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# 2009 Price Controls Review

## Second Consultation Paper

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**CR/E02/033**

**19 March 2009**

2009 Price Controls Review: Second Consultation Paper				
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# Foreword

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1. In November 2008, the Bureau published the First Consultation Paper to commence a review of the price controls for six electricity, water and wastewater companies operating in the Emirate of Abu Dhabi; namely, AADC, ADDC, ADSSC, ADWEC, RASCO and TRANSCO.
2. The present price controls for these companies are due to expire on 31 December 2009. New price controls (to be termed the “fourth price controls” or “PC4”) are therefore required for 2010 and onwards. The Bureau intends to extend the existing controls for RASCO, and to publish separate documents on the price control review for ADWEC. This paper therefore focuses on the four network companies.
3. The Bureau received a number of responses to the First Consultation Paper. This Second Consultation Paper summarises these responses and sets out the Bureau’s current thinking on each of the issues. The Bureau is due to publish Draft Proposals for PC4 in June 2009 and Final Proposals in September 2009.
4. Written responses to the issues raised in this paper should be sent by **30 April 2009** to:  
  
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Fax: 02-6424217  
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5. The Bureau proposes to make responses to the consultation exercise publicly available.

**NICK CARTER**  
**DIRECTOR GENERAL**

# 1. Introduction and background

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## Background

- 1.1 A number of the companies in the electricity, water and wastewater sector in the Emirate of Abu Dhabi are monopolies in their geographical area. In the case of the network companies, they are “natural monopolies” for which competition is impractical. At present, the only direct competition in the sector is the competition between bidders to build new generation and desalination plant or to build new wastewater treatment plants. The Bureau has therefore established a regulatory framework to constrain the market power and to incentivise the performance of the other companies.
- 1.2 The First Consultation Paper for PC4 issued by the Bureau in November 2008 describes the sector structure and the regulatory framework in some detail:
- (a) For **AADC**, **ADDC**, **ADWEC** and **TRANSCO**, the first price controls (PC1) were set in 1999 to run for three years and were extended for a further year; that is, a control duration of four years (1999-2002). The second price controls (PC2) were set in 2002 to apply for three years (2003-2005), followed by the current (third) price controls (PC3) set in 2005 for four years (2006-2009).
  - (b) Until 2003, some activities of **RASCO** were subject to tariffs approved by the Bureau. Following RASCO’s restructuring in 2002 (when its distribution and supply businesses were transferred to AADC and ADDC), the Bureau introduced a set of price controls for RASCO’s production activities (which are currently managed on its behalf by AADC and ADDC under management agreements). These price controls applied for two years (2004-2005) and were extended in 2005 to apply for a further period.
  - (c) In 2007, the Bureau set the first price control for **ADSSC** to apply from the date of establishment of ADSSC (21 June 2005) until 31 December 2009.
- 1.3 The price controls are important because they determine the cap on the annual revenue of each company. For AADC, ADDC and ADSSC, the difference between the revenue cap and the revenue from customers determines the subsidy required from the government. In 2007, the price-controlled costs accounted for about AED 4.59 billion, or 42% of total sector costs.

- 1.4 All the current price controls are due to expire at the end of 2009 and require new price controls to be in place to take effect from 1 January 2010. The First Consultation Paper marked the start of the process to set the new price controls (referred to as the “PC4” controls). As discussed in the First Consultation Paper, the Bureau intends to extend the existing controls for RASCO, and to subject ADWEC to a different control cycle and structure. This paper therefore focuses on the four network companies (i.e., **AADC, ADDC, ADSSC and TRANSCO**). The Bureau intends to publish separate documents on the price control review for ADWEC.

## Current price controls

- 1.5 The current price controls are in the form of revenue caps, defining Maximum Allowed Revenue (MAR) for each company or business for each year of the price control duration as follows:

$$\text{MAR} = \text{Pass through costs} + a + (b \times \text{Revenue driver 1}) + (c \times \text{Revenue driver 2}) + Q - K$$

where:

- (a) **Pass-through costs** are (where applicable) the costs which are subject to competition or regulation elsewhere in the sector and are allowed on an actual basis.
- (b) ‘a’ is a fixed component in UAE Dirhams (or AED).
- (c) ‘b’ and ‘c’ are the coefficients of two revenue drivers, expressed in AED per unit of the respective revenue driver.
- (d) ‘a’, ‘b’, and ‘c’ are set by the Bureau for the first year of the control period and are then automatically adjusted each year according to the following formula for (i) the UAE Consumer Price Index (CPI) inflation for the previous year and (ii) an ‘X’ factor set by the Bureau:

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

(same formula for ‘b’ and ‘c’)

- (e) **Revenue drivers** are measures of companies’ outputs or demands they meet in a year.
- (f) ‘Q’ is the revenue adjustment for performance during a year under the Performance Incentive Scheme (PIS).

- (g) 'K' is the correction factor adjusting any over- or under-recovery of revenue in the preceding year.

1.6 The following table summarises the specific structure of the current price controls for each company:

**Table 1.1: Structure of current price controls**

Company	Pass-Through	Revenue Driver 1	Revenue Driver 2
AADC / ADDC	Water and electricity purchases Transmission costs	Customer numbers	Metered units distributed
TRANSCO	Electricity ancillary service costs	Metered peak demand	Metered units transmitted
RASCO	Proportion of fuel costs	Electricity generation capacity	Water annual production
ADSSC	None	None	None

1.7 Presently, there are separate price controls for the water and electricity businesses of the companies. For the distribution companies (AADC and ADDC), the price controls (separate for water and electricity) presently cover both distribution and supply businesses. For ADSSC, a single price control covers all of its three separate businesses (sewerage, wastewater treatment and disposal).

1.8 Some companies also undertake certain unlicensed activities with the Bureau's consent (as required by their licences). These unlicensed activities are not subject to any price controls and are financially ring-fenced to reduce as much as possible any cross subsidy from licensed activities. However, in the case of TRANSCO's unlicensed activities in other Emirates, the difficulty of allocating 'common' or 'shared' assets separately to licensed and unlicensed activities meant that the scope of the PC3 controls was subsequently expanded to include unlicensed activities using such shared assets, with the intention of formalising this arrangement for the PC4 period.

## Framework for price control calculations

1.9 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. The Bureau has used the following framework for its price control calculations to date.

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

$$\text{Required revenue} = \text{Operating expenditure} + \text{RAV depreciation} + \text{Return on RAV}$$

where:

- (a) Operating expenditure (opex) refers to operating costs excluding depreciation; and
- (b) RAV is the mid-year average of opening and closing Regulatory Asset Values (RAVs) in that year. 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.

1.11 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.

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

$$\text{NPV of projected annual MARs} = \text{NPV of required revenues}$$

1.13 All calculations are carried out in real terms (excluding the effect of inflation). For the purpose of these calculations, pass-through costs and K and Q terms are excluded. For the PC3 calculations, the Bureau used a weighting of 70% for the fixed term ('a') and 30% for the variable terms (equally apportioned between the two revenue drivers 'b' and 'c'). These weightings were applied to the present value of total revenue over the control period. For ADSSC, the fixed term was set to have a weighting of 100%. That is, its MAR does not vary with any revenue drivers at present.

1.14 Therefore, price control calculations require the following inputs:

- (a) revenue driver projections;
- (b) opex projections;
- (c) initial Regulatory Asset Value (RAV);
- (d) capex projections (to determine RAVs for each year);
- (e) assumptions for depreciation (e.g. profile and average asset life);
- (f) an appropriate X-factor;
- (g) appropriate weightings for the fixed and variable terms in MAR formula; and
- (h) an appropriate cost of capital (to be used as the allowed rate of return on RAVs and as the discount rate to calculate NPVs).

1.15 The Bureau has used the following UAE CPI data and assumption for conversion of nominal prices into real prices or vice versa in this paper:

**Table 1.2: UAE CPI Assumptions**

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
UAE CPI	96.57	98.64	100.00	102.80	105.80	109.10	114.60	121.70	133.00	147.80	164.25	174.10
UAE Inflation		2.15%	1.37%	2.80%	2.92%	3.12%	5.04%	6.20%	9.29%	11.13%	11.13%	6.00%

Source: UAE Ministry of Economy (Base year 2000 = 100)

Notes: 2008 and 2009 CPIs are Bureau's assumptions. UAE CPI figures for 1998 and 1999 with base year 2000 = 100 have been derived from CPI figures with base year 1995 = 100.

