For AADC, it was positive in 2001 and 2003 but negative in 2000, 2002 and 2004. The supply businesses have thus demonstrated an ability in some years to reduce the level of bad debt or to recover debts that had previously been deemed non-recoverable, while in other years they have increased. By not assuming that the stock of bad debts should automatically increase, the Bureau has provided a strong incentive for the distribution to control the level of bad debt.

Similar arguments apply in the case of stock write-offs, for which the provision has varied in recent years between a positive and a negative provision depending on the licensee. This indicates there is scope for all licensees to benefit from better stock management.

The Bureau is not sure of the basis for AADC's suggestion that 1% of turnover should be allowed as the bad debt provision, which would cost the sector about AED 100 million a year over the PC3 period. Nevertheless, the Bureau understands that there are risks involved for the distribution companies in controlling their bad debt and managing stock as efficiently as the Bureau has assumed in the Draft Proposals. The Bureau has therefore allowed additional financing for the supply businesses as part of the combined distribution and supply price controls to address this and other matters (see Section 8.4).

ADWEC Additional Opex Allowance

The Bureau has reviewed the additional information provided by ADWEC in its response to the Draft Proposals and has agreed to increase the additional allowance for ADWEC's new responsibilities from AED 5 million to AED 7 million in total (in 2006 prices), divided between the water and electricity business as shown in **Table 6.3**:

Table 6.3: Additional Opex for ADWEC's New Responsibilities – Final Proposals

AED million, 2006 prices	2006	2007	2008	2009
ADWEC Electricity				
Administration of electricity purchases outside Abu Dhabi Emirate	2.00	2.00	2.00	2.00
ENG / GCC commercial issues	3.00	3.00	3.00	3.00
Electricity Total	5.00	5.00	5.00	5.00
ADWEC Water				
Administration of water purchases outside Abu Dhabi Emirate	2.00	2.00	2.00	2.00
ADWEC Total	**7.00**	**7.00**	**7.00**	**7.00**

Costs of Improvements in Service Levels

The Bureau agrees that the price control should fund improvements in service levels. First, the base opex allowances are increased in proportion to increases in demand, as described above. The opex allowances themselves are not prescriptive as to how the expenditure is allocated, allowing companies the flexibility to fund improvements in output and service without micro-management of their expenditure by the Bureau.

Secondly, the enhanced Performance Incentive Scheme proposed for the PC3 period (see Section 11) provides companies with financial rewards for improvements in the main output measures, such as network performance.

With regards to the issue of the financing of new payment methods which was raised by AADC, the Bureau has confirmed to the company that where new payment methods are not self-financing over the medium term, the reasonable net costs should be covered by the price controls, either at the present review or retrospectively at the next review. The Bureau has invited the distribution companies to submit a detailed cost-benefit analysis of any such proposals but none has yet been forthcoming.

6.4 Final Proposals

The main changes from the Draft Proposals are as follows:

- increased UAE CPI in 2004 and 2005;
- increase in "additional opex" for ADWEC from AED 5 million to AED 7 million per annum; and
- additional opex for TRANSCO in 2006 of AED 37 million.

The opex projections adopted in these Final Proposals are summarised in **Table 6.4**. Cumulatively, they represent an increase of 6% over the opex projections in the Draft Proposals and 20% in nominal terms (9% in real terms) over the actual opex of companies in 2004 (the latest audited year).

Table 6.4: Opex Projections for PC3 – Final Proposals

AED million, 2006 prices		2006	2007	2008	2009
AADC	Electricity	165.673	164.656	163.645	162.640
	Water	89.517	88.766	75.522	74.785
ADDC	Electricity	248.646	245.999	243.380	240.789
	Water	138.404	136.701	135.019	133.358
ADWEC	Electricity	11.084	11.161	11.239	11.318
	Water	6.941	6.986	7.031	7.076
TRANSCO	Electricity	115.878	117.373	118.888	120.422
	Water	261.301	228.031	231.832	235.707
TOTAL	Electricity	541.281	539.189	537.152	535.170
	Water	496.194	460.484	449.404	450.926
	Grand Total	1,037.445	999.673	986.556	986.096

7 Treatment of Capital Expenditure and Asset Valuation

7.1 Draft Proposals

Capital expenditure (capex) is an important input into the price controls of AADC, ADDC and TRANSCO. To date, treatment of capex in the price controls has been on an ex post basis, with only provisional allowances made ex ante. In the Draft Proposals, the Bureau's proposals in respect of capex and asset valuation were set out separately for the PC1, PC2 and PC3 periods, as follows:

PC1 Period (1999 – 2002)

For the PC1 period, provisional capex allowances had been set at the last review in 2002 and incorporated into the PC2 controls, and it was therefore necessary to finalise the assessment of actual efficient capex for the period.

For this purpose, the Bureau undertook a review in 2004 of the efficiency of PC1 capex, the results of which were shared and discussed with the companies. The overall approach was to review the processes undertaken by the companies in planning, procuring and managing capex projects and to assess a number of selected projects. The findings of this review were as follows:

Table 7.1: PC1 Capex Efficiency – Draft Proposals

Company	Capex Efficiency
AADC	84%
ADDC	89%
TRANSCO	94%

These results were then applied to actual capex for the PC1 period, for both water and electricity For this purpose, the Bureau used accruals-based capex (including advances to contractors) as shown in the Cash Flow Statements in the audited separate business accounts, as audited data is not readily available for a purely cash-based measure. This approach, all else equal, results in higher capex allowances and hence higher revenue than otherwise.

Compared with the provisional capex allowances for PC1 (of about AED 6.5 billion over 1999 – 2002 for all licensees combined), this resulted in additional capex for the PC1 period of approximately AED 750 million in total as shown in **Table 7.2** (distribution and supply have been combined in the table)**.**

To ensure the licensees were appropriately remunerated, the net present values (NPVs) of the foregone financing costs (depreciation and return on capital) up to 2006 in respect of the above amounts, calculated using the cost of capital of 6% used to set PC1, were then added to the opening 2006 Regulatory Asset Values (RAVs). For all companies combined, this adjustment in the Draft Proposals amounted to about AED 522 million (in 2006 prices). Furthermore, efficient PC1 capex (as determined above, and net of accumulated depreciation) was incorporated into the RAVs for 2006 onwards.

Table 7.2: Efficient PC1 Capex over and above Provisional PC1 Capex – Draft Proposals

AED m, 1999 prices	1999	2000	2001	2002
AADC Electricity	-76.044	50.785	37.039	-48.605
AADC Water	19.509	91.675	-12.295	80.769
ADDC Electricity	23.864	68.824	51.635	48.409
ADDC Water	25.718	-12.871	-13.255	-139.746
TRANSCO Electricity	119.453	224.729	206.178	-367.220
TRANSCO Water	-1.923	-0.767	94.147	285.532
Electricity – Total	67.272	344.337	294.852	-367.416
Water – Total	43.304	78.038	68.596	226.555
Grand Total	110.576	422.375	363.448	-140.861

PC2 Period (2003 – 2005)

Provisional allowances for PC2 capex (of about AED 8 billion in total) were set at the 2002 price controls review and incorporated into the PC2 controls. The Draft Proposals described the Bureau's intention that the assessment of actual efficient capex (water and electricity) for the PC2 period would be undertaken in late 2006, once audited data for all PC2 years is available. The Bureau would appoint independent consultants for this exercise. Any adjustment for differences between efficient and provisional PC2 capex would then be incorporated at the 2009 price controls review in the same manner as used at this review for PC1 capex.

PC3 Period (2006 – 2009)

It is also necessary at this review to address the financing of PC3 capex. In the absence of reliable forecasts from licensees of their future capex, and with the support of respondents to the Second Consultation Paper, the Bureau decided in the Draft Proposals to continue with the 'ex post' approach to PC3 capex. This means that PC3 capex will be assessed after the end of the PC3 period against the Bureau's established efficiency criteria that the expenditures:

- are required to meet growth in customer demand or the relevant security standards; and
- are efficiently procured.

The provisional allowances were in general based on average capex over the last four years (2001-2004), other than for TRANSCO's water business, for which recent expenditure had been atypical.

The provisional PC3 capex allowances from the Draft Proposals (approximately AED 13 billion in total) are shown in **Table 7.3**:

Table 7.3: Provisional Allowances for PC3 Capex – Draft Proposals

AED m, 2006 prices	2006	2007	2008	2009
AADC Electricity	305	305	305	305
AADC Water	153	153	153	153
ADDC Electricity	536	536	536	536
ADDC Water	315	315	315	315
TRANSCO Electricity	1,200	1,200	1,200	1,200
TRANSCO Water	750	750	750	750
Electricity – Total	2,041	2,041	2,041	2,041
Water – Total	1,218	1,218	1,218	1,218
Grand Total	3,259	3,259	3,259	3,259

RAVs for the PC3 period were then projected by rolling forward the PC3 provisional capex (net of depreciation) into RAVs for each year of the PC3 period. The Bureau retained the assumption of 30 years for the average asset lives for network companies and the straight-line method of depreciation, as used at the previous price control reviews.

Actual PC3 capex would then be reviewed against the Bureau's established efficiency criteria upon availability of audited data, and appropriate adjustments (based on the cost of capital used to set PC3) to remunerate efficient capex would be made at the subsequent price controls review. For PC3 capex, it was proposed that the efficiency of the companies will be assessed relative to each other (for more details see Section 7.4 below), so that the effect of such a review is cost-neutral for the sector, subject to a general efficiency improvement, and so as to provide more positive incentives for capex efficiency improvement.

The Bureau also proposed to retain the present efficiency criteria for PC3 capex with the additional guidance on the interpretation of these criteria provided in the Bureau's PC1 capex review reports.

In addition, the Bureau also proposed a new licence requirement on the distribution companies to produce an annual 5 year planning statement.

7.2 Responses to Draft Proposals

AADC responded as follows:

- all capital works for the PC1 period had been competitively tendered, which had ensured that the most efficient price had been obtained for these works. The majority of capital works for PC1 had been installed in response to the demands of customers. AADC therefore rejected the Bureau's assessment of PC1 capex, which it considered to be subjective, retrospective, and lacking in transparency;
- the ex post approach to the treatment of capex was unusual and created additional risks to the business which ought to be rewarded by greater returns;

- the revenue requirement for PC3 should reflect the most up-to-date information and thus the audited capex for 2003 and 2004 should be included in the PC3 price control; and
- AADC objected to the Bureau's proposal not to include, in the RAV, assets which had been transferred from TRANSCO and RASCO but for which AADC had not paid. It thought this created perverse incentives for efficient operation of the business.

ADDC responded as follows:

- 100% of actual PC1 capex should be financed in the price controls, and referred the Bureau to its earlier responses for the reasons why;
- the proposed treatment of capex could affect the valuation of the business due to both the delay in reward and the actual level and method of efficiency assessment. Investors would not value uncertain future returns as they may not have an interest in the company at that point;
- ADDC disagreed with the Bureau referencing the "Property, Plant and Equipment" line in the company's cash flow statement for the purposes of identifying capex and said instead that the appropriate figure should be derived from the notes to the accounts;
- the ex post approach justified a return higher than that of comparable businesses elsewhere subject to ex ante capex regulation, as the return is delayed, subject to the risk of future disallowance, and does not provide any scope for reward;
- the remuneration for the foregone financing costs of efficient PC1 capex should be incorporated in the form of an addition to MAR over the PC3 period rather than added to the RAV as of 1 January 2006, as had been proposed by the Bureau. It argued that this would reduce the risk associated with the delay in the receipt of revenue; and
- ADDC requested the Bureau to review its treatment of the financing of RASCO assets which had been transferred to the distribution companies.

TRANSCO divided its comments between the PC1, PC2 and PC3 (and beyond) periods:

- for PC1 capex, TRANSCO felt that no response had been provided to its earlier suggestion to adopt forward-looking incentives to improve performance rather than applying a retrospective penalty whose burden would continue to be felt until 2010;
- for PC2 capex, it cautiously welcomed the Bureau's proposals for the assessment of PC2 capex efficiency but was concerned with the prospect that the method could retrospectively disallow capex;
- for PC3 capex, TRANSCO welcomed the Bureau's proposals as a "helpful and pragmatic step forward for the sector"; and
- for PC3 and beyond, it welcomed strategies to move towards an ex ante approach but cautioned that much work needed to be done by all concerned before such an approach could be adopted.

7.3 Bureau's Views

Respondents' comments related to ex post approach

The respondents to the Draft Proposals raised few matters in relation to the regulation of capex which had not already been discussed in detail in the Draft Proposals or earlier consultation papers (see in particular pages 59 and 60 of the Draft Proposals).

The majority of the concerns highlighted by respondents arise from the ex post approach to capital regulation, whereby the efficiency of capex is reviewed after the event. This contrasts with the ex ante approach to capex adopted in more mature sectors elsewhere, where allowances for capex are set in advance with limited ex post review.

The Bureau's views were set out in a letter to licensees dated 6 April 2005 and reiterated in the Draft Proposals. In summary, they are as follows:

- The Bureau believes it would be inappropriate to increase the allowed return to reflect any increased regulatory risk inherent in the 'ex post' approach to the regulation of capex. The 'ex post' approach is adopted because the licensees have to date been unable to provide sufficiently reliable capex forecasts. To allow additional returns would not provide any incentive for licensees to produce more reliable capex forecasts in the future.
- The Bureau has been consistent since 1999 in stating that PC1 capex would only be allowed if it met the Bureau's established efficiency criteria. The same will apply for PC2 capex, as changing the agreed principles retrospectively would create an undesirable precedent and potentially increase regulatory risk. However, as discussed further below, the Bureau is receptive to suggestions that a more balanced reward/penalty arrangement should be implemented for future (PC3) capex.
- The Bureau does not agree with the very limited interpretation of the efficiency criteria suggested by some respondents - for example, that capex can be regarded as having been procured 100% efficiently simply because it has been put out to competitive tender. A capex review which did not also take into account the execution of projects or the need for the spend would not be credible. The meaning of "to procure" in this context is "to bring about or to effect" and thus includes the execution of projects.
- The PC1 capex review reports provide the source of guidance requested by certain licensees as to the Bureau's interpretation of the efficiency criteria going forward.
- The Bureau is satisfied that the PC1 capex review does not have an excessive financial impact, as suggested by AADC in earlier responses. In fact, these Final Proposals actually result in substantial *additional* income (see below) from that which has been previously allowed for the PC1 Period. In any case, the Bureau is required under Article 96 of Law No (2) to take into consideration the effect of its proposals on the financial position of licensees.
- The Bureau does not agree with the argument put forward by both distribution companies, in earlier responses, that there is no linkage between the efficiency of capex processes and outcomes. The PC1 capex review encompassed both capex processes and

a review of particular projects. While the Bureau did not rely solely on its review of processes, it believes that efficient capex processes are, all else equal, more likely to lead to efficient capex outcomes.

- The companies were consulted on the scope and nature of the PC1 capex review prior to commencing the review.

As explained in the Draft Proposals, the Bureau is committed to moving towards an ex ante approach to capex regulation whenever circumstances allow. In the meantime, allowing additional returns for ex post capex regulation, as requested by respondents to the Draft Proposals, would not provide an incentive for the licensee to produce more reliable capex forecasts in the future.

The distribution companies, in particular, have yet to make reliable capex forecasts and thus in these Final Proposals the Bureau is proceeding with its proposal for a licence modification to require the distribution companies to produce a five year planning statement similar to that already in place for TRANSCO.

In respect of TRANSCO's comments, the approach for PC1 (ex post approach subject to efficiency review) was agreed by TRANSCO and other licensees at the 1999 and 2002 price control reviews and the Bureau's reasoning has been set out in detail in earlier consultation documents. However, the Bureau welcomes TRANSCO's generally positive comments about the development and refinement of the approach proposed by the Bureau for the PC2 and PC3 periods. For the PC3 period, the Bureau has introduced the possibility of bonus (upside) as well as penalty (downside) for efficient capex, which was based in part on TRANSCO's earlier suggestion. This will address the concern of several respondents about future incentives for efficient capex from 2006 onwards.

Similarly, in response to ADDC's penultimate comment, this approach was discussed and agreed with licensees at the time of the PC2 review in 2002 and was again described in the earlier consultation papers for the present review. In summary, by including the foregone costs in the RAV, the licensee earns both a return and depreciation on that amount over 30 years. This therefore provides the licensee the correct financing in NPV terms over that period.

This method was chosen over the alternative (of spreading it just over a price control period) as both are arithmetically-equivalent but the former gives a smoother revenue profile over time. For the reasons given in Section 4.3, investors should be indifferent between the two approaches. By increasing the RAV, it also ensures there is less of a difference between the RAV and the accounting (book) asset value, which is a concern licensees have expressed from time to time. The same approach was used to fund the foregone financing costs on provisional PC1 allowances at the 2002 review, and so no change is proposed.

Other comments of respondents

Of the remaining comments, the Bureau does not agree with AADC's suggestion to review 2003 and 2004 capex at this review. The reasons for this were provided in the Second Consultation Paper and repeated in the Draft Proposals and are as follows:

- there is insufficient time between the receipt of audited data for 2004 and the publication of the Final Proposals for PC3 to allow a robust process of review and consultation on PC2 capex;
- audited data for 2005 will not become available until after this review; and
- any partial assessment of PC2 capex at this review with different treatments applying to different years would unduly increase the complexity of the regulatory arrangements.

PC2 capex will thus be reviewed in 2006 by independent consultants and any necessary adjustments made at the 2009 price controls review.

The Bureau also disagrees with the comments of the distribution companies in relation to assets transferred to them from RASCO and TRANSCO for which they have not paid. The Bureau does not consider it appropriate to allow licensees a return on assets for which the licensee has not paid. Nor has any allowance been made for depreciation of these assets. Should the licensees pay for the assets in the future via the line "Property, Plant and Equipment" in the Cash Flow Statement, they will receive a return on the assets (and depreciation) from the time at which they pay for them (assuming such expenditure is judged by the Bureau to have been efficient).

Finally, the Bureau does not support ADDC's suggestion to reference capex to a calculation derived from notes to the accounts rather than to the line "Property, Plant and Equipment" in the Cash Flow Statement. The Bureau considers that this would lack transparency and potentially increase regulatory risk. By contrast, the Bureau's approach is transparent and provides certainty to investors as to the circumstances in which capex will be remunerated.

7.4 Final Proposals

PC1 Period (1999 – 2002)

The Bureau wishes to proceed with its proposal to apply the results of its PC1 capex review (see **Table 7.1**) to actual capex over the PC1 period. This results in additional "efficient" capex as shown in **Table 7.2**, the same as the Draft Proposals.

This additional efficient PC1 capex is then rolled into the RAVs along with the foregone financing costs (both depreciation and return on capital) relating to the period between when the capex was undertaken and when it will be financed. Lines 1 – 48 of **Appendices A.1** through **A.6** to this paper show how this has been done for each price control of AADC, ADDC and TRANSCO. (These calculations are explained in detail on pages 63 – 64 of Draft Proposals).

Table 7.4 summarises the results of the above calculations in terms of the NPV of the foregone financing costs on efficient PC1 capex, the opening 2006 RAVs, and the total annual depreciation on 2006 opening RAVs. The table indicates that the total NPV of adjustments for foregone financing costs for PC1 capex, up to 2006, for all businesses, amounts to about AED 542 million (in 2006 prices).

Table 7.4: 2006 Opening RAVs and Depreciation (after adjustments for efficient PC1 capex)

AED m, 2006 prices	NPV of Adjustment for Foregone Financing Costs	2006 Opening RAVs	Depreciation on Opening 2006 RAVs
AADC Electricity	-29.212	2,754.707	148.771
AADC Water	110.303	1,001.365	31.199
ADDC Electricity	120.193	5,989.456	275.410
ADDC Water	-55.548	1,612.605	107.466
TRANSCO Electricity	220.690	9,057.561	354.868
TRANSCO Water	176.071	5,835.632	285.371
Total Electricity	311.671	17,801.724	779.049
Total Water	230.826	8,449.602	424.036
Grand Total	542.497	26,251.326	1,203.086

The total opening 2006 RAV, for all the businesses, has increased to about AED 26.3 billion and the total annual depreciation on the opening 2006 RAV, for all businesses, has increased to about AED 1.2 billion.

The above figures are higher than those in the Draft Proposals because of the higher inflation figures for 2004 and 2005 (as the figures are expressed in 2006 prices).

PC2 Period (2003 – 2005)

The assessment of PC2 capex efficiency will be undertaken in 2006, when audited data for all PC2 years will be available. The Bureau intends to appoint independent consultants for this exercise. This assessment will be undertaken for both water and electricity, and the criteria used will be the Bureau's established efficiency criteria (see above). Any adjustment for differences between efficient and provisional PC2 capex (including foregone financing costs) will be incorporated at the 2009 price controls review in the same manner as used at this review for PC1 capex.

