مكتب التنظيم و الرقابة
Regulation & Supervision Bureau

Consultation Document

2013 Price Controls Review

PC5 Final Proposals

6 November 2013 CR/E02/101

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Foreword

1. In April 2012, 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 October 2012 and draft proposals in May 2013.

2. The existing price controls for the four water, wastewater and electricity network companies are due to expire on 31 December 2013. The "fifth price controls" or "PC5" are therefore required for 2014 onwards.

3. This document describes our final proposals for PC5 controls for the four network companies taking into account the responses to the draft proposals. Similarly to the existing controls, PC5 controls are proposed to be in the form of CPI-X revenue caps with a four-year duration (2014-2017) for all the four licensees. We have worked with the network companies to develop and tailor the regulatory regime to address priority areas and challenges to provide flexibility in various aspects of regulation. This has translated into a number of arrangements providing flexibility to review capital and operating costs and enhance incentives during the PC5 period.

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 2014.

5. Each company is requested to communicate in writing to the Bureau its acceptance or otherwise of the proposed licence modifications by **10 December 2013** to the following address:

   Nick Carter
   Director General
   Regulation and Supervision Bureau
   PO Box 32800, Abu Dhabi
   Fax: 02-642 4217

6. If accepted by the licensee by the above date, these proposals will come into effect on 1 January 2014. 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 the PC5 price controls for AADC, ADDC, TRANSCO and ADSSC and takes into account the responses from the licensees to the draft proposals published in May 2013.

Form of controls (Section 2)

2. Section 2 describes our final proposals on the form, structure and duration of new price controls for the four network companies:

   (a) The form of PC5 controls for the network companies should remain the CPI-X revenue cap.

   (b) PC5 controls should be set for 4 years (2014-2017) for all four companies.

   (c) The scope of TRANSCO's price controls should be expanded to include unlicensed dedicated activities outside the Emirate of Abu Dhabi.

   (d) PC5 controls should retain the existing revenue drivers for the distribution companies (ie, customer numbers and metered units distributed) and ADSSC (ie, annual flow at treatment plant). TRANSCO's revenue drivers should simply be metered units and metered peak demands, without strict compliance with MDEC.

   (e) The 80:20 weights for the fixed and variable terms of the MAR remain appropriate for calibrating the PC5 controls.

   (f) We have adopted the revenue driver projections provided by the respective companies in their 2012 Annual Information Submissions (AIS), except for TRANSCO where revised projections proposed by TRANSCO have been adopted.

   (g) The existing cost pass-through arrangements should be retained.

3. The general structure of the Maximum Allowed Revenue (MAR) for each business for any year "t" of the PC5 control period shall be as follows:

$$MAR_t = \text{Pass-through Costs}_t + a_t + (b_t \times RD1_t) + (c_t \times RD2_t) + Q_t - K_t$$

   where:

   (a) "a_t", "b_t" and "c_t" are the notified values for the year "t" as determined by the Bureau in 2014 prices through price control calculations and are indexed against the UAE Consumer Price Index (CPI) less an "X" factor;

   (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 performance incentive amount and the correction factor for the year "t", respectively.

Operating expenditure (Section 3)

4. Section 3 discusses the approach to determining operating cost allowances and the regulation of operating costs for the PC5 period. Our PC5 opex projections in 2014 prices adopted in these final proposals and listed in **Table 1** are based on the Bureau's opex consultant's final report dated 30 September 2013 (issued to the companies in October 2013). These projections increase from AED 3.3 billion in 2014 to AED 3.5 billion with an average of AED 3.4 billion per annum over the PC5 period.

Table 1: PC5 opex projections (2014 prices) – final proposals

AED million, 2014 prices		2014	2015	2016	2017	Average
AADC	Electricity	416	416	413	413	414
	Water	246	243	238	233	240
	Total	662	659	651	646	654
ADDC	Electricity	771	825	873	927	849
	Water	417	438	453	468	444
	Total	1,188	1,263	1,326	1,395	1,293
TRANSCO	Electricity	326	337	339	345	337
	Water	424	438	441	450	438
	Total	750	775	781	795	775
ADSSC	Total	657	665	665	665	663
Total		**3,257**	**3,362**	**3,423**	**3,501**	**3,386**

5. The proposed opex allowances are higher than various comparator figures on average over the PC5 period in real 2012 prices:

   (a) higher than the draft proposals for each company by 21% - 42% or in aggregate by about AED 820 million per annum or 33% in 2012 prices (or AED 834 million per annum or 33% in 2014 prices);

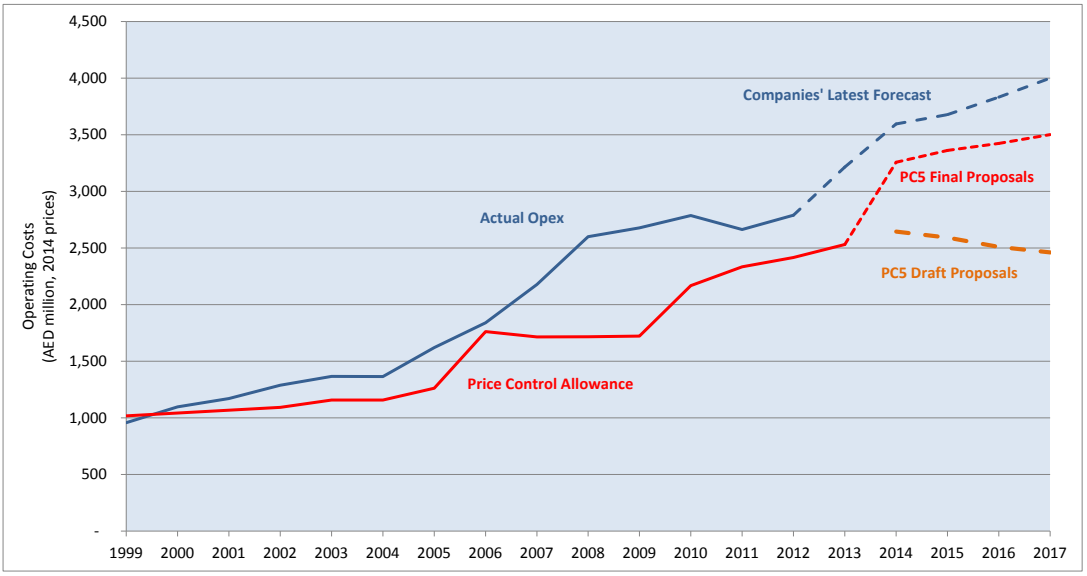
   (b) higher than each company's 2012 actual costs by 5% - 38% or in aggregate by about AED 585 million per annum or 21%; and

   (c) higher than the PC4 allowance for 2013 for each company by 21% - 47% or in aggregate by about AED 841 million per annum or 34%; but

   (d) lower than the each company's latest opex forecast by 3% - 27%, except for ADSSC (whose latest opex forecasts appear to be understated) where these projections are higher by 11%.

6. The following chart shows that our final proposals on opex allowances for PC5 are significantly higher than the draft proposals (by 33%) but lower than the network licensees' forecasts by 10% on average of the PC5 period for the four licensees:

Figure 1: PC5 final opex projections (2014 prices)



7. Our final opex projections exclude a number of costs or activities identified by network companies as further discussions and explanations are required to make adjustments for these items. However, these projections include various specific cost allowances for additional roles and responsibilities (eg, Emiratisation, training and apprenticeship, mega developments, energy costs for additional water pumping) as well as capability building in important areas (eg, demand side management, risk management, business and financial planning, tariff reforms, health and safety). These projections will be adjusted during the PC5 period for various parameters and further responsibilities.

Capital expenditure (Section 4)

PC3 capex (2006-2009)

8. We have retained the PC3 capital efficiency scores as per the draft proposals derived by adjusting the findings of our consultants in their PC3 capex final reports of June 2012. These are listed in **Table 2** below:

Table 2: PC3 capex efficiency – final proposals

Adjusted efficiency	Electricity	Water / Wastewater
AADC	96.22%	96.19%
ADDC	96.25%	95.54%
TRANSCO	95.65%	96.57%
ADSSC		97.49%

9. The additional efficient PC3 capex (over and above the provisional PC3 allowances incorporated into the PC3 controls) therefore remain the same as in the draft proposals. This amounts to a total of AED 12.9 billion (2014 prices) for the four companies, which is being financed at this review through an upward adjustment to the companies' regulatory asset values (RAVs) and future revenues.

Table 3: Additional efficient PC3 capex – final proposals

AED million, 2014 prices		2005	2006	2007	2008	2009	Total
AADC	Electricity		259	75	466	863	1,663
	Water		-112	-109	-223	30	-414
ADDC	Electricity		-86	485	813	1,831	3,043
	Water		-148	-103	142	-105	-213
TRANSCO	Electricity		167	1,816	3,497	1,011	6,491
	Water		-281	-163	1,463	1,367	2,386
ADSSC	Total	-14	16	-276	-63	283	-54
Total		**-14**	**-184**	**1,726**	**6,096**	**5,280**	**12,903**

PC4 capex (2010-2013)

10. In line with our draft proposals, we have used the PC3 efficiency figures in **Table 2** above to determine PC4 efficient capex for 2010-2011 at this review. The resulting additional efficient PC4 capex incorporated into the price controls is presented in **Table 4** below. (The negative sign indicates that the efficient capex is lower than the provisional capex and hence the resulting amount should be deducted from, rather than added to, the RAVs). This efficiency assessment, combined with the companies' under-spending against the PC4 provisional capex allowances, results in an aggregate downward adjustment of about AED 9 billion (in 2014 prices) to the companies' RAVs and future revenues.

11. The capex in the last two years of the PC4 period (ie, 2012-2013) will be reviewed alongside the PC5 capex in the future with any adjustment to be made in PC6.

Table 4: Additional efficient PC4 capex – final proposals

AED million, 2014 prices		2010	2011	Total
AADC	Electricity	228	-534	-306
	Water	284	-22	262
ADDC	Electricity	30	769	799
	Water	-12	-122	-134
TRANSCO	Electricity	-3,115	-2,261	-5,377
	Water	-1,114	-934	-2,049
ADSSC	Total	-1,671	-588	-2,259
Total		**-5,371**	**-3,693**	**-9,064**

PC5 capex (2014-2017)

12. While we have proposed retaining an ex-post efficiency review approach to the PC5 capex, we have also proposed changes to the overall regulatory regime for future capex in terms of limited, ex-ante annual capex reviews and more timely ex-post capex reviews.

13. **Table 5** shows the provisional allowances for PC5 capex amounting to AED 40 billion (or AED 10 billion per annum) over 2014-2017 for the four companies which we have included in PC5 price control calculations. As compared to the draft proposals (where we adopted the consultant's capex forecasts), we have adjusted the allowances for AADC, TRANSCO and ADSSC approximately to the lower of (a) the companies' actual average annual spends during the previous three years and (b) their latest forecasts. For ADDC,

we have kept the allowances as per the draft proposals but rounded them off appropriately.

14. As a result, these PC5 provisional capex allowances are higher than those suggested in the draft proposals for the four years (AED 35.35 billion) by about AED 4.65 billion or 13% and are identical or very close to the levels sought by the companies.

Table 5: Provisional PC5 capex allowances – final proposals

AED million, 2014 prices		2014	2015	2016	2017	Total
AADC	Electricity	700	700	700	700	2,800
	Water	300	300	300	300	1,200
ADDC	Electricity	2,700	2,700	2,700	2,700	10,800
	Water	600	600	600	600	2,400
TRANSCO	Electricity	2,300	2,300	2,300	2,300	9,200
	Water	1,800	1,800	1,800	1,800	7,200
ADSSC	Total	1,600	1,600	1,600	1,600	6,400
Total		**10,000**	**10,000**	**10,000**	**10,000**	**40,000**

Financial issues (Section 5)

15. Based on the overseas regulatory proposals and evidence from local and regional capital markets, we have retained our draft proposal for a real cost of capital of 5.50% for PC5.

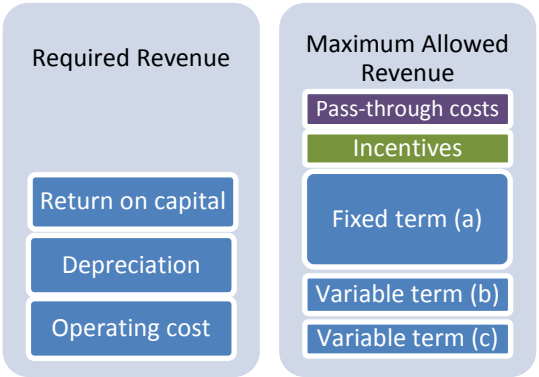
16. The additional efficient PC3 and PC4 capex have been rolled into the RAVs, increasing the 2014 opening RAVs by about AED 2.4 billion (in 2014 prices). With the provisional PC5 capex, RAVs have increased to AED 122 billion (2014 prices) by the end of 2017.

17. The foregone financing costs of the difference between efficient and provisional estimates of PC3 and PC4 capex have been allowed as an adjustment to PC5 revenue of about AED 3.6 billion (in 2014 prices) in present value terms.

Price control calculations (Section 6)

18. Consistent with the previous work, a "building-block" approach has been adopted to determine the revenue requirement (comprising opex, depreciation and return on capital) and a net present value (NPV) framework to determine the notified values "a", "b" and "c" for PC5.

Figure 2: Price control calculations framework



19. The notified values (a, b, and c) determined in these final proposals for 2014 (expressed in 2014 prices) are given in **Table 6** below. Their calculations are detailed in Section 6 and **Annex B**. For subsequent years, these notified values will be adjusted by CPI-X indexation.

Table 6: Notified values for PC5 – final proposals

2014 prices		X	a		b		c	
AADC	Electricity	0.00	1,327.42	AEDm	1,548.34	AED / customer account	0.7781	fils/ kWh metered
	Water	0.00	396.91	AEDm	907.60	AED / customer account	0.3526	AED / TIG metered
ADDC	Electricity	0.00	2,736.90	AEDm	1,120.50	AED / customer account	0.3836	fils / kWh metered
	Water	0.00	778.05	AEDm	450.04	AED / customer account	0.2878	AED / TIG metered
TRANSCO	Electricity	0.00	3,780.36	AEDm	31.26	AED / kW metered	0.5314	fils / kWh metered
	Water	0.00	2,156.13	AEDm	283.43	AED / TIGD metered	0.8374	AED / TIG metered
ADSSC		0.00	1,826.72	AEDm	1.4334	AED / m^3 metered	-	

Notes: These notified values for 2014 are based on an assumed UAE CPI of 118.00 (base year 2007 = 100) for 2013. They will be subject to an adjustment for actual UAE CPI for 2013.

20. The annual MARs projected for each business over the PC5 period in respect of its "own" costs (i.e. excluding pass-through costs and incentives) are summarised in **Table 7**. The aggregate MAR for the four companies is projected to be around AED 16.3 billion a year on average over the PC5 period.

21. The majority of the projected MAR is accounted for by capital cost related components, i.e, regulatory depreciation and the return on capital. In aggregate, the average return on capital or profit is expected to be around AED 7.2 billion (2014 prices) a year over the PC5 period.

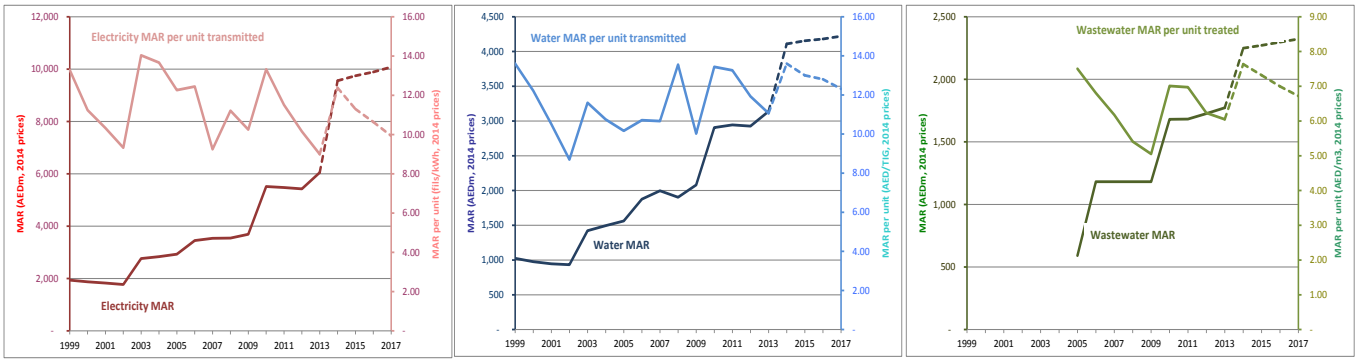
Table 7: Projected MAR over PC5 period – final proposals

AED million, 2014 prices		2014	2015	2016	2017	Average
AADC	Electricity	1,632	1,652	1,668	1,690	1,661
	Water	491	495	498	501	496
ADDC	Electricity	3,324	3,397	3,453	3,529	3,426
	Water	956	969	979	990	973
TRANSCO	Electricity	4,601	4,697	4,768	4,858	4,731
	Water	2,662	2,691	2,703	2,730	2,697
ADSSC	Total	2,249	2,272	2,298	2,322	2,285
Total		**15,915**	**16,173**	**16,367**	**16,620**	**16,269**

22. The charts in **Figure 3** show the expected effect of these final proposals on the total price-controlled costs and unit costs for electricity, water and wastewater, respectively (in 2014 prices). The annual MARs are projected to increase from the 2012 levels (on average by AED 6.2 billion or 61% over the PC5 period) mainly due to capital investments to expand and strengthen networks to meet increasing demand, additional opex allowances for specific costs and capability building, and inflation. However, the increasing demand also means that the final proposals are expected to continue the long trend of declining unit network costs for water, wastewater and electricity since the start of the price control regime for businesses (ie 2005 for ADSSC and 1999 for other three companies). Over a shorter term from 2012 to 2017, the final proposals are projected to result in a small reduction in the unit cost for electricity (by 2%) and marginal increases in

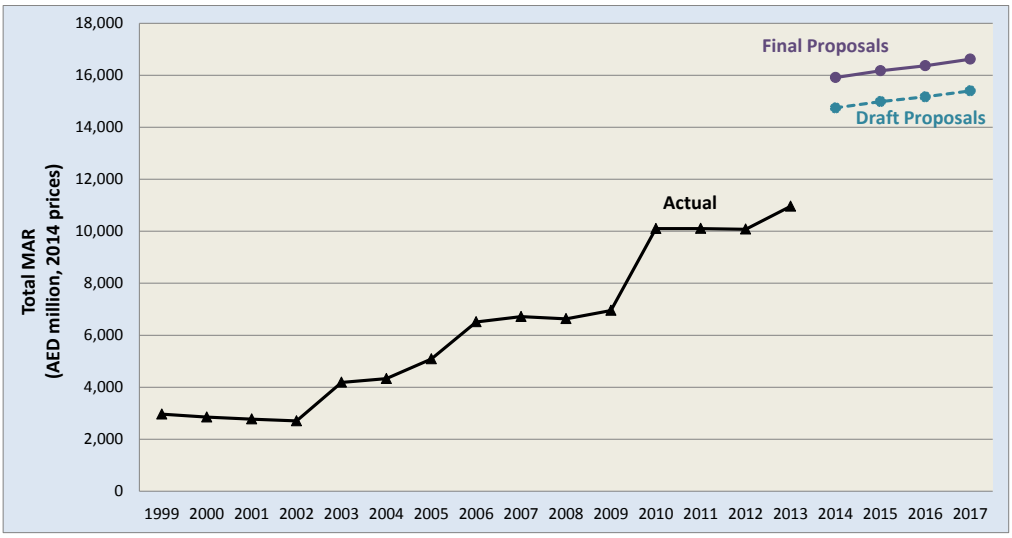
the unit costs for water and wastewater (by 3% and 8%) from the 2012 levels (in real terms).

Figure 3: Projected trends of price-controlled MARs



23. As the comparison in the following chart shows, the total MAR for PC5 projected in these final proposals is higher than that in the draft proposals by about AED 1.2 billion per annum or 8% on average over the PC5 period. This is due to higher PC5 opex allowances and higher PC5 provisional capex allowances in the final proposals.

Figure 4 : Projected total MAR –draft v final proposals



Incentives and outputs (Section 7)

24. In these final proposals, we have retained all the incentives from the draft proposals as listed in **Table 8**. However, we have made changes to the proposals as listed below:

(a) water transmission availability: changes to targets and dead-band;

(b) water and electricity interface metering: introduction of bonus for MDEC-compliance in excess of 90%;

(c) water transmission security of supply: larger margins for allowed interruptions and deferral of introduction of incentive to 2016;

(d) energy lost: changes to bonus target; and

(e) incentivisation of information submissions by TRANSCO put in abeyance, subject to satisfactory performance.

Table 8: Incentives developed for PC5 – final proposals

	AADC (E)	AADC (W)	ADDC (E)	ADDC (W)	TRANSCO (E)	TRANSCO (W)	ADSSC
Availability, security and quality of supply (Annex C)							
Water quality		✓		✓		✓	
Transmission system availability					✓	✓	
Removal of timed water supply		☑		☑			
Interface metering	✓	✓	✓	✓	☑	☑	
Distribution losses	✓	✓	✓	✓			
Security of supply						☑	
SAIDI	✓		✓				
SAIFI	✓		✓				
Energy lost					✓		
Biosolid reuse							☑
Information (Annex D)							
SBAs (including PCRs as per new RAGs)	✓	✓	✓	✓	✓	✓	✓
AIS	✓	✓	✓	✓	✓	✓	✓
End-use efficiency							
DSM strategy and action plan	☑	☑	☑	☑			
Number of existing incentives for PC5	6	5	6	5	4	4	2
Number of new incentives for PC5	1	2	1	2	1	2	1
Total number of incentives for PC5	**7**	**7**	**7**	**7**	**5**	**6**	**3**
Total number of existing incentives for PC4	**9**	**8**	**9**	**8**	**5**	**5**	**3**

Notes: "✓" represents an existing incentive; "☑" represents a new incentive.

25. It is proposed that these incentives be incorporated into the network companies' licences at this price control review for implementation in PC5. Each incentive will be subject to a cap equal to 0.50% of business' core MAR (ie, excluding pass-through costs).

26. While we have proposed five key areas for future incentives to be asset management, transmission system operator (TSO) function, customer service, demand side management (DSM) and carbon accounting, we are willing to consider other areas if the need and benefits are justified. If agreed, these incentives will be implemented later in the PC5 period or at the next price control review.

Changes from draft proposals

27. **Table 9** summarises the main differences between the draft and final proposals:

Table 9: Summary of main changes from the draft proposals

Main feature	Company	Draft proposals	Final proposals
PC5 duration	AADC,ADDC, TRANSCO	5 years (2014-2018)	4 years (2014-2017)
Treatment of Bureau's licence fees	All	Allowances to be included in opex projections with no adjustment in future	Allowances included in opex projections based on 2013 fees with future adjustment for significant deviation
Revenue drivers	ADSSC	Customer numbers as an additional driver	No additional revenue driver
Based level of opex	All	2011 actual opex	2012 actual opex
Opex approach , benchmarking and efficiency assumptions	All	Based on consultant's interim report / work in progress	Based on consultant's final report reducing or removing certain adjustments and allowing more time to achieve desired efficiencies
Specific cost allowances in PC5 opex projections	All	To be included with future adjustments for pre-specified parameters	Included in opex projections with future adjustments for pre-specified parameters as well as additional responsibilities, resource requirements, mega development costs, etc.
PC5 provisional capex	All	Based on capex consultant's draft final report	Allowances for AADC, TRANSCO and ADSSC are based on the lower of (a) companies' actual average annual spends during the previous 3 years and (b) their latest forecasts. For ADDC, allowances are retained as per the draft proposals but rounded them off appropriately.
Proposed incentives	AADC, ADDC, TRANSCO		Changes to targets/dead-bands for (a) water transmission availability; (b) water and electricity interface metering (with introduction of bonus for MDEC-compliance above 90%): (c) water transmission security of supply (with deferral of introduction to 2016); and (d) energy lost. incentivisation of information submissions by TRANSCO put in abeyance, subject to satisfactory performance
Incentives to be developed	All	5 pre-specified areas	5 pre-specified areas, plus any new areas if the need and benefits are justified.

Glossary

AADC	Al Ain Distribution Company
ADDC	Abu Dhabi Distribution Company
ADSSC	Abu Dhabi Sewage Services Company
ADWEA	Abu Dhabi Water and Electricity Authority
ADWEC	Abu Dhabi Water and Electricity Company
AIS	Annual Information Submission
BST	Bulk Supply Tariff
Capex	Capital Expenditure
CAPM	Capital Asset Pricing Model
CML	Customer Minutes Lost
CPI	Consumer Price Index
DLR	Distribution Loss Reduction
DUoS	Distribution Use of System
DSM	Demand Side Management
IM	Interface Metering
KPI	Key Performance Indicator
MAR	Maximum Allowed Revenue
Opex	Operating Expenditure
PC1	First Price Control covering the period 1999-2002
PC2	Second Price Control covering the period 2003-2005
PC3	Third Price Control covering the period 2006-2009 (for ADSSC, mid-2005 to 2009)
PC4	Fourth Price Control covering the period 2010-2013
PC5	Fifth Price Control covering the period 2014 onwards
PCR	Price Control Return
PIS	Performance Incentive Scheme
PWPA	Power and Water Purchase Agreement
RAG	Regulatory Accounting Guideline
RAV	Regulatory Asset Value
RIG	Regulatory Instruction and Guidance
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SBA	Separate Business Account
STA	Sewage Treatment Agreement
TA	Technical Assessor
TIG	Thousand Imperial Gallon
TSO	Transmission System Operator
TUoS	Transmission Use of System
TRANSCO	Abu Dhabi Transmission and Despatch Company
WACC	Weighted Average Cost of Capital

Contents

1. Introduction

This Review

1.1 The network companies in the electricity, water and wastewater sector in the Emirate of Abu Dhabi are natural monopolies. These have therefore been subject to price controls by the Bureau:

(a) For **AADC**, **ADDC** and **TRANSCO**, the first price controls (PC1) set in 1999 were applied to a four year period (1999-2002). The second price controls (PC2) were set in 2002 and spanned over a three year period (2003-2005), followed by the third price controls (PC3) set in 2005 for four years (2006-2009).

(b) In 2007, the Bureau set the first price control for **ADSSC** (also termed as PC3 for ease of reference) to apply for about four and a half years from the date of its establishment (21 June 2005) until 31 December 2009.

(c) In 2009, the current (fourth) price controls (PC4) were set for **AADC**, **ADDC**, **ADSSC** and **TRANSCO** to apply for four years (2010-2013).

1.2 The current PC4 controls are due to expire on 31 December 2013 and this requires new price controls to be in place to take effect from 1 January 2014. The Bureau therefore commenced a price control review. The review process is summarised as follows:

(a) First consultation paper issued in April 2012 set out the Bureau's initial views on the main issues that should be considered in setting the PC5 controls.

(b) Second consultation paper and draft proposals were issued in October 2012 and May 2013, respectively, after taking into account the detailed responses from the network licensees.

(c) The Bureau made a presentation of its draft proposals to the four network companies on 24 June 2013 and also conducted a separate workshop at the request of AADC on 20 June 2013 to discuss the main issues relating to PC5.

(d) We received detailed responses from the sector companies to the draft proposals as follows:

(i) AADC's response dated 18 July 2013;

(ii) ADDC's response dated 18 July 2013;

(iii) ADSSC's response dated 21 July 2013;

(iv) TRANSCO's response dated 4 July 2013; and

(v) ADWEA's letter dated 25 June 2013 setting out ADWEA's views on the companies' cost of capital addressed to AADC, ADDC and TRANSCO, received with the respective companies' responses.

(e) Following the receipt of the companies' responses, we met with each company during August-October 2013 to discuss their main concerns and suggestions.

(f) We have considered these responses in developing our final proposals.

Current regulatory framework and price controls

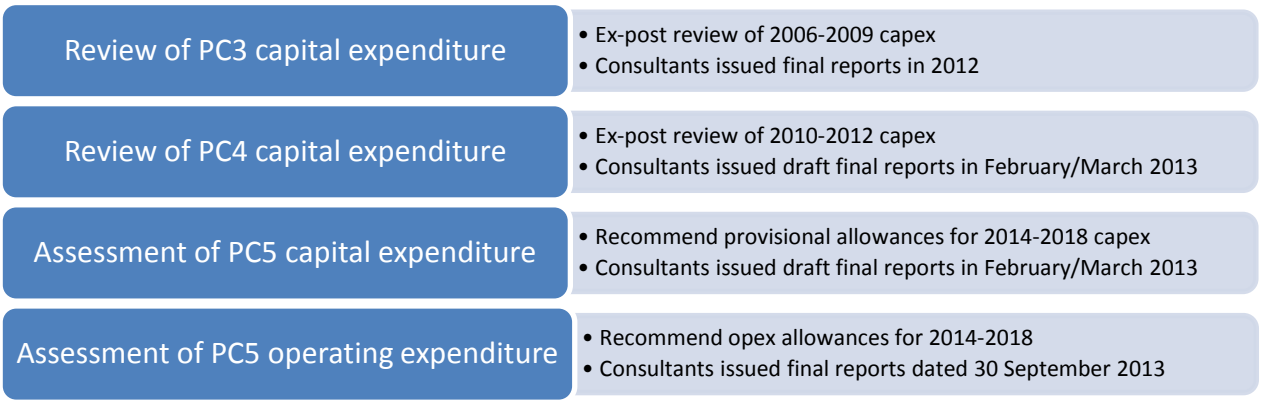
1.3 The first and second consultation papers summarised the role and main duties and functions of the Bureau as the regulatory body for the water and electricity sector under Law No (2) of 1998 and for the sewerage services sector under Law No (17) of 2005.

1.4 These papers described and summarised some of the main elements of the current price control arrangements which have been in place since 1999 with minor adjustments.

PC5 related work streams

1.5 This price control review has been supported by a number of related work streams, including the work of our expert consultants. We shared with the companies the scope of our consultants' work, deliverables and timetable, and received generally positive responses from the companies. These work streams are summarised below and discussed further in Sections 3 and 4.

Figure 1.1: External consultants' support for PC5



Review of opex and SBAs

1.6 Deloitte were appointed in February 2012 to support the work on operating costs and SBAs in three phases:

(a) In phase 1, Deloitte worked with AADC and ADDC to understand the significant increases in distribution and supply business costs that have occurred in recent years. In August 2012, they issued their final report for phase 1.

(b) Our consultants then commenced phase 2 of their work to develop the SBAs for the five price-controlled companies for the future. Their final report, along with RAGs and SBA templates, was delivered in April 2013.

(c) Phase 3, which commenced in October 2012, involved developing projections of operating costs to support the PC5 proposals. The consultants issued their initial and interim reports in the first quarter of 2013, draft final report in May 2013 and final report on 30 September 2013 (issued to the companies in October 2013). The final report contains the consultant's final recommendations on opex allowances for PC5 which constitute an important input to these final proposals.

PC3 capex review

1.7 To undertake the ex-post efficiency review of PC3 capex for the four network companies, two consultants were appointed by the Bureau in April 2011 - KEMA for electricity and ATKINS for water and wastewater. Our consultants issued interim, draft and final reports during 2011-2012.

PC4 capex review

1.8 To address the licensees' concerns about the time lags associated with the capex efficiency review process, we agreed to bring forward the ex-post efficiency review of PC4 capex by appointing the PC3 capex consultants to undertake this review.

1.9 The consultants commenced their work on the 2010-2011 capex review in June 2012 and issued their interim and draft reports in December 2012 and February/March 2013 respectively. Further work was not feasible in view of the time and resource constraints.

PC5 capex forecast review

1.10 The scope of work of the PC4 capex consultants also included developing projections of the likely capital expenditure for the PC5 period. The consultants' interim and draft reports on the 2010-2011 capex review included methodology and PC5 capex projections.

Timetable for related work streams

1.11 The following table sets out the high-level timetables for these work streams.

Table 1.1: Timetable for PC5 related work streams

Work stream	Indicative timescales
PC3 capex review	**April 2011 – June 2012**
• Consultants' final reports issued	June 2012
Review of opex and SBAs	**February 2012 – August 2013**
Phase 1 – Assess reasons for increase in opex for distribution companies over 2006-2010	February 2012 – June 2012
• Consultant's final report issued	August 2012
Phase 2 – Develop regulatory accounting arrangements for five companies	April 2012 – February 2013
• Consultant's final report issued	April 2013
Phase 3 – Prepare forecasts of reasonable opex for four network companies for 2014-2018	October 2012 –September 2013
• Consultant's final report issued	30 September 2013
PC4 capex review and PC5 capex forecast review	**May 2012 – March 2013**
• 2010-2011 capex efficiency review – draft reports issued	February/March 2013

Structure of this document

1.12 The remainder of this document is structured as follows:

(a) Section 2 describes our final proposals on the form, structure, duration and scope of PC5 controls and the revenue driver projections adopted for PC5.

(b) Section 3 describes our approach to operating expenditure.

(c) Section 4 discusses the treatment of past capital expenditure and future capital expenditure.

(d) In Section 5, we discuss the financial issues, particularly the cost of capital, depreciation and updating of regulatory asset values (RAVs). The detailed calculations to update RAVs are presented in **Annex A**.

(e) Section 6 sets out the results of our price control calculations. These price controls calculations are presented in **Annex B**.

(f) Finally, Section 7, along with **Annexes C** and **D**, describes our final proposals for the output and performance incentives for PC5.

2. Form of price controls

Introduction

2.1 The Bureau's earlier consultation papers on PC5 set out the Bureau's thinking on the key challenges and priorities for this price control review and a suitable form of regulation. We proposed retaining the CPI-X form of revenue caps with the following important features:

(a) revenue drivers, adjusting revenue in line with the outputs;

(b) cost pass-through terms, allowing the recovery of costs that licensees have limited or no control over;

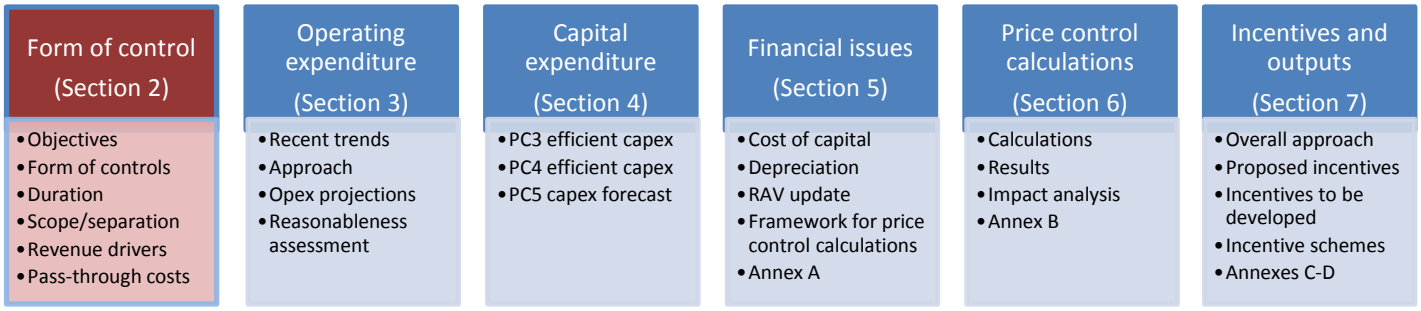
(c) multi-year duration, allowing the licensees to retain the benefits of efficiency savings for a number of years but providing the opportunity of a medium term review to take account of unexpected developments and changes in costs; and

(d) defined scope of activities subject to price control regulation, ensuring that the licensees have clarity as to whether a business activity is subject to regulation or normal commercial considerations and risks.

2.2 We however also suggested a number of changes to the existing regulatory regime to provide a more flexible arrangement for specified elements of operating costs, capex review and performance incentives.

2.3 This section summarises and assesses the views of the respondents to our draft proposals on these issues and sets out our final proposals on these matters for PC5.

Figure 2.1: Form of controls – Section 2



Objectives and priorities of this review

Draft proposals

2.4 Earlier consultation papers suggested that the focus of this price control review should include the following six core activities (and related incentives):

(a) capital efficiency

(b) asset management and performance

(c) availability, security and quality of supply

(d) high quality information

(e) adequate funding

(f) other important considerations – such as Emiratisation and end-use efficiency of electricity and water.

2.5 In view of the companies' suggestions, we also agreed to take account of some other areas at this review and to continue working with the companies in future on other priority areas to address the challenges – such as, capital efficiency assessment, asset management, use of incentives as effective drivers for improvements, cost-reflective tariffs and improved inter-company charges, demand side management (DSM), water management plan, mega developments, and accounting issues.

Responses

2.6 In response to the draft proposals, companies made the following suggestions:

(a) ADDC suggested that the key focus should be alignment between the sector's strategic direction set by the Government through ADWEA and the price controls by providing appropriate performance incentives for the companies. It stated that the Bureau being a Government regulator has an obligation to ensure capital expenditure efficiency but the Bureau should not let ADDC to spend capital inefficiently and then later penalise ADDC and eventually the Government for such inefficiency. ADDC emphasised the need for a forward-looking capital efficiency assessment, recognition of supply businesses being different from distribution, incentives for establishing an activity based costing system to provide high quality information, further alignment on an Emiratisation allowance, and the Bureau's engagement in the areas previously identified by the companies.

(b) In ADSSC's view, the focus should be more on delivery of the Government's vision for the sector in terms of meeting growth, expectations for scope and quality of services, and providing employment opportunities for citizens where possible, rather than on economic issues such as reducing costs by maximising efficiency.

Assessment and final proposals

2.7 We note that, taking into consideration ADDC's earlier suggestion, we proposed that AADC and ADDC should bring forward proposals to integrate RASCO into distribution and supply activities (for instance, as unlicensed assets and activities). While we have not received any proposals, we agreed with AADC during the meeting in August 2013 to discuss this matter with both the distribution companies outside of this review.

2.8 Certain of ADDC's comments depicted a lack of understanding of concepts or lack of cooperation and conflicted with its other comments. We explained to ADDC at the meeting in August 2013 that its rejection of CPi-X regulation and existing incentives is not aligned with its demand for a range of incentives. The CPI-X framework is best suited to

providing incentives for effective and efficient management of utility companies and for desirable performance and outcomes. Further, ADDC has shown a lack of cooperation with the suggestions of the Bureau and other companies to make progress on forward-looking capital efficiency assessments and action plans for improvements in the areas identified by the capex consultants. ADDC's suggestion for no ex-ante or ex-post review of its capex and lack of progress on the implementation of capex improvements already identified by the Bureau's consultants are inconsistent with its own emphasis on the Bureau's obligation to ensure capital efficiency and the need for a forward-looking approach to capex assessment. The Bureau has taken steps to further develop the regulatory regime to provide a more timely and forward-looking capex efficiency assessment. However, ADDC (and other licensees) remain responsible for delivering capex efficiency and the Bureau does not run or intend to micromanage the businesses.

2.9 The Bureau is also working with all the companies on the important areas identified by them including Emiratisation, incentives for improved performance and quality of service, funding for capacity building in important areas, and practical ways to ensure operating and capital efficiencies. We have taken these areas into account while developing our proposals on PC5 to the extent possible or relevant.

Basic approach to economic regulation

Draft proposals

2.10 In the draft proposals, we suggested that the CPI-X controls should be retained, with a more flexible arrangement for specified elements of operating costs and capex review.

Responses

2.11 The companies' responses generally supported the retention of the CPI-X form of regulation with some suggestions:

(a) AADC agreed to CPI-X controls with further attention to opex and capex allowances.

