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2009 Price Controls Review

Final Proposals

CR/E02/036

4 November 2009

Contents

Foreword

1. In November 2008, the Bureau commenced a consultation process to review the price controls that apply to AADC, ADDC, ADSSC and TRANSCO by publishing the First Consultation Paper. This was followed by our Second Consultation Paper in March 2009 and Draft Proposals in June 2009.

2. The existing price controls are due to expire on 31 December 2009. The "fourth price controls" or "PC4" are therefore required for 2010 onwards.

3. This document describes our Final Proposals for PC4 controls for the four network companies taking into account the responses to the Draft Proposals. PC4 controls shall be in the form of CPI-X revenue caps with a four-year duration (2010-2013) and accompanied by an enhanced Performance Incentive Scheme (PIS). The Bureau has decided to extend the existing controls for RASCO indefinitely and to subject ADWEC to a different control cycle, structure and consultation.

4. We are also in the process of issuing a draft licence modification to each company for its review to give effect to these Final Proposals on 1 January 2010.

5. Each company is requested to communicate in writing to the Bureau its acceptance or otherwise of the proposed licence modifications by **10 December 2009** to the following address:

   Nick Carter
   Director General
   Regulation and Supervision Bureau
   PO Box 32800, Abu Dhabi
   Fax: 02-4439-334

6. If accepted by the licensee by the above date, these proposals will come into effect on 1 January 2010. Otherwise, the existing licence will remain in force until such time as it is modified.

NICK CARTER

DIRECTOR GENERAL

Executive summary

Introduction

1. This document describes the Bureau's Final Proposals for PC4 price controls for the four network companies (AADC, ADDC, ADSSC and TRANSCO) taking into account the responses to the Draft Proposals issued by the Bureau in June 2009.

Form of controls

2. The form of PC4 controls for the network companies will remain the CPI-X revenue cap accompanied by an expanded Performance Incentive Scheme (PIS). All controls will have a four-year duration (2010-2013 inclusive). However, the PC4 controls will incorporate some new structural features compared to the existing controls:

   (a) ADSSC will have a new revenue driver; namely, annual flow at treatment plants (see **Table 1** below).

   (b) For all companies, the weights of fixed and variable terms in the price control formulae are assumed to be 80% and 20%, respectively (see **Table 1** below).

   (c) The scope of TRANSCO's price controls will be formally extended to include its unlicensed transmission activities outside the Emirate of Abu Dhabi which share the same assets with the licensed activities.

   (d) ADSSC's payments under Sewage Treatment Agreements (STAs) to new private treatment plants will be treated on a pass-through basis, subject to the economic purchasing obligation.

   (e) Electricity purchases (including any approved margin for the distribution company for RE) by AADC and ADDC from embedded generation will be treated on a pass-through basis, subject to economic purchasing obligations.

3. The general structure of the maximum allowed revenue (MAR) for each business for any year "t" of the control period shall be as follows:

$$\mathbf{MAR_t = Pass\ Through\ Costs_t + a_t + (b_t \times RD1_t) + (c_t \times RD2_t) + Q_t - K_t}$$

   where:

   (a) "a_t", "b_t" and "c_t" are the notified values for the year "t" as determined by the Bureau for 2010 in 2010 prices subject to an adjustment for actual UAE CPI

for 2009 and are indexed each year against UAE CPI less an "X" factor, where X has been set at zero;

(b) "$RD1_t$" and "$RD2_t$" are the actual values of the relevant revenue drivers in year "t"; and

(c) "Q_t" and "K_t" are the PIS Category A incentive amount and the correction factor for the year "t", respectively.

Table 1: Revenue drivers and their weights for PC4 – Final Proposals

Company	Revenue driver	Weight in MAR formula
AADC / ADDC	Fixed term	80%
(both water and electricity)	Customer numbers	15%
	Metered units distributed	5%
TRANSCO	Fixed term	80%
(both water and electricity)	Metered peak demand	10%
	Metered units transmitted	10%
ADSSC	Fixed term	80%
	Annual flow at treatment plants	20%

4. We have adopted the same revenue driver projections as suggested in the Draft Proposals:

Table 2: Revenue driver projections for PC4 – Final Proposals

			2010	2011	2012	2013
AADC	Electricity customer accounts	Customers	107,072	110,748	114,569	118,541
	Electricity metered units distributed	GWh	9,668	10,926	11,814	12,520
	Water customer accounts	Customers	58,218	58,852	59,539	60,281
	Water metered units distributed	MIG	40,858	54,642	72,391	102,193
ADDC	Electricity customer accounts	Customers	251,538	275,459	284,796	299,655
	Electricity metered units distributed	GWh	26,735	32,217	40,074	44,631
	Water customer accounts	Customers	213,717	233,998	241,887	254,465
	Water metered units distributed	MIG	95,604	101,677	107,541	111,514
TRANSCO	Electricity metered peak demand	MW	9,025	11,307	13,521	14,767
	Electricity metered units transmitted	GWh	56,040	71,026	85,563	93,696
	Water metered peak demand	MIGD	720	789	809	872
	Water metered units transmitted	MIG	246,422	269,668	277,039	297,761
ADSSC	Annual wastewater flow treated	m^3	246,323,170	267,223,070	296,051,865	314,445,675

Operating expenditure

5. For these Final Proposals, we have used the simple average of (a) opex projected for 2009 at the last price control reviews, and (b) 2008 actual opex, both converted into 2010 prices, as the base level of opex for the PC4 controls. This is in contrast to the

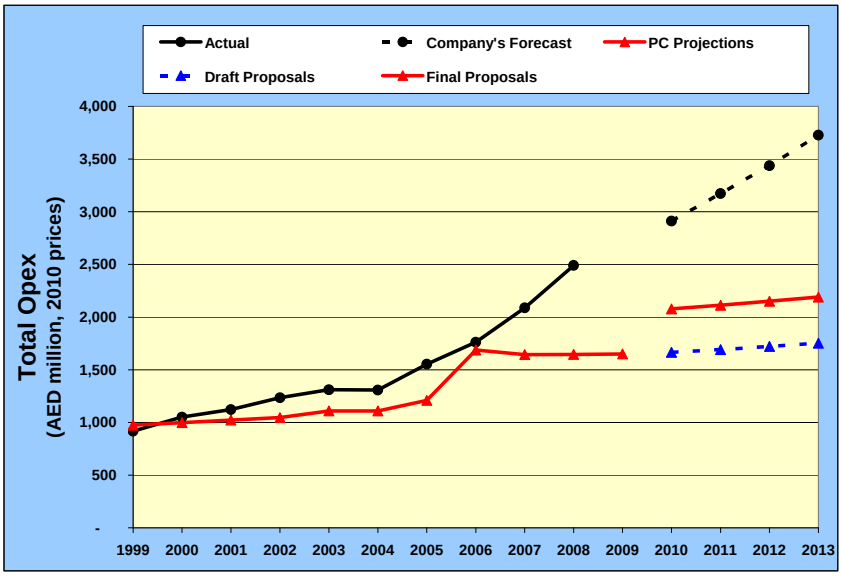
Draft Proposals, where only the opex at (a) above was used as the base level. Such base opex has then been adjusted for demand growth (0.75% opex increase for each 1% demand increase) and efficiency improvement (5% opex decrease per year in real terms). The resulting opex projections in 2010 prices are as follows:

Table 3: PC4 opex projections – Final Proposals

AED million, 2010 prices		2010	2011	2012	2013
AADC	Electricity	310.92	309.89	308.87	307.84
	Water	146.75	144.92	143.11	141.32
	Total	457.67	454.81	451.97	449.16
ADDC	Electricity	454.57	473.46	493.13	513.61
	Water	232.77	229.93	227.12	224.35
	Total	687.34	703.38	720.25	737.96
TRANSCO	Electricity	202.90	220.55	239.73	260.58
	Water	295.56	295.29	295.02	294.75
	Total	498.46	515.84	534.75	555.32
ADSSC	Total	434.37	438.85	443.38	447.95
Total		**2,077.84**	**2,112.88**	**2,150.34**	**2,190.40**

6. As **Figure 1** below shows, these Final Proposals provide significantly higher opex allowances than the previous price control assumptions as well as the Draft Proposals (on average by AED 425 million per year or by 25% in real terms). However, they are significantly less than the companies' 2008 actual opex and their forecasts, thereby providing incentives for the companies to manage their costs more efficiently (otherwise face reduction in their profits). While these allowances attempt to constrain the current rate of cost increases, the increasing trend will continue.

Figure 1: Opex projections – Final Proposal



Capital expenditure

PC2 capex (2003-2005)

7. As in the Draft Proposals, we have applied the following PC2 capex efficiency scores as assessed by the independent consultants to the actual audited PC2 capex to determine the efficient PC2 capex for AADC, ADDC and TRANSCO:

Table 4: PC2 capex efficiency – Final Proposals

Company	Electricity	Water
AADC	92.6%	91.7%
ADDC	90.1%	88.0%
TRANSCO	93.6%	86.2%

8. The resulting additional efficient PC2 capex over and above the provisional PC2 allowances incorporated into the PC2 controls are shown in **Table 5**, amounting to a total of AED 4,156 million in 2010 prices. These amounts have been included (net of depreciation) in the RAVs for 2010 onwards. The NPVs of the foregone or unduly earned financing costs (depreciation and return on capital) up to 2010 in respect of these amounts, calculated using a discount rate of 6% (the cost of capital for the PC2 period, to which the adjustment relates), amounting to a total of AED 2,517 million in 2010 prices, have been added to the revenue requirement over the PC4 period.

Table 5: Additional efficient PC2 capex – Final Proposals

AED million, 2003 prices		2003	2004	2005	Total
AADC	Electricity	173.78	152.75	263.52	590.05
	Water	47.30	65.95	103.45	216.70
	Total	221.07	218.70	366.97	806.75
ADDC	Electricity	62.54	(37.40)	(262.26)	(237.13)
	Water	258.85	90.01	(99.52)	249.34
	Total	321.38	52.61	(361.78)	12.21
TRANSCO	Electricity	(205.07)	839.89	931.27	1,566.09
	Water	427.19	745.73	(927.04)	245.88
	Total	222.12	1,585.62	4.23	1,811.97
Total	2003 prices	764.58	1,856.92	9.43	2,630.93
	2010 prices	**1,207.70**	**2,933.12**	**14.89**	**4,155.71**

PC4 capex (2010-2013)

9. As in the past, an ex-post approach, with provisional capex allowances, has been adopted for PC4 capex. **Table 6** below shows the provisional PC4 capex allowances in 2010 prices (about AED 56 billion in total). In contrast to the Draft Proposals where

such allowances were generally based on the 2007 actual capex, we have now set these annual allowances as follows (in 2010 prices):

(a) Each business (with exceptions below): the 2008 actual capex;

(b) AADC water business: the average of 2005-2008 actual capex; and

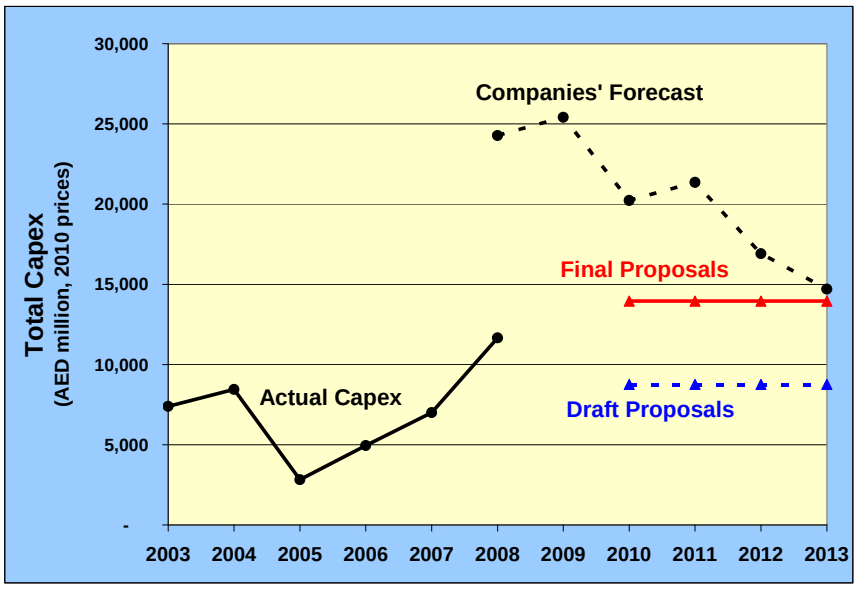
(c) ADSSC: AED 3 billion per annum.

10. The total provisional allowance of AED 56 billion is higher than that proposed in the Draft Proposals (AED 35 billion) by AED 21 billion or 59% but lower than the companies' forecast (AED 73 billion) by AED 17 billion or 24% (see **Figure 2**).

Table 6: Provisional PC4 capex allowances – Final Proposals

AED million, 2010 prices		2010	2011	2012	2013	Total
AADC	Electricity	900.00	900.00	900.00	900.00	3,600.00
	Water	130.00	130.00	130.00	130.00	520.00
	Total	1,030.00	1,030.00	1,030.00	1,030.00	4,120.00
ADDC	Electricity	1,570.00	1,570.00	1,570.00	1,570.00	6,280.00
	Water	590.00	590.00	590.00	590.00	2,360.00
	Total	2,160.00	2,160.00	2,160.00	2,160.00	8,640.00
TRANSCO	Electricity	5,230.00	5,230.00	5,230.00	5,230.00	20,920.00
	Water	2,530.00	2,530.00	2,530.00	2,530.00	10,120.00
	Total	7,760.00	7,760.00	7,760.00	7,760.00	31,040.00
ADSSC	Total	3,000.00	3,000.00	3,000.00	3,000.00	12,000.00
Total		**13,950.00**	**13,950.00**	**13,950.00**	**13,950.00**	**55,800.00**

Figure 2: Provisional PC4 capex allowances



11. These allowances have been rolled into the RAVs for the PC4 period using the straight-line depreciation method with an average asset life assumption of 50 years for ADSSC and 30 years for the other companies.

12. These allowances are not indicative of the Bureau's views of the appropriate or efficient level of capex. Once audited data on actual PC4 capex is available, it will be reviewed against the efficiency criteria established by the Bureau for the sector. That is, capex will be considered efficient if it:

    (a) was required to meet growth in customer demand or the relevant security and performance standards; and

    (b) was efficiently procured (procurement to be interpreted to include both the tendering process and project management).

13. Based on the efficiency review of actual PC4 capex and the relative-efficiency based approach already agreed for PC3 capex, an appropriate adjustment will be made at a future review for any difference between the efficient PC4 capex and the provisional PC4 capex allowed at this review, along with the foregone financing costs.

Cost of capital

14. In line with the Draft Proposals, we have adopted a real, post-tax cost of capital of 4.50% to calculate the return on capital component of the annual revenue requirement. In contrast to the Draft Proposals, we have not reduced the cost of capital for the PCROM which we no longer propose to introduce at this review.

Financial adjustments

15. In these Final Proposals, we have applied the following financial adjustments (amounting to minus AED 185 million in 2010 prices, at 1 January 2010) to the revenue requirement of the companies concerned (these adjustments are explained in Section 7):

Table 7: Financial adjustments – Final Proposals

AED million, 2010 prices	Customer asset installations	Interface metering	Planning statements	Transmission constraints	Total
AADC Water	-15.33				-15.33
ADDC Water					
TRANSCO Electricity			-8.24		-8.24
TRANSCO Water		130.29	-6.16	-285.45	-161.32
Total					**-184.88**

Price control calculations

16. Consistent with the approach taken to date, a "building-block" approach has been adopted to determine the revenue requirement (comprising opex, return on capital, depreciation and financial adjustments) and a net present value (NPV) framework to establish the level and profile of allowed revenue for each business and to determine the notified values "a", "b" and "c" for the PC4 period. All calculations are carried out in 2010 prices.

17. The notified values determined in these Final Proposals are given in **Table 8** below. These notified values are for 2010 expressed in 2010 prices. For subsequent years, these notified values will be adjusted by CPI-X indexation. These values will also be adjusted for actual CPI for 2009 through the Price Control Return (PCR) process.

Table 8: Notified values for PC4 – Final Proposals

			Values for 2010		
2010 prices		**X**	**a**	**b**	**c**
AADC	Electricity	0.00	882.30 AEDm	1,470.21 AED/customer account	0.4932 fils/kWh metered
	Water	0.00	333.53 AEDm	1,056.64 AED/customer account	0.3139 AED/TIG metered
ADDC	Electricity	0.00	1,243.56 AEDm	841.71 AED/customer account	0.2185 fils/kWh metered
	Water	0.00	628.75 AEDm	501.03 AED/customer account	0.3786 AED/TIG metered
TRANSCO	Electricity	0.00	2,358.55 AEDm	24.47 AED/kW metered	0.3885 fils/kWh metered
	Water	0.00	1,396.62 AEDm	219.58 AED/TIGD metered	0.6422 AED/TIG metered
ADSSC		0.00	1,325.94 AEDm	1.1850 AED/m^3 metered	

Notes: These notified values for 2010 are based on an assumed UAE CPI of 113.07 (base year 2007 = 100) for 2009. They will be subject to an adjustment for actual UAE CPI for 2009.

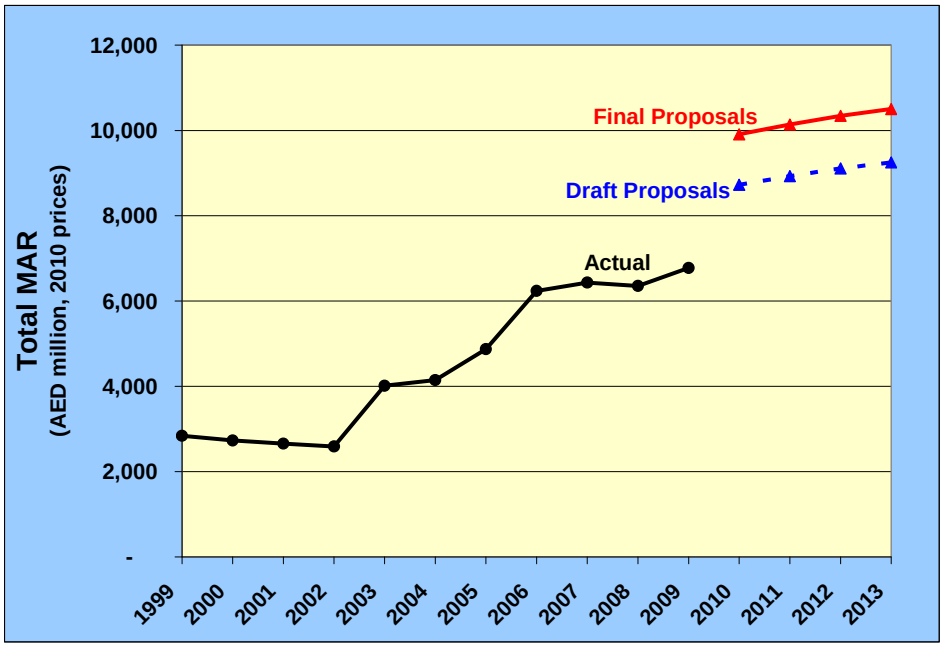
18. The annual MARs projected for each business over the PC4 period in respect of its "own" costs are summarised in **Table 9** below:

Table 9: Projected MAR over PC4 period – Final Proposals

AED million, 2010 prices		**2010**	**2011**	**2012**	**2013**
AADC	Electricity	1,087.41	1,099.02	1,109.01	1,118.34
	Water	407.87	412.86	419.16	429.30
	Total	1,495.27	1,511.88	1,528.18	1,547.63
ADDC	Electricity	1,513.69	1,545.80	1,570.82	1,593.29
	Water	772.03	784.49	790.66	798.47
	Total	2,285.72	2,330.29	2,361.49	2,391.76
TRANSCO	Electricity	2,797.13	2,911.20	3,021.86	3,083.95
	Water	1,713.07	1,743.12	1,752.11	1,779.35
	Total	4,510.20	4,654.32	4,773.97	4,863.30
ADSSC	Total	1,617.85	1,642.61	1,676.78	1,698.57
Total		**9,909.04**	**10,139.10**	**10,340.41**	**10,501.27**

19. The Final Proposals therefore represent increases (in real 2010 terms) in total annual MAR by about AED 1.2 billion or 14%, compared to the Draft Proposals and by about AED 3.9 billion or 61%, compared to the 2008 actual MAR (see **Figure 3** below).

Figure 3: Projected MAR for PC4



20. **Figures 4, 5 and 6** show the expected effect of these Final Proposals on the total price-controlled costs and unit costs for electricity, water and wastewater, respectively (in 2010 prices). While the annual MARs are expected to continue the increasing trend in real terms, the increasing demand means that the Final Proposals are expected to result in a declining trend for the unit cost.

Figure 4: Projected trend of price-controlled MAR - Electricity

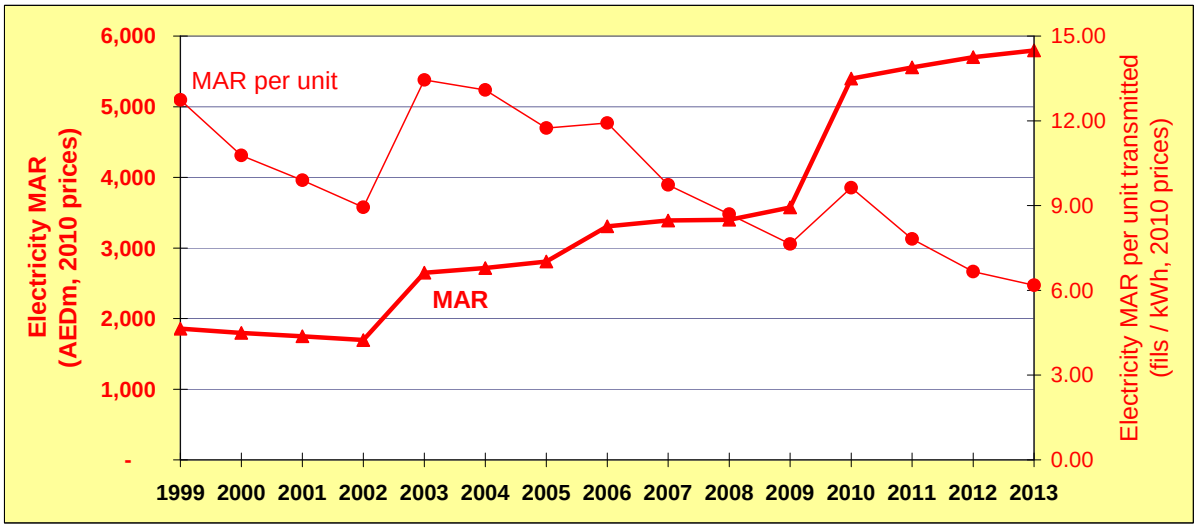


Figure 5: Projected trend of price-controlled MAR - Water

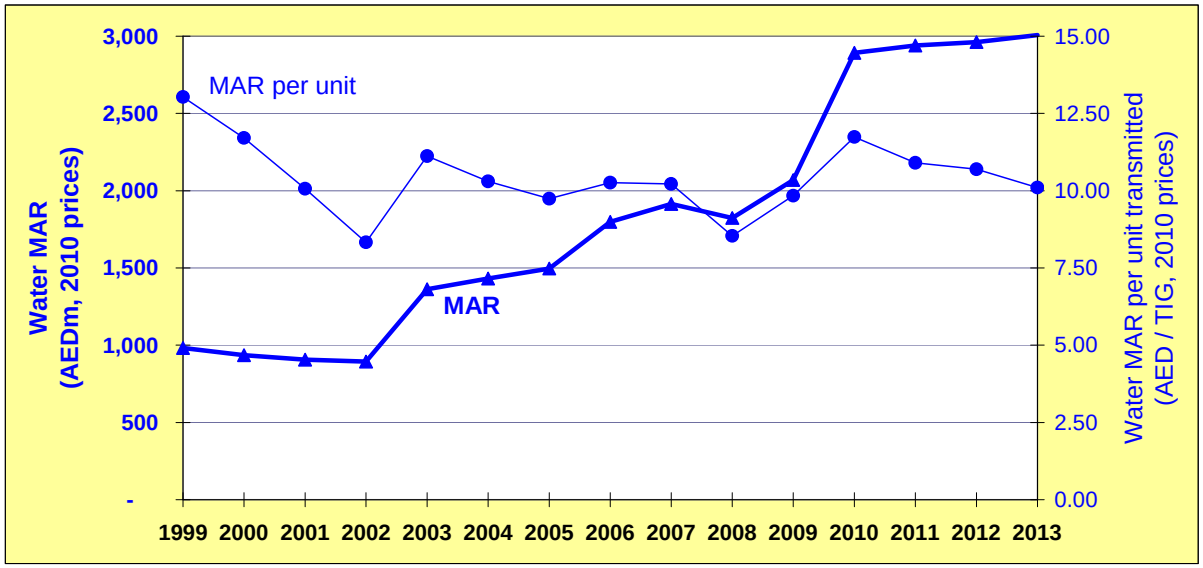
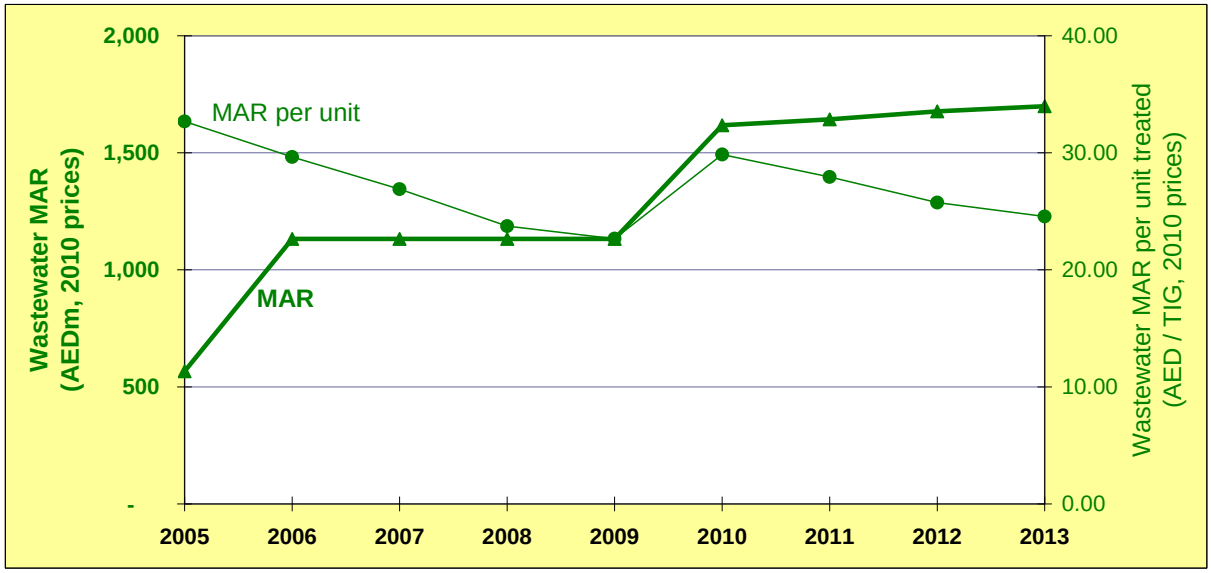


Figure 6: Projected trend of price-controlled MAR - Wastewater



Performance Incentive Scheme (PIS)

21. The PIS will continue to have Category A indicators (listed in **Table 10** below) and Category B indicators. The new indicators are shown in Table 10 below in **red bold** font. The main changes from the existing PIS are summarised below:

    (a) The three measures proposed in the Draft Proposals as Loss, Metering and Demand Incentives (LMDIs) will be introduced as PIS Category A technical indicators.

(b) The PIS bonuses of the Category A timeliness indicators for audited SBAs will be removed so that only a penalty for delayed submission should apply (bonuses will be retained for PCR and AIS).

(c) The PIS target dates for both PCRs and SBAs will be changed to 30 April, while extending the target date for AIS to 31 October.

(d) The PIS bonus and penalty for each Category A technical indicator will be subject to an individual cap of 1% of the company's "own" MAR. There will be no overall cap on Category A indicators. The overall cap for Category B indicators will be 1% of own MAR.

Table 10: Category A Indicators for PC4 – Final Proposals

Company	Electricity	Water	Wastewater
AADC / ADDC	Timeliness of Audited SBA	Timeliness of Audited SBA	
	Timeliness of Audited PCR	Timeliness of Audited PCR	
	Timeliness of AIS	Timeliness of AIS	
	Customer Minutes Lost per Customer	Water Quality	
	No. of Interruptions per Customer (until 2009)	**Customer Debt Reduction**	
	SAIFI	**DLR indicator**	
	Customer Debt Reduction	**IM indicator**	
	Distribution Loss Reduction (DLR) indicator	**DSM indicator**	
	Interface Metering (IM) indicator		
	Demand Side Management (DSM) indicator		
TRANSCO	Timeliness of Audited SBAs	Timeliness of Audited SBAs	
	Timeliness of Audited PCR	Timeliness of Audited PCR	
	Timeliness of AIS	Timeliness of AIS	
	Availability	Water Quality	
	Energy Lost	**Availability**	
ADSSC			Timeliness of Audited SBAs
			Timeliness of Audited PCR
			Timeliness of AIS

Notes: SBA = Separate Business Accounts; PCR = Price Control Return; AIS = Annual Information Submission; SAIFI = System Average Interruption Frequency Index

Changes from Draft Proposals

22. Differences between the Draft Proposals and the Final Proposals are summarised in **Table 11** below:

Table 11: Summary of main changes from Draft Proposals

Main feature	Company	Draft Proposals	Final Proposals
Price Control Re-Opening Mechanism (PCROM)	All	Proposed PCROM	No PCROM
Loss, Metering and Demand Incentives (LMDIs)	AADC, ADDC	New MAR term for LMDIs with individual caps of 2% of own MAR	Introduced LMDIs as PIS Category A indicators with individual caps of 1% of own MAR
Interface Metering Incentive (IMI)	AADC, ADDC	Penalties inversely related to improvement from prior year	Penalties proportionate to extent of non-compliance
Base level of opex	All	Opex projected for 2009 at the last price control review	Average of (a) Opex projected for 2009 at the last review and (b) 2008 actual opex
PC4 provisional capex	All	Based on 2007 actual capex (Exceptions - ADSSC: AED 2 billion per annum)	Based on 2008 actual capex (Exceptions - ADSSC: AED 3 billion per annum; AADC water: 2005-2008 actual average capex)
Cost of capital	All	Possible reduction by 0.1%-0.5% if PCROM introduced	Not applicable as PCROM not introduced
Financial adjustments for PIS Category B	TRANSCO	Penalties equal to 1% of MAR for Five-Year Planning Statements in 2006 and 2007	Penalties reduced to 0.5% of MAR
Financial adjustment for customer water installations	AADC	Removed AED 25 million provided at last review along with financing benefits	Allow AED 25 million but remove financing benefits due to delay in expenditure
Financial adjustment for water interface metering	AADC, ADDC	Penalties: AADC: - AED 30.41 million ADDC: - AED 99.88 million	No penalties
Possible financial adjustments for Guaranteed Standards and internet payment system	AADC, ADDC	Possible penalties of up to 1% of MAR	No penalties
PIS Category A indicator for water quality	AADC, ADDC, TRANSCO	Proposed a change to the existing incentive structure requiring 100% compliance for bonus	No change in the existing incentive structure
Overall cap for PIS Category B adjustments in any year	All	2% of MAR	1% of MAR

1. Introduction and background

Overall regulatory framework

1.1 The three water and electricity network companies in the Emirate of Abu Dhabi, namely, Al Ain Distribution Company (AADC), Abu Dhabi Distribution Company (ADDC) and Abu Dhabi Transmission and Despatch Company (TRANSCO), have been subject to price controls set by the Bureau since 1999:

(a) The first price controls (PC1) applied for four years (1999-2002);

(b) The second price controls (PC2) ran for three years (2003-2005); and

(c) The current (third) price controls (PC3) apply for four years (2006-2009).

1.2 The water production and electricity generation activities of the Abu Dhabi Company for Servicing Remote Areas (more commonly known as the Remote Area Services Company or RASCO) have been subject to the Bureau's price controls since 2003. These price controls were applied for two years (2004-2005) and were later extended in 2005 to apply for a further period.