PC3 Period (2006 – 2009)

The Bureau has not changed to its treatment to PC3 capex from that proposed in the Draft Proposals, which is as follows:

1. Provisional PC3 capex allowances will be set as per **Table 7.3**. For each year of the PC3 control period, this provisional capex is added to, and depreciation on both the opening 2006 RAV and such provisional capex is deducted from, the opening RAV to calculate the closing RAV. These calculations are shown in lines 49-55 of **Appendices A.1 - A.6**.

   The resulting opening RAVs and total depreciation (in 2006 prices) for each year are shown in the following two tables:

Table 7.5: Opening RAVs over PC3 Period – Final Proposals

AED m, 2006 prices	2006	2007	2008	2009	2010
AADC Electricity	2,754.707	2,905.852	3,046.832	3,177.644	3,298.290
AADC Water	1,001.365	1,120.616	1,234.767	1,343.817	1,447.768
ADDC Electricity	5,989.456	6,241.112	6,474.902	6,690.825	6,888.882
ADDC Water	1,612.605	1,814.889	2,006.672	2,187.956	2,358.739
TRANSCO Electricity	9,057.561	9,882.693	10,667.825	11,412.957	12,118.089
TRANSCO Water	5,835.632	6,287.761	6,714.891	7,117.020	7,494.149
Total Electricity	17,801.724	19,029.658	20,289.559	21,281.427	22,305.261
Total Water	8,449.602	9,223.266	9,956.329	10,648.793	11,300.656
Grand Total	26,251.326	28,252.924	30,145.888	31,930.219	33,605.917

Table 7.6: Total Annual Depreciation over PC3 Period – Final Proposals

AED m, 2006 prices	2006	2007	2008	2009
AADC Electricity	153.854	164.021	174.187	184.354
AADC Water	33.749	38.849	43.949	49.049
ADDC Electricity	284.343	302.210	320.077	337.943
ADDC Water	112.716	123.216	133.716	144.216
TRANSCO Electricity	374.868	414.868	454.868	494.868
TRANSCO Water	297.871	322.871	347.871	372.871
Total Electricity	813.066	881.099	949.132	1,017.166
Total Water	444.336	484.936	525.536	566.136
Grand Total	1,257.402	1,366.036	1,474.669	1,583.302

The total RAV of all the businesses increases from AED 26.3 billion to AED 33.6 billion over the PC3 period; that is, by AED 7.3 billion or 28% in real terms.

The total annual depreciation of all the businesses increases from AED 1.2 billion to AED 1.58 billion over the PC3 period; that is, by about AED 0.38 billion or by 32%.

2. PC3 actual capex will be assessed in 2010 against the Bureau's established efficiency criteria:

   - are required to meet growth in customer demand or the relevant security standards; and
   - are efficiently procured,

   and the companies will be awarded "efficiency scores", in the same manner as for the PC1 capex review and as for the forthcoming PC2 capex review. The Bureau intends to appoint independent consultants for this purpose.

3. However, in contrast to the PC1 and PC2 approach, for PC3 the benchmark level of efficiency will not be set at 100%. Rather, the benchmark level will be set such that positive adjustments for the relatively efficient companies will be offset by corresponding negative adjustments for the relatively inefficient companies.

4. The resultant efficiency scores would then be subject to a further adjustment, to reflect movement in the capex efficiency frontier of the whole sector. This is to reflect improvements in capital efficiency that should be expected of the sector as a whole. This is similar to the approach that has been adopted by Ofwat for the water industry in England and Wales. The assumed movement in the capital efficiency frontier will be identified based on international evidence and best practice.

In this way, the most efficient company (or companies) may receive an allowance in excess of their actual spend, dependent on the extent of their relative efficiency and the relationship to the assessed movement in the efficiency frontier. Less efficient companies will receive less than their actual spend, but the shortfall can be minimised by matching the efficiency of other firms in the sector. Overall, customers would benefit from the efficiency improvement inherent within the movement of the sector's capital efficiency frontier.

This approach will be consistent with the efficiency incentive characteristics of CPI-X regulation, and introduce a form of competition or yardstick regulation into the sector. By introducing the possibility of upside as well as downside in terms of remuneration of actual capex spend, the approach would reduce the perceived regulatory risk and possible impact of the efficiency review while at the same time providing a more positive incentive for capex efficiency.

The above assessment and resulting financial adjustment for foregone financing costs will be based on the cost of capital used to set PC3.

Finally, the Bureau confirms its proposal to introduce a new licence condition on the distribution companies to produce a five year planning statement by 30 June each year.

8 Cost of Capital and Profit Margin

8.1 Draft Proposals

In the Draft Proposals, the Bureau estimated the real, post-tax cost of capital as summarised in **Table 8.1** below:

Table 8.1: Cost of Capital or Profit Margin – Draft Proposals

	Cost of Capital (%, real, post-tax)	Margin on Turnover (%)
AADC / ADDC	5.30%	-
ADWEC	-	0.021%
TRANSCO	5.00%	-

The proposed cost of capital for TRANSCO lay towards the middle of the range calculated in the Second Consultation Paper (4.5%-5.6%), based on evidence from overseas regulators and local/regional capital markets.

Both AADC and ADDC had argued in response to the Second Consultation Paper that a "small company premium" should apply in their cases, and in the Draft Proposals a premium of 0.30% was added for this and other specific risks associated with the distribution and supply businesses.

For ADWEC, which has few capital assets, the Bureau allowed a margin of 0.021% on projected total turnover. This was calculated by adjusting the margin allowed in setting the PC2 controls for ADWEC for the reduced cost of capital (of 5% rather than 6% used for PC2).

8.2 Responses to Draft Proposals

AADC

AADC calculated that, if expressed in relation to its accounting book value rather than to its regulatory asset value, the effective cost of capital proposed by the Bureau for AADC was not 5.3% but near 4%. It regarded this as not sufficient to fund the business, given the risks to which it was exposed, and thought it might affect investment.

It also disagreed with the comparisons made with regulated utilities in the UK and Australia, and thought these were not appropriate due to risks arising from:

- the regulatory discretion associated with Category A and Category B PIS indicators, which exposed it to the risk of a potential reduction in revenue of up to 4% (see Section 11);
- the retrospective nature of the adjustment for "other income" proposed by the Bureau (see Section 9);
- the ex post approach to capex (see Section 7);

- the exclusion from its RAV of assets transferred from TRANSCO and RASCO for which AADC had not paid but nevertheless incurred liabilities (see Section 7); and
- the adjustment for water customer numbers for PC1 (see Section 9), which AADC felt should be matched by a similar adjustment (in the opposite direction) for PC2.

However, AADC agreed with the proposal to apply a small business premium to the cost of capital, although was concerned that the Bureau had applied a premium at the lower end of the range. AADC felt it was entitled to a higher premium than ADDC, due to its smaller size.

AADC also disagreed with the Draft Proposals to calculate supply business allowed profits on the basis of a return on capital rather than a return on turnover (profit margin). As a result, AADC's supply business would make a loss in 2006. Once allowances for bad debt, revenue driver variances and 'K' factor adjustments are deducted, the losses were significant and not sustainable over the PC3 period. AADC suggested that the Bureau adopt a profit margin for the supply business set at of 2 – 3% of turnover. It based this figure on benchmarks selected from around the world.

ADDC

ADDC did not believe that the cost of capital was sufficient, particularly when considered against the capital efficiency review and other factors, and stated, without providing supporting evidence, that a 6% cost of capital is the minimum level appropriate for its distribution business.

For the supply business, ADDC disagreed with the Bureau's proposal to link supply business profit to the RAV and considered that the proposed level of supply business profit would not ensure that licensees are able to finance their licensed activities. It considered that the profit level allowed for supply businesses in the UK was reasonable, which ADDC stated was 1.5% of turnover, and that such a level would prove challenging because of the relative size of the supply business.

ADWEC

ADWEC considered that the Bureau's BST projections, against which ADWEC's profit margin was set, were too low, particularly because of an under-estimation of future fuel costs. Furthermore, the margin itself should not be reduced from the 0.025% margin which had applied during PC2, and requested an explanation of the Bureau's reasoning.

TRANSCO

TRANSCO did not comment on the cost of capital in its response to the Draft Proposals.

8.3 Bureau's Views

Evidence from Earlier Consultation Papers and Draft Proposals

None of the respondents to the Draft Proposals provided any quantified analysis or other substantive evidence to support a higher cost of capital. By contrast, the Draft Proposals set out

the available recent evidence from other regulated environments and from the local capital markets, all of which are relevant to the cost of capital assessment.

Since in the UAE there are no business taxes, the pre-tax and post-tax rates of return are equal. In jurisdictions where taxation is applicable, investors are concerned with the return they receive after the deduction of taxes (ie, with the post-tax cost of capital). It is therefore the post-tax cost of capital that provides the relevant comparison from other countries.

In essence, the Bureau estimated that the appropriate range for the post-tax cost of capital is 4.5% - 5.6% in real terms. The lower end of this range is based on the mid-point estimates from UK and Australia (6 regulatory decisions in 2003 and 2004) and the higher end is based on the highest of the latest UK final regulatory decisions (Ofwat's final determination, December 2004).

In fact, the higher end of the Bureau's range allows a higher cost of capital than Ofwat's by incorporating a more favourable gearing assumption (of 45% compared to 55% assumed by Ofwat).[5]

The Bureau also cross-checked its cost of capital estimates against the data available on local and regional capital markets from equity and bond market research reports, and from the Bahrain Telecommunications Regulatory Authority. The Second Consultation Paper sets out all such local and regional data and its assessment in detail.

The following table shows the Bureau's cost of capital calculations for the PC3 Draft Proposals based on UK and Australian regulatory decisions and a cross-check against the local and regional estimates:

Table 8.2: Cost of Capital for PC3 and the Local/Regional Capital Market Data

	PC3 Draft Proposals	Local Capital Market Data
Risk-free rate (nominal)	5.30 – 5.50%	1.53 – 6.10%
Risk-free rate (real)	2.90 – 3.00%	2.74%
Debt premium	1.30%	
Corporation Tax	30%	
Post-tax cost of debt (nominal)	4.60 – 4.80%	2.11 – 6.35%
Post-tax cost of debt (real)	**2.90 -3.00%**	
Equity Risk Premium	4.30 – 4.70%	5 - 6.5%
Equity Beta	0.86 – 1.00	0.55 – 1.48%
Post-tax cost of equity (nominal)	9.00 – 10.20%	8.39 – 13.21%
Post-tax cost of equity (real)	**6.50 – 7.70%**	
Gearing	45 – 55%	Up to 80%
Post-tax WACC (nominal)	6.60 – 7.80%	7.27 – 7.83%
Post-tax WACC (real)	**4.50 – 5.60%**	

[5] Gearing refers to the ratio of (1) debt to (2) debt plus equity. As debt is cheaper to finance than equity, a lower gearing assumption (less debt, more equity) will produce a higher cost of capital than a higher gearing assumption, for given costs of debt and equity.

Updated Evidence from Local/Regional Capital Markets

The Bureau has taken steps to provide further evidence on the appropriate cost of capital, subsequent to the receipt of responses from the companies to the Draft Proposals. This has involved reviewing seven recent independent research reports available on the local and regional capital markets published by local financial analysts, *Shuaa Capital Research* and *Global Investment House*.

These were published between November 2004 and August 2005 and estimate (for the purposes of analysis of financial performance, share price and investment decision) the cost of capital (in some cases, only the cost of equity) of seven companies from the UAE, Saudi Arabia, and Kuwait:

- Emaar Properties (UAE);
- PWC Logistics (Kuwait);
- National Bank of Kuwait (Kuwait);
- Tabreed (UAE);
- SABIC (Saudi Arabia);
- Saudi Telecom Company (Saudi Arabia); and
- Commercial Facilities Company (Kuwait).

The information available from these sources is generally expressed in nominal terms (ie, including inflation). For the purposes of comparison, the Bureau's cost of capital is required to be converted into nominal terms. This is shown in **Table 8.3** below, for two inflation scenarios[6]: CPI of 5% and CPI of 6%:

Table 8.3: Bureau's Estimate of Cost of Capital for PC3: Real and Nominal Equivalents

	Real	**Nominal**	**Nominal**
Inflation estimate	**0%**	**5%**	**6%**
Cost of Debt	2.9%-3%	7.9%-8%	8.9%-9%
Cost of Equity	6.5%-7.7%	11.5%-12.7%	12.5%-13.7%
Cost of Capital	4.5%-5.6%	9.5%-10.6%	10.5%-11.6%

Table 8.4 compares the Bureau's nominal figures against the independent research. Generally, these are businesses that face greater risks as a result of exposure to competition of some degree. Investors in these companies require a return that takes account of competition. The situation for AADC and ADDC is that neither company is exposed to competition, implying greater certainty of returns (and lower risks) for investors. This means that investors would require a relatively lower return than in a competitive market. Yet the Bureau's nominal costs of capital is

[6] See Section 6.3 for a discussion of latest inflation estimates.

significantly higher in both the inflation scenarios than independently estimated for the other companies.

Table 8.4: Cost of Capital for PC3 and the Latest Local/Regional Capital Market Data

Nominal	Bureau's Calculations for PC3		Independent Research
Inflation estimate	**5%**	**6%**	
Risk-Free Rate	7.9%-8%	8.9%-9%	4.66% - 5.68%
Cost of Debt	**7.9%-8%**	**8.9%-9%**	**3% - 5.07%**
Equity Risk Premium	4.3%-4.7%	4.3%-4.7%	5.5% - 6.5%
Equity Beta	0.86-1.00	0.86-1.00	0.62 – 1.14
Cost of Equity	**11.5%-12.7%**	**12.5%-13.7%**	**8.5% - 12%**
Gearing	45%-55%	45%-55%	50%
Cost of Capital	**9.5%-10.6%**	**10.5%-11.6%**	**6.72% - 7.67%**

Note: in some cases, independent research estimates only cost of equity

These results suggest the cost of capital proposed in the Draft Proposals is higher than the evidence from local capital market suggests is required by investors. Consequently it is difficult to identify an objective basis for the higher cost of capital requested by AADC and ADDC.

Other Comments of Respondents

Regulatory risk

A regulated utility will be subject to some degree of regulatory risk. The obligation of a regulator is to minimise the regulatory risks where practicable and consistent with the performance of its duties under the relevant laws. For example, at the extreme, a regulator could allow the pass-through of all opex and capex spent by the companies, which would eliminate regulatory risk but would not be consistent with its overall objectives, such as ensuring the efficiency of the sector and protecting customers.

The specific risks identified by AADC are each discussed in the relevant section of this paper and the Bureau does not consider they provide a basis for allowing a higher rate of return.

Rate of return for future capex

AADC is concerned that its rate of return, when expressed against its accounting book value, is less than its rate of return expressed against its regulatory asset value. This is also common in other regulatory regimes worldwide which do not allow 100% pass-through of capex. To the extent that AADC has been inefficient in its capex, it will indeed earn a return on its book value less than its cost of capital. Analysis of regulated companies in the UK and Australia shows the same feature.

However, the business can still be financed going forward. This is because investors are most interested in the expected cost of capital on *future* investments, which will be at least equal to the allowed cost of capital (of 5.3% in the Draft Proposals), provided the capex is efficiently spent. The revised treatment of future (PC3) capex for 2006 onwards (set out in Section 7.4) provides

that the most efficient companies are able to earn a return *in excess of* their cost of capital. The Bureau is of the view that the proposed cost of capital and the proposed treatment of capex will not make it difficult to attract investors to the sector.

Small business premium

With regard to the small business premium, the premium applied by Ofwat varied depending on the size of the business, measured in terms of its RAV. AADC's RAV falls towards the top end of the range of RAVs for which Ofwat applied any small business premium. For companies with a RAV in excess of AED 4.9 billion equivalent, Ofwat did not apply a small business premium. After the PC3 period, AADC is expected to join ADDC in being greater in size than the companies for which Ofwat regarded a small business premium as appropriate. There is thus no justification for increasing the small business premium.

Supply business profit margin

As described in Section 3, the Bureau has decided to revert to the present approach of a single price control covering both distribution and supply. Consequently it is not necessary to identify a separate supply business profit margin at this review. However, in view of the comments of respondents relating to the potential financial viability of the supply businesses on a standalone basis, and uncertainties in relation to various costs, an additional adjustment has been made to the allowed rate of return of the distribution companies (distribution and supply combined), as discussed in Section 8.4.

ADWEC profit margin

The Bureau has adopted higher BST projections in response to ADWEC's comments, which increases ADWEC's allowed profits. However, there is no intention to alter the allowed margin on BST turnover of 0.021%, as this is linked to the 5% basic cost of capital judged appropriate for the sector. ADWEC is referred to the First and Second Consultation Papers and the Draft Proposals for the detailed explanation it has requested.

8.4 Final Proposals

The Bureau's Final Proposals in respect of the cost of capital are summarised below:

Table 8.5: Cost of Capital or Profit Margin – Final Proposals

	Cost of Capital (%, real, post-tax)	**Margin on Turnover (%)**
AADC / ADDC (distribution) – for information only	5.3%	-
AADC / ADDC (distribution and supply combined)	5.5%	
ADWEC (both businesses)	-	0.021%
TRANSCO (both businesses)	5.0%	-

The proposed cost of capital is 5%, as per the Draft Proposals.

For the distribution companies, in addition to the 0.3% premium proposed in the Draft Proposals, the overall cost of capital (distribution and supply combined) has been increased from 5.3% to 5.5%. This cost of capital still lies within the range estimated by the Bureau in the Second Consultation Paper (4.5%-5.6%) but has been further increased to allow additional financing for the supply businesses compared to the Draft Proposals, as discussed in Sections 6.3 and 8.3.

For ADWEC, the Bureau has allowed a margin of 0.021% on projected total turnover, as proposed in the Draft Proposals. This has been calculated by adjusting the margin allowed in setting the PC2 controls for ADWEC for the reduced cost of capital (of 5%). However, the Bureau has adopted ADWEC's higher BST projections in calculating the margin.

9 Financial Adjustments

9.1 Draft Proposals

In the Draft Proposals, the Bureau proposed a number of additional adjustments to the PC3 revenue requirement:

- for certain costs incurred by AADC and ADDC in 2001 and 2002 which have previously not been financed associated with distribution and supply assets inherited from RASCO - this was a positive adjustment;
- for TRANSCO's economic despatch performance during PC2 - negative adjustment;
- for necessary amendments to audited PCRs for AADC, ADDC and TRANSCO for PC1 (negative adjustments). These related to:
    - AADC's water customer accounts in PC1;
    - ADDC's metered units distributed in PC1; and
    - treatment of "other income" in PC1 (AADC, ADDC and TRANSCO);
- for ADWEC's Information Submissions in 2003 and 2004 – a negative adjustment; and
- for TRANSCO's income from unlicensed activities ("manpower services") erroneously financed within the PC1 controls - negative adjustment.

Detailed calculations were presented in the Draft Proposals. These adjustments were calculated in 2006 prices in terms of their NPV at 1 January 2006, based on a discount rate of 6% (the cost of capital used in setting the earlier price controls to which the adjustments relate).

The total financial adjustments for all businesses on the above basis amounted to a reduction of AED 196 million (in 2006 prices).

The Second Consultation Paper set out the Bureau's thinking to apply all the financial adjustments to the RAVs of each of the businesses, to spread their effect over a longer term. However, respondents to the Second Consultation Paper preferred adjustments to be made directly to the PC3 revenue requirement, in NPV terms, in order to phase out the effect of these adjustments as early as possible. The Draft Proposals incorporated this suggestion.

In the Draft Proposals, the Bureau also announced its intention to apply a further financial adjustment at the 2009 price control review to the future allowed revenues of TRANSCO. This was due to delays to the water transmission scheme necessary to fully utilise the water produced by the new generation and desalination plant at Shuweihat, for which the sector (specifically, ADWEC) had been incurring the cost of availability payments. The Bureau proposed to calculate the adjustment for TRANSCO at 50% of the availability payments which had been unnecessarily incurred by ADWEC as a result of the delays.

The Bureau also indicated that it would review more carefully in future the auditor's interpretation of the phrase "should have collected" in the definition of the regulated revenue of the distribution companies within the audited Price Control Return (PCR). This phrase refers not

only to accrued income but also to the necessity of charging all customers the correct tariff. This analysis is necessary to ensure that the distribution companies make all necessary efforts to collect due income from their customers, and do not rely unnecessarily on subsidy from government to make up the shortfall. The Bureau intends to request the auditors' analysis of this matter as part of the audited PCRs for future years (via paragraphs 19 and 38 of Schedule 2 of the distribution companies' licences).

9.2 Responses to Draft Proposals

AADC

AADC considered that no adjustments should be made in respect of the PC1 audited PCRs, as "future investors should not be shackled with historical adjustments".

AADC thought that in any case the adjustments were unnecessary as any alleged gain made in PC1 had a zero net effect at the time.