(b) ADDC did not consider the CPI-X approach to regulation appropriate to provide incentives for the Government-owned entities. Referring to the licensees' joint note of September 2012, ADDC encouraged the Bureau to work more closely with the licensees to jointly develop the best way forward to satisfy the Government's infrastructure needs.

(c) ADSSC supported the CPI-X form of controls but sought greater financial independence through alignment of the regulatory and government funding arrangements in line with the other companies.

(d) TRANSCO recognised the value and advantages of the CPI-X controls. However, it referred to the licensees' joint note of September 2012 to highlight the need for greater engagement and focus on incentives for companies' long-term performance improvement, delivery on agreed capital efficiency improvement programme, and the form of regulation to meet the needs of the Emirate of Abu Dhabi. Nonetheless, TRANSCO recognised that the Bureau has taken steps in

some areas, particularly to reduce the regulatory risks in capex efficiency assessments, and expressed its willingness to continue working with the Bureau in other areas, particularly the incentives.

Assessment

2.12 ADDC's comment regarding incentives has been discussed earlier. With regards to ADSSC's comment, we plan to engage with ADSSC shortly to better understand the details and accounting treatment of its funding arrangements, and then to work on the areas where alignment is required.

2.13 Our previous consultation papers took into consideration the suggestions made in the licensees' joint note and highlighted a number of steps that we have taken to develop a flexible regulatory framework to meet the specific challenges of the sector and the needs of the Emirate of Abu Dhabi, including the following:

(a) closer engagement in operating and capital cost reviews incentives and initiatives to improve performance;

(b) detailed methodology to develop PC5 opex projections with additional allowances for specific costs, capability building, and new responsibilities with flexibility to adjust certain allowances in future for parameters outside the licensees' control;

(c) adjustment of past capex efficiency assessments for exogenous factors;

(d) more timely and forward-looking assessment of future capex; and

(e) higher provisional allowances for future capex to address the companies' needs.

Final proposals

2.14 In view of the support from the licensees and our statutory duties for consistency and efficiency, we have retained the CPI-X approach to regulation in these final proposals. However, we have made a number of significant changes to the regulatory regime to address the specific challenges faced by the sector and to meet the needs of the Emirate of Abu Dhabi.

Duration of controls

Draft proposals

2.15 Earlier consultation papers highlighted a number of considerations relating to the duration of new controls including providing incentives for efficiency, reducing exposure to unanticipated outcomes, possible timing of interim ex-post capex reviews, and the advantages of a staggered approach to price control reviews in the future. In the draft proposals, we therefore suggested that the PC5 controls for ADSSC should be set for 3 years (2014-2016) and for AADC, ADDC and TRANSCO for 5 years (2014-2018).

Responses

2.16 Respondents to the draft proposals mostly preferred a 4-year control duration for PC5:

(a) AADC supported a 5-year duration with a mechanism for price control re-openers during the period.

(b) ADDC proposed a 4-year duration to align with its 2013-2017 business plan.

(c) ADSSC sought the same control period for all the companies to efficiently deal with sector-wide issues and preferred a 4-year control duration for PC5.

(d) TRANSCO proposed a 4-year duration for all companies given common issues and long-term demand forecasting errors.

Assessment and final proposals

2.17 In view of the companies' responses and the challenges faced by the sector, we have adopted a 4-year duration (2014-2017) for PC5 in these final proposals for all companies.

Scope and separation of controls

Draft proposals

2.18 In the draft proposals, the Bureau suggested retention of the existing scope and separation of price controls for PC5. This means separate controls for water and electricity for AADC, ADDC and TRANSCO, and a single control for wastewater collection, treatment and disposal businesses of ADSSC. In the case of TRANSCO, we however proposed that the price controls (currently covering licensed and unlicensed shared activities) should be expanded to include unlicensed dedicated activities outside the Emirate of Abu Dhabi.

2.19 We expressed our willingness to work with AADC and ADDC to ensure proper accounting and organisational separation of distribution and supply businesses and hoped that the implementation of the proposed regulatory accounting arrangements (RAGs) should improve the accounting separation and facilitate consideration of separation of controls at the next price control review.

Responses

2.20 AADC did not see any value in the separation between distribution and supply.

2.21 ADDC argued that separation of distribution and supply is vital to appropriately manage the two businesses and that separate price control calculations would facilitate better understanding of supply cost elements and future tariff designs. It did not expect significant improvement in the quality of accounting information from the implementation of the RAGs but supported the Bureau's opex consultant's recommendation for establishing an activity based costing system.

2.22 While TRANSCO recognised the merits of an extended scope of price controls to include unlicensed dedicated activities, it did not accept the proposed extended scope due to the

application of a capital efficiency adjustment to unlicensed dedicated assets which it estimated would result in an annual revenue loss of AED 4 million per annum.

Assessment

2.23 We recognise the benefits of accounting separation and will work with AADC and ADDC to ensure proper separation of distribution and supply businesses and the establishment of an activity based costing system. We believe that the recently issued RAGs when fully implemented would improve the accounting separation and facilitate consideration of the separation of controls at the next price control review. We also note that, besides the benefits of accounting separation for the companies themselves, the magnitude of price control incentives for preparation for SBAs far exceeds the costs of such preparation.

2.24 In relation to TRANSCO's comments, the draft proposals presented the benefits of the extended scope of its price controls and reasons for the application of capex efficiency to unlicensed dedicated assets. At the meeting in August 2013, we also clarified to TRANSCO that the total impact of such efficiency application is only about AED 2 million over the entire asset life (see Section 5).

Final proposals

2.25 Based on these considerations and discussions with TRANSCO, we have adopted an extended scope of TRANSCO's price controls in these final proposals to include the unlicensed dedicated activities and retained the existing scope of price controls for the other three network companies.

Revenue drivers

Draft proposals

2.26 The Bureau suggested retaining the 80:20 weights for the fixed and variable terms of the revenue and the existing revenue drivers for all companies. We also suggested that the number of customers should be included as an additional revenue driver for ADSSC and that TRANSCO's revenue drivers should be changed to metered units and metered peak demands without strict compliance with MDEC.

Responses

2.27 AADC sought clarification on a lower weight for metered units distributed (5%) than that for customer number (15%) and proposed network length or number of transformers as an additional revenue driver for its controls with the respective weights to be 5:10:5.

2.28 ADDC argued for separate revenue drivers and a different method for price control calculations than the building block approach for supply businesses, or alternatively a higher cost of capital for AADC and ADDC than TRANSCO to compensate for different risks associated with their supply businesses.

2.29 While ADSSC agreed with the proposed 80:20 weights for fixed and variable terms, it suggested continuation of the single revenue driver (ie, annual wastewater flow at

treatment plan) for PC5. In this regard, ADSSC highlighted its dependence on third parties for information about customer numbers (pending full development of its own customer register) and identified better cost drivers than customer number.

2.30 TRANSCO welcomed the Bureau's clarification that strict compliance with MDEC would not be required for its revenue drivers but sought further confirmation of the requirement. It reiterated its suggestion to remove one of its revenue drivers in view of the close relationship between peak demand and volume and its rejection of any performance incentive for MDEC-compliant interface metering.

Assessment

2.31 In relation to AADC's comments, we note that the weight of metered units distributed was reduced in the previous price control reviews to minimise the potentially undesirable incentive against end-use efficiency initiatives. As explained in the draft proposals, network length and number of transformers could be cost drivers but do not necessarily reflect customer demand and, if adopted as revenue drivers, may provide unnecessary incentives for system expansion and hence inefficiency.

2.32 With regards to ADDC's comments, we have explained in our PC5 consultation papers that separate price controls for supply businesses are not imminent at this stage and would not be reasonable given the current quality of accounting separation. Further, ADDC has not submitted a realistic and persuasive plan for the separation of its businesses as required. Its comment on a higher WACC is discussed in Section 5.

2.33 We agree with ADSSC's suggestion to continue with the existing single revenue driver (ie, annual wastewater flow at treatment plant) for PC5 pending its billing activities and the availability of better quality data on its customer numbers. We have therefore not adopted customer number as the additional revenue driver for ADSSC in these final proposals.

2.34 On TRANSCO's revenue drivers, we confirm that the proposed measures for PC5 are not required to be compliant with MDEC and include both MDEC and non-MDEC compliant metered quantities. However, as discussed in Section 7, we have proposed an interface metering incentive (not exceeding 0.50% of MAR) for TRANSCO in line with similar incentives for the distribution companies, recognising the shared responsibilities of the parties to ensure MDEC compliance. This will reduce the risk currently faced by TRANSCO (around 20% of its MAR) to a more reasonable and comparable basis.

Final proposals

2.35 Based on the above, we retain the 80:20 split of weights for the fixed and variable elements of revenue and the existing revenue drivers for all companies with no MDEC-compliance required for TRANSCO's metered revenue drivers, as summarised in **Table 2.1** below:

Table 2.1: Revenue drivers – final proposals

Company	Revenue driver	Revenue driver weight in MAR formula	
		Draft proposals	Final proposals
AADC / ADDC (both water and electricity)	Fixed term	80%	80%
	Customer numbers	15%	15%
	Metered units distributed	5%	5%
TRANSCO (both water and electricity)	Fixed term	80%	80%
	Metered peak demand (irrespective of MDEC compliance)	10%	10%
	Metered units transmitted (irrespective of MDEC compliance)	10%	10%
ADSSC	Fixed term	80%	80%
	Annual flow at treatment plants	10%	20%
	Customer numbers	10%	-

Cost pass-through arrangements

Draft proposals

2.36 The draft proposals suggested retaining the existing cost pass-through arrangements for PC5, as summarised in **Table 2.2** below. We also retained the existing treatment of the Bureau's licence fees where the regular fees are financed via opex allowances and the one-off project-specific fees are allowed a pass-through treatment via derogations.

Responses

2.37 Licensees continued to support the retention of the existing pass-through costs and made the following specific comments:

(a) AADC and ADDC preferred pass-through treatment for the Bureau's entire licence fees and ADWEA recharges. ADDC also noted that it had sought confirmation from ADWEA as to whether its supply business can purchase electricity from embedded generation and emphasised that appropriate profit for embedded generation should be determined by the Bureau at this review.

(b) ADSSC reiterated its suggestion for pass-through treatment of STA costs, O&M contract costs and the Bureau's licence fees and proposed that ex-ante provisional allowances for these costs be included in setting PC5.

(c) TRANSCO sought clarification on the treatment of GCCIA costs and reiterated its earlier suggestion for assessment of the reasonableness of connection applications of the distribution companies.

Assessment

2.38 In relation to ADDC's comments on electricity purchases from embedded generation, we note that such purchases are already allowed by the company's licence with a pass-through treatment and the Bureau has already provided initial guidance on the related profit calculation to ADDC via its letter dated 22 December 2009 pending any submission by ADDC on the matter.

2.39 With regards to ADWEA recharges, we received ADWEA's letter dated 26 May 2013 addressed to its group companies (received by the Bureau from TRANSCO) which provided useful explanation, justification and basis of allocation of ADWEA recharges. We understood that ADWEA provides a range of services to the companies which the companies need and would have procured separately and that the related charges are like other costs that companies normally incur. We accepted this explanation and have taken account of these recharges in full in the base level of opex and treat them in the same manner as companies' other costs. This approach continues to provide incentives for the companies and its shareholder to manage their costs efficiently.

2.40 In relation to ADSSC's suggestions to include ex-ante provisional allowances in PC5 controls for pass-through items, we note that this is not required as these items are automatically assigned the actual values (subject to licence conditions eg, economic purchasing obligations) for each year through the operation of the MAR formula. The price control review therefore focuses on determining the company's revenue requirement excluding pass-through costs. However, companies may like to estimate these pass-through items and their total MAR for budgeting and planning purposes.

2.41 Other companies' comments have already been discussed in the draft proposals and have not convinced us to make any change in the pass-through arrangements.

2.42 Nonetheless, the Bureau's intent is to maintain or reduce its licence fees in real terms. However, we agree to make an adjustment to the companies' price controls or MARs for any significant deviation between the Bureau's licence fee estimates included in the PC5 opex projections and the actual regular fees charged during the PC5 period.

Final proposals

2.43 The Bureau has therefore retained the existing cost pass-through arrangements for PC5, as suggested in the draft proposals (summarised in **Table 2.2** below) with a future adjustment to price control for significant deviations in the magnitude of the Bureau's regular licence fees during the PC5 period.

Table 2.2: Pass-through costs – daft proposals / final proposals

Company	Pass-through items
AADC / ADDC (both water and electricity)	Water and electricity purchases Transmission charges Embedded electricity purchases*
TRANSCO (both water and electricity)	Electricity ancillary service costs
ADSSC	STA costs**

Notes: All pass-through costs are subject to the relevant licensee's economic purchasing obligation. *These are electricity purchases from embedded generation (along with the distribution company's margin approved by the Bureau). **STA = Sewage Treatment Agreement.

Structure of PC5 controls

MAR formulae

2.44 Based on the above discussion, the structure of the Maximum Allowed Revenue (MAR) for each business for any year "t" of the PC5 control period shall be as follows:

$$MAR_t = \text{Pass-through Costs}_t + a_t + (b_t \times RD1_t) + (c_t \times RD2_t) + Q_t - K_t$$

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 2014 prices through the price control calculations and are indexed against the UAE Consumer Price Index (CPI) less an "X" factor (including an adjustment for actual 2013 UAE CPI as discussed below);

(c) "$RD1_t$" and "$RD2_t$" 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 performance incentive amount as discussed in Section 7 and the correction factor for the year "t", respectively.

Responses to draft proposals on UAE CPI

2.45 In response to the draft proposals, AADC, ADDC and TRANSCO suggested using Abu Dhabi CPI instead of the UAE CPI for price control indexation because the former better reflects the companies' operating costs particularly following the Government's recent decision that government employees are required to reside within the Emirate of Abu Dhabi to be eligible for accommodation allowance.

Assessment

2.46 We note that the significant components of a company's required revenue (eg, the return on capital element) are more linked to the UAE CPI than the Abu Dhabi CPI. Contractual arrangements in the sector (such as PPAs and PWPAs) also use the UAE CPI for price escalation. The use of the country's overall CPI or RPI is also a standard regulatory practice in various jurisdictions around the world. We also note that, while the two CPIs diverged in some years, the overall difference between them since 1999 has been negligible (0.20%).

Final proposals on UAE CPI

2.47 Given the above, the Bureau has retained the use of the UAE CPI for PC5.

2.48 We have also retained the following UAE CPI data and assumptions from the draft proposals for conversion of nominal prices into real prices or vice versa in this document:

Table 2.3: UAE CPI assumptions – draft proposals / final proposals

	2005	2006	2007	2008	2009	2010	2011	2012	2013
UAE CPI	82.34	89.99	100.00	112.30	114.00	115.00	116.01	116.78	**118.00**
UAE Inflation	6.20%	9.29%	11.13%	12.30%	1.51%	0.88%	0.88%	0.66%	1.04%

Source: UAE National Bureau of Statistics (Base year 2007 = 100). The UAE CPI figures for years upto 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: 2013 CPI is an assumption based on CPI for April 2013.

2.49 For earlier years not shown here, the CPI where required is based on actual official CPI data (presented in the PC4 final proposals dated 4 November 2009):

2.50 In line with our approach for PC4, the notified values “a”, “b” and “c” calculated at this review in 2014 prices (using the above CPI of 118.00 or 1.04% inflation assumption for 2013) will be adjusted for actual inflation for 2013 when known during the PC5 period. This adjustment will be done through the Price Control Return (PCR) for 2014 using appropriate formulae in the licence modifications required to incorporate PC5.

Revenue driver projections

Draft proposals

2.51 As discussed in Sections 5 and 6, we require revenue driver projections to calibrate the price controls and calculate the notified values “b” and “c”. In the draft proposals, we adopted revenue driver projections from the companies’ latest 2012 Annual Information Submissions (AIS) as reviewed by the independent Technical Assessor (TA). In the case of TRANSCO, we used demand forecasts from ADWEC’s draft 2012 statement of future capacity requirement to adjust TRANSCO’s 2012 AIS forecasts upward to include exports (i.e. demands and units for unlicensed activities). In relation to customer number projections for ADSSC, we did not make any adjustment to ADSSC’s projections but sought ADSSC’s review and explanation of a significant increase (by around 54%) in customer accounts from 2010 to 2011.

2.52 The revenue driver projections used in the draft proposals are shown in **Table 2.4** below. The projections of metered quantities implied high metering coverage (between 97% and 100%) over the PC5 period.

Responses to draft proposals

2.53 In response to the draft proposals, ADDC and TRANSCO expressed concerns about demand forecasting risks associated with the revenue driver projections and resulting financial impacts. ADDC noted that ADWEC’s latest demand forecasts being materially different from previous forecasts would expose ADDC to such risks, which should either be corrected for actual demands or compensated via higher WACC using an equity beta of unity as per ADWEA’s proposal.

2.54 While TRANSCO supported the Bureau’s inclusion of exports in its revenue driver projections, it stated that its 2012 AIS submission was independently assessed by the TA and fully compliant with the Bureau’s requirements. It argued that demand forecasting errors have created an under-recovery for TRANSCO in PC4. TRANSCO expressed its willingness to accept the proposed revenue driver projections provided TRANSCO is kept financially neutral to demand forecasting risks. However, subsequently through its email dated 6 August 2013, TRANSCO proposed its revenue driver projections for use in price control calculations based on ADWEC’s latest demand forecasts.

Table 2.4: Revenue driver projections for PC5 – draft proposals

			2014	2015	2016	2017	2018
AADC	Electricity customer accounts	Customers	146,868	157,148	165,006	176,557	187,814
	Electricity metered units distributed	GWh	9,912	10,491	10,969	11,409	11,753
	Water customer accounts	Customers	78,021	80,700	83,524	86,501	89,632
	Water metered units distributed	MIG	66,592	70,898	72,023	72,442	73,343
ADDC	Electricity customer accounts	Customers	395,832	444,466	477,451	525,475	579,358
	Electricity metered units distributed	GWh	37,318	42,124	47,345	52,980	59,030
	Water customer accounts	Customers	294,976	317,168	334,687	355,088	376,650
	Water metered units distributed	MIG	157,801	165,894	173,204	181,122	188,392
TRANSCO	Electricity metered peak demand	MW	13,068	14,512	15,577	17,059	18,048
	Electricity metered units transmitted	GWh	74,276	83,325	91,080	99,148	104,558
	Water metered peak demand	MIGD	886	946	966	1,003	1,039
	Water metered units transmitted	MIG	299,776	321,703	328,646	341,471	353,651
ADSSC	Customer accounts	Customers	529,367	570,129	614,030	661,309	712,230
	Annual wastewater flow treated	1000 m3	294,480	310,461	328,449	345,622	364,730

Source: Network companies' 2012 AIS submissions. Revenue driver projections for TRANSCO have been adopted from **Tables 2.7 -2.9**

Assessment of responses and final proposals

2.55 The companies have not provided any evidence of an adverse financial impact of demand forecasting errors in PC4. We replied to TRANSCO's relevant letter separately, identifying no financial impact of such errors during PC4. In the meetings held during August 2013, we explained to the companies that the demand forecasts are used in two ways in the price control calculations: first, through revenue driver projections to calculate notified values "b" and "c" (which account for 20% of MAR); and second, in developing opex projections (which also account for 20% of MAR on average across the companies). These two uses adjust a company's MAR in opposite directions for any demand forecasting error. This constitutes an automatic mechanism to offset the impact of demand forecasting errors but not necessarily in full for each business.

2.56 In view of the above, we propose reviewing the financial effect of demand forecasting error (taking account of both notified values and opex impacts) at the next price control review for an appropriate adjustment in PC6.

2.57 We have also reviewed TRANSCO's proposed revenue driver projections and shared with TRANSCO our concerns that they do not appear to be appropriately adjusted to represent demands leaving its transmission systems. However, TRANSCO has assured us that this is not the case. Further, the proposed review at the end of the PC5 period for a financial adjustment for any forecasting error would address the forecasting errors. Finally, these projections are very similar to those used in the draft proposals (with an average difference of less than 3% for any revenue driver over the PC5 period).

2.58 We have therefore adopted TRANSCO's proposed revenue driver projections in these final proposals. We have retained other revenue driver projections from our draft proposals but limited them to a 4-year control period for PC5 and removed customer number projections for ADSSC in view of our final proposals on these matters. The revenue driver projections adopted in the final proposals are listed in **Table 2.5** below:

Table 2.5: Revenue driver projections for PC5 – final proposals

			2014	2015	2016	2017
AADC	Electricity customer accounts	Customers	146,868	157,148	165,006	176,557
	Electricity metered units distributed	GWh	9,912	10,491	10,969	11,409
	Water customer accounts	Customers	78,021	80,700	83,524	86,501
	Water metered units distributed	MIG	66,592	70,898	72,023	72,442
ADDC	Electricity customer accounts	Customers	395,832	444,466	477,451	525,475
	Electricity metered units distributed	GWh	37,318	42,124	47,345	52,980
	Water customer accounts	Customers	294,976	317,168	334,687	355,088
	Water metered units distributed	MIG	157,801	165,894	173,204	181,122
TRANSCO	Electricity metered peak demand	MW	13,127	14,664	15,799	17,242
	Electricity metered units transmitted	GWh	77,214	86,252	92,930	101,417
	Water metered peak demand	MIGD	893	944	965	1,012
	Water metered units transmitted	MIG	302,097	319,576	326,502	342,662
ADSSC	Annual wastewater flow treated	1000 m3	294,480	310,461	328,449	345,622

Source: Network companies' 2012 AIS submissions. Revenue driver projections for TRANSCO have been adopted from TRANSCO's email dated 6 August 2013.

2.59 The above projections have also been used, where relevant, in developing PC5 opex projections in Section 3.

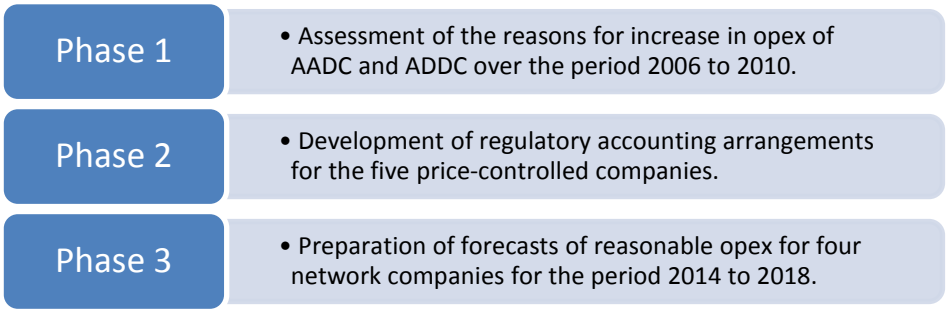
3. Operating expenditure

Introduction

3.1 Operating expenditure or opex (ie, operating cost excluding depreciation) is one of the main inputs to the price control calculations and constitutes one of the three building blocks of a company's required revenue. It is therefore important to make appropriate allowances for operating costs for price control purposes.

3.2 For PC5, the Bureau undertook three distinct work streams in relation to the operating costs with the help of a consultant, Deloitte & Touche ME, as shown in **Figure 3.1** below. In phase 3 of their work, the consultant worked with the Bureau and the network licensees to develop opex projections for PC5 and issued their final report in September 2013 setting out their methodology, analysis and opex projections for 2014-2018.

Figure 3.1 : Bureau's opex consultant work streams for PC5



3.3 This Section 3 sets our proposals on PC5 opex projections and is structured to:

(a) summarise the companies' 2012 opex performance and their opex forecasts;

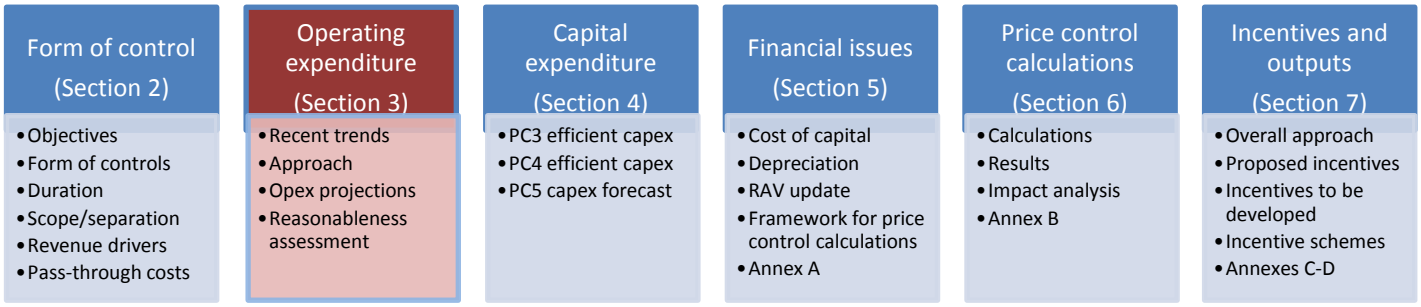
(b) describe our approach to developing the PC5 opex projections;

(c) provide a high-level assessment of the licensees' main concerns and important issues while discussing the approach to developing opex projections and treatment of certain specific costs (the consultant's final report deals with the companies' detailed comments);

(d) assess the reasonableness of our PC5 opex projections against the companies' 2012 actual costs and their latest opex forecasts; and

(e) present our final proposals on opex allowances for PC5 in 2014 prices.

Figure 3.2: Operating expenditure – Section 3

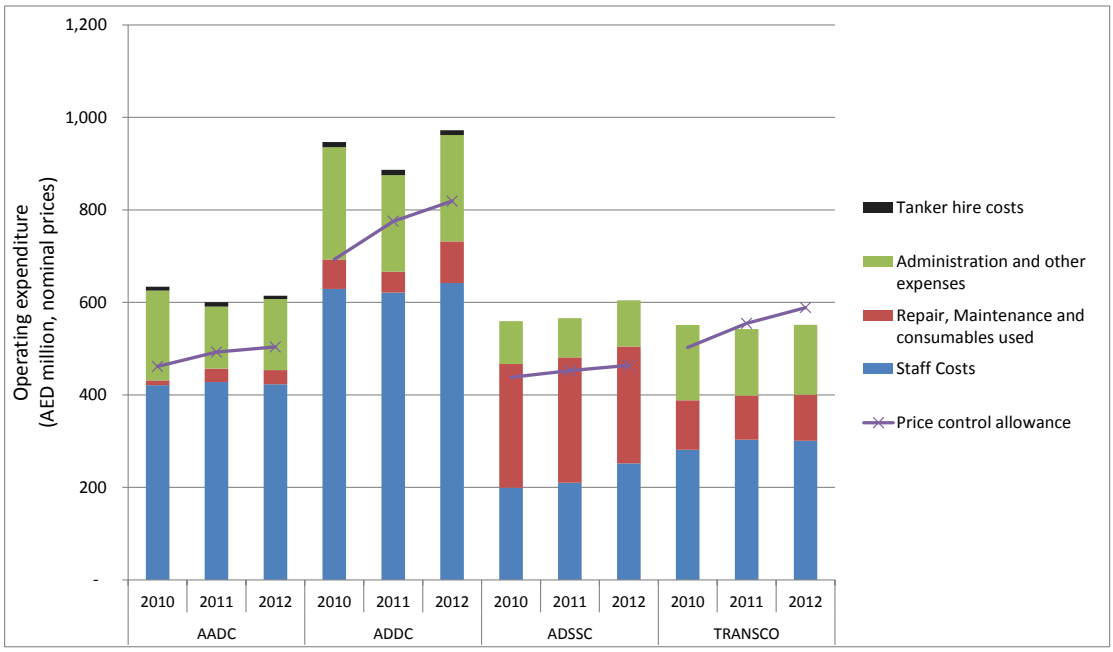


Network companies' actual and forecast opex

Companies' recent opex performance

3.4 **Figure 3.3** summarises the network companies' actual opex performance over 2010-2012 in nominal prices. ADDC's opex showed the highest increase in 2012 (10%), followed by ADSSC (7%), AADC (2%) and TRANSCO (2%). In aggregate, the four companies' opex increased by around 5.7% in 2012 to AED 2.74 billion from AED 2.59 billion in 2011, compared to a 3.6% decrease in 2011 from AED 2.69 billion in 2010.

Figure 3.3: Companies' 2012 actual opex performance (nominal prices)



Source: Companies' 2011-2012 SBAs

3.5 In 2012, staff costs continued to constitute the largest or major part (42% to 69%) of the companies' opex and amounted to about AED 1.6 billion in total for all companies (ie, 59% of total opex). Total staff costs increased by 3.5% in 2012, as compared to an increase of 2.1% in 2011.

3.6 For both AADC and ADDC combined, the ratio of supply business costs to distribution business costs however declined to about 67% in 2012 compared to 86% in 2010 and

90% in 2011. This indicated an improvement in the cost allocation process – an area of main concern in phases 1 and 2 of the consultant's work.

3.7 The aggregate gap between the actual opex and price control opex allowance for the four companies increased in 2012 (a gap of AED 361 million or 15% above the price control allowance) from the 2011 gap (AED 316 million or 14%) but was lower than the 2010 gap (AED 588 million or 28%). The gap remained significant for each company (actual opex being 20% to 30% above the allowance), except for TRANSCO which was able to control its opex, achieving 3% and 8% below the price control opex allowance in 2011 and 2012, respectively.

3.8 While the above assessment generally indicates increases in nominal terms, the operating cost per unit of electricity or water transmitted or per unit of wastewater treated for each business showed a general trend of decline (by 4% to 12% per annum) from 2010 to 2012 in real terms.

Companies' future opex projections

3.9 In the draft proposals, we summarised the network companies' opex projections from their 2012 AIS submissions (including TRANSCO's unlicensed dedicated activities). These projections are reproduced in **Table 3.1** for the PC5 period in 2012 prices. The table also compares the average annual forecast opex over 2014-2017 against the 2012 actual opex for each network company. The four companies' aggregate opex was projected to increase from around AED 2.7 billion in 2012 to an average of around AED 3.2 billion in real 2012 prices – a real average increase of 17%.

Table 3.1: Companies' PC5 opex forecasts as per 2012 AIS

AED million, 2012 prices	2012 actual	2014	2015	2016	2017	Average 2014-2017	Average difference from 2012 actual
AADC	615	613	601	608	612	609	-1%
ADDC	972	1,120	1,146	1,173	1,203	1,160	19%
TRANSCO	552	755	784	785	802	782	42%
ADSSC	605	636	642	649	656	646	7%
Total	**2,743**	**3,124**	**3,173**	**3,216**	**3,272**	**3,196**	**17%**

Source: 2012 actual opex as per companies' 2012 SBAs; 2012-2017 opex forecasts as per companies' 2012 AIS submissions.

Notes: Actual opex comprises staff costs, repair, maintenance and consumables, water tanker hire costs (for water distribution businesses), and administration and other expenses, but excludes provisions for slow moving and obsolete inventory and doubtful debts (the latter are also excluded from forecasts).

3.10 In their responses to the draft proposals or the opex consultant's final report, three companies (AADC, ADDC and ADSSC) submitted their updated opex forecasts, as summarised in **Table 3.2**. However, the companies did not provide a detailed breakdown and basis of their cost estimation and adequate justifications for cost increases. Due to the lack of clarity, we had to make some assumptions, such as that these forecasts are in 2012 prices and do not include all cost items unless explicitly specified by the companies. In certain cases, we have added some cost items provided separately by the companies to these forecasts (which might have resulted in double counting).

3.11 The companies' updated forecasts amount to a total of about AED 3.7 billion a year on average over the PC5 period. On average, these forecasts are higher than their 2012 AIS forecasts by 16% and higher than their 2012 actual costs by 35%:

(a) AADC's and ADDC's updated projections are higher than their 2012 AIS forecasts by 45% and 26%, and higher than their 2012 actual costs by 43% and 50%, respectively.

(b) TRANSCO's opex projections remain as per its 2012 AIS submission and are higher than its 2012 actual costs by 42% on average.

(c) ADSSC's updated projections on average are lower than its 2012 AIS by 9% and its 2012 actual costs by 2%. Given the lack of clarity and reconciliation between different estimates in its submission, it appears that ADSSC's updated forecasts may be significantly understated.

Table 3.2: Companies' updated opex forecasts

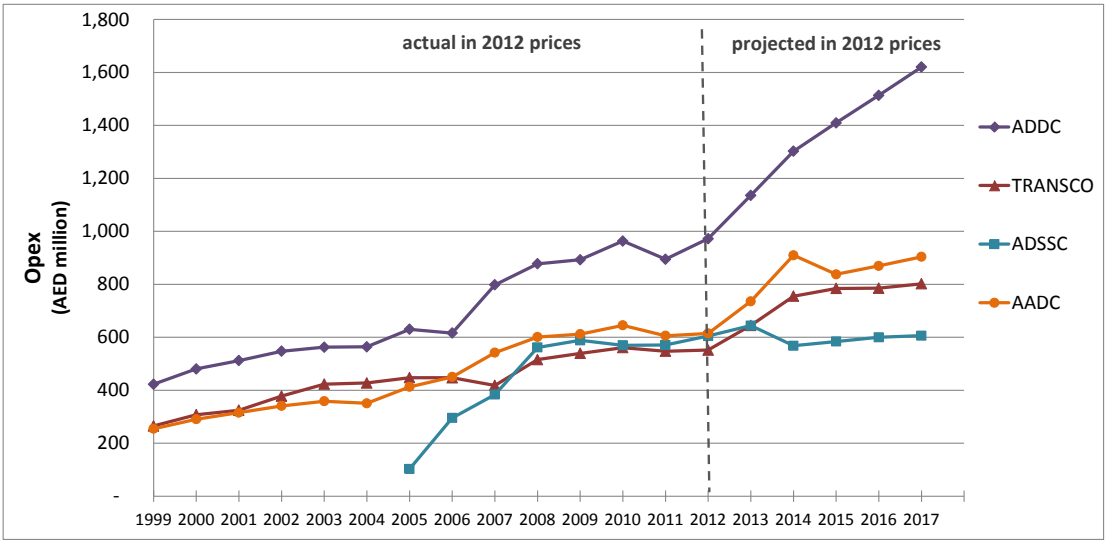
AED million, 2012 prices	2014	2015	2016	2017	Average 2014-2017	Average difference from 2012 AIS	Average difference from 2012 actual
AADC	910	838	869	904	880	45%	43%
ADDC	1,303	1,409	1,513	1,620	1,461	26%	50%
TRANSCO	755	784	785	802	782	0%	42%
ADSSC	568	584	600	606	590	-9%	-2%
Total	**3,535**	**3,615**	**3,768**	**3,932**	**3,713**	**16%**	**35%**

Source: AADC's response dated 18 July 2013 to PC5 draft proposals; ADDC's response dated 18 July 2013 to Deloitte's draft final report; ADSSC's response dated 21 July 2013 to PC5 draft proposals and Deloitte's draft final report

Notes: AADC: forecasts comprise main projections, additional allowances plus mega development allowances specified in its response;
ADDC: forecasts comprise main projections, ADWEA recharge estimates plus mega development allowances specified in its response; and
ADSSC: forecasts comprise projections of staff costs, O&M costs and Emiratisation allowances specified in its response – however, such forecasts do not reconcile to total cost projections less STA costs provided in the same response. The forecast adopted here is higher than the latter estimate by AED 31-48 million per annum.

3.12 The above trends in the companies' updated forecasts can be observed in the following chart over a longer horizon:

Figure 3.4: Companies' 2012-2017 opex forecasts (2012 prices)



Source: 1999-2012 actual opex as per companies' 1999-2012 SBAs. 2012-2017 opex forecasts as per companies' 2012 AIS or latest submissions.
Notes: Actual costs for 1999-2012 are in nominal prices. Projected opex for future years is in 2012 prices.

Approach to operating cost projections and allowances

Approach to opex projections

3.13 In the draft proposals, we proposed a seven-step approach to developing opex projections for PC5 based on the consultant's interim report issued in March 2013. The seven-step methodology employs both a high-level top-down approach and a more detailed bottom-up approach using various cost and efficiency benchmarks from the sector and elsewhere.

3.14 Since the publication of the draft proposals, the consultant has issued draft final and final reports in June and September 2013, respectively, following the above approach (but using actual opex for 2012 instead of 2011 as the base level) and taking account of the companies' comments and further information. While the opex consultant's work covered the period 2014-2018 as per the Bureau's initial proposal for the PC5 duration, we have used their recommended opex projections for 2014-2017 in this document in line with our final proposal for the PC5 duration.

3.15 The approach to developing the opex projections is illustrated in **Figure 3.5** and summarised below:

(a) Establish the company's base level of cost or current recurring controllable cash opex (CC) for 2012 by excluding non-cash items, one-off costs and non-controllable costs (such as the Bureau's licence fee).

(b) Roll forward the base level of cost to the start of PC5 period (ie, 2014).

(c) Develop top-down cost projections (TCP) up to the end of the PC5 period (in fact, over 2014-2018 as per our initial proposal) based on the top-down approach using estimates of high-level cost-volume relationship and expected productivity improvements. Both this and preceding step assume a 0.7% (for electricity businesses) or 0.85% (for water and wastewater businesses) increase in opex for each 1% increase in demand and a real annual efficiency gain of 3% for TRANSCO, 3.5% for ADDC and 4% for AADC and ADSSC.

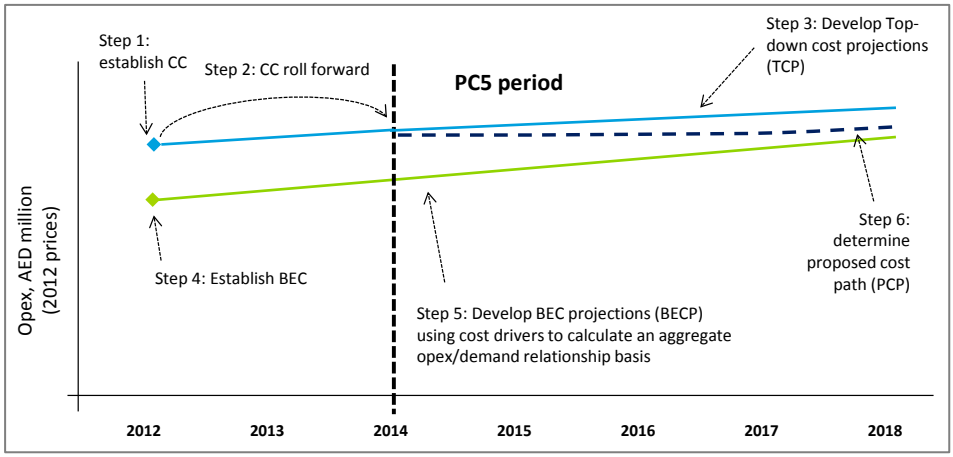
(d) Establish bottom-up efficient cost (BEC) for the base year (ie, 2012) costs using detailed bottom-up benchmarks for efficient costs.

(e) Starting with BEC, develop bottom-up efficient cost projections (BECP) to 2018 based on a set of comparator benchmarks, an assessment of cost-structure and cost/volume relationship using cost drivers for specific costs, and an annual frontier shift efficiency assumption of 1% per annum.

(f) Develop proposed cost path projections (PCP) of reasonable, controllable opex over the PC5 period by allowing a transition path for the company from its expected level of opex in the second year of the PC5 period based on TCP towards the efficient cost level based on BECP, with a linear catch-up rate that closes 60% of the gap between TCP and BECP by 2018.

(g) Set the reasonable cost projection (RCP) for PC5 by adding a reasonable estimate of non-controllable opex (ie, Bureau's licence fee) to PCP.