1.3 The wastewater collection, treatment and disposal activities of the Abu Dhabi Sewerage Services Company (ADSSC) have been subject to a price control set by the Bureau in 2007. This price control applies from the date of establishment of ADSSC (21 June 2005) until the end of 2009.

1.4 The price controls are important because they provide incentives for cost efficiency and performance improvement and determine the cap on the annual revenue of each company. For AADC, ADDC and ADSSC, the difference between the revenue cap and the revenue from customers determines the subsidy required from the government. In 2008, the price-controlled costs in the sector accounted for about AED 5.4 billion, or 43% of total sector costs (AED 12.4 billion).

1.5 The remaining sector costs (not subject to price controls) relate to electricity generation and water desalination, which are subject to competition between bidders to build new production plants and to the economic purchasing obligation of the Abu Dhabi Water and Electricity Company (ADWEC). ADWEC is the single buyer in the sector and the seller of water and electricity to AADC and ADDC. ADWEC's procurement costs (mainly staff-related costs) are however subject to price controls.

2009 price controls review

1.6 All the current price controls are due to expire at the end of 2009 and require new controls to be in place to take effect from 1 January 2010. Our First Consultation Paper marked the start of the process in November 2008 to set the new controls (referred to as the "PC4" controls), followed by the Second Consultation Paper and Draft Proposals in March and June 2009, respectively. As discussed in these papers, the Bureau has decided to extend the existing controls for RASCO, and to subject ADWEC to a different control cycle and structure. This paper therefore focuses on the four network companies (i.e., **AADC, ADDC, ADSSC and TRANSCO**).

1.7 These papers also set out the timetable for the current review. **Table 1.1** below summarises the progress to date against that timetable:

Table 1.1: Progress to date on 2009 Price Controls Review

Target Date	Task	Actual Date
November 2008	Bureau published First Consultation Paper	18 November 2008
5 January 2009	Responses to First Consultation Paper	
	AADC	27 January 2009
	ADDC	22 January 2009
	ADSSC	13 January 2009
	ADWEA	28 December 2008
	TRANSCO	5 January 2009
March 2009	Bureau published Second Consultation Paper	19 March 2009
30 April 2009	Responses to Second Consultation Paper	
	AADC	11 May 2009
	ADDC	10 May 2009
	ADSSC	4 May 2009
	MASDAR	30 April 2009
	TRANSCO	3 May 2009
Meetings to discuss Second Consultation Paper and responses to the paper		
	AADC	21 May 2009
	ADDC	26 May 2009
	ADSSC	14 May 2009
	TRANSCO	12 May 2009
June 2009	Bureau published Draft Proposals	24 June 2009
30 June 2009	Companies submitted audited Separate Business Accounts	Upto 30 June 2009
6 August 2009	Responses to Draft Proposals	
	AADC*	23 August 2009
	ADDC	9 August 2009
	ADSSC	6 August 2009
	ADWEA	6 September 2009
	TRANSCO**	6 August 2009
September / October 2009	Bureau publishes Final Proposals	4 November 2009

Notes: Dates shown for responses are the dates of their receipt by the Bureau. * AADC subsequently supplemented its response to the Draft Proposals with information on its claim for extraordinary costs due to water supply capacity constraints (2 September 2009) and its efficiency initiatives (3 September 2009). ** TRANSCO submitted additional information on its opex and capex forecasts on 31 August and 13 September 2009.

1.8 In parallel to the issue of Draft Proposals, we requested the companies to identify the main efficiency initiatives they plan to implement over the PC4 period and to explain the significant deviations of the 2008 actual capex from their 2008 forecast capex, via our letters of 25 June and 5 July 2009, respectively. We have received responses from TRANSCO to both the requests and from AADC to the former request.

1.9 We have received detailed responses to the Draft Proposals from each concerned licensee. These responses are discussed in the relevant sections of this paper. We have given due consideration to these responses and modified our Final Proposals for PC4 in some areas as a result. We have also now received the 2008 audited Separate Business Accounts (SBAs) from the companies and have taken into account of latest financial information.

1.10 During the consultation process some companies raised issues which are not directly related to the price controls review (for example, customer tariffs and sector restructuring); we invited the companies to make separate submissions on such issues. Some companies reiterated concerns about the review process. As discussed in the Draft Proposals, we need to strike a balance between the interests of the various stakeholders and to distinguish the issues of significance for this review. The outcome of the consultation on each issue may therefore not be to the full satisfaction of every stakeholder.

1.11 Proposed licence modifications that give effect to these Final Proposals are being issued to licensees separately. Each company is required to communicate to the Bureau its acceptance or otherwise of the proposed licence modifications by 10 December 2009. If accepted by the above date, these proposals will come into effect on 1 January 2010. Otherwise, the existing licence will remain in force until such time as it is modified.

Table 1.2: Remaining timetable for 2009 Price Controls Review

Target Date	Task
18 November 2009	Bureau to issue draft licence modifications to companies
17 December 2009	Companies to respond to Final Proposals / draft licence modifications
1 January 2010	Bureau to issue licence modifications for PC4
1 January 2010	PC4 controls to take effect

2. Form of controls

Type of regulation

2.1 The Draft Proposals suggested continuation of CPI-X regulation for all network companies (using the UAE CPI), following supportive responses received to earlier consultation papers.

2.2 In its response to the Draft Proposals, AADC, while continuing to support CPI-X regulation in principle, considered that the various proposed mechanisms for efficiency drivers and penalties with additional complexity and risks did not conform to CPI-X regulation. ADDC considered that the proposed form of CPI-X regulation is similar to rate of return (ROR) regulation due to the proposed PCROM, the delinking of the opex allowance from actual opex, and what it considered to be a lack of a visible X factor. Given the substantial demand growth, ADDC argued that a CPI-X regime is not suitable for ADDC. It therefore suggested that the Bureau adopts a form of regulation more suitable to the high growth and dynamic planning environment in the UAE.

2.3 We do not consider the mechanisms and approaches proposed in the Draft Proposals are inconsistent with the CPI-X regulation. In fact, such mechanisms are based on best practices in CPI-X regimes in other countries. For example, the proposed PCROM, which ADDC considered to be "unheard of in CPI-X regimes", was directly based on the IDoK (Interim Determination of K) mechanism which has been in use in the UK water sector since 1989. We have therefore adopted CPI-X regulation for these Final Proposals (using the UAE CPI).

Form of regulation

2.4 In view of the companies' continued support, the Draft Proposals adopted the hybrid form of revenue caps (i.e., fixed revenue term plus variable revenue terms involving revenue drivers) for all four network companies.

2.5 In its response to the Draft Proposals, ADDC did not agree with the hybrid form. Further, it considered that the proposed LMDIs and PIS place significant risks on the company (with a possible penalty of up to 14% of a distribution company's "own" MAR) and recommended a 100% fixed revenue term with such risks.

2.6 While ADDC has presented an extreme scenario of potential risks, we have, as discussed later in the paper, attempted to address these concerns by making

significant changes to the LMDIs and PIS, resulting in lower risks. The risks must in any case be seen in the context of the allowed profit, which in the case of ADDC make up about a third of the MAR.

2.7 With regard to revenue drivers, we consider that a 100% fixed revenue cap is not suitable in view of the companies' cost structures, high growth expectations and demand growth uncertainties. These Final Proposals are therefore based on the hybrid form of revenue caps for all four network companies.

Choice of revenue drivers

2.8 The table below summarises the current revenue drivers and their weights in the MAR formulae as well as our proposals for PC4 in the Draft Proposals:

Table 2.1: Revenue drivers and their weights in MAR formulae

Company	Revenue Driver	Weight in current price controls	Proposed weight in Second Consultation Paper	Proposed weight in Draft / Final Proposals
AADC / ADDC (both water and electricity)	Fixed term	70%	80%	80%
	Customer numbers	15%	15%	15%
	Metered units distributed	15%	5%	5%
TRANSCO (both water and electricity)	Fixed term	70%	70%	80%
	Metered peak demand	15%	15%	10%
	Metered units transmitted	15%	15%	10%
ADSSC	Fixed term	100%	70%	80%
	Customer numbers	0%	15%	0%
	Annual flow at treatment plants	0%	15%	20%

2.9 As explained in the Draft Proposals:

(a) The choice of revenue drivers and their weights reflects a number of considerations, including the cost structure of the business (thereby reducing the licensee's exposure to increases in its costs resulting from demand growth) and providing desirable incentives. We acknowledged that no single revenue driver can satisfy all of these objectives.

(b) The weighting of 5% for the 'metered units distributed' revenue driver for AADC and ADDC was reduced from 15% to 5% from PC3 to reduce any disincentive for distribution companies to undertake Demand Side Management (DSM) measures.

(c) In line with ADSSC's comments, the Draft Proposals incorporated 'annual flow entering treatment plants' as the only revenue driver for the company

with the weights of the fixed and variable components in the ratio 80:20, consistent with those overall weights for the distribution companies.

(d) Recognising the shared responsibility of TRANSCO and the distribution companies with respect to the interface metering, we reduced the weight of the variable terms in the MAR formulae for TRANSCO from 30% in aggregate to 20%, in line with other companies.

2.10 In response to the Draft Proposals:

(a) AADC considered that the proposed revenue drivers are more focused on the network or distribution business and do not fairly reflect the supply business.

(b) ADDC argued for including estimated meter reads within the metered units distributed revenue driver based on its presentation to the Bureau in early 2008.

(c) TRANSCO, while welcoming the proposed interface metering-related financial adjustment and Category A indicators for the distribution companies, reiterated its suggestion for introducing interface metering-related Category A indicators for all network companies rather than retaining interface metering-based revenue drivers for TRANSCO. In TRANSCO's view, this would reflect a fair apportionment of financial risk and responsibility.

2.11 In the absence of any alternative proposal from AADC and given the relative size of supply business, we believe that the customer accounts revenue driver fairly reflects the main cost driver of the supply business.

2.12 ADDC's issue with regards to estimated meter reads was discussed in the earlier consultation papers. The Bureau agrees in principle with ADDC but has yet to receive the requested report from ADDC on this matter (first requested in February 2009).

2.13 With regards to TRANSCO's concern, we believe that the reduced weight of 20% for its metered revenue drivers and the introduction of interface metering-related Category A indicators for AADC and ADDC reflects a fair balance and the shared responsibility between the companies.

2.14 In view of the above, we have adopted in these Final Proposals the revenue drivers and their weights as proposed in the Draft Proposals.

2.15 The new revenue driver *"annual flow at treatment plants"* for ADSSC will be defined as *"the aggregate quantity of wastewater (expressed in cubic meters) entered into*

the wastewater treatment plants in the relevant year as metered in compliance with the Metering and Data Exchange Code (if existing and to the extent applicable in that year) at entry points to the wastewater treatment plants". In the above definition, wastewater treatment plants include both ADSSC's own plants and those owned or operated by third parties under Sewage Treatment Agreements (STAs).

Duration of controls

2.16 Earlier consultation papers discussed the need for the control duration to strike a balance between providing incentives for efficiency and reducing exposure to unanticipated outcomes. The Draft Proposals suggested that the PC4 controls should have a duration of four years (2010-2013).

2.17 Respondents continued to support the four-year duration for PC4. We have therefore adopted a four-year control duration for PC4 in this paper.

Scope and separation of controls

2.18 The scope and separation of the present price controls can be summarised as follows:

(a) There are separate price controls for the water and electricity businesses of AADC, ADDC and TRANSCO. There is no such separation of controls for the sewerage, wastewater treatment and disposal businesses of ADSSC, nor for the distribution and supply businesses of the distribution companies.

(b) The scope of the present price controls covers, via the definition of the term "Regulated Revenue" in the respective licences, all the income of these companies, excluding only any revenues from unlicensed activities for which the concerned company has received the consent of the Bureau under the respective licence (termed "Excluded Income" in the licences).

(c) However, TRANSCO's unlicensed transmission activities outside the Emirate of Abu Dhabi which share the same assets with the licensed activities (referred to as 'unlicensed shared' assets) are included within the scope of the current price controls (as per an understanding agreed between TRANSCO and the Bureau).

(d) For AADC, ADDC and ADSSC, "Regulated Revenue" is defined in the licence to include any revenue which *should be* billed to and collected from their customers according to approved tariffs, rather than the revenue actually billed to the customers (this provides an incentive for distribution companies to bill all income to which they are entitled under the approved tariffs).

2.19 In the Draft Proposals, we proposed that the existing scope and separation of price controls should be retained for all companies, with necessary changes to formally extend the scope of TRANSCO's price controls to include 'unlicensed shared' assets.

2.20 In response, ADDC suggested that the Bureau was ignoring the supply business and proposed separating the price controls between distribution and supply businesses so that the returns can be explicitly and correctly allocated to each business. ADDC did not agree to the summary of its response to the Second Consultation Paper provided in the Draft Proposals with respect to the continuation of the current scope and separation of controls.

2.21 With regards to ADDC's earlier position on the scope and separation of controls, the relevant part of ADDC's response to the Second Consultation Paper is reproduced below, which clearly confirms the accuracy of the summary of the response in the Draft Proposals:

"2.48 Separation of price controls into the supply and distribution add administrative costs to the sector which have not been adequately proven to offset the benefits……. The virtual companies of supply and distribution bear no physical relationship to how ADDC is structured or controlled……. ADDC accepts to continue the current controls, because doing the same wrong activity is easier than making a change to do the correct way…..".

2.22 The Bureau does not agree that it is necessary to establish separate controls for the distribution and supply businesses. Such separation of controls becomes necessary only when there is competition in the supply activity. In the meantime, the Separate Business Accounts (SBAs) submitted annually to the Bureau by the distribution companies ensure that costs (and profits) are appropriately allocated to each business. The question of the appropriate return for the supply business is discussed in Section 6.

2.23 We have therefore not made any change to our proposal on the scope and separation of price controls and have adopted the Draft Proposals in this paper.

Pass-through costs

2.24 For the Draft Proposals, we adopted the following pass-through costs, all subject to the economic purchasing obligations:

Table 2.2 : Pass through costs – Draft Proposals

Company	Pass-through costs for PC4
AADC / ADDC	1. Water and electricity purchases 2. Transmission charges 3. Electricity purchases from embedded generation (along with distribution company's margin approved by the Bureau)
TRANSCO	Electricity ancillary service costs
ADSSC	Sewerage Treatment Agreements (STAs) costs

Notes: All pass-through costs are subject to the relevant licensee's economic purchasing obligation.

2.25 That is, for PC4, we proposed retaining all the existing pass-through items in the price controls and allowing the following new pass-through items:

(a) ADSSC's payments to new private wastewater treatment plants under the long-term Sewage Treatment Agreements (STAs); and

(b) cost of electricity purchases by ADDC and AADC from embedded generation (renewable energy (RE) or otherwise), including any profit margin determined by the Bureau for purchases from RE projects.

2.26 We also confirmed that any RE project for which it is agreed that the distribution company makes payments on a cost-reflective basis, it will be required to show as a separate line in its PCR the subsidy or green payment required as the difference between the tariff payment and the benchmark cost of energy from conventional sources (avoided BST and TUoS costs). The Bureau will continue to work with all the relevant parties on this subject with the objective to formulate a regulatory policy for the determination of tariffs, subsidy and the distribution company's profit margin for such projects.

2.27 In their responses to the Draft Proposals, AADC and ADDC welcomed the pass-through of embedded generation costs along with profit margin for RE projects and highlighted the following issues:

(a) AADC suggested that the issues relating to tariffs, subsidy and profit margin should be addressed through a separate focused consultation.

(b) AADC also argued for the opex projections for PC4 to include the opex allowance for embedded generation.

(c) ADDC was concerned that the profit margin for embedded generation has not been defined. It considered that a robust methodology for supply business' profit (proposed by ADDC to be 2% of turnover) would help determine a return on the purchase of embedded generation.

(d) Considering purchases from embedded generators an unlicensed activity, ADDC sought clarification on (i) whether any profit from such an activity should be considered unregulated revenue and be outside the MAR, and (ii) whether separate accounts should be required for such an activity.

2.28 AADC, ADDC and TRANSCO noted an increasing trend for the Bureau's licence fees. Both AADC and ADDC suggested these fees should be treated on a pass-through basis in the same year as they are levied, and that Bureau's costs be subject to the same efficiency assumption (i.e. 5% per annum in real prices) as the network companies. AADC also suggested the same base year for these fees as for the companies' opex.

2.29 Our views on the points raised by the respondents are as follows:

(a) We acknowledge that a separate discussion is required on the profit margin for purchases from embedded generation and will be working with the distribution companies on this issue. Our proposals therefore provide for the administrative cost recovery mechanism for the distribution companies (through the profit margin) and the transparency of subsidy implications relating to RE projects (through the PCR, if applicable) pending the finalisation of the details of the approach.

(b) We can clarify to ADDC that purchasing from embedded generators is not an unlicensed activity. Rather, the Bureau's consent can be issued pursuant to paragraph 1(b) of the distribution company's licence condition 2 as part of its licensed activities. No separate accounts will be required for such activities. However, separate lines will be required in the PCR to identify the subsidy for each embedded generator. While the costs of such purchases (including the Bureau's approved profit margin) and revenue from sale of electricity so purchased fall within the calculation of MAR and regulated revenue, respectively, the actual profit from embedded generation as per the Bureau's approved margin will be outside the regulated revenue.

(c) The Director General of the Bureau has declared the Bureau's intent to maintain or reduce licence fees to the existing licence holders in real terms (ignoring the effect of inflation) for the foreseeable future measured against the 2009 licence fees. Should this prove not to be possible then a suitable mechanism will be established to allow for a fair and equitable solution.

2.30 In these Final Proposals, we have therefore adopted the Draft Proposals on the pass-through items. We are also proposing amendments to Condition 18 of ADSSC's licence concerning the economic purchasing obligations to bring it into line with the

corresponding condition in ADWEC's licence in relation to the pass-through of electricity and water purchase costs (to which the pass-through of STA costs is analogous in the case of ADSSC).

Extension of price controls for RASCO

2.31 Based on the analysis showing satisfactory operation of the current price controls for RASCO over the last five years, earlier consultation papers suggested that the present price controls for RASCO should be continued indefinitely until notification is given by the Bureau of an intention to modify the controls (or RASCO requests such controls to be reviewed).

2.32 In its response to the Draft Proposals, ADDC reiterated that it accepted this proposal although it disagreed with the Bureau's views.

2.33 For these Final Proposals, we have continued with our proposal to extend the current price controls for RASCO indefinitely.

Price Control Re-Opening Mechanism (PCROM)

2.34 Earlier consultation papers suggested introducing a Price Control Reopening Mechanism (PCROM) into the licence of each network company at this review. The objective was to allow price controls to be re-opened between reviews – in certain defined circumstances having a financial impact exceeding a threshold. This proposal was made in response to the concerns raised by the companies during the PC3 period about unanticipated inflationary increases in costs which had occurred since the last price controls review, which they regarded as being outside of their control.

2.35 The companies initially supported this proposal. In the Draft Proposals, we provided further clarification on the mechanism. However, in response to the Draft Proposals, AADC and ADDC withdrew their support:

(a) AADC withdrew its support as it did not see any usefulness or "upside value" of the proposal to the company.

(b) ADDC also changed its view and did not agree with the proposed PCROM. It considered that the mechanism is counterproductive to the CPI-X regime, increases regulatory risk and is not a practical facility given the four year control duration.

(c) TRANSCO suggested including variation of actual capex relative to the PC4 capex allowance as a pre-specified event that can trigger the PCROM.

2.36 In view of these responses, we no longer propose the introduction of a PCROM at this review. The derogation mechanism used in the past can, if necessary, be considered in accordance with laws and licences to address intermittent revenue shortfall (due to various reasons) requiring temporary revenue advancement for a licensee.

2.37 With regards to TRANSCO's suggestion, variations in capex (including for mega projects) are already accommodated by the ex-post approach to capex, which we consider a more suitable (and tried and tested) mechanism for this purpose than a PCROM.

Structure of PC4 controls

2.38 Based on the above discussion, the structure of the Maximum Allowed Revenue (MAR) for each business for any year "t" of the PC4 period shall be as follows:

$$\mathbf{MAR_t = Pass\ Through\ Costs_t + a_t + (b_t \times RD1_t) + (c_t \times RD2_t) + Q_t - K_t}$$

where:

(a) Pass through costs are those listed in **Table 2.2** above.

(b) "a_t", "b_t" and "c_t" are the notified values for the year "t" as determined by the Bureau in 2010 prices through price control calculations and are indexed against UAE Consumer Price Index (CPI) less an "X" factor (including an adjustment for actual 2009 UAE CPI as per paragraph 2.48 below);

(c) "$RD1_t$" and (where applicable) "$RD2_t$" are the actual values of the relevant revenue drivers (listed in **Table 2.1** above) in year "t"; and

(d) "Q_t" and "K_t" are the PIS Category A incentive amount and the correction factor for the year "t", respectively.

2.39 A new term "$LMDI_t$" in the MAR formulae was proposed in the Draft Proposals as the Loss, Metering and Demand Incentive for AADC and ADDC. However, as discussed in Sections 3 and 9, this term is no more proposed as the measures covered will be included instead as Category A indicators under the PIS.

Framework for price control calculations

2.40 The framework for the price control calculations in these Final Proposals remains the same as the one used to date and as described in the Draft Proposals:

(a) The revenue requirement for each year of the control period (sufficient to finance a reasonably efficient business) is calculated using the "building block approach":

Required revenue = Opex + Depreciation + Return on capital

+ Financial adjustments

+ PC2 capex financing costs foregone

(b) The projected MAR for each year of the control period is calculated using the revenue driver projections, appropriate weightings for the fixed and variable terms, and an appropriate 'X' factor (set to zero).

(c) The values of 'a', 'b' and 'c' are then calculated by setting the net present value (NPV) of the projected MARs equal to the NPV of required revenues over the period using the estimated cost of capital as the discount rate:

NPV of projected annual MARs = NPV of required revenues

(d) All calculations are carried out in real terms (i.e. excluding the effect of inflation). For the purpose of these calculations, pass-through costs and Q and K terms are excluded.

2.41 Subsequent sections of this document discuss the required inputs to the price control calculations as mentioned above.

Revenue driver projections

2.42 As discussed above, revenue driver projections are required to make projections of annual MARs over the PC4 period in order to set the price controls.

2.43 In the Draft Proposals, we adopted the revenue driver projections for each company from their respective 2008 AIS with (a) an adjustment to projections of AADC's water metered units distributed to assume 97% metering coverage by 2013 (similar to ADDC) and (b) derivation of metered peak demands for TRANSCO from metering coverage for metered units transmitted.

2.44 No respondent to the Draft Proposals opposed these revenue driver projections. We have therefore adopted in these Final Proposals the same revenue driver projections as proposed in the Draft Proposals and summarised below:

Table 2.3: Revenue driver projections for PC4 – Draft Proposals

			2010	2011	2012	2013
AADC	Electricity customer accounts	Customers	107,072	110,748	114,569	118,541
	Electricity metered units distributed	GWh	9,668	10,926	11,814	12,520
	Water customer accounts	Customers	58,218	58,852	59,539	60,281
	Water metered units distributed	MIG	40,858	54,642	72,391	102,193
ADDC	Electricity customer accounts	Customers	251,538	275,459	284,796	299,655
	Electricity metered units distributed	GWh	26,735	32,217	40,074	44,631
	Water customer accounts	Customers	213,717	233,998	241,887	254,465
	Water metered units distributed	MIG	95,604	101,677	107,541	111,514
TRANSCO	Electricity metered peak demand	MW	9,025	11,307	13,521	14,767
	Electricity metered units transmitted	GWh	56,040	71,026	85,563	93,696
	Water metered peak demand	MIGD	720	789	809	872
	Water metered units transmitted	MIG	246,422	269,668	277,039	297,761
ADSSC	Annual wastewater flow treated	m^3	246,323,170	267,223,070	296,051,865	314,445,675

UAE CPI assumptions

2.45 The Bureau has used the following UAE CPI data and assumptions as originally presented in the Draft Proposals for conversion of nominal prices into real prices or vice versa in this paper:

Table 2.4: UAE CPI Assumptions – Final Proposals

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009YTD
UAE CPI	65.34	66.74	67.66	69.55	71.58	73.82	77.54	82.34	89.99	100.00	112.30	113.07
UAE Inflation		2.15%	1.37%	2.80%	2.92%	3.12%	5.04%	6.20%	9.29%	11.13%	**12.30%**	**0.69%**

Source: UAE Ministry of Economy (Base year 2007 = 100). The UAE CPI figures for 1998-2006 with base year 2007 = 100 have been derived from earlier official CPI figures with base year 1995 = 100 or base year 2000 = 100.

Notes: 2009 CPI is an assumption based on CPI for April 2009. "2009YTD" is the actual year-to-date CPI inflation as of end of April 2009.

2.46 The latest UAE CPI data indicates the CPI of 113.05 for June 2009, that is an inflation of 0.67% during January to June 2009. However, for these Final Proposals, we have assumed the same 2009 CPI inflation (i.e. 0.69% as shown in the above table) as assumed in the Draft Proposals for ease of comparison. However, in any event, the price controls will automatically be adjusted for actual 2009 inflation as discussed below.

2.47 The companies earlier suggested (reiterated by ADDC in its response to the Draft Proposals) using the 2008 actual inflation as an estimate for the 2009 inflation. Based on official government data released to date, we do not think 2008 inflation is likely to be a very accurate indicator of 2009 inflation. However, to address the companies' concern, as suggested in the Draft Proposals, the notified values "a", "b" and "c" calculated at this review in 2010 prices (using the above CPI of 113.07 or

0.69% inflation assumption for 2009) will be adjusted for actual inflation for 2009 when known during the PC4 period. This adjustment will be done through the Price Control Return (PCR) for 2010 using appropriate formulae in the licence modifications required to incorporate PC4.

2.48 Furthermore, in relation to the opex projections for PC4 presented in Section 4, we have adjusted the PC3 opex projection for 2009 made at the time of the 2005 price controls review for the difference between the actual and assumed CPIs for 2005. (Such an adjustment is not required for ADDSC as the opex projected at its last price control review in 2007 was based on actual 2005 CPI).

2.49 In response to the Draft Proposals, ADDC reiterated its suggestion to make financial adjustments at this review to compensate it for the difference between the 5.04% inflation assumption for 2005 used at the previous review and the actual 6.20% inflation for 2005. For the reasons explained in the Draft Proposals, we have not made any such adjustment in these Final Proposals.

3. Loss, Metering and Demand Incentives

Introduction

3.1 In the Draft Proposals, we proposed introducing a new term in the electricity and water MAR formulae for distribution companies called "Loss, Metering and Demand Incentives", or LMDI, comprising three components, each with a cap of 2% of the company's "own" MAR (i.e., MAR excluding pass through costs):

(a) Distribution Loss Reduction Incentive (DLRI);

(b) Interface Metering Incentive (IMI); and

(c) Demand Side Management Incentive (DSMI).

3.2 Like PIS Category A indicators, LMDIs were structured and defined as objectively as possible. The main distinction was that each LMDI is subject to a cap of 2% of company's "own" MAR, in contrast to the 1% cap proposed for PIS Category A technical indicators.

3.3 In their responses to the Draft Proposals, AADC and ADDC suggested including the LMDI measures within the PIS to avoid unnecessary complications and to use the time-tested incentive scheme. They also argued for introducing these measures first as PIS Category B indicators. Further, ADDC believed that proposed cap of 2% of MAR for each LMDI (meaning effectively an overall cap of 6% of MAR) is too high and arbitrarily chosen without considering the trade-offs between the incentives. It also suggested that the details of these incentives should have been proposed well in advance of PC4. Respondents' specific comments on each of three LMDI measures are discussed in the relevant sections below.

3.4 With respect to respondents' comments on the overall design of the LMDI scheme, the Bureau has given due consideration to these comments and has now proposed in these Final Proposals to introduce each of the LMDI measures as a PIS Category A indicator, each with a cap of 1% of the company's "own" MAR. For each such measure, the performance in year "t" will be used to adjust the MAR in year "t+2", as for the PIS. These measures will take effect for performance in 2010 onwards (adjusting the MAR in 2012) because their inputs are already audited, in one form or another, at present. A measure can be (and has in the past been) introduced directly as a PIS Category A indicator if it meets the relevant objective criteria, as is the case with the proposed LMDI measures. We also consider that the Draft Proposals was

the appropriate document to contain specific details on such incentives which were discussed and consulted upon in the earlier consultation papers.

3.5 This Section 3 sets out our specific proposal on the design of each of these three indicators in turn, taking into consideration the responses to the Draft Proposals. Section 9 (covering the PIS) describes the calculation of incentive rates for these indicators, along with other PIS Category A indicators.

Distribution Loss Reduction Incentive (DLRI)

3.6 Earlier consultation papers on PC4 discussed the need to provide positive incentives for metering and loss reduction in view of the reduced weight given to the 'metered units distributed' revenue drivers in the price control formulae. In the Draft Proposals, we developed the specific definitions and formulae for the DLRI term. We clarified that, in response to a concern raised by ADDC (also raised by AADC in response to the Draft Proposals) regarding the distinction between various losses, the proposed indicator does not distinguish between various types of losses but provides an incentive to reduce losses in total i.e. to reduce water or electricity not delivered metered to final customers.

3.7 In response to the Draft Proposals, AADC questioned the need for introducing the proposed losses and interface metering incentives when significant progress has been made on these issues. ADDC expressed concerns that the DLRI formulation ignores purchases from RASCO and embedded generation, cross-boundary transfers and what it said was a utility industry standard of using long-term rolling average (usually four years) for losses (which data is not available according to ADDC).

3.8 In our view, both metering/quantification of losses and interface metering are far from completion. Similar progress was suggested at the last review. In any event, if such significant progress is expected to be made, the companies should be able to earn bonuses under the DLRI. We consider that the issues raised by ADDC are potential incremental refinements which can be considered at the next review if necessary.

3.9 For these Final Proposals, we have therefore proposed a new PIS Category A indicator to incentivise metering and loss reduction. In this regard, we have adopted the same formulae and definitions as proposed in the Draft Proposals (for DLRI) to calculate the relevant Q term for year "t" (subject to a cap equal to 1% of the company's "own" MAR in that year):

$$\mathbf{Q_t = Incentive\ Rate \times (DL_{t-2} - DL_{t-3}) / DL_{t-3} \times 100}$$

where:

DL_{t-2} means the actual distribution loss for the year "t-2" as verified by the TA; and

DL_{t-3} means the actual distribution loss for the year "t-3" as verified by the TA.

3.10 For the purposes of this measure, the actual distribution loss for any year "t-2" (corresponding formula for year "t-3") is calculated as follows:

$$\mathbf{DL_{t-2} = (TUE_{t-2} - MUD_{t-2}) / TUE_{t-2} \times 100}$$

where:

TUE_{t-2} means the total number of units entering the distribution system in year "t-2" set equal to the total quantity of water or electricity (as the case may be) charged by ADWEC to the relevant distribution company in that year under the BST;

MUD_{t-2} means the total number of metered units distributed (i.e., the existing revenue driver for the distribution companies, or the terms "QU_E" or "QU_W" defined in their licences) for the year "t-2".

3.11 Both the inputs i.e., TUE and MUD, to the calculation of the Q term are currently audited for ADWEC and AADC / ADDC, respectively. The above formula has been structured in a way that the Q term will automatically take a positive sign (bonus) or negative sign (penalty) if the distribution losses in a year decrease or increase, respectively, from the previous year.

3.12 The "Incentive Rate" in the above formula is expressed in AED per 1% of improvement or deterioration of distribution loss and is calculated in Section 9 (along with incentive rates for other Category A indicators) using an assumed 20% maximum performance improvement or deterioration – for the purposes of calibration only.

Interface Metering Incentive (IMI)

3.13 Recognising the shared responsibility of TRANSCO and the distribution companies to ensure MDEC-compliant interface metering, the Second Consultation Paper set out the Bureau's thinking to introduce a new Category A indicator for AADC and ADDC to incentivise interface metering (for both water and electricity) (TRANSCO is already incentivised through the revenue drivers in its price control formulae). The Draft Proposals suggested defining a new term "IMI" in the MAR formulae for the distribution companies with a cap equal to 2% of the company's own MAR. The IMI

term could either be zero or negative (penalty) but never be positive (bonus). We proposed that the target metering for each year would be 100% with a non-linear penalty mechanism whereby penalty was linked to improvement from the previous year.