## Progress on the 2009 price controls review

1.16 The First Consultation Paper in November 2008 set out the timetable for the current review. **Table 1.3** below summarises the progress to date against that timetable:

**Table 1.3: Progress to date on 2009 Price Controls Review**

Target Date	Task	Actual Date
November 2008	Bureau published First Consultation Paper	18 November 2008
5 January 2009	Responses to First Consultation Paper	
	AADC	27 January 2009
	ADDC	22 January 2009
	ADSSC	13 January 2009
	ADWEA	28 December 2008
	TRANSCO	5 January 2009
March 2009	Bureau published Second Consultation Paper	19 March 2009

1.17 The Bureau has received detailed responses to its First Consultation Paper from each concerned licensee. These responses are discussed in the relevant sections of this paper. The Bureau also met with AADC and ADDC separately in January and February 2009 at their request to discuss the paper and their responses.

1.18 In some cases, the responses to the First Consultation Paper were delayed by one to three weeks. However, we have tried to minimise the impact of this delay on the timetable for the remainder of the review. **Table 1.4** below sets out the timetable for the remainder of the review while keeping the six-week period for the companies to respond to the consultation papers:

**Table 1.4: Remaining timetable for 2009 Price Controls Review**

Approximate Date	Task
30 April 2009	Companies to respond to Second Consultation Paper
15 June 2009	Bureau to publish <i>Draft Proposals</i>
30 June 2009	Companies to submit Audited Separate Business Accounts
30 July 2009	Companies to respond to Draft Proposals
15 September 2009	Bureau to publish <i>Final Proposals</i>

### 2009 Price Controls Review: Second Consultation Paper

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## 2. Form of controls

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### Introduction

- 2.1 The First Consultation Paper discussed the type of regulation, and the form, duration, and scope of the price controls. The discussion reflected the Bureau's desire to see more incentives for these companies to improve their performance, particularly on system metering and loss reduction.
- 2.2 This Section 2 summarises and assesses the views of the respondents to the First Consultation Paper on these fundamental issues. The Bureau agrees with many of the suggestions put forward by the respondents. In other cases, where the Bureau does not presently agree to the responses, or where it proposes changes or refinements to the respondents' suggestions, then this section explains the reasons. These responses have helped the Bureau to further develop its current thinking on various issues, as set out below.

### Type of regulation

#### *First Consultation Paper*

- 2.3 The First Consultation Paper discussed the two main types of regulation; namely, rate of return (ROR) regulation and price cap (or CPI-X) regulation, and certain variants of these approaches. In practice, ROR and price cap regulation are quite similar. The main difference between the two approaches relates to the period between the resetting of price controls (longer in the case of CPI-X regulation). By virtue of this difference, ROR regulation reduces perceived risk (and hence cost of capital) for a company. However, CPI-X regulation gives the company a greater incentive for efficiency.
- 2.4 To ensure consistency in the regulatory framework established for the sector, the First Consultation Paper set out the Bureau's belief that all the network companies should remain subject to CPI-X regulation. The paper considered that the efficiency incentives inherent in this approach are consistent with the Bureau's statutory duty towards an efficient and economic sector (Article 54 of Law No.2 of 1998).

### Responses

- 2.5 All the respondents to the First Consultation Paper supported the continuation of CPI-X regulation. AADC, ADDC and ADSSC however raised concerns about the appropriateness of the UAE CPI as the price escalation index in the price controls.

AADC and ADDC suggested the use of Abu Dhabi CPI as more representative of the costs in the Emirate of Abu Dhabi. ADSSC believed that construction costs are not fully reflected in the UAE CPI and suggested that the price index should reflect the business costs as accurately as possible.

- 2.6 AADC and ADDC also raised a wide variety of issues relating to the sector structure, laws and regulation, and to the subsidy levels and structures of the final customer tariffs. ADDC, for example, suggested that it should take over the activities of ADWEC. The Bureau however considers that many of the points raised, such as tariffs, are outside the scope of the price controls review. However, where relevant, the points raised are discussed in the related sections of this paper.

### **Assessment of responses**

- 2.7 Both the UAE CPI and Abu Dhabi CPI are published by the Ministry of Economy. However, UAE CPI is more widely used and quoted than Abu Dhabi CPI. More importantly, the use of the national CPI (rather than a regional CPI) is a convention and a standard practice by the regulators around the world.
- 2.8 The following table compares the inflation rates measured by the two indices since 1999:

**Table 2.1: Inflation as measured by UAE and Abu Dhabi CPIs**

	1999	2000	2001	2002	2003	2004	2005	2006	2007
<b>UAE CPI</b>	2.15%	1.37%	2.80%	2.92%	3.12%	5.04%	6.20%	9.29%	11.13%
<b>Abu Dhabi CPI</b>	0.42%	0.63%	3.10%	3.10%	3.01%	5.02%	6.26%	8.67%	11.67%
<b>Difference</b>	<b>-1.73%</b>	<b>-0.74%</b>	<b>0.30%</b>	<b>0.19%</b>	<b>-0.11%</b>	<b>-0.02%</b>	<b>0.07%</b>	<b>-0.61%</b>	<b>0.54%</b>

Source: Bureau's calculations based on CPI data from the UAE Ministry of Economy

- 2.9 Since 1998, accumulated CPI inflation for UAE is 54.21%, compared to 49.87% for Abu Dhabi, and so the use of UAE CPI in the price controls to date has benefited the sector companies. It would thus not be appropriate to switch to Abu Dhabi CPI simply on the ground that it is expected to be higher than the UAE CPI in the near future. In case of such a change (which we do not support), an appropriate financial adjustment would be necessary to offset the higher revenues previously earned by the companies due to the use of the UAE CPI in the past.
- 2.10 The Bureau acknowledges that the UAE CPI may not fully reflect changes in construction costs. In contrast to some other countries, there is no officially published index in the UAE that reflects construction prices. However, we believe that such concerns are addressed by our ex-post approach to capex discussed in Section 5. In any case, recent reports indicate that pressure on construction costs has eased

significantly, such that real reductions in construction prices may be expected in the near term.<sup>1</sup>

### ***Bureau's current thinking***

- 2.11 CPI-X regulation should continue to apply to all the network companies, with UAE CPI to continue to be used as the price escalation index.

## **Form of regulation**

### ***First Consultation Paper***

- 2.12 The First Consultation Paper discussed in some detail the three main forms of CPI-X price controls: (a) revenue yield control (i.e., a cap on the revenue per unit of output); (b) "pure" revenue cap (i.e., an overall lump-sum limit on annual revenue), and (c) the hybrid approach (i.e., a revenue cap consisting both of a fixed component plus one or more output-based "revenue drivers"). The price controls for Abu Dhabi network companies have to date taken the hybrid form of revenue caps. The current price control for ADSSC is however a "pure" revenue cap.
- 2.13 The hybrid form incentivises a company to meet the growing demand on its services while at the same time limiting the deviation of revenues from costs. The revenue drivers and their weights in MAR formula can be defined to reflect a number of considerations including the cost structure of the companies.
- 2.14 Based on the experience to date in the sector and to ensure consistency over time, the First Consultation Paper stated the Bureau's thinking to continue with this form of control for PC4 for AADC, ADDC and TRANSCO and to consider adoption of the same form of control for ADSSC, by identifying suitable revenue drivers.

## **Responses**

- 2.15 Respondents to the First Consultation Paper supported the hybrid form of revenue cap for all four network companies.

### ***Bureau's current thinking***

- 2.16 The hybrid form of revenue caps should continue for AADC, ADDC and TRANSCO and should be introduced for ADSSC with suitable revenue drivers.

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<sup>1</sup> For example, refer to two articles entitled "**Construction costs in UAE decline by 30%**" and "**Construction costs down 71% since Aug**" published on the website [www.business24-7.ae](http://www.business24-7.ae) on 2 and 8 February 2009, respectively.

## Choice of revenue drivers

### *First Consultation Paper*

2.17 The table below summarises the current revenue drivers for each company, along with the weight of each term in the PC3 MAR formula. These weightings were applied to the present value of total revenue over the control period at the last price control review. The weightings thus varied slightly from year to year, depending on the relative movement in revenue drivers in each year.

**Table 2.2: Revenue drivers in current price controls**

Company	Revenue Driver	Weight in MAR formula
<b>AADC / ADDC</b> <b>(both water and electricity)</b>	Fixed term	70%
	Customer numbers	15%
	Metered units distributed	15%
<b>TRANSCO</b> <b>(both water and electricity)</b>	Fixed term	70%
	Metered peak demand	15%
	Metered units transmitted	15%
<b>ADSSC</b>	Fixed term	100%

2.18 In addition to reflecting the company's cost structure, the revenue drivers may serve other purposes, such as to provide incentives to improve network metering. However, the First Consultation Paper discussed the undesirable incentives inherent in the existing "metered units distributed" revenue driver for AADC and ADDC, which may encourage excessive water and electricity consumption, and indicated the need for alternative methods to provide stronger incentives for metering and loss reduction (discussed later in this section).