In relation to the error in water customer numbers in PC1, AADC thought that the Bureau was taking an unbalanced approach, in making an adjustment for the PC1 period but not making a similar adjustment (in the opposite direction) which AADC thought was appropriate for the PC2 period.

AADC also disagreed with the Bureau's adjustment for PC1 'other income', although agreed that, at the time, the Bureau had reserved the right to make a financial adjustment at a later date. However, it felt the retrospective nature of the adjustment caused higher risk which should be reflected in a higher return.

ADDC

ADDC considered that it has always applied the correct definition of "regulated revenue" within its price controls submissions, consistent with the licence requirements in force at the time, and therefore disagreed with the adjustment for "other income" in the PC1 period.

ADWEC

ADWEC did not comment on this aspect of the Draft Proposals.

TRANSCO

TRANSCO expressed disappointment that the Bureau proposed to proceed with the adjustment for its economic despatch performance during PC2 and described the actions it has been taking to deliver economic dispatch during 2005. These included: updating its economic despatch operating procedure (OP100), development and testing of the Unit Commitment (UC) model which was expected to go "live" on 1 January 2006, preparation of a system constraints report, and review of outage optimisation software and short-term demand forecasting procedures.

TRANSCO also noted that the IPA report which the Bureau had asked it to implement was not published until 14 October 2003. TRANSCO therefore asked the Bureau to reconsider its decision to apply a penalty in each of the years 2003, 2004 and 2005.

9.3 Bureau's Views

The Bureau's views are described below in relation to each of the proposed adjustments:

General

The Bureau disagrees with AADC's arguments that no financial adjustments should be made. It has been necessary to carry forward adjustments to the price controls review for a number of reasons. However, perhaps the most important reason was the failure of the licensees, including AADC, to submit audited accounts and PCRs in a timely manner for the PC1 period (audited accounts and PCRs were not submitted until 2004). Furthermore, once AADC's audited PCRs were finally received, they contained certain treatments which the Bureau only accepted at the time subject to necessary adjustments being made at the present price controls review. However the scope of retrospective adjustments should be kept to the minimum consistent with the performance of the Bureau's statutory duties, and the Bureau has adhered to this principle in reaching its Final Proposals.

RASCO-Related Financial Adjustments for AADC and ADDC

No comments were received on the Bureau's proposal to retrospectively remunerate opex incurred by AADC and ADDC in 2001 and 2002, which had previously not been financed, associated with assets inherited from RASCO, and so the Bureau's views remain as per the Draft Proposals. This adjustment amounts to an additional AED 136 million (2006 prices) across the two distribution companies.

As discussed in Section 7.2, both distribution companies queried the Bureau's proposal not to allocate, within their RAVs, any value to the assets which had been transferred from RASCO (and other assets which had been transferred from TRANSCO). However, for the reasons given in Section 7.3 – in particular, that the distribution companies are shown in their audited separate business accounts not yet to have paid for such assets - the Bureau considers its approach remains appropriate.

Financial Adjustments for TRANSCO's Economic Despatch Performance

In the Draft Proposals, the Bureau proposed to implement an adjustment for performance against the PIS Category B indicators solely for TRANSCO's economic despatch performance during PC2.

The Bureau welcomes TRANSCO's recognition, in its response to the Draft Proposals, of the need to take positive actions to implement the IPA report,[7] and its explanation of certain steps taken in recent months. However, despite numerous reminders over many months, this acknowledgement has come at a late stage and only subsequent to the Draft Proposals when the

[7] "Review of Economic Despatch: Final Report", IPA Energy Consulting, October 2003.

Bureau proposed a financial penalty. It remains to be seen over the coming months whether TRANSCO follows through with these actions.

In particular, the Bureau is yet to receive a clear statement from TRANSCO that it accepts the main IPA finding that economic despatch should be based on the commercial arrangements in the PWPAs rather than on the technical performance of plant. Further, the Bureau has not yet received adequate analysis of the reconciliation of the UC model to the PWPA commercial arrangements, which TRANSCO first undertook to provide in mid-2004.

While TRANSCO is correct to note that the IPA report was not finalised until late 2003, IPA was appointed because had been unresponsive to an earlier review of economic despatch undertaken by the Bureau during 2002. Therefore it is not considered appropriate to waive the adjustment for 2003, as suggested by TRANSCO.

The Bureau intends to proceed with its proposal to implement a financial adjustment for TRANSCO's economic dispatch performance during PC2, calculated as set out in the Draft Proposals. In addition, economic dispatch will continue to be monitored, over the PC3 period, as a PIS Category B indicator (see Section 11). A positive or negative financial adjustment at the 2009 review may then be made for exceptionally good or poor performance. In this regard, the Bureau wrote to TRANSCO on 4 May 2005 listing the specific steps which TRANSCO must take either to avoid a negative adjustment or to receive a positive adjustment at the next review. The Bureau is also considering re-appointing IPA during 2006 to independently review the degree to which TRANSCO has implemented the recommendations of IPA's earlier report.

PCR-Related Financial Adjustments for PC1 Period

Financial Adjustments for AADC's Water Customer Accounts in PC1

This issue has been discussed at length in earlier consultation papers. In summary, the audited PCRs submitted by AADC for the years 1999-2002 contained significantly higher figures for the water customer numbers revenue driver than was assumed when setting the PC1 price control. The reason for this was that the information provided by AADC for setting PC1 was based on an old billing system (WANG), whereas the information used in the audited PCRs is based on AADC's current billing system (OMNIX). If left uncorrected, this would lead to an inappropriate 'windfall' gain for AADC.

A similar issue arose for ADDC. However, this was resolved by the company, with approval from the Bureau and the auditors. Effectively, the figures reported in ADDC's PCRs were "reset" to the base figure for water customer numbers for 1999 used in setting the PC1 controls. The Bureau indicated its preference for AADC to make the same adjustment but stated that if AADC made no adjustment to its PCRs (as has turned out to be the case) then an adjustment would be made by the Bureau at the present price control review instead. The Bureau sees no reason not to implement the adjustment for AADC now and if this were not carried out it would be unfair on ADDC, which has acted in good faith.

In implementing this proposal, a minor error has been corrected in the calculation of the adjustment which was identified by AADC separately to its response to the Draft Proposals.

AADC has suggested that such adjustments should be applied equally to under- and over-statements of revenue drivers. It has presented details of a similar adjustment (in this case, for *under*-estimation of water customer numbers) which it says should also be made for the PC2 period. It also argued that as many as possible of any such adjustments should be made now rather than being held over until the next price review.

The Bureau considers that AADC's proposed positive adjustment for over-forecasting PC2 customer numbers could remove the incentive for companies to provide accurate forecasts now and in the future. Nevertheless, consistent with the approach taken for PC1, the Bureau will review the matter once the full audited data for the period in question is available.

Financial Adjustments for ADDC's Metered Units Distributed in PC1

No comments were received on this proposal and so it remains as per the Draft Proposals. The adjustment relates to the erroneous inclusion by ADDC in its PCRs for 1999 and 2000 of some units that were distribution by RASCO. We are grateful to ADDC for bringing this error to the attention of the Bureau.

Financial Adjustments for "Other Income" in PC1 Period

The Draft Proposals suggested financial adjustments be made at this review to remove the gains earned by AADC, ADDC and TRANSCO due to the inappropriate exclusion of certain incomes from the "regulated revenue" in their audited PCRs for the PC1 period. Such income included: compensation, claims, penalties and damages from the general public, contractors and insurers; interest on deposits; and foreign exchange loss or gains.

The Bureau considers that such an exclusion is not in line with the licence definition of regulated revenue for the PC1 period and the consultation papers issued in 1999 for the PC1 controls. The Bureau's interpretation of the intent of the PC1 controls as reflected in those documents as well as the PC1 licence definition of "regulated revenue" is that it covered all income of the licensed business. This is separate to any income from unlicensed activities for which the Bureau has issued consent, which is outside regulated revenue.

The Bureau's position on this matter was set out in its letter of 18 January 2004 advising licensees to treat all PC1 income (other than unlicensed/consented activities) as regulated revenue. The Bureau reminded AADC during the audit work (correspondence of 28 July 2004) that "… for the purpose of the audit, some other income could be excluded at the discretion of the auditors but that these would be reviewed at the PC3 review and any financial adjustments made at that time for inappropriately excluded items." This was communicated so as to avoid any further delay in completing the audit of the PCRs for 1999-2002.

The Bureau therefore proposes to proceed with the adjustments listed in the Draft Proposals.

<u>Other Financial Adjustments</u>

No comments were received on the following matters discussed in the Draft Proposals:

- Financial Adjustment for Asset Disposal or Transfer (Section 9.5 of Draft Proposals);

- Financial Adjustment for ADWEC Information Submission in 2003 and 2004 (9.6);
- Financial Adjustment for TRANSCO "Manpower Services" Income in PC1 (9.7) ;
- Incentive for Income Collection by Distribution Companies (9.8);
- No Financial Adjustment for RASCO Subsidy Shortfall during 2001 – 2003 (9.9); and
- Impact of Transmission System Delays (9.10).

The above will therefore be implemented in line with the Draft Proposals.

9.4 Final Proposals

Table 9.1 overleaf summarises the financial adjustments. The detailed calculations are as set out in the Draft Proposals. Other than correcting a minor error in the calculation of the PC1 'water customer numbers' adjustment identified by AADC, the only change is that the revised CPI data for 2004 and 2005 has been incorporated, resulting in slightly higher adjustments than shown in the Draft Proposals when expressed in 2006 prices.

The total financial adjustments for all businesses now amount to a reduction of about AED 202 million (2006 prices) as at 1 January 2006. These adjustments have been made to the respective MARs over the PC3 period.

Table 9.1: Summary of Financial Adjustments – Final Proposals

AED million 2006 prices	RASCO-Related	PIS Category B	PC1 PCR-Related			Information Submission	Manpower Services	Total
			Water Customers	Metered Units	Other Income			
AADC Electricity	13.511				-38.027			-24.516
AADC Water	4.911		-27.946		-7.736			-30.770
ADDC Electricity	92.833			-1.622	-63.600			27.611
ADDC Water	24.994			-0.693	-16.164			8.138
ADWEC Electricity						-0.310		-0.310
ADWEC Water						-0.239		-0.239
TRANSCO Electricity		-52.763			-67.992		-17.828	-138.583
TRANSCO Water		-36.140			-4.753		-1.966	-42.859
Electricity – Total	106.344	-52.763		-1.622	-169.620	-0.310	-17.828	-135.797
Water – Total	29.906	-36.140	-27.946	-0.693	-28.652	-0.239	-1.966	-65.730
Grand Total	**136.250**	**-88.903**	**-27.946**	**-2.314**	**-198.271**	**-0.548**	**-19.794**	**-201.527**

10 Price Control Calculations

10.1 Draft Proposals

The price control calculations adopted in the Draft Proposals involved equating the required revenue (that which would be sufficient to finance an efficient business) to the forecast revenue, based on the revenue driver projections and subject to the proportions of revenue recovered by the fixed and variable revenue terms.

The required revenue was calculated using the "building-block" approach; that is, as the sum over the control period of:

- opex;
- depreciation;
- return on capital; and
- the financial adjustments described in Section 9.

In the case of ADWEC, the required revenue was calculated in a slightly different manner as the sum (over the control period) of:

- opex;
- capex;
- a profit margin on turnover; and
- the financial adjustments described in Section 9.

Consistent with the approach taken to setting the price controls previously, the Bureau used a net present value (NPV) framework to establish the level and profile of price controlled revenue. The NPV of costs or revenues was calculated on a mid-year basis; that is, the cost or revenue is assumed to be spread uniformly over a year or occur at the middle of the year. The discount rate used in the present value calculation was the cost of capital.

All costs and revenues were expressed in 2006 prices, consistent with the use of a real cost of capital.

As discussed in Section 4, once the NPV of the required revenue is established, the control itself can be sculpted in different ways to yield the same present value of revenue. That is, different combinations of values of the "notified values" (a, b, c and X) are possible to satisfy the equality condition. However, a unique set of values of a, b, c and X is obtained when constraints are put on shares of different revenue terms in the total revenue and on the value of X. 'X' was set to zero in the Draft Proposals for all businesses.

The above calculation methodology is applied to the MARs for all regulated businesses, excluding any pass-through costs.

10.2 Final Proposals

While respondents commented on various inputs to the modelling, none of the respondents commented specifically on the above methodology or on the Bureau's financial model. Based on the price control calculations explained above, and the inputs described in Sections 3-9 of this paper, the Bureau's Final Proposals for the notified values are summarised in **Table 10.1** below. These proposals are the same as calculated in **Appendices B.1 through B.8** to this paper (please refer to Section 10.2 of the Draft Proposals for a detailed explanation of these calculations).

Table 10.1: Notified Values for PC3 – Final Proposals

		Values for 2006		
2006 prices	**X**	**A or a**	**b**	**c**
AADC Electricity	0.00	344.74 AEDm	751.22 AED/customer account	0.97 fils/kWh metered
AADC Water	0.00	127.63 AEDm	542.40 AED/customer account	0.77 AED/TIG metered
ADDC Electricity	0.00	641.94 AEDm	649.02 AED/customer account	0.82 fils/kWh metered
ADDC Water	0.00	262.68 AEDm	309.15 AED/customer account	0.60 AED/TIG metered
ADWEC Electricity	0.00	11.80 AEDm	n/a	n/a
ADWEC Water	0.00	7.56 AEDm	n/a	n/a
TRANSCO Electricity	0.00	729.33 AEDm	31.53 AED/kW metered	0.57 fils/kWh metered
TRANSCO Water	0.00	626.69 AEDm	235.16 AED/TIGD metered	0.67 AED/TIG metered

The notified values given in **Table 10.1** (to the accuracy expressed therein) will be used to calculate MARs when the new price controls are implemented.

10.2.1 Projected Allowed Revenues

Table 10.2 presents the projected MAR in respect of "own costs" (that is, excluding pass-through costs, if applicable) for each business and in total for 2006-2009.

Table 10.2: Projected MARs for PC3 Period – Final Proposals

AED million, 2006 prices	**2006**	**2007**	**2008**	**2009**
AADC Electricity	479.66	488.29	497.13	507.35
AADC Water	170.05	179.09	187.26	195.17
ADDC Electricity	897.20	910.47	924.69	939.63
ADDC Water	358.43	366.16	382.17	397.85
ADWEC Electricity	11.80	11.80	11.80	11.80
ADWEC Water	7.56	7.56	7.56	7.56
TRANSCO Electricity	1,001.22	1,035.30	1,051.14	1,086.55
TRANSCO Water	868.40	890.63	904.84	921.43
Electricity – Total	2,389.88	2,445.85	2,484.75	2,545.33
Water – Total	1,404.44	1,443.44	1,481.82	1,522.00
Grand Total	3,794.32	3,889.29	3,966.58	4,067.33

Note: Excludes pass-through costs.

Total MARs (excluding pass-through costs) are expected to reach over AED 4 billion by 2009 for water and electricity combined (about AED 2.5 billion a year for electricity and about AED 1.5 billion a year for water).

10.3 Analysis of the Final Proposals

10.3.1 Comparison with 2005 MARs and Draft Proposals

In **Table 10.3**, the PC3 Final Proposals for the MARs for the 2006 financial year are compared to (i) the corresponding figures from the PC3 Draft Proposals and (ii) the projected MARs for the final year (2005) of the present PC2 control.

Table 10.3: Final Proposals – Comparison with 2005 MARs and Draft Proposals

AED million, nominal prices	2005 MAR (estimated)	2006 Draft Proposals MAR	2006 Final Proposals MAR	Increase in MAR over Draft Proposals
AADC Electricity	385.209	455.49	479.66	5%
AADC Water	149.196	162.09	170.05	5%
ADDC Electricity	696.987	851.24	897.20	5%
ADDC Water	325.287	341.74	358.43	5%
ADWEC Electricity	6.510	10.56	11.80	12%
ADWEC Water	4.930	6.33	7.56	19%
TRANSCO Electricity	884.211	969.57	1,001.22	3%
TRANSCO Water	577.635	831.17	868.40	4%
Electricity – Total	1,972.917	2,286.87	2,389.88	5%
Water – Total	1,057.048	1,341.33	1,404.44	5%
Grand Total	3,029.965	3,628.20	3,794.32	5%

Note: Excludes pass-through costs.

This shows that the PC3 Final Proposals represent an increase of about 5% over the PC3 Draft Proposals. The Draft Proposals themselves already represented an increase of approximately 20% in nominal terms (15% in real terms) over the projected MAR for 2005.

10.3.2 Constituents of Projected MARs

Figure 10.1 present the percentage breakdown of total revenue into projected opex, depreciation and profits in NPV terms for each company (excluding pass-through costs).

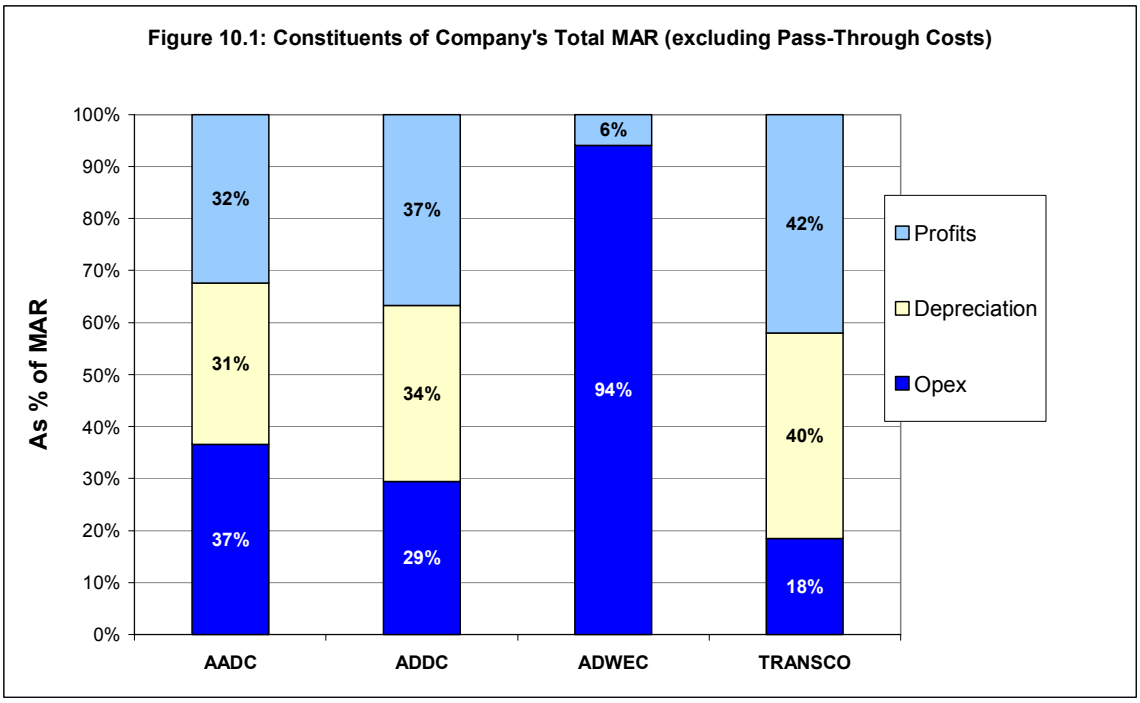
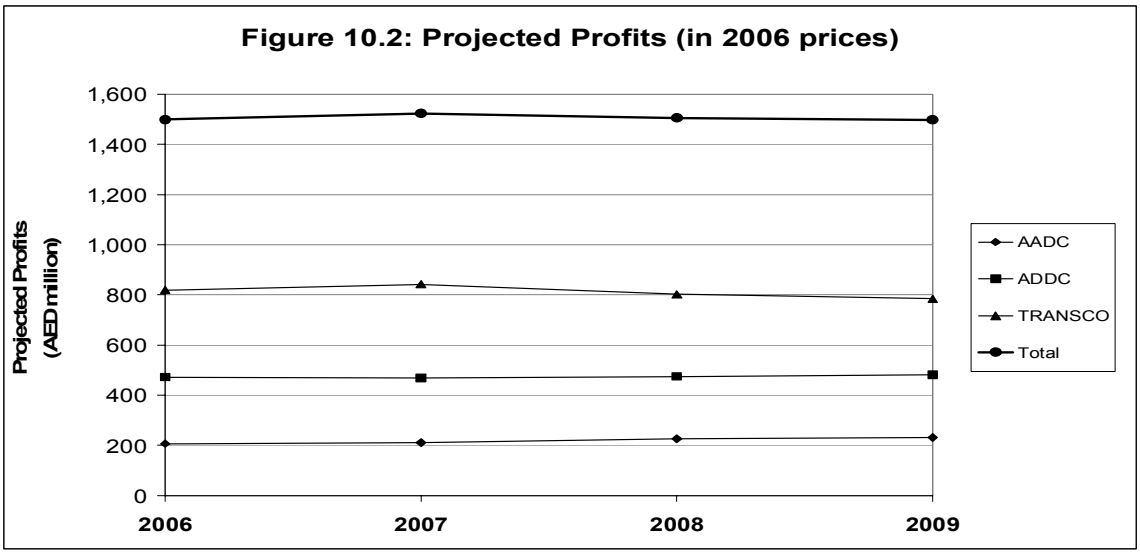


Figure 10.1 shows that depreciation and return on capital account for a significant proportion of the allowed revenue for AADC (about 63%), ADDC (71%) and TRANSCO (82%). This highlights the capital intensity of these businesses. In contrast, opex accounts for the majority (about 94%) of the allowed revenue for ADWEC's businesses, confirming its small capital base.