Figure 3.5: Consultant's approach to PC5 opex projections



Source: Deloitte's Final Report, 30 September 2013
Notes: For illustration purposes only and not drawn to scale.

3.16 Some network licensees expressed concerns about the use of a bottom-up approach and the application of benchmarking and argued that these have the effect of lowering the PC5 opex projections. It should be noted that the bottom-up approach has been developed in response to the licensees' concerns regarding the top-down approach employed in the previous price control reviews and their proposition for a detailed review of the costs. In the opex consultant's work, while the top-down approach sets the expected trend of the companies' costs based on their own performance to date, the bottom-up approach represents the efficient levels of costs that the companies should achieve. However, we have allowed sufficient time for the companies to move towards these efficient levels and assumed closing of only 60% of the gap towards these efficient levels by 2018.

3.17 Both the companies and the consultant acknowledge the limitations of the benchmarking exercise. However, the benchmarking results have been applied after recognising the differences between comparators and the licensees as well as between the licensees themselves. Adjustments have been made to licensees' costs only where inefficiency was clearly evident. As the work on benchmarking progressed with further refinement and companies' explanations of their costs, certain adjustments have been reduced or removed (eg, a 6% downward adjustment to expat staff costs for TRANSCO). Notwithstanding its limitations, the benchmarking analysis indicates specific areas where companies may be able to improve, such as non-O&M related activities for TRANSCO, enhanced staff productivity for AADC and ADDC, and overall staffing levels for AADC and ADSSC.

Approach to treatment of specific costs

3.18 Based on the responses to the draft proposals and the opex consultant's interim and draft final reports and further discussions with the companies, the following approach has been applied to the treatment of certain specific costs. In cases where the allowances are based on certain assumptions, we propose making an adjustment for actual out-turn values of relevant parameters achieved by the businesses during each year of the PC5 period. Such adjustments are explained and illustrated in the opex consultant's final report.

3.19 We have also included a requirement in the draft licence modification for the companies to provide audited information on the items required to make such adjustments as part of the Price Control Return (PCR) each year. However, we will specify these requirements in detail from time to time well before the due date of the PCR submission. Depending on the materiality of adjustments, these adjustments can be made annually or at the next price control review. If the required audited information is not submitted or, where allowances for additional staff are provided, if the additional capabilities are not developed, the Bureau will consider removing or reducing the allowances for the relevant specific costs as it deems appropriate.

Emiratisation and training allowances

3.20 For each business, the PC5 opex projections include the following additional allowances for Emiratisation costs based on (a) additional UAE National staff unit cost compared to an expat employee, and (b) annual Emiratisation rates assumed in the companies' 2012 AIS forecasts (with revised assumptions provided by TRANSCO). We propose that this allowance will be adjusted against the company's actual annual Emiratisation rate (ie, the number of UAE National employees as proportion of total number of full-time employees (FTEs)).

Table 3.3: Emiratisation allowances included in PC5 opex projections

AED million, 2012 prices		2014	2015	2016	2017	Average
AADC	Electricity	7.80	11.40	14.70	17.90	12.95
	Water	4.50	6.50	8.30	10.00	7.33
	Total	12.30	17.90	23.00	27.90	20.28
ADDC	Electricity	26.40	38.60	50.90	64.10	45.00
	Water	16.40	23.40	30.30	37.10	26.80
	Total	42.80	62.00	81.20	101.20	71.80
TRANSCO	Electricity	10.40	12.30	12.80	13.40	12.23
	Water	1.60	2.80	3.30	3.80	2.88
	Total	12.00	15.10	16.10	17.20	15.10
ADSSC	Total	23.10	26.70	27.20	27.20	26.05
Total		**90.20**	**121.70**	**147.50**	**173.50**	**133.23**

Source: Deloitte's Final Report, 30 September 2013

3.21 As the companies have explained the need for training of their new UAE National staff, the PC5 opex projections now include separate allowances for direct training of such staff as listed in **Table 3.4** below. These allowances are based on an estimated average training course cost and cumulative number of new UAE National staff added after 2012, Training costs for the employees that the companies had in 2012 are already reflected in the PC5 opex projections. We propose that this allowance will be adjusted against the actual cumulative number of new UAE National staff added after 2012 who attended such training courses.

3.22 In the case of ADSSC which provided an explicit estimate of its required Emiratisation allowance including training costs (AED 40 million per annum), we note that our PC5 projections include an average allowance of about AED 32 million per annum for Emiratisation and training costs.

Table 3.4: Direct training allowances included in PC5 opex projections

AED million, 2012 prices		2014	2015	2016	2017	Average
AADC	Electricity	1.70	2.20	2.50	2.80	2.30
	Water	0.10	0.40	0.50	0.50	0.38
	Total	1.80	2.60	3.00	3.30	2.68
ADDC	Electricity	4.00	6.20	8.10	10.30	7.15
	Water	2.50	3.40	4.30	5.10	3.83
	Total	6.50	9.60	12.40	15.40	10.98
TRANSCO	Electricity	2.70	3.10	3.00	3.00	2.95
	Water	1.00	1.30	1.30	1.30	1.23
	Total	3.70	4.40	4.30	4.30	4.18
ADSSC	Total	5.30	6.30	6.40	6.40	6.10
Total		**17.30**	**22.90**	**26.10**	**29.40**	**23.93**

Source: Deloitte's Final Report, 30 September 2013

3.23 Further, in response to a proposal made by TRANSCO, the PC5 opex projections include an allowance for an apprenticeship scheme for the UAE Nationals (see **Table 3.5**) based on an estimated annual cost per student and the total number of apprentices. If TRANSCO does not undertake this programme, the allowance will be removed. Further, this allowance will be adjusted for the actual number of apprentices and for any material difference between assumed and actual annual cost of this scheme per student (subject to the efficiency assessment of any higher costs).

Table 3.5: Apprenticeship scheme allowances in PC5 opex projections

AED million, 2012 prices		2014	2015	2016	2017	Average
TRANSCO	Electricity	-	2.90	6.80	11.50	5.30
	Water	-	1.80	4.30	7.30	3.35
	Total	**-**	**4.70**	**11.10**	**18.80**	**8.65**

Source: Deloitte's Final Report, 30 September 2013

3.24 At present, we have not made any apprenticeship allowance for other companies. However, if other companies put forward a proposal and commit to an apprenticeship scheme, we are willing to make similar allowances for them during the PC5 period.

Mega developments

3.25 For AADC, ADDC and ADSSC, the consultant's opex projections include a specific opex allowance for additional costs arising due to utility infrastructure assets from the mega developments transferred to the companies, as listed in **Table 3.6**. These allowances are based on an estimated opex per kilometre of electricity network or water pipeline (calculated from relevant components of companies' 2012 actual opex in 2012 SBAs) and an assumed length of network or pipeline.

3.26 These allowances will be adjusted for the actual length of electricity or water network taken over by the companies during each year of the PC5 period. Companies, particularly ADDC, considered the initial opex/km benchmark and hence initial estimates of these allowances inadequate given the anticipated condition of assets in the mega developments. Therefore, we agree that if the specifications or standards of the network taken over by a company differ significantly from those of the company's assets and result in significantly different operating costs, we will consider further adjustments to the

allowance by taking account of the actual costs incurred and the costs already captured in the allowance or otherwise in the PC5 opex projections (for example, by virtue of opex/demand adjustments to main projections).

Table 3.6: Mega development allowances in PC5 opex projections

AED million, 2012 prices		2014	2015	2016	2017	Average
AADC	Electricity	3.30	3.90	4.10	4.10	3.85
	Water	-	-	-	-	-
	Total	3.30	3.90	4.10	4.10	3.85
ADDC	Electricity	66.80	84.10	105.00	130.20	96.53
	Water	25.90	33.70	39.40	44.60	35.90
	Total	92.70	117.80	144.40	174.80	132.43
ADSSC	Total	0.10	0.60	1.90	2.50	1.28
Total		**96.10**	**122.30**	**150.40**	**181.40**	**137.55**

Source: Deloitte's Final Report, 30 September 2013

3.27 Nonetheless, the consultant's final report used a higher opex per km benchmark based on actual cost from the companies' 2012 SBAs and addressed the differentiation between low and high voltage network lengths for ADDC. The resulting allowances for mega developments (presented above) are lower than those estimated by AADC and ADDC (listed in the following table) on average by around 4% and 10%, respectively.

Table 3.7: Companies' estimates of mega development allowances

AED million	2014	2015	2016	2017	Average
AADC	2.42	3.24	4.46	5.88	4.00
ADDC	101.00	130.00	161.00	194.00	146.50
Total	**103.42**	**133.24**	**165.46**	**199.88**	**150.50**

Source: AADC's response dated 18 July 2013 to PC5 draft proposals; ADDC's response dated 18 July 2013 to Deloitte's draft final report;

Real price effects on staff costs

3.28 The consultant included an additional allowance for real increases in staff costs over the PC5 period in its opex projections assuming a 3% real unit cost increase in staff basic salaries. The resulting allowances are listed below in **Table 3.8**. These allowances are comparable to the estimates put forward by AADC (3% increase in staff costs) and ADSSC (about AED 4.8 million per annum).

Table 3.8: Real price effects on staff costs included in PC5 opex projections

AED million, 2012 prices		2014	2015	2016	2017	Average
AADC	Electricity	3.60	5.60	7.50	9.60	6.58
	Water	2.10	3.20	4.30	5.30	3.73
	Total	5.70	8.80	11.80	14.90	10.30
ADDC	Electricity	5.10	8.10	11.40	15.00	9.90
	Water	3.20	5.00	6.80	8.70	5.93
	Total	8.30	13.10	18.20	23.70	15.83
TRANSCO	Electricity	2.90	4.40	5.90	7.30	5.13
	Water	1.80	2.80	3.80	4.70	3.28
	Total	4.70	7.20	9.70	12.00	8.40
ADSSC	Total	2.80	4.30	5.90	7.40	5.10
Total		**21.50**	**33.40**	**45.60**	**58.00**	**39.63**

Source: Deloitte's Final Report, 30 September 2013

Additional capabilities

3.29 Some network licensees highlighted the need for additional staff resources. In particular, ADDC made a submission for staff vacancies against its approved organisational chart. In cases where a company provided sufficient justification or where the Bureau is already aware of the need, the consultant included allowances for such additional staff requirements in PC5 opex projections. These areas include capabilities in (a) demand side management for AADC and ADDC; (b) change management, risk management, tariff affairs, business support and business and financial planning for AADC, ADDC and ADSSC, and (c) health, safety and environment for ADSSC. The resulting allowances are listed in **Table 3.9**.

3.30 We however remain open to considering the justification for and allowing funding for further staff requirements (for example, ADDC's requirements in Western Region) and we will undertake a detailed review of such requirements during the PC5 period.

Table 3.9: Additional capabilities allowances in PC5 opex

AED million, 2012 prices		2014	2015	2016	2017	Average
AADC	Electricity	9.80	10.00	10.20	10.40	10.10
	Water	5.20	5.10	5.10	5.10	5.13
	Total	15.00	15.10	15.30	15.50	15.23
ADDC	Electricity	9.40	9.70	9.80	10.10	9.75
	Water	7.00	6.90	6.90	6.80	6.90
	Total	16.40	16.60	16.70	16.90	16.65
ADSSC	Total	16.90	18.50	20.80	24.00	20.05
Total		**48.30**	**50.20**	**52.80**	**56.40**	**51.93**

Source: Deloitte's Final Report, 30 September 2013

Additional water pumping costs

3.31 For TRANSCO's water business, the consultant included an additional allowance in the opex projections for an increase in the pumping costs due to increases in electricity tariffs and demand and additional costs for pumping stations at Qidfa recently transferred to TRANSCO. These allowances, summarised in **Table 3.10** below, are based on TRANSCO's estimates and will be subject to adjustments for the actual quantity of water pumped at Qidfa.

Table 3.10: Energy cost allowances for water pumping in PC5 opex projections

AED million, 2012 prices		2014	2015	2016	2017	Average
TRANSCO Water	Base allowance	77.00	81.50	83.20	87.30	82.25
	Qidfa pump	90.60	92.60	92.60	92.60	92.10
Total		**167.60**	**174.10**	**175.80**	**179.90**	**174.35**

Source: Deloitte's Final Report, 30 September 2013

3.32 In response to a recent TRANSCO's communication, we also agree to adjust this allowance for any further increase in tariff during the PC5 period but will encourage TRANSCO to negotiate a large user tariff with AADC and ADDC for its pumps.

Bureau licence fee

3.33 The consultant included the Bureau's regular licence fee in the opex projections assuming it will continue at its 2013 level in real prices during the PC5 period (see further discussion in Section 2).

ADWEA recharges

3.34 As discussed in Section 2, ADWEA recharges have been treated in the same manner as companies' other costs by including ADWEA recharges in full in the base levels of costs. Accordingly, the allowances for ADWEA recharges grow with the demand in line with companies' other costs.

Other costs

3.35 Pending further discussions with the network licensees and/or justification and impact estimation, we have not included any separate allowances (other than those already funded through inclusion in the base level, demand related adjustments, revenue driver adjustment mechanism, or other specific allowances) for the following cost items or issues:

(a) AADC and ADDC: Advanced Meter Reading (AMR), non-drinking water responsibilities, drinking water tankering, additional health insurance costs, and additional requirements for capabilities and roles;

(b) ADSSC: management of tankering services, customer billing and additional health insurance costs; and

(c) TRANSCO, GCCIA related charges, Liwa Aquifier Recharge Scheme, repair and maintenance work at Taweelah,sub-station, and the Bureau's initiative for business continuity management.

Total allowances for specific costs

3.36 **Table 3.11** presents the total allowances for specific costs discussed above for each business which are included in the consultant's final PC5 opex projections. These total allowances are averaged at AED 487 million per annum over the PC5 period. These allowances are dominated by ADDC (average AED 248 million p.a.) and TRANSCO (average AED 128 million p.a.), followed by AED 59 million p.a. and AED 52 million p.a. accounted for by ADSSC and AADC, respectively.

Table 3.11: Total allowances for specific costs included in PC5 opex projections

AED million, 2012 prices		2014	2015	2016	2017	Average
AADC	Electricity	26	33	39	45	36
	Water	12	15	18	21	17
	Total	38	48	57	66	52
ADDC	Electricity	112	147	185	230	168
	Water	55	72	88	102	79
	Total	167	219	273	332	248
TRANSCO	Electricity	16	23	29	35	26
	Water	95	101	105	110	103
	Total	111	124	134	145	128
ADSSC	Total	48	56	62	68	59
Total		**364**	**448**	**526**	**610**	**487**

Source: Deloitte's Final Report, 30 September 2013
Notes: Allowance for TRANSCO's water business includes energy costs for water pumping at Qidfa but excludes base allowance for existing water pumping which is included in the PC5 final opex projections presented later in this document.

Operating cost projections

PC5 draft proposals

3.37 The consultant's initial recommendations for the PC5 opex projections in the interim report which were used in the PC5 draft proposals are reproduced in **Table 3.12** in 2012 prices. The projections indicated an aggregate average opex of AED 2.5 billion per annum for the four network companies over the period.

Table 3.12: Consultant's initial PC5 opex projections

AED million, 2012 prices		2014	2015	2016	2017	Average
AADC	Electricity	321	307	293	282	301
	Water	204	194	184	176	189
	Total	525	501	477	458	490
ADDC	Electricity	582	580	573	566	575
	Water	327	320	314	309	318
	Total	909	900	887	875	893
TRANSCO	Electricity	275	271	260	253	265
	Water	372	376	359	360	367
	Total	647	648	619	614	632
ADSSC	Total	519	499	484	473	494
Total		**2,600**	**2,548**	**2,467**	**2,419**	**2,509**

Source: Deloitte's Interim Report, March 2013

Consultant's final opex projections

3.38 The consultant's final recommendations for the PC5 opex allowances including all specific costs discussed above are summarised in **Table 3.13**. The projections indicate an aggregate opex of AED 3.2 billion for the four network companies in 2014 increasing at an average rate of 2.4% per annum to AED 3.4 billion by 2017. We have adopted these projections in developing these final proposals.

Table 3.13: Consultant's final PC5 opex projections – final proposals

AED million, 2012 prices		2014	2015	2016	2017	Average
AADC	Electricity	409	409	406	406	407
	Water	242	239	234	229	236
	Total	651	648	640	635	643
ADDC	Electricity	758	811	858	912	835
	Water	410	431	446	460	437
	Total	1,168	1,242	1,304	1,372	1,271
TRANSCO	Electricity	320	331	334	339	331
	Water	417	431	434	443	431
	Total	737	762	768	782	762
ADSSC	Total	646	654	654	654	652
Total		**3,202**	**3,305**	**3,365**	**3,442**	**3,329**

Source: Deloitte's Final Report, 30 September 2013

Comparison of final opex projections against draft proposals

3.39 **Table 3.14** compares the consultant's final opex projections adopted in these final proposals against initial opex projections (adopted in PC5 draft proposals) in terms of average opex over the PC5 period for each company.

3.40 Clearly, the final opex projections are significantly higher than those adopted in the draft proposals in 2012 prices:

(a) Aggregate opex for the companies in these final proposals is higher than the draft proposals by about AED 820 million or 33% on average over the PC5 period.

(b) For individual companies, the final opex projections imply an increase by 21% to 42% on average against the draft proposals.

Table 3.14: PC5 final opex projections - comparison against draft proposals

AED million, 2012 prices	PC5 draft proposals average	PC5 final proposals average	Difference	Difference (%)
AADC	490	643	153	31%
ADDC	893	1,271	378	42%
TRANSCO	632	762	130	21%
ADSSC	494	652	158	32%
Total	**2,509**	**3,329**	**820**	**33%**

3.41 However, these significant differences are explained by the interim nature of the consultant's projections at the draft proposals stage and by the following main changes in the final opex projections as compared to those used in the draft proposals:

(a) use of 2012 actual costs as the base level;

(b) updated benchmarking and revised conclusions about the potential efficiency;

(c) receipt of further information and clarifications from the companies;

(d) lower efficiency assumptions and higher opex adjustments for demand growth;

(e) slower catch-up to close the gap between top-down and bottom-up projections, thereby allowing more time for the companies to achieve efficiency frontier performance and allowing a larger gap to remain at the end of the period;

(f) inclusion of the Bureau's licence fee; and

(g) inclusion of significant amounts for specific cost allowances.

Comparison against companies' 2012 actual costs

3.42 As shown in **Table 3.15** below, the opex projections adopted in these final proposals are also significantly higher than the companies' 2012 actual opex in terms of average opex over the period – by AED 585 million or 21% on an aggregate level (in 2012 real prices) and by 5% to 38% at a company level. The higher differences in the case of ADDC and TRANSCO are mainly due to allowances for mega developments, Emiratisation, training and apprenticeship.

Table 3.15: PC5 final opex projections - comparison against 2012 actual costs

AED million, 2012 prices	2012 actual opex	PC5 final proposals average	Difference	Difference (%)
AADC	615	643	29	5%
ADDC	972	1,271	299	31%
TRANSCO	552	762	210	38%
ADSSC	605	652	47	8%
Total	**2,743**	**3,329**	**585**	**21%**

Comparison against 2013 price control allowances

3.43 The final opex projections show (see **Table 3.16**) significant increases from the price control allowances for 2013 (the last year of the PC4 period) by AED 841 million per annum or 34% on an aggregate level and by 21%-47% for individual companies (in 2012 real prices), reflecting the specific costs allowances and demand growth for PC5.

Table 3.16: PC5 final opex projections - comparison against PC4 projections for 2013

AED million, 2012 prices	PC4 allowance for 2013	PC5 final proposals average	Difference	Difference (%)
AADC	520	643	123	24%
ADDC	866	1,271	405	47%
TRANSCO	629	762	133	21%
ADSSC	472	652	180	38%
Total	**2,488**	**3,329**	**841**	**34%**

Comparison against companies' forecasts

3.44 As summarised in **Table 3.17**, the opex projections adopted in these final proposals are still lower than the companies' latest opex forecasts – by as much as 27% in the case of AADC but only by 3% for TRANSCO. Overall, the final projections are lower than companies' aggregate forecasts by 10% on average. In the case of ADSSC, our opex projections are higher than the company's latest forecast by 11%. However, as mentioned earlier, ADSSC's updated forecast might be under-estimated. In contrast, ADSSC's 2012 AIS forecast average (AED 646 million per annum as per **Table 3.1** above) is comparable to our final PC5 opex projection average for ADSSC.

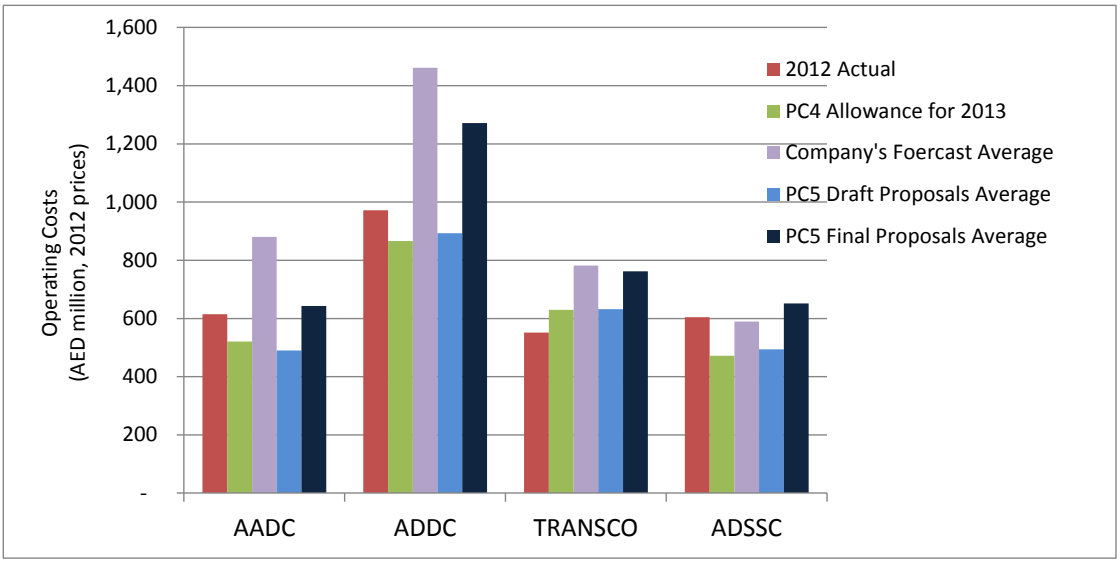
Table 3.17: PC5 final opex projections - comparison against companies' forecasts

AED million, 2012 prices	Company's forecast average	PC5 final proposals average	Difference	Difference (%)
AADC	880	643	-237	-27%
ADDC	1,461	1,271	-190	-13%
TRANSCO	782	762	-20	-3%
ADSSC	590	652	62	11%
Total	**3,713**	**3,329**	**-384**	**-10%**

Summary of comparisons

3.45 **Figure 3.6** summarises the above comparative analysis of our final PC5 opex projection average over the PC5 period in 2012 prices against the four comparator figures (ie., 2012 actual opex, PC4 allowance for 2013, company's forecast average, and PC5 draft proposal average). As discussed above, our final PC5 opex projections adopted are higher than the companies' 2012 actual opex, the PC4 allowances for 2013 and those used in the PC5 draft proposals. However, with the exception of ADSSC, the final PC5 opex projections are lower than the companies' opex forecasts for PC5.

Figure 3.6: Final PC5 opex projections – comparisons summary (2012 prices)



3.46 **Figure 3.7** presents the final PC5 opex projections as well as the overall trends for the price control opex allowances and companies' actual opex and forecasts.

3.47 As the above comparative analysis explains, these charts show that:

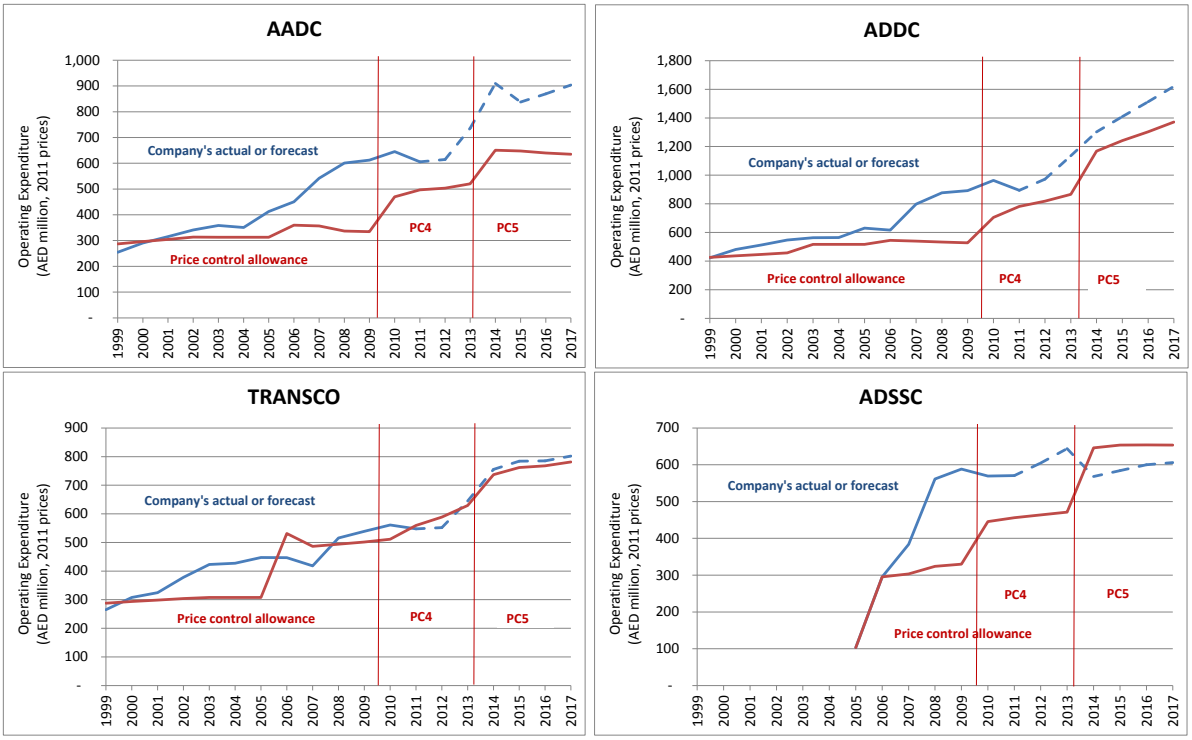
(a) For all companies, the final PC5 opex projections continue the increasing trend of price control allowances (mainly reflecting the actual cost trend, demand/system growth and specific costs allowances for Emiratisation and additional roles and responsibilities) with the step increases in the first year of each control period.

(b) For all companies, the final PC5 projections are higher than their 2012 actual costs by 5% to 38% on average over the period.

(c) For AADC and ADDC, the final PC5 projections are lower than the companies' latest forecasts by 27% and 13%, respectively, on average over the PC5 period.

For TRANSCO, these projections closely follow the company's forecast by a shortfall of only 3% over the period. In the case of ADSSC, our opex projections are higher than the company's latest forecast (which might be understated) by 11% but close to its 2012 AIS forecast.

Figure 3.7: Final PC5 opex projections – comparisons and trends (2012 prices)



Final proposals

3.48 The Bureau has adopted in these final proposals the consultant's final opex projections for PC5 as set out in **Table 3.13** above. As the price control calculations are carried out in 2014 prices, **Table 3.18** presents these opex projections in 2014 terms (resulting in a further increase by approximately 1.7% from those in 2012 prices).

3.49 These projections include various specific cost allowances for additional roles and responsibilities discussed in this Section 3 and will be adjusted during the PC5 period for a number of parameters and further responsibilities and requirements in accordance with paragraphs 3.18-3.35. As discussed earlier, these projections exclude a number of costs or activities that network companies have identified but for which further discussions and explanations are required before adjustments for these items can be made.

Table 3.18: PC5 opex projections (2014 prices) – final proposals

AED million, 2014 prices		2014	2015	2016	2017	Average
AADC	Electricity	416	416	413	413	414
	Water	246	243	238	233	240
	Total	662	659	651	646	654
ADDC	Electricity	771	825	873	927	849
	Water	417	438	453	468	444
	Total	1,188	1,263	1,326	1,395	1,293
TRANSCO	Electricity	326	337	339	345	337
	Water	424	438	441	450	438
	Total	750	775	781	795	775
ADSSC	Total	657	665	665	665	663
Total		**3,257**	**3,362**	**3,423**	**3,501**	**3,386**

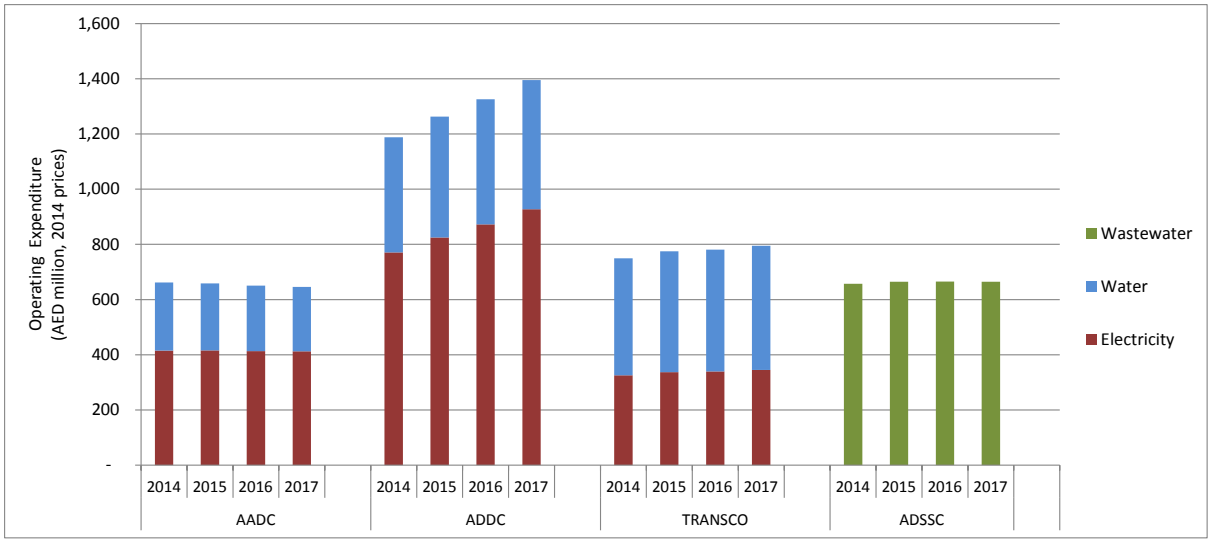
3.50 The following chart presents the above projections, highlighting:

(a) the profile of opex allowances over the PC5 period in real 2014 prices;

(b) the dominance of opex accounted for by ADDC (around AED 1,300 million p.a.), followed by TRANSCO (about AED 800 million p.a.), and AADC and ADSSC (around AED 650 million p.a.); and

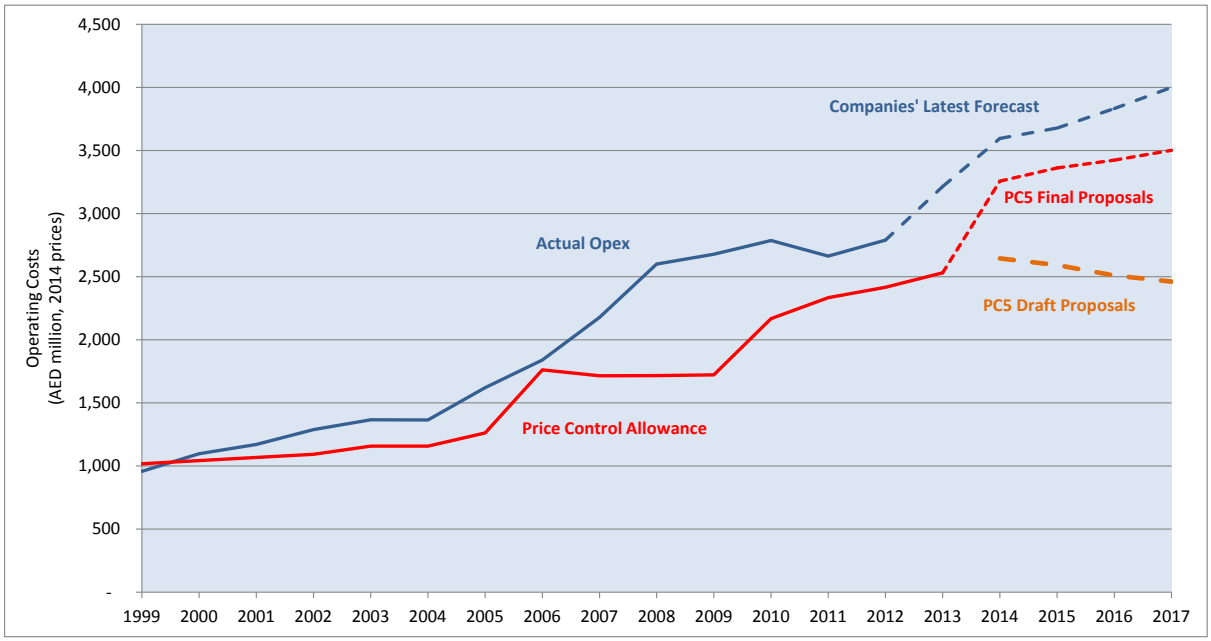
(c) the higher opex accounted for by the electricity businesses than water businesses for AADC and ADDC and vice versa for TRANSCO.

Figure 3.8: PC5 opex projections (2014 prices) – final proposals



3.51 As **Figure 3.9** below shows, our final proposals are significantly higher than the draft proposals by AED 834 million p.a. (2014 prices) or 33% but lower than the network licensees' latest forecasts by 10% on average over the PC5 period for the four companies:

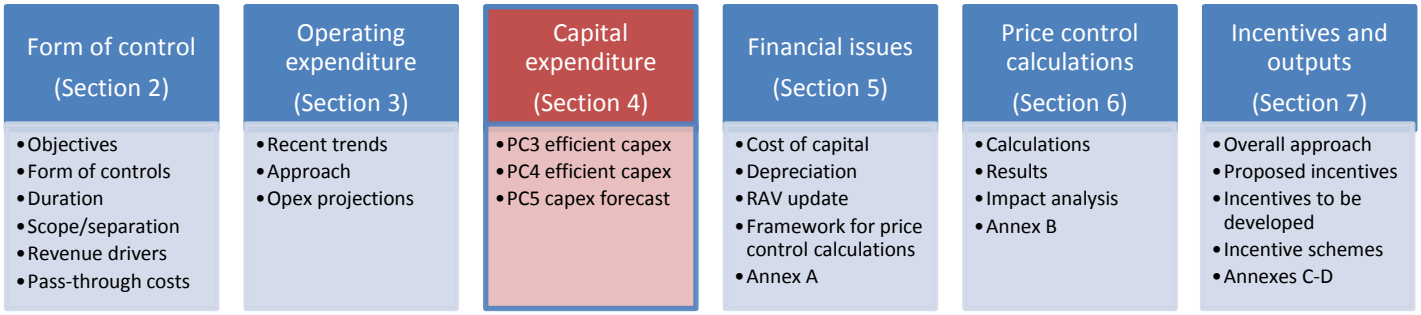
Figure 3.9: PC5 opex projections – final v draft proposals and companies' forecasts



4. Capital expenditure

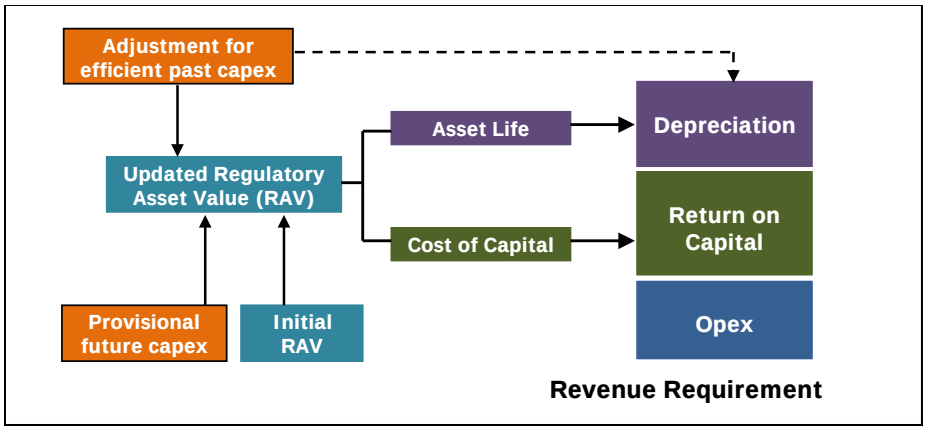
Introduction

Figure 4.1: Capital expenditure – Section 4



4.1 The Bureau's earlier consultation papers explained that capital expenditure (capex) is the most significant input to the price control calculations and directly affects two of the three building blocks of required revenue – namely, depreciation and return on capital (see **Figure 4.2**), which account for the majority of revenue requirements of the network businesses.

Figure 4.2: Capex in price control calculations



4.2 The treatment of capex by the Bureau in previous price control reviews has essentially been based on an ex-post assessment of efficient capex. Pending the ex-post assessment, provisional allowances for future capex are incorporated into the price controls to facilitate the financing of capex and the smoothing of the price control revenue from one period to another. As shown in **Figure 4.2**, necessary financial adjustments are then made at the subsequent price control review to compensate a company for the difference between the provisional capex allowance and the actual efficient capex (taking account of financing costs). The efficiency criteria (established in 1999) are that 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 the tendering process and project management).

4.3 The application of the above approach to capex over each price control period to date is summarised in the following table.

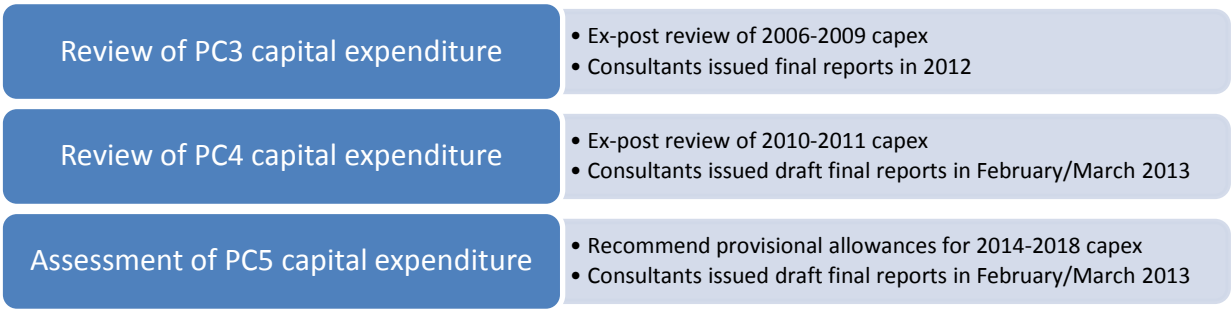
Table 4.1: Treatment of capex at various price control reviews

Treatment	PC1 capex	PC2 capex	PC3 capex	PC4 capex	PC5 capex
Provisional capex allowance	Provisional allowance included in PC2	Provisional allowance included in PC2	Provisional allowance included in PC3	Provisional allowance included in PC4	Provisional allowance to be included in PC5
Capex efficiency review	Reviewed by Bureau in 2004	Reviewed by consultants in 2007	Reviewed by consultants in 2011-2012	2010-2011 capex reviewed by consultants in 2012-2013 2012-2013 to be reviewed in future with PC5 capex	To be reviewed in future
Adjustment for efficient capex	Adjustment made in PC3	Adjustment made in PC4	Adjustment to be made in PC5	Adjustment for 2010-2011 capex to be made in PC5 Adjustment for 2012-2013 to be made in PC6	Adjustment to be made in PC6 and future price controls

Notes: Discussion about treatment of PC1 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 for PC3 capex for other network companies.