2.19 The First Consultation Paper stated the Bureau's thinking to retain the existing revenue drivers for all companies for the PC4 controls while strengthening the incentives for metering and loss reduction, and to introduce revenue drivers for ADSSC such as customer numbers and a measure of load (volume).

### **Responses**

2.20 Responses to the First Consultation Paper on the revenue drivers were mixed reflecting the specific issues faced by the respective companies:

- (a) AADC highlighted the conflict between the growth incentives via the existing revenue drivers and the government requirements for demand restraint. It suggested a number of alternative revenue drivers such as annual rates of growth in customer numbers and network coverage, number of customers per

square meter (customer density), and the ratio between the quantity of water or electricity delivered to customers and the quantity of water or electricity received from TRANSCO. AADC also proposed that the weights of the fixed and variable terms of the MAR formula should reflect the cost structure specific to each company.

- (b) ADDC expressed its preference for the continuation of the existing revenue drivers. It however suggested reducing the weight of metered units distributed revenue driver and increasing that of the fixed term in order to avoid MAR volatility over the control period.
- (c) ADSSC accepted the introduction of suitable revenue drivers in principle. It however highlighted the need for further discussion on the choice of revenue drivers as it considered customer numbers or a measure of load would not adequately cover the nature of the service.
- (d) TRANSCO considered the existing “metered peak demand” and “metered units transmitted” revenue drivers to be inappropriate. This is because, while TRANSCO has obligations under the Metering and Data Exchange Code (MDEC) to ensure its system metering, it does not have direct control over either installing or maintaining the MDEC compliant interface meters and has limited means of forcing the distribution companies to do so. TRANSCO also presented its calculations to show significant losses resulted from these revenue drivers in the past. TRANSCO therefore suggested the introduction of suitable metering revenue drivers for the owners of these meters (i.e., the distribution companies) to provide them with the required incentives. It also suggested to redefine its revenue drivers as “total” (rather than “metered”) peak demands and units transmitted, and to introduce a new PIS Category A indicator to incentivise TRANSCO to fulfil its obligations under MDEC.

### ***Assessment of responses***

2.21 The Bureau’s views on the companies’ responses are as follows:

- (a) The Bureau acknowledges the undesirable incentives of the current revenue drivers highlighted by AADC. However, AADC’s suggested alternative growth rate-related revenue drivers seem to suffer from similar shortcomings. It is also worth clarifying that the price control calculations do not assume the same benchmarks on network density or topography for AADC and ADDC. Recognising the undesirable incentives of the “metered units distributed” revenue drivers for AADC and ADDC, the Bureau is currently minded to

reduce their weights from 15% to 5%, with a corresponding increase in the weights of the fixed terms for these companies from 70% to 80%.

- (b) As suggested by ADDC, the Bureau is currently minded to retain the existing revenue drivers with revised weights of the fixed and variable terms in the MAR formula as indicated above.
- (c) The Bureau acknowledges that customer numbers or a measure of load alone would not fully reflect ADSSC's cost structure or nature of its service. A further important criterion in the choice of revenue driver is the ability to audit the required data. For this reason, the Bureau now suggests customer numbers and annual flow received at treatment plants as revenue drivers for ADSSC, but is open to consider alternative suggestions.
- (d) With regards to TRANSCO's response, the Bureau believes that TRANSCO has licence and MDEC obligations to ensure interface metering and that TRANSCO may not have exhausted all reasonable efforts to comply with these obligations. On the loss of revenue highlighted by TRANSCO's calculations, such losses would not have arisen were it not for TRANSCO's own forecasting errors in its revenue driver projections which were adopted at the 2005 price control review. However, we recognise the shared responsibility of the companies argued by TRANSCO and are therefore proposing a new PIS Category A indicator for AADC and ADDC at this review to incentivise interface metering (see Section 7).

### ***Bureau's current thinking***

2.22 In view of the above, the Bureau's current thinking on the revenue drivers for PC4 and their weightings in the MAR formulae is summarised below:

**Table 2.3: Bureau's current thinking on revenue drivers for PC4**

<b>Company</b>	<b>Revenue driver</b>	<b>Weight in MAR formula</b>
<b>AADC / ADDC (both water and electricity)</b>	Fixed term	80%
	Customer numbers	15%
	Metered units distributed	5%
<b>TRANSCO (both water and electricity)</b>	Fixed term	70%
	Metered peak demand	15%
	Metered units transmitted	15%
<b>ADSSC</b>	Fixed term	70%
	Customer numbers	15%
	Annual flow at treatment plants	15%

- 2.23 In view of the reduced weighting of the ‘metered units distributed’ revenue driver, we are proposing a new indicator to incentivise customer metering and distribution loss reduction (see below). The Bureau is also currently minded to introduce a new PIS Category A indicator for AADC and ADDC to incentivise interface metering (for both water and electricity) – see Section 7.

## **Distribution Loss Reduction Incentive**

### ***First Consultation Paper***

- 2.24 The First Consultation Paper, while discussing the undesirable incentives inherent in the existing “metered units distributed” revenue driver for AADC and ADDC, indicated the need to retain and strengthen methods to provide positive incentives for metering and loss reduction. One such method suggested was to provide incentives for distribution companies (via a new revenue driver or a PIS Category A indicator) to improve the ratio of (a) measured water (or electricity) delivered to customers to (b) the total water (or electricity) received from the transmission system.

### ***Responses***

- 2.25 In its response to the First Consultation Paper, AADC’s suggestions for alternative revenue drivers included the ratio between the quantity of water or electricity delivered to customers and the quantity of water or electricity received from TRANSCO.
- 2.26 ADDC suggested that system metering and/or loss incentive should first be introduced as a PIS Category B indicator before being considered as a Category A indicator. This would allow sufficient time to gain confidence in such a performance measurement before moving to Category A.

### ***Assessment of responses***

- 2.27 AADC’s alternative revenue driver, based on the ratio between quantities of water or electricity delivered to customers and those received from TRANSCO, is similar to the one indicated in the First Consultation Paper.
- 2.28 Regarding ADDC’s suggestion, while the Bureau agrees in principle to testing a measure first under Category B, a measure can be (and has been in the past) introduced directly as a Category A indicator if it meets the relevant objective criteria. The Bureau also agrees that the loss measure will have some metering issues and will need some estimation to be verified by the independent Technical Assessor, as part of the Price Control Return (PCR) audit.

## ***Bureau's current thinking***

2.29 The Bureau is currently minded to introduce a new term (to be referred to as the "Distribution Loss Reduction Incentive") in the MAR formulae for AADC and ADDC for both water and electricity businesses to incentivise reduction in distribution system losses. Each year, the company's performance will be assessed against the actual performance in the previous year in terms of the ratio of (i) measured quantity of water or electricity delivered to customers to (ii) total quantity of water or electricity received from the transmission system. The Distribution Loss Incentive term will then increase (i.e., bonus) or decrease (i.e., penalty) the MAR for the performance improvement or deterioration over the previous year. Given the importance of these matters, the Bureau further proposes to allow MAR variation in any given year for such performance up to 2% of the company's "own" MAR (i.e., excluding pass through costs) in that year.

## **Duration of controls**

### ***First Consultation Paper***

2.30 The duration of a price control needs to strike a balance between providing incentives for efficiency and reducing exposure to unanticipated outcomes. Internationally, the control period for CPI-X regulation is usually 4-5 years. In Abu Dhabi, the choice of a shorter duration in the early years was driven by a general lack of reliable and audited data on companies' performance as well as companies' preference for a shorter control duration due to the uncertainties within the sector. However, since then, there has been significant improvement in the availability of audited and reliable data in terms of separate business accounts (SBAs), price control returns (PCRs) and Annual Information Submission (AIS) supported by independent Technical Assessor's (TA) report. Furthermore, the companies' increasing costs also indicate the need for stronger incentives to reduce these costs.

2.31 The First Consultation Paper therefore indicated that the new PC4 controls should apply for four or five years (from 2010 to 2013 or 2014) for all companies. This represents a reasonably long duration to provide strong efficiency incentives for the companies and is consistent with best international practice.