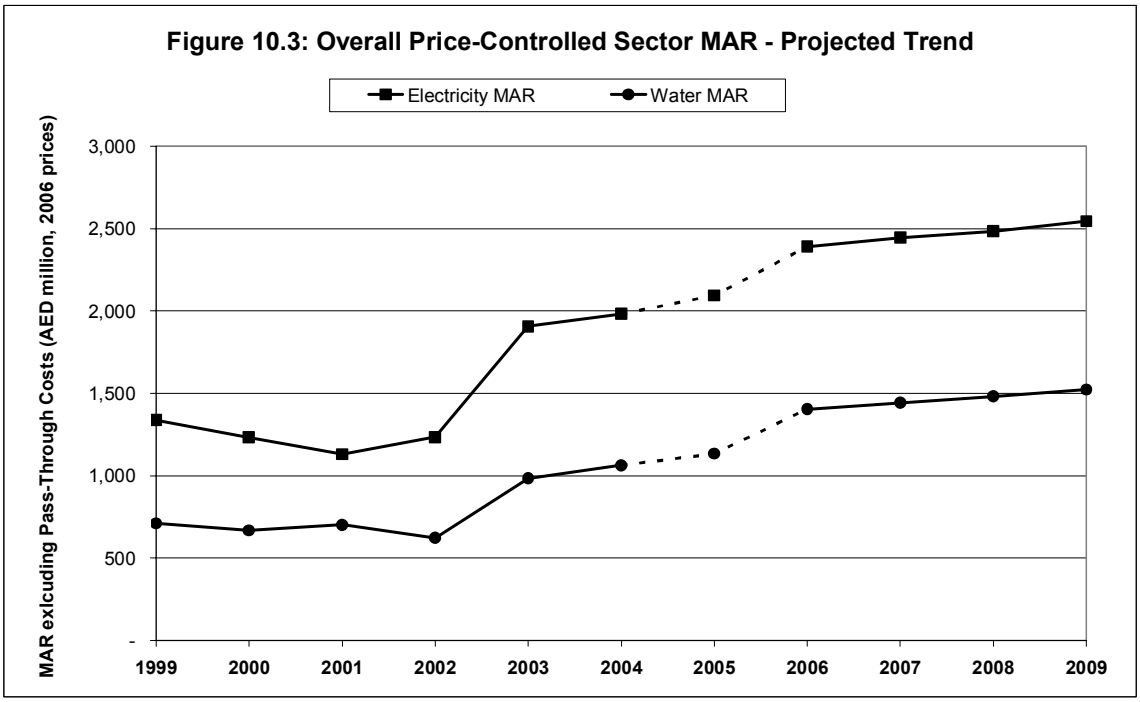
Figure 10.2 shows that the total profits for the price-controlled businesses in the sector are expected to average over AED 1.5 billion a year over the PC3 period, even with the reduction in the cost of capital (compared to PC2) implemented in these Final Proposals. This is made up of approximately AED 1 billion a year of profits for the electricity businesses and about AED 0.5 billion a year of profits for the water businesses.

On average over the period, TRANSCO is projected to make profits of AED 812 million a year, ADDC to make profits of AED 474 million a year, and AADC to make profits of AED 219 million a year. This level of profit reflects the cost of capital and is necessary to promote adequate network investment.



10.3.3 Effect of Final Proposals on Sector Costs

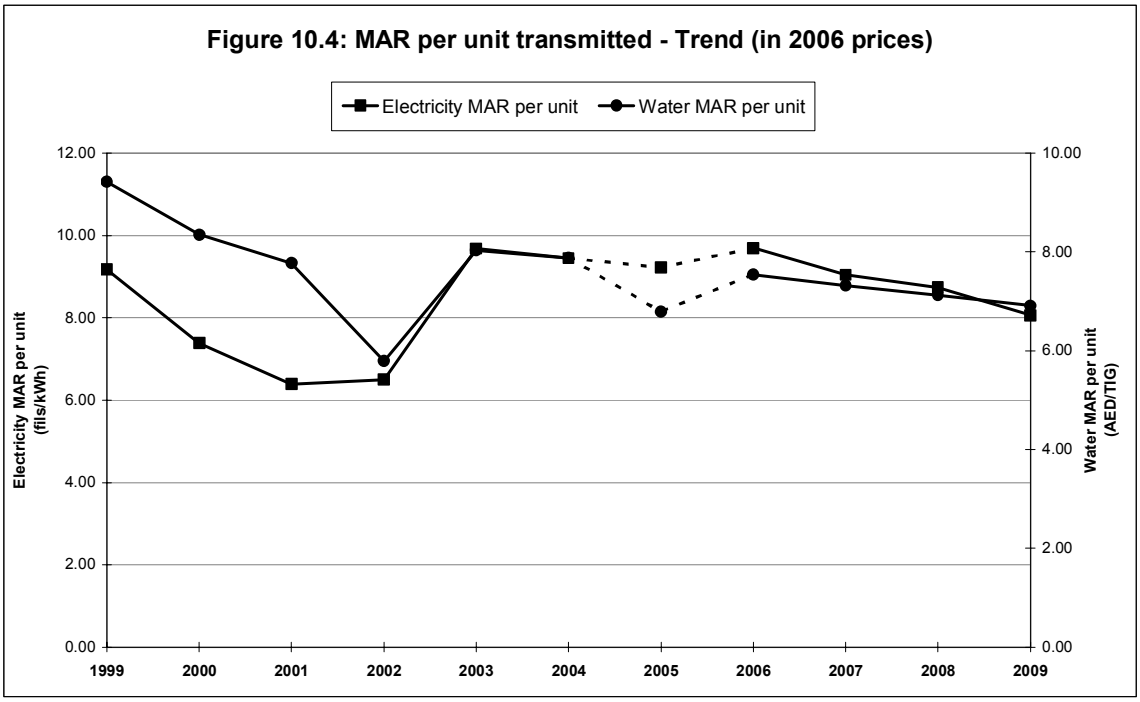
Figure 10.3 shows the expected effect of these Final Proposals on price-controlled sector costs (separately for electricity and water). This excludes the effect of changes in the purchase price of water and electricity (i.e. BST costs), which are treated on pass-through basis, subject to ADWEC's economic purchasing obligation.



Note: Excluding pass-through costs

However, the annual increases in MARs are significantly lower than the forecast demand increases over the same period. The Final Proposals are therefore expected to result in a declining trend for unit costs of water and electricity, in relation to price-controlled costs. This is graphically shown in **Figure 10.4** below:

Figure 10.4: MAR per unit transmitted - Trend (in 2006 prices)



Note: Excluding pass-through costs

As a result of the Final Proposals, unit costs for electricity and water are expected to be, respectively 12% and 27% lower (in real terms) than in 1999. This continues the downward trend over the period (the discontinuity in 2002/2003 was due to the delay in financing any PC1 capex).

11 Performance Incentive Scheme

11.1 Draft Proposals

A Performance Incentive Scheme (PIS) was introduced into the price controls for the PC2 period and links the MARs of the businesses to important aspects of their performance.

The PIS has two types of performance indicator:

- Category A indicators with precise definitions, targets and incentive rates, and an automatic annual revenue adjustment for performance via a term "Q" in the MAR formulae, subject to a cap; and
- Category B indicators, less precisely defined but subject to a possible financial adjustment at the following review, depending on performance.

During PC2 there were two Category A indicators: audited accounts timeliness, and audited PCR timeliness. Performance on both measures is assessed as the difference (in months) between the actual date of submission and the target date for submission to the Bureau of the statements for the previous year.

In the Draft Proposals, the Bureau sought to extend the Performance Incentive Scheme (PIS) for additional "Category A" indicators for the PC3 period. The overall cap on revenue adjustments for good (or bad) performance of the business on Category A indicators via the term 'Q' during the PC3 period was proposed to be increased to 4% of MAR in respect of "own costs" in that year.

The proposed Category A measures for the PC3 period were as follows (note: '*' indicates new Category A indicator for which the first year of assessment would be for performance in 2007):

- Timeliness of Audited Separate Business Accounts (SBAs) (all businesses);
- Timeliness of Audited Price Control Return (PCRs) (all businesses);
- Timeliness of Annual Information Submission (AIS) (all businesses);*
- Accuracy of Annual Peak Demand Forecasts (ADWEC's water and electricity businesses);*
- Water Quality (network water businesses);*
- Availability and Energy Lost (TRANSCO's electricity business);* and
- Number of Interruptions and Customer Minutes Lost (ADDC/AADC's electricity distribution businesses).*

Definitions, incentive rates and targets for the above indicators were detailed in Section 11 of the Draft Proposals.

The Draft Proposals also included a new requirement for licensees to commission a "Technical Assessor" – an independent consulting engineer, approved by the Bureau - to verify the accuracy

of technical information, although the overall PCR would ultimately still need to be signed off by the auditors.

For new indicators related to network performance, it was proposed that "Exceptional Events" outside the licensee's control would be excluded from the assessment of performance.

The Bureau also proposed a number of "Category B" performance indicators which would be monitored over the PC3 period, with positive or negative performance-related financial adjustments at the next review. It was proposed that the overall Category B adjustment in PC3 for each business would not exceed 2% of the MAR (excluding pass-through costs) for the respective year and would be limited to indicators where the performance is found to be exceptionally above or below the required standard.

11.2 Responses to Draft Proposals

AADC

AADC thought the Bureau had excessive regulatory discretion in the application of the Category A and B indicators. In particular, it thought that Category B indicators were not specifically defined or measured and yet exposed its business to a potential reduction in revenue of up to 4%. AADC also thought the regulatory regimes in the US, Australia and the UK do not have this discretionary element.

ADDC

ADDC believed that the development of the Category A indicators against an audited base was essential. It considered that the measures within the Draft Proposals, while useful and potentially acceptable, left significant issues in relation to interpretation and definition. It looked forward to being involved in the development of such measures.

However it did not consider it appropriate for financial adjustments to be made in respect of Category B indicators, as it viewed the potential penalty mechanism as undefined.

ADWEC

ADWEC expressed concern about the proposed target accuracy required for its new electricity and water demand forecasting indicators, particularly in view of uncertainty associated with future developments in the Emirate and the poor quality of demand forecasting data it said it had received from TRANSCO and the distribution companies.

The Draft Proposals had proposed an accuracy of within 100 MW for electricity and within 10 MGD for water, which represents an accuracy of about + / - 2%. ADWEC suggested that accuracy should be expressed as a percentage of demand rather than as an absolute value and that more appropriate target accuracies were + / - 7.5% for electricity demand and + / - 15% for water demand. ADWEC highlighted that water demand was particularly difficult to forecast, as water demand and supply were not balanced.

ADWEC also considered that the Technical Assessor may not add much value and its role should be limited to the Annual Information Submission, with the costs met by the Bureau.

TRANSCO

TRANSCO expressed concern that the Bureau intends to retain a substantial financial adjustment for Category B indicators into PC3, and was opposed to this for the following reasons:

- the criteria against which performance is judged and the extent of any bonus or penalty that might result is not clearly stated;
- the scale of potential adjustment is at least four times larger than any individual Category A indicator; and
- companies are retrospectively penalised or rewarded with no procedural requirement for the Bureau to demonstrate that the reward / penalty applied is proportionate or appropriate to any resulting benefit or loss incurred by the sector.

TRANSCO also thought that the Technical Assessor would add no value to the business and the associated costs should be treated as a pass-through.

11.3 Bureau's Views

Category A Indicators

ADDC's support for the development of Category A indicators is welcomed. With regard to the comment that these should refer to an audited base, this is part of the Bureau's proposals and is incorporated into the licence modifications which establish the new Category A indicators.

The Bureau does not agree with AADC's comment that there is regulatory discretion involved in the interpretation of Category A indicators, as these are clearly defined in its licence, have been implemented without any difficulty, and will in future be subject to an independent audit by the Technical Assessor.

Category B Indicators

AADC, ADDC and TRANSCO all expressed concern at the regulatory discretion associated with Category B financial adjustments. In the Draft Proposals, the Bureau responded to this concern by introducing a cap on any such adjustment. This cap is set at 2% of MAR, not 4% of MAR as stated by AADC. By comparison, Figure 10.1 shows that licensees' projected profits for PC3 are in the range 32 – 42% of MAR, which places the potential scale of the adjustment in context.

With regard to procedure, any financial adjustments are subject to full consultation via the price controls review process, and the licence modifications which give effect to this and other aspects of the Bureau's proposals are subject to the approval of the licensee. In addition, the Bureau would expect to notify the licensee in advance if its performance on any Category B indicator was giving rise to concern sufficient to trigger a potential adjustment at the following review (as was the Bureau's practice during the PC2 period).

Technical Assessor's Report

TRANSCO and ADWEC questioned the funding of costs associated with the employment of a Technical Assessor. In the case of ADWEC, only one Technical Assessor's report is required, to accompany the Annual Information Submission (other licensees are additionally required to procure a Technical Assessor's report to accompany the PCR).

The Bureau's view is that the Technical Assessor's report is necessary to ensure clarity of and confidence in reliable data. Furthermore, as shown in Section 10, these Final Proposals represent an average increase in MARs of about 20% (in real terms) compared with the 2005 level, providing ample additional funding for new obligations introduced at this review. The licensees will also be entitled to receive bonuses from the timely submission of the audited statements.

ADWEC Demand Forecasting Accuracy Indicators

The Bureau accepts ADWEC's argument that water demand may be more difficult to forecast accurately than electricity demand. However, ADWEC's proposed margin of + / - 15% is excessive. The Bureau has therefore doubled the error margin assumed in the Draft Proposals, from + / 10 MGD to + / - 20 MGD. This provides a total band of 40 MGD within which the water demand forecast must fall, which the Bureau considers is a reasonable target in the context of demand levels anticipated over the PC3 period (it is equivalent to, roughly, + /- 4% of demand).

For electricity, ADWEC suggested a demand forecasting error of +/- 7.5%. This would be equivalent to about 335 MW margin in either direction based on current levels of peak electricity demand (4,455MW in 2005). To put this in context, peak electricity demand in each of the last three years has increased in the Emirate of Abu Dhabi by just 126 MW (2003), 186 MW (2004), and 135 MW (2005). ADWEC's electricity demand forecast for 2006 recently submitted to the Bureau is for an increase of only 225 MW over 2005. Furthermore, ADWEC's range between its 'high' and 'low' forecasts, intended to cover all feasible outcomes, is itself only +/- 5%. Given this, the Bureau considers its proposed error margin of + / - 100 MW (ie, total band of 200 MW) for performance incentive purposes to be very reasonable (roughly, + /- 2%).

Although the Bureau has not accepted the absolute margins proposed by ADWEC, we have accepted that the forecasting margin for water may be approximately twice that of electricity in percentage terms.

Difficulties experienced by ADWEC in confirming the accuracy of data received from other parties is reflected in the above margins. Expressing the error margins in absolute terms also means, in the context of gradually increasing sector demands, that the error margins become slightly more demanding in percentage terms over time. This reflects improvements in demand forecasting accuracy that should be possible as data and forecasting methods improve.

While ADWEC has highlighted uncertainty pertaining to new developments which might affect future electricity and water demands, it will be required (for the purposes of the PIS) to submit a peak demand forecast only for the coming year. Over this timescale upcoming developments should be more predictable.

Water Quality Indicator (AADC, ADDC and TRANSCO)

The Draft Proposals introduced a new Category A indicator for AADC, ADDC and TRANSCO to incentivise them to improve their performance regarding compliance with the Bureau's Water Quality Regulations, both in terms of the number of parameters tests taken and the number of such tests which pass the required standard.

The Water Quality Indicator was defined as the ratio between (i) the total number of parameter tests that pass and (ii) the total number of parameter tests required to be taken in accordance with the Regulations.

The Draft Proposals suggested that licensees should be entitled to receive a bonus if they achieved 100% compliance against the requirements of the Regulations. Compliance below 100% would receive a penalty, except that if compliance was above 95%, or had improved by 10% or more from the previous year, then the penalty would be waived.

None of the respondents commented directly on the water quality indicator. However, the Bureau has been concerned that the 100% compliance target proposed in the Draft Proposals may be unrealistic and therefore unfair on the concerned licensees. Therefore, in these Final Proposals the new target benchmarks are at 80% (for 2007), 85% (2008), 90% (2009) compliance, defined as previously proposed, but now reflecting a realistic goal of progressive improvement by licensees.

Compliance greater than (less than) the above percentages will receive a bonus (penalty) for that year. However, any bonus will be subject to a further requirement that all parameter tests taken must pass. For example, suppose that a licensee achieves, say, 90% on the defined ratio. The bonus will only be applicable if this was as the result of only 90% of required parameter tests having been taken, rather as the result of one or more parameter tests having failed.

As the targets are now set on a more achievable basis, the provisions in the Draft Proposals for the circumstances in which a penalty would be waived (95% compliance or 10% improvement on previous year) have not be adopted in the Final Proposals.

A detailed definition of the above scheme is contained in the licence modifications that accompany these Final Proposals.

"SAIDI" and" SAIFI" for Distribution Companies

For the distribution companies, the Draft Proposals defined two measures of technical performance of the electricity distribution network: **"**Number of Interruptions" and "Customer Minutes Lost"**.** For consistency with existing sector terminology, the Bureau intends to redefine these measures consistent with the terms SAIFI (System Average Incident Frequency Index) and SAIDI (System Average Interruption Duration Index) against which the distribution companies already report. This is achieved by simply dividing both measures by the number of customer accounts (already a defined term in the licence).

The Bureau also now proposes to limit the possibility of Exceptional Events for SAIFI and SAIDI for distribution companies only to interruptions involving Customer Minutes Lost of

100,000 or more. This is because there are a large number of interruptions on the distribution system, many of which will be relatively insignificant, and it would be unreasonable to ask the distribution companies (and their Technical Assessors) to make an assessment in each case of whether or not it was due to an Exceptional Event. Exceptional Events may therefore be referred to by the distribution companies only in the case of the more significant incidents. No materiality lower limit is necessary for TRANSCO, as transmission system interruptions are far fewer, so an analysis of each on a case-by-case basis is reasonable.

"Customer Satisfaction" Category B Indicator

The Bureau wishes to clarify that the assessment of the "customer satisfaction" PIS Category B indicator for the distribution companies will directly cross-reference performance against the Guaranteed Standards (GS) and Overall Standards (OS), as required by the distribution companies' licences. In particular, implementation of such standards (approved by the Bureau), with associated payments to customers in the case of GS, will be regarded as exceptionally good performance for the purposes of the PIS.

11.4 Final Proposals

Definition of PIS Category A Indicators

Based on the above, the Bureau's final proposals are for the following Category A indicators for PC3. This table also reflects the decision to continue with combined distribution and supply price controls for PC3 rather than separate controls:

Table 11.1: Category A Indicators for PC3 – Final Proposals

AADC and ADDC	
Electricity	**Water**
1. Timeliness of Audited Accounts	1. Timeliness of Audited Accounts
2. Timeliness of Audited PCR	2. Timeliness of Audited PCR
3. Timeliness of Information Submission	3. Timeliness of Information Submission
4. Number of Interruptions per Customer (SAIFI)	4. Water Quality
5. Customer Minutes Lost per Customer (SAIDI)	

ADWEC	
Electricity	**Water**
1. Timeliness of Audited Accounts	1. Timeliness of Audited Accounts
2. Timeliness of Audited PCR	2. Timeliness of Audited PCR
3. Timeliness of Information Submission	3. Timeliness of Information Submission
4. Accuracy of Annual Peak Demand Forecast	4. Accuracy of Annual Peak Demand Forecast

TRANSCO	
Electricity	**Water**
1. Timeliness of Audited Accounts	1. Timeliness of Audited Accounts
2. Timeliness of Audited PCR	2. Timeliness of Audited PCR
3. Timeliness of Information Submission	3. Timeliness of Information Submission
4. Availability	4. Water Quality
5. Energy Lost (Unsupplied)	

Note that 'Energy Lost' is sometimes referred to as 'Energy Unsupplied', and refers to energy which can not be supplied as a result of interruptions on the transmission system, rather than to transmission losses.