3.14 In response to the Draft Proposals, AADC did not accept the proposed design for DLRI as placing an undue emphasis on the rate of change from the previous year and suggested adopting the simple ratio-based approach suggested by the Bureau in the Second Consultation Paper. ADDC also considered the design to be stringent and not fair. It agreed in principle to the measurement of interface metering but argued that changes required will take longer than 2 years to implement. It also argued that interface metering has not been its focus due to the pass-through treatment of BST and TUoS costs and reiterated its proposal to transfer the responsibility to TRANSCO. According to ADDC, its focus through its supply businesses is on the final customers and it has already been incentivised for customer metering through the revenue drivers.

3.15 In view of the above concerns regarding the design, we have revised the IMI formula to align more with the proposal in the Second Consultation Paper. We have adopted a linear mechanism whereby the penalty would be in proportion to the metering shortfall compared to 100% metering. We consider that ADDC's other objections to IMI ignore its obligations under MDEC to install, own and maintain the interface meters.

3.16 For these Final Proposals, the Q term for the new PIS Category A indicator for interface metering is proposed to calculated as follows for year "t" (with a cap equal to 1% of the company's own MAR):

$$\mathbf{Q_t = Incentive\ Amount \times (IM_{t-2} - 100\%) \times 100}$$

where:

IM_{t-2} means the actual interface metering for the year "t-2" as verified by the TA.

3.17 The actual interface metering for any year "t-2" is calculated as follows:

$$\mathbf{IM_{t-2} = MUE_{t-2} / TUE_{t-2} \times 100}$$

where:

TUE_{t-2} as defined earlier for DLRI related Category A indicator;

MUE_{t-2} means the number of units entering the distribution system in the year "t-2" measured through MDEC-compliant meters.

3.18 Both the inputs i.e., TUE and MUE, to the calculation of Q term for interface metering are currently audited for ADWEC and TRANSCO, respectively. The Q term can either be zero or negative (penalty) but will never be positive (bonus). The target metering for each year would be 100%. However, unlike the Draft Proposals, the penalty will be applied solely based on the remaining improvement (in percentage points) required to achieve 100% metering without any consideration of the improvement or deterioration from the previous year.

3.19 The "Incentive Rate" in the above formula is expressed in AED per 1 percentage point of improvement or deterioration of distribution loss and is calculated in Section 9 (along with incentive rates for other Category A indicators) using an assumed 30% maximum performance improvement or deterioration. This 30% improvement assumption (used only for the purposes of calibrating the incentive rate) compares to the 2008 actual interface metering in the range of 72% - 86% for the electricity and water businesses of AADC and ADDC.

Demand Side Management Incentive (DSMI)

3.20 In response to the Second Consultation Paper, ADDC's response, in particular, highlighted the importance of future DSM initiatives and the need for a supportive regulatory environment. We therefore proposed in the Draft Proposals a new term in the MAR formulae for the distribution companies to incentivise and finance DSM initiatives. Through this new incentive, a company would earn a bonus (or incur a penalty) if it is able to reduce (increase) residential demand per customer in a year from the 2009 level. As with the other LMDI terms, the DSMI term was subject to a cap equal to 2% of the company's "own" MAR. The proposed measure focused only on metered household or residential customers and only on units distributed (and not on peak demands) and aimed at incentivising conservation or savings (mainly in the generation or desalination costs) without affecting the industrial/economic growth in the Emirate.

3.21 The Draft Proposals also indicated that the Bureau was considering an additional scheme to incentivise specific DSM projects as an appropriate technical solution for reducing system peak demands and undertake a technical audit of their implementation. Once it has been confirmed that the scheme has been implemented and is operational, a distribution company would be entitled to a payment expressed in Dirhams per unit of peak demand (MW or MIG) saved. We envisaged that this mechanism would be developed and administered outside of the price control formulae.

3.22 In response to the Draft Proposals, both AADC and ADDC argued against the DSM incentives for various reasons. These included: DSM needs to be discussed and coordinated at a government or sector level; customer demands are outside companies' control; no incentives for peak demand or kW savings; no allowance for DSM related opex; and no supporting statutory requirements. AADC while supporting the encouragement of effective DSM argued that the topic is wide ranging and complex and warrants separate consultation and sector policy. It considered that the proposal would encourage piecemeal efforts resulting in poor allocation of sector resources.

3.23 On the additional scheme to incentivise specific DSM projects, ADDC criticised the Bureau for considering the scheme at a late stage of the consultation process and sought clarification on how a mechanism could be developed and administered outside the price control formulae when all sector elements are funded through the price control formulae.

3.24 The Draft Proposals acknowledged the limited scope of the formula-based DSM incentive (focused on metered households only) and explained the reasons for this. We appreciate these concerns and fully support formulation of a more comprehensive sector or government policy towards DSM. However, we believe that the regulatory incentives need not to wait for such a policy and that they will in fact complement and facilitate the implementation of such a policy. We also note that the Bureau and distribution companies have duties under the law and the licences to ensure economy and efficiency of the sector and promote efficient use of water and electricity by the customers.

3.25 Regarding ADDC's concerns about the additional scheme for specific DSM projects, the DSM incentives were proposed in the Draft Proposals partly to satisfy ADDC's request in its response to the First and Second Consultation Papers that regulatory aspects of DSM be addressed. Further, while this scheme has yet to be fully developed, and specific DSM projects have to be reviewed and approved outside of the price control review process, any incentive payment for such projects will be logged up for remuneration through appropriate financial adjustment at the subsequent price controls review. While the capex relating to such projects will (as with all capex) be regulated through our ex-post capex efficiency review, the incentive payment will be in addition to such capex and will be based on some proportion of the production costs saved due to the DSM projects.

3.26 For these Final Proposals, the Q term for year "t" for the new DSM-related Category A indicator is proposed to be calculated using the same formula as proposed for the DSMI term in the Draft Proposals (subject to a cap of 1% of the company's own MAR):

$$Q_t = \text{Incentive Rate} \times (MUDR_{2009} - MUDR_{t-2}) / MUDR_{2009}$$

where:

$MUDR_{t-2}$ means the total number of metered units distributed (of electricity or water in GWh or MIG) during the year "t-2" to residential customers, divided by the number of residential customer accounts (electricity or water) for that year, as verified by the TA (as part of its report for the PCR for the financial year "t-2"); and

$MUDR_{2009}$ means the total number of metered units distributed (of electricity or water in GWh or MIG) during the year 2009 to residential customers, divided by the number of residential customer accounts (electricity or water) for that year, as verified by the TA as part of its report for the PCR for the financial year 2009.

3.27 MUDR is the only input to the calculation of DSM-related Q term and is a sub-set of currently audited "metered units distributed" revenue driver for AADC and ADDC. The Q term can be positive (bonus), zero (no bonus or penalty), or negative (penalty). The "Incentive Rates" are calibrated in Section 9 using the 20% assumed maximum improvement or deterioration (same as proposed in the Draft Proposals and consistent with the calibration of other Category A indicators).

4. Opex projections

Introduction

4.1 "Operating expenditure" or "opex" (i.e. operating cost excluding depreciation) is one of the main inputs to the price control calculations, accounting for about one-quarter of the revenue requirement

4.2 Earlier consultation papers identified three main considerations when assessing opex projections: (a) the sufficiency of the allowed revenue to enable the company to finance its business; (b) ensuring the economy and efficiency of the sector; and (c) consistency in regulation. It was suggested that a 'top-down' approach (assessing the total opex of the company or business as a whole) as used at the previous price control reviews should be used at this review, as follows:

(a) determine a **base level** of opex;

(b) adjust the base level of opex to reflect increased costs for future **demand increases** (a 0.75% increase in opex for each 1% increase in demand was adopted at the last price controls review);

(c) adjust the demand-adjusted opex for **efficiency improvements** expected over the control period (a 5% decrease in opex per year in real terms was used at the last price controls review); and

(d) if necessary, make **further adjustments** to opex projections for new one-off costs (or cost savings) expected during PC4 or for anticipated changes in the real price of inputs.

4.3 We also presented analysis and discussion as follows:

(a) the actual opex of the network companies continues to increase significantly, both in real terms as well as in excess of opex allowances assumed in setting the previous price controls;

(b) the Bureau's traditional approach to setting base opex level using the most recent actual opex (2008 in this case) will continue to result in rising sector costs in real terms;

(c) the increases in opex over time mean that there is more room for efficiency in the future;

(d) the performance of one network company (i.e., TRANSCO) in the sector has shown that a reduction in opex was possible even with rising staff salaries and allowances; and

(e) the expected easing of inflation in the near future, particularly of the costs influenced by the construction sector, including staff accommodation costs, may potentially result in opex reductions (in real terms) over the PC4 period.

4.4 During the consultation process, companies argued against the above findings. They suggested using the most recent (2008) actual cost (or, in some cases, opex estimated or budgeted by companies for 2009 or the future) as the base level, and relaxing the opex efficiency assumptions for PC4. A number of new obligations, work streams, events and government policies were also suggested by the companies for higher opex allowances. ADSSC argued that it is a less mature business than other licensees and its cost base was still being established.

Draft Proposals

4.5 In the Draft Proposals (as in the earlier consultation papers), we did not agree with respondents who argued that using the most recent actual cost is the best regulatory practice. In our view, best regulatory practice is to set opex allowances according to an efficient level of cost and thus de-link the price controls from the actual cost. This provides incentives for companies to improve their efficiency. Using the latest actual opex as the base for future projections at each review provides no incentive for the companies to reduce opex in the latter years of a control period. Instead such an approach, if known to the companies to be used at each review, actually provides incentives for them to spend more opex in the latter years of a control period so as to have higher opex projections for the next control period.

4.6 In the case of ADSSC, we expressed our willingness to consider its detailed justification for higher opex allowance if submitted in response to the Draft Proposals. However, we were concerned about the recent significant increases in costs relating to its O&M contracts.

4.7 In view of the above, the Draft Proposals adopted the opex projection for 2009 (converted into 2010 prices) made at the time of the last price control reviews as the base level of opex. The 0.75% demand-opex relationship and 5% efficiency assumptions were used to calculate opex allowances for the remainder of PC4. As suggested by AADC, we however first adjusted the opex projection (which was based on an assumed inflation for 2005) for the 2005 actual inflation.

4.8 We considered this methodology necessary to provide a stronger incentive for licensees to be efficient in their opex, given the experience since 1999 of steadily rising costs in real terms. With regards to the new obligations, we noted that the mechanism described in paragraph 4.2(d) above for additional opex allowances may be used to fund new obligations for PC4, if necessary. Alternatively, if new obligations are imposed on licensees in the course of a price control period, the approved costs can be 'logged up' and remunerated at the next price controls review.

4.9 **Table 4.1** shows the base level of opex adopted in the Draft Proposals using the opex projection for 2009 from the last review, converted into 2010 prices (using the UAE CPI assumptions from **Table 2.4**) - this results in a total of AED 1,665 million in 2010 prices for the four network companies:

Table 4.1: Base level of opex for PC4 – Draft Proposals

Company	Business	Opex base level for 2010 (AED million, 2010 prices)
AADC	Electricity	225.79
	Water	103.82
	Total	329.61
ADDC	Electricity	334.28
	Water	185.14
	Total	519.42
TRANSCO	Electricity	167.18
	Water	327.23
	Total	494.41
ADSSC*	Total	321.40
Total		**1,664.84**

4.10 In the Draft Proposals, the base opex was then adjusted for the assumed effects of demand growth and efficiency improvements. The following table shows the calculation of the annual opex adjustment for each business adopted in the Draft Proposals. For this table, we calculated the demand growth as the simple average of growth rates for two demand measures for each business over the PC4 period – discussed in the Draft Proposals.

Table 4.2: Net annual opex adjustments – Draft Proposals

Company	Business	Annual demand growth rate (3)	Annual opex adjustment for demand growth (4) = 0.75 x (3)	Annual efficiency improvement (5)	Net annual opex adjustment (6) = (4) – (5)
AADC	Electricity	6.22%	4.67%	-5.00%	-0.33%
	Water	5.00%	3.75%	-5.00%	-1.25%
ADDC	Electricity	12.21%	9.15%	-5.00%	4.15%
	Water	5.04%	3.78%	-5.00%	-1.22%
TRANSCO	Electricity	18.26%	13.70%	-5.00%	8.70%
	Water	6.54%	4.91%	-5.00%	-0.09%
ADSSC		8.04%	6.03%	-5.00%	1.03%

4.11 The above adjustments were then applied to the base opex levels to determine the following annual opex allowances used in the Draft Proposals, as shown below:

Table 4.3: PC4 opex projections – Draft Proposals

AED million, 2010 prices		2010	2011	2012	2013
AADC	Electricity	225.79	225.04	224.30	223.55
	Water	103.82	102.53	101.25	99.98
	Total	329.61	327.57	325.54	323.54
ADDC	Electricity	334.28	348.17	362.64	377.70
	Water	185.14	182.88	180.65	178.44
	Total	519.42	531.05	543.28	556.14
TRANSCO	Electricity	167.18	181.72	197.52	214.70
	Water	327.23	326.93	326.63	326.33
	Total	494.41	508.65	524.15	541.03
ADSSC	Total	321.40	324.72	328.07	331.45
Total		**1,664.84**	**1,691.98**	**1,721.04**	**1,752.16**

Companies' actual and forecast opex

2008 Actual opex

4.12 After the issue of the Draft Proposals, we received audited Separate Business Accounts (SBAs) for the 2008 financial year from the companies. The following table summarises the actual opex for 2007 and 2008 for each network business:

Table 4.4: Actual opex for 2008

AED million, nominal prices		2007 actual opex	2008 actual opex	2008 Increase
AADC	Electricity	287.48	350.28	22%
	Water	132.90	167.75	26%
	Total	420.38	518.02	23%
ADDC	Electricity	405.85	508.41	25%
	Water	213.06	247.99	16%
	Total	618.92	756.40	22%
TRANSCO	Electricity	147.94	211.04	43%
	Water	176.45	233.39	32%
	Total	324.39	444.43	37%
ADSSC	Total	297.63	484.07	63%
Total		**1,661.32**	**2,202.92**	**33%**

Source: Companies' audited Separate Business Accounts (SBAs) for 2008.

Notes: Actual opex comprises (a) staff costs, (b) repair, maintenance and consumables used, (c) water tanker hire costs (where applicable), and (d) administration and other expenses.

4.13 We have observed the following significant cost increases in 2008:

(a) Total opex for the four companies increased by 33% in 2008 from 2007, against the UAE inflation of 12.3% in that year. ADSSC had the highest increase in opex (by 63%), followed by TRANSCO (37%), AADC (23%) and ADDC (22%). Note that AADC and ADDC had the highest opex increases in 2007 from 2006 (32%-42%).

(b) Staff costs remain the most significant cost, accounting for over 50% of the total opex. However, the total staff costs for the companies increased by 25%. Staff costs for TRANSCO increased at a lower pace (19%) as compared to AADC (24%), ADDC (26%) and ADSSC (36%).

(c) "Administrative and other expenses" remains the second largest cost item for all the companies, making about 30% of total opex. These costs increased by 45% on a total basis. TRANSCO showed the highest increase in these costs (85%), followed by ADSSC (69%), ADDC (32%) and AADC (25%).

4.14 Throughout the consultation process on PC4, the Bureau has been expressing concerns on the increasing costs, which are well in excess of the rate of inflation. The significant opex increases in 2008 have further highlighted these concerns. We believe there is significant scope for AADC, ADDC and ADSSC, in particular, to manage their costs more efficiently.

4.15 Note that the 2008 actual opex reported by ADWEA and TRANSCO in their responses to the Draft Proposals are different from the figures that the Bureau assessed from the companies' 2008 audited SBAs. Their figures have been prepared

on a slightly different basis to the Bureau's figures. It appears that TRANSCO's figures include certain costs (for example, relating to finance costs, changes in provisions for slow moving inventories and doubtful debts, and dedicated unlicensed activities) which are not included in the Bureau's figures. This is because such costs are not remunerated through opex allowances in the price controls. In price control calculations, such costs may be remunerated through other components (e.g. return on capital) of the revenue requirement. Further, TRANSCO stated that it derived its figures by using a different basis of cost allocation (between licensed/shared unlicensed and dedicated unlicensed activities) than that used for the audited SBAs.

Companies' opex forecasts

4.16 The following table summarises the companies' latest opex forecasts for 2009 and onwards:

Table 4.5: Companies' opex forecasts

AED million, 2010 prices		2009	2010	2011	2012	2013
AADC	Electricity		440.27	464.28	499.44	549.30
	Water		175.48	180.62	187.57	197.13
	Total	657.54*	615.75	644.89	687.00	746.43
ADDC	Electricity		544.97	554.37	563.32	569.99
	Water		281.98	283.10	284.61	289.73
	Total	985.61*	826.95	837.47	847.93	859.73
TRANSCO	Electricity		298.32	294.65	285.33	276.46
	Water		456.42	444.62	429.86	420.40
	Total	603.86*	754.74	739.27	715.19	696.86
ADSSC	Total		713.30	950.20	1,187.10	1,424.00
Total			**2,910.74**	**3,171.84**	**3,437.23**	**3,727.01**

Source: Companies' 2008 AIS; responses of ADSSC, ADWEA and TRANSCO to the Draft Proposals

Notes: Data from 2008 AIS for 2010-2013 which were in 2008 prices have been adjusted to 2010 prices using the UAE CPI assumptions set out in Table 2.4. Opex forecasts for 2010-2013 from TRANSCO's response to Draft Proposals were already in 2010 prices. Opex forecasts for 2010 and 2013 in ADSSC's response to Draft Proposals are understood to be in 2010 prices.

Notes: * 2009 Opex budget figures provided by ADWEA are understood to be in 2009 prices and have not been adjusted to 2010 prices.

4.17 These forecasts have been sourced as follows:

(a) For 2009, budget figures (which are understood to be in nominal or 2009 prices) for AADC, ADDC and TRANSCO provided in ADWEA's response to the Draft Proposals;

(b) For AADC and ADDC, 2010-2013 opex forecasts from their 2008 AIS, converted from 2008 prices to 2010 prices, using the UAE CPI inflation assumptions set out in **Table 2.4**;

(c) For TRANSCO, 2010-2013 opex forecasts (in 2010 prices) from its response to the Draft Proposals; and

(d) For ADSSC, 2010 and 2013 opex forecasts (understood to be in 2010 prices) from the description provided in its response to the Draft Proposals; opex forecasts for intermediate years have been assumed on a linear annual increase basis.

4.18 These forecasts show that:

(a) Opex for AADC, ADDC and TRANSCO in 2009 are expected by ADWEA to increase by 22%, 58% and 6%, respectively from 2008 actual opex. (Note that the 2008 actual opex reported in ADWEA's response to the Draft Proposals have been prepared on a slightly different basis to the Bureau's figures. Compared to the Bureau's figures these increases are 27%, 30% and 36%, respectively.)

(b) Companies' forecasts for 2010 total opex (AED 2,911 million) show an increase of 17% over 2008 actual opex in 2010 prices (AED 2,491 million). TRANSCO forecasts the highest opex increase of 50%, followed by 30% for ADSSC (in real 2010 prices). (Again, as discussed in paragraph 4.15 above, TRANSCO's 2008 opex data appears to have been prepared on a different basis to that used by the Bureau.)

(c) Further, companies forecast a total increase in their opex by 28% (in real terms) from 2010 to 2013. In particular, ADSSC's response to the Draft Proposals implies an increase in its opex by 100% in real terms over four years.

4.19 Such forecast increases in opex are substantial, especially on an inflation-adjusted basis and we believe are unlikely to represent an efficient level of expenditure.

Responses to Draft Proposals

4.20 Each of the respondents to the Draft Proposals considered that the Bureau's opex projections were too low.

AADC

4.21 AADC did not agree to using the projections for 2009 from the 2005 price controls review as the base level of opex, for the following reasons:

(a) It has not been shown to be representative of the actual costs of meeting the government policy objective of improving services for the growing economy;

(b) It does not take into account the need for licensees to finance and plan their businesses with a reasonable degree of assurance; and

(c) It sends the false signal that the scope of work has not changed since 2004.

4.22 AADC suggested that actual costs incurred in 2009 would be a better approach as they take into account the current known scope of works and uncontrollable costs imposed and addressed by the business. It did not believe that the use of actual opex as the base level of costs would provide an incentive to overspend during the latter years of a price control period as "the company is government owned and opex is dominated by government controlled staffing costs".

4.23 In addition, AADC made a claim for additional cost items which it had incurred in the PC3 period which it said were not reflected in the PC3 price controls:

(a) Increases in the Bureau's licence fees;

(b) Expenditure incurred to deal with the impact of water supply shortages due to the "red tide" effect on water production; and

(c) Expenditure incurred in meeting extraordinary increases in staffing costs.

4.24 AADC also repeated its claim for expenditure incurred towards rectification of customer water assets, as discussed on page 80 of the Draft Proposals.

4.25 Separately, AADC, in response to a request from the Bureau, provided details of efficiency initiatives it is planning over the PC4 period.

ADDC

4.26 ADDC also did not support the Bureau's approach to setting opex in the Draft Proposals, which it noted was 50% less than its 2009 opex budget. Some of the reasons given by ADDC are summarised as follows:

(a) Rapid growth meant that meeting demand and provide world class services was a higher priority than making efficiency improvements;

(b) Difficulties in meeting Emiratisation targets;

(c) Effects of unskilled or low-skilled workforce in the UAE;

(d) "Scope creep" and increase in regulatory burden, which it considered had also affected the Bureau's costs;

(e) Economies of scale could not be achieved until fixed assets had been installed and were operating effectively (eg, "IT system, business process documentation and policies and procedures and organizational structure");

(f) Actual opex incurred by ADDC was efficient, since it had been subject to an incentive mechanism in the past;

(g) Comparisons with TRANSCO are inappropriate;

(h) It is incorrect for the Bureau to change the previously-agreed traditional approach (to setting the base opex level using the most recent actual opex) because it does not like the outcome (i.e. rising sector cost);

(i) Increasing opex over time does not necessarily mean there is more scope for efficiency in the future; and

(j) ADDC identified a number of improvements undertaken in PC3 and planned to be undertaken in PC4 which were not reflected in historical costs.

4.27 ADDC suggested using 2008 actual opex as the base level of costs for PC4, with a zero efficiency target. It also clarified that its intention was not to claim for additional funding for items such as trade education and certification but to raise awareness of significant long-term issues for the sector.

ADSSC

4.28 ADSSC argued that its 2008 AIS figures, with a "suitable efficiency factor applied", should be used, for the following reasons:

(a) The company is still in its infancy and still establishing its true cost base;

(b) There is rapid development throughout the Emirate, which makes it difficult to maintain levels of service with an "overstretched and sweated" infrastructure;

(c) The separation of ADSSC from ADWEA will lead to additional costs;

(d) Higher flows (of sewage) are leading to increases in operating costs;

(e) Its cost forecasts are similar to the combined water service costs for the same geographic area, which it said was in line with international trends. According

to ADSSC, such trends showed that water and wastewater costs for the same geographic area were typically within 2% of each other; and

(f) The Bureau's projections (in the Draft Proposals) would lead to a deficit on opex for the company of AED 1.1 billion by 2013.

4.29 ADSSC also provided a commentary ("opex justification") outlining the main factors affecting its costs.

ADWEA

4.30 ADWEA submitted data on the opex budgets for AADC, ADDC and TRANSCO for 2009. These showed increased over the 2008 actual opex (as reported by ADWEA in its response to the Draft Proposals – see paragraph 4.18 above) of 22%, 58% and 6% respectively.

4.31 While recognising the Bureau's intention of promoting efficiency improvements, ADWEA considered that the Bureau needs to take more into consideration the business, political and financial factors within Abu Dhabi. In particular, it considered that the sudden spurt in the growth in the housing sector needs due consideration, with a relaxation of the efficiency targets so that Government infrastructure plans can be adequately completed.

4.32 ADWEA suggested that the Bureau uses the most recent audited accounts in setting the opex levels for PC4 and that it relaxes the efficiency targets for PC4.

TRANSCO

4.33 TRANSCO considered that the proposed opex funding at the start of the PC4 period was insufficient and that it would not be possible to achieve 5% year on year efficiency savings across the entire opex area. The reasons given are summarised as follows:

(a) The opex proposed by the Bureau for 2010 (in the Draft Proposals) was below TRANSCO's actual opex in 2008 (This was reported to be AED 720 million in 2010 prices in TRANSCO's response. However, this contrasts with the Bureau's figure of AED 502 million in 2010 prices based on TRANSCO's audited SBAs for 2008 – see paragraph 4.15 above and **Table 4.6** below.);

(b) A large proportion of opex line items are outside of TRANSCO's control;

(c) TRANSCO has been subject to the same inflationary pressures as the Bureau; and

(d) The difficulties in meeting Emiratisation targets.

4.34 TRANSCO also provided details of various efficiency initiatives it was planning over 2010 – 2013. TRANSCO believed that the Bureau should adopt a more realistic approach to setting the opex targets by taking 2008 as the base year and setting efficiency targets in those areas where the business has some control.

Bureau's assessment of responses

4.35 All respondents suggested that recent or current opex levels should be taken into account in determining the base level of opex for the PC4 period. The Bureau accepts that it is necessary to strike an appropriate balance between ensuring licensees are able to fund their operations and providing incentives for efficiency improvement. Taking into account licensees' responses, we have therefore increased the base level of opex (used for 2010) as compared to the Draft Proposals. In these Final Proposals, the base level of opex has been calculated as the simple average (in 2010 prices) of:

(a) Opex for 2009 projected at the 2005 Price Controls Review; and

(b) 2008 actual opex.

4.36 This approach takes into account of some (but not all) of the increases in costs which have occurred in recent years, as some of these have occurred for legitimate reasons (e.g., implementation of government policy). However, other recent increases in costs have not been adequately explained by licensees. Further, by not relying wholly on 2008 actual opex we ensure that the price control methodology does not provide the companies with an inappropriate incentive to increase their spending in the latter years of a price control period in order to increase their allowances in the subsequent control period.

4.37 None of the respondents provided any convincing evidence to contradict our findings from overseas experience that a minimum 5% efficiency target is achievable, so we have retained that assumption in our calculations (same as used at PC2 and PC3 reviews). Note that (in response to the concern expressed by TRANSCO) the evidence from overseas is based on realised reductions in overall opex (not just selected cost items which TRANSCO considers to be within a company's control).

4.38 We acknowledge that the rapid pace of growth currently being experienced in the Emirate provides challenges for the licensees but consider that this is adequately taken into account in the 0.75 cost-output relationship. In other words, if demand growth is forecast to be 10%, opex allowances increase by 7.5% (before efficiency assumption), reflecting a conservative expectation of economies of scale. In

practice, the very rapid pace of growth is likely to provide greater opportunities for economies of scale. Our assumptions will therefore accommodate many of the factors identified by licensees as likely to cause an increase in costs over the PC4 period. It is relevant to note here that this factor has been applied to licensees' own demand growth assumptions taken from their respective AIS submissions without adjustment by the Bureau.

4.39 We note ADWEA's submission suggesting increases in 2009 opex over 2008 levels, of up to 37% for one licensee. However no justification or evidence was provided to support increases of that magnitude. In any case, we note that when operating expenditure and depreciation are considered together, our assumptions in these Final Proposals are higher than ADWEA's combined figures for these two items as budgeted for 2009 (data for subsequent years not provided by ADWEA). Therefore our proposals would appear to satisfy ADWEA's concerns with respect to the financing of operating costs.

4.40 With regard to AADC's claim for remuneration of three additional cost items incurred during PC3, we note that there is no automatic mechanism in the price controls to allow them to be amended for such events. Further AADC's claim appears to be based on a presumption that it should be compensated wholly for factors outside of its control. This is not consistent with the basis on which the price controls are set, which allows licensees to earn significantly in excess of the risk-free rate on the grounds that they bear commercial risks. If the allowed rate of return is set according to a risk-free rate, the allowed cost of capital would be 3% or less (see Section 6). We therefore do not agree to AADC's claim for additional allowances for these items.

4.41 However we are willing to consider AADC's claim for expenditure relating to rectification of customers' water assets and this is discussed further in Section 7.

Final Proposals

Base level of opex

4.42 Given the above, **Table 4.6** shows the base level of opex adopted in these Final Proposals using the simple average of (a) PC3 opex projection for 2009 (from **Table 4.1**) and (b) 2008 actual opex (from **Table 4.4**), in both cases converted into 2010 prices (using the UAE CPI assumptions from **Table 2.4**).

4.43 The resulting base level of opex (AED 2,077.84 million in total) is significantly higher than that proposed in the Draft Proposals (AED 1,664.84 million) – by about AED 413 million or 25%. For AADC, ADDC and ADSSC, the base levels are now higher by about 30%-40% as compared the Draft Proposals. For TRANSCO, the increase

compared to the Draft Proposals is less noticeable, since its 2008 opex levels were closer to the level projected at the 2005 price control review.

Table 4.6: Base level of opex for PC4 – Final Proposals

AED million, 2010 prices		2009 opex projected at last review	2008 actual opex	Opex base level for 2010
AADC	Electricity	225.79	396.06	310.92
	Water	103.82	189.67	146.75
	Total	329.61	585.73	457.67
ADDC	Electricity	334.28	574.86	454.57
	Water	185.14	280.40	232.77
	Total	519.42	855.26	687.34
TRANSCO	Electricity	167.18	238.62	202.90
	Water	327.23	263.89	295.56
	Total	494.41	502.52	498.46
ADSSC*	Total	321.40	547.33	434.37
Total		**1,664.84**	**2,490.84**	**2,077.84**

4.44 This base level of opex for PC4 (AED 2,078 million in total) is however lower than the companies total opex forecast for 2010 (AED 2,911 million) – by about AED 833 million or 29%. As mentioned earlier, we do not in general regard the companies' opex forecasts as reasonable.

Adjustments for demand growth and efficiency

4.45 As per the approach described in paragraph 4.2, the base opex should be adjusted for the assumed effects of demand growth and efficiency improvements. For these Final Proposals, we have adopted the net annual opex adjustment for these factors as calculated in the Draft Proposals and reproduced in **Table 4.2**.

PC4 opex projections

4.46 These net annual opex adjustments have then been applied to the base opex levels in **Table 4.6** (first column) to determine the annual opex allowances which are listed in **Table 4.7** below and used in the price control calculations in Section 9.

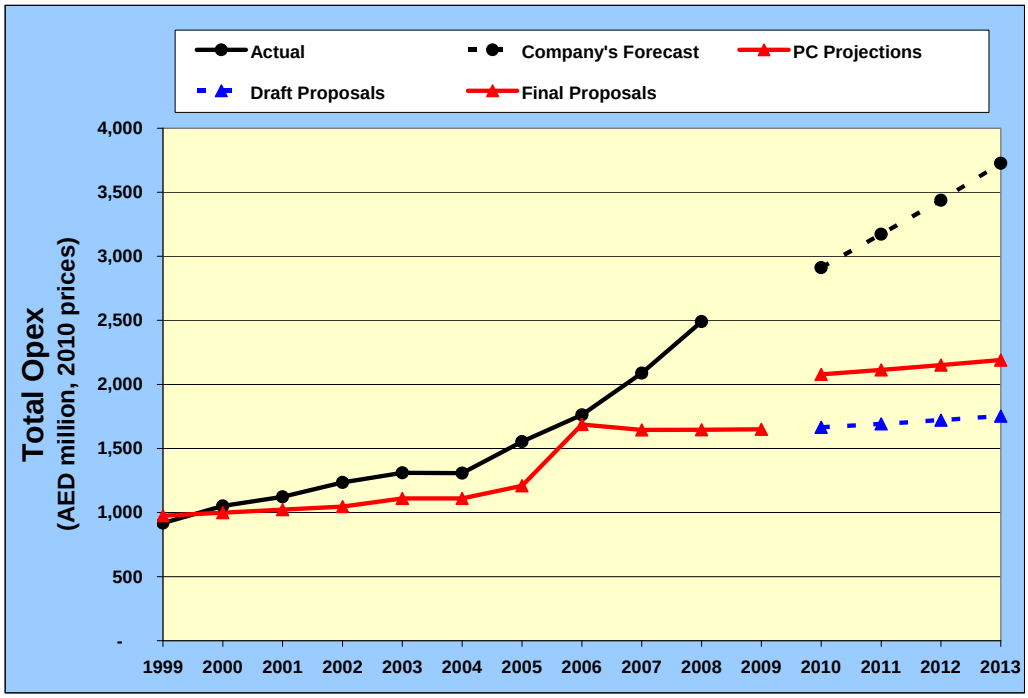
4.47 The table shows that total annual opex allowance for PC4 increases, in real terms, from AED 2,078 million in 2010 to AED 2,190 million in 2013 i.e., by about AED 113 million or 5.4%. This indicates that (other than for AADC) the effect of future demand growth (e.g., due to mega projects) outweighs the assumed efficiency improvements in real terms. The indexation of the notified values "a", "b" and "c" (and hence the MAR) against the UAE CPI during implementation of the PC4 controls will in practice mean even higher opex allowances in nominal terms (once adjusted for inflation).