4.4 PC1 and PC2 capex has been dealt with at previous price control reviews. This section deals with PC3 and PC4 capex efficiency reviews and how PC5 capex should be treated at this review. Two external consultants (Atkins and KEMA) supported us on the work streams relating to capex as shown in **Figure 4.3**.

Figure 4.3: Bureau's capex consultant work streams



Treatment of PC3 capex

Draft proposals

Provisional and actual PC3 capex

4.5 Our earlier consultation papers summarised the arrangements for PC3 capex agreed at the previous price control reviews. The following two tables reproduce the PC3 provisional capex previously allowed in the price controls (amounting to AED 22.4 billion in total) and the PC3 actual capex for the network companies (AED 36.7 billion in total) in 2014 prices from the draft proposals. The PC3 actual capex is higher than the PC3 provisional capex allowances by AED 14.3 billion in 2014 prices. This over-spending against the provisional allowance means that an upward adjustment to RAV is required besides any adjustment arising from the efficiency assessment.

Table 4.2: PC3 provisional capex (2014 prices)

AED million, 2014 prices		2005	2006	2007	2008	2009	Total
AADC	Electricity		437	437	437	437	1,748
	Water		219	219	219	219	877
ADDC	Electricity		768	768	768	768	3,072
	Water		451	451	451	451	1,806
TRANSCO	Electricity		1,720	1,720	1,720	1,720	6,879
	Water		1,075	1,075	1,075	1,075	4,299
ADSSC	Total	577	195	628	913	1,370	3,683
Total		**577**	**4,866**	**5,299**	**5,583**	**6,040**	**22,364**

Source: PC5 draft proposals

Table 4.3: PC3 actual capex (2014 prices)

AED million, 2014 prices		2005	2006	2007	2008	2009	Total
AADC	Electricity		723	532	939	1,351	3,545
	Water		111	115	-4	259	481
ADDC	Electricity		708	1,302	1,643	2,701	6,354
	Water		318	365	621	363	1,667
TRANSCO	Electricity		1,973	3,696	5,454	2,855	13,978
	Water		822	944	2,628	2,528	6,923
ADSSC	Total	577	217	361	872	1,696	3,722
Total		**577**	**4,873**	**7,316**	**12,153**	**11,752**	**36,671**

Source: Companies' audited SBAs (converted from nominal prices to 2014 real prices) as presented in PC5 draft proposals

Efficient PC3 capex

4.6 Earlier consultation papers explained the work undertaken by our capex consultants in 2011-2012 on the efficiency review of PC3 capex using process scoring and monetary quantification methods. The consultants issued their final reports in June 2012.

4.7 The licensees generally welcomed these efficiency assessments and the steps taken by the Bureau to address a number of concerns about capex assessments. They however suggested various adjustments to the consultants' PC3 capex efficiency scores based on their concerns about the methodologies used by the capex consultants and the inconsistencies between their results.

4.8 Taking into account the companies' comments and other considerations, we adjusted the PC3 capex efficiency scores in the draft proposals (as shown in **Table 4.4**) for any inconsistencies and factors beyond the company management's reasonable control.

Table 4.4: PC3 capex efficiency – draft proposals / final proposals

Adjusted efficiency	Electricity	Water / Wastewater
AADC	96.22%	96.19%
ADDC	96.25%	95.54%
TRANSCO	95.65%	96.57%
ADSSC		97.49%

4.9 In the draft proposals, we applied the above efficiency scores to the companies' respective actual PC3 capex figures in **Table 4.3** to determine the actual efficient PC3 capex as set out below amounting to around AED 35.3 billion in 2014 prices:

Table 4.5: PC3 efficient capex (2014 prices) – draft proposals / final proposals

AED million, 2014 prices		2005	2006	2007	2008	2009	Total
AADC	Electricity		696	512	903	1,300	3,411
	Water		107	111	-4	249	463
ADDC	Electricity		682	1,253	1,582	2,599	6,116
	Water		304	349	593	347	1,593
TRANSCO	Electricity		1,887	3,535	5,217	2,731	13,370
	Water		794	912	2,538	2,441	6,685
ADSSC	Total	562	212	352	850	1,653	3,629
Total		**562**	**4,681**	**7,024**	**11,679**	**11,320**	**35,267**

4.10 The provisional PC3 capex shown in **Table 4.2** were subtracted from the efficient PC3 capex shown in **Table 4.5** to calculate the additional PC3 efficient capex presented in **Table 4.6** below (amounting to AED 12.9 billion in 2014 prices in total) which needs to be financed at this price control review.

Table 4.6: PC3 additional efficient capex (2014 prices) – draft proposals / final proposals

AED million, 2014 prices		2005	2006	2007	2008	2009	Total
AADC	Electricity		259	75	466	863	1,663
	Water		-112	-109	-223	30	-414
ADDC	Electricity		-86	485	813	1,831	3,043
	Water		-148	-103	142	-105	-213
TRANSCO	Electricity		167	1,816	3,497	1,011	6,491
	Water		-281	-163	1,463	1,367	2,386
ADSSC	Total	-14	16	-276	-63	283	-54
Total		**-14**	**-184**	**1,726**	**6,096**	**5,280**	**12,903**

Responses

4.11 Network companies welcomed the adjustments to the PC3 capex efficiency scores in the draft proposals. They however identified lessons learnt from the efficiency assessments and suggested a number of improvements to future assessments (which, where relevant, are discussed later in the context of PC5 capex).

Final proposals

4.12 In these final proposals, we have not made any further changes to the PC3 efficiency scores and the PC3 additional efficient capex as proposed in the draft proposals and shown in **Tables 4.4** and **4.6** above.

Treatment of PC4 capex

Draft proposals

Provisional and actual PC4 capex (2010-2011)

4.13 As explained in our earlier consultation papers, the PC4 capex efficiency review was brought forward as suggested by the companies. The review was structured such that 2010-2011 capex would be reviewed in 2012-2013 and 2012 capex in 2013 with the

efficiency adjustments to RAVs made at this review and 2013 capex reviewed in future alongside PC5 capex.

4.14 The following two tables reproduce the PC4 provisional capex (2010-2011) previously allowed in the price controls (amounting to AED 29 billion in total) and the PC4 actual capex for the network companies (around AED 21 billion in total) in 2014 prices from the draft proposals. The PC4 actual capex is lower than the PC4 provisional capex allowances by about AED 8.3 billion in 2014 prices over two years (2010-2011).

Table 4.7: PC4 provisional capex allowances (2014 prices)

AED million, 2014 prices		2010	2011	Total 2010-2011
AADC	Electricity	939	939	1,878
	Water	136	136	271
ADDC	Electricity	1,638	1,638	3,277
	Water	616	616	1,231
TRANSCO	Electricity	5,458	5,458	10,916
	Water	2,640	2,640	5,281
ADSSC	Total	3,131	3,131	6,262
Total		**14,558**	**14,558**	**29,116**

Source:: PC5 draft proposals

Table 4.8: PC4 actual capex to date (2014 prices)

AED million, 2014 prices		2010	2011	Total 2010-2011
AADC	Electricity	1,213	421	1,634
	Water	436	118	554
ADDC	Electricity	1,734	2,501	4,235
	Water	632	517	1,149
TRANSCO	Electricity	2,449	3,342	5,791
	Water	1,580	1,766	3,347
ADSSC	Total	1,497	2,609	4,106
Total		**9,541**	**11,274**	**20,815**

Source: Companies' audited SBAs (converted nominal prices to 2014 real prices) as presented in PC5 draft proposals

4.15 This two-year under-spending by AED 8.3 billion against the provisional allowance means that a downward adjustment to RAV is required besides any adjustment arising from the efficiency assessment. This downward adjustment will partially offset the upward effect of PC3 additional efficient capex on the RAV.

Efficient PC4 capex (2010-2011)

4.16 The capex consultants (KEMA and Atkins) undertook the PC4 capex review by using the process scoring method to calculate efficiency scores and delivered initial, interim and draft reports in 2012-2013. The draft reports issued in February/March 2013 contained the consultants' recommendations on the efficiency scores for 2010-2011 capex.

4.17 While the methodology for the review was developed and adopted following consultation with the licensees and keeping in view its benefits in terms of identifying the areas where further improvements are required, the licensees expressed significant concerns on the work and efficiency results of the consultants.

4.18 Having given due consideration to the issues surrounding the PC4 capex review, the desire to reduce the time lag between actual spent and price control adjustment, and the time and efforts that went into the review, the Bureau adopted the same efficiency scores for PC4 capex (2010-2011) as suggested for the PC3 capex (see **Table 4.4)**. We wrote to the four network companies in March 2013 explaining the reasons for applying this approach and the conclusion of the capex consultants' work at the draft reports stage. As a result, we also deferred assessment of the 2012-2013 capex efficiency to the future.

4.19 Accordingly, in the draft proposals, we applied the PC3 efficiency scores from **Table 4.4** to the companies' respective actual PC4 capex figures for 2010-2011 in **Table 4.8** above to determine the actual efficient capex as shown in **Table 4.9** below. In total, the efficient PC4 capex for the four companies amounts to about AED 20 billion in 2014 prices, as compared to the actual capex of around AED 21 billion in 2014 prices over the period 2010-2011.

Table 4.9: PC4 efficient capex to date (2014 prices) – draft / final proposals

AED million, 2014 prices		2010	2011	Total 2010-2011
AADC	Electricity	1,167	405	1,573
	Water	420	113	533
ADDC	Electricity	1,669	2,407	4,076
	Water	603	494	1,097
TRANSCO	Electricity	2,343	3,197	5,539
	Water	1,526	1,706	3,232
ADSSC	Total	1,459	2,543	4,003
Total		**9,187**	**10,865**	**20,053**

4.20 The comparison of the above against the provisional PC4 capex shown in **Table 4.7** above gives the PC4 additional efficient capex (over and above PC4 provisional capex) as listed in **Table 4.10** below, which needs to be financed at this review. For most businesses, the table shows negative values – meaning an adjustment is required at this review to remove part of the provisional PC4 capex which has now been found to be inefficient or underspent. In total, this amounts to minus AED 9 billion in 2014 prices.

Table 4.10: PC4 additional efficient capex (2014 prices) – draft / final proposals

AED million, 2014 prices		2010	2011	Total 2010-2011
AADC	Electricity	228	-534	-306
	Water	284	-22	262
ADDC	Electricity	30	769	799
	Water	-12	-122	-134
TRANSCO	Electricity	-3,115	-2,261	-5,377
	Water	-1,114	-934	-2,049
ADSSC	Total	-1,671	-588	-2,259
Total		**-5,371**	**-3,693**	**-9,064**

4.21 The additional PC4 efficient capex (over and above PC4 provisional capex) presented above is to be rolled into the respective business' RAV at this review – in the same manner as PC3 capex but as a negative value will have an opposite effect. That is, the

downward adjustment for PC4 capex will partially offset the increasing effect of PC3 additional efficient capex on the RAV. Section 5 provides further details on these matters.

Mega developments

4.22 In respect of network assets that are built by the developers as part of their mega developments, we are keen to see these assets transferred to the respective network businesses as quickly as possible and a separate work stream is in place (with separate consultants) for valuing these network assets. As and when the assessment of a mega development is concluded, the efficient values of assets so determined would be added into the RAVs. In the meantime, to facilitate timely transfer of these assets to AADC, ADDC and ADSSC and their operation and maintenance, we have proposed provisional opex allowances to be included in PC5 (see Section 3).

Responses

4.23 In response to the draft proposals, all the four network companies suggested applying the same efficiency scores to the 2012-2013 capex as applied to the 2010-2011 capex to conclude the efficiency assessment of the entire PC4 capex. ADDC argued that, based on consultants' findings that ADDC's capex processes have improved in PC4 from PC3, ADDC should be given higher capex efficiency for PC4 than PC3 or alternatively the same PC3 scores be applied to the entire PC4 capex.

Assessment

4.24 The Bureau does not agree with the companies' suggestion. Our proposal to apply the same PC3 efficiency scores to 2010-2011 was based on the work and findings of the capex consultants for 2010-2011 and in consideration of the companies' submission of the required information and efforts to explain and justify the capex spent during these two years. Further, the actual capex for 2013 is not yet known. No assessment has therefore been made of the capex spent during 2012 and 2013. Any application of pre-determined PC3 capex scores to the capex not incurred or assessed would dilute the incentives for capex efficiency and improvements that all companies seek.

Final proposals

4.25 In view of the above, we have not made any changes to the PC4 efficiency scores and the PC4 additional efficient capex for 2010-2011 as proposed in the draft proposals and shown in **Tables 4.4** and **4.10** above and have deferred the efficiency assessment of 2012-2013 capex to the future. Our proposed adjustments to PC3 efficiency will however not be available or automatically applicable to future capex reviews, except as discussed in relation to PC4 capex.

Treatment of PC5 capex

Draft proposals

Approach to future capex regulation

4.26 Based on the companies' comments, our earlier consultation papers suggested the following three main changes in our approach to the future regulation of capital efficiency:

(a) Set provisional capex allowances for PC5 to better align with the companies' business plans.

(b) Review the front-end elements of their capex plans on an annual forward-looking basis, which should limit the scope of ex-post assessment and associated risks to some extent.

(c) Undertake ex-post capital efficiency reviews for past years on a more frequent basis (say, every 2 or 3 years) to provide more timely support to the sector to incorporate identified improvements in the capex processes.

4.27 Licensees generally supported these suggestions. However, in relation to some of their comments, we noted in the draft proposals that:

(a) While we continue to make endeavours to move towards more ex-ante capex regulation, the quality of the companies' capex forecasting, planning and procurement processes will ultimately determine the extent of any ex-ante and ex-post assessments.

(b) The TA's independent assessment of the companies' current capex forecasts provides only a high-level, front-end review of a few sample projects to assess the overall robustness of forecasts and will not take away the need for an ex-post capex review.

(c) As was the case with the PC4 capex review, we would consult with the licensees on the consultants' scope of work and methodology for any interim capex efficiency review during the PC5 period.

PC5 provisional capex allowances

4.28 The draft proposals also presented:

(a) the network companies' PC5 capex forecasts (excluding mega developments) from their 2012 AIS submissions;

(b) the comparisons for these forecasts against the trends in the recent past, indicating the companies' limited planning horizon or more certainty about the near future than later years; and

(c) an assessment of the accuracy of the companies' forecasts against the actual outturn spends in recent years, indicating the need for more robust forecasts to set provisional allowances in the future as well as the impact of overall economic growth on the utilities' capex plans.

4.29 Based on the capex consultants' recommendations for PC5 capex forecasts contained in their draft final reports of February/March 2013, we adopted the following provisional PC5 capex allowances in the draft proposals. In total, the recommended PC5 capex forecasts amount to AED 43.6 billion in 2014 prices for the four companies against the companies' capex forecasts amounting to AED 59.3 billion in 2014 prices (excluding mega developments). That is, the overall recommended forecasts are about 74% of (or lower by 26% than) the companies' aggregate forecasts.

Table 4.11: PC5 provisional capex allowances (2014 prices) – draft proposals

AED million, 2014 prices		2014	2015	2016	2017	2018	Total 2014-2018	Total 2014-2017
AADC	Electricity	810	810	810	810	810	4,050	3,240
	Water	160	160	160	160	160	800	640
ADDC	Electricity	2,690	2,690	2,690	2,690	2,690	13,450	10,760
	Water	620	620	620	620	620	3,100	2,480
TRANSCO	Electricity	2,080	2,080	2,080	2,080	2,080	10,400	8,320
	Water	950	950	950	950	950	4,750	3,800
ADSSC	Total	1,850	1,520	1,390	1,350	980	7,090	6,110
Total		**9,160**	**8,830**	**8,700**	**8,660**	**8,290**	**43,640**	**35,350**

Source: PC5 draft proposals

4.30 We noted that the consultants' assessment was high level due to the time constraints and availability of limited information in the companies' 2012 AIS submissions about PC5 capex forecasts. Due to the time limitations, the consultants' further work and interactions with the companies required to carry out a more vigorous analysis were not practicable.

4.31 In the draft proposals, we suggested that an ex-post efficiency review of 2012-2013 capex spend could be undertaken during 2014-2015 and a review of 2014-2015 capex during 2016-2017. Alternatively, a review of the entire capex spent in 2012-2015 could be carried out during 2016-2017. In any case, the efficiency scores should be available to make an appropriate adjustment at the next price control review. We expressed our intention to appoint consultants to undertake such reviews using the process scoring method.

Responses

4.32 The companies' main comments on the treatment of PC5 capex are summarised as follows:

(a) Considering the proposed PC5 provisional capex allowances for its water businesses were almost half of its estimates, AADC sought an increase in these allowances to effectively deal with the water network expansion, rehabilitation and replacement. It explained in detail that higher capex is required to support the balance payments under the running and closing stage projects as well as recently awarded projects and projects at the tendering stage with approved budgets.

(b) ADDC considered the proposed PC5 provisional capex allowances to be on the lower side if mega developments are included but on the higher side if mega

developments are excluded. Accordingly, it accepted the proposed PC5 provisional capex allowances for its businesses.

ADDC however stressed on replacing all ex-post and ex-ante reviews of capex with a forward-looking approach to capital efficiency improvement. It stated that the Bureau being a government regulatory authority has an obligation to ensure that capital expenditure is spent efficiently and the Bureau should not let ADDC spend capital inefficiently and then later penalise ADDC and eventually the government for such inefficiency. ADDC suggested that lessons should be learnt from the PC3 and PC4 ex-post capex reviews to improve the future capex treatment – for example, the challenges in using different consultants for water and electricity, practical issues in applying the concept of a capital efficiency frontier, and the need for replacing ex-post reviews with a forward-looking approach to capital efficiency improvement with incentives provided for PASS 55 accreditation and other improvements.

(c) While ADSSC considered the process and results of the consultants' work on PC5 capex forecasts appropriate, it submitted an updated profile of capex in line with its recent submission of the planning statement to the Bureau and sought provisional PC5 capex allowance of not less than AED 1.6 billion per year.

ADSSC also suggested developing a forward-looking approach for future capex which could incorporate the assessment of a cap on annual capex based on agreed outcomes and external review, verification of the need case for selected individual projects, and incentives for a formal asset management accreditation.

(d) TRANSCO considered that the capex consultant's work on PC5 capex forecasts was at an initial stage and that the recommended forecasts were at variance with those submitted to the Bureau as part of its recent planning statement and those approved by ADWEA and the Executive Council. While it accepted the significant variances in its PC4 capex forecasts against actual spend, it highlighted the challenges and context of demand forecasting and the recent steps it has taken to strengthen its capital planning and delivery process. TRANSCO submitted its latest profile of PC5 capex forecasts and sought a provisional allowance of AED 4.5 billion per year for the PC5 period.

TRANSCO also suggested that progress be made on ex-ante annual reviews commencing 2014 and that ex-post reviews should be carried out on an annual or biannual basis. In relation to ex-post reviews, it supported the continuation of using business process assessment but with more technical insight than the PC3 and PC4 capex assessments.

4.33 **Table 4.12** below shows the companies' latest capex forecasts available to the Bureau based on AADC's and ADDC's 2012 AIS submissions and the updated capex forecasts submitted by ADSSC and TRANSCO in their responses.

Table 4.12: Companies' latest capex forecasts for PC5 (2014 prices)

AED million, 2014 prices		2014	2015	2016	2017	Total	Annual Average
AADC	Electricity	2,556	2,116	1,285	1,000	**6,957**	**1,739**
	Water	366	371	235	166	**1,137**	**284**
ADDC	Electricity	4,289	3,858	3,218	2,960	**14,325**	**3,581**
	Water	1,870	1,474	934	619	**4,897**	**1,224**
TRANSCO	Electricity	3,933	2,812	2,024	1,874	**10,643**	**2,661**
	Water	1,890	2,033	1,809	1,452	**7,184**	**1,796**
ADSSC	Total	2,341	1,689	1,309	1,145	**6,484**	**1,621**
Total		**17,245**	**14,354**	**10,813**	**9,216**	**51,627**	**12,907**

Source: AADC and ADDC's 2012 AIS (converted from 2012 prices into 2014 prices) and ADSSC and TRANSCO's responses to PC5 draft proposals (assumed to be in 2014 prices)

Assessment

Approach to future capex regulation

4.34 We welcome the companies' general support for our proposed approach to future capex regulation and note their general preference for annual ex-ante reviews of front-end elements of projects and more timely and frequent ex-post reviews, with the focus on a forward-looking process scoring methodology. Our views on companies' other specific comments are as follows:

(a) As discussed in Section 2, ADDC's comments entail conflicting comments and a lack of understanding and cooperation. ADDC has not responded positively to the suggestions of the Bureau and other companies to make progress on the forward-looking capital efficiency assessments and action plans for improvements in the areas identified by the capex consultants. ADDC's suggestion for no ex-ante or ex-post review of its capex and lack of progress on implementation of capex improvements are inconsistent with its own emphasis on the Bureau's obligation to ensure capital efficiency and the need for a forward-looking approach to capex assessment.

(b) As noted in the draft proposals, there is a wide range of approaches and methods available to assess capex efficiency and we have used some of them with further modifications and improvements from time to time. The methodology for the PC4 capex review was developed and adopted following consultation with the licensees and keeping in view its benefits in terms of identifying the areas where further improvements are required.

(c) We will work with the companies to develop the precise scope and plan for any annual review of front-end elements of their capex plans. The objective would be to help the companies prepare robust capex budgets and associated requests for Government funding, and limit the scope and risk of ex-post assessment to some extent. However, the companies will remain responsible for developing and implementing detailed action plans and capex processes.

(d) We reiterate our willingness to support the companies in improving their capex processes and to consider incentives for asset management including formal accreditation such as PASS55 as discussed in Section 7.

(e) As was the case with the PC4 capex review, we will consult with the licensees on the consultants' scope of work and methodology for any interim capex efficiency review during the PC5 period. We also discussed with TRANSCO in August 2013 the possibility of appointing capex consultants on a retention basis for a number of years to ensure timely and consistent assessment.

PC5 provisional capex allowances

4.35 The following are our views on the companies' comments about PC5 capex allowances:

(a) We note again that the consultants' work on PC5 capex projections was not completed as per plan and was in any case supposed to be a high level review.

(b) We note ADDC's acceptance of the allowances for both water and electricity businesses suggested in the draft proposals.

(c) A company's submission of its forecasts or budget to government or regulatory authorities has not in the past guaranteed, and will not be sufficient to guarantee in the future, more accurate forecasts; what is required is the improvement in the company's forecasting and delivery abilities.

(d) While TRANSCO's capex processes have improved in recent years, this may take some time to deliver more robust capex forecasts. The draft proposals presented the accuracy of companies' capex forecasts and TRANSCO's response has also acknowledged significant variations in its capex forecasts against the actual capex in the recent past. The capex forecasts for 2010-2012 in each of TRANSCO's latest three AIS submissions have been found to be significantly higher than the actual capex for these years.

(e) In overall terms, the companies' latest PC5 capex forecasts shown in **Table 4.12** (totalling AED 51.6 billion) are almost the same as the 2012 AIS forecasts (amounting to AED 51.4 billion) over 2014-2017 assessed by the capex consultants and reported in the draft proposals. While ADSSC's and TRANSCO's updated capex projections differ from their 2012 AIS projections for individual years, they are very similar in overall terms (with a difference of only 2% to 3%).

4.36 Nonetheless, as the 2012 SBAs are now available, we have assessed the companies' suggestions for higher capex allowances by reviewing the actual capex spent by the four network companies during the last three years (2010-2012). We have compared the actual average annual spends for 2010-2012 against the average annual PC5 capex allowance adopted in the draft proposals and the companies' average annual capex forecasts from **Table 4.12** above. This comparison is summarised in **Table 4.13**:

Table 4.13: Comparison of PC5 capex forecasts against 2010-2012 actual capex

AED million, 2014 prices		2010 actual	2011 actual	2012 actual	Annual average capex			PC5 final proposals
					2010-2012 actual	PC5 draft proposals	Company's PC5 latest forecasts	Annual allowance
AADC	Electricity	1,213	421	354	663	810	1,739	**700**
	Water	436	118	186	247	160	284	**300**
ADDC	Electricity	1,734	2,501	1,041	1,759	2,690	3,581	**2,700**
	Water	632	517	388	512	620	1,224	**600**
TRANSCO	Electricity	2,449	3,342	1,059	2,284	2,080	2,661	**2,300**
	Water	1,580	1,766	2,664	2,004	950	1,796	**1,800**
ADSSC	Total	1,497	2,609	3,418	2,508	1,528	1,614	**1,600**
Total		**9,541**	**11,274**	**9,110**	**9,975**	**8,838**	**12,900**	**10,000**

Source: Bureau's assessment based on companies' audited SBAs 2010-2011, PC5 draft proposals and Table 4.12 above

4.37 This review shows that the average annual PC5 capex allowances suggested in the draft proposals for AADC's water business, TRANSCO and ADSSC were significantly lower than their respective actual average spends in the last three years. However, ADSSC's own capex forecast for PC5 is significantly lower than its actual average spend. We have therefore increased the PC5 provisional allowances for AADC's water businesses and both TRANSCO's businesses to the level of their actual average annual spends in the last three years and increased ADSSC's allowance to its latest forecast annual average.

4.38 We have however reduced the allowance for AADC's electricity business to the level of its actual average spend over 2010-2012. This is also in line with discussions during the workshop held by the Bureau to discuss the PC5 draft proposals with AADC on 20 June 2013 where AADC considered the PC5 capex allowance for its electricity business to be on the higher side.

4.39 Our revised proposals on PC5 capex allowances are shown in the last column of **Table 4.13** and have been rounded off to the nearest hundred million for simplicity. The allowance for AADC's water business has almost doubled from the draft proposals as suggested by AADC. The total allowances for TRANSCO and ADSSC have increased to AED 4.1 billion and AED 1.6 billion, respectively, which are identical or very close to the levels sought by these companies.

4.40 While similar comparison shows the provisional allowances for ADDC's water and electricity business to be on the higher side, we have not made any adjustment to these allowances (except for rounding off to the nearest hundred million for consistency) given the consultants' findings and the company's acceptance.

4.41 Lastly, these allowances are provisional and subject to adjustment for actual outturn figures and efficiency assessments. Given this and the uncertainties surrounding capex forecasting and delivery, it is possible that the companies might see significant positive and negative adjustments for individual years at the next price control review – as mentioned earlier for PC3 and PC4 capex adjustments.

Final proposals

4.42 In view of the companies' comments and the above considerations, our plan to further develop the approach to future capex regulation is as follows:

(a) Review the front-end elements of the companies' capex plans on an annual forward-looking basis, with prior work focusing on defining the scope and overall plan such reviews; and

(b) Undertake ex-post capital efficiency reviews for the past years on a more frequent basis (every 2 or 3 years) using a process scoring methodology, with prior work on developing the consultants' scope of work and methodology in consultation with the companies.

4.43 The PC5 provisional capex allowances adopted in these final proposals are set out in **Table 4.14** below. We have adjusted the allowances for AADC, TRANSCO and ADSSC approximately to the lower of (a) the companies' actual average annual spends during the previous three years and (b) their latest forecasts. For ADDC, we have kept the allowances as per the draft proposals but rounded them off appropriately.

Table 4.14: PC5 provisional capex allowances (2014 prices) – final proposals

AED million, 2014 prices		2014	2015	2016	2017	PC5 Total
AADC	Electricity	700	700	700	700	2,800
	Water	300	300	300	300	1,200
ADDC	Electricity	2,700	2,700	2,700	2,700	10,800
	Water	600	600	600	600	2,400
TRANSCO	Electricity	2,300	2,300	2,300	2,300	9,200
	Water	1,800	1,800	1,800	1,800	7,200
ADSSC	Total	1,600	1,600	1,600	1,600	6,400
Total		**10,000**	**10,000**	**10,000**	**10,000**	**40,000**

4.44 These PC5 provisional capex allowances are identical to, or very close to, the levels sought by the companies. In total, these amount to AED 10 billion per annum or AED 40 billion over the PC5 period. These are higher than the total allowance suggested in the draft proposals for the four years (AED 35.35 billion) by about AED 4.65 billion or 13% for the four companies together. However, the allowances are still lower than the companies' latest available forecasts for the four years by AED 11.6 billion or 22% in overall terms, as we are not convinced by these forecasts given the forecasting errors to date, our consultants' analysis and the companies' actual capex in recent years.

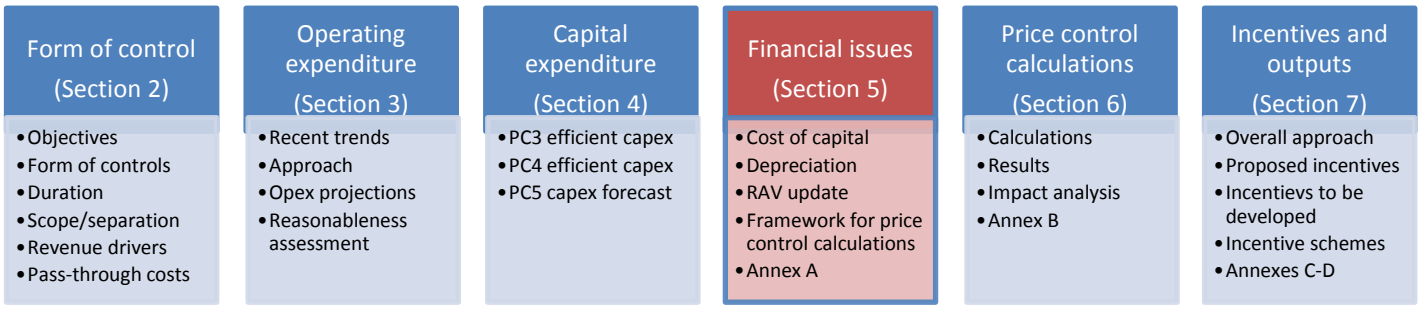
5. Financial issues

Introduction

5.1 The Bureau's earlier consultation papers discussed the financing of operating and capital expenditures and the calculation of the overall level of price control revenue at this review in detail. The draft proposals particularly explained the approach and assumptions to calculate regulatory asset values, regulatory depreciation and returns. Building on the earlier evidence from both overseas and local and regional sources, the draft proposals presented an assessment of further regulatory determinations from the UAE, Bahrain, UK and Australia and suggested a real cost of capital of 5.50% for PC5.

5.2 This section summarises the companies' responses to the draft proposals on the financial issues, including ADWEA's letter dated 25 June 2013 to the companies, and presents the Bureau's assessment of these responses and final proposals on the issues.

Figure 5.1: Capital expenditure – Section 5



Cost of capital

Draft proposals

5.3 Our earlier consultation papers explained the Bureau's approach used to date for the calculation of the cost of capital as the forward-looking, real Weighted Average Cost of Capital (WACC), with the cost of equity calculated by applying the Capital Asset Pricing Model (CAPM). In view of the limited size and liquidity of debt and equity markets in the UAE, our calculations to date have drawn heavily on the estimates of the cost of capital components used by regulators of similar businesses in the UK, Northern Island and Australia. However, we also cross checked our calculation against local or regional estimates to the extent they are available. This is consistent with the approach adopted by the telecommunication regulatory authorities (TRAs) in Bahrain and Oman. Our sources included local and regional capital market analyst reports for the listed companies in the electricity and water, energy, real estate, and telecommunication sectors as well as the estimates made by Oman TRA in October 2011.

5.4 Based on the above evidence, we presented our initial cost of capital calculations for PC5 showing that a range of 3.8% to 7.3% for the real cost of capital with a mid-point average of 5.5% would be appropriate for PC5.

5.5 In the draft proposals, we assessed more recent regulatory decisions or proposals in the UK and Australia as well as those of the UAE and Bahrain TRAs, which supported our initial estimates. Based on these evidence, we adopted a real cost of capital of 5.50% in the draft proposals as per the calculations set out below. This compares favourably against the cost of capital of 5% and 4.5% used for setting PC3 and PC4, respectively.

Table 5.1: PC5 cost of capital calculations (real terms) – draft / final proposals

	Low	High	Mid-Point Average
Risk-free rate (real)	1.50%	2.00%	1.75%
Debt premium	1.50%	3.94%	2.72%
Cost of debt (real)	3.00%	5.94%	4.47%
Equity risk premium	5.00%	6.75%	5.88%
Equity beta	0.68	1.00	0.84
Cost of equity (real)	4.90%	8.75%	6.69%
Gearing	60.00%	50.00%	55.00%
Cost of capital (real)	**3.76%**	**7.35%**	**5.47%**

Responses

5.6 ADSSC accepted the Bureau's approach and proposal on the cost of capital. However, it stated that as ADSSC is fully subsidised by the Government and its funding arrangements are not aligned with the regulatory framework, the need to earn a return is an abstract requirement at present.

5.7 AADC, ADDC and TRANSCO enclosed their shareholder's letter addressed to the companies for consideration by the Bureau in relation to the financial issues, particularly the cost of capital, and highlighted its treasury role for the companies.

5.8 This companies' common submission presented a detailed assessment of the Bureau's approach to cost of capital calculations and estimates of individual parameters and considered the Bureau's approach and estimates of cost of debt and equity risk premium as fair and acceptable. However, it suggested the following two adjustments to the Bureau's calculations which would result in a higher real cost of capital of 6.36% for PC5:

(a) The companies' common submission suggested that the equity beta should be increased from 0.84 to 1.00 to take into account the evolving regulatory process in Abu Dhabi compared to mature jurisdictions. It argued that while PC3 and partial PC4 capex efficiency assessments have now been settled, the assessment process has given rise to significant investor risk that does not exist in more mature regulatory jurisdictions.

(b) The companies' common response also suggested a decrease in the gearing assumption from 55% to 40%. It considered that the Bureau's gearing assumption is prevalent in the UK and Australia and is consistent with the fact that the Government is encouraging the sector companies to arrange capital funding from their own sources or bank loans. However, it believed that interest free funding will be available to the sector and the sector companies' gearing will increase from 33% at present to 40%. It stated that there is risk in accepting a high gearing since it would lower the WACC for the sector.

5.9 The suggested analysis in the companies' common submission of the shareholder's letter is summarised in the table below:

Table 5.2: PC5 cost of capital calculations – Companies' common suggestion

	Bureau's PC5 draft proposals	Companies' common suggestion	Difference as per companies' common suggestion
Risk-free rate (real)	1.75%	1.75%	-
Debt premium	2.72%	2.72%	-
Cost of debt (real)	4.47%	4.47%	-
Equity risk premium	5.88%	5.88%	-
Equity beta	0.84	1.00	0.16
Cost of equity (real)	6.69%	7.63%	0.94%
Gearing	55.00%	40.00%	-15.00%
Cost of capital (real)	**5.47%**	**6.36%**	**0.89%**

Source: ADWEA's letter dated 25 June 2013 to AADC, ADDC and TRANSCO (received with these network companies' responses)

5.10 In addition, ADDC noted the Bureau's reliance on the telecommunication industry for cost of capital estimation. Reiterating its concerns about the building-block approach to price control calculations for supply businesses, it also sought a higher cost of capital for itself and AADC given different risks faced by the supply businesses.

Assessment

5.11 We welcome ADSSC's acceptance of our draft proposal on the cost of capital and reiterate our support for ADSSC to address the misalignment between its funding and regulatory arrangements (also see Section 2).

5.12 The Bureau also welcomes companies common submission of their shareholder's detailed assessment of the Bureau's cost of capital calculations and acceptance of the Bureau's approach and estimates of certain individual parameters. Our views on their suggested changes to cost of capital are as follows:

(a) While arguments were made for a higher cost of capital or suggested changes to equity beta and gearing, we note that no evidence was provided to support them.

(b) Network companies have recognised that the PC3 and PC4 capex efficient assessments have been useful in identifying the areas where further improvements are required and that these assessments and other related steps taken by the Bureau have reduced or would reduce the risks. In developing our proposal on cost of capital, we have taken into account a wide range of businesses and regulatory jurisdictions including real estate and telecom businesses and regulatory decisions in the UAE and neighbouring countries which might be subject to higher risks and might function in less mature markets. These considerations provide evidence that an equity beta of unity is not justified for regulated water and electricity network businesses.

(c) Our gearing assumption of 55% reflects a more optimal or efficient level rather than the companies' actual gearing and a level that has been achieved and even exceeded in the UAE as well as the sector. Actual gearing is a company's or its shareholder's choice but price controls provide incentives to achieve or gradually move towards an optimal gearing. We also consider that the customers or the

Government as the subsidy provider should not bear the additional costs arising from a higher cost of capital due to a company's or its shareholder's financing decision. This is consistent with the international best practice in efficient, private companies' financing and incentive-based regulation.

(d) Even if we were to adopt the companies' common proposal of lower gearing of 40%, this would require a downward adjustment to our equity beta assumption. This is because the equity beta is a measure of both the underlying business risk (assessed in terms of unlevered or asset beta) and the financial risk (arising from debt-equity ratio). In other words, two companies with the same business risks will have different equity beta if they have different gearing levels.

(e) The adjusted equity beta can be calculated as follows:

(i) first, calculate an asset beta based on the initial estimate of equity beta for a given gearing, using an approximate formula as follows: asset beta = (1 – original gearing) x original equity beta; and

(ii) then, calculate a revised equity beta based on the asset beta so calculated and the revised gearing, using n approximate formula as follows: revised equity beta = asset beta / (1 – revised gearing).

(f) In view of the adjusted equity beta so calculated, our assessment of the impact of the companies' shareholder's suggested gearing of 40% is described as follows and summarised in **Table 5.3**:

(i) Assuming an initial equity beta of 0.84 with a gearing of 55% (as per the Bureau's estimates), the adjusted equity beta would be 0.63 for a revised 40% gearing. These revised gearing and equity beta, along with the Bureau's estimates of other parameters accepted by the companies' common submission, would result in a cost of capital of 5.06%.

(ii) Even if we accept an initial equity beta of 1.0 as per the companies' common proposal with an original gearing of 55%, a revised gearing of 40% would result in a revised equity beta of 0.75. These revised gearing and equity beta would result in a cost of capital of 5.48%.

Table 5.3: PC5 cost of capital – Assessment of companies' suggested gearing

	Impact of 40% gearing with initial equity beta of 0.84	Impact of 40% gearing with initial equity beta of 1.00
Risk-free rate (real)	1.75%	1.75%
Debt premium	2.72%	2.72%
Cost of debt (real)	4.47%	4.47%
Equity risk premium	5.88%	5.88%
Implied asset beta	0.378	0.45
Adjusted equity beta	0.63	0.75
Cost of equity (real)	5.45%	6.16%
Gearing	40.00%	40.00%
Cost of capital (real)	**5.06%**	**5.48%**

(g) The preceding assessment shows that the three companies' suggested changes, if accepted and implemented properly, would result in the same or lower cost of

capital as the Bureau's proposal of 5.50%. The three companies' shareholder's letter also acknowledged this effect.

(h) We also note the availability of interest-free funding to the sector companies. If we assume a zero cost of debt, the overall cost of capital would be significantly lower than our proposal of 5.50% even with any set of the equity beta and gearing assumptions discussed above. However, as mentioned earlier, our approach to cost of capital calculations is a forward-looking approach based on efficient but realistic financing and incentives.