Formal definitions of the above indicators are provided in the proposed licence modifications which accompany these Final Proposals.

For all the above indicators involving interruptions, the Bureau has defined an "Interruption" as having a duration in excess of 3 minutes.

Targets for Category A Indicators for PC3

The Bureau's proposed targets for Category A indicators for PC3 are summarised in **Table 11.2**:

Table 11.2: Performance Targets for PC3 Category A Indicators – Final Proposals

Category A Indicator	Price Control	Proposed Target
Audited Accounts Timeliness	All	30 June each year
Audited PCR Timeliness	All	31 March each year
Information Submission Timeliness	All	30 September each year
Water Quality Indicator	All network water businesses	80% (2007), 85% (2008), 90% (2009)
Peak Demand Forecast Accuracy	ADWEC water and electricity	Accuracy within 20 MGD and 100 MW
Availability	TRANSCO electricity	Previous year performance
Number of Interruptions/Customer	AADC/ADDC electricity	Previous year performance
Energy Lost (Unsupplied)	TRANSCO electricity	Previous year performance
Customer Minutes Lost/Customer	AADC/ADDC electricity	Previous year performance

Incentive Rates for Category A Indicators for PC3

The Bureau has calculated the incentive rates for Category A indicators based on the approach it used at the last price control reviews and described in the Draft Proposals. The Final Proposals for incentive rates are summarised in **Table 11.3**.

For existing Category A indicators, these rates will apply to the Q terms in the 2007 formula year onwards (ie, relating to performance in 2006 in submitting audited accounts and PCRs for the 2005 financial year).

For new Category A indicators, they will apply to the Q terms in the 2009 formula year onwards (ie, assessing performance in 2007 onwards as submitted in 2008).

For any business, each of the three timeliness indicators (audited accounts, audited PCRs and Annual Information Submissions) has the same incentive rate as shown in the first numerical column of the table, as the same amount is at stake for the indicator and the same calibration assumption has been used. Similar is the case for the four technical indicators (final column) specific to the electricity network businesses (that is, availability, energy lost, number of interruptions per customer and Customer Minutes Lost per customer).

Table 11.3: PIS Category A Indicators for PC3 - Final Proposals

Business	Timeliness Indicator (3 indicators)*	Demand Forecasting Accuracy Indicator	Water Quality Indicator	Availability, Energy Lost SAIDI and SAIFI
	(AED / month)	(AED/MW or AED/MGD)	(AED / 1% non-compliance)	(AED / 1% change)
AADC Electricity	660,000			200,000
AADC Water	300,000		40,000	
ADDC Electricity	1,220,000			370,000
ADDC Water	630,000		80,000	
ADWEC Electricity	20,000	1,000		
ADWEC Water	13,000	4,000		
TRANSCO Electricity	1,390,000			420,000
TRANSCO Water	1,490,000		120,000	

* Timeliness of audited Separate Business Accounts (SBAs), audited Price Control Returns (PCRs) and Annual Information Submission (AIS)

Exceptional Events

The Bureau proposes to proceed broadly with the definition of Exceptional Events as set out in the Draft Proposals. This definition is set out within the proposed licence modifications. In simple terms, interruptions due to the weather, natural disaster or third parties (including other licensees) which can not be mitigated by the licensee may qualify as a possible Exceptional Event.

For example, in general terms, the assessment of TRANSCO's performance in terms of the availability and reliability of the transmission system will not be affected by interruptions which are the fault of generators or distribution companies (except to the except that TRANSCO failed to take action that could have mitigated the effect of the Interruption).

The definition is similar to that of a *force majeure* found in a contract. A business wishing to exclude the impact of a certain event from the operation of the PIS would need to demonstrate to a Technical Assessor (see below) that the event satisfies the requirements of the definition.

Exceptional Events will apply to the following indicators (only):

- Water Quality (AADC, ADDC and TRANSCO);
- Availability (TRANSCO);
- Energy Lost (Unsupplied) (TRANSCO);
- Number of Interruptions per Customer (SAIFI) (AADC and ADDC); and
- Customer Minutes Lost per Customer (SAIDI) (AADC and ADDC).

A materiality lower limit will apply to Exceptional Events for SAIFI and SAIDI, so only incidents involving Customer Minutes Lost of 100,000 or more may be considered for attribution to an Exceptional Event.

Performance Audit and Technical Assessor's Statement

For the PC3 period, the companies will be required to commission a statement by a suitably-qualified independent organisation approved by the Bureau (to be termed "Technical Assessor"), verifying the accuracy of performance data. The Draft Proposals set out the key features which are confirmed as follows:

- Technical Assessors will be expected to be consulting engineers. They must be independent of the licensee (ie, no conflict of interest) and will be asked to examine the Annual Information Submission (AIS) and the non-financial (technical) elements of the information that companies submit to the Bureau in the PCRs;
- in relation to the technical PIS indicators, they will be asked to assess whether the companies have systems in place to collect and accurately record the information required by the Bureau and to confirm the data submitted by licensees. They will also be asked to confirm any exclusions made for "Exceptional Events". The Technical Assessor's professional opinion on the above matters will be required to be presented in a formal report to the Bureau and the licensee's auditors to accompany the PCR;
- in the case of the AIS, the Technical Assessors will be asked to expose, examine and challenge all material assumptions, again in the form of a formal report;
- while appointed by the licensees, the Technical Assessor's duty of care will be to the Bureau, with the primary objective of assisting the Bureau to fulfil its statutory duties;
- the Bureau may issue additional guidance to the Technical Assessors and auditors concerning their respective roles, if necessary;
- the companies should provide their annual performance data for each year for all Category A indicators by the end of first quarter of the following year, as part of the audited PCR. The related adjustments to MARs via the Q terms will be made in the year following the year in which the due dates for the said PCRs fall. That is, the performance in 2007 will be reported in 2008 and rewarded/penalised via the Q term in 2009, in line with the design of the existing PIS;
- performance in 2006 on the new Category A indicators shall not be subject to a reward or penalty. However, where the performance target for each year is based on the previous year's performance, there will be a requirement for the companies in 2007 to provide audited data for performance in 2006, as part of the PCRs to be delivered on 31 March 2007. This will determine the target benchmark for 2007 performance;
- to maintain the integrity of the PIS, the Bureau will reserve the right to direct an adjustment of the targets for 2007 in the case of exceptionally poor performance in 2006 on new Category A indicators, but does not expect to need to exercise this option; and
- the overall PCR will still need to be signed off by the licensee's auditors, cross-referencing the Technical Assessor's statements where necessary.

The role of Technical Assessors is defined precisely within the proposed licence modifications that accompany these Final Proposals.

Q Terms for existing Category A Indicators for 2006

The present licences already set out the Q terms in relation to the existing Category A indicators for the 2006 formula year. The proposed licence modifications for the PC3 controls continue with the Q terms agreed at the last review for 2006 and set out the incentive rates and Q term mechanisms for 2007 onwards. However, the introduction at this review of separate price controls for the water and electricity businesses of ADWEC means the incentive rates and Q terms agreed for ADWEC at the last review need to be allocated appropriately to these separate businesses for 2006.

The Bureau's proposed allocations are set out in **Table 11.4** below based on the corresponding ratios for the PC3 incentive rates:

Table 11.4: Incentive Rates for Existing Category A Indicators for 2006 – Final Proposals

Business	Audited Accounts Timeliness (AED / month)	Audited PCR Timeliness (AED / month)
ADWEC Electricity	11,000	11,000
ADWEC Water	7,000	7,000

Future Cap on Incentives for Category A Indicators

For PC3, the Bureau confirms that the total incentive and penalty for Category A under the PIS for each year will be capped at 4% of MAR in relation to the licensee's 'own costs' (i.e. excluding pass-through items) in the year in question.

Category B Indicators – Draft Proposals

The Bureau remains of the view that the Category B indicators are a useful means of incentivising company performance on a wider set of measures than can be incorporated into Category A.

The proposed Category B indicators for the PC3 period are similar to those given in the Draft Proposals and are listed in **Table 11.5**.

The changes from the Draft Proposals are as follows:

- TRANSCO's Statement of Connection Charges has been removed, as it is presently in the process of being approved by the Bureau;
- the PWPA timeliness indicator for ADWEC has also been removed, reflecting that ADWEC has now signed medium- or long-term PWPAs with all GDs; and
- an indicator for the timeliness of the Five Year Planning Statement has been added for the distribution companies, reflecting the introduction of the Statement in 2006.

Table 11.5 Category B Performance Indicators for PC3 – Final Proposals

S. No.	ADDC/AADC	ADWEC	TRANSCO
1.	Technical KPIs	Generation Security Standard	Technical KPIs
2.	Customer Satisfaction (GS/OS)	Desalination Security Standard	Settlement Data Accuracy and Timeliness
3.	Interim P&L Account Timeliness	Interim P&L Account Timeliness	Planning Data Accuracy and Timeliness
4.	Meter Reading	Seven-Year Planning Statement Timeliness	Interim P&L Account Timeliness
5.	Five-Year Planning Statement Timeliness	BST Timeliness	Five-Year Planning Statement Timeliness
6.		Economic Purchase Indicator	Statement of Use of System Charges Timeliness
7.			Economic Despatch

To limit regulatory discretion, the Bureau undertakes to limit any adjustment for performance on the above indicators at the next price controls review to 2% of MAR in relation to the licensees' 'own costs' (i.e. excluding pass-through items) in the year in question. Furthermore, adjustments will only be made where performance is exceptionally good or poor, and the Bureau would expect to notify the licensee in advance if its performance on any Category B indicator was giving rise to concern sufficient to trigger a potential adjustment at the following review (as was the Bureau's practice during the PC2 period).

The basis for the Bureau's assessment for certain of the above measures has been clearly defined in this paper (for example, "economic dispatch" for TRANSCO and "customer satisfaction" for the distribution companies). In other cases, particularly the 'timeliness' indicators, the assessment can be made against the objective licence requirements. The Bureau is willing to work with licensees during PC3 to clarify the definition of any measures which they feel may not yet be adequately defined. This will also provide a basis for moving additional indicators, where appropriate, into Category A at the next price controls review.

Appendices A.1 – A.6: Updating RAVs

Appendix A.1: AADC Electricity – Updating RAV

Updating 2006 Opening RAV for PC1 Efficient Capex

Line No.

	UAE CPI Assumptions	1998	1999	2000	2001	2002	2003	2004	2005
1	Historical CPI (1995 = 100) - end year value	106.90	109.20	110.70					
2	Historical CPI (2000 = 100) - end year value			100.00	102.80	105.80	109.10	114.60	
3	Historical CPI Inflation		2.15%	1.37%	2.80%	2.92%	3.12%	5.04%	
4	Forecast CPI Inflation								5.04%
5	**CPI (2000 = 100) used in calculations**	**96.57**	**98.64**	**100.00**	**102.80**	**105.80**	**109.10**	**114.60**	**120.38**

	Inputs			1999	2000	2001	2002
6	Provisional PC1 capex allowed at PC2	AEDm, 1999 prices		188.68	188.68	188.68	188.68
7	Actual PC1 capex	AEDm, nominal prices		134.08	291.21	278.26	177.51
8	Applied capex efficiency factor	%	84.00%				
9	Initial Opening 2006 RAV (with provisional PC1 and PC2 capex)	AEDm, 2003 ₤	2,479.17				
10	Depreciation on Opening 2003 RAV	AEDm, 2003 ₤	111.52				
11	Depreciation on provisional capex for 2003-2005	AEDm, 2003 ₤	20.58				
12	Depreciation on Initial Opening 2006 RAV	AEDm, 2003 ₤	132.10				
13	Assumed average asset life for new investment	years	30				
14	Cost of capital (real)	%	6.00%				

	Calculation of Additional Efficient PC1 Capex to be allowed at this Review			1999	2000	2001	2002
15	Actual PC1 capex	AEDm, nominal prices		134.08	291.21	278.26	177.51
16	Applied capex efficiency factor	%	84.00%				
17	Efficient PC1 capex	AEDm, nominal prices		112.63	244.61	233.74	149.11
18	Efficient PC1 capex	AEDm, 1999 prices		112.63	239.46	225.71	140.07
19	Provisional PC1 capex	AEDm, 1999 prices		188.68	188.68	188.68	188.68
20	**Additional efficient PC1 capex to be allowed at PC3**	**AEDm, 1999 prices**		**-76.04**	**50.79**	**37.04**	**-48.61**

	Calculation of Depreciation foregone on Additonal Efficient PC1 Capex			1999	2000	2001	2002	2003	2004	2005
21	Assumed average asset life for new investment	years	30							
22	Additional efficient PC1 capex to be allowed at PC3	AEDm, 1999 prices		-76.04	50.79	37.04	-48.61			
23	**Depreciation on additional efficient PC1 capex**	AEDm, 1999 prices		**-1.27**	**-1.69**	**-0.22**	**-0.42**	**-1.23**	**-1.23**	**-1.23**
24	(half-year depreciation for the first year of each annual capex)									

	Calculation of Return on Capital foregone on Additional Efficient PC1 Capex			1999	2000	2001	2002	2003	2004	2005
25	Additional efficient PC1 capex - Opening value	AEDm, 1999 prices		0.00	-74.78	-22.30	14.96	-33.23	-32.00	-30.77
26	Additional efficient PC1 capex	AEDm, 1999 prices		-76.04	50.79	37.04	-48.61			
27	Depreciation on additional efficient PC1 capex	AEDm, 1999 prices		-1.27	-1.69	-0.22	-0.42	-1.23	-1.23	-1.23
28	Additional efficient PC1 capex - Closing value	AEDm, 1999 prices		-74.78	-22.30	14.96	-33.23	-32.00	-30.77	**-29.55**
29	Average of Opening and Closing values	AEDm, 1999 prices		-37.39	-48.54	-3.67	-9.13	-32.61	-31.39	-30.16
30	Cost of capital (real)	%	6.00%							
31	**Return on capital foregone**	AEDm, 1999 prices		**-2.24**	**-2.91**	**-0.22**	**-0.55**	**-1.96**	**-1.88**	**-1.81**

	Calculation of Financing Costs foregone on Additional Efficient PC1 Capex		1999	2000	2001	2002	2003	2004	2005
32	Depreciation foregone	AEDm, 1999 prices	-1.27	-1.69	-0.22	-0.42	-1.23	-1.23	-1.23
33	Return on capital foregone	AEDm, 1999 prices	-2.24	-2.91	-0.22	-0.55	-1.96	-1.88	-1.81
34	Total financing costs foregone	AEDm, 1999 prices	-3.51	-4.60	-0.44	-0.97	-3.18	-3.11	-3.04
35	Years from year mid point to 1 Jan 2006	AEDm, 1999 prices	6.50	5.50	4.50	3.50	2.50	1.50	0.50
36	NPV @ 1 Jan 2006 of financing costs foregone	AEDm, 1999 prices	-5.13	-6.34	-0.58	-1.18	-3.68	-3.39	-3.13
37	**Accumulated NPV (@ 1 Jan 2006) of financing costs foregone**	AEDm, 1999 prices							**-23.43**
		AEDm, 2006 prices							-29.21

	Calculation of 2006 Opening RAV (including Financing Costs foregone on Additional Efficient PC1 Capex)		2006
38	Initial Opening 2006 RAV (with provisional PC1 and PC2 capex)	AEDm, 2003 prices	2,479.17
39	Initial Opening 2006 RAV (with provisional PC1 and PC2 capex)	AEDm, 1999 prices	2,262.82
40	Add: Additional efficient PC1 capex - Closing value @ 31 Dec 2005	AEDm, 1999 prices	(29.55)
41	Add: Accumulated NPV (@ 1 Jan 2006) of financing costs foregone	AEDm, 1999 prices	(23.43)
42	Opening 2006 RAV including Financing Costs foregone on Efficient PC1 capex	AEDm, 1999 prices	2,209.84
43	**Opening 2006 RAV including Financing Costs foregone on Efficient PC1 capex**	**AEDm, 2006 prices**	**2,754.71**

	Calculation of Total Depreciation (on Initial 2006 Opening RAV and Additional Efficient PC1 Capex)		2006
44	Depreciation on Initial Opening 2006 RAV	AEDm, 2003 prices	132.10
45	Depreciation on Initial Opening 2006 RAV	AEDm, 1999 prices	120.57
46	Depreciation on additional efficient PC1 capex	AEDm, 1999 prices	(1.23)
47	Total Depreciation for 2006 onwards	AEDm, 1999 prices	119.34
48	**Total Annual Depreciation for 2006 onwards**	**AEDm, 2006 prices**	**148.77**

Updating PC3 RAVs for PC3 Provisional Capex

	Inputs			2006	2007	2008	2009
49	Provisional PC3 capex	AEDm, 2006 prices		305.00	305.00	305.00	305.00
50	Assumed average asset life for new investment	years	30				
51	Opening 2006 RAV including Financing Costs foregone on Efficient PC1 capex	AEDm, 2006 prices		2,754.71			
52	Depreciation on Opening 2006 RAV	AEDm, 2006 prices		148.77	148.77	148.77	148.77

	Calculations		2006	2007	2008	2009
50	**Opening RAV**	**AEDm, 2006 prices**	**2,754.71**	**2,905.85**	**3,046.83**	**3,177.64**
51	Provisional PC3 capex	AEDm, 2006 prices	305.00	305.00	305.00	305.00
52	Depreciation on Opening 2006 RAV	AEDm, 2006 prices	148.77	148.77	148.77	148.77
53	Depreciation on provisional PC3 capex (half-year depreciation for first year)	AEDm, 2006 prices	5.08	15.25	25.42	35.58
54	**Total depreciation for PC3**	**AEDm, 2006 prices**	**153.85**	**164.02**	**174.19**	**184.35**
55	**Closing RAV**	**AEDm, 2006 prices**	**2,905.85**	**3,046.83**	**3,177.64**	**3,298.29**

Appendix A.2: AADC Water – Updating RAV

Updating 2006 Opening RAV for PC1 Efficient Capex

Line No.