## ***Responses***

2.32 In their responses to the First Consultation Paper, ADDC and ADSSC favoured a four-year control period for PC4. AADC, while recommending a three-year duration to reduce exposure to unanticipated outcomes, sought guidance on the opportunity cost

or benefit foregone for not accepting a longer PC4 period. TRANSCO did not comment on this issue.

### ***Assessment of responses***

- 2.33 The Bureau agrees with ADDC and ADSSC that a four-year duration for PC4 strikes a better balance between providing incentives for efficiency and reducing exposure to unanticipated outcomes and is more consistent with international best practice than a three-year period.
- 2.34 The Bureau explained to AADC in the meeting held in January 2009 how the company could compare the financial implications of various control periods by using the Bureau's financial model provided to companies at the last price control review (or the model to be developed and provided to companies along with the Draft Proposals for PC4).

### ***Bureau's current thinking***

- 2.35 PC4 controls should have a duration of four years (2010-2013).

## **Scope and separation of controls**

### ***First Consultation Paper***

- 2.36 Presently, there are separate price controls for the water and electricity businesses of AADC, ADDC and TRANSCO. There is no such separation of controls for the sewerage, wastewater treatment and disposal businesses of ADSSC, nor for the distribution and supply businesses of the distribution companies. The First Consultation Paper indicated no urgent need for such separation of controls for PC4.
- 2.37 The scope of the present price controls generally covers, via the definition of the term "Regulated Revenue" in the respective licences, all the income of these companies. However, the Regulated Revenue explicitly excludes any revenues from unlicensed activities for which the concerned company has received the consent of the Bureau, as required according to the licences (referred to as "Excluded Income" in the relevant licences). However, as discussed in Section 1, TRANSCO and the Bureau have agreed an understanding whereby TRANSCO's unlicensed transmission activities outside the Emirate of Abu Dhabi which share the same assets with the licensed activities (referred to as 'unlicensed shared' assets) are included within the scope of the current price controls.
- 2.38 The First Consultation Paper stated the Bureau's thinking to retain the existing scope and separation of price controls for all companies. However, necessary changes will

be made to formally extend the scope of TRANSCO's price controls to include 'unlicensed shared' assets.

- 2.39 For AADC, ADDC and ADSSC, "Regulated Revenue" is defined in the licence to include any revenue which should be billed to and collected from their customers according to approved tariffs, rather than the revenue actually collected from the customers. The Bureau is satisfied with the overall concept and scope of this definition. However, the First Consultation Paper sought views on whether any changes are required to further clarify that such revenue includes all revenue which should have been billed to and collected from the customers as per the approved tariffs and charges, even if such revenue was not actually billed / collected.

## **Responses**

- 2.40 All respondents to the First Consultation Paper agreed to retain the existing separation and scope of price controls.
- 2.41 ADDC also suggested removing the licence requirement for accounting separation between supply and distribution if separate supply is not part of the long term vision of the sector. ADDC also suggested a number of other structural changes including merging RASCO and ADWEC into its supply business (to deal with trading with GCC countries and embedded generation), removing accounting separation between water and electricity for its supply business, and merging RASCO's price controls into its price controls.
- 2.42 AADC sought confirmation that Regulated Revenue means revenues recorded on accruals basis rather than a cash basis of accounting.
- 2.43 TRANSCO raised an issue with regards to the licence requirement for separate business accounts (SBAs) for any unlicensed activity. It suggested that a materiality threshold (in terms of revenue) be incorporated into the licence so that the SBA requirement should apply only if the unlicensed activity exceeds such a threshold, in line with a current consent issued by the Bureau to TRANSCO in respect of the unlicensed activity "manpower services".

## **Assessment of responses**

- 2.44 The current accounting separation between the separate businesses of each company ensures cost transparency. It could also facilitate the introduction of separate price controls for each business if needed in future, and the introduction of competition in potentially competitive businesses (such as the supply businesses of AADC and ADDC, or the treatment and disposal businesses of ADSSC). The Bureau

therefore would like to retain the current accounting separation which has been established with a great deal of effort by all stakeholders. Moreover, the accounting separation has already been helpful in designing special tariffs for large customers, which might be using the services of only the supply business or only the high-voltage network of the distribution business. Most importantly, accounting separation between water and electricity is essential for setting customer tariffs (whether subsidised or cost-reflective) and for determining separate economic cost and subsidy for water and electricity in the sector.

- 2.45 In relation to ADDC's suggestions for restructuring, these are outside the scope of this price control review. In any case, ADWEC has been dealing successfully with electricity and water transactions with the other emirates of the UAE and has been positioned to deal with electricity trading with GCC countries. Issues relating to embedded generation and RASCO are discussed later in this paper.
- 2.46 On the accounting issue raised by AADC with respect to the Regulated Revenue, the definition of Regulated Revenue in each licence clearly requires accounting of such revenue on an accruals basis.
- 2.47 With regards to the issue raised by TRANSCO relating to the licence requirement for SBAs for unlicensed activities, the Bureau considers it appropriate to deal with unlicensed activities on a case by case basis through the Consent mechanism. This is in order to be aware of, and to monitor, such activities to avoid any adverse effect on the respective licensed activities.

### ***Bureau's current thinking***

- 2.48 The existing scope and separation of price controls should be retained for all companies, with necessary changes to formally extend the scope of TRANSCO's price controls to include 'unlicensed shared' assets.

## **Pass-through costs**

### ***First Consultation Paper***

- 2.49 To date, certain costs have been allowed as pass-through in the price control formulae on an actual basis as listed below:

**Table 2.4: Pass-through costs under current price controls**

Company	Pass-through costs
AADC / ADDC	Water and electricity purchases Transmission charges
TRANSCO	Electricity ancillary service costs
ADSSC	None

- 2.50 The planned development of four major wastewater treatment plants by the private sector to provide treatment services to ADSSC under long-term Sewerage Treatment Agreements (STAs) raises new issues for ADSSC's price controls. The First Consultation Paper discussed two main options for the treatment of such costs in ADSSC's price controls: to either forecast the efficient level of such costs, or to allow the pass-through of such costs.
- 2.51 The paper laid out our thinking to retain all the existing pass-through items in the price controls, and to also allow ADSSC's payments to new private wastewater treatment plants as pass-through costs. This is conditional upon ADSSC demonstrating that each of these plants were required at the time to meet ADSSC's demands and security standards and that they were procured competitively.

### **Responses**

- 2.52 AADC, ADDC and TRANSCO raised concerns about the lack of control that they have over the annual licence fees charged to them by the Bureau. These licence fees directly affect their opex which (along with other cost components of MAR) is allowed to increase by the UAE CPI inflation only, whereas increases in licence fees are not presently bound by such an inflation cap. The companies therefore proposed that licence fees should be treated as pass through costs.
- 2.53 ADDC raised issues relating to the treatment of embedded generation in the distribution systems and proposed a number of methods to address them. These methods include RASCO purchasing electricity from embedded generation for sale to AADC and ADDC, and merging RASCO and ADWEC into the supply business of ADDC.
- 2.54 ADSSC welcomed the treatment of STA costs on a pass through basis. However, it stated that it was not directly involved in the procurement decisions and would not have access to the details considered at the time.

## **Assessment of responses**

### *Bureau's licence fees*

2.55 We recognise the concerns expressed by respondents regarding the recent increases in the Bureau's licence fees. Now that the Bureau is almost fully staffed, a more predictable cost trend should be possible in future. We are therefore considering introducing a treatment, similar to a pass-through mechanism, which will limit future increases in the Bureau's fees to no more than UAE CPI inflation (assuming no increase in the scope of our legal duties). Further details on this mechanism will be provided in the Draft Proposals.

### *Embedded generation*

2.56 As regards the embedded generation, ADDC's proposed restructuring of various sector companies would be subject to major legal issues and is outside the scope of this price control review, as discussed earlier in this paper. However, it is worth clarifying that the Bureau will give consent for the cost of electricity purchases by ADDC (or AADC) from embedded generation to be treated as a pass-through item in the MAR formulae in the same manner as other electricity and water purchases (from ADWEC and RASCO), subject to the existing economic purchasing obligation (Condition 18 of AADC/ADDC's licences).

2.57 Further, we are considering introducing incentives for both the developers of the embedded generators and the distribution companies in order to encourage renewable energy (RE) projects. For example:

- (a) Embedded RE projects could be paid the full cost-reflective tariff payments (as approved by the Bureau) by the relevant distribution company without the need for a separate, direct 'green' payment by the government to RE projects. However, distribution companies will need to show as a separate subsidy line in its audited PCR the equivalent 'green' payment (i.e., the difference between the full cost-reflective tariff payment to RE projects and the costs of equivalent energy from other sources (e.g., average BST costs)).
- (b) The relevant distribution company could be provided an incentive in the form of a profit margin on the energy purchases from RE projects.