Table 4.7: PC4 opex projections – Final Proposals

AED million, 2010 prices		2010	2011	2012	2013
AADC	Electricity	310.92	309.89	308.87	307.84
	Water	146.75	144.92	143.11	141.32
	Total	457.67	454.81	451.97	449.16
ADDC	Electricity	454.57	473.46	493.13	513.61
	Water	232.77	229.93	227.12	224.35
	Total	687.34	703.38	720.25	737.96
TRANSCO	Electricity	202.90	220.55	239.73	260.58
	Water	295.56	295.29	295.02	294.75
	Total	498.46	515.84	534.75	555.32
ADSSC	Total	434.37	438.85	443.38	447.95
Total		**2,077.84**	**2,112.88**	**2,150.34**	**2,190.40**

4.48 The following chart compares the PC4 opex projections adopted in these Final Proposals against the historical costs and previous price control assumptions, as well as against the projections in the Draft Proposals and companies' forecasts for the PC4 period. These Final Proposals provide significantly higher opex allowances than the previous price control assumptions as well as the Draft Proposals (on average by AED 425 million per year or by 25% in real terms) but less than the companies' 2008 actual opex and forecasts. They thereby provide incentives for the companies to manage their costs more efficiently (otherwise they face a reduction in their profits).

Table 4.8: PC4 Opex Projections compared to actual and forecast opex



5. Capex, asset valuation and depreciation

Introduction

5.1 Capital expenditure (capex) is an important input into the price control calculations through both return of capital (i.e., depreciation) and return on capital, which account for the majority (over 70%) of the revenue requirements for network businesses.

5.2 We have to date adopted the "ex-post" approach towards the treatment of capex in the price controls, with provisional allowances made ex ante and actual capex (to the extent assessed to be efficient) remunerated at a subsequent price control review. The efficiency criteria (as established in 1999 and applied consistently thereafter) are that the capex will be considered efficient if it:

(a) was required to meet growth in customer demand or relevant security and performance standards; and

(b) was efficiently procured (procurement to be interpreted both in relation to both the tendering process and project management).

5.3 The application of the above approach to capex over each price control period to date is summarised in the following table, which also highlights (in green-shaded cells) the issues to be dealt with in setting the PC4 controls at this price control review:

Table 5.1: Treatment of capex in price controls

Treatment	PC1 capex	PC2 capex	PC3 capex	PC4 capex
Provisional capex allowances	Included in PC2	Included in PC2	Included in PC3	**To be included in PC4**
Capex efficiency review	Undertaken by Bureau in 2004	Undertaken by independent consultants in 2007	To be undertaken in 2010	To be undertaken in 2014
Adjustment for efficient capex	Made in PC3	**To be made in PC4**	To be made in PC5	To be made in PC6

Notes: Discussion about the treatment of PC1 capex and PC2 capex does not apply to ADSSC which was established in 2005. For ADSSC, treatment of capex spent over its first control period 2005-2009 is the same as that described here for PC3 capex for other network companies.

Treatment of PC2 capex

PC2 provisional allowances and efficiency review

5.4 Provisional capex allowances for the PC2 period amounting to a total of AED 7,897 million in 2003 prices (or AED 12,473 million in 2010 prices) were incorporated into the PC2 controls for AADC, ADDC and TRANSCO at the 2002 price controls review. However, as described in the Draft Proposals, the three companies' actual PC2 capex exceeded the provisional allowances by about AED 3,752 million in 2003 prices (or by AED 5,927 million in 2010 prices).

5.5 As agreed at the previous price control reviews, the Bureau appointed Sinclair Knight Merz (SKM) and WS Atkins in September 2006 as the independent consultants to undertake the efficiency review of PC2 capex for the electricity and water businesses, respectively. The consultants' final efficiency assessments of PC2 capex are summarised below:

Table 5.2: Consultants' efficiency assessment of PC2 capex

Company	Electricity	Water
AADC	92.6%	91.7%
ADDC	90.1%	88.0%
TRANSCO	93.6%	86.2%

Source: SKM and ATKINS final reports on PC2 capex assessment, 2007

Draft Proposals

5.6 In the Draft Proposals, we applied the consultants' efficiency scores to companies' PC2 actual capex to determine the PC2 efficient capex. This reflected a strict application of the agreement reached at the 2002 review to apply the PC2 capex efficiencies as assessed by the independent consultants.

5.7 In applying this approach, we were mindful of our request for a more rigorous assessment and in some cases reassessment of future capex projects by licensees as part of the work on five-year planning statements. We said we would continue to monitor companies' response and progress on this work until the Final Proposals to make a final decision on whether to apply this approach or otherwise.

5.8 **Table 5.3** below shows the results of this approach in terms of additional PC2 efficient capex (over and above PC2 provisional capex), which needs to be financed at this price control review. In total, this amounts to AED 2,631 million in 2003 prices (or AED 4,156 million in 2010 prices).

Table 5.3: Additional efficient PC2 capex – Draft Proposals

AED million, 2003 prices		2003	2004	2005	Total
AADC	Electricity	173.78	152.75	263.52	590.05
	Water	47.30	65.95	103.45	216.70
	Total	221.07	218.70	366.97	806.75
ADDC	Electricity	62.54	(37.40)	(262.26)	(237.13)
	Water	258.85	90.01	(99.52)	249.34
	Total	321.38	52.61	(361.78)	12.21
TRANSCO	Electricity	(205.07)	839.89	931.27	1,566.09
	Water	427.19	745.73	(927.04)	245.88
	Total	222.12	1,585.62	4.23	1,811.97
Total	2003 prices	764.58	1,856.92	9.43	2,630.93
	2010 prices	**1,207.70**	**2,933.12**	**14.89**	**4,155.71**

Responses to Draft Proposals

5.9 AADC expressed surprise at the Bureau's proposal to apply the findings of the independent consultants (SKM and Atkins) and considered that the Draft Proposals did not adequately justify why the relative efficiency-based approach which it said was supported by AADC, ADDC and TRANSCO was not accepted.

5.10 ADDC noted the Bureau's proposal for how the efficiency scores should be applied, and said it was discussing the matter with its shareholder as it has a long term impact on the returns to their investment. ADDC considered that the Bureau needs to explain further the criteria used to assess capital efficiency, as it thought they had been applied inconsistently in the capital expenditure reviews to date. It considered the current approach was not helping the licensees to improve and requested the Bureau's views on the "PAS 55" standards for capital asset delivery which ADDC said it was trying to adopt.

5.11 ADWEA was concerned that the Bureau was applying capital efficiency targets not currently viable within the region and believed that applying a relative-efficiency methodology better suits the environment and provides the necessary incentives to the licensees. According to ADWEA, the arrangement proposed in the Draft Proposals would erode the shareholder wealth.

Assessment of responses

5.12 In our view, no respondent presented any convincing argument against applying the approach agreed at the 2002 and 2005 price control reviews for PC2 capex i.e., applying the PC2 capex efficiency as assessed by the independent consultants.

5.13 The Bureau appointed independent consultants for the PC2 capex review at the suggestion of licensees (the review of PC1 capex had been undertaken in-house by Bureau staff). At the 2005 price controls review, we provided that "any adjustment for differences between efficient and provisional PC2 capex would be incorporated at the 2009 price controls review in the same manner as used at this review for PC1 capex". (Final Proposals for PC3, page 38). The Bureau has therefore not departed from the approach for PC2 capex previously announced. We believe that applying the previously-agreed approach provides regulatory certainty and appropriate signals for the companies and their shareholder for ensuring future capex efficiency.

5.14 The Bureau supports ADDC's efforts to adopt PAS 55 standards for capital asset delivery if it assists ADDC to comply with the Bureau's capital expenditure efficiency criteria. These criteria were established by the Bureau in 1999 and have been applied consistently ever since. We consider that they provide sufficient guidance as to the criteria to be used to assess the efficiency of capital expenditure.

5.15 We have also not observed any significant efforts from AADC, ADDC and ADSSC in response to our request of 5 July 2009 for them to explain past inaccuracies in their capex forecasts. While TRANSCO has made a detailed submission to the Bureau in this regard, its effectiveness is yet to be seen (discussed below). None of the respondents responded to our request to describe how they intend to benefit from the more favourable procurement environment resulting from the recent slowdown in the UAE and global economy.

Final Proposals

5.16 We have therefore not changed our view from the Draft Proposals on PC2 capex efficiency. This results in additional "efficient" capex as shown in **Table 5.3**, the same as the Draft Proposals. That is, a total additional capex of AED 4,156 million in 2010 prices is being included (net of depreciation) in the future RAVs for AADC, ADDC and TRANSCO in relation to the PC2 period. Further, as shown later in **Table 5.14**, a total NPV of about AED 2,517 million (in 2010 prices) is also being added to the PC4 revenue requirement for foregone financing costs up to 2010 for all businesses in relation to this additional PC2 efficient capex.

Treatment of PC4 capex

Draft Proposals

5.17 Given the continuing uncertainty associated with the sector capex forecasts, the satisfactory working of the ex-post approach over the years, and the companies' support for the approach, the Draft Proposals suggested continuing with its ex-post approach for PC4 capex along with provisional allowances at this review.

5.18 The Draft Proposals also summarised our review of the PC4 capex forecasts contained in the companies' latest (2008) AIS amounting to about AED 65 billion in total over the PC4 period. Considering that this would be around three times the total actual capex spent in the past five years (2003-2007), there was a strong likelihood that these forecasts might be over-stated.

5.19 We therefore used the 2007 actual capex (the most recent available at the time), converted into 2010 prices, to make provisional annual allowances for PC4 capex for each company. However, we set these allowances for ADSSC at AED 2 billion per year - significantly higher than its actual annual capex to date but still lower than the company's forecast for PC4. This was because we were mindful of ADSSC being a less mature company in the sector than the other companies (which have been operating for ten years) and facing a backlog of various projects.

5.20 The resulting projections are reproduced in **Table 5.4** below:

Table 5.4: PC4 provisional capex allowances – Draft Proposals

AED million, 2010 prices		2010	2011	2012	2013	Total
AADC	Electricity	510.00	510.00	510.00	510.00	2,040.00
	Water	110.00	110.00	110.00	110.00	440.00
	Total	620.00	620.00	620.00	620.00	2,480.00
ADDC	Electricity	1,250.00	1,250.00	1,250.00	1,250.00	5,000.00
	Water	350.00	350.00	350.00	350.00	1,400.00
	Total	1,600.00	1,600.00	1,600.00	1,600.00	6,400.00
TRANSCO	Electricity	3,540.00	3,540.00	3,540.00	3,540.00	14,160.00
	Water	1,000.00	1,000.00	1,000.00	1,000.00	4,000.00
	Total	4,540.00	4,540.00	4,540.00	4,540.00	18,160.00
ADSSC	Total	2,000.00	2,000.00	2,000.00	2,000.00	8,000.00
Total		**8,760.00**	**8,760.00**	**8,760.00**	**8,760.00**	**35,040.00**

5.21 The table shows a total PC4 provisional capex allowance of about AED 35 billion (2010 prices) for the four network companies, which is about half of the licensees' forecasts for PC4 capex.

5.22 The Draft Proposals stated that should the 2008 audited actual capex be available by the time of publication of the Final Proposals, this will be used (rather than 2007 audited actual capex) as the basis for the PC4 provisional capex allowances.

5.23 In relation to the "mega projects" capex, the Draft Proposals expressed our willingness to include such capex in the provisional PC4 capex allowances if such capex can be forecast with reasonable accuracy and supporting explanation or justification. Further, we explained that the scope of efficiency assessment would be more limited for such projects than that for other capex undertaken by the licensees, with the emphasis being on the role and performance of the network companies in ensuring the reasonableness and efficiency of project designs, specifications and procurement processes used by the developers.

Responses to Draft Proposals

5.24 In response to the Draft Proposals, ADDC welcomed the Bureau's willingness to include mega projects in the provisional allowances and stated that it would be submitting detailed forecasts on mega projects for consideration. The company reiterated its concern with the compensation for capex and financing costs at a future date and the associated risks. It also highlighted the uncertainties faced by its capex planning, resulting in the company undertaking a number of projects that are either not planned or are significantly changed in scope.

5.25 ADSSC considered the PC4 provisional capex allowances in the Draft Proposals (a total of AED 8 billion for ADSSC) to be significantly less than its planned expenditure of AED 20 billion over the PC4 period and not in line with its strategy and KPIs to be monitored by the government. According to the company, while the ex-post approach will eventually reconcile any differences between actual and provisional capex, it was concerned about the potential impact on the MAR and perception that it is underperforming until reconciliation at a subsequent price control review. It also sought further clarity on the treatment of mega projects and resulting impacts on the RAV.

5.26 ADWEA also considered the total provisional allowance of AED 27 billion for AADC, ADDC and TRANSCO in the Draft Proposals to be insufficient in the light of committed projects worth AED 47 billion. While highlighting the lag of up to 8 years from the time a capex is spent to the time of compensation, ADWEA suggested the Bureau reconsider the provisional allowances.

5.27 TRANSCO made detailed submissions on its PC4 capex forecasts and the reasons for its forecast variations and errors. It was concerned with the significant difference between the PC4 provisional allowance of AED 18 billion in the Draft Proposals and

its forecast of about AED 32 billion over the PC4 period and with the associated impact on the ability to obtain financing for such capex. The company suggested including a variation in actual capex from provisional capex (having an impact of 10% of MAR or more) as a specified event that can trigger the proposed PCROM.

5.28 We have given due considerations to these responses and have now adopted significantly higher provisional allowances for PC4 than the Draft Proposals. However, as discussed below, we remain concerned with the quality of capex forecasts in the sector and are not able to fully rely on them.

Companies' actual and forecast capex

2008 Actual and forecast capex

5.29 After the issue of the Draft Proposals, we received audited Separate Business Accounts (SBAs) for the 2008 financial year from the network companies. The following table compares the 2008 audited actual capex for each network business against the corresponding 2008 capex forecasts provided by the companies in their 2008 Annual Information Submissions (AIS) in September 2008:

Table 5.5: Companies' actual and forecast capex for 2008

AED million, nominal prices		2008 actual capex	2008 forecast capex	Forecast deviation
AADC	Electricity	795.42	654.74	-18%
	Water	-3.36	159.03	-4833%
	Total	792.06	813.77	3%
ADDC	Electricity	1,392.57	2,484.02	78%
	Water	525.95	1,580.68	201%
	Total	1,918.52	4,064.70	112%
TRANSCO	Electricity	4,622.87	10,848.98	135%
	Water	2,236.81	3,742.27	67%
	Total	6,859.68	14,591.24	113%
ADSSC*	Total	738.67	2,002.03	171%
Total		**10,308.93**	**21,471.74**	**108%**

Source: Companies' 2008 audited Separate Business Accounts (SBAs) and 2008 Annual Information Submissions (AIS).

Notes: As described in the Second Consultation Paper and Draft Proposals, capex is derived from the cash flow statements in the audited SBAs as follows:

(a) Purchase of property, plant and equipment;
(b) Add: Advances to contractors;
(c) Subtract: Proceeds from disposal of property, plant and equipment;
(d) Subtract: Net book value of property, plant and equipment transferred to a third party;
(e) Subtract: Material returns from property, plant and equipment;
(f) Subtract: Transfer of property, plant and equipment to inventory; and
(g) Add / Subtract: Inter-group transfer of property, plant and equipment from / to another party, respectively.

5.30 The four network companies spent an aggregate capex of AED 10.3 billion in 2008 against AED 5.6 billion in 2007 – an increase by about 85%. TRANSCO remained the company with the largest capex spent of about AED 6.9 billion in 2008, followed by ADDC (AED 1.9 billion), AADC (AED 0.79 billion) and ADSSC (AED 0.74 billion).

5.31 The comparison against the companies' forecasts shows that:

(a) In aggregate, actual capex for 2008 was AED 10.3 billion, compared to the AIS forecast of AED 21.5 billion a deviation of over 100%; and

(b) At the company level, the forecasting deviations were in excess of 100% for each of ADDC, ADSSC and TRANSCO.

5.32 These differences are beyond any conventional margin of error, especially given that the 2008 AIS forecasts were submitted near the end of the third quarter of the year in question. We therefore sought explanation from the companies (via our letters of 5 July 2009) as to the reasons for these forecasting deviations. We however only received a response from TRANSCO. In its detailed submissions, TRANSCO identified a number of factors for such deviations including contractors' delay in progress, payment delays and cancellation, deferral and retendering of projects.

PC4 capex forecasts

5.33 The Second Consultation Paper summarised the PC4 capex forecasts (amounting to a total of AED 65 billion in 2008 prices) presented in the companies' 2008 AIS. The relevant table is reproduced below from the paper in 2010 prices showing a total capex of AED 74 billion in 2010 prices:

Table 5.6: PC4 capex forecasts as per companies' 2008 AIS

AED million, 2010 prices		2010	2011	2012	2013	Total
AADC	Electricity	1,200.11	1,212.31	1,186.77	1,190.61	4,789.81
	Water	224.05	158.73	146.99	156.04	685.80
	Total	1,424.17	1,371.04	1,333.76	1,346.65	**5,475.61**
ADDC	Electricity	1,692.41	1,696.73	1,696.29	1,696.29	6,781.71
	Water	771.67	770.89	769.60	769.60	3,081.75
	Total	2,464.08	2,467.62	2,465.88	2,465.88	**9,863.46**
TRANSCO	Electricity	9,748.81	6,167.72	3,374.01	864.37	20,154.90
	Water	3,341.77	2,467.59	3,615.13	3,137.14	12,561.63
	Total	13,090.58	8,635.31	6,989.13	4,001.51	**32,716.53**
ADSSC	Total	6,764.12	6,745.59	5,917.67	6,362.68	**25,790.05**
Total		**23,742.94**	**19,219.55**	**16,706.44**	**14,176.71**	**73,845.65**

Source: 2008 AIS submissions of AADC, ADDC, ADSSC and TRANSCO

5.34 As mentioned earlier, we did not consider these forecasts realistic. More recent capex forecasts received in response to the Draft Proposals show significant changes / differences. As shown in the following table, the sum of approved projects for the three network companies contained in ADWEA's response to the Draft Proposals appears to be significantly different to the companies' forecasts:

Table 5.7: ADWEA's PC4 capex forecasts

AED million, 2010 prices	Companies' forecasts		ADWEA's budget	Difference
AADC	2008 AIS	5,476	1,911	-65%
ADDC	2008 AIS	9,863	26,247	166%
TRANSCO	2008 AIS	32,717	18,855	-42%
TRANSCO	6 August 2009	32,065	18,855	-41%
TRANSCO	23 / 31 August 2009	32,917	18,855	-43%
TRANSCO	13 September 2009	34,095	18,855	-45%

Source: ADWEA's and TRANSCO's responses to Draft Proposals; companies' 2008 AIS

5.35 While TRANSCO's detailed submissions in response to the Draft Proposals indicated its continuing efforts to improve capex forecasting methodologies, we were concerned about the significant changes in its capex forecasts within a few weeks, as shown in the following table:

Table 5.8 : TRANSCO's latest PC4 capex forecasts

AED million, 2010 prices		2010	2011	2012	2013	Total
TRANSCO	2008 AIS	13,091	8,635	6,989	4,002	32,717
TRANSCO	6 August 2009	9,575	10,770	7,192	4,528	32,065
	Difference from 2008 AIS	-27%	25%	3%	13%	-2%
TRANSCO	23 / 31 August 2009	9,844	9,987	8,626	4,460	32,917
	Difference from 6 August 2009	3%	-7%	20%	-2%	3%
TRANSCO	13 September 2009					34,095
	Difference from 23/31 August 2009					4%

Final Proposals

5.36 In these Final Proposals, we have used the 2008 actual capex (converted into 2010 prices and appropriately rounded off) to make provisional allowances for PC4 capex. However, in the case of AADC water business, where the 2008 actual capex was a negative figure (e.g., due to advances to contractors), we have used the average of actual capex over the last four years (2005-2008) to set the PC4 provisional allowance. This is consistent with the methodology used at the 2005 price control review and results in a capex allowance amounting to about 76% of the company's forecast.

5.37 For ADSSC, we have increased its PC4 provisional allowance from AED 2 billion per year in the Draft Proposals to AED 3 billion per year in these Final Proposals. The resulting provisional allowances are presented in **Table 5.9** below:

Table 5.9: PC4 provisional capex allowances – Final Proposals

AED million, 2010 prices		2010	2011	2012	2013	Total
AADC	Electricity	900.00	900.00	900.00	900.00	3,600.00
	Water	130.00	130.00	130.00	130.00	520.00
	Total	1,030.00	1,030.00	1,030.00	1,030.00	4,120.00
ADDC	Electricity	1,570.00	1,570.00	1,570.00	1,570.00	6,280.00
	Water	590.00	590.00	590.00	590.00	2,360.00
	Total	2,160.00	2,160.00	2,160.00	2,160.00	8,640.00
TRANSCO	Electricity	5,230.00	5,230.00	5,230.00	5,230.00	20,920.00
	Water	2,530.00	2,530.00	2,530.00	2,530.00	10,120.00
	Total	7,760.00	7,760.00	7,760.00	7,760.00	31,040.00
ADSSC	Total	3,000.00	3,000.00	3,000.00	3,000.00	12,000.00
Total		13,950.00	13,950.00	13,950.00	13,950.00	55,800.00

5.38 These provisional allowances aggregate to AED 55.8 billion in 2010 prices over the PC4 period, which is higher than the provisional allowances totalling AED 35 billion (2010 prices) proposed in the Draft Proposals by AED 20.8 billion or 59%. On a company level, these provisional allowances are compared against the Draft Proposals as follows (totals over PC4 period):

(a) For AADC, higher by AED 1,640 million or 66%;

(b) For ADDC, higher by AED 2,240 million or 35%;

(c) For ADSSC, higher by AED 4,000 million or 50%; and

(d) For TRANSCO, higher by AED 12,880 million or 71%.

5.39 However, these provisional allowances are lower than the companies' forecasts (contained in 2008 AIS submissions or response to the Draft Proposals):

(a) For AADC, lower than the forecast by AED 1,356 million or 25%;

(b) For ADDC, lower than the forecast by AED 1,223 million or 12%;

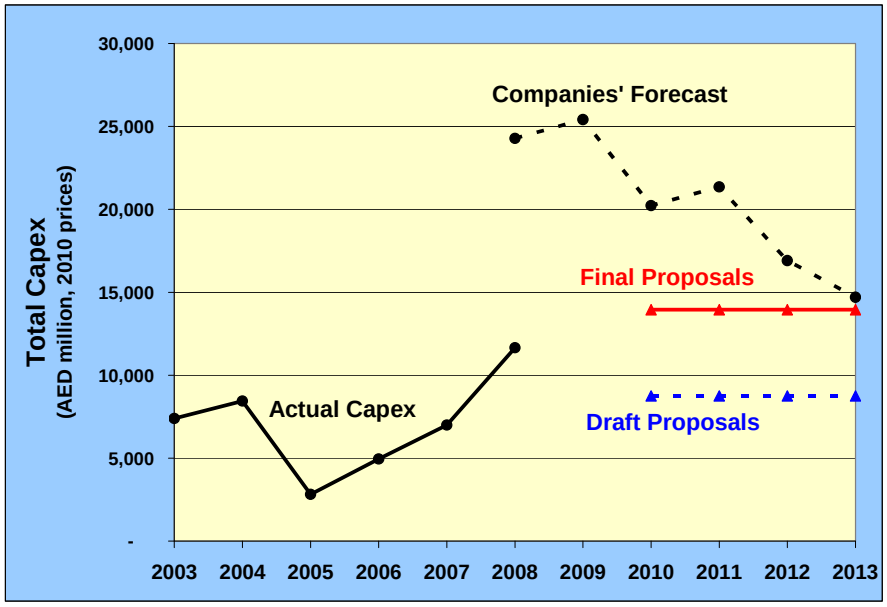
(c) For ADSSC, lower than the forecast by AED 13,790 million or 53%;

(d) For TRANSCO, lower than the forecast by AED 1,025 million or 3%; and

(e) On a total basis, lower than the forecast by AED 17,394 million or 24%.

5.40 The magnitude of these provisional allowances therefore falls between what we proposed in the Draft Proposals and what the companies requested, as shown in the following chart.

Figure 5.1: PC4 Capex in Final Proposals against Draft Proposals and Forecasts



5.41 It is important to note that the provisional capex used in setting the price control is solely to facilitate the financing of capex and the smoothing of the price control revenue from one period to another. It is not intended to be indicative of the Bureau's views of the appropriate or efficient level of capex. Once the audited accounts for all the years of the PC4 period are available, the actual capex spent over the period will be assessed by independent consultants against the Bureau's efficiency criteria. For PC4 capex, the relative-efficiency score approach will be used, as previously also agreed for PC3 capex for the water and electricity network companies. (See PC3 Final Proposals, November 2005, pages 44-46.)

5.42 Finally, we have compared our aggregate provisional allowances for AADC, ADDC and TRANSCO (of AED 44 billion) to ADWEA's total budget for approved projects for the same three companies (of AED 47 billion) and are satisfied that our proposals address ADWEA's concerns about the financiability of the overall future capex programme.

Depreciation

5.43 The Draft Proposals suggested continuing using the straight-line depreciation method both for initial RAVs and new capex and the same average asset life assumption (as set out in **Table 5.10** below) as used at the previous price control reviews:

Table 5.10: Asset life assumptions at previous price control reviews

Business	Initial RAV				Life of New Capex
	RAV Year	RAV	Depreciation	Implied Life	
		AEDm	AEDm	years	years
AADC (E)	1999	1,516.140	78.780	19.25	30
AADC (W)	1999	129.320	3.850	33.59	30
ADDC (E)	1999	2,939.200	130.950	22.45	30
ADDC (W)	1999	845.560	57.130	14.80	30
TRANSCO (E)	1999	2,907.100	115.100	25.26	30
TRANSCO (W)	1999	2,053.187	113.645	18.07	30
ADSSC	2005	4,430.479	324.923	13.64	50

Source: Bureau
Notes: "E "stands for "Electricity" business and "W" stands for Water" business; All AED figures are expressed in price terms of the RAV Year

5.44 In response to the Draft Proposals, ADSSC reiterated its concerns regarding the asset life assumption and argued for a shorter life than 50 years. However, it failed to provide any evidence or analysis supporting a shorter life assumption.

5.45 As discussed in the Draft Proposals, the data for asset lives of different asset classes presented by ADSSC at the 2007 price control review did not contradict the weighted average asset life assumption of 50 years for future assets. ADSSC accepted this assumption at that review. Further, a significant element of ADSSC's future capex programme relates to the construction of a major sewerage 'tunnel' on the Island of Abu Dhabi which is expected to have an asset life in excess of 100 years. We therefore remain satisfied with the average life assumption of 50 years for ADSSC's future assets and have continued with the assumptions from **Table 5.10** in these Final Proposals.

5.46 As explained in the Draft Proposals, we have developed a separate model (referred to as the "***PC4 Depreciation Model***") to calculate, for each business separately, the depreciation on all allowed investments to date. This is done by separately calculating and adding depreciation on (a) the initial RAV, (b) each annual efficient capex during the PC1 and PC2 periods; (c) each annual provisional capex during the PC3 period; and (d) the foregone financing costs in relation to PC1 efficient capex agreed to be added to the RAV. (For PC2 efficient capex, the foregone financing costs have not been added to the RAV but are instead included in the revenue requirement for the PC4 period). As any initial RAV or annual capex becomes fully depreciated, its depreciation for future years is set to zero. The model is available to the network companies upon request and will be updated at each price control review as appropriate.

5.47 **Table 5.11** below shows the total depreciation for each business calculated by this model for each year of the PC4 period in 2010 prices, in respect of items (a)-(d) above:

Table 5.11: Depreciation on initial RAV and on capex to date (excluding PC4 capex)

AED million, 2010 prices		2010	2011	2012	2013
AADC	Electricity	307.04	307.04	307.04	307.04
	Water	102.58	102.58	102.58	102.58
ADDC	Electricity	505.12	505.12	505.12	505.12
	Water	240.82	240.82	240.82	221.11
TRANSCO	Electricity	846.23	846.23	846.23	846.23
	Water	567.11	567.11	567.11	567.11
ADSSC	Total	544.41	544.41	544.41	544.41
Total		**3,113.31**	**3,113.31**	**3,113.31**	**3,093.60**

5.48 The above table excludes the depreciation in respect of the provisional PC4 capex, which is calculated in the main price control financial model discussed in Section 8 and is shown in **Table 5.12** below:

Table 5.12: Depreciation on PC4 provisional capex – Final Proposals

AED million, 2010 prices		2010	2011	2012	2013
AADC	Electricity	15.00	45.00	75.00	105.00
	Water	2.17	6.50	10.83	15.17
ADDC	Electricity	26.17	78.50	130.83	183.17
	Water	9.83	29.50	49.17	68.83
TRANSCO	Electricity	87.17	261.50	435.83	610.17
	Water	42.17	126.50	210.83	295.17
ADSSC	Total	30.00	90.00	150.00	210.00
Total		**212.50**	**637.50**	**1,062.50**	**1,487.50**

5.49 **Table 5.13** below presents the total annual depreciation for each business which is the sum of corresponding amounts shown in **Tables 5.11** and **5.12** above.

Table 5.13: Total depreciation for PC4 calculations – Final Proposals

AED million, 2010 prices		2010	2011	2012	2013
AADC	Electricity	322.04	352.04	382.04	412.04
	Water	104.75	109.08	113.42	117.75
ADDC	Electricity	531.29	583.62	635.95	688.29
	Water	250.66	270.32	289.99	289.95
TRANSCO	Electricity	933.40	1,107.73	1,282.06	1,456.40
	Water	609.27	693.61	777.94	862.27
ADSSC	Total	574.41	634.41	694.41	754.41
Total		**3,325.81**	**3,750.81**	**4,175.81**	**4,581.10**

5.50 The aggregate annual depreciation allowance for the four companies in these Final Proposal on average (AED 3,958 million per year) is higher than that in the Draft

Proposals (AED 3,639 million per year) by AED 319 million per year, or 9%, due to the increase in provisional capex allowances for PC4.

Updating RAVs

5.51 The opening 2010 RAVs projected at the last price control reviews need to be updated for the following items (as well as adjustment to 2010 prices):

(a) additional efficient PC2 capex over and above the provisional PC2 capex allowances in the PC2 controls, in the case of AADC, ADDC and TRANSCO; and

(b) provisional PC4 capex allowances being made at this review for all the four companies.

Updating RAVs for PC2 capex

5.52 As agreed at the previous price control reviews, the additional efficient PC2 capex over and above the provisional PC2 capex allowances (i.e., the amounts in **Table 5.3** above) needs to be rolled into the RAVs. However, as agreed at this review, the foregone financing costs (both depreciation and return on capital) relating to the period between when the PC2 capex was undertaken and when it will be financed will be remunerated within the revenue requirement over the PC4 period (rather than added to the RAVs as was done in the case of PC1 capex). **Annex A** to this paper shows how this has been done for each business of AADC, ADDC and TRANSCO separately in **Annexes A.1 through A.6**. The format of tables and calculations in each of these Annexes is standardised (see Annex A to the Draft Proposals for a description of the calculations on a line-by-line basis).