	UAE CPI Assumptions		1998	1999	2000	2001	2002	2003	2004	2005
1	Historical CPI (1995 = 100) - end year value		106.90	109.20	110.70					
2	Historical CPI (2000 = 100) - end year value				100.00	102.80	105.80	109.10	114.60	
3	Historical CPI Inflation			2.15%	1.37%	2.80%	2.92%	3.12%	5.04%	
4	Forecast CPI Inflation									5.04%
5	**CPI (2000 = 100) used in calculations**		**96.57**	**98.64**	**100.00**	**102.80**	**105.80**	**109.10**	**114.60**	**120.38**

	Inputs			1999	2000	2001	2002
6	Provisional PC1 capex allowed at PC2	AEDm, 1999 prices		66.35	66.35	66.35	66.35
7	Actual PC1 capex	AEDm, nominal prices		102.21	192.17	66.64	186.45
8	Applied capex efficiency factor	%	84.00%				
9	Initial Opening 2006 RAV (with provisional PC1 and PC2 capex)	AEDm, 2003	617.67				
10	Depreciation on Opening 2003 RAV	AEDm, 2003	13.62				
11	Depreciation on provisional capex for 2003-2005	AEDm, 2003	7.24				
12	Depreciation on Initial Opening 2006 RAV	AEDm, 2003	20.86				
13	Assumed average asset life for new investment	years	30				
14	Cost of capital (real)	%	6.00%				

	Calculation of Additional Efficient PC1 Capex to be allowed at this Review			1999	2000	2001	2002
15	Actual PC1 capex	AEDm, nominal prices		102.21	192.17	66.64	186.45
16	Applied capex efficiency factor	%	84.00%				
17	Efficient PC1 capex	AEDm, nominal prices		85.86	161.43	55.98	156.61
18	Efficient PC1 capex	AEDm, 1999 prices		85.86	158.03	54.06	147.12
19	Provisional PC1 capex	AEDm, 1999 prices		66.35	66.35	66.35	66.35
20	**Additional efficient PC1 capex to be allowed at PC3**	**AEDm, 1999 prices**		**19.51**	**91.68**	**(12.29)**	**80.77**

	Calculation of Depreciation foregone on Additonal Efficient PC1 Capex			1999	2000	2001	2002	2003	2004	2005
21	Assumed average asset life for new investment	years	30							
22	Additional efficient PC1 capex to be allowed at PC3	AEDm, 1999 prices		19.51	91.68	-12.29	80.77			
23	**Depreciation on additional efficient PC1 capex**	AEDm, 1999 prices		**0.33**	**2.18**	**3.50**	**4.64**	**5.99**	**5.99**	**5.99**
24	(half-year depreciation for the first year of each annual capex)									

	Calculation of Return on Capital foregone on Additional Efficient PC1 Capex			1999	2000	2001	2002	2003	2004	2005
25	Additional efficient PC1 capex - Opening value	AEDm, 1999 prices		0.00	19.18	108.68	92.88	169.01	163.02	157.03
26	Additional efficient PC1 capex	AEDm, 1999 prices		19.51	91.68	-12.29	80.77			
27	Depreciation on additional efficient PC1 capex	AEDm, 1999 prices		0.33	2.18	3.50	4.64	5.99	5.99	5.99
28	Additional efficient PC1 capex - Closing value	AEDm, 1999 prices		19.18	108.68	92.88	169.01	163.02	157.03	**151.05**
29	Average of Opening and Closing values	AEDm, 1999 prices		9.59	63.93	100.78	130.95	166.02	160.03	154.04
30	Cost of capital (real)	%	6.00%							
31	**Return on capital foregone**	AEDm, 1999 prices		**0.58**	**3.84**	**6.05**	**7.86**	**9.96**	**9.60**	**9.24**

	Calculation of Financing Costs foregone on Additional Efficient PC1 Capex		1999	2000	2001	2002	2003	2004	2005
32	Depreciation foregone	AEDm, 1999 prices	0.33	2.18	3.50	4.64	5.99	5.99	5.99
33	Return on capital foregone	AEDm, 1999 prices	0.58	3.84	6.05	7.86	9.96	9.60	9.24
34	Total financing costs foregone	AEDm, 1999 prices	0.90	6.01	9.55	12.50	15.95	15.59	15.23
35	Years from year mid point to 1 Jan 2006	AEDm, 1999 prices	6.50	5.50	4.50	3.50	2.50	1.50	0.50
36	NPV @ 1 Jan 2006 of financing costs foregone	AEDm, 1999 prices	1.32	8.29	12.41	15.33	18.45	17.01	15.68
37	**Accumulated NPV (@ 1 Jan 2006) of financing costs foregone**	AEDm, 1999 prices							**88.49**
		AEDm, 2006 prices							110.30

	Calculation of 2006 Opening RAV (including Financing Costs foregone on Additional Efficient PC1 Capex)		2006
38	Initial Opening 2006 RAV (with provisional PC1 and PC2 capex)	AEDm, 2003 prices	617.67
39	Initial Opening 2006 RAV (with provisional PC1 and PC2 capex)	AEDm, 1999 prices	563.77
40	Add: Additional efficient PC1 capex - Closing value @ 31 Dec 2005	AEDm, 1999 prices	151.05
41	Add: Accumulated NPV (@ 1 Jan 2006) of financing costs foregone	AEDm, 1999 prices	88.49
42	Opening 2006 RAV including Financing Costs foregone on Efficient PC1 capex	AEDm, 1999 prices	803.30
43	**Opening 2006 RAV including Financing Costs foregone on Efficient PC1 capex**	**AEDm, 2006 prices**	**1,001.37**

	Calculation of Total Depreciation (on Initial 2006 Opening RAV and Additional Efficient PC1 Capex)		2006
44	Depreciation on Initial Opening 2006 RAV	AEDm, 2003 prices	20.86
45	Depreciation on Initial Opening 2006 RAV	AEDm, 1999 prices	19.04
46	Depreciation on additional efficient PC1 capex	AEDm, 1999 prices	5.99
47	Total Depreciation for 2006 onwards	AEDm, 1999 prices	25.03
48	**Total Annual Depreciation for 2006 onwards**	**AEDm, 2006 prices**	**31.20**

Updating PC3 RAVs for PC3 Provisional Capex

	Inputs			2006	2007	2008	2009
49	Provisional PC3 capex	AEDm, 2006 prices		153.00	153.00	153.00	153.00
50	Assumed average asset life for new investment	years	30				
51	Opening 2006 RAV including Financing Costs foregone on Efficient PC1 capex	AEDm, 2006 prices		1,001.37			
52	Depreciation on Opening 2006 RAV	AEDm, 2006 prices		31.20	31.20	31.20	31.20

	Calculations		2006	2007	2008	2009
50	**Opening RAV**	**AEDm, 2006 prices**	**1,001.37**	**1,120.62**	**1,234.77**	**1,343.82**
51	Provisional PC3 capex	AEDm, 2006 prices	153.00	153.00	153.00	153.00
52	Depreciation on Opening 2006 RAV	AEDm, 2006 prices	31.20	31.20	31.20	31.20
53	Depreciation on provisional PC3 capex (half-year depreciation for first year)	AEDm, 2006 prices	2.55	7.65	12.75	17.85
54	**Total depreciation for PC3**	**AEDm, 2006 prices**	**33.75**	**38.85**	**43.95**	**49.05**
55	**Closing RAV**	**AEDm, 2006 prices**	**1,120.62**	**1,234.77**	**1,343.82**	**1,447.77**

Appendix A.3: ADDC Electricity – Updating RAV

Updating 2006 Opening RAV for PC1 Efficient Capex

Line No.

	UAE CPI Assumptions		1998	1999	2000	2001	2002	2003	2004	2005
1	Historical CPI (1995 = 100) - end year value		106.90	109.20	110.70					
2	Historical CPI (2000 = 100) - end year value				100.00	102.80	105.80	109.10	114.60	
3	Historical CPI Inflation			2.15%	1.37%	2.80%	2.92%	3.12%	5.04%	
4	Forecast CPI Inflation									5.04%
5	**CPI (2000 = 100) used in calculations**		**96.57**	**98.64**	**100.00**	**102.80**	**105.80**	**109.10**	**114.60**	**120.38**

	Inputs			1999	2000	2001	2002
6	Provisional PC1 capex allowed at PC2	AEDm, 1999 prices		196.51	300.86	398.34	389.89
7	Actual PC1 capex	AEDm, nominal prices		247.61	424.31	523.56	524.26
8	Applied capex efficiency factor	%	89.00%				
9	Initial Opening 2006 RAV (with provisional PC1 and PC2 capex)	AEDm, 2003 ∫	4,981.52				
10	Depreciation on Opening 2003 RAV	AEDm, 2003 ∫	186.48				
11	Depreciation on provisional capex for 2003-2005	AEDm, 2003 ∫	48.54				
12	Depreciation on Initial Opening 2006 RAV	AEDm, 2003 ∫	235.02				
13	Assumed average asset life for new investment	years	30				
14	Cost of capital (real)	%	6.00%				

	Calculation of Additional Efficient PC1 Capex to be allowed at this Review			1999	2000	2001	2002
15	Actual PC1 capex	AEDm, nominal prices		247.61	424.31	523.56	524.26
16	Applied capex efficiency factor	%	89.00%				
17	Efficient PC1 capex	AEDm, nominal prices		220.37	377.64	465.97	466.59
18	Efficient PC1 capex	AEDm, 1999 prices		220.37	369.68	449.98	438.30
19	Provisional PC1 capex	AEDm, 1999 prices		196.51	300.86	398.34	389.89
20	**Additional efficient PC1 capex to be allowed at PC3**	**AEDm, 1999 prices**		**23.86**	**68.82**	**51.63**	**48.41**

	Calculation of Depreciation foregone on Additonal Efficient PC1 Capex			1999	2000	2001	2002	2003	2004	2005
21	Assumed average asset life for new investment	years	30							
22	Additional efficient PC1 capex to be allowed at PC3	AEDm, 1999 prices		23.86	68.82	51.63	48.41			
23	**Depreciation on additional efficient PC1 capex**	AEDm, 1999 prices		**0.40**	**1.94**	**3.95**	**5.62**	**6.42**	**6.42**	**6.42**
24	(half-year depreciation for the first year of each annual capex)									

	Calculation of Return on Capital foregone on Additional Efficient PC1 Capex			1999	2000	2001	2002	2003	2004	2005
25	Additional efficient PC1 capex - Opening value	AEDm, 1999 prices		0.00	23.47	90.35	138.03	180.82	174.40	167.97
26	Additional efficient PC1 capex	AEDm, 1999 prices		23.86	68.82	51.63	48.41			
27	Depreciation on additional efficient PC1 capex	AEDm, 1999 prices		0.40	1.94	3.95	5.62	6.42	6.42	6.42
28	Additional efficient PC1 capex - Closing value	AEDm, 1999 prices		23.47	90.35	138.03	180.82	174.40	167.97	**161.55**
29	Average of Opening and Closing values	AEDm, 1999 prices		11.73	56.91	114.19	159.43	177.61	171.19	164.76
30	Cost of capital (real)	%	6.00%							
31	**Return on capital foregone**	AEDm, 1999 prices		**0.70**	**3.41**	**6.85**	**9.57**	**10.66**	**10.27**	**9.89**

	Calculation of Financing Costs foregone on Additional Efficient PC1 Capex		1999	2000	2001	2002	2003	2004	2005
32	Depreciation foregone	AEDm, 1999 prices	0.40	1.94	3.95	5.62	6.42	6.42	6.42
33	Return on capital foregone	AEDm, 1999 prices	0.70	3.41	6.85	9.57	10.66	10.27	9.89
34	Total financing costs foregone	AEDm, 1999 prices	1.10	5.36	10.80	15.18	17.08	16.70	16.31
35	Years from year mid point to 1 Jan 2006	AEDm, 1999 prices	6.50	5.50	4.50	3.50	2.50	1.50	0.50
36	NPV @ 1 Jan 2006 of financing costs foregone	AEDm, 1999 prices	1.61	7.38	14.04	18.62	19.76	18.22	16.79
37	**Accumulated NPV (@ 1 Jan 2006) of financing costs foregone**	AEDm, 1999 prices							**96.42**
		AEDm, 2006 prices							120.19

	Calculation of 2006 Opening RAV (including Financing Costs foregone on Additional Efficient PC1 Capex)		2006
38	Initial Opening 2006 RAV (with provisional PC1 and PC2 capex)	AEDm, 2003 prices	4,981.52
39	Initial Opening 2006 RAV (with provisional PC1 and PC2 capex)	AEDm, 1999 prices	4,546.80
40	Add: Additional efficient PC1 capex - Closing value @ 31 Dec 2005	AEDm, 1999 prices	161.55
41	Add: Accumulated NPV (@ 1 Jan 2006) of financing costs foregone	AEDm, 1999 prices	96.42
42	Opening 2006 RAV including Financing Costs foregone on Efficient PC1 capex	AEDm, 1999 prices	4,804.77
43	**Opening 2006 RAV including Financing Costs foregone on Efficient PC1 capex**	**AEDm, 2006 prices**	**5,989.46**

	Calculation of Total Depreciation (on Initial 2006 Opening RAV and Additional Efficient PC1 Capex)		2006
44	Depreciation on Initial Opening 2006 RAV	AEDm, 2003 prices	235.02
45	Depreciation on Initial Opening 2006 RAV	AEDm, 1999 prices	214.51
46	Depreciation on additional efficient PC1 capex	AEDm, 1999 prices	6.42
47	Total Depreciation for 2006 onwards	AEDm, 1999 prices	220.94
48	**Total Annual Depreciation for 2006 onwards**	**AEDm, 2006 prices**	**275.41**

Updating PC3 RAVs for PC3 Provisional Capex

	Inputs			2006	2007	2008	2009
49	Provisional PC3 capex	AEDm, 2006 prices		536.00	536.00	536.00	536.00
50	Assumed average asset life for new investment	years	30				
51	Opening 2006 RAV including Financing Costs foregone on Efficient PC1 capex	AEDm, 2006 prices		5,989.46			
52	Depreciation on Opening 2006 RAV	AEDm, 2006 prices		275.41	275.41	275.41	275.41

	Calculations		2006	2007	2008	2009
50	**Opening RAV**	**AEDm, 2006 prices**	**5,989.46**	**6,241.11**	**6,474.90**	**6,690.83**
51	Provisional PC3 capex	AEDm, 2006 prices	536.00	536.00	536.00	536.00
52	Depreciation on Opening 2006 RAV	AEDm, 2006 prices	275.41	275.41	275.41	275.41
53	Depreciation on provisional PC3 capex (half-year depreciation for first year)	AEDm, 2006 prices	8.93	26.80	44.67	62.53
54	**Total depreciation for PC3**	**AEDm, 2006 prices**	**284.34**	**302.21**	**320.08**	**337.94**
55	**Closing RAV**	**AEDm, 2006 prices**	**6,241.11**	**6,474.90**	**6,690.83**	**6,888.88**

Appendix A.4: ADDC Water – Updating RAV

Updating 2006 Opening RAV for PC1 Efficient Capex

Line No.

	UAE CPI Assumptions		1998	1999	2000	2001	2002	2003	2004	2005
1	Historical CPI (1995 = 100) - end year value		106.90	109.20	110.70					
2	Historical CPI (2000 = 100) - end year value				100.00	102.80	105.80	109.10	114.60	
3	Historical CPI Inflation			2.15%	1.37%	2.80%	2.92%	3.12%	5.04%	
4	Forecast CPI Inflation									5.04%
5	**CPI (2000 = 100) used in calculations**		**96.57**	**98.64**	**100.00**	**102.80**	**105.80**	**109.10**	**114.60**	**120.38**

	Inputs			1999	2000	2001	2002
6	Provisional PC1 capex allowed at PC2	AEDm, 1999 prices		69.11	44.92	130.47	380.71
7	Actual PC1 capex	AEDm, nominal prices		106.54	36.79	136.38	288.22
8	Applied capex efficiency factor	%	89.00%				
9	Initial Opening 2006 RAV (with provisional PC1 and PC2 capex)	AEDm, 2003 ţ	1,603.18				
10	Depreciation on Opening 2003 RAV	AEDm, 2003 ţ	83.66				
11	Depreciation on provisional capex for 2003-2005	AEDm, 2003 ţ	15.91				
12	Depreciation on Initial Opening 2006 RAV	AEDm, 2003 ţ	99.57				
13	Assumed average asset life for new investment	years	30				
14	Cost of capital (real)	%	6.00%				

	Calculation of Additional Efficient PC1 Capex to be allowed at this Review			1999	2000	2001	2002
15	Actual PC1 capex	AEDm, nominal prices		106.54	36.79	136.38	288.22
16	Applied capex efficiency factor	%	89.00%				
17	Efficient PC1 capex	AEDm, nominal prices		94.82	32.74	121.38	256.51
18	Efficient PC1 capex	AEDm, 1999 prices		94.82	32.05	117.22	240.96
19	Provisional PC1 capex	AEDm, 1999 prices		69.11	44.92	130.47	380.71
20	**Additional efficient PC1 capex to be allowed at PC3**	**AEDm, 1999 prices**		**25.72**	**(12.87)**	**(13.26)**	**-139.75**

	Calculation of Depreciation foregone on Additonal Efficient PC1 Capex			1999	2000	2001	2002	2003	2004	2005
21	Assumed average asset life for new investment	years	30							
22	Additional efficient PC1 capex to be allowed at PC3	AEDm, 1999 prices		25.72	-12.87	-13.26	-139.75			
23	**Depreciation on additional efficient PC1 capex**	AEDm, 1999 prices		**0.43**	**0.64**	**0.21**	**-2.34**	**-4.67**	**-4.67**	**-4.67**
24	(half-year depreciation for the first year of each annual capex)									

	Calculation of Return on Capital foregone on Additional Efficient PC1 Capex			1999	2000	2001	2002	2003	2004	2005
25	Additional efficient PC1 capex - Opening value	AEDm, 1999 prices		0.00	25.29	11.78	-1.69	-139.09	-134.42	-129.75
26	Additional efficient PC1 capex	AEDm, 1999 prices		25.72	-12.87	-13.26	-139.75			
27	Depreciation on additional efficient PC1 capex	AEDm, 1999 prices		0.43	0.64	0.21	-2.34	-4.67	-4.67	-4.67
28	Additional efficient PC1 capex - Closing value	AEDm, 1999 prices		25.29	11.78	-1.69	-139.09	-134.42	-129.75	**-125.07**
29	Average of Opening and Closing values	AEDm, 1999 prices		12.64	18.53	5.04	-70.39	-136.75	-132.08	-127.41
30	Cost of capital (real)	%	6.00%							
31	**Return on capital foregone**	AEDm, 1999 prices		**0.76**	**1.11**	**0.30**	**-4.22**	**-8.21**	**-7.92**	**-7.64**

	Calculation of Financing Costs foregone on Additional Efficient PC1 Capex		1999	2000	2001	2002	2003	2004	2005
32	Depreciation foregone	AEDm, 1999 prices	0.43	0.64	0.21	-2.34	-4.67	-4.67	-4.67
33	Return on capital foregone	AEDm, 1999 prices	0.76	1.11	0.30	-4.22	-8.21	-7.92	-7.64
34	Total financing costs foregone	AEDm, 1999 prices	1.19	1.75	0.51	-6.57	-12.88	-12.60	-12.32
35	Years from year mid point to 1 Jan 2006	AEDm, 1999 prices	6.50	5.50	4.50	3.50	2.50	1.50	0.50
36	NPV @ 1 Jan 2006 of financing costs foregone	AEDm, 1999 prices	1.73	2.42	0.66	-8.05	-14.90	-13.75	-12.68
37	**Accumulated NPV (@ 1 Jan 2006) of financing costs foregone**	AEDm, 1999 prices							**-44.56**
		AEDm, 2006 prices							-55.55

	Calculation of 2006 Opening RAV (including Financing Costs foregone on Additional Efficient PC1 Capex)		2006
38	Initial Opening 2006 RAV (with provisional PC1 and PC2 capex)	AEDm, 2003 prices	1,603.18
39	Initial Opening 2006 RAV (with provisional PC1 and PC2 capex)	AEDm, 1999 prices	1,463.28
40	Add: Additional efficient PC1 capex - Closing value @ 31 Dec 2005	AEDm, 1999 prices	(125.07)
41	Add: Accumulated NPV (@ 1 Jan 2006) of financing costs foregone	AEDm, 1999 prices	(44.56)
42	Opening 2006 RAV including Financing Costs foregone on Efficient PC1 capex	AEDm, 1999 prices	1,293.64
43	**Opening 2006 RAV including Financing Costs foregone on Efficient PC1 capex**	**AEDm, 2006 prices**	**1,612.61**

	Calculation of Total Depreciation (on Initial 2006 Opening RAV and Additional Efficient PC1 Capex)		2006
44	Depreciation on Initial Opening 2006 RAV	AEDm, 2003 prices	99.57
45	Depreciation on Initial Opening 2006 RAV	AEDm, 1999 prices	90.88
46	Depreciation on additional efficient PC1 capex	AEDm, 1999 prices	(4.67)
47	Total Depreciation for 2006 onwards	AEDm, 1999 prices	86.21
48	**Total Annual Depreciation for 2006 onwards**	**AEDm, 2006 prices**	**107.47**

Updating PC3 RAVs for PC3 Provisional Capex

	Inputs			2006	2007	2008	2009
49	Provisional PC3 capex	AEDm, 2006 prices		315.00	315.00	315.00	315.00
50	Assumed average asset life for new investment	years	30				
51	Opening 2006 RAV including Financing Costs foregone on Efficient PC1 capex	AEDm, 2006 prices		1,612.61			
52	Depreciation on Opening 2006 RAV	AEDm, 2006 prices		107.47	107.47	107.47	107.47

	Calculations		2006	2007	2008	2009
50	**Opening RAV**	**AEDm, 2006 prices**	**1,612.61**	**1,814.89**	**2,006.67**	**2,187.96**
51	Provisional PC3 capex	AEDm, 2006 prices	315.00	315.00	315.00	315.00
52	Depreciation on Opening 2006 RAV	AEDm, 2006 prices	107.47	107.47	107.47	107.47
53	Depreciation on provisional PC3 capex (half-year depreciation for first year)	AEDm, 2006 prices	5.25	15.75	26.25	36.75
54	**Total depreciation for PC3**	**AEDm, 2006 prices**	**112.72**	**123.22**	**133.72**	**144.22**
55	**Closing RAV**	**AEDm, 2006 prices**	**1,814.89**	**2,006.67**	**2,187.96**	**2,358.74**

Appendix A.5: TRANSCO Electricity – Updating RAV

Updating 2006 Opening RAV for PC1 Efficient Capex

Line No.