2.58 These incentives would apply only to RE projects embedded within the distribution systems and not to any project (RE or otherwise) connected to the transmission system.

## *STA costs for ADSSC*

- 2.59 With regards to the treatment of STA costs for ADSSC, the Bureau believes the pass-through treatment subject to the economic purchasing licence obligation will encourage ADSSC to make the necessary efforts to gain access to the documents and information required to satisfy its licence obligation.

### ***Bureau's current thinking***

- 2.60 The Bureau's current thinking is to retain all the existing pass-through items in the price controls, and to also allow ADSSC's payments to new private wastewater treatment plants as pass-through costs. This is conditional upon ADSSC demonstrating compliance with its economic purchasing obligation.
- 2.61 We are also considering introducing a mechanism similar to a pass-through treatment for the Bureau's licence fees.
- 2.62 The cost of electricity purchases by ADDC and AADC from embedded generation should be treated on a pass-through basis in the MAR formulae in the same manner as other electricity and water purchases (from ADWEC and RASCO), subject to the economic purchasing obligation. We are also considering introducing new incentives for both the developers and the distribution companies to encourage the development of embedded RE projects.

## **Extension of price controls for RASCO**

### ***First Consultation Paper***

- 2.63 The First Consultation Paper presented an analysis of the operation of the current price controls for RASCO over the last five years and indicated the Bureau's thinking to continue with the present price controls for RASCO indefinitely until notification is given by us of an intention to modify the controls (or RASCO requests such controls to be reviewed).

### ***Responses***

- 2.64 In its response to the First Consultation Paper, AADC did not oppose the extension of current price controls for RASCO. It however sought clarification on the strategic plan for the possible migration of RASCO operations so as to provide some planning certainty for the businesses.
- 2.65 ADDC proposed that the price controls for RASCO should continue only if RASCO's licence is expanded to incorporate the negotiation and management of power

purchase agreements for embedded generation for onward sale to ADDC. Otherwise, ADDC suggested that RASCO (as well as ADWEC), and RASCO's price controls, should be merged with ADDC's price controls for ease of administration, accounting and regulation.

### ***Assessment of responses***

2.66 As mentioned earlier in this paper, issues relating to any restructuring of sector companies are beyond the scope of this price controls review. As long as RASCO exists as a holder of a licence from the Bureau, price controls are required to ensure its economic regulation in the absence of any competition. Treatment of embedded generation has also been discussed earlier in the paper. The Bureau therefore does not consider that any of these issues hinder the proposed extension of the current price controls for RASCO.

### ***Bureau's current thinking***

2.67 The present price controls for RASCO should be continued indefinitely until notification is given by the Bureau of an intention to modify the controls (or RASCO requests such controls to be reviewed).

## **Mechanism for reopening price control**

### ***First Consultation Paper***

2.68 During the PC3 period, a number of licensees raised concerns about unanticipated inflationary increases in costs which had occurred since the last price controls review, which they regarded as being outside of their control. Notwithstanding the Bureau's views on the specifics of such claims, the Bureau undertook to consider the introduction of a mechanism into companies' licences at this review to allow price controls to be re-opened between price control reviews in future. The First Consultation Paper reviewed such mechanisms used in other jurisdictions and highlighted the following best practice:

- (a) Price controls should be reopened only in the case of certain events which are pre-specified in the licences, such as (i) events beyond the control of a licensee, (ii) unreasonably 'excessive' profits earned by a licensee, and (iii) a takeover or privatisation of a licensee;
- (b) Price controls should be reopened only if such events have a significant financial impact on the licensee; for example, the impact is (cumulatively) equal to 10% or more of annual turnover.

- 2.69 The price controls would then be reset to revert the financial impact of the price controls on the licensee to that which would have prevailed in the absence of that event.
- 2.70 Such a mechanism has a benefit of reducing the risks for the licensees, thus lowering their cost of capital.

### **Responses**

- 2.71 The companies' responses to the First Consultation Paper on this mechanism were mixed. AADC and ADSSC supported the introduction of such a mechanism. AADC suggested that the events triggering price control reopening should be infrequent and unusual in nature. TRANSCO did not comment on this issue. ADDC considered that such a mechanism is not required at this review if (a) the cost of capital is calculated properly taking account of the business risks – barring any extraordinary circumstance beyond company / sector control, and (b) the treatment of the network assets currently being installed by mega project developers is fully determined at this price control review and related capex is included in PC4 controls.

### **Assessment of responses**

- 2.72 The Bureau agrees with AADC's proposal that events triggering price control reopening should be rare and unusual. The threshold for the materiality of the financial impact of such events should therefore be sufficiently wide to avoid a frequent need for reopening.
- 2.73 The cost of capital and capex regulation are discussed later in the relevant sections of this paper. The Bureau believes that these issues are dealt with to fully address ADDC's concerns. However, as ADDC itself acknowledged, there can be events beyond the control of a company or the sector which are not anticipated and hence not accounted for while setting the price controls. The proposed mechanism for reopening price controls between the price control reviews aims at addressing specifically these kinds of unforeseen events provided they have significant financial impact on the licensee.

### **Bureau's current thinking**

- 2.74 The Bureau is currently minded to introduce a Price Control Reopening Mechanism (to be termed as "PCROM") into the licence of each company at this review with the following features:

- (a) Price controls can be re-opened between the price control reviews for events pre-specified in the licences, provided their cumulative impact is equal to 10% or more of annual turnover ('own' MAR) of the respective company.
- (b) Such pre-specified events could include (i) events beyond the control of a licensee, (ii) unreasonably 'excessive' profits earned by a licensee, and (iii) a takeover or privatisation of a licensee.
- (c) Upon the occurrence or observation of such an event or events, the mechanism can be invoked by the Bureau on a licensee's request or otherwise.
- (d) The Bureau will undertake the necessary calculations to reset the price controls if necessary (subject to appropriate consultation with the licensee concerned).

## 3. Revenue driver projections

### Introduction

- 3.1 As discussed in Sections 1 and 2, revenue driver projections along with appropriate weights of each term in the MAR formulae are used to calculate projected MAR for each year of the control period.
- 3.2 The Bureau's current thinking is to adopt the revenue driver projections provided by the respective companies in their 2008 Annual Information Submissions (AIS) to the Bureau which have been reviewed by the independent Technical Assessor (TA). These projections are presented below for each company in turn. The one exception to this is the projections for AADC's water metered units distributed, which the Bureau intends to adjust to assume 100% metering over an appropriate timescale.

### AADC's revenue driver projections

#### AADC electricity business

- 3.3 The following table shows the historical data on the electricity revenue drivers of AADC, along with annual as well as compounded average growth rates from 2003 to 2007. The table also shows the implied system metering coverage (i.e., metered units distributed as a percentage of total units distributed).

**Table 3.1: Historical data on revenue drivers – AADC electricity**

		2003	2004	2005	2006	2007	CAGR
<b>Customer accounts</b>		<b>84,051</b>	<b>87,245</b>	<b>90,410</b>	<b>94,079</b>	<b>96,861</b>	
Annual growth			3.8%	3.6%	4.1%	3.0%	<b>3.6%</b>
<b>Metered units distributed</b>	<b>GWh</b>	<b>5,619</b>	<b>5,508</b>	<b>5,776</b>	<b>5,767</b>	<b>6,724</b>	
Annual growth			-2.0%	4.9%	-0.2%	16.6%	<b>4.6%</b>
<b>Total units distributed</b>	<b>GWh</b>	<b>5,820</b>	<b>5,723</b>	<b>5,968</b>	<b>5,943</b>	<b>6,927</b>	
Annual growth			-1.7%	4.3%	-0.4%	16.6%	<b>4.5%</b>
Metering coverage		97%	96%	97%	97%	97%	

Source: Company's audited PCRs and 2007 and 2008 AIS submissions.

Notes: CAGR is the "compounded average growth rate" over the period 2003-2007. "Total units distributed" includes both metered and unmetered units.