5.53 The results of this updating are summarised below (same as in the Draft Proposals):

Table 5.14: Updated RAVs and foregone financing costs for PC2 capex

AED million		NPV of PC2 capex foregone financing costs (2010 prices)	Opening 2010 RAVs from last review (2006 prices)	Opening 2010 RAVs updated for efficient PC2 capex (2010 prices)
AADC	Electricity	518.18	3,300.51	5,298.10
	Water	186.03	1,628.53	2,518.78
ADDC	Electricity	(155.58)	7,037.90	9,341.40
	Water	291.29	2,611.91	3,889.43
TRANSCO	Electricity	1,209.61	12,118.09	18,720.51
	Water	467.66	7,494.15	10,536.78
Total		**2,517.19**	**34,191.09**	**50,305.00**

5.54 This table indicates that the total NPV of adjustments for foregone financing costs up to 2010 for all businesses amounts to about AED 2,517 million (in 2010 prices). This is added to the revenue requirement for PC4. The final two columns show the RAV adjustment. The total opening 2010 RAV for all the businesses has increased from about AED 34 billion (2006 prices) to about AED 50 billion (2010 prices). The increase reflects principally the change in price basis from 2006 prices to 2010 prices (i.e. due to CPI inflation) but also the inclusion of additional PC2 efficient capex as set out in **Table 5.3** above (net of depreciation).

Updating RAVs for PC4 capex

5.55 **Annexes A.1 through A.6** to this paper also show the updating of RAVs for provisional PC4 capex for each of AADC, ADDC, ADSSC and TRANSCO (all figures are in 2010 prices). The following table summarises the results of this updating:

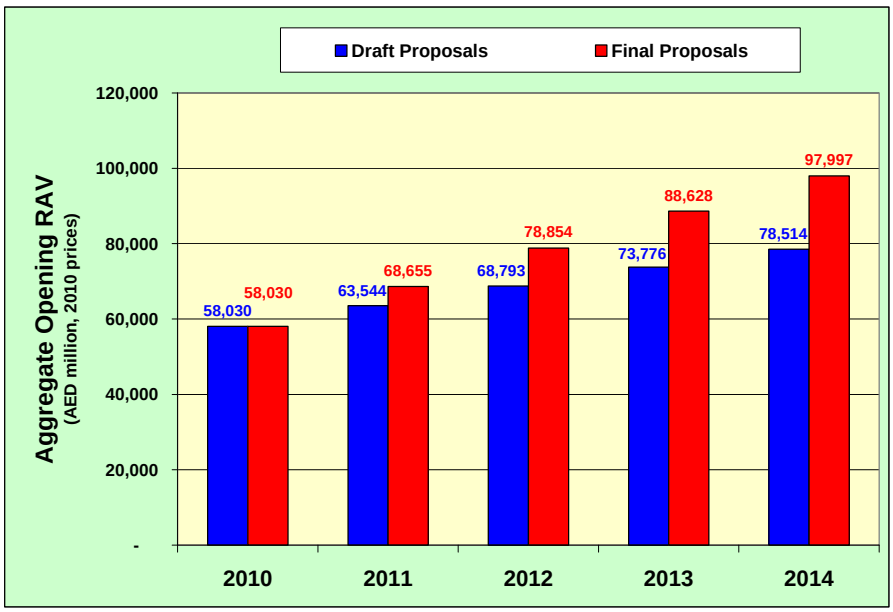
Table 5.15: Opening RAVs updated for provisional PC4 capex

AED million, 2010 prices		2010	2011	2012	2013	2014
AADC	Electricity	5,298.10	5,876.06	6,424.01	6,941.97	7,429.92
	Water	2,518.78	2,544.03	2,564.95	2,581.54	2,593.79
ADDC	Electricity	9,341.40	10,380.11	11,366.49	12,300.54	13,182.25
	Water	3,889.43	4,228.77	4,548.45	4,848.46	5,148.51
TRANSCO	Electricity	18,720.51	23,017.11	27,139.38	31,087.32	34,860.92
	Water	10,536.78	12,457.50	14,293.90	16,045.95	17,713.68
ADSSC		7,725.34	10,150.94	12,516.53	14,822.13	17,067.72
Total		**58,030.34**	**68,654.53**	**78,853.72**	**88,627.90**	**97,996.80**

5.56 The total RAV for all the businesses (including ADSSC) increases from about AED 58 billion (in 2010 before adjustments for provisional PC4 capex) to over AED 97 billion by end of 2013 (after adjustments for provisional PC4 capex). These RAVs are significantly higher than those in the Draft Proposals due to higher PC4 provisional capex allowances. This is shown in **Figure 5.2** below. The aggregate RAV is now higher than the Draft Proposals by about AED 19.5 billion, or 25%, by the end of 2013.

5.57 The RAVs shown in **Table 5.15** are used as inputs to the PC4 price control calculations in Section 8. The opening 2014 RAVs will also be used as the starting points at the next price controls review for any RAV updates for efficient or provisional capex.

Figure 5.2: Aggregate Opening RAV



6. Cost of capital

Introduction

6.1 Earlier consultation papers described the theoretical framework and the Bureau's approach to cost of capital calculations in detail. The Bureau has to date calculated the cost of capital (for the companies) as the forward-looking, post-tax Weighted Average Cost of Capital (WACC) in real terms by applying the Capital Asset Pricing Model (CAPM) to the data available from local and international capital markets. Our cost of capital calculations to date have drawn heavily on the estimates of cost of capital components used by regulators of similar businesses in the UK and Australia subject to a similar regulatory regime. However, with the continuing development of the local and regional capital markets, these estimates were cross-checked against the information available from such markets in order to capture any particular factors that may be specific to the businesses operating in Abu Dhabi.

6.2 Earlier consultation papers argued for a lower cost of capital than 5% previously used by the Bureau based on the following:

(a) The recent regulatory decisions in the UK and Australia;

(b) Upgrading of the UAE's country rating from A1 to Aa3 and assigning of an Aa3 rating to Abu Dhabi National Energy Company (TAQA), ADWEA's subsidiary holding significant ownership of the IWPPs in Abu Dhabi;

(c) Recent significant volatility in the equity markets and declines in (i) the risk-free rate (as low as 2% p.a. in nominal terms), (ii) the overall cost of debt in global markets, and (iii) the UAE inter-bank interest rates;

(d) Bureau's analysis of responses from ADDC and ADWEA quoting overseas regulators' data and the actual cost of borrowing for sector companies, respectively; and

(e) Recent cost of capital estimates from the local capital market analysts for the UAE companies operating in the utility and other sectors.

Draft Proposal

6.3 In the Draft Proposals, we adopted a real, post-tax cost of capital of 4.50% for all four network companies. However, we noted that the possible introduction of the PCROM at this review would result in lower risks and hence a lower cost of capital for the

companies. We were therefore considering whether to further reduce our estimate of the cost of capital by, say, 0.1%-0.5% to reflect the lower risks.

6.4 The Draft Proposals noted that while ADDC pointed to the additional return of 0.5% previously included in the cost of capital for the distribution companies, it did not make a case justifying why such additional return be considered at this review. In response to a point raised by ADSSC, we explained that once the framework for subsidy calculation as developed for the distribution companies is adopted for ADSSC (requiring full subsidy from the government covering all components of its revenue requirement or MAR, less any customer revenue), the company will be able to see the impact of the cost of capital assumption.

Responses to Draft Proposals

6.5 In response to the Draft Proposals, network companies argued for a higher return. ADDC and TRANSCO continued to defer the matter to their shareholder. The responses are summarised as follows:

(a) AADC and ADDC noted the lack of an additional element of 0.50% allowed at the last review for the distribution companies in relation to their supply businesses. They considered that the supply businesses have different risk profiles than their network or distribution businesses and suggested a 2% profit margin on the turnover for supply businesses. AADC thought the Draft Proposals had arbitrarily excluded a profit margin for the supply businesses, whereas ADDC thought the implied margin for the supply businesses was too low.

(b) ADDC considered that applying traditional WACC methodologies to the companies in the UAE will provide flawed outcomes for reasons such as: local stock market is in its infancy; little history of risk-free rates in the UAE; "*there is no tax in the UAE which means debt and equity holders are the same*"; and the UAE has no effective bankruptcy laws and more bankruptcy risks for a business than other countries.

(c) ADSSC believed that the Bureau's proposals would result in a lower cost of capital than allowed by other regulators with mechanisms similar to the PCROM. The company considered that, while there is little impact of a low cost of capital under the current subsidy mechanism for ADSSC, a consistent approach should be maintained in the future.

(d) In ADWEA's view, the proposed cost of capital of 4.5% in real terms is equivalent to 5.19% in nominal terms using the 0.69% inflation for 2009 to

date and is therefore understated when compared to the sector's current borrowing cost which it said was Emirates Interbank Offered Rate (EIBOR) plus 350 basis points with the possibility to increase in future. ADWEA also identified potential liquidity constraints for the companies due to the 8-year loan repayment period in contrast to the 30-year asset life assumption under the price controls and a lag of 8 years from when capex is spent to when it is remunerated under the ex-post efficiency review.

(e) TRANSCO noted that, while the Bureau appeared to use the terms 'profit' and 'cost of capital' interchangeably, cost of capital is an expense in accounting terms and needs to be funded before profit is calculated. TRANSCO presented data to show that its return on invested capital (calculated as the ratio of profit to net asset value) had never reached 3% over the PC3 period. As a result, TRANSCO (via ADWEA) had to use the depreciation allowance to repay its loans at the prevailing or agreed interest rates, thereby reducing profitability for its shareholders and/or reducing the funds available for replacing the fully depreciated assets.

Assessment of responses to Draft Proposals

6.6 Our views on these issues are as follows:

(a) AADC and ADDC did not identify the risks specific to the supply businesses which are not reflected in our proposed cost of capital. Our cost of capital has been derived from, and assessed against, the costs of capital for network as well as other companies. Such companies include telecommunication and real estate companies in the UAE and GCC and in some cases are subject to direct retail competition (in contrast to AADC and ADDC supply businesses). Our estimated cost of capital therefore takes account of a wide range of risks. In our view, the supply businesses in the sector are subject to very low risk due to (i) the pass-through treatment of generation and transmission costs which guarantees recovery of such costs, and (ii) the subsidy mechanism which makes up for any shortfall between customer tariff income and "own" MAR of the distribution and supply businesses. Finally, we may clarify that AADC is incorrect to think that we have allowed no margin for the supply business; rather, we have applied a common cost of capital to the distribution and supply businesses combined.

(b) We note that our proposal is consistent with the most recent cost of capital estimate by the UK water regulator. Following the issue of the Draft Proposals, Ofwat published its draft determinations in July 2009 for water and sewerage charges 2010-15 allowing a real post-tax cost of capital of 4.5%.

(c) The UK water regulatory decisions (which have been one of the inputs to our cost of capital calculations) cover all the operations of the water and wastewater companies, including their equivalent of the AADC and ADDC supply businesses. The UK companies are subject to significant 'collection risks' as they are prohibited from disconnecting customers for non-payment.

(d) While we do not necessarily agree to all the reasons identified by ADDC against applying conventional cost of capital theories and standard practices to the companies in the UAE, we note that our approach using the data from overseas regulatory regimes and developed capital markets and cross-checking it against the local and regional capital markets aims at addressing many of such concerns. Furthermore, as explained in our earlier consultation papers with specific references, the research analysts in the local and regional capital markets use the same WACC methodologies for their assessment or valuation of the companies as the Bureau has employed since 1999.

(e) We agree with ADSSC that a consistent approach should be adopted to the cost of capital. For this reason, we have consistently adopted the same WACC approach since 1999, although our data coverage and research have become more extensive over time. Further, as we no longer propose the introduction of a PCROM at this review, we have not made any downward adjustment to our proposed cost of capital for this factor.

(f) On ADWEA's response, we note the following:

(i) Estimating a nominal cost of capital over the price control period requires a medium-term estimate of inflation (e.g. over the four-year PC4 period). The figure of 0.69% is the actual inflation over only a few months during 2009 and is unlikely to reflect inflation over PC4 as a whole. In fact, the UAE Ministry of Economy expects the 2009 inflation to be in range of 3.50%-4.00% (reference the article "UAE foreign ownership laws revised" in the Gulf News of 14 September 2009). If we assume 4% for medium-term inflation, our proposed cost of capital of 4.5% and cost of debt of about 2.9% in real terms translate into nominal figures of 8.5% and 6.9%, respectively.

(ii) Recently, EIBOR has been in the range of 2%-2.5%. Assuming a medium-term EIBOR at 3% (which may be on the higher side), ADWEA's reported current borrowing cost at EIBOR+350 basis points translates into 6.5% in nominal terms.

(iii) While its current highest cost of borrowing may be EIBOR+350 basis points, we understand (from ADWEA's response to the First Consultation Paper and discussions) that ADWEA's borrowing cost from various sources varies from a fixed 6% p.a. to a range of EIBOR plus 75 to 350 basis points (i.e. an overall range of 3.75%-6.5% assuming a medium-term EIBOR at 3%). TRANSCO's 2008 audited accounts show a number of loans with interest rate in the range of 3.5%-5.8% (charged by ADWEA on actual basis) including some interest-free loans.

(iv) Both our proposed cost of capital and cost of debt (approximately 8.5% and 6.9%, respectively, in nominal terms) are slightly higher than cost of borrowing for ADWEA (i.e. 3.75%-6.5%). On any reasonable estimate of future inflation and EIBOR, our proposed cost of debt is comparable in nominal terms to the information provided by ADWEA on its actual cost of debt at present.

(v) Regarding the mis-match between the capex repayment period under the price controls (30 years) and the repayment period for the debt financing arranged by ADWEA (8 years), we note that at any given time the MAR will be remunerating capital investments made over the past 30 years, not just the PC4 capex allowances. Further, the 30-year repayment period assumption under the price controls applies not just to debt financing but also to equity financing, whereas equity is typically a longer term investment than debt. Thus while ADWEA may presently be facing significant financing requirements due to a short-spike in investment, it has provided no evidence (e.g., inadequate debt service coverage ratios and interest covers) to demonstrate that the price controls, taken as a whole, prevent it from financing this programme.

(g) We make the following comments on TRANSCO's response:

(i) TRANSCO is correct to identify that the cost of capital should reflect both the cost of servicing debt (interest) and the return to shareholders (profit). This is always reflected in our approach to calculating the cost of capital in and in our financing modelling. As the sector network companies have been predominantly financed by equity (as per their balance sheets), we have sometimes showed the return on capital component of revenue as projected profit over the PC4 period for ease of understanding.

(ii) Only a proportion of cost of capital (cost of debt) is an expense in accounting terms and needs to be funded before profit is calculated.

(iii) Regarding TRANSCO's achieved rate of return on invested capital over the PC3 period, the Bureau understands that:

- The principle reason for this was that the revenue drivers in the PC3 period (especially metered water units transmitted) turned out to be much lower than TRANSCO's forecasts which the Bureau used to set the PC3 price controls.
- Some of the assets included within the net book value (used by TRANSCO to calculate return on invested capital) have not yet been remunerated via the controls (due to the ex-post approach to capex regulation). The return on capital so calculated therefore ignores the return on such assets which will materialise in future. (e.g., PC2 and PC3 efficient capex over and above the provisional allowances)
- The return on invested capital measure, which can be compared against the allowed cost of capital, should be calculated as the ratio of profit plus debt finance costs (not just profit) to the net asset value.

Final Proposals

6.7 In these Final Proposals, we have adopted a real, post-tax cost of capital of 4.50% for all four network companies.

7. Financial adjustments

Draft Proposals

7.1 In the Draft Proposals, we proposed the following financial adjustments relating to past years to be applied at this review to companies' future revenue:

Table 7.1: Financial adjustments at this review – Draft Proposals

AED million, 2010 prices	Customer asset installations	Interface metering	Planning statements	Transmission constraints	Total
AADC Electricity					
AADC Water	-40.33	-30.41			-70.73
ADDC Electricity					
ADDC Water		-99.88			-99.88
TRANSCO Electricity			-16.47		-16.47
TRANSCO Water		130.29	-12.32	-285.45	-167.48
ADSSC					
Total					**-354.57**

7.2 These adjustments were calculated in 2010 prices in terms of their NPV at 1 January 2010, based on a discount rate of 4.50% (the proposed real cost of capital for PC4). Detailed calculations were presented in the Draft Proposals.

7.3 In the Draft Proposals, we also indicated the possibility of negative financial adjustments for AADC and ADDC for their performance on internet-based payment methods and on Guaranteed Standards (GS) and Overall Standards (OS). We also confirmed the introduction of additional incentives for TRANSCO, effective 1 January 2009, to remove water network constraints.

Responses to Draft Proposals

7.4 In general, the respondents argued against the proposed financial adjustments. As discussed below, we have given due consideration to these arguments and made necessary changes to the Draft Proposals in some cases.

Customers' water asset installations (AADC)

7.5 AADC did not accept the financial adjustment to remove the entire opex allowance of AED 25 million in 2006 prices given via the PC3 controls for installation of customers' water assets. Taking account of the time value of money and inflation, this penalty amounted to AED 40.33 million in 2010 prices as shown in **Table 7.1** above. It argued that this adjustment contrasts to the assurance given in the Bureau's letter of 25 August 2008 and the First Consultation Paper to remunerate AADC for the

expenditure it incurred. According to AADC, it submitted details of expenditure via its letter of 14 July 2008 to the Bureau reporting substantial progress (45% of 'minor' works connections and 57% of 'significant' works connections) by the originally scheduled date. However, the Bureau's refusal to grant further extension beyond the end of June 2009 halted further work on the program. AADC argued that the denial to recognise reasonable actual expenditure puts at risk any confidence it can have in future undertakings by the Bureau for remuneration adjustment at future reviews for incurred expenditure.

7.6 The Bureau's proposal arose due to AADC's failure to provide adequate or reliable information about how the allowance was being spent. The opex allowance was made at the previous review (to be spent by end 2007) at AADC's own request to facilitate completion of a 24-hour water supply in the AADC area. Despite our continued support, reminders and an 18-month extension up to 30 June 2009, AADC did not respond to our request in August 2008 for a detailed plan until February 2009, when it informed us that the work could not be completed by June 2009 and sought a further, indefinite extension of time for completion. Further, the figures in AADC's letter of 14 July 2008 suggested survey of about half of the properties and spending of AED 0.6 million on 'significant' works for which an allowance of AED 14 million was allotted in the PC3 controls.

7.7 However, keeping in view the need to facilitate this important work, we are again allowing the original allowance of AED 25 million (in 2010 prices, as of 1 January 2010) at this review, by adjusting the proposed financial adjustment from AED -40.33 million to AED -15.33 million (2010 prices). Effectively this treatment takes account of the fact that a proportion of the expenditure was incurred before 1 January 2010 and a proportion will be incurred after 1 January 2010. The penalty now reflects the failure (as acknowledged by AADC) to spend the full allowance in the years it was allocated (2006 and 2007) when setting the PC3 price controls but does not remove the funding of the scheme. If AADC again fails to complete this work in a timely manner during the PC4 period, we will make an appropriate negative financial adjustment at the next review.

Planning statements

7.8 In earlier consultation papers, we expressed general concerns on the performance of some companies on certain Category B indicators. These papers and the Draft Proposals particularly expressed our intention to apply negative financial adjustments in respect of TRANSCO's Five-Year Planning Statements for water in 2006 and electricity in 2007, which the Bureau was not able to approve.

7.9 In response to the Draft Proposals, ADDC continued to argue against such adjustments as being subjective and out of company's control, although it recognised that the Bureau had applied such adjustments sparingly. It also noted that no positive adjustment was considered for areas such as time-of-day metering where ADDC considered it had performed exceptionally well.

7.10 TRANSCO argued against the proposed adjustment based on insufficient justification and a lack of clarity on the requirements that the planning statements needed to meet.

7.11 These comments were discussed in the Draft Proposals. In particular, we have proposed financial adjustments where the relevant company's performance was exceptionally good or poor. While we have always encouraged the companies to identify exceptional performance on Category B indicators for consideration of financial adjustments, time-of-day metering is not presently a Category B indicator for ADDC. We also believe that the relevant licence condition for the Five Year Plan and the Bureau's requirements were clear at the time.

7.12 Nevertheless, we have given further consideration to the need for any penalties to be proportionate and to the fact that TRANSCO was able to meet the requirements for planning statements in more recent years. In these Final Proposals, we have therefore reduced the said financial adjustments by 50% (i.e. to 0.5% of TRANSCO's MAR) from those calculated in the Draft Proposals. We have also implemented the modifications to Condition 15 of TRANSCO's licence concerning planning statements, as discussed in earlier consultation papers, to bring it in line with the corresponding condition for other network companies.

Future transmission system constraints (TRANSCO)

7.13 ADDC highlighted material transmission constraints in the Western Region affecting its ability to apply constant water pressure to its networks. It therefore suggested extending the incentives for TRANSCO to Western Region (rather than limiting it to water supplies to AADC).

7.14 We would like to clarify that the new incentive mechanism for TRANSCO to reduce transmission constraints applies to the entire Emirate of Abu Dhabi. The water supply to Al Ain being a familiar case with significant history was mentioned in earlier papers as an example rather than as the only scope of incentives.

Water interface metering (AADC / ADDC)

7.15 AADC and ADDC argued against the proposed negative financial adjustment for delays in the installation of interface metering to date. In particular, they made a specific reference to the latest version of MDEC (Clause 13, Preface), according to which they are not required by MDEC to complete such metering before 1 January 2010. They therefore believed that it would be incorrect to apply any penalty for interface metering before such a date.

7.16 We have accepted this argument. In the Final Proposals, we have therefore decided not to apply the negative financing adjustments for AADC and ADDC amounting to AED 130 million proposed in the Draft Proposals. We have however retained the corresponding positive adjustment for TRANSCO to compensate it for 50% of its loss in 2008 due to delays in interface metering. For 2010 onwards, both TRANSCO and the distribution companies will have incentives to finalise the interface metering programme (via revenue drivers and Category A indicators, respectively), as explained in Sections 2 and 9 of this paper.

Guaranteed Standards and Bill Payment Methods (AADC/ADDC)

7.17 In response to the Draft Proposals, ADDC argued against this possible adjustment while highlighting its progress on the internet-based bill payment method and other considerations. With regards to our consultants' audit report on the performance of AADC and ADDC on the implementation of Guaranteed Standards (GS), ADDC said it did not have an opportunity to review the report and suggested that the Draft Proposals should have been the stage for consultation on the contents of the audit report.

7.18 Having given consideration to the distribution companies' progress on internet-based payment method, and as the GS audit is not yet completed, we have decided not to apply any financial adjustment at this review for these aspects. However, we will continue to monitor the distribution companies' performance (as part of customer satisfaction-related Category B indicator – see Section 9) over the PC4 period for any positive or negative financial adjustment at the next price control review. We will work with the companies to develop a mechanism to incentivise and finance improvements in performance.

Summary of financial adjustments at this review

7.19 **Table 7.2** below summarises the financial adjustments that we propose for these Final Proposals, showing a reduction in the total adjustment by 48% from the Draft Proposals. These financial adjustments have been used in the price control calculations in Section 9 to adjust the NPV of the revenue requirements for PC4.

Table 7.2: Financial adjustments at this review – Final Proposals

AED million, 2010 prices	Customer asset installations	Interface metering	Planning statements	Transmission constraints	Total
AADC Electricity					
AADC Water	-15.33				-15.33
ADDC Electricity					
ADDC Water					
TRANSCO Electricity			-8.24		-8.24
TRANSCO Water		130.29	-6.16	-285.45	-161.32
ADSSC					
Total					**-184.88**

Notes: Green-shaded cells highlight the changes from the Draft Proposals.

7.20 We also confirm that, from 1 January 2009, TRANSCO will bear a cost equal to 50% of the availability payments paid by ADWEC to the production companies under the PWPAs in respect of water which is made available by producers but which cannot be supplied to final customers due to transmission constraints. The Bureau will monitor TRANSCO's performance on transmission constraints from 2009 onwards, and any required financial adjustment will be made at the next price control review. This scheme covers the entire Emirate of Abu Dhabi. For ease of reference and simplicity, we have now included water transmission constraint removal in the PIS as a Category B indicator (see Section 9).

8. Price control calculations

Introduction

8.1 In the Draft Proposals, we described the Microsoft Excel-based financial model used to carry out the PC4 price control calculations (referred to as the "***PC4 Financial Model***") leading to determination of the notified values "a", "b" and "c" for each company or business. The same model also included the calculations relating to opex and revenue driver projections, efficient PC2 capex and related foregone financing costs, updating of RAVs for efficient PC2 capex and provisional PC4 capex, and the financial adjustments. This model took the total depreciation on RAV and capex to date (in 2010 prices) directly from the PC4 Depreciation Model (see Section 6). Both of these models were provided to the network companies.

8.2 While respondents commented on various inputs to the modelling (as summarised in earlier sections), none of them commented specifically on the price control calculation methodology or on the Bureau's financial models. We have now modified the various inputs to the PC4 Financial Model as discussed in earlier sections. The revised model is available to the network companies upon request.

8.3 This Section 8 describes the results of the revised price control calculations as contained in the PC4 Financial Model. All calculations are carried out in real, 2010 prices. The discount rate used in the present value or NPV calculation is the cost of capital set out in Section 6; that is, 4.50% (real, post-tax).

Price control calculations

8.4 **Annex B** to this paper presents detailed price control calculations for each business (extracted from the relevant spreadsheets of the PC4 Financial Model) separately in seven sub-annexes, namely **Annexes B.1 through B.7**. These calculations are presented in a standard format for all businesses. Annex B to the Draft Proposals explained these calculations on a line-by-line basis.

Notified values

8.5 Based on these price control calculations, the Bureau's Final Proposals for the notified values are summarised in **Table 8.1** below. The notified values given in **Table 8.1** (to the accuracy to decimal places expressed therein) will be those used to calculate MARs when the price controls are implemented.

Table 8.1: Notified values for PC4 – Final Proposals

			Values for 2010		
2010 prices		**X**	**a**	**b**	**c**
AADC	Electricity	0.00	882.30 AEDm	1,470.21 AED/customer account	0.4932 fils/kWh metered
	Water	0.00	333.53 AEDm	1,056.64 AED/customer account	0.3139 AED/TIG metered
ADDC	Electricity	0.00	1,243.56 AEDm	841.71 AED/customer account	0.2185 fils/kWh metered
	Water	0.00	628.75 AEDm	501.03 AED/customer account	0.3786 AED/TIG metered
TRANSCO	Electricity	0.00	2,358.55 AEDm	24.47 AED/kW metered	0.3885 fils/kWh metered
	Water	0.00	1,396.62 AEDm	219.58 AED/TIGD metered	0.6422 AED/TIG metered
ADSSC		0.00	1,325.94 AEDm	1.1850 AED/m^3 metered	

Notes: Based on an assumed UAE CPI for 2009

8.6 These notified values are for 2010 expressed in 2010 prices based on the assumed UAE CPI inflation rate of 0.69% for 2009. The adjustment for actual inflation for 2009 (see Section 2) will be done upon its availability during 2010 via the Price Control Return (PCR) process. For subsequent years, these notified values will be adjusted by CPI-X indexation in the usual way.

Projected MARs

8.7 **Table 8.2** presents the projected MAR in respect of "own" costs (i.e., excluding pass-through costs, if applicable) for each business and in total for 2010-2013:

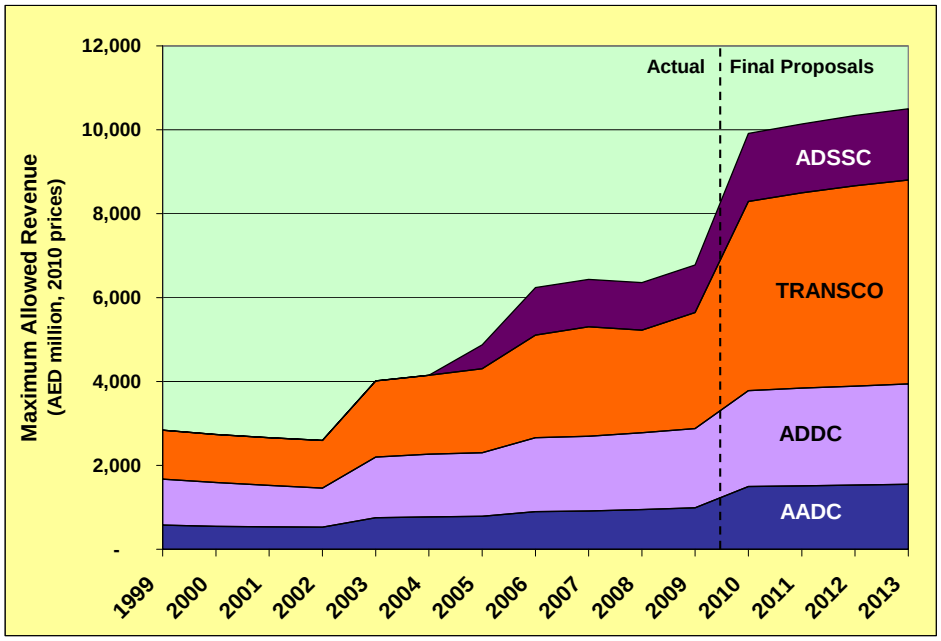
Table 8.2: Projected MAR over PC4 period – Final Proposals

AED million, 2010 prices		**2010**	**2011**	**2012**	**2013**
AADC	Electricity	1,087.41	1,099.02	1,109.01	1,118.34
	Water	407.87	412.86	419.16	429.30
	Total	1,495.27	1,511.88	1,528.18	1,547.63
ADDC	Electricity	1,513.69	1,545.80	1,570.82	1,593.29
	Water	772.03	784.49	790.66	798.47
	Total	2,285.72	2,330.29	2,361.49	2,391.76
TRANSCO	Electricity	2,797.13	2,911.20	3,021.86	3,083.95
	Water	1,713.07	1,743.12	1,752.11	1,779.35
	Total	4,510.20	4,654.32	4,773.97	4,863.30
ADSSC	Total	1,617.85	1,642.61	1,676.78	1,698.57
Total		**9,909.04**	**10,139.10**	**10,340.41**	**10,501.27**

8.8 In total, companies' MAR (excluding pass-through costs) is expected to be over AED 9.9 billion in 2010 reaching almost AED 10.5 billion by 2013. This is excluding any bonuses or penalties that the companies will earn or incur under the PIS over the PC4 period and compares to the latest (2008) audited figure of AED 5.6 billion in 2008 prices or AED 6.4 billion in 2010 prices. Overall, the average projected MAR for PC4 is higher than the 2008 actual MAR by AED 3.9 billion or 61% in 2010 prices.