	UAE CPI Assumptions		1998	1999	2000	2001	2002	2003	2004	2005
1	Historical CPI (1995 = 100) - end year value		106.90	109.20	110.70					
2	Historical CPI (2000 = 100) - end year value				100.00	102.80	105.80	109.10	114.60	
3	Historical CPI Inflation			2.15%	1.37%	2.80%	2.92%	3.12%	5.04%	
4	Forecast CPI Inflation									5.04%
5	**CPI (2000 = 100) used in calculations**		**96.57**	**98.64**	**100.00**	**102.80**	**105.80**	**109.10**	**114.60**	**120.38**

	Inputs			1999	2000	2001	2002
6	Provisional PC1 capex allowed at PC2	AEDm, 1999 prices		344.17	533.79	795.29	1,222.50
7	Actual PC1 capex	AEDm, nominal prices		493.22	824.30	1,103.26	968.60
8	Applied capex efficiency factor	%	94.00%				
9	Initial Opening 2006 RAV (with provisional PC1 and PC2 capex)	AEDm, 2003 ∫	7,626.55				
10	Depreciation on Opening 2003 RAV	AEDm, 2003 ∫	227.07				
11	Depreciation on provisional capex for 2003-2005	AEDm, 2003 ∫	78.14				
12	Depreciation on Initial Opening 2006 RAV	AEDm, 2003 ∫	305.21				
13	Assumed average asset life for new investment	years	30				
14	Cost of capital (real)	%	6.00%				

	Calculation of Additional Efficient PC1 Capex to be allowed at this Review			1999	2000	2001	2002
15	Actual PC1 capex	AEDm, nominal prices		493.22	824.30	1,103.26	968.60
16	Applied capex efficiency factor	%	94.00%				
17	Efficient PC1 capex	AEDm, nominal prices		463.62	774.84	1,037.07	910.48
18	Efficient PC1 capex	AEDm, 1999 prices		463.62	758.52	1,001.47	855.28
19	Provisional PC1 capex	AEDm, 1999 prices		344.17	533.79	795.29	1,222.50
20	**Additional efficient PC1 capex to be allowed at PC3**	**AEDm, 1999 prices**		**119.45**	**224.73**	**206.18**	**-367.22**

	Calculation of Depreciation foregone on Additonal Efficient PC1 Capex			1999	2000	2001	2002	2003	2004	2005
21	Assumed average asset life for new investment	years	30							
22	Additional efficient PC1 capex to be allowed at PC3	AEDm, 1999 prices		119.45	224.73	206.18	-367.22			
23	**Depreciation on additional efficient PC1 capex**	AEDm, 1999 prices		**1.99**	**7.73**	**14.91**	**12.23**	**6.10**	**6.10**	**6.10**
24	(half-year depreciation for the first year of each annual capex)									

	Calculation of Return on Capital foregone on Additional Efficient PC1 Capex			1999	2000	2001	2002	2003	2004	2005
25	Additional efficient PC1 capex - Opening value	AEDm, 1999 prices		0.00	117.46	334.46	525.73	146.29	140.18	134.08
26	Additional efficient PC1 capex	AEDm, 1999 prices		119.45	224.73	206.18	-367.22			
27	Depreciation on additional efficient PC1 capex	AEDm, 1999 prices		1.99	7.73	14.91	12.23	6.10	6.10	6.10
28	Additional efficient PC1 capex - Closing value	AEDm, 1999 prices		117.46	334.46	525.73	146.29	140.18	134.08	**127.97**
29	Average of Opening and Closing values	AEDm, 1999 prices		58.73	225.96	430.10	336.01	143.24	137.13	131.03
30	Cost of capital (real)	%	6.00%							
31	**Return on capital foregone**	AEDm, 1999 prices		**3.52**	**13.56**	**25.81**	**20.16**	**8.59**	**8.23**	**7.86**

	Calculation of Financing Costs foregone on Additional Efficient PC1 Capex		1999	2000	2001	2002	2003	2004	2005
32	Depreciation foregone	AEDm, 1999 prices	1.99	7.73	14.91	12.23	6.10	6.10	6.10
33	Return on capital foregone	AEDm, 1999 prices	3.52	13.56	25.81	20.16	8.59	8.23	7.86
34	Total financing costs foregone	AEDm, 1999 prices	5.51	21.29	40.71	32.39	14.70	14.33	13.97
35	Years from year mid point to 1 Jan 2006	AEDm, 1999 prices	6.50	5.50	4.50	3.50	2.50	1.50	0.50
36	NPV @ 1 Jan 2006 of financing costs foregone	AEDm, 1999 prices	8.05	29.33	52.92	39.71	17.00	15.64	14.38
37	**Accumulated NPV (@ 1 Jan 2006) of financing costs foregone**	AEDm, 1999 prices							**177.04**
		AEDm, 2006 prices							220.69

	Calculation of 2006 Opening RAV (including Financing Costs foregone on Additional Efficient PC1 Capex)		2006
38	Initial Opening 2006 RAV (with provisional PC1 and PC2 capex)	AEDm, 2003 prices	7,626.55
39	Initial Opening 2006 RAV (with provisional PC1 and PC2 capex)	AEDm, 1999 prices	6,961.01
40	Add: Additional efficient PC1 capex - Closing value @ 31 Dec 2005	AEDm, 1999 prices	127.97
41	Add: Accumulated NPV (@ 1 Jan 2006) of financing costs foregone	AEDm, 1999 prices	177.04
42	Opening 2006 RAV including Financing Costs foregone on Efficient PC1 capex	AEDm, 1999 prices	7,266.03
43	**Opening 2006 RAV including Financing Costs foregone on Efficient PC1 capex**	**AEDm, 2006 prices**	**9,057.56**

	Calculation of Total Depreciation (on Initial 2006 Opening RAV and Additional Efficient PC1 Capex)		2006
44	Depreciation on Initial Opening 2006 RAV	AEDm, 2003 prices	305.21
45	Depreciation on Initial Opening 2006 RAV	AEDm, 1999 prices	278.57
46	Depreciation on additional efficient PC1 capex	AEDm, 1999 prices	6.10
47	Total Depreciation for 2006 onwards	AEDm, 1999 prices	284.68
48	**Total Annual Depreciation for 2006 onwards**	**AEDm, 2006 prices**	**354.87**

Updating PC3 RAVs for PC3 Provisional Capex

	Inputs			2006	2007	2008	2009
49	Provisional PC3 capex	AEDm, 2006 prices		1,200.00	1,200.00	1,200.00	1,200.00
50	Assumed average asset life for new investment	years	30				
51	Opening 2006 RAV including Financing Costs foregone on Efficient PC1 capex	AEDm, 2006 prices		9,057.56			
52	Depreciation on Opening 2006 RAV	AEDm, 2006 prices		354.87	354.87	354.87	354.87

	Calculations		2006	2007	2008	2009
50	**Opening RAV**	**AEDm, 2006 prices**	**9,057.56**	**9,882.69**	**10,667.83**	**11,412.96**
51	Provisional PC3 capex	AEDm, 2006 prices	1,200.00	1,200.00	1,200.00	1,200.00
52	Depreciation on Opening 2006 RAV	AEDm, 2006 prices	354.87	354.87	354.87	354.87
53	Depreciation on provisional PC3 capex (half-year depreciation for first year)	AEDm, 2006 prices	20.00	60.00	100.00	140.00
54	**Total depreciation for PC3**	**AEDm, 2006 prices**	**374.87**	**414.87**	**454.87**	**494.87**
55	**Closing RAV**	**AEDm, 2006 prices**	**9,882.69**	**10,667.83**	**11,412.96**	**12,118.09**

Appendix A.6: TRANSCO Water – Updating RAV

Updating 2006 Opening RAV for PC1 Efficient Capex

Line No.

	UAE CPI Assumptions		1998	1999	2000	2001	2002	2003	2004	2005
1	Historical CPI (1995 = 100) - end year value		106.90	109.20	110.70					
2	Historical CPI (2000 = 100) - end year value				100.00	102.80	105.80	109.10	114.60	
3	Historical CPI Inflation			2.15%	1.37%	2.80%	2.92%	3.12%	5.04%	
4	Forecast CPI Inflation									5.04%
5	**CPI (2000 = 100) used in calculations**		**96.57**	**98.64**	**100.00**	**102.80**	**105.80**	**109.10**	**114.60**	**120.38**

	Inputs			1999	2000	2001	2002
6	Provisional PC1 capex allowed at PC2	AEDm, 1999 prices		118.74	123.46	92.11	289.04
7	Actual PC1 capex	AEDm, nominal prices		124.27	133.33	205.19	650.70
8	Applied capex efficiency factor	%	94.00%				
9	Initial Opening 2006 RAV (with provisional PC1 and PC2 capex)	AEDm, 2003 ₤	4,612.53				
10	Depreciation on Opening 2003 RAV	AEDm, 2003 ₤	144.23				
11	Depreciation on provisional capex for 2003-2005	AEDm, 2003 ₤	92.81				
12	Depreciation on Initial Opening 2006 RAV	AEDm, 2003 ₤	237.05				
13	Assumed average asset life for new investment	years	30				
14	Cost of capital (real)	%	6.00%				

	Calculation of Additional Efficient PC1 Capex to be allowed at this Review			1999	2000	2001	2002
15	Actual PC1 capex	AEDm, nominal prices		124.27	133.33	205.19	650.70
16	Applied capex efficiency factor	%	94.00%				
17	Efficient PC1 capex	AEDm, nominal prices		116.81	125.33	192.88	611.65
18	Efficient PC1 capex	AEDm, 1999 prices		116.81	122.69	186.26	574.57
19	Provisional PC1 capex	AEDm, 1999 prices		118.74	123.46	92.11	289.04
20	**Additional efficient PC1 capex to be allowed at PC3**	**AEDm, 1999 prices**		**(1.92)**	**(0.77)**	**94.15**	**285.53**

	Calculation of Depreciation foregone on Additonal Efficient PC1 Capex			1999	2000	2001	2002	2003	2004	2005
21	Assumed average asset life for new investment	years	30							
22	Additional efficient PC1 capex to be allowed at PC3	AEDm, 1999 prices		-1.92	-0.77	94.15	285.53			
23	**Depreciation on additional efficient PC1 capex**	AEDm, 1999 prices		**-0.03**	**-0.08**	**1.48**	**7.81**	**12.57**	**12.57**	**12.57**
24	(half-year depreciation for the first year of each annual capex)									

	Calculation of Return on Capital foregone on Additional Efficient PC1 Capex			1999	2000	2001	2002	2003	2004	2005
25	Additional efficient PC1 capex - Opening value	AEDm, 1999 prices		0.00	-1.89	-2.58	90.09	367.81	355.24	342.68
26	Additional efficient PC1 capex	AEDm, 1999 prices		-1.92	-0.77	94.15	285.53			
27	Depreciation on additional efficient PC1 capex	AEDm, 1999 prices		-0.03	-0.08	1.48	7.81	12.57	12.57	12.57
28	Additional efficient PC1 capex - Closing value	AEDm, 1999 prices		-1.89	-2.58	90.09	367.81	355.24	342.68	**330.11**
29	Average of Opening and Closing values	AEDm, 1999 prices		-0.95	-2.24	43.75	228.95	361.53	348.96	336.39
30	Cost of capital (real)	%	6.00%							
31	**Return on capital foregone**	AEDm, 1999 prices		**-0.06**	**-0.13**	**2.63**	**13.74**	**21.69**	**20.94**	**20.18**

	Calculation of Financing Costs foregone on Additional Efficient PC1 Capex		1999	2000	2001	2002	2003	2004	2005
32	Depreciation foregone	AEDm, 1999 prices	-0.03	-0.08	1.48	7.81	12.57	12.57	12.57
33	Return on capital foregone	AEDm, 1999 prices	-0.06	-0.13	2.63	13.74	21.69	20.94	20.18
34	Total financing costs foregone	AEDm, 1999 prices	-0.09	-0.21	4.10	21.54	34.26	33.50	32.75
35	Years from year mid point to 1 Jan 2006	AEDm, 1999 prices	6.50	5.50	4.50	3.50	2.50	1.50	0.50
36	NPV @ 1 Jan 2006 of financing costs foregone	AEDm, 1999 prices	-0.13	-0.29	5.34	26.42	39.63	36.56	33.72
37	**Accumulated NPV (@ 1 Jan 2006) of financing costs foregone**	AEDm, 1999 prices							**141.25**
		AEDm, 2006 prices							176.07

	Calculation of 2006 Opening RAV (including Financing Costs foregone on Additional Efficient PC1 Capex)		2006
38	Initial Opening 2006 RAV (with provisional PC1 and PC2 capex)	AEDm, 2003 prices	4,612.53
39	Initial Opening 2006 RAV (with provisional PC1 and PC2 capex)	AEDm, 1999 prices	4,210.02
40	Add: Additional efficient PC1 capex - Closing value @ 31 Dec 2005	AEDm, 1999 prices	330.11
41	Add: Accumulated NPV (@ 1 Jan 2006) of financing costs foregone	AEDm, 1999 prices	141.25
42	Opening 2006 RAV including Financing Costs foregone on Efficient PC1 capex	AEDm, 1999 prices	4,681.38
43	**Opening 2006 RAV including Financing Costs foregone on Efficient PC1 capex**	**AEDm, 2006 prices**	**5,835.63**

	Calculation of Total Depreciation (on Initial 2006 Opening RAV and Additional Efficient PC1 Capex)		2006
44	Depreciation on Initial Opening 2006 RAV	AEDm, 2003 prices	237.05
45	Depreciation on Initial Opening 2006 RAV	AEDm, 1999 prices	216.36
46	Depreciation on additional efficient PC1 capex	AEDm, 1999 prices	12.57
47	Total Depreciation for 2006 onwards	AEDm, 1999 prices	228.93
48	**Total Annual Depreciation for 2006 onwards**	**AEDm, 2006 prices**	**285.37**

Updating PC3 RAVs for PC3 Provisional Capex

	Inputs			2006	2007	2008	2009
49	Provisional PC3 capex	AEDm, 2006 prices		750.00	750.00	750.00	750.00
50	Assumed average asset life for new investment	years	30				
51	Opening 2006 RAV including Financing Costs foregone on Efficient PC1 capex	AEDm, 2006 prices		5,835.63			
52	Depreciation on Opening 2006 RAV	AEDm, 2006 prices		285.37	285.37	285.37	285.37

	Calculations			2006	2007	2008	2009
50	**Opening RAV**	**AEDm, 2006 prices**		**5,835.63**	**6,287.76**	**6,714.89**	**7,117.02**
51	Provisional PC3 capex	AEDm, 2006 prices		750.00	750.00	750.00	750.00
52	Depreciation on Opening 2006 RAV	AEDm, 2006 prices		285.37	285.37	285.37	285.37
53	Depreciation on provisional PC3 capex (half-year depreciation for first year)	AEDm, 2006 prices		12.50	37.50	62.50	87.50
54	**Total depreciation for PC3**	**AEDm, 2006 prices**		**297.87**	**322.87**	**347.87**	**372.87**
55	**Closing RAV**	**AEDm, 2006 prices**		**6,287.76**	**6,714.89**	**7,117.02**	**7,494.15**

Appendices B.1 – B.8: Price Control Calculations

Appendix B.1: AADC Electricity – Price Control Calculations

Line No. (all AED amounts are in 2006 prices)

	Inputs			2006	2007	2008	2009
1	Operating expenditure allowance	AEDm		165.67	164.66	163.64	162.64
2	Opening RAV	AEDm		2,754.71	2,905.85	3,046.83	3,177.64
3	Closing RAV	AEDm		2,905.85	3,046.83	3,177.64	3,298.29
4	Mid-Year RAV	AEDm		2,830.28	2,976.34	3,112.24	3,237.97
5	Total depreciation for PC3	AEDm		153.85	164.02	174.19	184.35
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	Customer Accounts		93,944	97,274	100,122	102,802
8	Forecast for revenue driver 3	GWh		6,604	7,233	7,922	8,765
9	PV of financial adjustments	AEDm	-24.52				
10	Cost of capital (real)		5.50%				
11	Weight in revenue for Revenue driver 1		70.00%				
12	Weight in revenue for Revenue driver 2		15.00%				
13	Weight in revenue for Revenue driver 3		15.00%				
14	Negative X Factor		0.00				

	PC3 Required Revenue Calculations		2006	2007	2008	2009	PV over PC3 Period at 1 January 2006
15	Operating expenditure allowance	AEDm	165.67	164.66	163.64	162.64	591.24
16	Total depreciation for PC3	AEDm	153.85	164.02	174.19	184.35	606.37
17	Return on mid-year RAV	AEDm	155.67	163.70	171.17	178.09	600.00
18	Annual revenue requirement before financial adjustment	AEDm	475.19	492.38	509.01	525.08	1,797.61
19	Discounted annual revenue requirement before financial adjustment	AEDm	462.64	454.38	445.24	435.36	1,797.61
20	PV of financial adjustments	AEDm					-24.52
21	PV of revenue requirement after financial adjustment	AEDm					**1,773.10**

	PC3 Required Forecast and Profiling			2006	2007	2008	2009	PV Share in TOTAL	
22	**Revenue driver 1**	Revenue driver forecast		1.00	1.00	1.00	1.00		
23		Fixed revenue term (a)	AEDm	**344.74**	344.74	344.74	344.74		
24		Revenue forecast	AEDm	344.74	344.74	344.74	344.74	1,241.17	
25		Share of revenue	%	72%	72%	72%	72%	**70%**	
26	**Revenue driver 2**	Revenue driver forecast	Customer Accounts	93,944	97,274	100,122	102,802	**Constraints for Solver Run**	
27		Co-efficeint of variable revenue term (b)	AED / Customer	**751.22**	751.22	751.22	751.22		
28		Revenue forecast	AEDm	71	73	75	77	265.96	
29		Share of revenue	%	15%	15%	16%	16%	**15%**	
30	**Revenue driver 3**	Revenue driver forecast	kWh	6,604,391,606	7,233,471,333	7,921,575,379	8,764,532,000		
31		Co-efficeint of variable revenue term (c)	fils / kWh	**0.97**	0.97	0.97	0.97		
32		Revenue forecast	AEDm	64.34	70.47	77.17	85.38	265.96	
33		Share of revenue	%	13%	15%	16%	18%	**15%**	
			Variables for Solver Run						
34	Annual revenue		AEDm	479.66	488.29	497.13	507.35	**TOTAL**	Difference
35	**Discounted annual revenue at 1 January 2006**		AEDm	466.99	450.60	434.85	420.66	**1,773.1**	**0.00**
								Target for Solver Run	

	Results		2006
36	X Factor		0.0
37	Fixed revenue term (a)	AED million	344.74
38	Co-efficeint of variable revenue term (b)	AED / Customer Account	751.22
39	Co-efficeint of variable revenue term (c)	fils / kWh metered	0.97

	Implied Financial Indicators		2006	2007	2008	2009	Average
40	Implied annual profit	AEDm	160.13	159.61	159.30	160.36	159.85
41	Implied return on mid-point RAV	%	5.66%	5.36%	5.12%	4.95%	5.27%

Appendix B.2: AADC Water – Price Control Calculations

Line No.				(all AED amounts are in 2006 prices)				
	Inputs			**2006**	**2007**	**2008**	**2009**	
1	Operating expenditure allowance	AEDm		89.52	88.77	75.52	74.78	
2	Opening RAV	AEDm		1,001.37	1,120.62	1,234.77	1,343.82	
3	Closing RAV	AEDm		1,120.62	1,234.77	1,343.82	1,447.77	
4	Mid-Year RAV	AEDm		1,060.99	1,177.69	1,289.29	1,395.79	
5	Total depreciation for PC3	AEDm		33.75	38.85	43.95	49.05	
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00	
7	Forecast for revenue driver 2	Customer Accounts		48,525	50,048	51,217	52,238	
8	Forecast for revenue driver 3	MG		20,965	31,660	41,470	51,048	
9	PV of financial adjustments	AEDm	-30.77					
10	Cost of capital (real)		5.50%					
11	Weight in revenue for Revenue driver 1		70.00%					
12	Weight in revenue for Revenue driver 2		15.00%					
13	Weight in revenue for Revenue driver 3		15.00%					
14	Negative X Factor		0.00					

	PC3 Required Revenue Calculations		**2006**	**2007**	**2008**	**2009**	**PV over PC3 Period at 1 January 2006**
15	Operating expenditure allowance	AEDm	89.52	88.77	75.52	74.78	297.13
16	Total depreciation for PC3	AEDm	33.75	38.85	43.95	49.05	147.82
17	Return on mid-year RAV	AEDm	58.35	64.77	70.91	76.77	242.26
18	Annual revenue requirement before financial adjustment	AEDm	181.62	192.39	190.38	200.60	687.22
19	Discounted annual revenue requirement before financial adjustment	AEDm	176.82	177.54	166.53	166.32	687.22
20	PV of financial adjustments	AEDm					-30.77
21	PV of revenue requirement after financial adjustment	AEDm					**656.45**

	PC3 Required Forecast and Profiling			**2006**	**2007**	**2008**	**2009**	**PV Share in TOTAL**	
22	**Revenue driver 1**	Revenue driver forecast		1.00	1.00	1.00	1.00		
23		Fixed revenue term (a)	AEDm	**127.63**	127.63	127.63	127.63		
24		Revenue forecast	AEDm	127.63	127.63	127.63	127.63	459.51	
25		Share of revenue	%	75%	75%	75%	75%	**70%**	
26	**Revenue driver 2**	Revenue driver forecast	Customer Accounts	48,525	50,048	51,217	52,238	**Constraints for Solver Run**	
27		Co-efficeint of variable revenue term (b)	AED / Customer	**542.40**	542.40	542.40	542.40		
28		Revenue forecast	AEDm	26.32	27.15	27.78	28.33	98.47	
29		Share of revenue	%	15%	16%	16%	17%	**15%**	
30	**Revenue driver 3**	Revenue driver forecast	TIG	20,965,160	31,660,498	41,469,631	51,047,504		
31		Co-efficeint of variable revenue term (c)	AED / TIG	**0.77**	0.77	0.77	0.77		
32		Revenue forecast	AEDm	16.10	24.31	31.85	39.20	98.47	
33		Share of revenue	%	9%	14%	19%	23%	**15%**	
			Variables for Solver Run						
34	Annual revenue		AEDm	170.05	179.09	187.26	195.17	**TOTAL**	Difference
35	**Discounted annual revenue at 1 January 2006**		AEDm	165.56	165.27	163.80	161.82	**656.4**	**0.00**
								Target for Solver Run	