- 3.4 The following table presents the revenue driver projections for the period 2008-2013 as contained in AADC's 2008 AIS, along with the implied growth rates and metering coverage:

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**Table 3.2: Revenue driver projections – AADC electricity**

		2008	2009	2010	2011	2012	2013	CAGR
<b>Customer accounts</b>		<b>100,134</b>	<b>103,536</b>	<b>107,072</b>	<b>110,748</b>	<b>114,569</b>	<b>118,541</b>	
	Annual growth	3.4%	3.4%	3.4%	3.4%	3.5%	3.5%	<b>3.4%</b>
<b>Metered units distributed</b>	<b>GWh</b>	<b>6,751</b>	<b>8,148</b>	<b>9,668</b>	<b>10,926</b>	<b>11,814</b>	<b>12,520</b>	
	Annual growth	0.4%	20.7%	18.7%	13.0%	8.1%	6.0%	<b>10.9%</b>
<b>Total units distributed</b>	<b>GWh</b>	<b>6,954</b>	<b>8,393</b>	<b>9,959</b>	<b>11,255</b>	<b>12,170</b>	<b>12,897</b>	
	Annual growth	0.4%	20.7%	18.7%	13.0%	8.1%	6.0%	<b>10.9%</b>
	Metering coverage	97%	97%	97%	97%	97%	97%	

Source: Company's 2007 and 2008 AIS submissions.

Notes: CAGR is the "compounded average growth rate" over the period 2007-2013. "Total units distributed" includes both metered and unmetered units.

### AADC water business

3.5 The actual outturn data on AADC's water revenue drivers for the period 2003-2007 are summarised below:

**Table 3.3: Historical data on revenue drivers – AADC water**

		2003	2004	2005	2006	2007	CAGR
<b>Customer accounts</b>		<b>42,894</b>	<b>45,360</b>	<b>44,942</b>	<b>46,673</b>	<b>48,841</b>	
	Annual growth		5.7%	-0.9%	3.9%	4.6%	<b>3.3%</b>
<b>Metered units distributed</b>	<b>MIG</b>	<b>1,880</b>	<b>6,872</b>	<b>10,097</b>	<b>15,972</b>	<b>16,643</b>	
	Annual growth		265.5%	46.9%	58.2%	4.2%	<b>72.5%</b>
<b>Total units distributed</b>	<b>MIG</b>	<b>27,037</b>	<b>30,128</b>	<b>37,458</b>	<b>42,510</b>	<b>44,285</b>	
	Annual growth		11.4%	24.3%	13.5%	4.2%	<b>13.1%</b>
	Metering coverage	7%	23%	27%	38%	38%	

Source: Company's audited PCRs and 2007 and 2008 AIS submissions.

Notes: CAGR is the "compounded average growth rate" over the period 2003-2007. "Total units distributed" includes both metered and unmetered units.

3.6 The table below shows AADC's water revenue driver projections for the future as submitted in its 2008 AIS:

**Table 3.4: Revenue driver projections – AADC water**

		2008	2009	2010	2011	2012	2013	CAGR
<b>Customer accounts</b>		<b>57,112</b>	<b>57,637</b>	<b>58,218</b>	<b>58,852</b>	<b>59,539</b>	<b>60,281</b>	
	Annual growth	16.9%	0.9%	1.0%	1.1%	1.2%	1.2%	<b>3.6%</b>
<b>Metered units distributed</b>	<b>MIG</b>	<b>17,850</b>	<b>18,112</b>	<b>33,068</b>	<b>34,301</b>	<b>34,075</b>	<b>39,855</b>	
	Annual growth	7.3%	1.5%	82.6%	3.7%	-0.7%	17.0%	<b>15.7%</b>
<b>Total units distributed</b>	<b>MIG</b>	<b>46,666</b>	<b>45,962</b>	<b>81,717</b>	<b>91,070</b>	<b>90,488</b>	<b>105,354</b>	
	Annual growth	5.4%	-1.5%	77.8%	11.4%	-0.6%	16.4%	<b>15.5%</b>
	Metering coverage	38%	39%	40%	38%	38%	38%	

Source: Company's 2007 and 2008 AIS submissions.

Notes: CAGR is the "compounded average growth rate" over the period 2007-2013. "Total units distributed" includes both metered and unmetered units.

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## Observations

- 3.7 The following can be observed from AADC's revenue driver projections:
- (a) While customer account projections for the future show a growth similar to the historical trend, the units distributed are projected to grow at a higher rate than in the past, particularly for electricity;
  - (b) Metering coverage for both water and electricity units are not projected to improve in the future; and
  - (c) Metering coverage on the water system remains significantly lower than electricity.
- 3.8 Given the current and forecast metering coverage for AADC's water system being only around 38%, the Bureau intends to adjust AADC's metered units distributed projections to ensure 100% metering over an appropriate timescale.

## ADDC's revenue driver projections

### ADDC electricity business

- 3.9 The tables below present the corresponding information for ADDC's electricity revenue drivers:

**Table 3.5: Historical data on revenue drivers – ADDC electricity**

		2003	2004	2005	2006	2007	CAGR
<b>Customer accounts</b>		<b>191,556</b>	<b>196,929</b>	<b>201,278</b>	<b>209,526</b>	<b>216,335</b>	
Annual growth			2.8%	2.2%	4.1%	3.2%	<b>3.1%</b>
<b>Metered units distributed</b>	<b>GWh</b>	<b>11,172</b>	<b>12,597</b>	<b>12,769</b>	<b>13,823</b>	<b>14,740</b>	
Annual growth			12.8%	1.4%	8.3%	6.6%	<b>7.2%</b>
Total units distributed	GWh	11,310	13,107	13,150	14,217	15,123	
Annual growth			15.9%	0.3%	8.1%	6.4%	7.5%
Metering coverage		99%	96%	97%	97%	97%	

Source: Company's audited PCRs and 2007 and 2008 AIS submissions.

Notes: CAGR is the "compounded average growth rate" over the period 2003-2007. "Total units distributed" includes both metered and unmetered units.

**Table 3.6: Revenue driver projections – ADDC electricity**

		2008	2009	2010	2011	2012	2013	CAGR
<b>Customer accounts</b>		<b>226,643</b>	<b>237,442</b>	<b>251,538</b>	<b>275,459</b>	<b>284,796</b>	<b>299,655</b>	
Annual growth		4.8%	4.8%	5.9%	9.5%	3.4%	5.2%	<b>5.6%</b>
<b>Metered units distributed</b>	<b>GWh</b>	<b>16,659</b>	<b>23,214</b>	<b>26,735</b>	<b>32,217</b>	<b>40,074</b>	<b>44,631</b>	
Annual growth		13.0%	39.3%	15.2%	20.5%	24.4%	11.4%	<b>20.3%</b>
<b>Total units distributed</b>	<b>GWh</b>	<b>17,042</b>	<b>23,597</b>	<b>27,118</b>	<b>32,600</b>	<b>40,457</b>	<b>45,014</b>	
Annual growth		12.7%	38.5%	14.9%	20.2%	24.1%	11.3%	<b>19.9%</b>
Metering coverage		98%	98%	99%	99%	99%	99%	

Source: Company's 2007 and 2008 AIS submissions.

Notes: CAGR is the "compounded average growth rate" over the period 2007-2013. "Total units distributed" includes both metered and unmetered units.

### **ADDG water business**

3.10 The tables below present the corresponding information for ADDC's water revenue drivers:

**Table 3.7 Historical data on revenue drivers – ADDC water**

		2003	2004	2005	2006	2007	CAGR
<b>Customer accounts</b>		<b>164,757</b>	<b>169,002</b>	<b>171,700</b>	<b>178,250</b>	<b>182,932</b>	
Annual growth			2.6%	1.6%	3.8%	2.6%	<b>2.7%</b>
<b>Metered units distributed</b>	<b>MIG</b>	<b>24,436</b>	<b>54,437</b>	<b>65,270</b>	<b>72,897</b>	<b>71,986</b>	
Annual growth			122.8%	19.9%	11.7%	-1.2%	<b>31.0%</b>
<b>Total units distributed</b>	<b>MIG</b>	<b>38,736</b>	<b>70,011</b>	<b>81,927</b>	<b>88,042</b>	<b>83,720</b>	
Annual growth			80.7%	17.0%	7.5%	-4.9%	<b>21.2%</b>
Metering coverage		63%	78%	80%	83%	86%	

Source: Company's audited PCRs and 2007-2008 AIS

Notes: CAGR is the "compounded average growth rate" over the period 2003-2007. "Total units distributed" includes both metered and unmetered units.