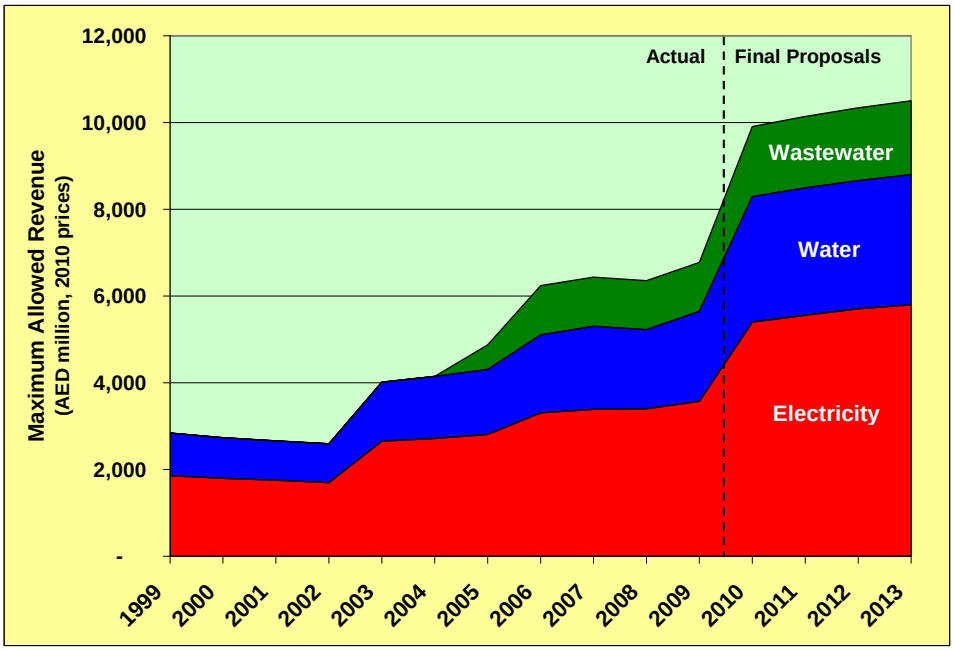
8.9 The following chart shows the projected MAR profile for each company over the PC4 period, indicating significant increases from previous years in real terms and TRANSCO's continuing large share of the MAR:

Figure 8.1: Projected MARs over PC4 period by Company



8.10 The following chart shows the total MARs for water, wastewater and electricity, indicating electricity's continuing domination of the sector costs:

Figure 8.2: Projected MARs over PC4 period by Company

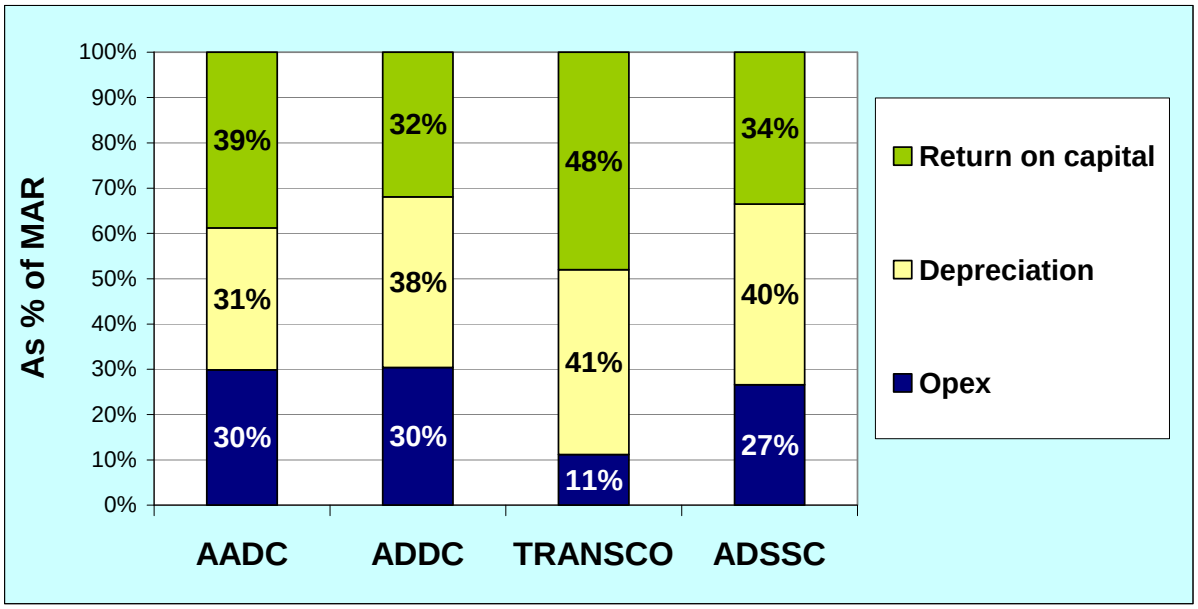


Analysis of Final Proposals

Constituents of Projected MARs

8.11 **Figure 8.3** below presents the percentage breakdown of total revenue (excluding pass-through costs) into projected opex, depreciation and return on capital (including financial adjustments and PC2 capex related foregone financing costs) in NPV terms for each company. The capital cost related components (i.e., depreciation and return on capital) account for a significant proportion of the revenue for each company (in the range of 70% to 89%), compared to opex which accounts for only 11% to 30% of revenue. This highlights the capital intensity of network companies, especially TRANSCO.

Figure 8.3: Constituents of MARs (excluding pass-through costs)



Projected return on capital

8.12 **Figure 8.4** shows the expected profile of return on capital (or profits, before any debt financing costs) for the companies. Overall, the total returns for the four companies are expected to be of the order of AED 4.1 billion (2010 prices) a year on average over the PC4 period, with the average projected return on capital for each company as follows (2010 prices):

(a) AADC: AED 589 million per annum;

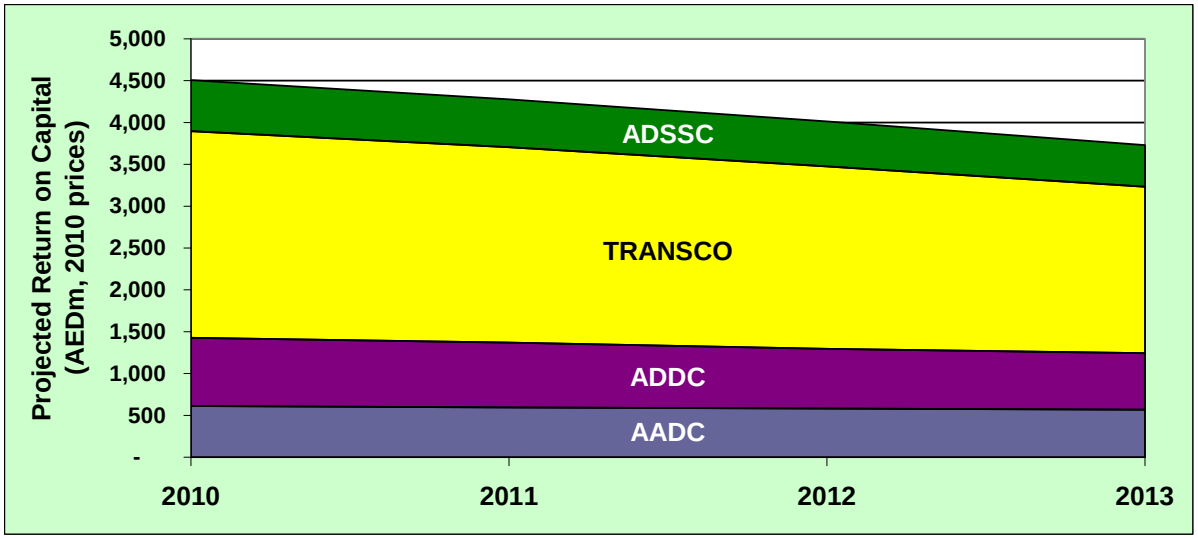
(b) ADDC: AED 745 million per annum;

(c) ADSSC: AED 553 million per annum; and

(d) TRANSCO: AED 2,244 million per annum.

8.13 This level of profit reflects the capital investment and cost of capital and is necessary to promote adequate network investment. Returns fall slightly over the period due to the revenue profiling assumption combined with increasing depreciation and opex allowances. Generally, the rate of return on the mid-year RAV exceeds the allowed cost of capital due to the inclusion within the PC4 MAR of the foregone financing costs for PC2 capex.

Figure 8.4: Projected return on capital over PC4 period



Effect of Final Proposals on sector costs

8.14 **Figures 8.5, 8.6 and 8.7** show the expected effect of these Final Proposals on the total price-controlled costs (MAR) and unit costs for electricity, water and wastewater, respectively (in 2010 prices):

Figure 8.5: Projected trend of price-controlled MAR - Electricity

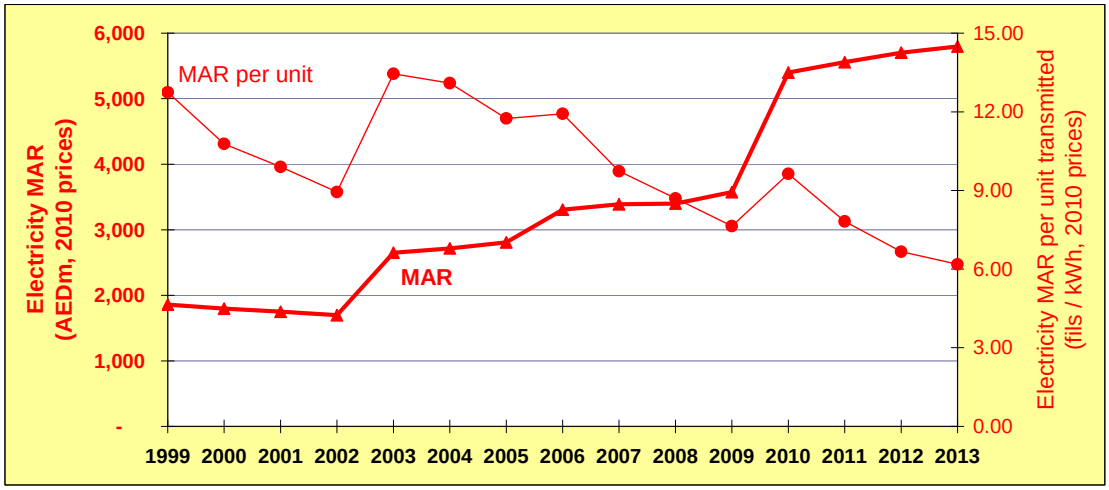


Figure 8.6: Projected trend of price-controlled MAR - Water

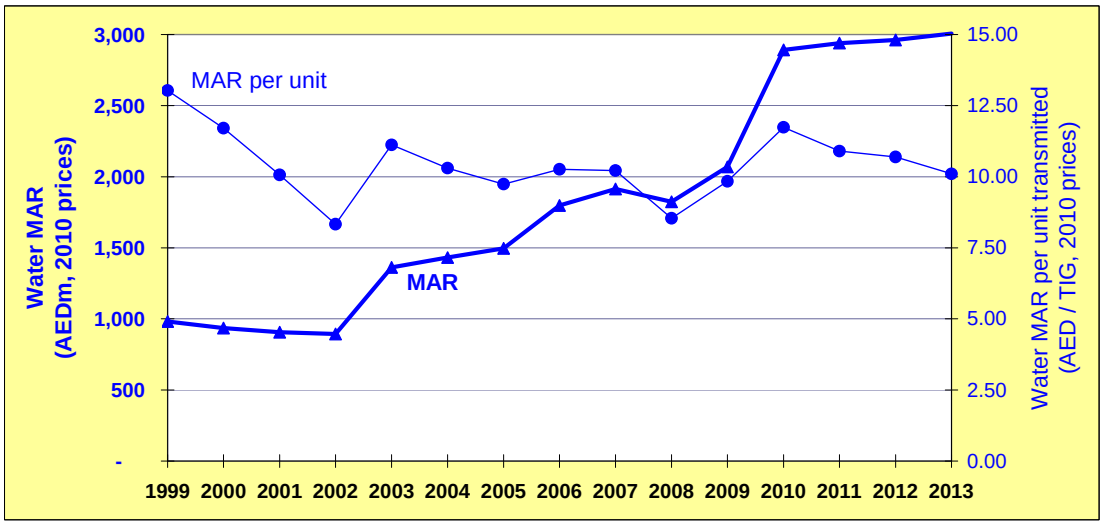
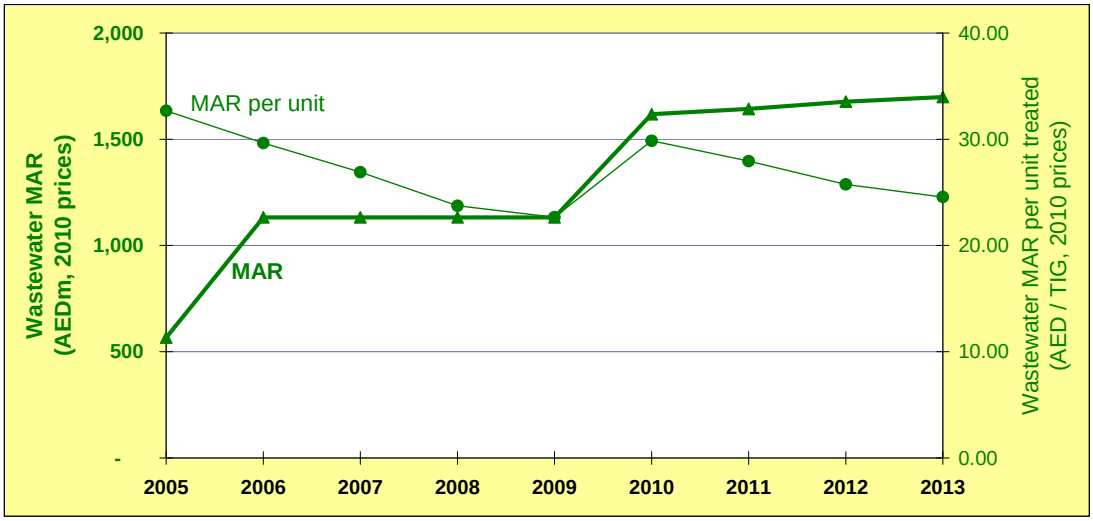


Figure 8.7: Projected trend of price-controlled MAR - Wastewater



8.15 These charts indicate that the annual MARs are expected to continue the increasing trend in real terms. However, the increasing demand combined with the efficiency assumptions means that the Final Proposals are expected to result in a declining trend for the unit cost. This shows that, as a result of the Final Proposals:

(a) ***for electricity:*** while the total MAR for AADC, ADDC and TRANSCO (excluding pass-through costs) is expected to increase by 212% from 1999 to 2013 (in real terms), the MAR per unit transmitted is expected to be 6.19 fils/kWh in 2013, lower by 51% than in 1999 (in 2010 prices);

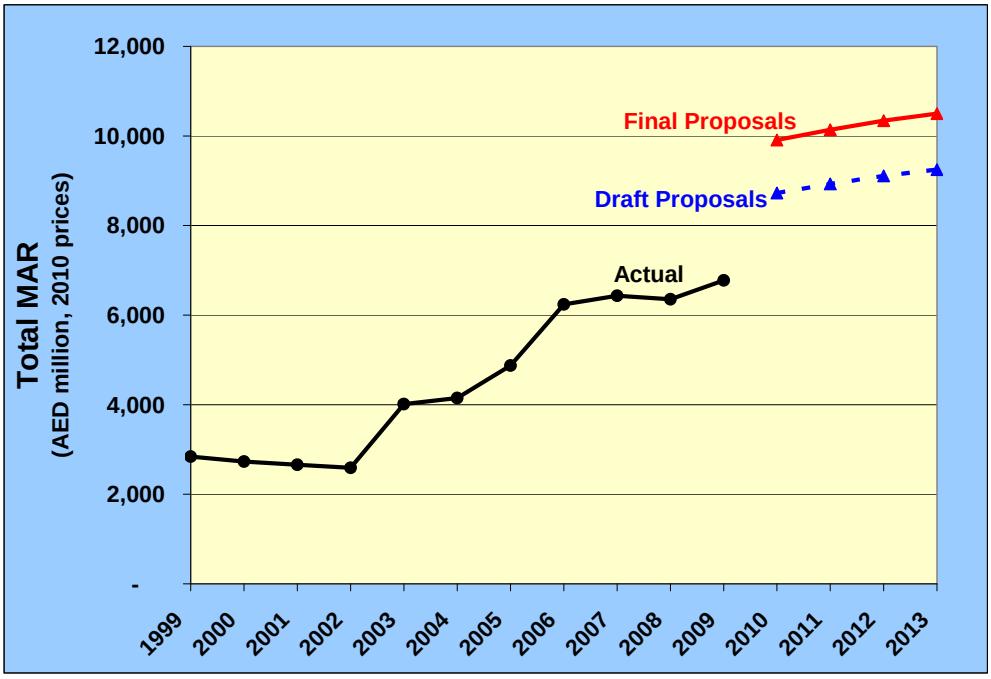
(b) ***for water:*** while the total MAR for AADC, ADDC and TRANSCO (excluding pass-through costs) is expected to increase by 206% from 1999 to 2013 (in real terms), the MAR per unit transmitted is expected to be 10.10 AED/TIG in 2013, lower by 23% than in 1999 (in 2010 prices); and

(c) ***for wastewater:*** while the total MAR for ADSSC (excluding any pass-through costs) is expected to increase by 50% from 2005 to 2013 (in real terms), the MAR per unit transmitted is expected to be 5.40 AED/m^3 (24.56 AED/TIG) in 2013, lower by 25% than in 2005 (in 2010 prices).

Comparison against Draft Proposals

8.16 **Figure 8.8** below compares the total MAR for PC4 projected in these Final Proposals against that in the Draft Proposals:

Figure 8.8: Total Projected MAR - Comparison between Final and Draft Proposals



8.17 The table below shows that the Final Proposals represent increases in total MAR by about AED 1,218 million (2010 prices) or by about 14%, compared to the Draft Proposals.

Table 8.3: Average Annual Projected MARs for PC4

AED million, 2010 prices		Draft Proposals	Final Proposals	Increase in Final Proposals	% Increase
AADC	Electricity	961	1,103	143	15%
	Water	357	417	60	17%
	Total	1,318	1,521	203	15%
ADDC	Electricity	1,381	1,556	175	13%
	Water	677	786	110	16%
	Total	2,057	2,342	285	14%
TRANSCO	Electricity	2,659	2,954	294	11%
	Water	1,550	1,747	197	13%
	Total	4,209	4,700	491	12%
ADSSC	Total	1,420	1,659	239	17%
Total		**9,004**	**10,222**	**1,218**	**14%**

8.18 Further, the Final Proposals result in higher returns on capital (or profits ignoring any debt financing costs) than the Draft Proposals, by an average AED 474 million per annum or 13% in real terms. This is due to the higher allowances for PC4 capex and lower negative financial adjustments assumed in the Final Proposals.

9. Performance Incentive Scheme

Introduction

9.1 Under the Performance Incentive Scheme (PIS), companies are rewarded for improved service and output performance, and penalised for deteriorating performance. The current PIS for all businesses has two types of performance indicators:

(a) Category A indicators (shown in black font in **Table 9.1** below) with precise definitions, targets and incentive rates, and an automatic annual revenue adjustment for performance via a term "Q" in the MAR formulae, currently subject to an overall cap set at 4% of MAR each year; and

(b) Category B indicators (shown in black font in **Table 9.2** below), less precisely defined but subject to a possible financial adjustment at the following review for exceptionally good or poor performance, subject to an overall cap currently set at 2% of MAR each year.

9.2 Companies are required to appoint an independent Technical Assessor (TA) with the Bureau's approval to verify the accuracy of the information required for calculation of technical (i.e. non-timeliness) Category A indicators.

9.3 Over time, we have introduced new Category A indicators or moved some indicators from Category B to Category A. However, given the automatic mechanistic adjustments to MAR, Category A indicators must meet our established objective criteria (i.e., measurable, verifiable, non-manipulable, non-distortionary and customer-oriented).

Draft Proposals

9.4 In the Draft Proposals, we proposed to extend the PIS for additional Category A and B indicators for PC4 (as shown in **Red bold** font in **Tables 9.1** and **9.2** below, respectively) with the following changes to the existing PIS:

(a) The PIS bonuses of the Category A timeliness indicators for audited SBAs will be removed so that only a penalty for delayed submission should apply in that case.

(b) The PIS target dates for both the PCRs and the SBAs will be changed to 30 April (from 31 March and 30 June respectively), while extending the target date for the AIS to 31 October (from 30 September).

(c) The Category A technical (or non-timeliness) indicators will each be subject to an individual cap of 1% of the company's "own" MAR. The individual caps will replace the overall cap on Category A indicators.

(d) It was proposed that the existing water quality indicator would be retained (with a target compliance increased from existing 90% for 2009 to 95% each year for PC4), but with an amendment to the operation of the indicator so that a bonus (of 20 times the incentive rate) could only be attained if a company passes 100% of the required tests (excluding Exceptional Events).

Table 9.1: Category A Indicators for PC4 – Draft Proposals

Company	Electricity	Water	Wastewater
AADC / ADDC	Timeliness of Audited SBA Timeliness of Audited PCR Timeliness of AIS Customer Minutes Lost per Customer No. of Interruptions per Customer (until 2009) **SAIFI** **Customer Debt Reduction**	Timeliness of Audited SBA Timeliness of Audited PCR Timeliness of AIS Water Quality **Customer Debt Reduction**	
TRANSCO	Timeliness of Audited SBAs Timeliness of Audited PCR Timeliness of AIS Availability Energy Lost	Timeliness of Audited SBAs Timeliness of Audited PCR Timeliness of AIS Water Quality **Availability**	
ADSSC			Timeliness of Audited SBAs Timeliness of Audited PCR Timeliness of AIS

Notes: SBA = Separate Business Accounts; PCR = Price Control Return; AIS = Annual Information Submission; SAIFI = System Average Interruption Frequency Index

9.5 We reiterated our desire to introduce a Category A technical indicator for ADSSC at this review and requested the company to provide details in response to the Draft Proposals on the measures which it presently monitors internally (for example, to assess its expenditure needs, its own performance and the performance of its contractors).

Table 9.2: Category B Indicators for PC4 – Draft / Final Proposals

Company	Category B Indicator
AADC / ADDC	**1.** Technical KPIs (including **SAIFI for worst served customers** and **water quality sub-indices)** 2. Customer satisfaction (Guaranteed / Overall Standards) 3. Interim profit & loss account timeliness 4. Meter reading 5. Five-Year Planning Statement timeliness
TRANSCO	**1.** Technical KPIs (including **water quality sub-indices)** 2. Settlement data accuracy and timeliness 3. Planning data accuracy and timeliness 4. Interim profit & loss account timeliness 5. Five-Year Planning Statement timeliness 6. Timeliness of Transmission Use of System Charges Statement 7. Economic despatch **8. Reduction in water transmission constraints**
ADSSC	**1. Technical KPIs** 2. Performance of sewerage system (e.g., availability and reliability) 3. Customer complaints (e.g., in relation to odour and flooding) 4. Performance against guaranteed service standards for customers 5. Compliance with standards at treatment plants 6. Meeting targets for recycling of treated effluent and biosolids 7. Environmental performance 8. Interim profit & loss account timeliness 9. Five-Year Planning Statement timeliness

Notes: The incentive scheme / financial adjustment for removal of water transmission constraints from 1 January 2009 (discussed in the Draft Proposals and Section 7 of these Final Proposals) is shown here as a Category B indicator for TRANSCO. However, this indicator has its own incentive scheme and is not subject to a cap.

Responses to Draft Proposals

9.6 Respondents to the Draft Proposals continued to support the PIS and many of our proposals, with some qualifications.

9.7 AADC agreed to the need for further review and development of "Technical KPIs" under Category B, particularly the new measure of 'SAIFI for worst served customers'. It suggested excluding outstanding debts of certain government and other VIP customers (being beyond the company's control) from the proposed Customer Debt Reduction-related Category A indicator.

9.8 ADDC welcomed the replacement of the existing Interruption-related Category A indicator for electricity with SAIFI with immediate effect and the continuation of the existing water quality Category A indicator. However, it argued against certain other aspects:

(a) It did not agree to the proposed change to the existing incentive mechanism for the water quality indicator and identified shortcomings in the current Water Quality Regulations.

(b) It reiterated its suggestion for 15 May (instead of 30 April) each year as the target date for SBA timeliness indicator. This was in order to procure auditor services at a lower cost after the audit work for other companies in the country is completed.

(c) It argued against the proposed Customer Debt Reduction indicator based on a number of reasons:

(i) It considered that it did not have a problem with collection of customer debts in general, and that the high balance of accounts receivable stems from specific payment disputes with a small number of government customers.

(ii) Existing incentives are sufficient. Customer debt does not affect subsidy and hence should not be a concern for the Bureau. The issue represents a cash flow problem for the company, and lower profits, which is being resolved by the company and its shareholder with the fellow government organisations.

(iii) Reports which ADDC submitted to the Bureau since June 2008 show reduction in accounts receivable and hence should address the Bureau's concern.

(iv) Accounts receivable, being directly correlated to customer demand, to the tariff (if revised), and to revenue, will continue to vary during the year and from year to year and hence are beyond the company's control. In case the indicator is adopted, customer debt should be assessed as a proportion of customer revenue rather than in absolute terms.

(d) It argued against any increase in (or removal of) the overall cap for Category A indicators without allowing higher cost of capital and suggested reducing such a cap from the existing 4% to 2% of company's own MAR and the corresponding cap for Category B from 2% to 1%.

9.9 ADSSC agreed to review and propose technical KPIs for Category A and to work with us to develop Category B indicators over the PC4 period. It however argued that the bonus for SBAs timeliness should be retained to ensure an equitable treatment.

9.10 TRANSCO welcomed retention of the planning statement timeliness as a Category B indicator (rather than a Category A indicator as suggested in earlier consultation papers) and of the existing water quality Category A indicator. However, it suggested retaining the existing bonus/penalty mechanism for the water quality indicator, as a

target of 100% compliance to earn a PIS bonus is not realistic in its view. The company also reiterated its concerns about the adjustments for Category B indicators (particularly the planning statement timelines) being subjective and retrospective. While welcoming the Bureau's recent regulatory guidelines for AIS, it highlighted the need for similar guidelines for Category B indicators.

Assessment of responses

9.11 We welcome the companies' positive response to the PIS in general, to some specific proposals for PC4, and to the further development and refinement of certain Category B indicators in future. We have given due consideration to their suggestions and made the following changes to the PIS in these Final Proposals:

(a) In the light of suggestions from AADC, ADDC and TRANSCO, we have decided to continue with the existing structure of the bonus/penalty mechanism for the water quality Category A indicator, while raising the target compliance to 95%.

(b) As suggested by ADDC, we also propose to limit the total financial adjustment for Category B indicators to 1% of the company's own MAR in the relevant year, to reduce the risks for the companies. This also acknowledges that Category A now includes various technical measures which were previously covered to some extent by the general "Technical KPIs" under Category B.

9.12 We however do not agree to the companies' suggestion on the other issues:

(a) In the earlier consultation papers, we explained the basis of our proposed target date of 30 April for SBA and PCR submissions and the removal of bonus for SBA submission. ADDC did not quantify the cost saving from its proposed 15 May audit or submission, which could be taken account of while setting the opex allowance for PC4 if such a proposal is accepted. Such cost saving is not obvious to us given that companies are required by federal law to produce their statutory accounts by 30 April.

(b) The existing 4% cap for Category A indicators was introduced when there were 4 Category A indicators for most of the companies and when there was no individual cap on each Category A indicator. With more Category A indicators for PC4, and individual caps (of 1%) on all Category A indicators, such a cap would no longer be reasonable. We have however reduced the individual caps on LMDI indicators from 2% to 1% (now part of PIS) partially to address these concerns.

(c) Concerns raised by TRANSCO in relation to the assessment of performance on Category B were discussed in this document and earlier consultation papers. We acknowledge the lack of precise definitions and measurements for these indicators, which is why they are not in Category A with automatic penalty or bonus. However, our adjustments for Category B have been limited to date to only a few cases. The reduced overall cap of 1% for Category B indicators should further address these concerns. We would expect to continue notifying 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. Further, we would be very pleased to provide any further guidelines on our assessment of specific Category B indicators if and when requested by the companies.

(d) In contrast to its response, ADSSC has not yet proposed any technical measure for Category A indicator. This is despite our request for details on the technical KPIs or measures which ADSSC presently uses to monitor its own performance and the performance of its contractors. We consistently highlighted that, in common with the other companies, one or more Category A indicators should be considered for ADSSC to provide incentives to improve technical aspects of its operations, such as network availability and reliability.

(e) With regards to the Customer Debt Reduction indicator, we note that:

(i) Distribution companies' accounts and reports continue to show a level of customer debts in excess of international comparisons.

(ii) We are concerned with customer debts both in absolute terms and as a proportion of the revenues. However, we are not setting an arbitrary target for reduction. The target will be the level of customer debts in the previous year.

(iii) AADC's concern with regards to certain customers was acknowledged and discussed in the Draft Proposals. There we explained that the indicator requires an audited value and the only audited value provided in the accounts is the total receivables across all customers.

Final Proposals

Category A and B Indicators for PC4

9.13 Based on the above discussion, we have adopted in these Final Proposals all Category A and B indicators proposed in the Draft Proposals (with some minor refinements). Further, as discussed in Section 3, we have now adopted the proposed LMDI measures as Category A indicators.

9.14 **Table 9.3** below lists the Category A indicators for PC4 adopted in these Final Proposals. **Table 9.2** above lists the Category B indicators for PC4 (unchanged from the Draft Proposals). In both the tables, new indicators are highlighted in a **red bold** font.

Table 9.3: Category A Indicators for PC4 – Final Proposals

Company	Electricity	Water	Wastewater
AADC / ADDC	Timeliness of Audited SBA	Timeliness of Audited SBA	
	Timeliness of Audited PCR	Timeliness of Audited PCR	
	Timeliness of AIS	Timeliness of AIS	
	Customer Minutes Lost per Customer	Water Quality	
	No. of Interruptions per Customer (until 2009)	**Customer Debt Reduction**	
	SAIFI	**DLR indicator**	
	Customer Debt Reduction	**IM indicator**	
	Distribution Loss Reduction (DLR) indicator	**DSM indicator**	
	Interface Metering (IM) indicator		
	Demand Side Management (DSM) indicator		
TRANSCO	Timeliness of Audited SBAs	Timeliness of Audited SBAs	
	Timeliness of Audited PCR	Timeliness of Audited PCR	
	Timeliness of AIS	Timeliness of AIS	
	Availability	Water Quality	
	Energy Lost	**Availability**	
ADSSC			Timeliness of Audited SBAs
			Timeliness of Audited PCR
			Timeliness of AIS

Notes: SBA = Separate Business Accounts; PCR = Price Control Return; AIS = Annual Information Submission; SAIFI = System Average Interruption Frequency Index

9.15 As discussed in Section 7 and shown in **Table 9.2**, we have now formalised the additional incentives for TRANSCO to remove water transmission constraints from 1 January 2009 by including it in the PIS as a Category B indicator. However, this indicator has its own incentive scheme and is not subject to a cap.

Caps on incentives

9.16 The bonus and penalty for each Category A indicator (including LMDI measures) will be subject to an individual cap of 1% of the company's own MAR. There will be no overall cap on Category A indicators. We have reduced the overall cap on the financial adjustments (if any, at the next price control review) for performance on Category B indicators during PC4 to 1% of company's own MAR in the relevant year.

9.17 Bonuses for Category A timeliness indicators will continue to be calculated as six times the relevant monthly penalty, with the maximum penalty capped at 12 months delay.

Table 9.4: Caps on PIS incentives – Final Proposals

	Individual cap	Overall cap
Category A indicator	As below:	No overall cap
Timeliness indicator	6 (bonus) or 12 (penalty) times incentive rate	No overall cap
Technical indicator	1% of company's own MAR	No overall cap
Category B indicator	No individual cap	1% of company's own MAR

Notes: Timeliness indicators relate to SBA, PCR and AIS submissions. Technical indicators refer to non-timeliness indicators.

Targets for Category A indicators

9.18 For these Final Proposals, we have adopted the performance targets for Category A indicators as suggested in the Draft Proposals:

Table 9.5: Targets for Category A indicators – Final Proposals

Category A indicator	Performance target
Timeliness indicators	
SBA and PCR timeliness	30 April
AIS timeliness	31 October
Technical (non-timeliness) indicators	
Water quality	95% (existing definition)
Interface metering	100%
All other technical indicators	Previous year performance

Incentive rates for Category A Indicators for PC4

9.19 As shown in **Table 9.6** below, the incentive rates for Category A indicators for each business have been calculated using the same approach as used in the Draft Proposals and similar to the approach used at the previous price control reviews:

(a) Determine the total amount "at risk" for each indicator as 1% of average forecast MAR for PC4 in relation to "own costs".

(b) The incentive rate for each indicator is then derived by dividing the amount calculated above by a scheme calibration assumption as follows:

(i) For all timeliness indicators: 6 months delay;

(ii) For IM indicator: 30% metering improvement; and

(iii) For all other indicators: 20% change from the target performance.

9.20 These assumptions are purely hypothetical and used only for the purpose of the initial calibration of PIS and play no further role in the implementation of the scheme.

Table 9.6: Incentive rates for Category A Indicators – Final Proposals

		Average MAR (AED million)	Incentive amount for each indicator (AED)	Timeliness indicator (AED / month)	Interface metering indicator (AED / 1%)	All other indicators (AED / 1%)
AADC	**Electricity**	1,103.44	11,034,427	1,840,000	**370,000**	**550,000**
	Water	417.30	4,172,972	700,000	**140,000**	**210,000**
ADDC	**Electricity**	1,555.90	15,558,994	2,590,000	**520,000**	**780,000**
	Water	786.41	7,864,142	1,310,000	**260,000**	**390,000**
TRANSCO	**Electricity**	2,953.53	29,535,324	4,923,000		**1,480,000**
	Water	1,746.92	17,469,158	2,912,000		**600,000**
ADSSC		1,658.95	16,589,515	**2,760,000**		

Notes: 1. "Timeliness indicators" means those relating to SBAs, PCRs and AIS.