	Results		**2006**
36	X Factor		0.0
37	Fixed revenue term (a)	AED million	127.63
38	Co-efficeint of variable revenue term (b)	AED / Customer Account	542.40
39	Co-efficeint of variable revenue term (c)	AED / TIG	0.77

	Implied Financial Indicators		**2006**	**2007**	**2008**	**2009**	**Average**
40	Implied annual profit	AEDm	46.79	51.48	67.79	71.33	59.35
41	Implied return on mid-point RAV	%	4.41%	4.37%	5.26%	5.11%	4.79%

Appendix B.3: ADDC Electricity – Price Control Calculations

Line No. (all AED amounts are in 2006 prices)

	Inputs			2006	2007	2008	2009
1	Operating expenditure allowance	AEDm		248.65	246.00	243.38	240.79
2	Opening RAV	AEDm		5,989.46	6,241.11	6,474.90	6,690.83
3	Closing RAV	AEDm		6,241.11	6,474.90	6,690.83	6,888.88
4	Mid-Year RAV	AEDm		6,115.28	6,358.01	6,582.86	6,789.85
5	Total depreciation for PC3	AEDm		284.34	302.21	320.08	337.94
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	Customer Accounts		205,554	210,008	214,557	218,863
8	Forecast for revenue driver 3	GWh		14,842	16,106	17,478	18,957
9	PV of financial adjustments	AEDm	27.61				
10	Cost of capital (real)		5.50%				
11	Weight in revenue for Revenue driver 1		70.00%				
12	Weight in revenue for Revenue driver 2		15.00%				
13	Weight in revenue for Revenue driver 3		15.00%				
14	Negative X Factor		0.00				

	PC3 Required Revenue Calculations		2006	2007	2008	2009	PV over PC3 Period at 1 January 2006
15	Operating expenditure allowance	AEDm	248.65	246.00	243.38	240.79	881.63
16	Total depreciation for PC3	AEDm	284.34	302.21	320.08	337.94	1,115.89
17	Return on mid-year RAV	AEDm	336.34	349.69	362.06	373.44	1,276.49
18	Annual revenue requirement before financial adjustment	AEDm	869.33	897.90	925.51	952.17	3,274.01
19	Discounted annual revenue requirement before financial adjustment	AEDm	846.37	828.61	809.57	789.47	3,274.01
20	PV of financial adjustments	AEDm					27.61
21	PV of revenue requirement after financial adjustment	AEDm					**3,301.62**

	PC3 Required Forecast and Profiling			2006	2007	2008	2009	PV Share in TOTAL	
22	**Revenue driver 1**	Revenue driver forecast		1.00	1.00	1.00	1.00		
23		Fixed revenue term (a)	AEDm	**641.94**	641.94	641.94	641.94		
24		Revenue forecast	AEDm	641.94	641.94	641.94	641.94	2,311.13	
25		Share of revenue	%	72%	72%	72%	72%	**70%**	
26	**Revenue driver 2**	Revenue driver forecast	Customer Accounts	205,554	210,008	214,557	218,863	**Constraints for Solver Run**	
27		Co-efficeint of variable revenue term (b)	AED / Customer	**649.02**	649.02	649.02	649.02		
28		Revenue forecast	AEDm	133.41	136.30	139.25	142.05	495.24	
29		Share of revenue	%	15%	15%	16%	16%	**15%**	
30	**Revenue driver 3**	Revenue driver forecast	kWh	14,841,930,876	16,106,248,916	17,477,920,879	18,956,962,262		
31		Co-efficeint of variable revenue term (c)	fils / kWh	**0.82**	0.82	0.82	0.82		
32		Revenue forecast	AEDm	121.86	132.24	143.50	155.64	495.24	
33		Share of revenue	%	14%	15%	16%	17%	**15%**	
			Variables for Solver Run						
34	Annual revenue		AEDm	897.20	910.47	924.69	939.63	**TOTAL**	Difference
35	**Discounted annual revenue at 1 January 2006**		AEDm	873.50	840.21	808.84	779.06	**3,301.6**	**0.00**
								Target for Solver Run	

	Results		2006
36	X Factor		0.0
37	Fixed revenue term (a)	AED million	641.94
38	Co-efficeint of variable revenue term (b)	AED / Customer Account	649.02
39	Co-efficeint of variable revenue term (c)	fils / kWh metered	0.82

	Implied Financial Indicators		2006	2007	2008	2009	Average
40	Implied annual profit	AEDm	364.21	362.26	361.23	360.89	362.15
41	Implied return on mid-point RAV	%	5.96%	5.70%	5.49%	5.32%	5.61%

Appendix B.4: ADDC Water – Price Control Calculations

Line No. (all AED amounts are in 2006 prices)

	Inputs			2006	2007	2008	2009
1	Operating expenditure allowance	AEDm		138.40	136.70	135.02	133.36
2	Opening RAV	AEDm		1,612.61	1,814.89	2,006.67	2,187.96
3	Closing RAV	AEDm		1,814.89	2,006.67	2,187.96	2,358.74
4	Mid-Year RAV	AEDm		1,713.75	1,910.78	2,097.31	2,273.35
5	Total depreciation for PC3	AEDm		112.72	123.22	133.72	144.22
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	Customer Accounts		176,468	180,324	184,264	188,290
8	Forecast for revenue driver 3	MG		69,154	80,137	104,965	129,208
9	PV of financial adjustments	AEDm	8.14				
10	Cost of capital (real)		5.50%				
11	Weight in revenue for Revenue driver 1		70.00%				
12	Weight in revenue for Revenue driver 2		15.00%				
13	Weight in revenue for Revenue driver 3		15.00%				
14	Negative X Factor		0.00				

	PC3 Required Revenue Calculations		2006	2007	2008	2009	PV over PC3 Period at 1 January 2006
15	Operating expenditure allowance	AEDm	138.40	136.70	135.02	133.36	489.57
16	Total depreciation for PC3	AEDm	112.72	123.22	133.72	144.22	459.98
17	Return on mid-year RAV	AEDm	94.26	105.09	115.35	125.03	393.32
18	Annual revenue requirement before financial adjustment	AEDm	345.38	365.01	384.09	402.61	1,342.88
19	Discounted annual revenue requirement before financial adjustment	AEDm	336.25	336.84	335.97	333.81	1,342.88
20	PV of financial adjustments	AEDm					8.14
21	PV of revenue requirement after financial adjustment	AEDm					**1,351.01**

	PC3 Required Forecast and Profiling			2006	2007	2008	2009	PV Share in TOTAL	
22	**Revenue driver 1**	Revenue driver forecast		1.00	1.00	1.00	1.00		
23		Fixed revenue term (a)	AEDm	**262.68**	262.68	262.68	262.68		
24		Revenue forecast	AEDm	262.68	262.68	262.68	262.68	945.71	
25		Share of revenue	%	73%	73%	73%	73%	**70%**	
26	**Revenue driver 2**	Revenue driver forecast	Customer Accounts	176,468	180,324	184,264	188,290	**Constraints for Solver Run**	
27		Co-efficeint of variable revenue term (b)	AED / Customer	**309.15**	309.15	309.15	309.15		
28		Revenue forecast	AEDm	54.56	55.75	56.97	58.21	202.65	
29		Share of revenue	%	15%	16%	16%	16%	**15%**	
30	**Revenue driver 3**	Revenue driver forecast	TIG	69,154,480	80,136,921	104,965,136	129,208,004		
31		Co-efficeint of variable revenue term (c)	AED / TIG	**0.60**	0.60	0.60	0.60		
32		Revenue forecast	AEDm	41.19	47.73	62.52	76.96	202.65	
33		Share of revenue	%	11%	13%	17%	21%	**15%**	
			Variables for Solver Run						
34	Annual revenue		AEDm	358.43	366.16	382.17	397.85	**TOTAL**	Difference
35	**Discounted annual revenue at 1 January 2006**		AEDm	348.96	337.90	334.29	329.87	**1,351.0**	**0.00**
								Target for Solver Run	

	Results		2006
36	X Factor		0.0
37	Fixed revenue term (a)	AED million	262.68
38	Co-efficeint of variable revenue term (b)	AED / Customer Account	309.15
39	Co-efficeint of variable revenue term (c)	AED / TIG	0.60

	Implied Financial Indicators		2006	2007	2008	2009	Average
40	Implied annual profit	AEDm	107.31	106.24	113.43	120.28	111.81
41	Implied return on mid-point RAV	%	6.26%	5.56%	5.41%	5.29%	5.63%

Appendix B.5: TRANSCO Electricity – Price Control Calculations

Line No. **(all AED amounts are in 2006 prices)**

	Inputs			2006	2007	2008	2009
1	Operating expenditure allowance	AEDm		115.88	117.37	118.89	120.42
2	Opening RAV	AEDm		9,057.56	9,882.69	10,667.83	11,412.96
3	Closing RAV	AEDm		9,882.69	10,667.83	11,412.96	12,118.09
4	Mid-Year RAV	AEDm		9,470.13	10,275.26	11,040.39	11,765.52
5	Total depreciation for PC3	AEDm		374.87	414.87	454.87	494.87
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	MW		4,397	4,824	5,073	5,632
8	Forecast for revenue driver 3	GWh		23,419	27,043	28,443	31,573
9	PV of financial adjustments	AEDm	-138.58				
10	Cost of capital (real)		5.00%				
11	Weight in revenue for Revenue driver 1		70.00%				
12	Weight in revenue for Revenue driver 2		15.00%				
13	Weight in revenue for Revenue driver 3		15.00%				
14	Negative X Factor		0.00				

	PC3 Required Revenue Calculations		2006	2007	2008	2009	PV over PC3 Period at 1 January 2006
15	Operating expenditure allowance	AEDm	115.88	117.37	118.89	120.42	428.93
16	Total depreciation for PC3	AEDm	374.87	414.87	454.87	494.87	1,571.24
17	Return on mid-year RAV	AEDm	473.51	513.76	552.02	588.28	1,924.16
18	Annual revenue requirement before financial adjustment	AEDm	964.25	1,046.00	1,125.78	1,203.57	3,924.33
19	Discounted annual revenue requirement before financial adjustment	AEDm	941.01	972.19	996.50	1,014.63	3,924.33
20	PV of financial adjustments	AEDm					-138.58
21	PV of revenue requirement after financial adjustment	AEDm					**3,785.75**

	PC3 Required Forecast and Profiling			2006	2007	2008	2009	PV Share in TOTAL
22	**Revenue driver 1**	Revenue driver forecast		1.00	1.00	1.00	1.00	
23		Fixed revenue term (a)	AEDm	**729.33**	729.33	729.33	729.33	
24		Revenue forecast	AEDm	729.33	729.33	729.33	729.33	2,650.03
25		Share of revenue	%	73%	73%	73%	73%	**70%**
26	**Revenue driver 2**	Revenue driver forecast	kW	4,396,959	4,823,581	5,073,263	5,631,607	**Constraints for Solver Run**
27		Co-efficeint of variable revenue term (b)	AED / kW	**31.53**	31.53	31.53	31.53	
28		Revenue forecast	AEDm	138.62	152.07	159.94	177.54	567.86
29		Share of revenue	%	14%	15%	16%	18%	**15%**
30	**Revenue driver 3**	Revenue driver forecast	kWh	23,418,555,391	27,042,924,518	28,442,741,683	31,573,041,485	
31		Co-efficeint of variable revenue term (c)	fils / kWh	**0.57**	0.57	0.57	0.57	
32		Revenue forecast	AEDm	133.28	153.90	161.87	179.68	567.86
33		Share of revenue	%	13%	15%	16%	18%	**15%**
			Variables for Solver Run					
34	Annual revenue		AEDm	1,001.22	1,035.30	1,051.14	1,086.55	**TOTAL** Difference
35	**Discounted annual revenue at 1 January 2006**		AEDm	977.09	962.24	930.43	915.99	**3,785.8** **0.00**
								Target for Solver Run

	Results		2006
36	X Factor		0.0
37	Fixed revenue term (a)	AED million	729.33
38	Co-efficeint of variable revenue term (b)	AED / kW metered	31.53
39	Co-efficeint of variable revenue term (c)	fils / kWh metered	0.57

	Implied Financial Indicators		2006	2007	2008	2009	Average
40	Implied annual profit	AEDm	510.48	503.06	477.38	471.26	490.54
41	Implied return on mid-point RAV	%	5.39%	4.90%	4.32%	4.01%	4.65%

Appendix B.6: TRANSCO Water – Price Control Calculations

Line No. (all AED amounts are in 2006 prices)

	Inputs			2006	2007	2008	2009
1	Operating expenditure allowance	AEDm		261.30	228.03	231.83	235.71
2	Opening RAV	AEDm		5,835.63	6,287.76	6,714.89	7,117.02
3	Closing RAV	AEDm		6,287.76	6,714.89	7,117.02	7,494.15
4	Mid-Year RAV	AEDm		6,061.70	6,501.33	6,915.96	7,305.58
5	Total depreciation for PC3	AEDm		297.87	322.87	347.87	372.87
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	MIGD		526	557	587	622
8	Forecast for revenue driver 3	MG		175,056	197,206	207,827	220,219
9	PV of financial adjustments	AEDm	-42.86				
10	Cost of capital (real)		5.00%				
11	Weight in revenue for Revenue driver 1		70.00%				
12	Weight in revenue for Revenue driver 2		15.00%				
13	Weight in revenue for Revenue driver 3		15.00%				
14	Negative X Factor		0.00				

	PC3 Required Revenue Calculations		2006	2007	2008	2009	PV over PC3 Period at 1 January 2006
15	Operating expenditure allowance	AEDm	261.30	228.03	231.83	235.71	870.86
16	Total depreciation for PC3	AEDm	297.87	322.87	347.87	372.87	1,213.04
17	Return on mid-year RAV	AEDm	303.08	325.07	345.80	365.28	1,211.93
18	Annual revenue requirement before financial adjustment	AEDm	862.26	875.97	925.50	973.86	3,295.83
19	Discounted annual revenue requirement before financial adjustment	AEDm	841.48	814.15	819.23	820.98	3,295.83
20	PV of financial adjustments	AEDm					-42.86
21	PV of revenue requirement after financial adjustment	AEDm					**3,252.97**

	PC3 Required Forecast and Profiling			2006	2007	2008	2009	PV Share in TOTAL	
22	**Revenue driver 1**	Revenue driver forecast		1.00	1.00	1.00	1.00		
23		Fixed revenue term (a)	AEDm	**626.69**	626.69	626.69	626.69		
24		Revenue forecast	AEDm	626.69	626.69	626.69	626.69	2,277.08	
25		Share of revenue	%	72%	72%	72%	72%	**70%**	
26	**Revenue driver 2**	Revenue driver forecast	TIGD	526,000	557,000	587,000	622,000	**Constraints for Solver Run**	
27		Co-efficeint of variable revenue term (b)	AED / TIGD	**235.16**	235.16	235.16	235.16		
28		Revenue forecast	AEDm	123.69	130.98	138.04	146.27	487.95	
29		Share of revenue	%	14%	15%	16%	17%	**15%**	
30	**Revenue driver 3**	Revenue driver forecast	TIG	175,056,482	197,205,850	207,827,350	220,219,100		
31		Co-efficeint of variable revenue term (c)	AED / TIG	**0.67**	0.67	0.67	0.67		
32		Revenue forecast	AEDm	118.02	132.96	140.12	148.47	487.95	
33		Share of revenue	%	14%	15%	16%	17%	**15%**	
			Variables for Solver Run						
34	Annual revenue		AEDm	868.40	890.63	904.84	921.43	**TOTAL**	Difference
35	**Discounted annual revenue at 1 January 2006**		AEDm	847.48	827.77	800.94	776.78	**3,253.0**	**0.00**
								Target for Solver Run	

	Results		2006
36	X Factor		0.0
37	Fixed revenue term (a)	AED million	626.69
38	Co-efficeint of variable revenue term (b)	AED / TIGD metered	235.16
39	Co-efficeint of variable revenue term (c)	AED / TIG metered	0.67

	Implied Financial Indicators		2006	2007	2008	2009	Average
40	Implied annual profit	AEDm	309.23	339.73	325.14	312.85	321.74
41	Implied return on mid-point RAV	%	5.10%	5.23%	4.70%	4.28%	4.83%

Appendix B.7: ADWEC Electricity – Price Control Calculations

Line No. **(all AED amounts are in 2006 prices)**

	Inputs			2006	2007	2008	2009
1	Operating expenditure allowance	AEDm		11.08	11.16	11.24	11.32
2	Turnover	AEDm		2,997	3,269	3,303	3,541
3	Profit Margin on Turnover	%		0.021%			
4	Profit on Turnover	AEDm		0.63	0.69	0.69	0.74
9	PV of financial adjustments	AEDm	-0.310				
10	Cost of capital (real)		5.00%				
14	Negative X Factor		0.00				

	PC3 Required Revenue Calculations		2006	2007	2008	2009	PV over PC3 Period at 1 January 2006
15	Operating expenditure allowance	AEDm	11.08	11.16	11.24	11.32	40.68
17	Profit on Turnover	AEDm	0.63	0.69	0.69	0.74	2.49
18	Annual revenue requirement before fin	AEDm	11.71	11.85	11.93	12.06	43.17
19	Discounted annual revenue requiremen	AEDm	11.43	11.01	10.56	10.17	43.17
20	PV of financial adjustments	AEDm					-0.31
21	PV of revenue requirement after financ	AEDm					**42.86**

	PC3 Required Forecast and Profiling		2006	2007	2008	2009	PV Share in TOTAL	
34	Annual Revenue Fixed revenu	AEDm	**11.80**	11.80	11.80	11.80		
35	**Discounted annual revenue at 1 Jan**	AEDm	11.51	10.96	10.44	9.94	**42.86**	**0.00**

Variables for Solver Run **Target for Solver Run**

	Results		2006
36	X Factor		0.0
37	Fixed revenue term (a)	AED million	11.80

	Implied Financial Indicators		2006	2007	2008	2009	Average
40	Implied annual profit	AEDm	0.71	0.64	0.56	0.48	0.60
41	Implied profit margin on turnover	%	0.024%	0.019%	0.017%	0.014%	0.018%

Appendix B.8: ADWEC Water – Price Control Calculations

Line No.				(all AED amounts are in 2006 prices)				
	Inputs			**2006**	**2007**	**2008**	**2009**	
1	Operating expenditure allowance	AEDm		6.94	6.99	7.03	7.08	
2	Turnover	AEDm		2,688	2,861	3,084	3,147	
3	Profit Margin on Turnover	%		0.021%				
4	Profit on Turnover	AEDm		0.56	0.60	0.65	0.66	
9	PV of financial adjustments	AEDm	-0.239					
10	Cost of capital (real)		5.00%					
14	Negative X Factor		0.00					

	PC3 Required Revenue Calculations		**2006**	**2007**	**2008**	**2009**	**PV over PC3 Period at 1 January 2006**
15	Operating expenditure allowance	AEDm	6.94	6.99	7.03	7.08	25.46
17	Profit on Turnover	AEDm	0.56	0.60	0.65	0.66	2.24
18	Annual revenue requirement before fin	AEDm	7.51	7.59	7.68	7.74	27.69
19	Discounted annual revenue requiremen	AEDm	7.32	7.05	6.80	6.52	27.69
20	PV of financial adjustments	AEDm					-0.24
21	PV of revenue requirement after financ	AEDm					**27.46**

	PC3 Required Forecast and Profiling		**2006**	**2007**	**2008**	**2009**	**PV Share in TOTAL**	
34	Annual Revenue Fixed revenu	AEDm	**7.56**	7.56	7.56	7.56		
35	**Discounted annual revenue at 1 Jan**	AEDm	7.37	7.02	6.69	6.37	**27.46**	**0.00**

Variables for Solver Run **Target for Solver Run**

	Results		**2006**
36	X Factor		0.0
37	Fixed revenue term (a)	AED million	7.56

	Implied Financial Indicators		**2006**	**2007**	**2008**	**2009**	**Average**
40	Implied annual profit	AEDm	0.62	0.57	0.53	0.48	0.55
41	Implied profit margin on turnover	%	0.023%	0.020%	0.017%	0.015%	0.019%