5.13 In summary, we are not convinced by changes suggested by the three companies' common submission to our cost of capital calculations. Further, if the suggestion for interest-free funding arrangements is accepted, our assessment is that this will result in a zero cost of debt and hence lower cost of capital than our draft proposal, even with other changes suggested by the companies' common submission. However, these changes and arrangements are not consistent with the Bureau's forward-looking approach based on incentive based regulation.

5.14 With regards to ADDC's comments, we note that the company 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 these 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 at present 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.

Final proposals

5.15 In these final proposals, we have adopted a real cost of capital of 5.50% for all four network companies as suggested in the draft proposals.

Regulatory asset values and regulatory depreciation

Draft proposals

5.16 In the draft proposals, we suggested using the same approach for PC5 as adopted during the previous price control reviews to calculate the regulatory depreciation and RAVs for the next price control period. We also suggested the continuation of use of the straight-line method of depreciation for both initial RAVs and new capex with the asset life assumptions listed in **Table 5.4**.

5.17 In order to allow timely recovery and to reduce complexity, we suggested that the foregone financing costs associated with the PC3 and PC4 capex should be remunerated as an adjustment to revenue over the PC5 period rather than as an addition to the RAVs (for recovery over 30 years or more).

Table 5.4: Asset life assumptions

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

Responses

5.18 AADC sought clarification about the regulatory depreciation allowances projected in the draft proposals being significantly higher than its estimates.

5.19 ADSSC accepted the Bureau's approach and assumptions for depreciation. It highlighted the inconsistency between the asset life assumptions used in setting price controls and preparing its accounts. However, it considered that this issue is not critical at present but recommended that asset life assumptions be subject to review in the near future as part of the sector wide development of common asset management policies and practices.

Assessment

5.20 We acknowledge the differences between regulatory depreciation allowances used in price controls and companies' actual or accounting depreciation. These differences arise mainly due to (a) different depreciation methods and asset life assumptions used for the two purposes, (b) CPI indexation of regulatory depreciation allowances, (c) incorporation of provisional allowances for future capex in the price controls, and (d) efficiency adjustment to actual capex in price controls and the timing of such adjustment. Due to the improvements in companies' capex efficiency and steps taken by the Bureau, the impact of efficiency adjustment and its timing should reduce over time. In other areas of differences, the Bureau is willing to support the companies' initiatives and consider their proposals in due course.

Final proposals

5.21 In these final proposals, we have adopted the same approach suggested in the draft proposals (which was also used for PC4) to calculate regulatory depreciation, RAVs and the recovery of foregone financing costs associated with PC3 and PC4 capex over the PC5 period.

5.22 The following paragraphs describe our calculation of regulatory depreciation and updated RAVs adopted in these draft proposals for PC5.

Calculating regulatory depreciation

5.23 As explained in the draft proposals, we have updated the Microsoft Excel based model developed at the previous review (referred to as the "***PC5 Depreciation Model***") solely 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 determined to date i.e. during the PC1, PC2, PC3 and PC4 periods (excluding 2012 and 2013); (c) each annual provisional capex during the PC4 period for which the efficiency review has not been completed (i.e. 2012 and 2013); and (d) the foregone financing costs in relation to PC1 efficient capex previously added to the RAV. As any initial RAV or annual capex becomes fully depreciated, its depreciation for future years is set to zero.

5.24 **Table 5.5** below shows the total depreciation for each business calculated by using the PC5 Depreciation Model for each year of the PC5 period in 2014 prices, in respect of initial RAVs, efficient capex for PC1, PC2, PC3 and PC4 (excluding 2012 and 2013), and provisional capex for PC4 (2012 and 2013 only). These depreciation projections are the same as estimated in the draft proposals.

5.25 It is noted that depreciation for TRANSCO's water business is lower in 2017 than in earlier years, as the initial (1999) RAV becomes fully depreciated in 2017 (in line with the initial RAV asset life shown in **Table 5.4**).

Table 5.5: Depreciation on initial RAV and on capex to date (excluding PC5 capex)

AED million, 2014 prices		2014	2015	2016	2017
AADC	Electricity	491	491	491	491
	Water	120	120	120	120
ADDC	Electricity	874	874	874	874
	Water	219	219	219	219
TRANSCO	Electricity	1,648	1,648	1,648	1,648
	Water	958	958	958	767
ADSSC	Total	772	772	772	772
Total		**5,082**	**5,082**	**5,082**	**4,891**

5.26 The above table excludes the depreciation in respect of the provisional PC5 capex, which is calculated in the main price control financial model discussed in Section 6 and is shown in **Table 5.6** below.

Table 5.6: Depreciation on PC5 provisional capex

AED million, 2014 prices		2014	2015	2016	2017
AADC	Electricity	12	35	58	82
	Water	5	15	25	35
ADDC	Electricity	45	135	225	315
	Water	10	30	50	70
TRANSCO	Electricity	38	115	192	268
	Water	30	90	150	210
ADSSC	Total	16	48	80	112
Total		**156**	**468**	**780**	**1,092**

5.27 **Table 5.7** below presents the total annual depreciation for each business on all assets, namely the initial RAV, efficient capex for PC1-PC4 periods, and provisional capex for PC4 remaining years and PC5 period. Each amount in this table is the sum of corresponding amounts shown in **Tables 5.5** and **5.6** above.

Table 5.7: Total depreciation for PC5 calculations – final proposals

AED million, 2014 prices		2014	2015	2016	2017
AADC	Electricity	503	526	549	573
	Water	125	135	145	155
ADDC	Electricity	919	1,009	1,099	1,189
	Water	229	249	269	289
TRANSCO	Electricity	1,686	1,763	1,840	1,916
	Water	988	1,048	1,108	977
ADSSC	Total	788	820	852	884
Total		**5,238**	**5,550**	**5,862**	**5,983**

5.28 The aggregate annual depreciation allowance for the four companies in these final proposals on average (AED 5.66 billion per year) is marginally higher than that in the draft proposals (AED 5.59 billion per year) by AED 71 million per year, or 1%, due to the increase in total provisional capex allowances for PC5 in the final proposals.

Updating RAVs

5.29 The opening 2014 RAVs projected at the last price control reviews need to be updated for the following items (as well as adjustment to 2014 prices):

(a) additional efficient PC3 capex over and above the provisional PC3 capex allowances in PC3 controls;

(b) additional efficient PC4 capex over and above the provisional PC4 capex allowances in PC4 controls for the years for which the efficiency review has been completed (ie, excluding 2012 and 2013); and

(c) provisional PC5 capex allowances being made at this review.

5.30 To set a price control for a number of years, the opening and closing RAVs for each year need to be calculated. The closing RAV for a year is also the opening RAV for the next year. The approach to calculating these RAVs works as follows:

(a) The opening RAV for 2014 (i.e. the first year of the PC5 control period) is calculated from the 2013 closing RAV calculated at the last review by adding the difference between efficient and provisional PC3 capex net of accumulated depreciation from the time such capex was spent up to the end of 2013.

(b) The same approach as described above can be applied to updating the RAVs for PC4 capex for 2010 and 2011 at this review as per the efficiency assessment described in Section 4.

(c) For PC5, the RAVs can be calculated simply by adding provisional PC5 capex and subtracting the estimate of regulatory depreciation for each year of the price control period.

Updating RAVs for PC3 and PC4 additional efficient capex

5.31 As agreed at the previous price control reviews, the additional efficient PC3 and PC4 capex over and above the provisional PC3 and PC4 capex allowances (i.e., the amounts in **Tables 4.6** and **4.10**, respectively) needs to be rolled into the RAVs. However, as discussed earlier, the foregone financing costs (both depreciation and return on capital) relating to the PC3 and PC4 capex is proposed to be remunerated over the PC5 period (rather than added to the RAVs). These financing costs relate to the period between (a) the time when the PC3 and PC4 capex was undertaken, and (b) the time when it will be financed.

5.32 **Annex A** to this paper shows how this has been done for each business of AADC, ADDC and TRANSCO separately and ADSSC in **Annexes A.1 through A.7**. The format of tables and calculations in each of these Annexes is standardised and has been described on a line-by-line basis in Annex A to the draft proposals. The results of this calculation are summarised below:

Table 5.8: Updated RAVs and foregone financing costs for PC3 and PC4 capex

AED million		NPV of PC3 and PC4 capex foregone financing costs	Opening 2014 RAVs from last review	Opening 2014 RAVs updated from last review	Opening 2014 value of PC3 and PC4 additional efficient capex	Opening 2014 RAVs updated for efficient PC3 and PC4 capex
		(to be added to PC5 revenue)			(to be added to RAV)	
		(2014 prices)	(2010 prices)	(2014 prices)	(2014 prices)	(2014 prices)
AADC	Electricity	735	7,430	7,754	1,079	8,833
	Water	-162	2,594	2,707	-96	2,611
ADDC	Electricity	1,478	13,182	13,757	3,267	17,024
	Water	-163	5,149	5,373	-287	5,086
TRANSCO	Electricity	1,833	34,861	36,381	439	36,824
	Water	416	17,714	18,486	178	18,717
ADSSC	Total	-571	17,068	17,812	-2,149	15,663
Total		**3,567**	**97,997**	**102,270**	**2,431**	**104,758**

Notes: For TRANSCO's both businesses, updated 2014 opening RAVs have been adjusted to include 2014 opening asset values for its unlicensed dedicated activities which are now within the scope of PC5 price controls.

5.33 This table indicates that the total NPV of adjustments for foregone financing costs relating to PC3 and PC4 capex for all businesses amounts to about AED 3.6 billion (in 2014 prices) up to 2014. In the price control calculations described in Section 6, this NPV amount has been added to the companies' revenue requirements over the PC5 period.

5.34 The total opening 2014 RAV for all the businesses has increased from about AED 98 billion in 2010 prices from the last price control review to about AED 105 billion in 2014 prices. This increase in RAV by about AED 7 billion reflects mainly the change in price basis from 2010 prices to 2014 prices (i.e. due to CPI inflation) and the addition of a positive figure (AED 2.4 billion) for the depreciated value of aggregate PC3 and PC4 additional efficient capex discussed in Section 4.

5.35 These RAVs are the same as estimated in the PC5 draft proposals. However, in the case of TRANSCO, we have adjusted the updated 2014 opening RAVs upward by about AED 58 million to include the efficiency-adjusted 2014 opening asset values (against the 2014 opening net book values totalling about AED 60 million) for its unlicensed dedicated

water and electricity activities in view of the extended scope of PC5 controls. This has resulted in a corresponding increase in the total RAV for the companies as compared to the draft proposals. The associated depreciation was already included in the total depreciation allowance in the draft proposals and remains included in these final proposals.

Updating RAVs for PC5 provisional capex

5.36 **Annexes A.1 through A.7** to this paper also show the updating of RAVs for the provisional PC5 capex for each business. **Table 5.9** summarises the results of this updating of RAVs (all figures are in 2014 prices). Note that the opening RAV for one year is also the closing RAV for the preceding year. The total RAV for all the businesses increases from about AED 105 billion (in 2014 before adjustments for provisional PC5 capex) to over AED 122 billion by the end of 2017 (after adjustments for provisional PC5 capex). Due to higher PC5 provisional capex allowances, the aggregate RAV is now higher than in the draft proposals by AED 4.4 billion, or 4%, by the end of 2017.

Table 5.9: Opening RAVs updated for provisional PC5 capex

AED million, 2014 prices		2014	2015	2016	2017	2018
AADC	Electricity	8,833	9,030	9,204	9,355	9,482
	Water	2,611	2,786	2,951	3,106	3,251
ADDC	Electricity	17,024	18,806	20,497	22,098	23,610
	Water	5,086	5,458	5,809	6,140	6,452
TRANSCO	Electricity	36,824	37,437	37,974	38,434	38,818
	Water	18,717	19,529	20,280	20,972	21,795
ADSSC	Total	15,663	16,474	17,254	18,002	18,717
Total		**104,758**	**109,520**	**113,970**	**118,107**	**122,125**

5.37 The RAVs shown in **Table 5.9** are used as inputs to the PC5 price control calculations in Section 6. The opening 2018 RAVs will also be used as the starting point at the next price control review for any RAV updates for efficient or provisional capex.

Approach to calculating price control revenue

Draft proposals

5.38 Setting the price controls means determining the values of the fixed term 'a' and the coefficients of revenue drivers 'b' and 'c' in the MAR formula, and the value of the X-factor. In the draft proposals, the Bureau used the same framework for its price control calculations as used at the previous price control review.

5.39 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

+ PC3 and PC4 additional efficient capex financing costs foregone

where:

(a) Operating expenditure (opex) refers to operating costs excluding depreciation.

(b) Depreciation is calculated using a straight-line method with assumed average asset life separately in respect of the initial RAV (at the time of first control setting) and each year's capex.

(c) Return on capital in any year is calculated by multiplying the mid-year average of opening and closing RAVs in that year by the cost of capital. For each year, the closing RAV is determined by adding the efficient capital expenditure (capex) incurred in that year to, and subtracting the depreciation from, the opening RAV.

(d) NPV of the foregone financing costs in respect of the additional efficient PC3 and PC4 capex, are applied to the NPV of the required revenue over the PC5 period.

5.40 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).

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

NPV of projected annual MARs = NPV of required revenues

5.42 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.

Responses

5.43 No respondents to the draft proposals commented on the above approach. However, ADDC reiterated its suggestions for a different approach for its supply businesses.

Assessment

5.44 ADDC's comments have been discussed earlier in this document, particularly in Section 2.

Final proposals

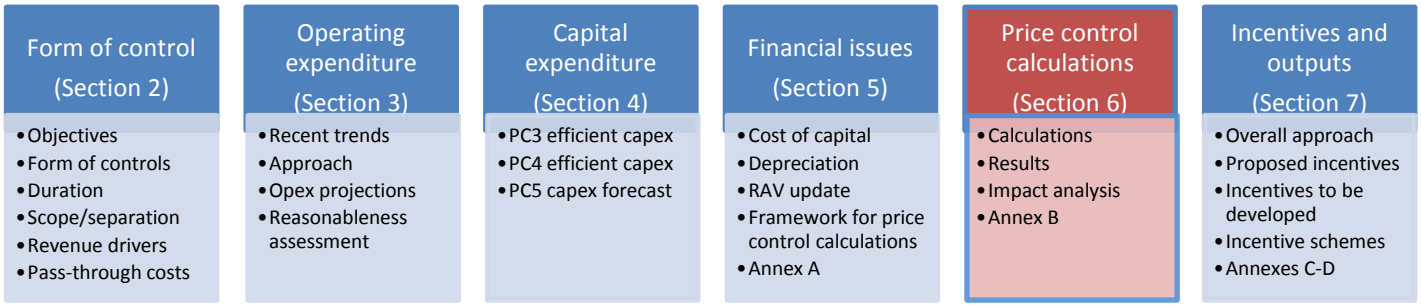
5.45 The Bureau has retained the building-block approach and NPV framework to price control calculation for PC5 as used for PC4.

6. Price control calculations

Introduction

6.1 Section 5 describes the overall framework for the price control calculations used in these final proposals. Earlier sections discuss and set out the various inputs required for these calculations. This Section 6 describes the results of price control calculations (as contained in a financial model) and their implications.

Figure 6.1: Price control calculations – Section 6

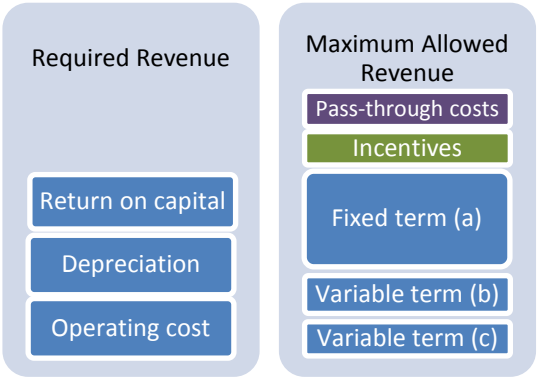


Price control calculations

Approach

6.2 The calculations of price control revenue involve using allowances for operating costs, regulatory depreciation and returns, together with present value calculations, to derive the companies' own or core price control revenues (i.e. revenue requirement excluding pass-through costs). We then use these core price control revenues to determine the base or notified values ('a', 'b' and 'c') for the new price controls, which will be included in new price control conditions in the licences for the four network companies. Once the new price control arrangements are put in place, this level of base revenue will be subject to cost pass-through terms (see Section 2) and incentive arrangements (see Section 7), allowing the determination of total price control revenue.

Figure 6.2: Building blocks of revenue requirement



Financial Models

6.3 In the draft proposals, we described a Microsoft Excel-based financial model we developed to carry out the PC5 price control calculations (referred to as the "***PC5 Financial Model***"). These calculations lead to the determination of the notified values "a", "b" and "c" for each company or business. This model also includes the calculations discussed in earlier sections relating to efficient PC3 and PC4 capex and related foregone financing costs and updating of RAVs for such capex as well as provisional PC5 capex.

6.4 The PC5 Financial Model takes the total depreciation on RAV and capex to date (in 2014 prices) directly from the PC5 Depreciation Model, another Excel-based model described in Section 5. Both the models were provided to the network companies with the draft proposals. We have now updated these models for the revised inputs and assumptions on revenue drivers, opex and capex in accordance with these final proposals.

6.5 All calculations have been carried out in real, 2014 prices. The discount rate used in the present value or NPV calculation is our proposed real cost of capital of 5.50%. The NPV of costs is calculated on a mid-year basis.

6.6 **Annex B** to this paper presents detailed price control calculations for each business (extracted from the relevant spread sheets of the PC5 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 with reference to "Line" numbers used in the **Annexes B.1 through B.7** and in the PC5 Financial Model.

Notified values

6.7 Based on these price control calculations, the Bureau's final proposals for the notified values are summarised in **Table 6.1** below. The notified values given in this table (to the accuracy to decimal places expressed therein) will be those used to calculate MARs when the price controls are implemented. Accordingly, these notified values will be incorporated into the charge restriction conditions schedules to the network companies' respective licences.

Table 6.1: Notified values for PC5 – final proposals

2014 prices		X	a		b		c	
AADC	Electricity	0.00	1,327.42	AEDm	1,548.34	AED / customer account	0.7781	fils/ kWh metered
	Water	0.00	396.91	AEDm	907.60	AED / customer account	0.3526	AED / TIG metered
ADDC	Electricity	0.00	2,736.90	AEDm	1,120.50	AED / customer account	0.3836	fils / kWh metered
	Water	0.00	778.05	AEDm	450.04	AED / customer account	0.2878	AED / TIG metered
TRANSCO	Electricity	0.00	3,780.36	AEDm	31.26	AED / kW metered	0.5314	fils / kWh metered
	Water	0.00	2,156.13	AEDm	283.43	AED / TIGD metered	0.8374	AED / TIG metered
ADSSC		0.00	1,826.72	AEDm	1.4334	AED / m3 metered	-	

Notes: These notified values for 2014 are based on an assumed UAE CPI of 118.00 (base year 2007 = 100) for 2013. They will be subject to an adjustment for actual UAE CPI for 2013.

6.8 These notified values are for 2014 expressed in 2014 prices based on the assumed UAE CPI of 118.00 (base year 2007 = 100). The adjustment for actual inflation for 2013 and

CPI-X indexation for subsequent years in the usual way will be done as described in Section 2.

6.9 In response to the draft proposals, AADC sought clarification regarding the reduction in its notified values of "b" proposed for PC5 in the draft proposals for both water and electricity as compared to those for 2012. We note that, while generally the notified values have increased from the existing PC4 levels, the customer number-related notified values "b" for AADC's water business and ADDC's water and electricity businesses have reduced for PC5 as compared to PC4 levels. Since the customer number revenue driver projections have increased by a larger percentage than the projected MARs from PC4 to PC5, the relevant notified values have decreased. The notified values are, in essence, determined by dividing the relevant proportion of the projected MARs by the revenue driver projections in the price control calculations.

Projected MARs

6.10 **Table 6.2** presents the projected MAR in respect of "own" costs (i.e., excluding pass-through costs, if applicable) for each business for 2014-2017:

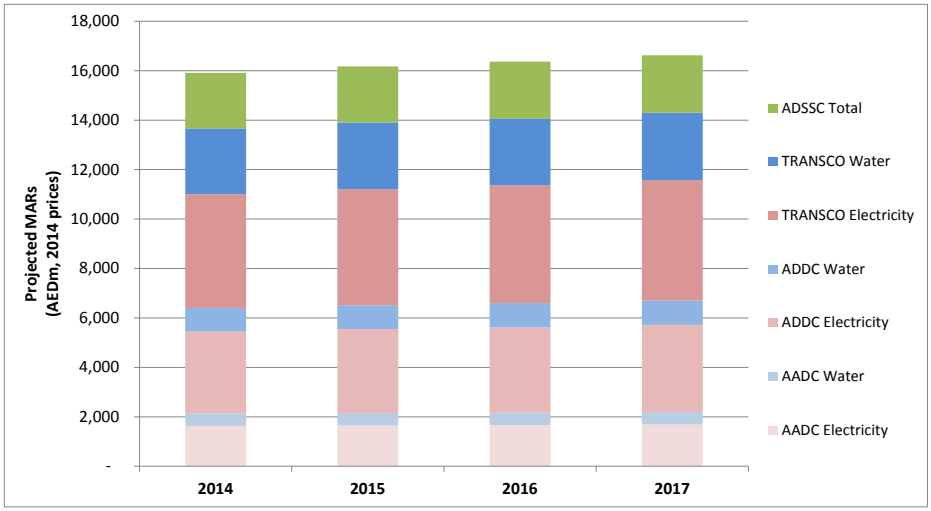
Table 6.2: Projected MAR over PC5 period – final proposals

AED million, 2014 prices		2014	2015	2016	2017	Average
AADC	Electricity	1,632	1,652	1,668	1,690	1,661
	Water	491	495	498	501	496
ADDC	Electricity	3,324	3,397	3,453	3,529	3,426
	Water	956	969	979	990	973
TRANSCO	Electricity	4,601	4,697	4,768	4,858	4,731
	Water	2,662	2,691	2,703	2,730	2,697
ADSSC	Total	2,249	2,272	2,298	2,322	2,285
Total		**15,915**	**16,173**	**16,367**	**16,620**	**16,269**

6.11 The aggregate MAR for the four network companies (excluding pass-through costs) is expected to be over AED 15.9 billion in 2014 reaching around AED 16.6 billion by 2017 with an average annual amount of AED 16.3 billion over the PC5 period.

6.12 **Figure 6.3** presents the projected MAR profile for each company over the PC5 period, indicating that TRANSCO accounts for a large share of all the companies' total MAR:

Figure 6.3: Projected MARs over PC5 period



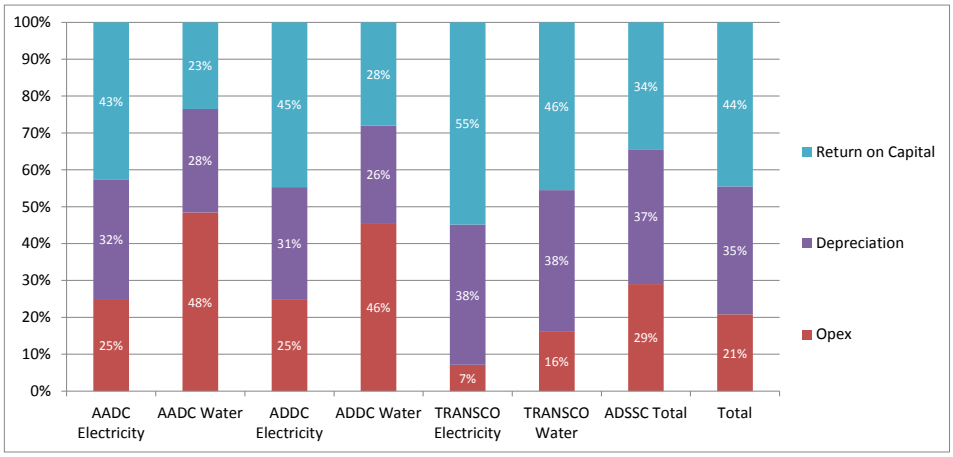
Analysis of draft proposals

Constituents of projected MARs

6.13 **Figure 6.4** below presents the percentage breakdown of total revenue (excluding pass-through costs) into projected opex, depreciation and return on capital (or profits plus interest costs) in NPV terms for each company. The PC3 and PC4 capex related foregone financing costs have been included as part of the return on capital.

6.14 This figure shows that the capital cost-related components (i.e. depreciation and the return on capital) account for a significant proportion of the revenue for each business (in the range of 52% to 93%), compared to opex which accounts for only 7% to 48% of revenue.

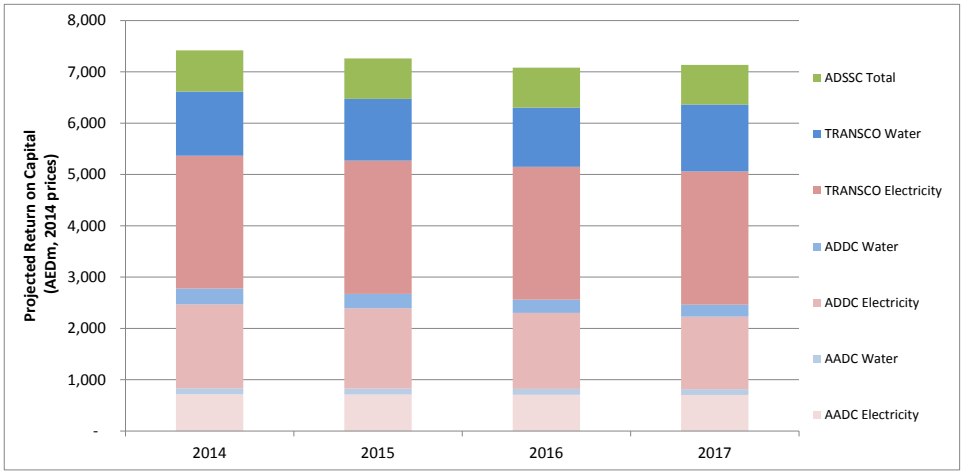
Figure 6.4: Constituents of MARs (excluding pass-through costs)



Projected return on capital

6.15 **Figure 6.5** shows the profile of projected profit (or more precisely, the return on capital) for the companies.

Figure 6.5: Projected return on capital over the PC5 period



6.16 Overall, the total return on capital for the four companies is expected to be of the order of AED 7.2 billion (2014 prices) a year on average over the PC5 period, as compared to the actual profit of AED 4.3 billion and AED 3.3 billion (nominal prices) in 2011 and 2012, respectively. As the return on capital includes both profits to the shareholders and interest payments on any loans, a more like-to-like comparison should be made against the actual return on capital (ie, actual profits plus actual interest costs) of AED 4.4 billion and AED 3.9 billion (nominal prices) in 2011 and 2012, respectively, for the four network companies. The average projected return on capital (including financial adjustments mentioned earlier) for each company is as follows (2014 prices):

(a) AADC: over AED 800 million per annum

(b) ADDC: about AED 1,800 million per annum

(c) ADSSC: about AED 800 million per annum

(d) TRANSCO: over AED 3,800 million per annum

6.17 This projected level of return on capital or profit reflects the capital investment and cost of capital necessary to promote adequate network investment. Note that:

(a) Projected returns fall slightly over the period due to the revenue profiling assumption combined with increasing depreciation and opex allowances.

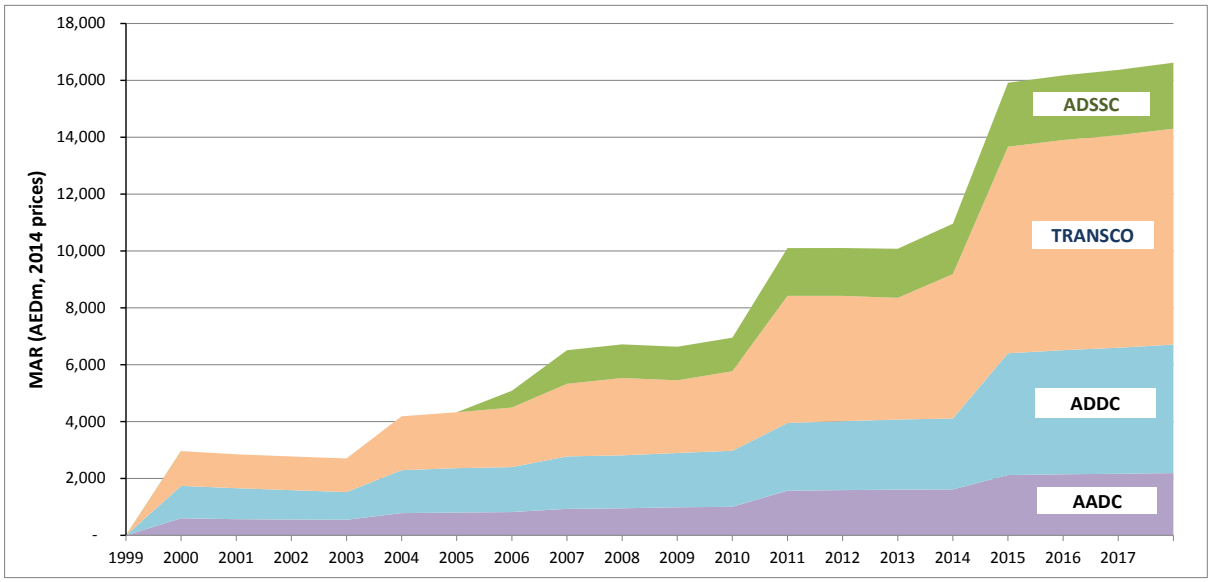
(b) In the case of the electricity businesses of AADC and ADDC and both water and electricity businesses of TRANSCO, the rate of return on the mid-year RAV exceeds the allowed cost of capital of 5.50% (real) due to the inclusion within the PC5 MAR of the foregone financing costs for PC3 and PC4 capex.

(c) However, in other cases (ADSSC and the water businesses of AADC and ADDC) where such foregone financing costs are negative, the projected rate of return on the mid-year RAV is lower than the allowed cost of capital. Refer to the financing costs shown in **Table 5.8** in Section 5 and the last row of each of **Appendices B1-B7**.

Projected trends for MAR

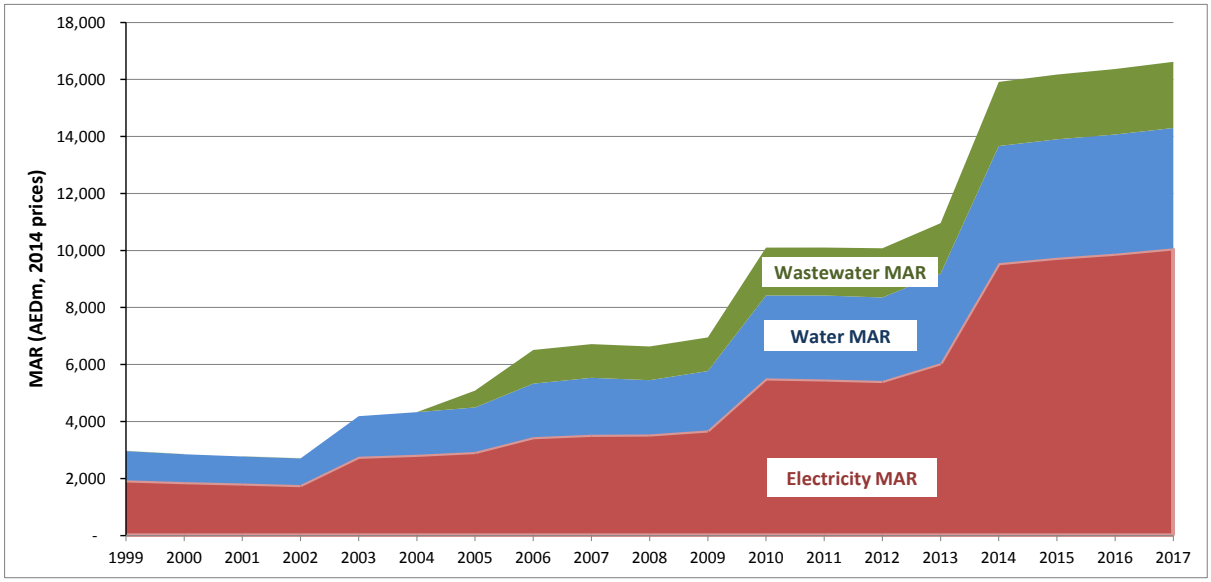
6.18 The following chart shows the projected MAR profile for each company over the PC5 period, indicating significant increases from previous years in real terms and TRANSCO's continuing large share of the MAR:

Figure 6.6: Projected MARs over PC5 period by company



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

Figure 6.7: Projected MARs over PC4 period by sector



Effect of Final Proposals on sector costs

6.20 The following three charts show the expected effect of these final proposals on the total price-controlled costs and unit costs for electricity, water and wastewater in 2014 prices.

Figure 6.8: Projected trend of price-controlled MAR – electricity

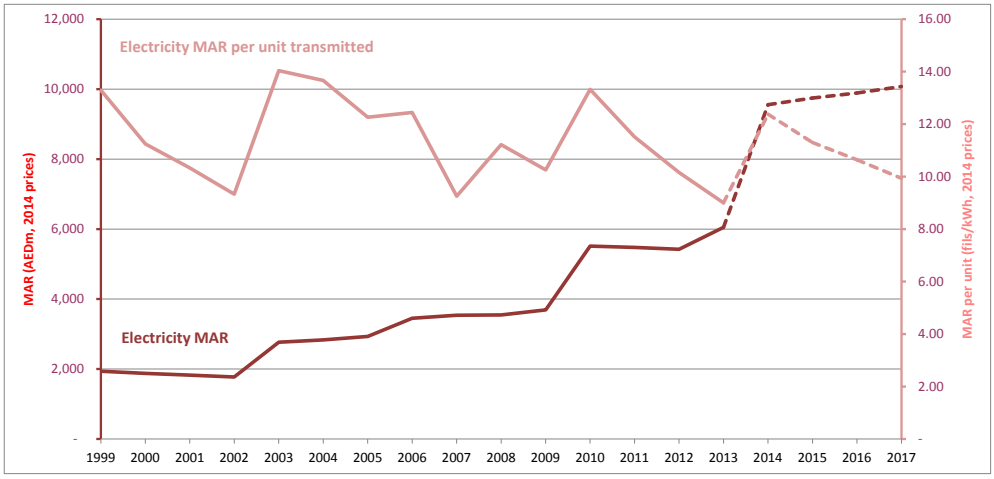


Figure 6.9: Projected trend of price-controlled MAR -water

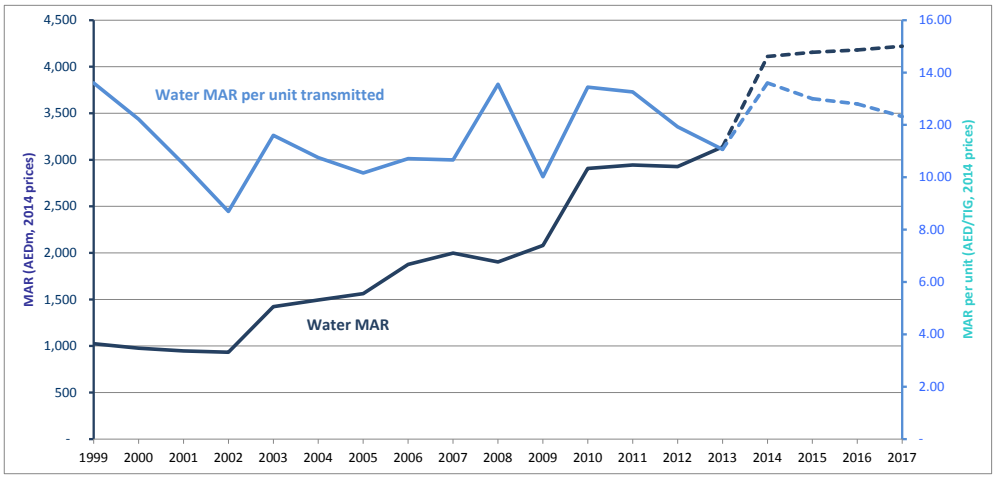
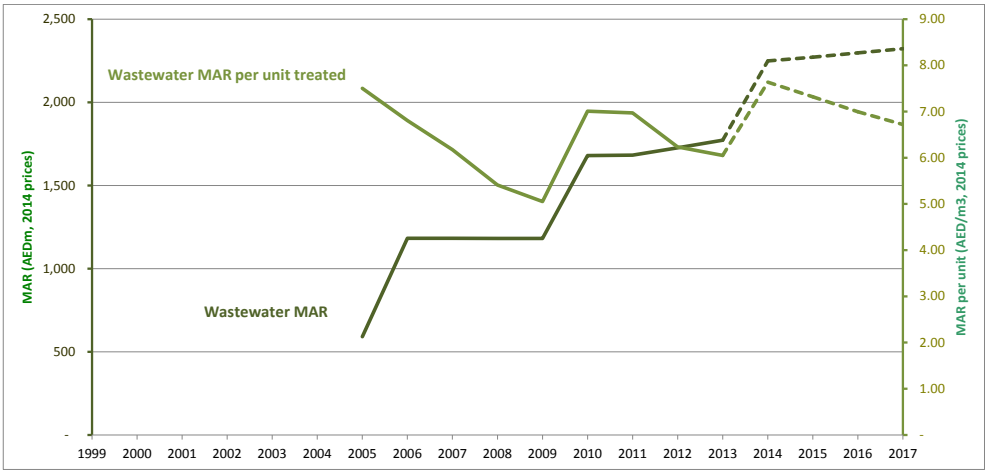


Figure 6.10: Projected trend of price-controlled MAR – wastewater



6.21 These charts indicate that the annual MARs are expected to continue the increasing trend in real terms. However, the projected increase in demand means that the final proposals are expected to result in a declining trend for the unit costs for electricity, water and wastewater businesses. This shows that:

(a) For electricity:

(i) The total MAR for AADC, ADDC and TRANSCO (excluding pass-through costs) is expected to increase 5 fold from 1999 to 2017 (in real terms).

(ii) However, the MAR per unit transmitted is expected to be around 10 fils/kWh in 2017, lower by 25% than that in 1999 (in 2014 prices).

(b) For water:

(i) The total MAR for AADC, ADDC and TRANSCO (excluding pass-through costs) is expected to almost quadruple from 1999 to 2017 (in real terms).

(ii) However, the MAR per unit transmitted is expected to be over 12 AED/TIG in 2017, lower by 9.5% than in 1999 (in 2014 prices).

(c) For wastewater:

(i) The total MAR for ADSSC (excluding any pass-through costs) is expected to almost double from 2005 (annualised) to 2017 (in real terms).

(ii) The MAR per unit transmitted is expected to be 6.72 AED/m^3 in 2017, lower by 10.5% than in 2005 (in 2014 prices).

Comparison against 2012 actual MARs and draft proposals

Comparison against 2012 actual MARs

6.22 **Table 6.3** compares the projected MARs for PC5 against the 2012 actual MARs. This comparison excludes performance bonuses and penalties, correction factor, pass-through costs and other financial adjustments or derogations.