Notes: 2. "All other indicators" refers to the technical indicators (a) water quality indicator (b) customer debt reduction, (c) customer minutes lost. (d) SAIFI, (e) DLR indicator, (f) DSM indicator, (g) availability, and (h) energy lost. The only exception is the IM indicator which is calibrated on a different assumption than these indicators.

Operation of PIS for Category A Indicators for PC4

Formulae for Q terms

9.21 The PIS for PC4 operates in the same manner as has been operating for the current price controls. Specific formulae for the calculation of the Q terms for each Category A indicator will remain the same as set out in the Draft Proposals.

9.22 The only exception to the above is the water quality indicator, where we have now decided to retain the existing formula structure (rather than the revision suggested in the Draft Proposals). The annual compliance target will be 95% for each year of the

PC4 period. That is, both the bonus and penalty for water quality indicator will be calculated as follows:

Q = Incentive Rate x [(No. of samples passed tests / No. of samples required to be taken)-0.95] x 100

provided, if Q calculated as above is positive (bonus), and if any of the actual parameter tests taken do not pass the requirements of the Water Quality Regulations, then the value of Q shall be taken as zero.

Timing of new indicators and incentive rates

9.23 As at present, MAR will be adjusted via the Q term in the year "t+2" for performance on Category A indicators, as follows:

(a) Submission in year "t+1" of SBAs and PCRs for the financial year "t";

(b) Submission in year "t" of AIS for the year "t"; and

(c) Performance on technical indicators in year "t".

9.24 The new incentive rates and new Category A indicators proposed for PC4 in these Final Proposals will take effect as follows:

(a) Existing Category A indicators will continue to be subject to the existing incentive rates as long as the performance year (for technical indicators) or submission year (for timeliness indicators) falls within the PC3 period (i.e. up to 2009). These indicators will be subject to the new PC4 incentive rates as calculated in **Table 9.6** above when the performance or submission year falls during the PC4 period (i.e. 2010-2014).

(b) The new Category A indicators (which are all technical indicators) and their new incentive rates will take effect as follows:

(i) where the audited data for performance measurement in 2009 is available to set the target for 2010, the first performance year will be 2010 and new incentive rates will apply to adjust MAR in 2012 onwards; or

(ii) where the audited data for performance measurement in 2009 is not available, the first performance year will be 2011 and new incentive rates will apply to adjust MAR in 2013 onwards (in this case, 2010 data will be audited to set the target for 2011).

9.25 All new Category A indicators (except one) will have 2009 audited data available to set the performance target and hence will be introduced for performance from 2010 onwards. We will ask the TA to report this data in its forthcoming PCR audit of the 2009 financial year. The only exception is the water availability indicator for TRANSCO, which will not have 2009 data available and will therefore take effect for performance from 2011 onwards (with 2010 actual performance as the target).

9.26 The existing electricity Interruption indicator for AADC and ADDC will continue until the performance year 2009 with the existing incentive rates (to be applied to 2011 MAR). The SAIFI indicator will replace this indicator from the performance year 2010 with the new incentive rates (to be applied to 2012 MAR).

9.27 The submission dates for the PCRs/SBAs and AIS change to 30 April and 31 October, respectively, for the 2010 submissions.

9.28 The above mechanism will also treat the AIS indicator for ADSSC consistent with those for other licensees. That is, the MAR adjustment for AIS submission for year "t" will occur in year "t+2" rather than year "t+1" as implied in ADSSC's current licence. (The Bureau has corresponded separately with ADSSC on this subject.)

9.29 The above proposed design is summarised in **Table 9.7** below:

Table 9.7: Operation of PIS for Category A indicators – Final Proposals

	Submission year	Performance year	MAR adjustment	PC4 incentive rates apply
Timeliness Indicators				
SBAs for financial year t	t+1		t+2	2010 submission (2011 MAR)
PCRs for financial year t	t+1		t+2	2010 submission (2011 MAR)
AIS for year t	t		t+2	2010 submission (2012 MAR)
Existing Technical Indicators				
Customer Minutes Lost		t	t+2	2010 performance (2012 MAR)
Interruptions		t (until 2009)	t+2	n/a
Availability (electricity)		t	t+2	2010 performance (2012 MAR)
Energy Lost		t	t+2	2010 performance (2012 MAR)
New Technical Indicators				
SAIFI		t	t+2	2010 performance (2012 MAR)
Customer Debt Reduction		t	t+2	2010 performance (2012 MAR)
DLRI		t	t+2	2010 performance (2012 MAR)
IMI		t	t+2	2010 performance (2012 MAR)
DSMI		t	t+2	2010 performance (2012 MAR)
Availability (water)		t	t+2	2011 performance (2013 MAR)

Annex A: Updating RAVs

Annex A.1: AADC Electricity – Updating RAV

Updating 2010 Opening RAV for PC2 Efficient Capex

Line No.

	UAE CPI Assumptions	2002	2003	2004	2005	2006	2007	2008	2009
1	**CPI (2000 = 100) used in calculations**	**71.58**	**73.82**	**77.54**	**82.34**	**89.99**	**100.00**	**112.30**	**113.07**

	Additional Efficient PC2 Capex to be allowed at this Review			2003	2004	2005
2	Actual PC2 capex	AEDm, nominal prices		409.91	399.28	548.98
3	Applied capex efficiency factor	%	92.60%			
4	Efficient PC2 capex	AEDm, nominal prices		379.57	369.73	508.35
5	Efficient PC2 capex	AEDm, 2003 prices		379.57	358.55	469.32
6	Provisional PC2 capex	AEDm, 2003 prices		205.80	205.80	205.80
7	**Additional efficient PC2 capex to be allowed at PC4**	**AEDm, 2003 prices**		**173.78**	**152.75**	**263.52**

	Depreciation foregone on Additional Efficient PC2 Capex			2003	2004	2005	2006	2007	2008	2009
8	Assumed average asset life for new investment	years	30							
9	Additional efficient PC2 capex to be allowed at PC4	AEDm, 2003 prices		173.78	152.75	263.52				
10	**Depreciation on additional efficient PC2 capex** (half-year depreciation for the first year of each annual capex)	AEDm, 2003 prices		**2.90**	**8.34**	**15.28**	**19.67**	**19.67**	**19.67**	**19.67**

	Return on Capital foregone on Additional Efficient PC2 Capex			2003	2004	2005	2006	2007	2008	2009
11	Additional efficient PC2 capex - Opening value	AEDm, 2003 prices		0.00	170.88	315.29	563.54	543.87	524.20	504.53
12	Additional efficient PC2 capex	AEDm, 2003 prices		173.78	152.75	263.52				
13	Depreciation on additional efficient PC2 capex	AEDm, 2003 prices		2.90	8.34	15.28	19.67	19.67	19.67	19.67
14	Additional efficient PC2 capex - Closing value	AEDm, 2003 prices		170.88	315.29	563.54	543.87	524.20	504.53	**484.86**
15	Average of Opening and Closing values	AEDm, 2003 prices		85.44	243.09	439.41	553.70	534.03	514.37	494.70
16	Cost of capital (real)	%	6.00%							
17	**Return on capital foregone**	AEDm, 2003 prices		**5.13**	**14.59**	**26.36**	**33.22**	**32.04**	**30.86**	**29.68**

	Financing Costs foregone on Additional Efficient PC2 Capex		2003	2004	2005	2006	2007	2008	2009
18	Depreciation foregone	AEDm, 2003 prices	2.90	8.34	15.28	19.67	19.67	19.67	19.67
19	Return on capital foregone	AEDm, 2003 prices	5.13	14.59	26.36	33.22	32.04	30.86	29.68
20	Total financing costs foregone	AEDm, 2003 prices	8.02	22.92	41.64	52.89	51.71	50.53	49.35
21	Years from year mid point to 1 Jan 2010	years	6.50	5.50	4.50	3.50	2.50	1.50	0.50
22	NPV @ 1 Jan 2010 of financing costs foregone	AEDm, 2003 prices	11.72	31.58	54.13	64.86	59.82	55.15	50.81
23	Accumulated NPV (@ 1 Jan 2010) of financing costs foregone	AEDm, 2003 prices							328.06
24	**Accumulated NPV (@ 1 Jan 2010) of financing costs foregone**	**AEDm, 2010 prices**							**518.18**

	Updated 2010 Opening RAV (including Additional Efficient PC2 Capex)		2010
25	Initial Opening 2010 RAV (with provisional PC2 capex)	AEDm, 2006 prices	3,300.51
26	Initial Opening 2010 RAV (with provisional PC2 capex)	AEDm, 2003 prices	2,869.30
27	Add: Additional efficient PC2 capex - Closing value @ 31 Dec 2009	AEDm, 2003 prices	484.86
28	Updated Opening 2010 RAV including Additional Efficient PC2 capex	AEDm, 2003 prices	3,354.16
29	**Updated Opening 2010 RAV including Efficient PC2 capex**	**AEDm, 2010 prices**	**5,298.10**

Updating PC4 RAVs for PC4 Provisional Capex

	Updated PC4 RAVs including PC4 Provisional Capex			2010	2011	2012	2013
30	Assumed average asset life for new investment	years	30				
31	**Opening RAV**	**AEDm, 2010 prices**		**5,298.10**	**5,876.06**	**6,424.01**	**6,941.97**
32	Provisional PC4 capex	AEDm, 2010 prices		900.00	900.00	900.00	900.00
33	Total Depreciation on RAV and capex (excluding PC4 provisional capex)	AEDm, 2010 prices		307.04	307.04	307.04	307.04
34	Depreciation on provisional PC4 capex (half-year depreciation for first year)	AEDm, 2010 prices		15.00	45.00	75.00	105.00
35	**Total depreciation for PC4**	**AEDm, 2010 prices**		**322.04**	**352.04**	**382.04**	**412.04**
36	**Closing RAV**	**AEDm, 2010 prices**		**5,876.06**	**6,424.01**	**6,941.97**	**7,429.92**

Annex A.2: AADC Water – Updating RAV

Updating 2010 Opening RAV for PC2 Efficient Capex

Line No.

	UAE CPI Assumptions		2002	2003	2004	2005	2006	2007	2008	2009
1	**CPI (2000 = 100) used in calculations**		**71.58**	**73.82**	**77.54**	**82.34**	**89.99**	**100.00**	**112.30**	**113.07**

	Additional Efficient PC2 Capex to be allowed at this Review			2003	2004	2005
2	Actual PC2 capex	AEDm, nominal prices		130.50	155.54	207.68
3	Applied capex efficiency factor	%	91.70%			
4	Efficient PC2 capex	AEDm, nominal prices		119.67	142.63	190.45
5	Efficient PC2 capex	AEDm, 2003 prices		119.67	138.32	175.82
6	Provisional PC2 capex	AEDm, 2003 prices		72.37	72.37	72.37
7	**Additional efficient PC2 capex to be allowed at PC4**	**AEDm, 2003 prices**		**47.30**	**65.95**	**103.45**

	Depreciation foregone on Additional Efficient PC2 Capex			2003	2004	2005	2006	2007	2008	2009
8	Assumed average asset life for new investment	years	30							
9	Additional efficient PC2 capex to be allowed at PC4	AEDm, 2003 prices		47.30	65.95	103.45				
10	**Depreciation on additional efficient PC2 capex**	AEDm, 2003 prices		**0.79**	**2.68**	**5.50**	**7.22**	**7.22**	**7.22**	**7.22**
	(half-year depreciation for the first year of each annual capex)									

	Return on Capital foregone on Additional Efficient PC2 Capex			2003	2004	2005	2006	2007	2008	2009
11	Additional efficient PC2 capex - Opening value	AEDm, 2003 prices		0.00	46.51	109.78	207.74	200.51	193.29	186.07
12	Additional efficient PC2 capex	AEDm, 2003 prices		47.30	65.95	103.45				
13	Depreciation on additional efficient PC2 capex	AEDm, 2003 prices		0.79	2.68	5.50	7.22	7.22	7.22	7.22
14	Additional efficient PC2 capex - Closing value	AEDm, 2003 prices		46.51	109.78	207.74	200.51	193.29	186.07	**178.84**
15	Average of Opening and Closing values	AEDm, 2003 prices		23.26	78.15	158.76	204.13	196.90	189.68	182.46
16	Cost of capital (real)	%	6.00%							
17	**Return on capital foregone**	AEDm, 2003 prices		**1.40**	**4.69**	**9.53**	**12.25**	**11.81**	**11.38**	**10.95**

	Financing Costs foregone on Additional Efficient PC2 Capex		2003	2004	2005	2006	2007	2008	2009
18	Depreciation foregone	AEDm, 2003 prices	0.79	2.68	5.50	7.22	7.22	7.22	7.22
19	Return on capital foregone	AEDm, 2003 prices	1.40	4.69	9.53	12.25	11.81	11.38	10.95
20	Total financing costs foregone	AEDm, 2003 prices	2.18	7.36	15.02	19.47	19.04	18.60	18.17
21	Years from year mid point to 1 Jan 2010	years	6.50	5.50	4.50	3.50	2.50	1.50	0.50
22	NPV @ 1 Jan 2010 of financing costs foregone	AEDm, 2003 prices	3.19	10.15	19.53	23.88	22.02	20.30	18.71
23	Accumulated NPV (@ 1 Jan 2010) of financing costs foregone	AEDm, 2003 prices							117.77
24	**Accumulated NPV (@ 1 Jan 2010) of financing costs foregone**	**AEDm, 2010 prices**							**186.03**

	Updated 2010 Opening RAV (including Additional Efficient PC2 Capex)		2010
25	Initial Opening 2010 RAV (with provisional PC2 capex)	AEDm, 2006 prices	1,628.53
26	Initial Opening 2010 RAV (with provisional PC2 capex)	AEDm, 2003 prices	1,415.77
27	Add: Additional efficient PC2 capex - Closing value @ 31 Dec 2009	AEDm, 2003 prices	178.84
28	Updated Opening 2010 RAV including Additional Efficient PC2 capex	AEDm, 2003 prices	1,594.61
29	**Updated Opening 2010 RAV including Efficient PC2 capex**	**AEDm, 2010 prices**	**2,518.78**

Updating PC4 RAVs for PC4 Provisional Capex

	Updated PC4 RAVs including PC4 Provisional Capex			2010	2011	2012	2013
30	Assumed average asset life for new investment	years	30				
31	**Opening RAV**	**AEDm, 2010 prices**		**2,518.78**	**2,544.03**	**2,564.95**	**2,581.54**
32	Provisional PC4 capex	AEDm, 2010 prices		130.00	130.00	130.00	130.00
33	Total Depreciation on RAV and capex (excluding PC4 provisional capex)	AEDm, 2010 prices		102.58	102.58	102.58	102.58
34	Depreciation on provisional PC4 capex (half-year depreciation for first year)	AEDm, 2010 prices		2.17	6.50	10.83	15.17
35	**Total depreciation for PC4**	**AEDm, 2010 prices**		**104.75**	**109.08**	**113.42**	**117.75**
36	**Closing RAV**	**AEDm, 2010 prices**		**2,544.03**	**2,564.95**	**2,581.54**	**2,593.79**

Annex A.3: ADDC Electricity – Updating RAV

Updating 2010 Opening RAV for PC2 Efficient Capex

Line No.

	UAE CPI Assumptions		2002	2003	2004	2005	2006	2007	2008	2009
1	**CPI (2000 = 100) used in calculations**		**71.58**	**73.82**	**77.54**	**82.34**	**89.99**	**100.00**	**112.30**	**113.07**

	Additional Efficient PC2 Capex to be allowed at this Review			2003	2004	2005
2	Actual PC2 capex	AEDm, nominal prices		582.03	512.24	296.89
3	Applied capex efficiency factor	%	90.10%			
4	Efficient PC2 capex	AEDm, nominal prices		524.41	461.53	267.50
5	Efficient PC2 capex	AEDm, 2003 prices		524.41	447.57	246.96
6	Provisional PC2 capex	AEDm, 2003 prices		461.88	484.97	509.22
7	**Additional efficient PC2 capex to be allowed at PC4**	**AEDm, 2003 prices**		**62.54**	**(37.40)**	**(262.26)**

	Depreciation foregone on Additional Efficient PC2 Capex			2003	2004	2005	2006	2007	2008	2009
8	Assumed average asset life for new investment	years	30							
9	Additional efficient PC2 capex to be allowed at PC4	AEDm, 2003 prices		62.54	-37.40	-262.26				
10	**Depreciation on additional efficient PC2 capex**	AEDm, 2003 prices		**1.04**	**1.46**	**-3.53**	**-7.90**	**-7.90**	**-7.90**	**-7.90**
	(half-year depreciation for the first year of each annual capex)									

	Return on Capital foregone on Additional Efficient PC2 Capex			2003	2004	2005	2006	2007	2008	2009
11	Additional efficient PC2 capex - Opening value	AEDm, 2003 prices		0.00	61.49	22.63	-236.10	-228.20	-220.29	-212.39
12	Additional efficient PC2 capex	AEDm, 2003 prices		62.54	-37.40	-262.26				
13	Depreciation on additional efficient PC2 capex	AEDm, 2003 prices		1.04	1.46	-3.53	-7.90	-7.90	-7.90	-7.90
14	Additional efficient PC2 capex - Closing value	AEDm, 2003 prices		61.49	22.63	-236.10	-228.20	-220.29	-212.39	**-204.48**
15	Average of Opening and Closing values	AEDm, 2003 prices		30.75	42.06	-106.74	-232.15	-224.24	-216.34	-208.43
16	Cost of capital (real)	%	6.00%							
17	**Return on capital foregone**	AEDm, 2003 prices		**1.84**	**2.52**	**-6.40**	**-13.93**	**-13.45**	**-12.98**	**-12.51**

	Financing Costs foregone on Additional Efficient PC2 Capex		2003	2004	2005	2006	2007	2008	2009
18	Depreciation foregone	AEDm, 2003 prices	1.04	1.46	-3.53	-7.90	-7.90	-7.90	-7.90
19	Return on capital foregone	AEDm, 2003 prices	1.84	2.52	-6.40	-13.93	-13.45	-12.98	-12.51
20	Total financing costs foregone	AEDm, 2003 prices	2.89	3.98	-9.94	-21.83	-21.36	-20.88	-20.41
21	Years from year mid point to 1 Jan 2010	years	6.50	5.50	4.50	3.50	2.50	1.50	0.50
22	NPV @ 1 Jan 2010 of financing costs foregone	AEDm, 2003 prices	4.22	5.49	-12.92	-26.77	-24.71	-22.79	-21.01
23	Accumulated NPV (@ 1 Jan 2010) of financing costs foregone	AEDm, 2003 prices							-98.50
24	**Accumulated NPV (@ 1 Jan 2010) of financing costs foregone**	**AEDm, 2010 prices**							**-155.58**

	Updated 2010 Opening RAV (including Additional Efficient PC2 Capex)		2010
25	Initial Opening 2010 RAV (with provisional PC2 capex)	AEDm, 2006 prices	7,037.90
26	Initial Opening 2010 RAV (with provisional PC2 capex)	AEDm, 2003 prices	6,118.41
27	Add: Additional efficient PC2 capex - Closing value @ 31 Dec 2009	AEDm, 2003 prices	(204.48)
28	Updated Opening 2010 RAV including Additional Efficient PC2 capex	AEDm, 2003 prices	5,913.93
29	**Updated Opening 2010 RAV including Efficient PC2 capex**	**AEDm, 2010 prices**	**9,341.40**

Updating PC4 RAVs for PC4 Provisional Capex

	Updated PC4 RAVs including PC4 Provisional Capex			2010	2011	2012	2013
30	Assumed average asset life for new investment	years	30				
31	**Opening RAV**	**AEDm, 2010 prices**		**9,341.40**	**10,380.11**	**11,366.49**	**12,300.54**
32	Provisional PC4 capex	AEDm, 2010 prices		1,570.00	1,570.00	1,570.00	1,570.00
33	Total Depreciation on RAV and capex (excluding PC4 provisional capex)	AEDm, 2010 prices		505.12	505.12	505.12	505.12
34	Depreciation on provisional PC4 capex (half-year depreciation for first year)	AEDm, 2010 prices		26.17	78.50	130.83	183.17
35	**Total depreciation for PC4**	**AEDm, 2010 prices**		**531.29**	**583.62**	**635.95**	**688.29**
36	**Closing RAV**	**AEDm, 2010 prices**		**10,380.11**	**11,366.49**	**12,300.54**	**13,182.25**

Annex A.4: ADDC Water – Updating RAV

Updating 2010 Opening RAV for PC2 Efficient Capex

Line No.

	UAE CPI Assumptions			2002	2003	2004	2005	2006	2007	2008	2009
1	**CPI (2000 = 100) used in calculations**			**71.58**	**73.82**	**77.54**	**82.34**	**89.99**	**100.00**	**112.30**	**113.07**

	Additional Efficient PC2 Capex to be allowed at this Review			2003	2004	2005
2	Actual PC2 capex	AEDm, nominal prices		466.21	291.79	82.99
3	Applied capex efficiency factor	%	88.00%			
4	Efficient PC2 capex	AEDm, nominal prices		410.27	256.77	73.03
5	Efficient PC2 capex	AEDm, 2003 prices		410.27	249.00	67.43
6	Provisional PC2 capex	AEDm, 2003 prices		151.42	158.99	166.94
7	**Additional efficient PC2 capex to be allowed at PC4**	**AEDm, 2003 prices**		**258.85**	**90.01**	**(99.52)**

	Depreciation foregone on Additional Efficient PC2 Capex			2003	2004	2005	2006	2007	2008	2009
8	Assumed average asset life for new investment	years	30							
9	Additional efficient PC2 capex to be allowed at PC4	AEDm, 2003 prices		258.85	90.01	-99.52				
10	**Depreciation on additional efficient PC2 capex**	AEDm, 2003 prices		**4.31**	**10.13**	**9.97**	**8.31**	**8.31**	**8.31**	**8.31**
	(half-year depreciation for the first year of each annual capex)									

	Return on Capital foregone on Additional Efficient PC2 Capex			2003	2004	2005	2006	2007	2008	2009
11	Additional efficient PC2 capex - Opening value	AEDm, 2003 prices		0.00	254.53	334.42	224.93	216.62	208.31	200.00
12	Additional efficient PC2 capex	AEDm, 2003 prices		258.85	90.01	-99.52				
13	Depreciation on additional efficient PC2 capex	AEDm, 2003 prices		4.31	10.13	9.97	8.31	8.31	8.31	8.31
14	Additional efficient PC2 capex - Closing value	AEDm, 2003 prices		254.53	334.42	224.93	216.62	208.31	200.00	**191.69**
15	Average of Opening and Closing values	AEDm, 2003 prices		127.27	294.47	279.67	220.78	212.46	204.15	195.84
16	Cost of capital (real)	%	6.00%							
17	**Return on capital foregone**	AEDm, 2003 prices		**7.64**	**17.67**	**16.78**	**13.25**	**12.75**	**12.25**	**11.75**

	Financing Costs foregone on Additional Efficient PC2 Capex		2003	2004	2005	2006	2007	2008	2009
18	Depreciation foregone	AEDm, 2003 prices	4.31	10.13	9.97	8.31	8.31	8.31	8.31
19	Return on capital foregone	AEDm, 2003 prices	7.64	17.67	16.78	13.25	12.75	12.25	11.75
20	Total financing costs foregone	AEDm, 2003 prices	11.95	27.80	26.75	21.56	21.06	20.56	20.06
21	Years from year mid point to 1 Jan 2010	AEDm, 2003 prices	6.50	5.50	4.50	3.50	2.50	1.50	0.50
22	NPV @ 1 Jan 2010 of financing costs foregone	years	17.45	38.30	34.77	26.44	24.36	22.44	20.66
23	Accumulated NPV (@ 1 Jan 2010) of financing costs foregone	AEDm, 2003 prices							184.41
24	**Accumulated NPV (@ 1 Jan 2010) of financing costs foregone**	**AEDm, 2010 prices**							**291.29**

	Updated 2010 Opening RAV (including Additional Efficient PC2 Capex)		2010
25	Initial Opening 2010 RAV (with provisional PC2 capex)	AEDm, 2006 prices	2,611.91
26	Initial Opening 2010 RAV (with provisional PC2 capex)	AEDm, 2003 prices	2,270.66
27	Add: Additional efficient PC2 capex - Closing value @ 31 Dec 2009	AEDm, 2003 prices	191.69
28	Updated Opening 2010 RAV including Additional Efficient PC2 capex	AEDm, 2003 prices	2,462.35
29	**Updated Opening 2010 RAV including Efficient PC2 capex**	**AEDm, 2010 prices**	**3,889.43**

Updating PC4 RAVs for PC4 Provisional Capex

	Updated PC4 RAVs including PC4 Provisional Capex			2010	2011	2012	2013
30	Assumed average asset life for new investment	years	30				
31	**Opening RAV**	**AEDm, 2010 prices**		**3,889.43**	**4,228.77**	**4,548.45**	**4,848.46**
32	Provisional PC4 capex	AEDm, 2010 prices		590.00	590.00	590.00	590.00
33	Total Depreciation on RAV and capex (excluding PC4 provisional capex)	AEDm, 2010 prices		240.82	240.82	240.82	221.11
34	Depreciation on provisional PC4 capex (half-year depreciation for first year)	AEDm, 2010 prices		9.83	29.50	49.17	68.83
35	**Total depreciation for PC4**	**AEDm, 2010 prices**		**250.66**	**270.32**	**289.99**	**289.95**
36	**Closing RAV**	**AEDm, 2010 prices**		**4,228.77**	**4,548.45**	**4,848.46**	**5,148.51**

Annex A.5: TRANSCO Electricity – Updating RAV

Updating 2010 Opening RAV for PC2 Efficient Capex

Line No.

	UAE CPI Assumptions	2002	2003	2004	2005	2006	2007	2008	2009
1	**CPI (2000 = 100) used in calculations**	**71.58**	**73.82**	**77.54**	**82.34**	**89.99**	**100.00**	**112.30**	**113.07**

	Additional Efficient PC2 Capex to be allowed at this Review			2003	2004	2005
2	Actual PC2 capex	AEDm, nominal prices		1,135.39	1,729.96	1,478.15
3	Applied capex efficiency factor	%	93.60%			
4	Efficient PC2 capex	AEDm, nominal prices		1,062.72	1,619.24	1,383.55
5	Efficient PC2 capex	AEDm, 2003 prices		1,062.72	1,570.26	1,277.31
6	Provisional PC2 capex	AEDm, 2003 prices		1,267.79	730.38	346.04
7	**Additional efficient PC2 capex to be allowed at PC4**	**AEDm, 2003 prices**		**-205.07**	**839.89**	**931.27**

	Depreciation foregone on Additional Efficient PC2 Capex			2003	2004	2005	2006	2007	2008	2009
8	Assumed average asset life for new investment	years	30							
9	Additional efficient PC2 capex to be allowed at PC4	AEDm, 2003 prices		(205.07)	839.89	931.27				
10	**Depreciation on additional efficient PC2 capex**	AEDm, 2003 prices		**-3.42**	**7.16**	**36.68**	**52.20**	**52.20**	**52.20**	**52.20**
	(half-year depreciation for the first year of each annual capex)									

	Return on Capital foregone on Additional Efficient PC2 Capex			2003	2004	2005	2006	2007	2008	2009
11	Additional efficient PC2 capex - Opening value	AEDm, 2003 prices		0.00	(201.65)	631.07	1,525.66	1,473.46	1,421.26	1,369.05
12	Additional efficient PC2 capex	AEDm, 2003 prices		(205.07)	839.89	931.27				
13	Depreciation on additional efficient PC2 capex	AEDm, 2003 prices		(3.42)	7.16	36.68	52.20	52.20	52.20	52.20
14	Additional efficient PC2 capex - Closing value	AEDm, 2003 prices		(201.65)	631.07	1,525.66	1,473.46	1,421.26	1,369.05	**1,316.85**
15	Average of Opening and Closing values	AEDm, 2003 prices		(100.83)	214.71	1,078.37	1,499.56	1,447.36	1,395.16	1,342.95
16	Cost of capital (real)	%	6.00%							
17	**Return on capital foregone**	AEDm, 2003 prices		**-6.05**	**12.88**	**64.70**	**89.97**	**86.84**	**83.71**	**80.58**

	Financing Costs foregone on Additional Efficient PC2 Capex		2003	2004	2005	2006	2007	2008	2009
18	Depreciation foregone	AEDm, 2003 prices	(3.42)	7.16	36.68	52.20	52.20	52.20	52.20
19	Return on capital foregone	AEDm, 2003 prices	(6.05)	12.88	64.70	89.97	86.84	83.71	80.58
20	Total financing costs foregone	AEDm, 2003 prices	(9.47)	20.05	101.38	142.18	139.04	135.91	132.78
21	Years from year mid point to 1 Jan 2010	years	6.50	5.50	4.50	3.50	2.50	1.50	0.50
22	NPV @ 1 Jan 2010 of financing costs foregone	AEDm, 2003 prices	(13.83)	27.62	131.78	174.34	160.85	148.33	136.71
23	Accumulated NPV (@ 1 Jan 2010) of financing costs foregone	AEDm, 2003 prices							765.79
24	**Accumulated NPV (@ 1 Jan 2010) of financing costs foregone**	**AEDm, 2010 prices**							**1209.61**

	Updated 2010 Opening RAV (including Additional Efficient PC2 Capex)		2010
25	Initial Opening 2010 RAV (with provisional PC2 capex)	AEDm, 2006 prices	12,118.09
26	Initial Opening 2010 RAV (with provisional PC2 capex)	AEDm, 2003 prices	10,534.87
27	Add: Additional efficient PC2 capex - Closing value @ 31 Dec 2009	AEDm, 2003 prices	1,316.85
28	Updated Opening 2010 RAV including Additional Efficient PC2 capex	AEDm, 2003 prices	11,851.72
29	**Updated Opening 2010 RAV including Efficient PC2 capex**	**AEDm, 2010 prices**	**18,720.51**

Updating PC4 RAVs for PC4 Provisional Capex

	Updated PC4 RAVs including PC4 Provisional Capex			2010	2011	2012	2013
30	Assumed average asset life for new investment	years	30				
31	**Opening RAV**	**AEDm, 2010 prices**		**18,720.51**	**23,017.11**	**27,139.38**	**31,087.32**
32	Provisional PC4 capex	AEDm, 2010 prices		5,230.00	5,230.00	5,230.00	5,230.00
33	Total Depreciation on RAV and capex (excluding PC4 provisional capex)	AEDm, 2010 prices		846.23	846.23	846.23	846.23
34	Depreciation on provisional PC4 capex (half-year depreciation for first year)	AEDm, 2010 prices		87.17	261.50	435.83	610.17
35	**Total depreciation for PC4**	**AEDm, 2010 prices**		**933.40**	**1,107.73**	**1,282.06**	**1,456.40**
36	**Closing RAV**	**AEDm, 2010 prices**		**23,017.11**	**27,139.38**	**31,087.32**	**34,860.92**

Annex A.6: TRANSCO Water – Updating RAV

Updating 2010 Opening RAV for PC2 Efficient Capex

Line No.