**Table 3.8: Revenue driver projections – ADDC water**

		2008	2009	2010	2011	2012	2013	CAGR
<b>Customer accounts</b>		<b>192,645</b>	<b>201,782</b>	<b>213,717</b>	<b>233,998</b>	<b>241,887</b>	<b>254,465</b>	
Annual growth		5.3%	4.7%	5.9%	9.5%	3.4%	5.2%	<b>5.7%</b>
<b>Metered units distributed</b>	<b>MIG</b>	<b>85,131</b>	<b>90,158</b>	<b>95,604</b>	<b>101,677</b>	<b>107,541</b>	<b>111,514</b>	
Annual growth		18.3%	5.9%	6.0%	6.4%	5.8%	3.7%	<b>7.6%</b>
<b>Total units distributed</b>	<b>MIG</b>	<b>93,966</b>	<b>97,521</b>	<b>101,494</b>	<b>106,095</b>	<b>110,486</b>	<b>114,459</b>	
Annual growth		12.2%	3.8%	4.1%	4.5%	4.1%	3.6%	<b>5.4%</b>
Metering coverage		91%	92%	94%	96%	97%	97%	

Source: Company's 2007 and 2008 AIS submissions.

Notes: CAGR is the "compounded average growth rate" over the period 2007-2013. "Total units distributed" includes both metered and unmetered units.

### **Observations**

3.11 The following can be observed from ADDC's future revenue driver projections:

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- (a) The projected customer account numbers, for each of ADDC's water and electricity businesses, increase at a higher rate than each did in the past years;
- (b) While electricity units distributed are projected to increase at a higher rate than the past, water units are forecast to increase at a lower rate than the past years; and
- (c) Metering coverage on the water system is significantly higher for ADDC than AADC and is projected to improve further in the future.

## TRANSCO's revenue driver projections

### *TRANSCO electricity business*

3.12 The table below lists the actual outturn values of the two electricity revenue drivers for TRANSCO for the period 2003-2007, along with the implied growth rates and metering coverage:

**Table 3.9: Historical data on revenue drivers – TRANSCO electricity**

		2003	2004	2005	2006	2007	CAGR
<b>Metered peak demand</b>	<b>MW</b>	<b>3,672</b>	<b>3,788</b>	<b>3,917</b>	<b>4,080</b>	<b>4,643</b>	
	Annual growth		3.1%	3.4%	4.2%	13.8%	<b>6.0%</b>
<b>Total peak demand</b>	<b>MW</b>	3,672	3,788	4,186	4,819	5,850	
	Annual growth		3.1%	10.5%	15.1%	21.4%	12.3%
	Metering coverage	100%	100%	94%	85%	79%	
<b>Metered units transmitted</b>	<b>GWh</b>	-	<b>2,421</b>	<b>6,681</b>	<b>23,981</b>	<b>33,969</b>	
	Annual growth			175.9%	258.9%	41.6%	<b>141.2%</b>
<b>Total units transmitted</b>	<b>GWh</b>	19,700	20,741	23,912	27,739	34,817	
	Annual growth		5.3%	15.3%	16.0%	25.5%	15.3%
	Metering coverage	0%	12%	28%	86%	98%	

Source: Company's audited PCRs and 2007 and 2008 AIS submissions.

Notes: CAGR is the "compounded average growth rate" over the period 2003-2007. For "Metered units transmitted", CAGR is calculated over 2005-2007. "Total peak demand" and "Total units transmitted" includes both metered and unmetered demands and units, respectively.

3.13 The following table presents TRANSCO's revenue driver forecasts for the period 2008-2013 as contained in its 2008 AIS. For peak demands, the AIS only contains forecasts of total demands (metered and unmetered combined). To estimate the metered peak demand forecasts shown in the table below, metering coverage rates for the metered units transmitted has been applied to the total peak demand forecasts.

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**Table 3.10: Revenue driver projections – TRANSCO electricity**

		2008	2009	2010	2011	2012	2013	CAGR
<b>Metered peak demand</b>	<b>MW</b>	<b>6,068</b>	<b>7,662</b>	<b>9,025</b>	<b>11,307</b>	<b>13,521</b>	<b>14,767</b>	
	Annual growth	30.7%	26.3%	17.8%	25.3%	19.6%	9.2%	<b>21.3%</b>
<b>Total peak demand</b>	<b>MW</b>	<b>6,068</b>	<b>7,662</b>	<b>9,025</b>	<b>11,307</b>	<b>13,521</b>	<b>14,767</b>	
	Annual growth	3.7%	26.3%	17.8%	25.3%	19.6%	9.2%	16.7%
	Metering coverage	100%	100%	100%	100%	100%	100%	
<b>Metered units transmitted</b>	<b>GWh</b>	<b>39,086</b>	<b>46,795</b>	<b>56,040</b>	<b>71,026</b>	<b>85,563</b>	<b>93,696</b>	
	Annual growth	15.1%	19.7%	19.8%	26.7%	20.5%	9.5%	<b>18.4%</b>
<b>Total units transmitted</b>	<b>GWh</b>	<b>39,086</b>	<b>46,795</b>	<b>56,040</b>	<b>71,026</b>	<b>85,563</b>	<b>93,696</b>	
	Annual growth	12.3%	19.7%	19.8%	26.7%	20.5%	9.5%	17.9%
	Metering coverage	100%	100%	100%	100%	100%	100%	

Source: Company's 2007 and 2008 AIS submissions.

Notes: CAGR is the "compounded average growth rate" over the period 2007-2013. "Total peak demand" and "Total units transmitted" includes both metered and unmetered demands and units, respectively.

### **TRANSCO water business**

3.14 The following table shows the actual outturn values of TRANSCO's water revenue drivers for the period 2003-2007, along with the implied growth rates and metering coverage:

**Table 3.11: Historical data on revenue drivers – TRANSCO water**

		2003	2004	2005	2006	2007	CAGR
<b>Metered peak demand</b>	<b>MIGD</b>	<b>380</b>	<b>421</b>	<b>493</b>	<b>248</b>	<b>451</b>	
	Annual growth		10.6%	17.2%	-49.7%	81.8%	<b>4.4%</b>
<b>Total peak demand</b>	<b>MIGD</b>	<b>380</b>	<b>457</b>	<b>575</b>	<b>538</b>	<b>567</b>	
	Annual growth		20.2%	25.9%	-6.4%	5.4%	10.5%
	Metering coverage	100%	92%	86%	46%	79%	
<b>Metered units transmitted</b>	<b>MIG</b>	<b>-</b>	<b>-</b>	<b>11,053</b>	<b>90,449</b>	<b>142,568</b>	
	Annual growth				718.3%	57.6%	<b>259.1%</b>
<b>Total units transmitted</b>	<b>MIG</b>	<b>122,535</b>	<b>139,001</b>	<b>153,609</b>	<b>175,176</b>	<b>187,268</b>	
	Annual growth		13.4%	10.5%	14.0%	6.9%	11.2%
	Metering coverage	0%	0%	7%	52%	76%	

Source: Company's audited PCRs and 2007 and 2008 AIS submissions.

Notes: CAGR is the "compounded average growth rate" over the period 2003-2007. "Total peak demand" and "Total units transmitted" includes both metered and unmetered demands and units, respectively.

3.15 The table below shows TRANSCO's water revenue driver forecasts as provided in its 2008 AIS. As explained earlier for electricity, TRANSCO's AIS only contains forecasts of total water peak demands (metered and unmetered combined). To estimate the projected metered peak demands shown in the table, metering coverage rates for water metered units transmitted have been applied to the total peak demand forecasts.

**Table 3.12: Revenue driver projections – TRANSCO water**

		2008	2009	2010	2011	2012	2013	CAGR
<b>Metered peak demand</b>	<b>MIGD</b>	<b>517</b>	<b>615</b>	<b>720</b>	<b>789</b>	<b>809</b>	<b>872</b>	
	Annual growth	14.6%	19.0%	17.2%	9.6%	2.5%	7.8%	<b>11.6%</b>
<b>Total peak demand</b>	<b>MIGD</b>	<b>604</b>	<b>615</b>	<b>720</b>	<b>789</b>	<b>809</b>	<b>872</b>	
	Annual growth	6.5%	1.8%	17.2%	9.6%	2.5%	7.8%	7.4%
	Metering coverage	86%	100%	100%	100%	100%	100%	
<b>Metered units transmitted</b>	<b>MIG</b>	<b>182,694</b>	<b>210,221</b>	<b>246,422</b>	<b>269,668</b>	<b>277,039</b>	<b>297,761</b>	
	Annual growth	28.1%	15.1%	17.2%	9.4%	2.7%	7.5%	<b>13.1%</b>
<b>Total units transmitted</b>	<b>MIG</b>	<b>213,580</b>	<b>210,221</b>	<b>246,422</b>	<b>269,668</b>	<b>277,039</b>	<b>297,761</b>	
	Annual growth	14.1%	-1.6%	17.2%	9.4%	2.7%	7.5%	8.0%
	Metering coverage	86%	100%	100%	100%	100%	100%	

Source: Company's 2007 and 2008 AIS submissions.