Table 6.3: Comparison of PC5 projected MARs against 2012 actual MARs

AED million		2012 actual MAR		2014 MAR (2014 prices)		2017 MAR (2014 prices)	
		2012 prices	2014 prices	MAR	% Increase from 2012 MAR	MAR	% Increase from 2012 MAR
AADC	Electricity	1,142	1,162	1,632	40%	1,690	45%
	Water	439	447	491	10%	501	12%
ADDC	Electricity	1,605	1,633	3,324	104%	3,529	116%
	Water	818	832	956	15%	990	19%
TRANSCO	Electricity	2,586	2,630	4,601	75%	4,858	85%
	Water	1,621	1,648	2,662	61%	2,730	66%
ADSSC	Total	1,697	1,726	2,249	30%	2,322	35%
Total		**9,908**	**10,078**	**15,915**	**58%**	**16,620**	**65%**

Notes: Based on assumed UAE CPI for 2013

6.23 The table shows that:

(a) For 2014, the total projected MAR is higher than the 2012 actual MAR by AED 6 billion or 61% in nominal prices and by AED 5.8 billion or 58% in real 2014 prices.

(b) The projected MARs continue to increase over the PC5 period.

(c) By 2017, the total projected MAR exceeds the total 2012 actual MAR by AED 6.5 billion (in 2014 prices) or 65%.

(d) The average annual MAR for PC5 is higher than the 2012 actual MAR by 6.2 billion or 61% in 2014 prices.

6.24 These increases in MARs are mainly due to:

(a) capital investments to expand and strengthen networks to meet increasing demands both in the past and future;

(b) cost increases to operate and maintain such expanding systems to meet growing demand;

(c) higher cost of capital estimated for PC5; and,

(d) additional opex allowances for Emiratisation, training and apprenticeship, capability building in specific areas, and inflation.

6.25 However, the increasing demand also means that the MAR per unit transmitted or treated is projected to continue the overall declining trend since the establishment of the price control regime (ie, 2005 for ADSSC and 1999 for other three companies). Over a shorter term from 2012 to 2017, the MAR per unit is expected to decline or increase slightly in 2014 prices from 2012 as follows:

(a) Electricity: decline by about 2% by 2017;

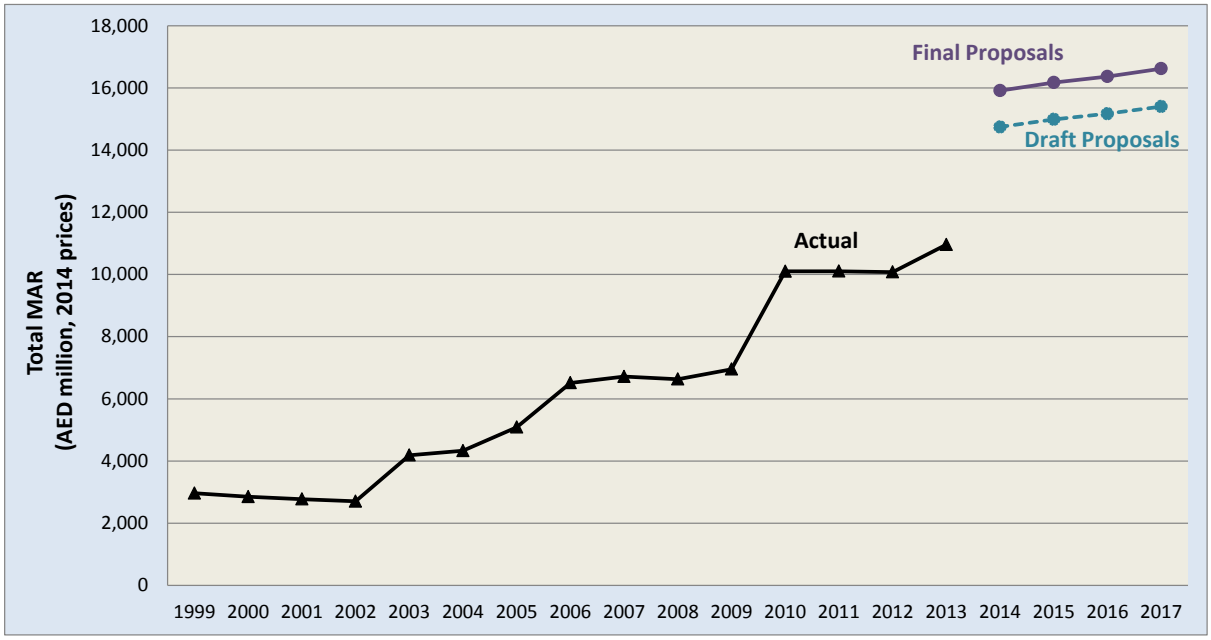
(b) Water: increase by about 3% by 2017; and

(c) Wastewater: increase by 8% by 2017.

Comparison against draft proposals

6.26 **Figure 6.11** below compares the total MAR for PC5 projected in these final proposals against that in the draft proposals:

Figure 6.11: Total projected MAR - comparison between final and draft Proposals



6.27 The table below shows that the final proposals represent increases in total annual MAR by about AED 1.2 billion (2014 prices) or by about 8%, compared to the draft proposals.

Table 6.4: Average annual projected MARs for PC5 – final v draft proposals

AED million, 2014 prices		Draft Proposals	Final Proposals	Increase in Final Proposals	% Increase
AADC	Electricity	1,521	1,661	140	9%
	Water	432	496	64	15%
ADDC	Electricity	3,137	3,426	288	9%
	Water	876	973	97	11%
TRANSCO	Electricity	4,537	4,731	194	4%
	Water	2,442	2,697	255	10%
ADSSC	Total	2,130	2,285	155	7%
Total		**15,076**	**16,269**	**1,193**	**8%**

7. Incentives and outputs

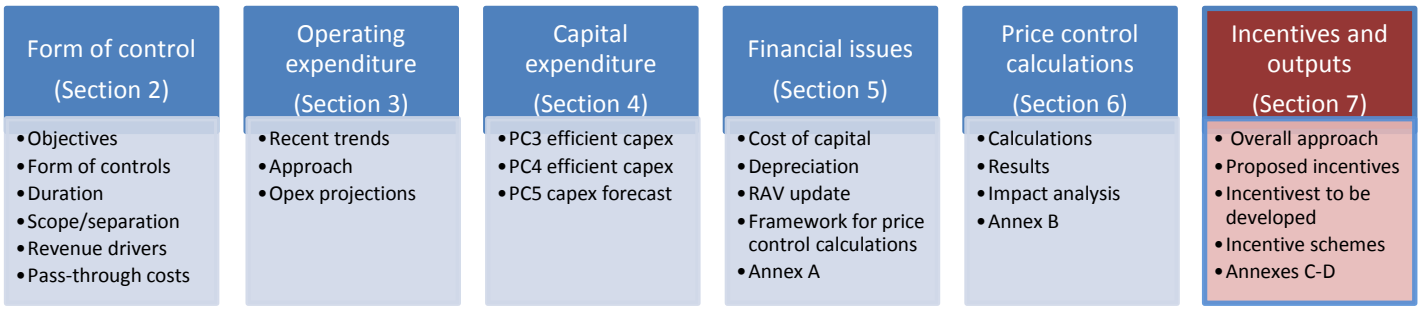
Introduction

7.1 The existing price controls are accompanied by a Performance Incentive Scheme (PIS) under which the companies are rewarded for improved service and output performance and penalised for deteriorating performance.

7.2 For PC5, our earlier consultation papers suggested continuing with the concept of performance indicators subject to automatic annual MAR adjustment in line with the present Category A indicators. However, we proposed that the current concept of Category B indicators with a potential financial adjustment at the next price control review should no longer apply in PC5. This should address the companies' concerns about the regulatory risks arising from performance incentives that are not fully developed and precisely defined. In contrast, we proposed developing in consultation with the licensees new performance indicators during the PC5 period with the automatic annual incentive arrangement.

7.3 This section summarises our draft proposals, the licensees' responses and our final proposals on the overall approach, specific incentives, calibration of incentive schemes and the proposed magnitude of incentives. **Annexes C** and **D,** containing details on the proposed incentives, will be issued to the four network companies separately.

Figure 7.1: Incentives and outputs – Section 7



Overall approach

Draft proposals

7.4 In the second consultation paper, we put forward a wide range of incentives in six areas: (a) asset management; (b) availability, security and quality of supply; (c) transmission system operator (TSO); (d) provision of high quality information; (e) Emiratisation; and (f) end-use efficiency.

7.5 In the draft proposals, recognising the licensees' concerns about the large number of proposed incentives, we reduced the number of incentives to a manageable level. Our draft proposals therefore focused on three areas of incentives: (a) availability, security and quality of supply; (b) high quality information; and (c) end-use efficiency (see **Table**

7.1 for the list of incentives). Incentives for Emiratisation were provided through opex allowances and hence discussed separately in the context of opex.

7.6 However, we considered it as equally important that we continue the constructive dialogue within the sector to further prioritise and develop all the incentives under consideration. We proposed that we adopt a flexible arrangement which would allow us to introduce, following consultation, further incentives during the PC5 period. We identified five key areas for this purpose where we intended to develop one incentive in each area: (a) asset management; (b) customer service; (c) transmission system operator (TSO); (d) DSM initiatives and schemes; and (e) carbon accounting.

Responses

7.7 AADC welcomed the reduction in the number of incentives and removal of new incentives relating to the connectivity model, worst-served customers, SRA, planning statement, and residential consumption. It accepted all the incentives proposed for PC5 with some suggestions (discussed later). It also supported the treatment of Emiratisation within the opex allowance rather than as an incentive.

7.8 ADDC suggested that the key focus should be alignment between the sector's strategic direction set by the Government through ADWEA and the price controls, achieved by providing appropriate performance incentives for the companies. In the absence of such alignment, ADDC found it difficult to agree on incentives. It considered that either some of the proposed incentives are outside its control or do not reflect a common future vision of the sector.

7.9 ADDC expressed concerns about the reduction in the number of incentives, the lack of distinction of incentives between distribution and supply businesses, and there being only one incentive (ie, end-use efficiency) for supply businesses. It noted that while separate accounts are required for distribution and supply, such separation has not been provided in incentives. It sought targeted incentives to help the sector to improve both effectively and efficiently. ADDC also made detailed comments in relation to the incentives proposed to be developed and introduced during the PC5 period.

7.10 ADSSC reiterated its support for the Bureau's approach in the first and second consultation papers to propose incentives for the delivery of specific initiatives such as asset management accreditation, preferring this to the proposal to incentivise biosolids reuse.

7.11 TRANSCO expressed concerns about the reduction in the number of incentives and emphasised greater cooperation between the Bureau and the licensees on alignment of incentives to focus on important areas. It clarified that it was not concerned about the large number of incentives but questioned the merit of some incentives.

7.12 TRANSCO welcomed the opportunity to develop and implement new incentives during the PC5 period, extended supported for this approach, and sought mobilisation of incentive-related work streams from September 2013 with a firm programme to be agreed during 2014.

Assessment

7.13 We note AADC's positive comments and ADDC' and TRANSCO's concerns about the reduction in the number of incentives. In the draft proposals, we explained the rationale for such a reduction, this being primarily to address the companies' concerns and to focus on important areas. The purpose of identifying a large number of possible incentives initially was to promote debate. Our first and second consultation papers clearly stated that there would be significant challenges associated with specifying and calibrating such incentives and outputs within the time available during this price control review. We therefore highlighted that it might be that some of these matters would need to be subject to longer-term work streams and that such incentives would not be fully implemented until the middle of the price control period or at the next price control review.

7.14 TRANSCO's response to the second consultation paper clearly expressed concerns about the large number of incentives, lack of focus, additional risks and the time available to develop satisfactory incentives, and highlighted the need to rely on the companies' statutory obligations. While ADDC's response to that paper highlighted the need for the alignment of incentives with its business plan, it did not submit its business plan or any specific incentive in the detailed manner (for example, similar to the Bureau's annexes on incentives) that could be progressed.

7.15 Nonetheless, we recognise the need for developing new incentives in the important and strategic areas including asset management, as discussed in the draft proposals and later in this section.

Final Proposals

7.16 In these final proposals, we have retained our two-pronged approach towards the development of incentives for PC5:

(a) We have proposed a manageable number of focused incentives in specific important areas within the companies' reasonable control. These areas of incentives are (a) availability, security and quality of supply; (b) high quality information; and (c) end-use efficiency.

(b) We have adopted a flexible arrangement which will allow us to introduce, following consultation, further incentives during the PC5 period.

Incentives developed for PC5

Draft proposals

7.17 In the draft proposals, we proposed incentives that are ready for introduction in PC5 in three areas: (a) availability, security and quality of supply; (b) high quality information; and (c) end-use efficiency. **Table 7.1** lists all incentives suggested in the draft proposals for incorporation at this price control review into the network companies' licences for implementation in PC5.

Table 7.1: Incentives developed for PC5 – draft / final proposals

	AADC (E)	AADC (W)	ADDC (E)	ADDC (W)	TRANSCO (E)	TRANSCO (W)	ADSSC
Availability, security and service quality (Annex C)							
Water quality		✓		✓		✓	
Transmission system availability					✓	✓	
Removal of timed water supply		☑		☑			
Interface metering	✓	✓	✓	✓	☑	☑	
Distribution loss reduction	✓	✓	✓	✓			
Security of supply						☑	
SAIDI	✓		✓				
SAIFI	✓		✓				
Energy lost					✓		
Biosolids reuse							☑
Information (Annex D)							
SBAs (including PCRs as per new RAGs)	✓	✓	✓	✓	✓	✓	✓
AIS	✓	✓	✓	✓	✓	✓	✓
End-use efficiency							
DSM strategy and action plan	☑	☑	☑	☑			
Number of existing incentives for PC5	6	5	6	5	4	4	2
Number of new incentives for PC5	1	2	1	2	1	2	1
Total number of incentives for PC5	**7**	**7**	**7**	**7**	**5**	**6**	**3**
Total number of existing incentives for PC4	9	8	9	8	5	5	3

Notes: "✓" represents an existing incentive; "☑" represents a new incentive.

Responses

7.18 The companies' main comments on the draft proposals in relation to the specific incentives are discussed in the following paragraphs. The companies' more detailed comments are discussed in **Annexes C** and **D** in relation to each specific incentive separately.

Assessment and final proposals

7.19 The following paragraphs described our assessment of the companies' main comments on the specific incentives proposed for PC5. As discussed below, we have retained all the incentives we suggested in our draft proposals with some changes to certain incentives. Our assessment of the companies' detailed comments is presented in **Annexes C** and **D** in relation to each specific incentive separately. The precise definitions, targets and amounts of specific incentives as set out in this Section 7 and **Annexes C** and **D**, once agreed, will be incorporated into the companies' licences. Further, following consultation with the companies, we will from time to time issue and amend Regulatory Instructions and Guidance (RIG) documents to provide detailed guidance on the measurement and reporting of individual performance indicators so as to address emerging issues and incorporate lessons learnt.

Availability, security and service quality

Draft proposals

7.20 **Table 7.1** lists the ten incentives relating to availability, security and service quality suggested in the draft proposals for incorporation at this price control review into the network companies' licences for implementation in PC5.

7.21 All these proposed incentives are based on the existing incentives (either with or without some changes), except for certain new incentives: the removal of timed water supply for AADC and ADDC; interface metering and security of water supply for TRANSCO; and biosolids reuse for ADSSC.

Responses

7.22 AADC accepted all the proposed incentives with some suggestions:

(a) For the water quality incentive, further parameters in addition to Bromate should be considered as Exceptional Events, being outside its control.

(b) Regarding the removal of timed water supply, the unavailability of water from TRANSCO should be considered as an Exceptional Event.

(c) The interface metering incentive should start from 2015 (instead of 2014), aligning with the expected completion of a metering project by the end of 2013.

(d) The connectivity model related parameter "C" in SAIDI and SAIFI incentives should be set to 1.00 for 2014 and 2015 to avoid any incentive adjustment for a lack of progress on the connectivity model.

7.23 ADDC's main comments on the proposed incentives are summarised as follows:

(a) It welcomed the removal of the existing incentive for residential consumption reduction. However, it considered that this incentive and the current incentive for customer debt reduction could have been improved.

(b) It suggested retaining the existing performance indicator for the water quality incentive covering all parameters instead of the proposed weighted index which would focus on a few parameters and neglect the remaining sampling and testing activities performed by ADDC.

(c) It agreed with the proposed treatment of unplanned outages for SAIDI and SAIFI but suggested the temporary exclusion of the mega developments from its assessed performance on SAIDI and SAIFI.

(d) It agreed with the changes to the distribution loss incentive but suggested including customers supplied at transmission voltage level.

(e) It considered that an interface metering incentive is not appropriate for TRANSCO.

7.24 As mentioned earlier, ADSSC suggested the focus of incentives should be on initiatives such as the achievement of formal accreditation for PAS55 / ISO55000 for asset management, rather than biosolids reuse.

7.25 TRANSCO considered certain incentives beyond its control or involving undue penalty and made detailed comments on specific incentives developed for PC5, summarised below:

(a) It did not accept the interface metering incentive, considering that TRANSCO's responsibilities are limited to only managing MDEC.

(b) It accepted the water quality incentive but disputed the parameters to be included and specifically sought the exclusion of bromate.

(c) It agreed to the transmission system availability incentives for water and electricity but expressed concerns about the removal of two components from water transmission system availability.

(d) It also accepted the energy lost incentive but expressed concerns about the form of the performance indicator and the target of zero energy lost needing to be achieved to earn a bonus.

(e) It did not accept the incentive for security of water supply, mainly because of its dependence on the distribution companies' forecasts, production constraints, water curtailments and other exceptional circumstances, and also because of what it considered stringent performance targets and margins.

(f) It considered that certain new incentives (eg, security of water supply) should not be effective until 2016 to allow sufficient time to put in place the required systems and processes.

Assessment

7.26 In our opinion, no parameter of the water quality incentive can be permanently excluded from the companies' performance. However, any parameter (including bromate) to the extent affected by events beyond a company's reasonable control (eg, events occurring upstream of the relevant system) would be assessed by the TA and could be classified as an Exceptional Event in accordance with the licence definition, and hence would be excluded from the company's performance for the calculation of the incentive. This practice applies consistently across all the three water network companies.

7.27 A similar rationale applies to AADC/ADDC's incentives for the removal of timed water supply, SADIF and SAIFI, and TRANSCO's incentive for the security of water supply. Unavailability of water from TRANSCO or the impact of mega developments on SAIDI and SAIFI and unavailability of water from production plants would be assessed by the TA for consideration as an Exceptional Event for distribution companies and TRANSCO, respectively.

7.28 As the companies' sampling performance for water quality has reached a satisfactory level, the performance indicator for the water quality incentive needs to be replaced by the proposed weighted index which would focus on areas of more importance. This is also in line with ADDC's general desire for targeted incentives. However, licensees will

continue to comply with the Water Quality Regulations in relation to all parameters as part of business-as-usual.

7.29 Regarding ADDC's comment, we note that customers supplied at transmission voltage level are not relevant to the distribution loss incentive.

7.30 We believe that TRANSCO shares responsibility with the distribution companies for ensuring MDEC-compliant interface metering. We believe that incentivising those responsible for both sides of the interface should encourage and reward cooperation. We have however made some changes to both electricity and water interface metering incentives by introducing a financial bonus for achieving MDEC compliance in excess of 90%. This is in contrast to the existing structure of this incentive and the one suggested in the draft proposals, each of which provides only the potential to reduce a financial penalty and no bonus opportunity. We believe that this change will strengthen the incentives for companies to accelerate the pace of MDEC-compliant metering. This change will also make the interface metering incentives more symmetric and consistent with other incentives which involve both bonus and penalty.

7.31 As discussed in section 2, we have replaced MDEC requirements for TRANSCO's revenue drivers, which posed significantly higher risks for TRANSCO, with a new incentive for interface metering. In contrast, the metering incentive is an existing incentive for the distribution companies and should continue in 2014 without any interruption.

7.32 In response to AADC's comment, we clarify that the connectivity model related parameter "C" in the SAIDI and SAIFI incentives is already proposed to be equal to 1 for 2014 and 2015 and can take a value of 0.50 only for 2016 onwards to adjust the incentive for lack of progress on the connectivity model.

7.33 With regard to TRANSCO's specific incentives, we have made the following changes to three incentives:

(a) Our suggested targets in the draft proposals already take account of the removal of two components from the water transmission system availability incentives. However, we have slightly lowered the performance targets and dead-band from 96.5%-97.5% to 96%-97% to address TRANSCO's concern regarding the exclusion of certain reliable assets.

(b) We have also modified the incentive scheme for the energy lost to allow TRANSCO to earn a bonus if the energy lost is below a reasonable target (rather than equal to zero energy lost).

(c) In respect of the security of water supply incentive, we have relaxed the margins (thereby reducing the risks for TRANSCO) based on further analysis of the past performance. While TRANSCO has been reporting on the relevant performance indicator (without incentive) since 2005 and the required systems and processes are already in place to measure and report this indicator, we have also deferred its introduction from 2015 to 2016 to enable TRANSCO to enhance the systems to report against this incentive..

7.34 We welcome ADSSC's support for initiative-specific incentives such as asset management accreditation and will work with the sector during PC5 period to develop

appropriate incentives for this activity. We do not consider incentives for asset management and biosolids reuse as mutually exclusive. We still believe that the framework to promote the reuse of biosolids is well established under the Recycled Water and Biosolids Regulation 2010 and that the proposed biosolids reuse incentive is required to accelerate ADSSC's progress towards meeting its statutory obligations and as such it is the only new incentive proposed for ADSSC.

Final Proposals

7.35 In these final proposals, the Bureau has therefore retained all the ten incentives suggested in the draft proposals as per **Table 7.1** (or thirteen incentives if those common to water and electricity are considered separately in line with the treatment in **Annex C**) with the following changes to certain incentives:

(a) Water transmission availability: revised performance targets and dead-band;

(b) Water and electricity interface metering: revised target with a potential to earn a bonus;

(c) Water transmission security of supply: revised margins and introduction in 2016; and

(d) Energy lost: revised performance target for bonus.

Provision of high quality information

Draft proposals

7.36 **Table 7.1** lists the two incentives relating to the timely submission of SBAs and AIS suggested in the draft proposals for incorporation at this price control review into the network companies' licences for implementation in PC5.

7.37 Both of these incentives are based on the existing incentives. However, in contrast to the two existing separate incentives for SBAs and PCRs, we proposed a single incentive covering SBAs and PCRs, as the SBAs would include PCRs in accordance with the recently issued RAGs. Further, in contrast to the existing incentive for SBA submission, we propose a financial bonus for the timely submission of SBAs for PC5; this will also incentivise implementation of the newly developed RAGs which merges the PCR into the SBA.

Responses

7.38 AADC accepted both the proposed incentives for information submission.

7.39 ADDC's main comments on incentives are summarised as follows:

(a) It did not expect significant improvement in the quality of accounting information without the implementation of an activity based costing system, and sought support and incentives for such a system.

(b) It did not agree to the merger of SBAs and PCRs into one incentive and the target for submission of SBAs until it had identified any gaps in its current processes following completion of the RAGs pilot project later in 2013.

(c) It did not agree to the Bureau's prior approval of the TA draft report and considered that the TA arrangements have worked satisfactorily. However, it agreed that the licensees and the Bureau should be aligned and had no concerns in discussing and agreeing matters with the Bureau in providing advice to the TA.

(d) On the performance targets, ADDC expressed its desire to review the draft licence modification in relation to the TA ratio, including in particular the treatment of areas of improvement and completion of the TA's recommendations.

7.40 TRANSCO made the following main comments:

(a) TRANSCO did not see the need for the proposed information incentives and emphasised its acceptance of, and commitment to, its regulatory obligation to provide quality and timely information. It noted its support to date for the revision of SBAs via RAGs which should be testimony to TRANSCO's capability and intent to enhance the quality of reporting. However, it sought an extension of the target date for submission of the merged SBAs/PCRs as per the RAGs from the end of April to the end of May. In respect of the AIS, TRANSCO saw little change and limited burden.

(b) It considered the current working of the TA arrangements reasonable, noting the Bureau's unconstrained access to the TA. TRANSCO saw the Bureau's stated need to strengthen the TA's duty of care as an unfounded concern. It emphasised the independence of the TA and did not agree to the Bureau's review of the TA report prior to issue of the final report.

Assessment

7.41 We welcome TRANSCO's commitment to provide timely and quality information as per its licence obligations without the need for incentives. As discussed with TRANSCO during the meeting in August 2013, while we seek to incorporate the proposed incentives for SBAs/PCRs and AIS in TRANSCO's licence in line with other companies' licences, we will rely on TRANSCO's commitment and will not enforce this incentive for TRANSCO unless the Bureau finds the need for an incentive.

7.42 With regard to the companies' comments about the extension of the target date for the merged SBA/PCR submission, we note that the RAGs and the timeline for their implementation over a number of years have been developed keeping in view the companies' existing systems and workload. Further, these RAGs are currently being tested through a pilot project initiated by the companies that will identify any gaps as well as providing an informed assessment of the time and effort required to bridge these gaps. Should the pilot run identify any significant gaps, we can consider further smoothing of the glide-path to implementation of the RAGs. However, the annual target dates in the licences for submission of the entire SBA/PCR deliverable will remain unchanged.

7.43 Further, the RAGs encourage and provide the necessary regulatory framework to move towards activity based costing systems and we support the development and implementation of such systems by the licensees and are ready to work with them on this. However, we do not believe separate incentives are required for each such initiative – particularly when the licensees find the said system useful to provide the required regulatory information and such information is already incentivised.

7.44 We have modified the AIS template from time to time to reduce the regulatory burden by requesting the data for additional years only when it is required (for example, in the year of the price control review or capex review). While this approach has been welcomed by other companies, we are disappointed by ADDC's reluctance particularly when a significant incentive is provided to do so. Nevertheless, we agreed with ADDC during a meeting in August that it can submit data for additional years if it finds it more convenient.

7.45 In relation to the TA working arrangements, we have certain concerns and wish to strengthen the TA's duty of care towards the Bureau. Nonetheless, the Bureau recognises and values the independence of the TA. The Bureau believes that an early review of the TA's draft final report would give the Bureau an opportunity to seek clarification of any matters or point out any apparent omissions. We believe that this would make the process more efficient. We welcome ADDC's positive comments in this regard and will discuss these issues separately with the licensees and if necessary incorporate appropriate guidance for the TA in the relevant RIGs.

7.46 With regard to the companies' comments about licence modifications, we are issuing the draft licence modifications (that would give effect to the PC5 final proposals if accepted by the companies) to the four network companies for their review.

Final Proposals

7.47 In view of the above discussion, we propose continuing with the existing two incentives for SBAs (including PCRs as per the new RAGs) and AIS submissions suggested in the draft proposals as per **Table 7.1**. However, based on TRANSCO's suggestions and its commitment to meet its obligations for these submissions, these incentives will not take effect for TRANSCO unless the Bureau directs otherwise.

Efficient use of water and electricity

Draft Proposals

7.48 In the draft proposals, we suggested the following multi-pronged approach to deal with this important matter:

(a) Appropriate additional opex funding at this review for AADC and ADDC to develop skills and capabilities within the companies.

(b) An incentive for the development of an overall strategy and action plan (with specific targets and milestones on end-use efficiency over the medium to long term) by AADC and ADDC. These companies will be required to submit a draft strategy and action plan document to the Bureau for review by 30 June 2014 and a final document by 31 December 2014. If the companies develop such a

document to the Bureau's satisfaction by 31 December 2014, they will be rewarded with an incentive amount equivalent of 0.50% of their core MAR for 2014; if not, they will be subject to an equivalent penalty. The companies and the Bureau would also discuss additional incentives and funding requirements to implement the approved strategy and action plan.

(c) Initiatives by AADC and ADDC to propose pilot schemes and DSM initiatives to PowerWise and WaterWise for discussion, approval and funding of reasonable opex and efficient capex as well as an incentive payment provided that such total funding must be less than the benefits of the pilot project or initiative.

7.49 In view of the limited success of the existing incentives in reducing average residential consumption and the broader work planned for DSM strategy and action plans, we propose that the current incentive will not be continued in PC5.

Responses

7.50 AADC and ADDC welcomed the removal of the existing incentive for residential consumption reduction. ADDC however considered this incentive could have been improved by focusing on large users.

7.51 ADDC suggested that an opex allowance should be provided to address the capability gap within ADDC in relation to end-use efficiency. ADDC noted ADWEA's role and the importance of any future customer tariff reforms. It also highlighted the need for price controls to fund the opex and capex required to make improvements in performance on service standards, risk management, tariff design, regulation and DSM.

7.52 TRANSCO also supported these incentives for distribution companies.

Assessment and draft proposals

7.53 In addition to the financial incentives discussed in this section, the capability gaps within ADDC and AADC in the identified areas (as well as ADSSC to the extent relevant) have been addressed by an additional opex allowance (see section 3).

Final Proposals

7.54 We have retained our three-pronged approach to incentivise end-use efficiency as per the draft proposals:

(a) We have included additional funding in our PC5 opex projections to address the capability gaps within AADC and ADDC in areas such as DSM, risk management, tariff design and regulation (see Section 3).

(b) We have incorporated an incentive in the draft licence modifications for AADC and ADDC to develop and submit their overall strategy and action plan (with specific targets and milestones on end-use efficiency over the medium to long term) by the end of 2014, along with a commitment to implement such a strategy and action plan. During the preparation of the strategy/action plan, the Bureau will also agree with the distribution companies the incentives (both bonus and penalty) for the implementation of the approved strategy and action plan.

(c) We will consider funding DSM pilot schemes and initiatives put forward by AADC and ADDC during the PC5 period.

Incentives to be developed during the PC5 period

Draft proposals

7.55 As mentioned earlier, the draft proposals identified five key areas where we intended to develop one incentive in each area during the PC5 period. These areas were (a) asset management, (b) customer service, (c), transmission system operator (TSO), (d) DSM initiatives and schemes, and (e) carbon accounting.

Responses

7.56 While supporting a 5-year control for PC5 with a re-opening mechanism, AADC suggested a methodology to discuss, accept or reject any new incentive during the PC5 period such that any new incentives developed during the PC5 period should be introduced first as Category B indicators.

7.57 ADDC considered the introduction of additional incentives during the PC5 period as a source of risks which should be compensated for by a higher cost of capital. It also noted that the impact of any new incentive is delayed by about 3 years and since most changes require a long time to implement, long-term consistent incentives are required.

7.58 ADDC did not agree to the five areas of future incentives and proposed its alternative areas for incentives – such as, adoption of mega developments, consumption of drinkable water, forward-looking capex assessment, guaranteed and overall standards, activity based accounting and e-services and outage management.

7.59 TRANSCO reiterated its support for both asset management and transmission system operator incentives and looked forward to the Bureau's re-engagement in these initiatives. While it supported the proposed initiative to promote carbon accounting, it sought a firm programme of engagement and, in view of the significant reduction in opex allowances, suggested logging-up of all costs that may be incurred in developing and delivering such new initiatives.

Assessment

7.60 We note the companies' general support for all or some of the five key areas of future incentives, particularly asset management and the TSO. Our current plan on the engagement in these areas is given below. However, the final outcome in terms of development and implementation of the relevant incentives will depend on the licensees' engagement and agreement.

(a) TSO – work has already commenced with the appointment of a consultant to assess TRANSCO's processes and systems to recommend an appropriate incentive, with the final report expected in the second quarter of 2014.

(b) Asset management, customer service and carbon accounting – work is planned to commence in 2014-2015.

(c) DSM initiatives and schemes – AADC and ADDC have to take the lead and submit pilot schemes and DSM initiatives for discussion, approval and funding.

7.61 In relation to ADDC's comments, we note that the reduction in the number of incentives, the retention of existing incentives with a cap of 0.5% of MAR, and the gradual introduction of incentives over time has reduced risks for the companies.

7.62 While other alternative areas identified by ADDC are addressed by our proposals on opex, capex and incentives, we are willing to consider areas for future incentives in addition to the identified five key areas. This will allow consideration of AADC's suggestion for the water leakage/loss report. However, we will need to keep the number of incentives manageable and focused and will only be introducing incentives if required to inculcate efficiency or performance. If the performance under an incentive scheme reaches a satisfactory level and companies' processes and systems show consistent maturity, we would consider removing or amending such an incentive.

7.63 As explained earlier, we have removed the concept of Category B incentives, because a new incentive, if fully developed and agreed, can be introduced during the PC5 period.

7.64 During the PC5 period, the Bureau or a licensee can identify the need for any new incentive and propose its design and scheme. The Bureau will undertake a formal consultation on any such incentive along with a draft licence modification to incorporate such an incentive. If the proposed incentive is accepted by the relevant licensee(s), the relevant licence(s) will be modified accordingly to give effect to the agreed incentive.

Final Proposals

7.65 While we have proposed five key areas for future incentives to be asset management, TSO, customer service, DSM and carbon accounting, we are willing to consider other areas if the need and benefits are justified.

Cap on incentives

Draft proposals

7.66 In the draft proposals, we discussed a number of considerations that are relevant to the magnitude of the financial incentives, including the company's costs of improvement, its value to customers, and the impact of the potential penalty on a company's financial position. We suggested a cap on the financial impact of each incentive of 0.5% of MAR to ensure a balanced set of incentives and to help protect the licensee from any undue business risk. We did not see the need for an overall cap on the total level of incentive payments. In contrast to the existing cap of 1% of a company's revenue, the proposed lower limit is reasonable in view of the higher projected MARs for the PC5 period and the companies' desire to reduce regulatory risks. The proposed lower limit will also allow additional incentives to be developed and introduced during the PC5 period in other key areas.

Responses

7.67 ADDC considered the cap of 0.50% of MAR to be too high for supply-related incentives and too low for distribution-related incentives. It further suggested an incentive regime that involves financial bonuses only (with no penalties) and where the bonus should be proportional to the desired outcome.

7.68 TRANSCO had no objection to the proposed cap of 0.5% of MAR for any incentive and recognised the balance that needs to be struck between incentive and MAR. AADC and ADSSC did not comment on the proposed cap.

Assessment

7.69 We note licensees' support for the proposed cap on individual incentives.

7.70 In relation to ADDC's comments, we have discussed in detail the issues relating to the separation of controls between distribution and supply in earlier consultation papers and earlier sections of this paper. Separate controls, and hence separate incentive caps, are not justified and appropriate at present. In any case, the proposed cap takes account of the potential financial impact on the licensees.

7.71 Further, we consider the proposed symmetric incentive schemes (involving both bonus and penalty) to be a more appropriate and balanced arrangement between licensees (and their shareholders) and their customers (and Government as the subsidy provider) than penalty-only schemes.

Final Proposals

7.72 In these final proposals, we have adopted a cap of 0.50% of company's MAR (excluding pass-through costs) for each incentive as per the draft proposals.

Design of incentive schemes

Performance targets

7.73 Based on the above discussions and proposals, **Table 7.2** lists the proposed targets for all incentives which will be incorporated into the network companies' licences at this price control review.

7.74 As explained in the draft proposals, performance would be assessed against targets as follows:

(a) The targets for information incentives are in the form of a specific date by which an information submission is required. A timely submission will result in a lump sum financial reward. A delay beyond the target date will trigger a financial penalty on a monthly basis.

(b) The timely delivery of a DSM strategy and action plan by the target date will be rewarded by a one-time lump sum financial bonus and a delay will result in a lump-sum penalty each year until the submission is delivered.

(c) In the case of availability, security and service quality incentives, the performance target for a year is generally based on the company's actual performance in the preceding year as verified by the TA as follows:

(i) For the existing incentives, the company's actual performance in 2013 would be verified under the PC4 arrangement and can be used to set the target for 2014.

(ii) For new incentives or significantly modified existing incentives where the actual performance in the preceding year was not measured according to the new or modified definitions, 2015 will be the first year when the performance will be subject to incentives and the performance in 2014 will be verified by the TA to set the target for 2015.

(d) There are however incentives where performance targets are proposed in absolute terms rather than based on the previous year performance. Such incentives can be introduced from the first year of the PC5 period (ie, 2014).

(e) For a number of incentives, we have proposed a deadband for performance where a company will not be subject to any bonus or penalty.

Table 7.2: Performance targets for PC5 incentives – final proposals

	Target / deadband	First year of performance against incentive
Availability, security and service quality (Annex C)		
Water quality	4.6-4.8 (deadband)	2014
Transmission system availability	E: 97.5%-98.5% (deadband) W: 96%-97% (deadband)	2014
Removal of timed water supply	Previous year performance	2015
Interface metering	90% (both water and electricity)	2014
Distribution losses	Previous year performance	2015
Security of supply	Previous year performance	2016
SAIDI	Previous year performance	2014
SAIFI	Previous year performance	2014
Energy lost	Bonus: 0 - 0.00025158% of total annual energy Penalty: above 0.00025158% of total annual energy:	2014
Biosolids reuse	Bonus: 75%, 50%, 25%, 0% Penalty: Previous year performance – 10 percentage points	2015
Information (Annex D)		
SBAs (including PCRs as per new RAGs)	30 April	2014
AIS	31 October	2014
End-use efficiency		
DSM strategy and action plan	31 December	2014

Operation of incentive schemes

7.75 As explained in the draft proposals, the incentive schemes for PC5 will operate in the same manner as the current price controls. The financial reward or penalty will be provided via the "Q" term in the MAR formula to adjust the company's allowed revenue

upward or downward. As at present and shown in **Table 7.3**, MAR will be adjusted via the Q term in the year "t" for performance on incentive indicators based on:

(a) for information incentives:

(i) company's information submission (except for AIS) in year "t-1"; or

(ii) company's AIS in year "t-2";

(b) for all other incentives: company's performance in year "t-2";

Table 7.3: Operation of incentive schemes

Year	t-2	t-1	t
SBA submission incentives		Submission	Q applies to MAR
AIS submission incentive	Submission		Q applies to MAR
Performance indicator incentives	Performance	Verification	Q applies to MAR

7.76 **Annexes C** and **D** set out the methods and formulae to assess a company's performance and calculate the relevant performance indicator and the precise formula to determine the Q term for each proposed incentive. These Q formulae (which remain the same as suggested in the draft proposals) are structured so that the Q term will automatically take a positive sign if a reward is required (i.e. actual performance is better than the target) and a negative sign if a penalty is required (i.e. actual performance is below the target). In general, the formula for any Q term relating to an incentive is structured as follows:

Q = Incentive rate x Performance deviation from target

7.77 To formalise the existing practice, the Q formula for information incentives will also involve an adjustment for the proportion of the TA's previous year recommendations not completed

7.78 The incentive rate is expressed in AED per each 1% or 1 percentage point deviation in performance from the target or, for information incentives, in AED per month. In response to an AADC query, we clarify that the incentive also applies to any performance deviation that involves a fractional percentage or percentage point; the amount of incentive will be calculated using the full performance deviation including the fractional part.

Incentive rates

7.79 As shown in **Table 7.4**, incentive rates for all indicators proposed for introduction at this price control review have been calculated using the same approach as used in the draft proposals and similarly to the approach used at previous price control reviews, That is:

(a) First, determine the total amount "at risk" for each incentive as 0.50% of average forecast MAR (excluding pass-through costs) for PC5.

(b) Second, the incentive rate for each indicator is derived by dividing the amount calculated above by a scheme calibration assumption given below:

(i) Information submission incentives: 6 months delay

(ii) Water quality incentive: 4% deviation

(iii) Removal of timed water supply incentive: 5 percentage points deviation

(iv) Transmission system availability incentives: 2% improvement on the target performance (for both water and electricity);

(v) Interface metering incentives: 10 percentage points (for both water and electricity); and

(vi) All other incentives: 20% improvement on the target performance.

7.80 Note that the above assumptions are purely hypothetical and used only for the purpose of the initial calibration of the scheme and play no further role in the implementation of the incentive schemes.