	UAE CPI Assumptions		2002	2003	2004	2005	2006	2007	2008	2009
1	**CPI (2000 = 100) used in calculations**		**71.58**	**73.82**	**77.54**	**82.34**	**89.99**	**100.00**	**112.30**	**113.07**

	Additional Efficient PC2 Capex to be allowed at this Review			2003	2004	2005
2	Actual PC2 capex	AEDm, nominal prices		1,958.58	2,423.44	(859.25)
3	Applied capex efficiency factor	%	86.20%			
4	Efficient PC2 capex	AEDm, nominal prices		1,688.29	2,089.00	(740.68)
5	Efficient PC2 capex	AEDm, 2003 prices		1,688.29	2,025.82	(683.80)
6	Provisional PC2 capex	AEDm, 2003 prices		1,261.10	1,280.09	243.24
7	**Additional efficient PC2 capex to be allowed at PC4**	**AEDm, 2003 prices**		**427.19**	**745.73**	**(927.04)**

	Depreciation foregone on Additional Efficient PC2 Capex			2003	2004	2005	2006	2007	2008	2009
8	Assumed average asset life for new investment	years	30							
9	Additional efficient PC2 capex to be allowed at PC4	AEDm, 2003 prices		427.19	745.73	(927.04)				
10	**Depreciation on additional efficient PC2 capex**	AEDm, 2003 prices		**7.12**	**26.67**	**23.65**	**8.20**	**8.20**	**8.20**	**8.20**
	(half-year depreciation for the first year of each annual capex)									

	Return on Capital foregone on Additional Efficient PC2 Capex			2003	2004	2005	2006	2007	2008	2009
11	Additional efficient PC2 capex - Opening value	AEDm, 2003 prices		0.00	420.07	1,139.13	188.44	180.25	172.05	163.85
12	Additional efficient PC2 capex	AEDm, 2003 prices		427.19	745.73	(927.04)				
13	Depreciation on additional efficient PC2 capex	AEDm, 2003 prices		7.12	26.67	23.65	8.20	8.20	8.20	8.20
14	Additional efficient PC2 capex - Closing value	AEDm, 2003 prices		420.07	1,139.13	188.44	180.25	172.05	163.85	**155.66**
15	Average of Opening and Closing values	AEDm, 2003 prices		210.04	779.60	663.79	184.34	176.15	167.95	159.76
16	Cost of capital (real)	%	6.00%							
17	**Return on capital foregone**	AEDm, 2003 prices		**12.60**	**46.78**	**39.83**	**11.06**	**10.57**	**10.08**	**9.59**

	Financing Costs foregone on Additional Efficient PC2 Capex		2003	2004	2005	2006	2007	2008	2009
18	Depreciation foregone	AEDm, 2003 prices	7.12	26.67	23.65	8.20	8.20	8.20	8.20
19	Return on capital foregone	AEDm, 2003 prices	12.60	46.78	39.83	11.06	10.57	10.08	9.59
20	Total financing costs foregone	AEDm, 2003 prices	19.72	73.44	63.47	19.26	18.76	18.27	17.78
21	Years from year mid point to 1 Jan 2010	years	6.50	5.50	4.50	3.50	2.50	1.50	0.50
22	NPV @ 1 Jan 2010 of financing costs foregone	AEDm, 2003 prices	28.80	101.19	82.50	23.61	21.71	19.94	18.31
23	Accumulated NPV (@ 1 Jan 2010) of financing costs foregone	AEDm, 2003 prices							296.07
24	**Accumulated NPV (@ 1 Jan 2010) of financing costs foregone**	**AEDm, 2010 prices**							**467.66**

	Updated 2010 Opening RAV (including Additional Efficient PC2 Capex)		2010
25	Initial Opening 2010 RAV (with provisional PC2 capex)	AEDm, 2006 prices	7,494.15
26	Initial Opening 2010 RAV (with provisional PC2 capex)	AEDm, 2003 prices	6,515.05
27	Add: Additional efficient PC2 capex - Closing value @ 31 Dec 2009	AEDm, 2003 prices	155.66
28	Updated Opening 2010 RAV including Additional Efficient PC2 capex	AEDm, 2003 prices	6,670.70
29	**Updated Opening 2010 RAV including Efficient PC2 capex**	**AEDm, 2010 prices**	**10,536.78**

Updating PC4 RAVs for PC4 Provisional Capex

	Updated PC4 RAVs including PC4 Provisional Capex			2010	2011	2012	2013
30	Assumed average asset life for new investment	years	30				
31	**Opening RAV**	**AEDm, 2010 prices**		**10,536.78**	**12,457.50**	**14,293.90**	**16,045.95**
32	Provisional PC4 capex	AEDm, 2010 prices		2,530.00	2,530.00	2,530.00	2,530.00
33	Total Depreciation on RAV and capex (excluding PC4 provisional capex)	AEDm, 2010 prices		567.11	567.11	567.11	567.11
34	Depreciation on provisional PC4 capex (half-year depreciation for first year)	AEDm, 2010 prices		42.17	126.50	210.83	295.17
35	**Total depreciation for PC4**	**AEDm, 2010 prices**		**609.27**	**693.61**	**777.94**	**862.27**
36	**Closing RAV**	**AEDm, 2010 prices**		**12,457.50**	**14,293.90**	**16,045.95**	**17,713.68**

Annex A.7: ADSSC – Updating RAV

Updating 2010 Opening RAV for PC2 Efficient Capex

Line No.

	UAE CPI Assumptions	2002	2003	2004	2005	2006	2007	2008	2009
1	CPI (2000 = 100) used in calculations	71.58	73.82	77.54	82.34	89.99	100.00	112.30	113.07

Updating PC4 RAVs for PC4 Provisional Capex

	Updated PC4 RAVs including PC4 Provisional Capex			2010	2011	2012	2013
30	Assumed average asset life for new investment	years	50				
	Initial Opening 2010 RAV (excluding PC4 provisional capex)	AEDm, 2005 prices		5,297.62			
31	**Opening RAV**	**AEDm, 2010 prices**		**7,725.34**	**10,150.94**	**12,516.53**	**14,822.13**
32	Provisional PC4 capex	AEDm, 2010 prices		3,000.00	3,000.00	3,000.00	3,000.00
33	Total Depreciation on RAV and capex (excluding PC4 provisional capex)	AEDm, 2010 prices		544.41	544.41	544.41	544.41
34	Depreciation on provisional PC4 capex (half-year depreciation for first year)	AEDm, 2010 prices		30.00	90.00	150.00	210.00
35	**Total depreciation for PC4**	**AEDm, 2010 prices**		**574.41**	**634.41**	**694.41**	**754.41**
36	**Closing RAV**	**AEDm, 2010 prices**		**10,150.94**	**12,516.53**	**14,822.13**	**17,067.72**

Annex B: Price Control Calculations

Annex B.1: AADC Electricity – Price Control Calculations

Line No. **(all AED amounts are in 2010 prices)**

	Inputs			2010	2011	2012	2013
1	Operating expenditure allowance	AEDm		310.92	309.89	308.87	307.84
2	Opening RAV	AEDm		5,298.10	5,876.06	6,424.01	6,941.97
3	Closing RAV	AEDm		5,876.06	6,424.01	6,941.97	7,429.92
4	Mid-Year RAV	AEDm		5,587.08	6,150.03	6,682.99	7,185.95
5	Total depreciation for PC4	AEDm		322.04	352.04	382.04	412.04
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	Customer Accounts		107,072	110,748	114,569	118,541
8	Forecast for revenue driver 3	GWh		9,668	10,926	11,814	12,520
9	PV of financial adjustments	AEDm	0.00				
10	PV of financing costs foregone on PC2 capex	AEDm	518.18				
11	Cost of capital (real)		4.50%				
12	Weight in revenue for Revenue driver 1		80.00%				
13	Weight in revenue for Revenue driver 2		15.00%				
14	Weight in revenue for Revenue driver 3		5.00%				
15	Negative X Factor		0.00				

	PC3 Required Revenue Calculations		2010	2011	2012	2013	PV over PC4 Period at 1 January 2010
16	Operating expenditure allowance	AEDm	310.92	309.89	308.87	307.84	1,134.82
17	Total depreciation for PC3	AEDm	322.04	352.04	382.04	412.04	1,340.03
18	Return on mid-year RAV	AEDm	251.42	276.75	300.73	323.37	1,051.61
19	Annual revenue requirement	AEDm	884.39	938.69	991.64	1,043.25	3,526.46
20	Discounted annual revenue requirement	AEDm	865.14	878.71	888.31	894.30	3,526.46
21	PV of financial adjustments	AEDm					0.00
22	PV of financing costs foregone on PC2 capex	AEDm					518.18
23	PV of revenue requirement (after financial adjustment and foregone financing costs)	AEDm					**4,044.64**

	PC3 Required Forecast and Profiling		2010	2011	2012	2013	PV Share in TOTAL	
24	**Revenue driver 1**		1.00	1.00	1.00	1.00		
25		AEDm	**882.30**	882.30	882.30	882.30		
26		AEDm	882.30	882.30	882.30	882.30	3,235.71	
27		%	81%	80%	80%	79%	**80%**	
28	**Revenue driver 2**	Customer Accounts	107,072	110,748	114,569	118,541	**Constraints for Solver Run**	
29		AED / Customer	**1,470.21**	1,470.21	1,470.21	1,470.21		
30		AEDm	157.42	162.82	168.44	174.28	606.70	
31		%	14%	15%	15%	16%	**15%**	
32	**Revenue driver 3**	kWh	9,667,804,848	10,925,910,590	11,814,156,542	12,519,899,501		
33		fils / kWh	**0.49**	0.49	0.49	0.49		
34		AEDm	47.69	53.89	58.27	61.75	202.23	
35		%	4%	5%	5%	6%	**5%**	
		Variables for Solver Run						
36	Annual revenue	AEDm	1,087.41	1,099.02	1,109.01	1,118.34	**TOTAL**	Difference
37	**Discounted annual revenue at 1 January 2006**	AEDm	1,063.73	1,028.80	993.45	958.66	**4,044.64**	**0.00**
							Target for Solver Run	

	Results		2010
38	**X Factor**		**0.0**
39	**Fixed revenue term (a)**	**AED million**	**882.30**
40	**Co-efficient of variable revenue term (b)**	**AED / Customer Account**	**1,470.21**
41	**Co-efficient of variable revenue term (c)**	**fils / kWh metered**	**0.4932**

	Implied Financial Indicators		2010	2011	2012	2013	Average
42	Implied annual profit	AEDm	454.44	437.08	418.10	398.45	427.02
43	Implied return on mid-point RAV	%	8.13%	7.11%	6.26%	5.54%	6.76%

Annex B.2: AADC Water – Price Control Calculations

Line No.				(all AED amounts are in 2010 prices)				
	Inputs			**2010**	**2011**	**2012**	**2013**	
1	Operating expenditure allowance	AEDm		146.75	144.92	143.11	141.32	
2	Opening RAV	AEDm		2,518.78	2,544.03	2,564.95	2,581.54	
3	Closing RAV	AEDm		2,544.03	2,564.95	2,581.54	2,593.79	
4	Mid-Year RAV	AEDm		2,531.41	2,554.49	2,573.24	2,587.66	
5	Total depreciation for PC4	AEDm		104.75	109.08	113.42	117.75	
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00	
7	Forecast for revenue driver 2	Customer Accounts		58,218	58,852	59,539	60,281	
8	Forecast for revenue driver 3	MIG		40,858	54,642	72,391	102,193	
9	PV of financial adjustments	AEDm	-15.33					
10	PV of financing costs foregone on PC2 capex	AEDm	186.03					
11	Cost of capital (real)		4.50%					
12	Weight in revenue for Revenue driver 1		80.00%					
13	Weight in revenue for Revenue driver 2		15.00%					
14	Weight in revenue for Revenue driver 3		5.00%					
15	Negative X Factor		0.00					

	PC3 Required Revenue Calculations		**2010**	**2011**	**2012**	**2013**	**PV over PC4 Period at 1 January 2010**
16	Operating expenditure allowance	AEDm	146.75	144.92	143.11	141.32	528.55
17	Total depreciation for PC3	AEDm	104.75	109.08	113.42	117.75	407.11
18	Return on mid-year RAV	AEDm	113.91	114.95	115.80	116.44	422.59
19	Annual revenue requirement	AEDm	365.41	368.95	372.32	375.51	1,358.25
20	Discounted annual revenue requirement	AEDm	357.45	345.38	333.52	321.90	1,358.25
21	PV of financial adjustments	AEDm					-15.33
22	PV of financing costs foregone on PC2 capex	AEDm					186.03
23	PV of revenue requirement (after financial adjustment and foregone financing costs)	AEDm					**1,528.96**

	PC3 Required Forecast and Profiling		**2010**	**2011**	**2012**	**2013**	**PV Share in TOTAL**	
24	**Revenue driver 1**		1.00	1.00	1.00	1.00		
25		AEDm	**333.53**	333.53	333.53	333.53		
26		AEDm	333.53	333.53	333.53	333.53	1,223.17	
27		%	82%	81%	80%	78%	**80%**	
28	**Revenue driver 2**	Customer Accounts	58,218	58,852	59,539	60,281	**Constraints for Solver Run**	
29		AED / Customer	**1,056.64**	1,056.64	1,056.64	1,056.64		
30		AEDm	61.52	62.19	62.91	63.70	229.35	
31		%	15%	15%	15%	15%	**15%**	
32	**Revenue driver 3**	TIG	40,858,327	54,641,902	72,390,771	102,192,992		
33		AED / TIG	**0.31**	0.31	0.31	0.31		
34		AEDm	12.82	17.15	22.72	32.07	76.45	
35		%	3%	4%	5%	7%	**5%**	
		Variables for Solver Run						
36	Annual revenue	AEDm	407.87	412.86	419.16	429.30	**TOTAL**	Difference
37	**Discounted annual revenue at 1 January 2006**	AEDm	398.99	386.48	375.48	368.00	**1,528.96**	**0.00**
							Target for Solver Run	

	Results		**2010**
38	**X Factor**		**0.0**
39	**Fixed revenue term (a)**	**AED million**	**333.53**
40	**Co-efficient of variable revenue term (b)**	**AED / Customer Account**	**1,056.64**
41	**Co-efficient of variable revenue term (c)**	**AED / TIG metered**	**0.3139**

	Implied Financial Indicators		**2010**	**2011**	**2012**	**2013**	**Average**
42	Implied annual profit	AEDm	156.37	158.87	162.64	170.23	162.03
43	Implied return on mid-point RAV	%	6.18%	6.22%	6.32%	6.58%	6.32%

Annex B.3: ADDC Electricity – Price Control Calculations

Line No. **(all AED amounts are in 2010 prices)**

	Inputs			2010	2011	2012	2013
1	Operating expenditure allowance	AEDm		454.57	473.46	493.13	513.61
2	Opening RAV	AEDm		9,341.40	10,380.11	11,366.49	12,300.54
3	Closing RAV	AEDm		10,380.11	11,366.49	12,300.54	13,182.25
4	Mid-Year RAV	AEDm		9,860.76	10,873.30	11,833.52	12,741.40
5	Total depreciation for PC4	AEDm		531.29	583.62	635.95	688.29
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	Customer Accounts		251,538	275,459	284,796	299,655
8	Forecast for revenue driver 3	GWh		26,735	32,217	40,074	44,631
9	PV of financial adjustments	AEDm	0.00				
10	PV of financing costs foregone on PC2 capex	AEDm	-155.58				
11	Cost of capital (real)		4.50%				
12	Weight in revenue for Revenue driver 1		80.00%				
13	Weight in revenue for Revenue driver 2		15.00%				
14	Weight in revenue for Revenue driver 3		5.00%				
15	Negative X Factor		0.00				

	PC3 Required Revenue Calculations		2010	2011	2012	2013	PV over PC4 Period at 1 January 2010
16	Operating expenditure allowance	AEDm	454.57	473.46	493.13	513.61	1,769.91
17	Total depreciation for PC3	AEDm	531.29	583.62	635.95	688.29	2,225.75
18	Return on mid-year RAV	AEDm	443.73	489.30	532.51	573.36	1,860.63
19	Annual revenue requirement	AEDm	1,429.59	1,546.38	1,661.59	1,775.26	5,856.29
20	Discounted annual revenue requirement	AEDm	1,398.48	1,447.58	1,488.45	1,521.79	5,856.29
21	PV of financial adjustments	AEDm					0.00
22	PV of financing costs foregone on PC2 capex	AEDm					-155.58
23	PV of revenue requirement (after financial adjustment and foregone financing costs)	AEDm					**5,700.71**

	PC3 Required Forecast and Profiling		2010	2011	2012	2013	PV Share in TOTAL
24	**Revenue driver 1**		1.00	1.00	1.00	1.00	
25		AEDm	**1,243.56**	1,243.56	1,243.56	1,243.56	
26		AEDm	1,243.56	1,243.56	1,243.56	1,243.56	4,560.57
27		%	82%	80%	79%	78%	**80%**
28	**Revenue driver 2**	Customer Accounts	251,538	275,459	284,796	299,655	**Constraints for Solver Run**
29		AED / Customer	**841.71**	841.71	841.71	841.71	
30		AEDm	211.72	231.86	239.72	252.22	855.10
31		%	14%	15%	15%	16%	**15%**
32	**Revenue driver 3**	kWh	26,734,527,971	32,216,925,947	40,073,914,669	44,630,705,942	
33		fils / kWh	**0.22**	0.22	0.22	0.22	
34		AEDm	58.41	70.39	87.55	97.51	285.04
35		%	4%	5%	6%	6%	**5%**
		Variables for Solver Run					
36	Annual revenue	AEDm	1,513.69	1,545.80	1,570.82	1,593.29	**TOTAL** Difference
37	**Discounted annual revenue at 1 January 2006**	AEDm	1,480.74	1,447.03	1,407.14	1,365.80	**5,700.71** **0.00**
							Target for Solver Run

	Results		2010
38	**X Factor**		**0.0**
39	**Fixed revenue term (a)**	**AED million**	**1,243.56**
40	**Co-efficient of variable revenue term (b)**	**AED / Customer Account**	**841.71**
41	**Co-efficient of variable revenue term (c)**	**fils / kWh metered**	**0.2185**

	Implied Financial Indicators		2010	2011	2012	2013	Average
42	Implied annual profit	AEDm	527.83	488.72	441.74	391.39	462.42
43	Implied return on mid-point RAV	%	5.35%	4.49%	3.73%	3.07%	4.16%

Annex B.4: ADDC Water – Price Control Calculations

Line No.				(all AED amounts are in 2010 prices)				
	Inputs			**2010**	**2011**	**2012**	**2013**	
1	Operating expenditure allowance	AEDm		232.77	229.93	227.12	224.35	
2	Opening RAV	AEDm		3,889.43	4,228.77	4,548.45	4,848.46	
3	Closing RAV	AEDm		4,228.77	4,548.45	4,848.46	5,148.51	
4	Mid-Year RAV	AEDm		4,059.10	4,388.61	4,698.46	4,998.49	
5	Total depreciation for PC4	AEDm		250.66	270.32	289.99	289.95	
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00	
7	Forecast for revenue driver 2	Customer Accounts		213,717	233,998	241,887	254,465	
8	Forecast for revenue driver 3	MIG		95,604	101,677	107,541	111,514	
9	PV of financial adjustments	AEDm	0.00					
10	PV of financing costs foregone on PC2 capex	AEDm	291.29					
11	Cost of capital (real)		4.50%					
12	Weight in revenue for Revenue driver 1		80.00%					
13	Weight in revenue for Revenue driver 2		15.00%					
14	Weight in revenue for Revenue driver 3		5.00%					
15	Negative X Factor		0.00					

	PC3 Required Revenue Calculations		**2010**	**2011**	**2012**	**2013**	**PV over PC4 Period at 1 January 2010**
16	Operating expenditure allowance	AEDm	232.77	229.93	227.12	224.35	838.71
17	Total depreciation for PC3	AEDm	250.66	270.32	289.99	289.95	1,006.57
18	Return on mid-year RAV	AEDm	182.66	197.49	211.43	224.93	745.77
19	Annual revenue requirement	AEDm	666.08	697.74	728.54	739.22	2,591.04
20	Discounted annual revenue requirement	AEDm	651.58	653.16	652.62	633.68	2,591.04
21	PV of financial adjustments	AEDm					0.00
22	PV of financing costs foregone on PC2 capex	AEDm					291.29
23	PV of revenue requirement (after financial adjustment and foregone financing costs)	AEDm					**2,882.33**

	PC3 Required Forecast and Profiling		**2010**	**2011**	**2012**	**2013**	**PV Share in TOTAL**	
24	**Revenue driver 1**		1.00	1.00	1.00	1.00		
25		AEDm	**628.75**	628.75	628.75	628.75		
26		AEDm	628.75	628.75	628.75	628.75	2,305.87	
27		%	81%	80%	80%	79%	**80%**	
28	**Revenue driver 2**	Customer Accounts	213,717	233,998	241,887	254,465	**Constraints for Solver Run**	
29		AED / Customer	**501.03**	501.03	501.03	501.03		
30		AEDm	107.08	117.24	121.19	127.49	432.35	
31		%	14%	15%	15%	16%	**15%**	
32	**Revenue driver 3**	TIG	95,604,105	101,677,174	107,541,128	111,514,301		
33		AED / TIG	**0.38**	0.38	0.38	0.38		
34		AEDm	36.20	38.50	40.72	42.22	144.12	
35		%	5%	5%	5%	5%	**5%**	
		Variables for Solver Run						
36	Annual revenue	AEDm	772.03	784.49	790.66	798.47	**TOTAL**	Difference
37	**Discounted annual revenue at 1 January 2006**	AEDm	755.23	734.37	708.27	684.47	**2,882.33**	**0.00**
							Target for Solver Run	

	Results		**2010**
38	**X Factor**		**0.0**
39	**Fixed revenue term (a)**	**AED million**	**628.75**
40	**Co-efficient of variable revenue term (b)**	**AED / Customer Account**	**501.03**
41	**Co-efficient of variable revenue term (c)**	**AED / TIG metered**	**0.3786**

	Implied Financial Indicators		**2010**	**2011**	**2012**	**2013**	**Average**
42	Implied annual profit	AEDm	288.61	284.24	273.55	284.18	282.65
43	Implied return on mid-point RAV	%	7.11%	6.48%	5.82%	5.69%	6.27%

Annex B.5: TRANSCO Electricity – Price Control Calculations

Line No. **(all AED amounts are in 2010 prices)**

	Inputs			2010	2011	2012	2013
1	Operating expenditure allowance	AEDm		202.90	220.55	239.73	260.58
2	Opening RAV	AEDm		18,720.51	23,017.11	27,139.38	31,087.32
3	Closing RAV	AEDm		23,017.11	27,139.38	31,087.32	34,860.92
4	Mid-Year RAV	AEDm		20,868.81	25,078.25	29,113.35	32,974.12
5	Total depreciation for PC4	AEDm		933.40	1,107.73	1,282.06	1,456.40
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	MW		9,025	11,307	13,521	14,767
8	Forecast for revenue driver 3	GWh		56,040	71,026	85,563	93,696
9	PV of financial adjustments	AEDm	-8.24				
10	PV of financing costs foregone on PC2 capex	AEDm	1,209.61				
11	Cost of capital (real)		4.50%				
12	Weight in revenue for Revenue driver 1		80.00%				
13	Weight in revenue for Revenue driver 2		10.00%				
14	Weight in revenue for Revenue driver 3		10.00%				
15	Negative X Factor		0.00				

	PC3 Required Revenue Calculations		2010	2011	2012	2013	PV over PC4 Period at 1 January 2010
16	Operating expenditure allowance	AEDm	202.90	220.55	239.73	260.58	843.06
17	Total depreciation for PC3	AEDm	933.40	1,107.73	1,282.06	1,456.40	4,346.96
18	Return on mid-year RAV	AEDm	939.10	1,128.52	1,310.10	1,483.84	4,420.63
19	Annual revenue requirement	AEDm	2,075.39	2,456.80	2,831.89	3,200.81	9,610.65
20	Discounted annual revenue requirement	AEDm	2,030.22	2,299.83	2,536.80	2,743.80	9,610.65
21	PV of financial adjustments	AEDm					-8.24
22	PV of financing costs foregone on PC2 capex	AEDm					1,209.61
23	PV of revenue requirement (after financial adjustment and foregone financing costs)	AEDm					**10,812.03**

	PC3 Required Forecast and Profiling		2010	2011	2012	2013	PV Share in TOTAL
24	**Revenue driver 1**		1.00	1.00	1.00	1.00	
25		AEDm	**2,358.55**	2,358.55	2,358.55	2,358.55	
26		AEDm	2,358.55	2,358.55	2,358.55	2,358.55	8,649.63
27		%	84%	81%	78%	76%	**80%**
28	**Revenue driver 2**	kW	9,024,905	11,306,905	13,520,905	14,766,905	Constraints for Solver Run
29		AED / kW	**24.47**	24.47	24.47	24.47	
30		AEDm	220.85	276.69	330.87	361.36	1,081.20
31		%	8%	10%	11%	12%	**10%**
32	**Revenue driver 3**	kWh	56,039,873,986	71,025,888,749	85,562,717,119	93,695,990,565	
33		fils / kWh	**0.39**	0.39	0.39	0.39	
34		AEDm	217.74	275.96	332.44	364.04	1,081.19
35		%	8%	9%	11%	12%	**10%**
		Variables for Solver Run					
36	Annual revenue	AEDm	2,797.13	2,911.20	3,021.86	3,083.95	**TOTAL** Difference
37	**Discounted annual revenue at 1 January 2006**	AEDm	2,736.24	2,725.19	2,706.97	2,643.63	**10,812.03** **0.00**
							Target for Solver Run

	Results		2010
38	**X Factor**		**0.0**
39	**Fixed revenue term (a)**	**AED million**	**2,358.55**
40	**Co-efficient of variable revenue term (b)**	**AED / kW metered**	**24.47**
41	**Co-efficient of variable revenue term (c)**	**fils / kWh metered**	**0.3885**

	Implied Financial Indicators		2010	2011	2012	2013	Average
42	Implied annual profit	AEDm	1660.83	1582.92	1500.06	1366.97	1527.70
43	Implied return on mid-point RAV	%	7.96%	6.31%	5.15%	4.15%	5.89%

Annex B.6: TRANSCO Water – Price Control Calculations

Line No.				(all AED amounts are in 2010 prices)				
	Inputs			**2010**	**2011**	**2012**	**2013**	
1	Operating expenditure allowance	AEDm		295.56	295.29	295.02	294.75	
2	Opening RAV	AEDm		10,536.78	12,457.50	14,293.90	16,045.95	
3	Closing RAV	AEDm		12,457.50	14,293.90	16,045.95	17,713.68	
4	Mid-Year RAV	AEDm		11,497.14	13,375.70	15,169.93	16,879.82	
5	Total depreciation for PC4	AEDm		609.27	693.61	777.94	862.27	
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00	
7	Forecast for revenue driver 2	MIGD		720	789	809	872	
8	Forecast for revenue driver 3	MIG		246,422	269,668	277,039	297,761	
9	PV of financial adjustments	AEDm	-161.32					
10	PV of financing costs foregone on PC2 capex	AEDm	467.66					
11	Cost of capital (real)		4.50%					
12	Weight in revenue for Revenue driver 1		80.00%					
13	Weight in revenue for Revenue driver 2		10.00%					
14	Weight in revenue for Revenue driver 3		10.00%					
15	Negative X Factor		0.00					

	PC3 Required Revenue Calculations		**2010**	**2011**	**2012**	**2013**	**PV over PC4 Period at 1 January 2010**
16	Operating expenditure allowance	AEDm	295.56	295.29	295.02	294.75	1,082.49
17	Total depreciation for PC3	AEDm	609.27	693.61	777.94	862.27	2,681.34
18	Return on mid-year RAV	AEDm	517.37	601.91	682.65	759.59	2,332.21
19	Annual revenue requirement	AEDm	1,422.21	1,590.80	1,755.60	1,916.61	6,096.03
20	Discounted annual revenue requirement	AEDm	1,391.25	1,489.16	1,572.66	1,642.96	6,096.03
21	PV of financial adjustments	AEDm					-161.32
22	PV of financing costs foregone on PC2 capex	AEDm					467.66
23	PV of revenue requirement (after financial adjustment and foregone financing costs)	AEDm					**6,402.37**

	PC3 Required Forecast and Profiling		**2010**	**2011**	**2012**	**2013**	**PV Share in TOTAL**	
24	**Revenue driver 1**		1.00	1.00	1.00	1.00		
25		AEDm	**1,396.62**	1,396.62	1,396.62	1,396.62		
26		AEDm	1,396.62	1,396.62	1,396.62	1,396.62	5,121.90	
27		%	82%	80%	80%	78%	**80%**	
28	**Revenue driver 2**	TIGD	720,447	789,300	808,698	872,147	**Constraints for Solver Run**	
29		AED / TIGD	**219.58**	219.58	219.58	219.58		
30		AEDm	158.20	173.32	177.58	191.51	640.24	
31		%	9%	10%	10%	11%	**10%**	
32	**Revenue driver 3**	TIG	246,421,548	269,668,274	277,039,260	297,760,599		
33		AED / TIG	**0.64**	0.64	0.64	0.64		
34		AEDm	158.26	173.19	177.92	191.23	640.24	
35		%	9%	10%	10%	11%	**10%**	
		Variables for Solver Run						
36	Annual revenue	AEDm	1,713.07	1,743.12	1,752.11	1,779.35	**TOTAL**	Difference
37	**Discounted annual revenue at 1 January 2006**	AEDm	1,675.78	1,631.75	1,569.54	1,525.30	**6,402.37**	**0.00**
							Target for Solver Run	

	Results		**2010**
38	**X Factor**		**0.0**
39	**Fixed revenue term (a)**	**AED million**	**1,396.62**
40	**Co-efficient of variable revenue term (b)**	**AED / TIGD metered**	**219.58**
41	**Co-efficient of variable revenue term (c)**	**AED / TIG metered**	**0.6422**

	Implied Financial Indicators		**2010**	**2011**	**2012**	**2013**	**Average**
42	Implied annual profit	AEDm	808.24	754.22	679.16	622.33	715.99
43	Implied return on mid-point RAV	%	7.03%	5.64%	4.48%	3.69%	5.21%

Annex B.7: ADSSC – Price Control Calculations

Line No. **(all AED amounts are in 2010 prices)**

	Inputs			2010	2011	2012	2013
1	Operating expenditure allowance	AEDm		434.37	438.85	443.38	447.95
2	Opening RAV	AEDm		7,725.34	10,150.94	12,516.53	14,822.13
3	Closing RAV	AEDm		10,150.94	12,516.53	14,822.13	17,067.72
4	Mid-Year RAV	AEDm		8,938.14	11,333.74	13,669.33	15,944.92
5	Total depreciation for PC4	AEDm		574.41	634.41	694.41	754.41
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
8	Forecast for revenue driver 2	m3		246,323,170	267,223,070	296,051,865	314,445,675
9	PV of financial adjustments	AEDm	0.00				
10	PV of financing costs foregone on PC2 capex	AEDm	0.00				
11	Cost of capital (real)		4.50%				
12	Weight in revenue for Revenue driver 1		80.00%				
13	Weight in revenue for Revenue driver 2		20.00%				
15	Negative X Factor		0.00				

	PC3 Required Revenue Calculations		2010	2011	2012	2013	PV over PC4 Period at 1 January 2010
16	Operating expenditure allowance	AEDm	434.37	438.85	443.38	447.95	1,616.89
17	Total depreciation for PC3	AEDm	574.41	634.41	694.41	754.41	2,424.51
18	Return on mid-year RAV	AEDm	402.22	510.02	615.12	717.52	2,036.99
19	Annual revenue requirement	AEDm	1,410.99	1,583.27	1,752.90	1,919.88	6,078.39
20	Discounted annual revenue requirement	AEDm	1,380.28	1,482.11	1,570.24	1,645.76	6,078.39
21	PV of financial adjustments	AEDm					0.00
22	PV of financing costs foregone on PC2 capex	AEDm					0.00
23	PV of revenue requirement (after financial adjustment and foregone financing costs)	AEDm					**6,078.39**

	PC3 Required Forecast and Profiling		2010	2011	2012	2013	PV Share in TOTAL	
24	**Revenue driver 1**		1.00	1.00	1.00	1.00		
25		AEDm	**1,325.94**	1,325.94	1,325.94	1,325.94		
26		AEDm	1,325.94	1,325.94	1,325.94	1,325.94	4,862.71	
27		%	82%	81%	79%	78%	**80%**	
							Constraints for Solver Run	
28	**Revenue driver 2**	m3	246,323,170	267,223,070	296,051,865	314,445,675		
29		AED / m3	**1.19**	1.19	1.19	1.19		
30		AEDm	291.90	316.67	350.83	372.63	1,215.68	
31		%	18%	19%	21%	22%	**20%**	
		Variables for Solver Run						
36	Annual revenue	AEDm	1,617.85	1,642.61	1,676.78	1,698.57	**TOTAL**	Difference
37	**Discounted annual revenue at 1 January 2006**	AEDm	1,582.63	1,537.66	1,502.05	1,456.05	**6,078.39**	**0.00**
							Target for Solver Run	

	Results		2010
38	**X Factor**		**0.0**
39	**Fixed revenue term (a)**	**AED million**	**1,325.94**
40	**Co-efficient of variable revenue term (b)**	**AED / m3**	**1.1850**
		AED / TIG	5.3871

	Implied Financial Indicators		2010	2011	2012	2013	Average
42	Implied annual profit	AEDm	609.07	569.36	538.99	496.22	553.41
43	Implied return on mid-point RAV	%	6.81%	5.02%	3.94%	3.11%	4.72%