Table 7.4: PC5 incentive rates – final proposals

		AADC (E)	AADC (W)	ADDC (E)	ADDC (W)	TRANSCO (E)	TRANSCO (W)	ADSSC
Average PC5 MAR	AED million	1,661	496	3,426	973	4,731	2,697	2,285
Amount at stake	AED million	8.30	2.48	17.13	4.87	23.66	13.48	11.43
Incentive rate for water quality	AED / 1%		620,000		1,217,000		3,371,000	
Incentive rate for timed water supply removal	AED / 1 ppt		496,000		973,000			
Incentive rate for transmission availability	AED / 1%					11,828,000	6,742,000	
Incentive rate for interface metering	AED / 1 ppt	830,000	248,000	1,713,000	487,000	2,366,000	1,348,000	
Incentive rate for all other indicators	AED / 1%	415,000	124,000	856,000	243,000	1,183,000	674,000	571,000
Incentive rate for information	AED / month	1,384,000	414,000	2,855,000	811,000	3,943,000	2,247,000	1,904,000
Incentive rate for DSM strategy and action plan	AED million	8.30	2.48	17.13	4.87			

Notes: "ppt" stands for percentage point

7.81 The new incentive rates proposed for PC5 in these draft proposals will take effect as follows:

(a) Existing indicators will continue to be subject to the existing incentive rates as long as the performance year (for availability, security and service quality indicators) or submission year (for information timeliness incentives) falls within the PC4 period (i.e. up to 2013). These indicators will however be subject to the new PC5 incentive rates as calculated in **Table 7.4** above when the performance or submission year falls during the PC5 period (i.e. 2014-2017).

(b) The new incentives or indicators will take effect from the first performance or submission year (2014 or 2015 or 2016) as listed in **Table 7.2** above and their incentive rates will apply to adjust MAR in 2015 or later as per the timeline shown in **Table 7.3**.

Annex A: Updating RAVs

Introduction

A.1 This **Annex A** to the final proposals for PC5 sets out the updating of the opening 2014 RAVs projected at the last price control reviews taking account of:

(a) additional efficient PC3 capex over and above the provisional PC3 capex allowances in PC3 controls for all the four network companies (AADC, ADDC, ADSSC and TRANSCO);

(b) additional efficient PC4 capex over and above the provisional PC4 capex allowances in PC4 controls for all the four network companies; and

(c) provisional PC5 capex allowances being made at this review for all the four companies.

A.2 ***Annexes A.1 through A.7*** show how this has been done for each of the electricity and water businesses of AADC, ADDC, TRANSCO, and ADSSC. The format of tables and calculations in each of these Annexes is standardised. Annex A to the PC5 draft proposals explains these calculations with reference to "Line" numbers used in these Annexes and in the ***PC5 Financial Model*** (a Microsoft Excel based computer model developed by the Bureau to carry out PC5 calculations). The only difference in the format and description from the PC5 draft proposals is that the PC5 period now refers to the five-year period (2014-2017) for all the companies in these annexes.

A.3 The results of these calculations are summarised and discussed in Sections 5 and 6 of the document. Various assumptions and inputs used in these calculations (such as, UAE CPI, actual, efficient and provisional capex, efficiency scores, depreciation profile, and cost of capital) are described in Sections 2 through 5 of the document.

A.4 In this Annex A:

(a) **PC3 period** refers to 2006-2009 for AADC, ADDC and TRANSCO and to 2005-2009 for ADSSC. In the case of ADSSC, 2005 covers only the second half of 2005.

(b) **PC4 period** refers to 2010-2013 but PC4 capex to be treated at this review includes capex relating to only 2010-2011.

(c) **PC5 period** refers to 2014-2017 for all businesses.

Annex A.1: AADC electricity – Updating RAV

Updating 2014 Opening RAV for PC3 and PC4 Efficient Capex

Line No.

	UAE CPI Assumptions	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
1	**CPI (2000 = 100) used in calculations**	**77.54**	**82.34**	**89.99**	**100.00**	**112.30**	**114.00**	**115.00**	**116.01**	**116.78**	**118.00**
						Assumed in PC4	113.07				

			PC3				PC4		
	Additional Efficient PC3 and PC4 Capex to be allowed at this Review		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
2	Actual PC3 and PC4 capex	AEDm, nominal prices	504.86	405.79	795.42	1,285.42	1,172.14	410.41	-
3	Applied capex efficiency factor	%	96.22%	96.22%	96.22%	96.22%	96.22%	96.22%	96.22%
4	Efficient PC3 and PC4 capex	AEDm, nominal prices	485.77	390.45	765.35	1,236.83	1,127.84	394.89	-
5	Efficient PC3 and PC4 capex	AEDm, 2014 prices	696.14	512.00	903.11	1,299.61	1,167.41	405.20	-
6	Provisional PC3 and PC4 capex	AEDm, PC3 2006 / PC4 2010 p	305.00	305.00	305.00	305.00	900.00	900.00	-
7	Provisional PC3 and PC4 capex	AEDm, 2014 prices	437.08	437.08	437.08	437.08	939.24	939.24	-
8	**Additional efficient PC3 and PC4 capex to be allowed at PC5**	**AEDm, 2014 prices**	**259.06**	**74.91**	**466.03**	**862.53**	**228.17**	**-534.05**	**0.00**

	Depreciation foregone on Additional Efficient PC3 and PC4 Capex		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
9	Assumed average asset life for new investment	years 30								
10	Additional efficient PC3 and PC4 capex to be allowed at PC4	AEDm, 2014 prices	259.06	74.91	466.03	862.53	228.17	-534.05	0.00	
11	**Depreciation on additional efficient PC3 and PC4 capex** (half-year depreciation for the first year of each annual capex)	AEDm, 2014 prices	**4.32**	**9.88**	**18.90**	**41.04**	**59.22**	**54.12**	**45.22**	**45.22**

	Return on Capital foregone on Additional Efficient PC3 and PC4 Capex		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
12	Additional efficient PC3 and PC4 capex - Opening value	AEDm, 2014 prices	0.00	254.74	319.77	766.90	1,588.38	1,757.33	1,169.16	1,123.94
13	Additional efficient PC3 and PC4 capex	AEDm, 2014 prices	259.06	74.91	466.03	862.53	228.17	-534.05	0.00	
14	Depreciation on additional efficient PC3 and PC4 capex	AEDm, 2014 prices	4.32	9.88	18.90	41.04	59.22	54.12	45.22	45.22
15	Additional efficient PC3 and PC4 capex - Closing value	AEDm, 2014 prices	254.74	319.77	766.90	1,588.38	1,757.33	1,169.16	1,123.94	**1,078.72**
16	Average of Opening and Closing values	AEDm, 2014 prices	127.37	287.26	543.33	1,177.64	1,672.85	1,463.25	1,146.55	1,101.33
17	Cost of capital (real)	%	5.50%	5.50%	5.50%	5.50%	4.50%	4.50%	4.50%	4.50%
18	**Return on capital foregone**	AEDm, 2014 prices	**7.01**	**15.80**	**29.88**	**64.77**	**75.28**	**65.85**	**51.59**	**49.56**

	Financing Costs foregone on Additional Efficient PC3 and PC4 Capex		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
19	Depreciation foregone	AEDm, 2014 prices	4.32	9.88	18.90	41.04	59.22	54.12	45.22	45.22
20	Return on capital foregone	AEDm, 2014 prices	7.01	15.80	29.88	64.77	75.28	65.85	51.59	49.56
21	Total financing costs foregone	AEDm, 2014 prices	11.32	25.68	48.78	105.81	134.50	119.97	96.82	94.78
22	Years from year mid point to 1 Jan 2010 (PC3 capex)	years	3.50	2.50	1.50	0.50				
23	NPV @ 1 Jan 2010 of financing costs foregone (PC3 capex)	AEDm, 2014 prices	13.66	29.36	52.86	108.68				
24	Accumulated NPV (@ 1 Jan 2010) of financing costs foregone (PC3 capex)	AEDm, 2014 prices				204.56				
25	Years from year mid point to 1 Jan 2014 (PC3 and PC4 capex)	AEDm, 2014 prices				4.50	3.50	2.50	1.50	0.50
26	NPV @ 1 Jan 2014 of financing costs foregone (PC3 and PC4 capex)	AEDm, 2014 prices				243.95	156.90	133.92	103.42	96.89
27	**Accumulated NPV (@ 1 Jan 2014) of financing costs foregone**	**AEDm, 2014 prices**								**735.08**

	Updated 2010 Opening RAV (including Additional Efficient PC2 Capex)		**2013**
28	Initial Opening 2014 RAV (with provisional PC3 and PC4 capex)	AEDm, 2010 prices	7,429.92
29	Initial Opening 2014 RAV (with provisional PC3 and PC4 capex)	AEDm, 2014 prices	7,753.88
30	Add: Additional efficient PC3 and PC4 capex - Closing value @ 31 Dec 2013	AEDm, 2014 prices	1,078.72
31	**Updated Opening 2014 RAV including Additional Efficient PC3 and PC4 capex**	**AEDm, 2014 prices**	**8,832.60**

Updating PC5 RAVs for PC5 Provisional Capex

	Updated PC5 RAVs including PC5 Provisional Capex		PC5				
	AEDm, 2014 prices		**2014**	**2015**	**2016**	**2017**	**2018**
32	Assumed average asset life for new investment	years 30					
33	**Opening RAV**	**AEDm, 2014 prices**	**8,832.60**	**9,030.04**	**9,204.16**	**9,354.94**	**9,482.39**
34	PC5 Provisional capex	AEDm, 2014 prices	700.00	700.00	700.00	700.00	
35	Total Depreciation on RAV and capex (excluding PC5 provisional capex)	AEDm, 2014 prices	490.89	490.89	490.89	490.89	
36	Depreciation on provisional PC5 capex (half-year depreciation for first year)	AEDm, 2014 prices	11.67	35.00	58.33	81.67	
37	**Total depreciation for PC5**	AEDm, 2014 prices	**502.55**	**525.89**	**549.22**	**572.55**	
38	**Closing RAV**	AEDm, 2014 prices	**9,030.04**	**9,204.16**	**9,354.94**	**9,482.39**	

Annex A.2: AADC water – Updating RAV

Updating 2014 Opening RAV for PC3 and PC4 Efficient Capex

Line No.

	UAE CPI Assumptions	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
1	**CPI (2000 = 100) used in calculations**	**77.54**	**82.34**	**89.99**	**100.00**	**112.30**	**114.00**	**115.00**	**116.01**	**116.78**	**118.00**
							Assumed in PC4	113.07			

			PC3				PC4		
	Additional Efficient PC3 and PC4 Capex to be allowed at this Review		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
2	Actual PC3 and PC4 capex	AEDm, nominal prices	77.66	87.72	(3.36)	246.45	421.56	114.71	-
3	Applied capex efficiency factor	%	96.19%	96.19%	96.19%	96.19%	96.19%	96.19%	96.19%
4	Efficient PC3 and PC4 capex	AEDm, nominal prices	74.70	84.38	(3.23)	237.06	405.50	110.34	-
5	Efficient PC3 and PC4 capex	AEDm, 2014 prices	107.05	110.65	(3.81)	249.10	419.73	113.22	-
6	Provisional PC3 and PC4 capex	AEDm, PC3 2006 / PC4 2010 p	153.00	153.00	153.00	153.00	130.00	130.00	-
7	Provisional PC3 and PC4 capex	AEDm, 2014 prices	219.26	219.26	219.26	219.26	135.67	135.67	-
8	**Additional efficient PC3 and PC4 capex to be allowed at PC5**	**AEDm, 2014 prices**	**-112.21**	**-108.61**	**-223.07**	**29.84**	**284.06**	**-22.45**	**0.00**

	Depreciation foregone on Additional Efficient PC3 and PC4 Capex			**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
9	Assumed average asset life for new investment	years	30								
10	Additional efficient PC3 and PC4 capex to be allowed at PC4	AEDm, 2014 prices		-112.21	-108.61	-223.07	29.84	284.06	-22.45	0.00	
11	**Depreciation on additional efficient PC3 and PC4 capex** (half-year depreciation for the first year of each annual capex)	AEDm, 2014 prices		**-1.87**	**-5.55**	**-11.08**	**-14.30**	**-9.07**	**-4.71**	**-5.08**	**-5.08**

	Return on Capital foregone on Additional Efficient PC3 and PC4 Capex		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
12	Additional efficient PC3 and PC4 capex - Opening value	AEDm, 2014 prices	0.00	-110.34	-213.40	-425.39	-381.25	-88.13	-105.87	-100.79
13	Additional efficient PC3 and PC4 capex	AEDm, 2014 prices	-112.21	-108.61	-223.07	29.84	284.06	-22.45	0.00	
14	Depreciation on additional efficient PC3 and PC4 capex	AEDm, 2014 prices	-1.87	-5.55	-11.08	-14.30	-9.07	-4.71	-5.08	-5.08
15	Additional efficient PC3 and PC4 capex - Closing value	AEDm, 2014 prices	-110.34	-213.40	-425.39	-381.25	-88.13	-105.87	-100.79	**-95.70**
16	Average of Opening and Closing values	AEDm, 2014 prices	-55.17	-161.87	-319.39	-403.32	-234.69	-97.00	-103.33	-98.25
17	Cost of capital (real)	%	5.50%	5.50%	5.50%	5.50%	4.50%	4.50%	4.50%	4.50%
18	**Return on capital foregone**	AEDm, 2014 prices	**-3.03**	**-8.90**	**-17.57**	**-22.18**	**-10.56**	**-4.36**	**-4.65**	**-4.42**

	Financing Costs foregone on Additional Efficient PC3 and PC4 Capex		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
19	Depreciation foregone	AEDm, 2014 prices	-1.87	-5.55	-11.08	-14.30	-9.07	-4.71	-5.08	-5.08
20	Return on capital foregone	AEDm, 2014 prices	-3.03	-8.90	-17.57	-22.18	-10.56	-4.36	-4.65	-4.42
21	Total financing costs foregone	AEDm, 2014 prices	-4.90	-14.45	-28.65	-36.48	-19.63	-9.07	-9.73	-9.50
22	Years from year mid point to 1 Jan 2010 (PC3 capex)	years	3.50	2.50	1.50	0.50				
23	NPV @ 1 Jan 2010 of financing costs foregone (PC3 capex)	AEDm, 2014 prices	-5.92	-16.52	-31.04	-37.47				
24	Accumulated NPV (@ 1 Jan 2010) of financing costs foregone (PC3 capex)	AEDm, 2014 prices				-90.95				
25	Years from year mid point to 1 Jan 2014 (PC3 and PC4 capex)	AEDm, 2014 prices				4.50	3.50	2.50	1.50	0.50
26	NPV @ 1 Jan 2014 of financing costs foregone (PC3 and PC4 capex)	AEDm, 2014 prices				-108.46	-22.90	-10.13	-10.40	-9.71
27	**Accumulated NPV (@ 1 Jan 2014) of financing costs foregone**	**AEDm, 2014 prices**								**-161.59**

	Updated 2010 Opening RAV (including Additional Efficient PC2 Capex)		**2013**
28	Initial Opening 2014 RAV (with provisional PC3 and PC4 capex)	AEDm, 2010 prices	2,593.79
29	Initial Opening 2014 RAV (with provisional PC3 and PC4 capex)	AEDm, 2014 prices	2,706.88
30	Add: Additional efficient PC3 and PC4 capex - Closing value @ 31 Dec 2013	AEDm, 2014 prices	(95.70)
31	**Updated Opening 2014 RAV including Additional Efficient PC3 and PC4 capex**	**AEDm, 2014 prices**	**2,611.18**

Updating PC5 RAVs for PC5 Provisional Capex

	Updated PC5 RAVs including PC5 Provisional Capex			PC5				
	AEDm, 2014 prices			**2014**	**2015**	**2016**	**2017**	**2018**
32	Assumed average asset life for new investment	years	30					
33	**Opening RAV**	**AEDm, 2014 prices**		**2,611.18**	**2,786.11**	**2,951.05**	**3,105.99**	**3,250.93**
34	PC5 Provisional capex	AEDm, 2014 prices		300.00	300.00	300.00	300.00	
35	Total Depreciation on RAV and capex (excluding PC5 provisional capex)	AEDm, 2014 prices		120.06	120.06	120.06	120.06	
36	Depreciation on provisional PC5 capex (half-year depreciation for first year)	AEDm, 2014 prices		5.00	15.00	25.00	35.00	
37	**Total depreciation for PC5**	AEDm, 2014 prices		**125.06**	**135.06**	**145.06**	**155.06**	
38	**Closing RAV**	AEDm, 2014 prices		**2,786.11**	**2,951.05**	**3,105.99**	**3,250.93**	

Annex A.3: ADDC electricity – Updating RAV

Updating 2014 Opening RAV for PC3 and PC4 Efficient Capex

Line No.

	UAE CPI Assumptions	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
1	**CPI (2000 = 100) used in calculations**	**77.54**	**82.34**	**89.99**	**100.00**	**112.30**	**114.00**	**115.00**	**116.01**	**116.78**	**118.00**
							Assumed in PC4	113.07			

			PC3				PC4		
	Additional Efficient PC3 and PC4 Capex to be allowed at this Review		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
2	Actual PC3 and PC4 capex	AEDm, nominal prices	494.24	992.98	1,392.57	2,570.15	1,674.82	2,437.45	-
3	Applied capex efficiency factor	%	96.25%	96.25%	96.25%	96.25%	96.25%	96.25%	96.25%
4	Efficient PC3 and PC4 capex	AEDm, nominal prices	475.71	955.75	1,340.34	2,473.77	1,612.02	2,346.05	-
5	Efficient PC3 and PC4 capex	AEDm, 2014 prices	681.72	1,253.28	1,581.61	2,599.33	1,668.58	2,407.25	-
6	Provisional PC3 and PC4 capex	AEDm, PC3 2006 / PC4 2010 pr	536.00	536.00	536.00	536.00	1,570.00	1,570.00	-
7	Provisional PC3 and PC4 capex	AEDm, 2014 prices	768.12	768.12	768.12	768.12	1,638.45	1,638.45	-
8	**Additional efficient PC3 and PC4 capex to be allowed at PC5**	**AEDm, 2014 prices**	**-86.40**	**485.16**	**813.48**	**1,831.21**	**30.12**	**768.79**	**0.00**

	Depreciation foregone on Additional Efficient PC3 and PC4 Capex			**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
9	Assumed average asset life for new investment	years	30								
10	Additional efficient PC3 and PC4 capex to be allowed at PC4	AEDm, 2014 prices		-86.40	485.16	813.48	1831.21	30.12	768.79	0.00	
11	**Depreciation on additional efficient PC3 and PC4 capex** (half-year depreciation for the first year of each annual capex)	AEDm, 2014 prices		**-1.44**	**5.21**	**26.85**	**70.93**	**101.95**	**115.27**	**128.08**	**128.08**

	Return on Capital foregone on Additional Efficient PC3 and PC4 Capex		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
12	Additional efficient PC3 and PC4 capex - Opening value	AEDm, 2014 prices	0.00	-84.96	394.99	1,181.62	2,941.90	2,870.08	3,523.61	3,395.53
13	Additional efficient PC3 and PC4 capex	AEDm, 2014 prices	-86.40	485.16	813.48	1,831.21	30.12	768.79	0.00	
14	Depreciation on additional efficient PC3 and PC4 capex	AEDm, 2014 prices	-1.44	5.21	26.85	70.93	101.95	115.27	128.08	128.08
15	Additional efficient PC3 and PC4 capex - Closing value	AEDm, 2014 prices	-84.96	394.99	1,181.62	2,941.90	2,870.08	3,523.61	3,395.53	**3,267.45**
16	Average of Opening and Closing values	AEDm, 2014 prices	-42.48	155.01	788.30	2,061.76	2,905.99	3,196.84	3,459.57	3,331.49
17	Cost of capital (real)	%	5.50%	5.50%	5.50%	5.50%	4.50%	4.50%	4.50%	4.50%
18	**Return on capital foregone**	AEDm, 2014 prices	**-2.34**	**8.53**	**43.36**	**113.40**	**130.77**	**143.86**	**155.68**	**149.92**

	Financing Costs foregone on Additional Efficient PC3 and PC4 Capex		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
19	Depreciation foregone	AEDm, 2014 prices	-1.44	5.21	26.85	70.93	101.95	115.27	128.08	128.08
20	Return on capital foregone	AEDm, 2014 prices	-2.34	8.53	43.36	113.40	130.77	143.86	155.68	149.92
21	Total financing costs foregone	AEDm, 2014 prices	-3.78	13.73	70.21	184.32	232.72	259.12	283.76	278.00
22	Years from year mid point to 1 Jan 2010 (PC3 capex)	years	3.50	2.50	1.50	0.50				
23	NPV @ 1 Jan 2010 of financing costs foregone (PC3 capex)	AEDm, 2014 prices	-4.55	15.70	76.08	189.33				
24	Accumulated NPV (@ 1 Jan 2010) of financing costs foregone (PC3 capex)	AEDm, 2014 prices				276.55				
25	Years from year mid point to 1 Jan 2014 (PC3 and PC4 capex)	AEDm, 2014 prices				4.50	3.50	2.50	1.50	0.50
26	NPV @ 1 Jan 2014 of financing costs foregone (PC3 and PC4 capex)	AEDm, 2014 prices				329.79	271.48	289.27	303.13	284.18
27	**Accumulated NPV (@ 1 Jan 2014) of financing costs foregone**	**AEDm, 2014 prices**								**1477.84**

	Updated 2010 Opening RAV (including Additional Efficient PC2 Capex)		**2013**
28	Initial Opening 2014 RAV (with provisional PC3 and PC4 capex)	AEDm, 2010 prices	13,182.25
29	Initial Opening 2014 RAV (with provisional PC3 and PC4 capex)	AEDm, 2014 prices	13,757.02
30	Add: Additional efficient PC3 and PC4 capex - Closing value @ 31 Dec 2013	AEDm, 2014 prices	3,267.45
31	**Updated Opening 2014 RAV including Additional Efficient PC3 and PC4 capex**	**AEDm, 2014 prices**	**17,024.46**

Updating PC5 RAVs for PC5 Provisional Capex

	Updated PC5 RAVs including PC5 Provisional Capex			PC5				
	AEDm, 2014 prices			**2014**	**2015**	**2016**	**2017**	**2018**
32	Assumed average asset life for new investment	years	30					
33	**Opening RAV**	**AEDm, 2014 prices**		**17,024.46**	**18,805.78**	**20,497.09**	**22,098.41**	**23,609.73**
34	PC5 Provisional capex	AEDm, 2014 prices		2,700.00	2,700.00	2,700.00	2,700.00	
35	Total Depreciation on RAV and capex (excluding PC5 provisional capex)	AEDm, 2014 prices		873.68	873.68	873.68	873.68	
36	Depreciation on provisional PC5 capex (half-year depreciation for first year)	AEDm, 2014 prices		45.00	135.00	225.00	315.00	
37	**Total depreciation for PC5**	AEDm, 2014 prices		**918.68**	**1,008.68**	**1,098.68**	**1,188.68**	
38	**Closing RAV**	AEDm, 2014 prices		**18,805.78**	**20,497.09**	**22,098.41**	**23,609.73**	

Annex A.4: ADDC water – Updating RAV

Updating 2014 Opening RAV for PC3 and PC4 Efficient Capex

Line No.

	UAE CPI Assumptions	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
1	**CPI (2000 = 100) used in calculations**	**77.54**	**82.34**	**89.99**	**100.00**	**112.30**	**114.00**	**115.00**	**116.01**	**116.78**	**118.00**
						Assumed in PC4	113.07				

				PC3			PC4			
	Additional Efficient PC3 and PC4 Capex to be allowed at this Review		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
2	Actual PC3 and PC4 capex	AEDm, nominal prices	221.92	278.42	526.30	345.55	610.24	503.75	-
3	Applied capex efficiency factor	%	95.54%	95.54%	95.54%	95.54%	95.54%	95.54%	95.54%
4	Efficient PC3 and PC4 capex	AEDm, nominal prices	212.03	266.00	502.83	330.14	583.02	481.29	-
5	Efficient PC3 and PC4 capex	AEDm, 2014 prices	303.85	348.81	593.34	346.90	603.48	493.84	-
6	Provisional PC3 and PC4 capex	AEDm, PC3 2006 / PC4 2010 p	315.00	315.00	315.00	315.00	590.00	590.00	-
7	Provisional PC3 and PC4 capex	AEDm, 2014 prices	451.42	451.42	451.42	451.42	615.72	615.72	-
8	**Additional efficient PC3 and PC4 capex to be allowed at PC5**	**AEDm, 2014 prices**	**-147.57**	**-102.61**	**141.92**	**-104.52**	**-12.25**	**-121.88**	**0.00**

	Depreciation foregone on Additional Efficient PC3 and PC4 Capex			**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
9	Assumed average asset life for new investment	years	30								
10	Additional efficient PC3 and PC4 capex to be allowed at PC4	AEDm, 2014 prices		-147.57	-102.61	141.92	-104.52	-12.25	-121.88	0.00	
11	**Depreciation on additional efficient PC3 and PC4 capex** (half-year depreciation for the first year of each annual capex)	AEDm, 2014 prices		**-2.46**	**-6.63**	**-5.97**	**-5.35**	**-7.30**	**-9.53**	**-11.56**	**-11.56**

	Return on Capital foregone on Additional Efficient PC3 and PC4 Capex		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
12	Additional efficient PC3 and PC4 capex - Opening value	AEDm, 2014 prices	0.00	-145.11	-241.09	-93.19	-192.36	-197.31	-309.66	-298.10
13	Additional efficient PC3 and PC4 capex	AEDm, 2014 prices	-147.57	-102.61	141.92	-104.52	-12.25	-121.88	0.00	
14	Depreciation on additional efficient PC3 and PC4 capex	AEDm, 2014 prices	-2.46	-6.63	-5.97	-5.35	-7.30	-9.53	-11.56	-11.56
15	Additional efficient PC3 and PC4 capex - Closing value	AEDm, 2014 prices	-145.11	-241.09	-93.19	-192.36	-197.31	-309.66	-298.10	**-286.54**
16	Average of Opening and Closing values	AEDm, 2014 prices	-72.55	-193.10	-167.14	-142.78	-194.84	-253.49	-303.88	-292.32
17	Cost of capital (real)	%	5.50%	5.50%	5.50%	5.50%	4.50%	4.50%	4.50%	4.50%
18	**Return on capital foregone**	AEDm, 2014 prices	**-3.99**	**-10.62**	**-9.19**	**-7.85**	**-8.77**	**-11.41**	**-13.67**	**-13.15**

	Financing Costs foregone on Additional Efficient PC3 and PC4 Capex		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
19	Depreciation foregone	AEDm, 2014 prices	-2.46	-6.63	-5.97	-5.35	-7.30	-9.53	-11.56	-11.56
20	Return on capital foregone	AEDm, 2014 prices	-3.99	-10.62	-9.19	-7.85	-8.77	-11.41	-13.67	-13.15
21	Total financing costs foregone	AEDm, 2014 prices	-6.45	-17.25	-15.17	-13.20	-16.06	-20.94	-25.24	-24.72
22	Years from year mid point to 1 Jan 2010 (PC3 capex)	years	3.50	2.50	1.50	0.50				
23	NPV @ 1 Jan 2010 of financing costs foregone (PC3 capex)	AEDm, 2014 prices	-7.78	-19.72	-16.43	-13.56				
24	Accumulated NPV (@ 1 Jan 2010) of financing costs foregone (PC3 capex)	AEDm, 2014 prices				-57.50				
25	Years from year mid point to 1 Jan 2014 (PC3 and PC4 capex)	AEDm, 2014 prices				4.50	3.50	2.50	1.50	0.50
26	NPV @ 1 Jan 2014 of financing costs foregone (PC3 and PC4 capex)	AEDm, 2014 prices				-68.56	-18.74	-23.37	-26.96	-25.27
27	**Accumulated NPV (@ 1 Jan 2014) of financing costs foregone**	**AEDm, 2014 prices**								**-162.91**

	Updated 2010 Opening RAV (including Additional Efficient PC2 Capex)		**2013**
28	Initial Opening 2014 RAV (with provisional PC3 and PC4 capex)	AEDm, 2010 prices	5,148.51
29	Initial Opening 2014 RAV (with provisional PC3 and PC4 capex)	AEDm, 2014 prices	5,373.00
30	Add: Additional efficient PC3 and PC4 capex - Closing value @ 31 Dec 2013	AEDm, 2014 prices	(286.54)
31	**Updated Opening 2014 RAV including Additional Efficient PC3 and PC4 capex**	**AEDm, 2014 prices**	**5,086.46**

Updating PC5 RAVs for PC5 Provisional Capex

	Updated PC5 RAVs including PC5 Provisional Capex			PC5				
	AEDm, 2014 prices			**2014**	**2015**	**2016**	**2017**	**2018**
32	Assumed average asset life for new investment	years	30					
33	**Opening RAV**	**AEDm, 2014 prices**		**5,086.46**	**5,457.78**	**5,809.11**	**6,140.43**	**6,451.75**
34	PC5 Provisional capex	AEDm, 2014 prices		600.00	600.00	600.00	600.00	
35	Total Depreciation on RAV and capex (excluding PC5 provisional capex)	AEDm, 2014 prices		218.68	218.68	218.68	218.68	
36	Depreciation on provisional PC5 capex (half-year depreciation for first year)	AEDm, 2014 prices		10.00	30.00	50.00	70.00	
37	**Total depreciation for PC5**	AEDm, 2014 prices		**228.68**	**248.68**	**268.68**	**288.68**	
38	**Closing RAV**	AEDm, 2014 prices		**5,457.78**	**5,809.11**	**6,140.43**	**6,451.75**	

Annex A.5: TRANSCO electricity – Updating RAV

Updating 2014 Opening RAV for PC3 and PC4 Efficient Capex

Line No.

	UAE CPI Assumptions	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
1	**CPI (2000 = 100) used in calculations**	**77.54**	**82.34**	**89.99**	**100.00**	**112.30**	**114.00**	**115.00**	**116.01**	**116.78**	**118.00**
						Assumed in PC4	113.07				

				PC3			PC4		
	Additional Efficient PC3 and PC4 Capex to be allowed at this Review		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
2	Actual PC3 and PC4 capex	AEDm, nominal prices	1,376.69	2,818.66	4,622.32	2,716.96	2,366.18	3,257.24	-
3	Applied capex efficiency factor	%	95.65%	95.65%	95.65%	95.65%	95.65%	95.65%	95.65%
4	Efficient PC3 and PC4 capex	AEDm, nominal prices	1,316.80	2,696.04	4,421.25	2,598.77	2,263.25	3,115.55	-
5	Efficient PC3 and PC4 capex	AEDm, 2014 prices	1,887.06	3,535.35	5,217.08	2,730.68	2,342.67	3,196.83	-
6	Provisional PC3 and PC4 capex	AEDm, PC3 2006 / PC4 2010 pr	1,200.00	1,200.00	1,200.00	1,200.00	5,230.00	5,230.00	-
7	Provisional PC3 and PC4 capex	AEDm, 2014 prices	1,719.68	1,719.68	1,719.68	1,719.68	5,458.03	5,458.03	-
8	**Additional efficient PC3 and PC4 capex to be allowed at PC5**	**AEDm, 2014 prices**	**167.38**	**1,815.67**	**3,497.40**	**1,011.00**	**-3,115.37**	**-2,261.21**	**0.00**

	Depreciation foregone on Additional Efficient PC3 and PC4 Capex			**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
9	Assumed average asset life for new investment	years	30								
10	Additional efficient PC3 and PC4 capex to be allowed at PC4	AEDm, 2014 prices		167.38	1815.67	3497.40	1011.00	-3115.37	-2261.21	0.00	
11	**Depreciation on additional efficient PC3 and PC4 capex** (half-year depreciation for the first year of each annual capex)	AEDm, 2014 prices		**2.79**	**35.84**	**124.39**	**199.53**	**164.46**	**74.85**	**37.16**	**37.16**

	Return on Capital foregone on Additional Efficient PC3 and PC4 Capex		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
12	Additional efficient PC3 and PC4 capex - Opening value	AEDm, 2014 prices	0.00	164.59	1,944.42	5,317.43	6,128.90	2,849.07	513.01	475.85
13	Additional efficient PC3 and PC4 capex	AEDm, 2014 prices	167.38	1,815.67	3,497.40	1,011.00	-3,115.37	-2,261.21	0.00	
14	Depreciation on additional efficient PC3 and PC4 capex	AEDm, 2014 prices	2.79	35.84	124.39	199.53	164.46	74.85	37.16	37.16
15	Additional efficient PC3 and PC4 capex - Closing value	AEDm, 2014 prices	164.59	1,944.42	5,317.43	6,128.90	2,849.07	513.01	475.85	**438.69**
16	Average of Opening and Closing values	AEDm, 2014 prices	82.30	1,054.50	3,630.92	5,723.16	4,488.98	1,681.04	494.43	457.27
17	Cost of capital (real)	%	5.00%	5.00%	5.00%	5.00%	4.50%	4.50%	4.50%	4.50%
18	**Return on capital foregone**	AEDm, 2014 prices	**4.11**	**52.73**	**181.55**	**286.16**	**202.00**	**75.65**	**22.25**	**20.58**

	Financing Costs foregone on Additional Efficient PC3 and PC4 Capex		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
19	Depreciation foregone	AEDm, 2014 prices	2.79	35.84	124.39	199.53	164.46	74.85	37.16	37.16
20	Return on capital foregone	AEDm, 2014 prices	4.11	52.73	181.55	286.16	202.00	75.65	22.25	20.58
21	Total financing costs foregone	AEDm, 2014 prices	6.90	88.57	305.94	485.69	366.46	150.50	59.41	57.74
22	Years from year mid point to 1 Jan 2010 (PC3 capex)	years	3.50	2.50	1.50	0.50				
23	NPV @ 1 Jan 2010 of financing costs foregone (PC3 capex)	AEDm, 2014 prices	8.19	100.06	329.17	497.68				
24	Accumulated NPV (@ 1 Jan 2010) of financing costs foregone (PC3 capex)	AEDm, 2014 prices				935.10				
25	Years from year mid point to 1 Jan 2014 (PC3 and PC4 capex)	AEDm, 2014 prices				4.50	3.50	2.50	1.50	0.50
26	NPV @ 1 Jan 2014 of financing costs foregone (PC3 and PC4 capex)	AEDm, 2014 prices				1,115.12	427.50	168.00	63.47	59.02
27	**Accumulated NPV (@ 1 Jan 2014) of financing costs foregone**	**AEDm, 2014 prices**								**1833.12**

	Updated 2010 Opening RAV (including Additional Efficient PC2 Capex)		**2013**
28	Initial Opening 2014 RAV (with provisional PC3 and PC4 capex)	AEDm, 2010 prices	34,860.92
29	Initial Opening 2014 RAV (with provisional PC3 and PC4 capex)	AEDm, 2014 prices	36,380.90
30	Add: Additional efficient PC3 and PC4 capex - Closing value @ 31 Dec 2013	AEDm, 2014 prices	438.69
31	**Updated Opening 2014 RAV including Additional Efficient PC3 and PC4 capex**	**AEDm, 2014 prices**	**36,823.71**

Note to Row 31: Opening 2014 RAV has also been adjusted to include 2014 opening asset value of TRANSCO's unlicensed dedicated activities amounting to: AEDm, 2014 prices 4.12

Updating PC5 RAVs for PC5 Provisional Capex

				PC5			
	Updated PC5 RAVs including PC5 Provisional Capex						
	AEDm, 2014 prices			**2014**	**2015**	**2016**	**2017**	**2018**
32	Assumed average asset life for new investment	years	30					
33	**Opening RAV**	**AEDm, 2014 prices**		**36,823.71**	**37,437.22**	**37,974.07**	**38,434.25**	**38,817.76**
34	PC5 Provisional capex	AEDm, 2014 prices		2,300.00	2,300.00	2,300.00	2,300.00	
35	Total Depreciation on RAV and capex (excluding PC5 provisional capex)	AEDm, 2014 prices		1,648.15	1,648.15	1,648.15	1,648.15	
36	Depreciation on provisional PC5 capex (half-year depreciation for first year)	AEDm, 2014 prices		38.33	115.00	191.67	268.33	
37	**Total depreciation for PC5**	AEDm, 2014 prices		**1,686.49**	**1,763.15**	**1,839.82**	**1,916.49**	
38	**Closing RAV**	AEDm, 2014 prices		**37,437.22**	**37,974.07**	**38,434.25**	**38,817.76**	

Annex A.6: TRANSCO water – Updating RAV

Updating 2014 Opening RAV for PC3 and PC4 Efficient Capex

Line No.

	UAE CPI Assumptions	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
1	**CPI (2000 = 100) used in calculations**	**77.54**	**82.34**	**89.99**	**100.00**	**112.30**	**114.00**	**115.00**	**116.01**	**116.78**	**118.00**
						Assumed in PC4	113.07				

				PC3			PC4		
	Additional Efficient PC3 and PC4 Capex to be allowed at this Review		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
2	Actual PC3 and PC4 capex	AEDm, nominal prices	573.74	720.08	2,227.33	2,405.95	1,526.75	1,721.56	-
3	Applied capex efficiency factor	%	96.57%	96.57%	96.57%	96.57%	96.57%	96.57%	96.57%
4	Efficient PC3 and PC4 capex	AEDm, nominal prices	554.06	695.38	2,150.93	2,323.43	1,474.38	1,662.51	-
5	Efficient PC3 and PC4 capex	AEDm, 2014 prices	794.00	911.86	2,538.10	2,441.36	1,526.12	1,705.88	-
6	Provisional PC3 and PC4 capex	AEDm, PC3 2006 / PC4 2010 p	750.00	750.00	750.00	750.00	2,530.00	2,530.00	-
7	Provisional PC3 and PC4 capex	AEDm, 2014 prices	1,074.80	1,074.80	1,074.80	1,074.80	2,640.31	2,640.31	-
8	**Additional efficient PC3 and PC4 capex to be allowed at PC5**	**AEDm, 2014 prices**	**-280.80**	**-162.94**	**1,463.30**	**1,366.56**	**-1,114.19**	**-934.43**	**0.00**

	Depreciation foregone on Additional Efficient PC3 and PC4 Capex		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
9	Assumed average asset life for new investment	years 30								
10	Additional efficient PC3 and PC4 capex to be allowed at PC4	AEDm, 2014 prices	-280.80	-162.94	1463.30	1366.56	-1114.19	-934.43	0.00	
11	**Depreciation on additional efficient PC3 and PC4 capex** (half-year depreciation for the first year of each annual capex)	AEDm, 2014 prices	**-4.68**	**-12.08**	**9.60**	**56.76**	**60.97**	**26.82**	**11.25**	**11.25**

	Return on Capital foregone on Additional Efficient PC3 and PC4 Capex		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
12	Additional efficient PC3 and PC4 capex - Opening value	AEDm, 2014 prices	0.00	-276.12	-426.98	1,026.72	2,336.52	1,161.35	200.10	188.85
13	Additional efficient PC3 and PC4 capex	AEDm, 2014 prices	-280.80	-162.94	1,463.30	1,366.56	-1,114.19	-934.43	0.00	
14	Depreciation on additional efficient PC3 and PC4 capex	AEDm, 2014 prices	-4.68	-12.08	9.60	56.76	60.97	26.82	11.25	11.25
15	Additional efficient PC3 and PC4 capex - Closing value	AEDm, 2014 prices	-276.12	-426.98	1,026.72	2,336.52	1,161.35	200.10	188.85	**177.60**
16	Average of Opening and Closing values	AEDm, 2014 prices	-138.06	-351.55	299.87	1,681.62	1,748.93	680.73	194.48	183.23
17	Cost of capital (real)	%	5.00%	5.00%	5.00%	5.00%	4.50%	4.50%	4.50%	4.50%
18	**Return on capital foregone**	AEDm, 2014 prices	**-6.90**	**-17.58**	**14.99**	**84.08**	**78.70**	**30.63**	**8.75**	**8.25**

	Financing Costs foregone on Additional Efficient PC3 and PC4 Capex		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
19	Depreciation foregone	AEDm, 2014 prices	-4.68	-12.08	9.60	56.76	60.97	26.82	11.25	11.25
20	Return on capital foregone	AEDm, 2014 prices	-6.90	-17.58	14.99	84.08	78.70	30.63	8.75	8.25
21	Total financing costs foregone	AEDm, 2014 prices	-11.58	-29.65	24.59	140.84	139.67	57.46	20.00	19.50
22	Years from year mid point to 1 Jan 2010 (PC3 capex)	years	3.50	2.50	1.50	0.50				
23	NPV @ 1 Jan 2010 of financing costs foregone (PC3 capex)	AEDm, 2014 prices	-13.74	-33.50	26.46	144.32				
24	Accumulated NPV (@ 1 Jan 2010) of financing costs foregone (PC3 capex)	AEDm, 2014 prices				123.54				
25	Years from year mid point to 1 Jan 2014 (PC3 and PC4 capex)	AEDm, 2014 prices				4.50	3.50	2.50	1.50	0.50
26	NPV @ 1 Jan 2014 of financing costs foregone (PC3 and PC4 capex)	AEDm, 2014 prices				147.32	162.93	64.14	21.37	19.93
27	**Accumulated NPV (@ 1 Jan 2014) of financing costs foregone**	**AEDm, 2014 prices**								**415.69**

	Updated 2010 Opening RAV (including Additional Efficient PC2 Capex)		**2013**
28	Initial Opening 2014 RAV (with provisional PC3 and PC4 capex)	AEDm, 2010 prices	17,713.68
29	Initial Opening 2014 RAV (with provisional PC3 and PC4 capex)	AEDm, 2014 prices	18,486.02
30	Add: Additional efficient PC3 and PC4 capex - Closing value @ 31 Dec 2013	AEDm, 2014 prices	177.60
31	**Updated Opening 2014 RAV including Additional Efficient PC3 and PC4 capex**	**AEDm, 2014 prices**	**18,717.23**

Note to Row 31: Opening 2014 RAV has also been adjusted to include 2014 opening asset value of TRANSCO's unlicensed dedicated activities amounting to: AEDm, 2014 prices 53.61

Updating PC5 RAVs for PC5 Provisional Capex

				PC5			
	Updated PC5 RAVs including PC5 Provisional Capex						
	AEDm, 2014 prices		**2014**	**2015**	**2016**	**2017**	**2018**
32	Assumed average asset life for new investment	years 30					
33	**Opening RAV**	**AEDm, 2014 prices**	**18,717.23**	**19,528.77**	**20,280.31**	**20,971.84**	**21,794.95**
34	PC5 Provisional capex	AEDm, 2014 prices	1,800.00	1,800.00	1,800.00	1,800.00	
35	Total Depreciation on RAV and capex (excluding PC5 provisional capex)	AEDm, 2014 prices	958.46	958.46	958.46	766.90	
36	Depreciation on provisional PC5 capex (half-year depreciation for first year)	AEDm, 2014 prices	30.00	90.00	150.00	210.00	
37	**Total depreciation for PC5**	AEDm, 2014 prices	**988.46**	**1,048.46**	**1,108.46**	**976.90**	
38	**Closing RAV**	AEDm, 2014 prices	**19,528.77**	**20,280.31**	**20,971.84**	**21,794.95**	

Annex A.7: ADSSC – Updating RAV

Updating 2014 Opening RAV for PC3 and PC4 Efficient Capex

Line No.

	UAE CPI Assumptions	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
1	**CPI (2000 = 100) used in calculations**	**77.54**	**82.34**	**89.99**	**100.00**	**112.30**	**114.00**	**115.00**	**116.01**	**116.78**	**118.00**
							Assumed in PC4	113.07			

				PC3				PC4		
	Additional Efficient PC3 and PC4 Capex to be allowed at this Review		**2005H2**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
2	Actual PC3 and PC4 capex	AEDm, nominal prices	379.01	151.41	275.57	738.67	1,613.76	1,446.20	2,542.35	-
3	Applied capex efficiency factor	%	97.49%	97.49%	97.49%	97.49%	97.49%	97.49%	97.49%	97.49%
4	Efficient PC3 and PC4 capex	AEDm, nominal prices	369.50	147.61	268.66	720.13	1,573.25	1,409.90	2,478.54	-
5	Efficient PC3 and PC4 capex	AEDm, 2014 prices	562.32	211.53	352.29	849.75	1,653.11	1,459.37	2,543.20	-
6	Provisional PC3 and PC4 capex	AEDm, PC3 2005 / PC4 2010 p	379.01	128.25	412.76	600.00	900.00	3,000.00	3,000.00	-
7	Provisional PC3 and PC4 capex	AEDm, 2014 prices	576.80	195.18	628.16	913.11	1,369.66	3,130.80	3,130.80	-
8	**Additional efficient PC3 and PC4 capex to be allowed at PC5**	**AEDm, 2014 prices**	**-14.48**	**16.36**	**-275.87**	**-63.36**	**283.44**	**-1,671.43**	**-587.61**	**0.00**

	Depreciation foregone on Additional Efficient PC3 and PC4 Capex		**2005H2**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
9	Assumed average asset life for new investment	years	50								
10	Additional efficient PC3 and PC4 capex to be allowed at PC4	AEDm, 2014 prices	-14.48	16.36	-275.87	-63.36	283.44	-1671.43	-587.61	0.00	
11	**Depreciation on additional efficient PC3 and PC4 capex** (half-year depreciation for the first year of each annual capex)	AEDm, 2014 prices	**-0.07**	**-0.13**	**-2.72**	**-6.11**	**-3.91**	**-17.79**	**-40.38**	**-46.26**	**-46.26**

	Return on Capital foregone on Additional Efficient PC3 and PC4 Capex		**2005H2**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
12	Additional efficient PC3 and PC4 capex - Opening value	AEDm, 2014 prices	0.00	-14.41	2.08	-271.07	-328.31	-40.96	-1,694.60	-2,241.82	-2,195.56
13	Additional efficient PC3 and PC4 capex	AEDm, 2014 prices	-14.48	16.36	-275.87	-63.36	283.44	-1,671.43	-587.61	0.00	
14	Depreciation on additional efficient PC3 and PC4 capex	AEDm, 2014 prices	-0.07	-0.13	-2.72	-6.11	-3.91	-17.79	-40.38	-46.26	-46.26
15	Additional efficient PC3 and PC4 capex - Closing value	AEDm, 2014 prices	-14.41	2.08	-271.07	-328.31	-40.96	-1,694.60	-2,241.82	-2,195.56	**-2,149.30**
16	Average of Opening and Closing values	AEDm, 2014 prices	-7.20	-6.16	-134.49	-299.69	-184.63	-867.78	-1,968.21	-2,218.69	-2,172.43
17	Cost of capital (real)	%	5.00%	5.00%	5.00%	5.00%	5.00%	4.50%	4.50%	4.50%	4.50%
18	**Return on capital foregone**	AEDm, 2014 prices	**-0.36**	**-0.31**	**-6.72**	**-14.98**	**-9.23**	**-39.05**	**-88.57**	**-99.84**	**-97.76**

	Financing Costs foregone on Additional Efficient PC3 and PC4 Capex		**2005H2**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
19	Depreciation foregone	AEDm, 2014 prices	-0.07	-0.13	-2.72	-6.11	-3.91	-17.79	-40.38	-46.26	-46.26
20	Return on capital foregone	AEDm, 2014 prices	-0.36	-0.31	-6.72	-14.98	-9.23	-39.05	-88.57	-99.84	-97.76
21	Total financing costs foregone	AEDm, 2014 prices	-0.43	-0.43	-9.45	-21.10	-13.14	-56.84	-128.95	-146.10	-144.02
22	Years from year mid point to 1 Jan 2010 (PC3 capex)	years	4.25	3.50	2.50	1.50	0.50				
23	NPV @ 1 Jan 2010 of financing costs foregone (PC3 capex)	AEDm, 2014 prices	-0.53	-0.52	-10.67	-22.70	-13.47				
24	Accumulated NPV (@ 1 Jan 2010) of financing costs foregone (PC3 capex)	AEDm, 2014 prices					-47.89				
25	Years from year mid point to 1 Jan 2014 (PC3 and PC4 capex)	AEDm, 2014 prices					4.50	3.50	2.50	1.50	0.50
26	NPV @ 1 Jan 2014 of financing costs foregone (PC3 and PC4 capex)	AEDm, 2014 prices					-57.11	-66.31	-143.95	-156.07	-147.22
27	**Accumulated NPV (@ 1 Jan 2014) of financing costs foregone**	**AEDm, 2014 prices**									**-570.66**

	Updated 2010 Opening RAV (including Additional Efficient PC2 Capex)		**2013**
28	Initial Opening 2014 RAV (with provisional PC3 and PC4 capex)	AEDm, 2010 prices	17,067.72
29	Initial Opening 2014 RAV (with provisional PC3 and PC4 capex)	AEDm, 2014 prices	17,811.90
30	Add: Additional efficient PC3 and PC4 capex - Closing value @ 31 Dec 2013	AEDm, 2014 prices	(2,149.30)
31	**Updated Opening 2014 RAV including Additional Efficient PC3 and PC4 capex**	**AEDm, 2014 prices**	**15,662.59**

Updating PC5 RAVs for PC5 Provisional Capex

	Updated PC5 RAVs including PC5 Provisional Capex			PC5				
	AEDm, 2014 prices			**2014**	**2015**	**2016**	**2017**	**2018**
32	Assumed average asset life for new investment	years	50					
33	**Opening RAV**	**AEDm, 2014 prices**		**15,662.59**	**16,474.24**	**17,253.90**	**18,001.55**	**18,717.20**
34	PC5 Provisional capex	AEDm, 2014 prices		1,600.00	1,600.00	1,600.00	1,600.00	
35	Total Depreciation on RAV and capex (excluding PC5 provisional capex)	AEDm, 2014 prices		772.35	772.35	772.35	772.35	
36	Depreciation on provisional PC5 capex (half-year depreciation for first year)	AEDm, 2014 prices		16.00	48.00	80.00	112.00	
37	**Total depreciation for PC5**	AEDm, 2014 prices		**788.35**	**820.35**	**852.35**	**884.35**	
38	**Closing RAV**	AEDm, 2014 prices		**16,474.24**	**17,253.90**	**18,001.55**	**18,717.20**	

Annex B: PC5 price control calculations

Introduction

B.1 This **Annex B** to the final proposals for PC5 comprises **Annexes B.1 through B.7** and presents detailed price control calculations for each of the four network companies (i.e., AADC, ADDC, ADSSC and TRANSCO), separately for water and electricity businesses, where applicable. These calculations have been extracted from the relevant spread sheets of the ***PC5 Financial Model*** – a Microsoft Excel based computer model developed by the Bureau to carry out PC5 calculations. The results of these calculations are described in Section 6 of the paper. Various assumptions and inputs used in these calculations (such as, UAE CPI, revenue driver projections and weights, opex allowances, and cost of capital) are described in Sections 2 through 5 of the document.

B.2 The calculations in each of **Annexes B.1 through B.7** are presented in a standard format for all businesses. They are explained in the PC5 draft proposals with reference to "Line" numbers used in these Annexes and in the PC5 Financial Model. The only difference in the format and description from the PC5 draft proposals is that the PC5 period now refers to the four-year period (2014-2017) for all the companies in these Annexes.

B.3 In this **Annex B**, **PC5 period** refers the four-year period 2014-2017 for all businesses.

Annex B.1: AADC electricity – PC5 price control calculations

Line No. **(all AED amounts are in 2014 prices)**

				PC5			
	Inputs			**2014**	**2015**	**2016**	**2017**
1	Operating expenditure allowance	AEDm		415.51	415.91	413.27	412.76
2	Opening RAV	AEDm		8,832.60	9,030.04	9,204.16	9,354.94
3	Closing RAV	AEDm		9,030.04	9,204.16	9,354.94	9,482.39
4	Mid-Year RAV	AEDm		8,931.32	9,117.10	9,279.55	9,418.66
5	Total depreciation for PC5	AEDm		502.55	525.89	549.22	572.55
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	Customer Accounts		146,868	157,148	165,006	176,557
8	Forecast for revenue driver 3	GWh		9,912	10,491	10,969	11,409
9	PV of financing costs foregone on PC3 and PC4 capex	AEDm	735.08				
10	Cost of capital (real)		5.50%				
11	Weight in revenue for Revenue driver 1		80.00%				
12	Weight in revenue for Revenue driver 2		15.00%				
13	Weight in revenue for Revenue driver 3		5.00%				
14	Negative X Factor		0.00				

			PC5				
	PC5 Required Revenue Calculations		**2014**	**2015**	**2016**	**2017**	**PV over PC5 Period at 1 January 2014**
15	Operating expenditure allowance	AEDm	415.51	415.91	413.27	412.76	1,492.07
16	Total depreciation for PC5	AEDm	502.55	525.89	549.22	572.55	1,929.71
17	Return on mid-year RAV	AEDm	491.22	501.44	510.38	518.03	1,816.93
18	Annual revenue requirement	AEDm	1,409.28	1,443.24	1,472.86	1,503.34	5,238.71
19	Discounted annual revenue requirement	AEDm	1,372.06	1,331.86	1,288.34	1,246.45	5,238.71
20	PV of financing costs foregone on PC3 and PC4 capex	AEDm					735.08
21	PV of revenue requirement (after foregone financing costs)	AEDm					**5,973.79**

	PC5 Revenue Forecast and Profiling		**2014**	**2015**	**2016**	**2017**	**PV Share in TOTAL**	
22	**Revenue driver 1**		1.00	1.00	1.00	1.00		
23		AEDm	**1,327.42**	1,327.42	1,327.42	1,327.42		
24		AEDm	1,327.42	1,327.42	1,327.42	1,327.42	4,779.03	
25		%	81%	80%	80%	79%	**80%**	
26	**Revenue driver 2**	Customer Accounts	146,868	157,148	165,006	176,557	**Constraints for Solver Run**	
27		AED / Customer	**1,548.34**	1,548.34	1,548.34	1,548.34		
28		AEDm	227.40	243.32	255.48	273.37	896.07	
29		%	14%	15%	15%	16%	**15%**	
30	**Revenue driver 3**	kWh	9,912,000,000	10,491,000,000	10,969,000,000	11,409,000,000		
31		fils / kWh	**0.7781**	0.7781	0.7781	0.7781		
32		AEDm	77.13	81.63	85.35	88.78	298.69	
33		%	5%	5%	5%	5%	**5%**	
		Variables for Solver Run						
34	Annual revenue	AEDm	1,631.95	1,652.37	1,668.25	1,689.56	**TOTAL**	Difference
35	**Discounted annual revenue at 1 January 2014**	AEDm	1,588.84	1,524.85	1,459.25	1,400.85	**5,973.79**	**0.00**
							Target for Solver Run	

	Results		**2014**
36	**X Factor**		**0.0**
37	**Fixed revenue term (a)**	**AED million**	**1,327.42**
38	**Co-efficient of variable revenue term (b)**	**AED / Customer Account**	**1,548.34**
39	**Co-efficient of variable revenue term (c)**	**fils / kWh metered**	**0.7781**

	Implied Financial Indicators		**2014**	**2015**	**2016**	**2017**	**Average**
40	Implied annual profit	AEDm	713.89	710.57	705.77	704.25	708.62
41	Implied return on mid-point RAV	%	7.99%	7.79%	7.61%	7.48%	7.72%

Annex B.2: AADC water – PC5 price control calculations

Line No. **(all AED amounts are in 2014 prices)**

				PC5			
	Inputs			**2014**	**2015**	**2016**	**2017**
1	Operating expenditure allowance	AEDm		246.46	242.90	237.61	233.13
2	Opening RAV	AEDm		2,611.18	2,786.11	2,951.05	3,105.99
3	Closing RAV	AEDm		2,786.11	2,951.05	3,105.99	3,250.93
4	Mid-Year RAV	AEDm		2,698.65	2,868.58	3,028.52	3,178.46
5	Total depreciation for PC5	AEDm		125.06	135.06	145.06	155.06
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	Customer Accounts		78,021	80,700	83,524	86,501
8	Forecast for revenue driver 3	MIG		66,592	70,898	72,023	72,442
9	PV of financing costs foregone on PC3 and PC4 capex	AEDm	-161.59				
10	Cost of capital (real)		5.50%				
11	Weight in revenue for Revenue driver 1		80.00%				
12	Weight in revenue for Revenue driver 2		15.00%				
13	Weight in revenue for Revenue driver 3		5.00%				
14	Negative X Factor		0.00				

			PC5				
	PC5 Required Revenue Calculations		**2014**	**2015**	**2016**	**2017**	**PV over PC5 Period at 1 January 2014**
15	Operating expenditure allowance	AEDm	246.46	242.90	237.61	233.13	865.23
16	Total depreciation for PC5	AEDm	125.06	135.06	145.06	155.06	501.85
17	Return on mid-year RAV	AEDm	148.43	157.77	166.57	174.82	580.74
18	Annual revenue requirement	AEDm	519.94	535.73	549.24	563.01	1,947.83
19	Discounted annual revenue requirement	AEDm	506.21	494.39	480.43	466.80	1,947.83
20	PV of financing costs foregone on PC3 and PC4 capex	AEDm					-161.59
21	PV of revenue requirement (after foregone financing costs)	AEDm					**1,786.23**

	PC5 Revenue Forecast and Profiling		**2014**	**2015**	**2016**	**2017**	**PV Share in TOTAL**	
22	**Revenue driver 1**		1.00	1.00	1.00	1.00		
23		AEDm	**396.91**	396.91	396.91	396.91		
24		AEDm	396.91	396.91	396.91	396.91	1,428.99	
25		%	81%	80%	80%	79%	**80%**	
26	**Revenue driver 2**	Customer Accounts	78,021	80,700	83,524	86,501	**Constraints for Solver Run**	
27		AED / Customer	**907.60**	907.60	907.60	907.60		
28		AEDm	70.81	73.24	75.81	78.51	267.94	
29		%	14%	15%	15%	16%	**15%**	
30	**Revenue driver 3**	TIG	66,592,000	70,898,000	72,023,000	72,442,000		
31		AED/TIG	**0.3526**	0.3526	0.3526	0.3526		
32		AEDm	23.48	25.00	25.39	25.54	89.31	
33		%	5%	5%	5%	5%	**5%**	
		Variables for Solver Run						
34	Annual revenue	AEDm	491.20	495.15	498.11	500.96	**TOTAL**	Difference
35	**Discounted annual revenue at 1 January 2014**	AEDm	478.23	456.94	435.71	415.36	**1,786.23**	**0.00**
							Target for Solver Run	

	Results		**2014**
36	**X Factor**		**0.0**
37	**Fixed revenue term (a)**	**AED million**	**396.91**
38	**Co-efficient of variable revenue term (b)**	**AED / Customer Account**	**907.60**
39	**Co-efficient of variable revenue term (c)**	**AED / TIG metered**	**0.3526**

	Implied Financial Indicators		**2014**	**2015**	**2016**	**2017**	**Average**
40	Implied annual profit	AEDm	119.68	117.19	115.44	112.77	116.27
41	Implied return on mid-point RAV	%	4.43%	4.09%	3.81%	3.55%	3.97%

Annex B.3: ADDC electricity – PC5 price control calculations

Line No. **(all AED amounts are in 2014 prices)**

				PC5			
	Inputs			**2014**	**2015**	**2016**	**2017**
1	Operating expenditure allowance	AEDm		770.90	824.81	872.51	927.24
2	Opening RAV	AEDm		17,024.46	18,805.78	20,497.09	22,098.41
3	Closing RAV	AEDm		18,805.78	20,497.09	22,098.41	23,609.73
4	Mid-Year RAV	AEDm		17,915.12	19,651.44	21,297.75	22,854.07
5	Total depreciation for PC5	AEDm		918.68	1,008.68	1,098.68	1,188.68
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	Customer Accounts		395,832	444,466	477,451	525,475
8	Forecast for revenue driver 3	GWh		37,318	42,124	47,345	52,980
9	PV of financing costs foregone on PC3 and PC4 capex	AEDm	1,477.84				
10	Cost of capital (real)		5.50%				
11	Weight in revenue for Revenue driver 1		80.00%				
12	Weight in revenue for Revenue driver 2		15.00%				
13	Weight in revenue for Revenue driver 3		5.00%				
14	Negative X Factor		0.00				

			PC5				
	PC5 Required Revenue Calculations		**2014**	**2015**	**2016**	**2017**	**PV over PC5 Period at 1 January 2014**
15	Operating expenditure allowance	AEDm	770.90	824.81	872.51	927.24	3,043.69
16	Total depreciation for PC5	AEDm	918.68	1,008.68	1,098.68	1,188.68	3,771.86
17	Return on mid-year RAV	AEDm	985.33	1,080.83	1,171.38	1,256.97	4,023.53
18	Annual revenue requirement	AEDm	2,674.92	2,914.32	3,142.57	3,372.89	10,839.08
19	Discounted annual revenue requirement	AEDm	2,604.26	2,689.42	2,748.87	2,796.53	10,839.08
20	PV of financing costs foregone on PC3 and PC4 capex	AEDm					1,477.84
21	PV of revenue requirement (after foregone financing costs)	AEDm					**12,316.92**

	PC5 Revenue Forecast and Profiling		**2014**	**2015**	**2016**	**2017**	**PV Share in TOTAL**	
22	**Revenue driver 1**		1.00	1.00	1.00	1.00		
23		AEDm	**2,736.90**	2,736.90	2,736.90	2,736.90		
24		AEDm	2,736.90	2,736.90	2,736.90	2,736.90	9,853.54	
25		%	82%	81%	79%	78%	**80%**	
26	**Revenue driver 2**	Customer Accounts	395,832	444,466	477,451	525,475	**Constraints for Solver Run**	
27		AED / Customer	**1,120.50**	1,120.50	1,120.50	1,120.50		
28		AEDm	443.53	498.02	534.98	588.79	1,847.54	
29		%	13%	15%	15%	17%	**15%**	
30	**Revenue driver 3**	kWh	37,318,000,000	42,124,000,000	47,345,000,000	52,980,000,000		
31		fils / kWh	**0.3836**	0.3836	0.3836	0.3836		
32		AEDm	143.15	161.59	181.61	203.23	615.85	
33		%	4%	5%	5%	6%	**5%**	
		Variables for Solver Run						
34	Annual revenue	AEDm	3,323.58	3,396.51	3,453.50	3,528.92	**TOTAL**	Difference
35	**Discounted annual revenue at 1 January 2014**	AEDm	3,235.79	3,134.40	3,020.84	2,925.89	**12,316.92**	**0.00**
							Target for Solver Run	

	Results		**2014**
36	**X Factor**		**0.0**
37	**Fixed revenue term (a)**	**AED million**	**2,736.90**
38	**Co-efficient of variable revenue term (b)**	**AED / Customer Account**	**1,120.50**
39	**Co-efficient of variable revenue term (c)**	**fils / kWh metered**	**0.3836**

	Implied Financial Indicators		**2014**	**2015**	**2016**	**2017**	**Average**
40	Implied annual profit	AEDm	1634.00	1563.02	1482.30	1413.00	1523.08
41	Implied return on mid-point RAV	%	9.12%	7.95%	6.96%	6.18%	7.55%

Annex B.4: ADDC water – PC5 price control calculations

Line No. **(all AED amounts are in 2014 prices)**

				PC5			
	Inputs			**2014**	**2015**	**2016**	**2017**
1	Operating expenditure allowance	AEDm		417.34	437.99	453.45	467.89
2	Opening RAV	AEDm		5,086.46	5,457.78	5,809.11	6,140.43
3	Closing RAV	AEDm		5,457.78	5,809.11	6,140.43	6,451.75
4	Mid-Year RAV	AEDm		5,272.12	5,633.44	5,974.77	6,296.09
5	Total depreciation for PC5	AEDm		228.68	248.68	268.68	288.68
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	Customer Accounts		294,976	317,168	334,687	355,088
8	Forecast for revenue driver 3	MIG		157,801	165,894	173,204	181,122
9	PV of financing costs foregone on PC3 and PC4 capex	AEDm	-162.91				
10	Cost of capital (real)		5.50%				
11	Weight in revenue for Revenue driver 1		80.00%				
12	Weight in revenue for Revenue driver 2		15.00%				
13	Weight in revenue for Revenue driver 3		5.00%				
14	Negative X Factor		0.00				

			PC5				
	PC5 Required Revenue Calculations		**2014**	**2015**	**2016**	**2017**	**PV over PC5 Period at 1 January 2014**
15	Operating expenditure allowance	AEDm	417.34	437.99	453.45	467.89	1,595.08
16	Total depreciation for PC5	AEDm	228.68	248.68	268.68	288.68	926.49
17	Return on mid-year RAV	AEDm	289.97	309.84	328.61	346.28	1,142.79
18	Annual revenue requirement	AEDm	935.98	996.50	1,050.74	1,102.85	3,664.36
19	Discounted annual revenue requirement	AEDm	911.26	919.60	919.10	914.40	3,664.36
20	PV of financing costs foregone on PC3 and PC4 capex	AEDm					-162.91
21	PV of revenue requirement (after foregone financing costs)	AEDm					**3,501.45**

	PC5 Revenue Forecast and Profiling		**2014**	**2015**	**2016**	**2017**	**PV Share in TOTAL**	
22	**Revenue driver 1**		1.00	1.00	1.00	1.00		
23		AEDm	**778.05**	778.05	778.05	778.05		
24		AEDm	778.05	778.05	778.05	778.05	2,801.16	
25		%	81%	80%	80%	79%	**80%**	
26	**Revenue driver 2**	Customer Accounts	294,976	317,168	334,687	355,088	**Constraints for Solver Run**	
27		AED / Customer	**450.04**	450.04	450.04	450.04		
28		AEDm	132.75	142.74	150.62	159.80	525.22	
29		%	14%	15%	15%	16%	**15%**	
30	**Revenue driver 3**	TIG	157,801,000	165,894,000	173,204,000	181,122,000		
31		AED/TIG	**0.2878**	0.2878	0.2878	0.2878		
32		AEDm	45.41	47.74	49.84	52.12	175.07	
33		%	5%	5%	5%	5%	**5%**	
		Variables for Solver Run						
34	Annual revenue	AEDm	956.21	968.52	978.51	989.97	**TOTAL**	Difference
35	**Discounted annual revenue at 1 January 2014**	AEDm	930.95	893.78	855.92	820.80	**3,501.45**	**0.00**
							Target for Solver Run	

	Results		**2014**
36	**X Factor**		**0.0**
37	**Fixed revenue term (a)**	**AED million**	**778.05**
38	**Co-efficient of variable revenue term (b)**	**AED / Customer Account**	**450.04**
39	**Co-efficient of variable revenue term (c)**	**AED / TIG metered**	**0.2878**

	Implied Financial Indicators		**2014**	**2015**	**2016**	**2017**	**Average**
40	Implied annual profit	AEDm	310.19	281.86	256.38	233.40	270.46
41	Implied return on mid-point RAV	%	5.88%	5.00%	4.29%	3.71%	4.72%

Annex B.5: TRANSCO electricity – PC5 price control calculations

Line No. **(all AED amounts are in 2014 prices)**

				PC5			
	Inputs			**2014**	**2015**	**2016**	**2017**
1	Operating expenditure allowance	AEDm		325.69	336.98	339.42	344.92
2	Opening RAV	AEDm		36,823.71	37,437.22	37,974.07	38,434.25
3	Closing RAV	AEDm		37,437.22	37,974.07	38,434.25	38,817.76
4	Mid-Year RAV	AEDm		37,130.47	37,705.65	38,204.16	38,626.01
5	Total depreciation for PC5	AEDm		1,686.49	1,763.15	1,839.82	1,916.49
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	Customer Accounts		13,127	14,664	15,799	17,242
8	Forecast for revenue driver 3	GWh		77,214	86,252	92,930	101,417
9	PV of financing costs foregone on PC3 and PC4 capex	AEDm	1,833.12				
10	Cost of capital (real)		5.50%				
11	Weight in revenue for Revenue driver 1		80.00%				
12	Weight in revenue for Revenue driver 2		10.00%				
13	Weight in revenue for Revenue driver 3		10.00%				
14	Negative X Factor		0.00				

			PC5				
	PC5 Required Revenue Calculations		**2014**	**2015**	**2016**	**2017**	**PV over PC5 Period at 1 January 2014**
15	Operating expenditure allowance	AEDm	325.69	336.98	339.42	344.92	1,210.94
16	Total depreciation for PC5	AEDm	1,686.49	1,763.15	1,839.82	1,916.49	6,467.35
17	Return on mid-year RAV	AEDm	2,042.18	2,073.81	2,101.23	2,124.43	7,501.39
18	Annual revenue requirement	AEDm	4,054.35	4,173.95	4,280.47	4,385.83	15,179.69
19	Discounted annual revenue requirement	AEDm	3,947.26	3,851.84	3,744.21	3,636.37	15,179.69
20	PV of financing costs foregone on PC3 and PC4 capex	AEDm					1,833.12
21	PV of revenue requirement (after foregone financing costs)	AEDm					**17,012.80**

	PC5 Revenue Forecast and Profiling		**2014**	**2015**	**2016**	**2017**	**PV Share in TOTAL**	
22	**Revenue driver 1**		1.00	1.00	1.00	1.00		
23		AEDm	**3,780.36**	3,780.36	3,780.36	3,780.36		
24		AEDm	3,780.36	3,780.36	3,780.36	3,780.36	13,610.24	
25		%	82%	80%	79%	78%	**80%**	
26	**Revenue driver 2**	kW metered	13,127,250	14,663,853	15,799,215	17,242,178	**Constraints for Solver Run**	
27		AED / kW metered	**31.26**	31.26	31.26	31.26		
28		AEDm	410.32	458.35	493.84	538.94	1,701.28	
29		%	9%	10%	10%	11%	**10%**	
30	**Revenue driver 3**	kWh	77,213,679,531	86,251,881,211	92,930,013,374	101,417,430,941		
31		fils / kWh	**0.5314**	0.5314	0.5314	0.5314		
32		AEDm	410.32	458.35	493.84	538.94	1,701.28	
33		%	9%	10%	10%	11%	**10%**	
		Variables for Solver Run						
34	Annual revenue	AEDm	4,601.00	4,697.06	4,768.04	4,858.24	**TOTAL**	Difference
35	**Discounted annual revenue at 1 January 2014**	AEDm	4,479.46	4,334.58	4,170.70	4,028.06	**17,012.80**	**0.00**
							Target for Solver Run	

	Results		**2014**
36	**X Factor**		**0.0**
37	**Fixed revenue term (a)**	**AED million**	**3,780.36**
38	**Co-efficient of variable revenue term (b)**	**AED / kW metered**	**31.26**
39	**Co-efficient of variable revenue term (c)**	**fils / kWh metered**	**0.5314**

	Implied Financial Indicators		**2014**	**2015**	**2016**	**2017**	**Average**
40	Implied annual profit	AEDm	2588.82	2596.92	2588.79	2596.84	2592.84
41	Implied return on mid-point RAV	%	6.97%	6.89%	6.78%	6.72%	6.84%

Annex B.6: TRANSCO water – PC5 price control calculations

Line No. **(all AED amounts are in 2014 prices)**

				PC5			
	Inputs			**2014**	**2015**	**2016**	**2017**
1	Operating expenditure allowance	AEDm		424.05	438.19	441.34	450.09
2	Opening RAV	AEDm		18,717.23	19,528.77	20,280.31	20,971.84
3	Closing RAV	AEDm		19,528.77	20,280.31	20,971.84	21,794.95
4	Mid-Year RAV	AEDm		19,123.00	19,904.54	20,626.08	21,383.39
5	Total depreciation for PC5	AEDm		988.46	1,048.46	1,108.46	976.90
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	Customer Accounts		893	944	965	1,012
8	Forecast for revenue driver 3	MIG		302,097	319,576	326,502	342,662
9	PV of financing costs foregone on PC3 and PC4 capex	AEDm	415.69				
10	Cost of capital (real)		5.50%				
11	Weight in revenue for Revenue driver 1		80.00%				
12	Weight in revenue for Revenue driver 2		10.00%				
13	Weight in revenue for Revenue driver 3		10.00%				
14	Negative X Factor		0.00				

			PC5				
	PC5 Required Revenue Calculations		**2014**	**2015**	**2016**	**2017**	**PV over PC5 Period at 1 January 2014**
15	Operating expenditure allowance	AEDm	424.05	438.19	441.34	450.09	1,576.45
16	Total depreciation for PC5	AEDm	988.46	1,048.46	1,108.46	976.90	3,709.46
17	Return on mid-year RAV	AEDm	1,051.76	1,094.75	1,134.43	1,176.09	4,001.68
18	Annual revenue requirement	AEDm	2,464.28	2,581.40	2,684.24	2,603.08	9,287.59
19	Discounted annual revenue requirement	AEDm	2,399.18	2,382.19	2,347.96	2,158.26	9,287.59
20	PV of financing costs foregone on PC3 and PC4 capex	AEDm					415.69
21	PV of revenue requirement (after foregone financing costs)	AEDm					**9,703.28**

	PC5 Revenue Forecast and Profiling		**2014**	**2015**	**2016**	**2017**	**PV Share in TOTAL**	
22	**Revenue driver 1**		1.00	1.00	1.00	1.00		
23		AEDm	**2,156.13**	2,156.13	2,156.13	2,156.13		
24		AEDm	2,156.13	2,156.13	2,156.13	2,156.13	7,762.62	
25		%	81%	80%	80%	79%	**80%**	
26	**Revenue driver 2**	TIGD	892,550	944,194	964,656	1,012,402	**Constraints for Solver Run**	
27		AED / TIGD	**283.43**	283.43	283.43	283.43		
28		AEDm	252.98	267.61	273.41	286.95	970.33	
29		%	10%	10%	10%	11%	**10%**	
30	**Revenue driver 3**	TIG	302,096,625	319,576,015	326,501,811	342,662,001		
31		AED/TIG	**0.8374**	0.8374	0.8374	0.8374		
32		AEDm	252.98	267.61	273.41	286.95	970.33	
33		%	10%	10%	10%	11%	**10%**	
		Variables for Solver Run						
34	Annual revenue	AEDm	2,662.09	2,691.36	2,702.96	2,730.03	**TOTAL**	Difference
35	**Discounted annual revenue at 1 January 2014**	AEDm	2,591.77	2,483.67	2,364.33	2,263.51	**9,703.28**	**0.00**
							Target for Solver Run	

	Results		**2014**
36	**X Factor**		**0.0**
37	**Fixed revenue term (a)**	**AED million**	**2,156.13**
38	**Co-efficient of variable revenue term (b)**	**AED / TIGD metered**	**283.43**
39	**Co-efficient of variable revenue term (c)**	**AED / TIG metered**	**0.8374**

	Implied Financial Indicators		**2014**	**2015**	**2016**	**2017**	**Average**
40	Implied annual profit	AEDm	1249.57	1204.71	1153.16	1303.04	1227.62
41	Implied return on mid-point RAV	%	6.53%	6.05%	5.59%	6.09%	6.07%

Annex B.7: ADSSC – PC5 price control calculations

Line No. **(all AED amounts are in 2014 prices)**

				PC5			
	Inputs			**2014**	**2015**	**2016**	**2017**
1	Operating expenditure allowance	AEDm		656.98	664.91	665.42	664.81
2	Opening RAV	AEDm		15,662.59	16,474.24	17,253.90	18,001.55
3	Closing RAV	AEDm		16,474.24	17,253.90	18,001.55	18,717.20
4	Mid-Year RAV	AEDm		16,068.42	16,864.07	17,627.72	18,359.37
5	Total depreciation for PC5	AEDm		788.35	820.35	852.35	884.35
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	m3		294,480,000	310,461,000	328,449,000	345,622,000
8	Forecast for revenue driver 3	-		-	-	-	-
9	PV of financing costs foregone on PC3 and PC4 capex	AEDm	-570.66				
10	Cost of capital (real)		5.50%				
11	Weight in revenue for Revenue driver 1		80.00%				
12	Weight in revenue for Revenue driver 2		20.00%				
13	Weight in revenue for Revenue driver 3		0.00%				
14	Negative X Factor		0.00				

			PC5				
	PC5 Required Revenue Calculations		**2014**	**2015**	**2016**	**2017**	**PV over PC5 Period at 1 January 2014**
15	Operating expenditure allowance	AEDm	656.98	664.91	665.42	664.81	2,386.49
16	Total depreciation for PC5	AEDm	788.35	820.35	852.35	884.35	3,003.36
17	Return on mid-year RAV	AEDm	883.76	927.52	969.52	1,009.77	3,401.64
18	Annual revenue requirement	AEDm	2,329.09	2,412.79	2,487.29	2,558.93	8,791.49
19	Discounted annual revenue requirement	AEDm	2,267.57	2,226.59	2,175.69	2,121.65	8,791.49
20	PV of financing costs foregone on PC3 and PC4 capex	AEDm					-570.66
21	PV of revenue requirement (after foregone financing costs)	AEDm					**8,220.83**

	PC5 Revenue Forecast and Profiling			**2014**	**2015**	**2016**	**2017**	**PV Share in TOTAL**	
22	**Revenue driver 1**			1.00	1.00	1.00	1.00		
23		AEDm		**1,826.72**	1,826.72	1,826.72	1,826.72		
24		AEDm		1,826.72	1,826.72	1,826.72	1,826.72	6,576.67	
25		%		81%	80%	80%	79%	**80%**	
26	**Revenue driver 2**	m3		294,480,000	310,461,000	328,449,000	345,622,000	**Constraints for Solver Run**	
27		AED/m3		**1.4334**	1.4334	1.4334	1.4334		
28		AEDm		422.10	445.00	470.79	495.40	1,644.17	
29		%		19%	20%	20%	21%	**20%**	
30	**Revenue driver 3**			-	-	-	-		
31				**-**	-	-	-		
32		AEDm		-	-	-	-	-	
33		%		0%	0%	0%	0%	**0%**	
			Variables for Solver Run						
34	Annual revenue	AEDm		2,248.82	2,271.73	2,297.51	2,322.13	**TOTAL**	Difference
35	**Discounted annual revenue at 1 January 2014**	AEDm		2,189.42	2,096.42	2,009.68	1,925.32	**8,220.83**	**0.00**
								Target for Solver Run	

	Results		**2014**
36	**X Factor**		**0.0**
37	**Fixed revenue term (a)**	**AED million**	**1,826.72**
38	**Co-efficient of variable revenue term (b)**	**AED / m3**	**1.4334**
39	**Co-efficient of variable revenue term (c)**	**-**	**-**

	Implied Financial Indicators		**2014**	**2015**	**2016**	**2017**	**Average**
40	Implied annual profit	AEDm	803.49	786.47	779.74	772.97	785.67
41	Implied return on mid-point RAV	%	5.00%	4.66%	4.42%	4.21%	4.57%

Annex C: Incentives for availability, security and quality of supply

To be issued separately to the network companies

Annex D: Incentives for provision for high quality information

To be issued separately to the network companies