Notes: CAGR is the "compounded average growth rate" over the period 2007-2013. "Total peak demand" and "Total units transmitted" includes both metered and unmetered demands and units, respectively.

### Observations

3.16 TRANSCO's revenue driver projections indicate that:

- (a) In line with the electricity forecasts of AADC and ADDC, TRANSCO has projected its total peak demand and total units transmitted to grow in the future at higher rates than those observed in the past;
- (b) For both water and electricity, TRANSCO has projected similar future growth rates for its total peak demand and total units transmitted;
- (c) For both water and electricity, past and future growth rates for metered units transmitted and metered peak demands are reflective of both the growth in total units and demands and the improvement in metering coverage; and
- (d) For both water and electricity, the high metering coverage for 2007-2009 implied by TRANSCO's projections is not consistent with the information recently provided by TRANSCO to the Bureau in connection with the 2009 TUoS charge calculations.

### ADSSC's revenue driver projections

3.17 The table below presents the actual outturn values of the possible revenue drivers for ADSSC for the period 2005-2007, along with the implied growth rates. Total annual volume of wastewater handled at the treatment plants has been estimated by multiplying the average daily volume handled (as recorded in ADSSC's 2008 AIS) by the number of days in the year.

**Table 3.13: Historical data on revenue drivers – ADSSC**

		2005	2006	2007	CAGR
<b>Number of customers</b>		<b>221,730</b>	<b>226,068</b>	<b>224,470</b>	
	Annual growth		2.0%	-0.7%	<b>0.6%</b>
<b>Total volume handled</b>	<b>MI</b>	<b>157,535</b>	<b>173,701</b>	<b>191,411</b>	
Average daily flow handled	MI/d	432	476	524	
	Annual growth		10.3%	10.2%	<b>10.2%</b>

Source: Company's audited PCRs and 2008 AIS submission.

Notes: CAGR is the "compounded average growth rate" over the period 2005-2007. "MI" stands for "million litres" and "MI/d" for "million litres per day".

3.18 The following table shows ADSSC's revenue driver forecasts for the period 2008-2013 as per its 2008 AIS:

**Table 3.14: Revenue driver projections – ADSSC**

		2008	2009	2010	2011	2012	2013	CAGR
<b>Number of customers</b>		<b>230,155</b>	<b>260,108</b>	<b>300,938</b>	<b>328,171</b>	<b>351,186</b>	<b>374,949</b>	
	Annual growth	2.5%	13.0%	15.7%	9.0%	7.0%	6.8%	<b>8.9%</b>
<b>Total volume handled</b>	<b>MI</b>	<b>217,021</b>	<b>227,284</b>	<b>246,323</b>	<b>267,223</b>	<b>296,052</b>	<b>314,446</b>	
Average daily flow handled	MI/d	595	623	675	732	811	861	
	Annual growth	13.4%	4.7%	8.4%	8.5%	10.8%	6.2%	<b>8.6%</b>

Source: Company's 2008 AIS submission.

Notes: CAGR is the "compounded average growth rate" over the period 2007-2013. "MI" stands for "million litres" and "MI/d" for "million litres per day".

### Observations

3.19 Review of ADSSC's revenue driver projections indicates that:

- The numbers of ADSSC's customers, up until 2008, is close to or slightly lower than the sum of water customer accounts for AADC and ADDC. However, for the future, ADSSC has projected a significantly higher growth rate for its customers than those for AADC and ADDC;
- ADSSC has projected similar growth rates for future customer numbers and wastewater volumes handled; and
- Average annual growth in ADSSC's wastewater volumes handled is generally lower than the past years and lies between the growth in total forecast water units distributed (forecast by AADC and ADDC combined) and the growth in total forecast water units transmitted (forecast by TRANSCO).

## 4. Opex projections

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### Introduction

- 4.1 Operating expenditure (opex) projections are one of the main inputs to the price control calculations, accounting for about one-third of the revenue requirement.<sup>2</sup>
- 4.2 The First Consultation Paper identified three main considerations when assessing opex projections: (a) the sufficiency of the allowed revenue to enable the company to finance its business; (b) the economy and efficiency of the sector; and (c) consistency in regulation.
- 4.3 The paper discussed a number of approaches to assessing opex allowances with a preference for a ‘top-down’ approach (assessing total opex of the company or business as a whole). The paper also identified the need for stronger incentives for the distribution companies to reduce their customer debt to a reasonable level.
- 4.4 This Section 4 summarises the responses to the First Consultation Paper on the approaches to the opex projections, followed by the Bureau’s assessment of these responses. To provide a background to such assessment, and to demonstrate the need for stronger incentives, this section starts with a review of the companies’ performance on opex to date.

### Companies’ performance on opex to date

- 4.5 In the following paragraphs, actual opex spent by each of the four network companies over the period 1999-2007 is assessed (in nominal terms) against the opex projections adopted for setting the previous and current price controls. The actual opex has been sourced from the companies’ audited accounts and comprises (a) staff costs, (b) repair, maintenance and consumables used, (c) water tanker hire cost (where applicable), and (d) administration and other expenses.

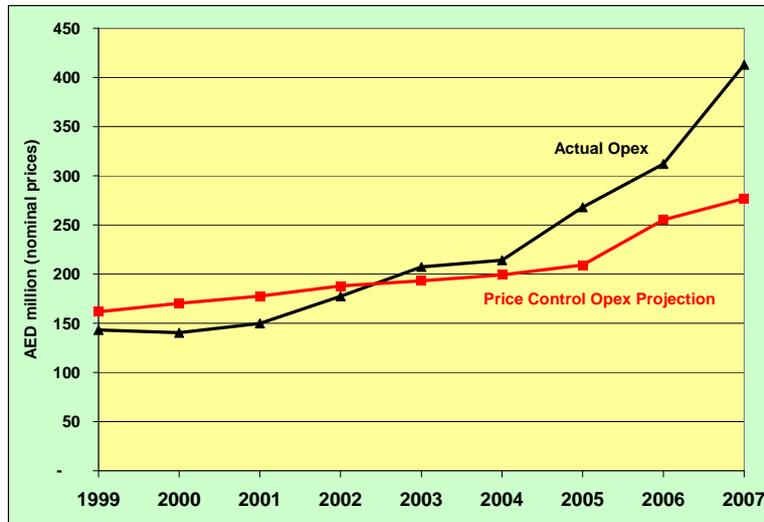
### *AADC’s opex performance*

- 4.6 The chart below shows AADC’s actual opex (for both water and electricity businesses combined) against its price control projected opex from 1999 to 2007:

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<sup>2</sup> Note that the term “operating expenditure” or “opex” in this paper refers to operating costs excluding depreciation.

**Figure 4.1: Assessment of actual opex - AADC**

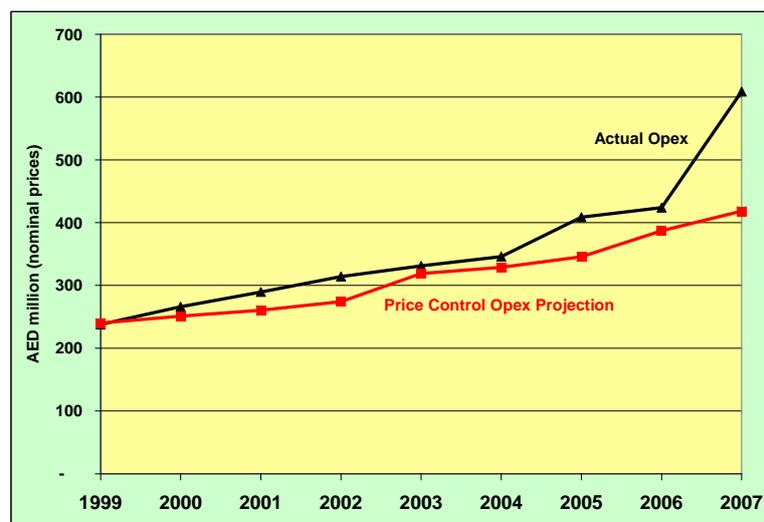


4.7 Over the period 1999-2007, AADC’s actual opex increased on average by about 14% per annum in comparison to an average increase of 7% per annum in its price control projected opex. Notably, opex doubled over the three year period 2004-2007. The increase in actual opex was higher for its electricity business than its water business.

***ADDC’s opex performance***

4.8 As shown below, ADDC’s actual opex (water and electricity combined) increased on average by about 12.5% per annum as compared to an increase of 7.2% per annum for the price control projected opex over the period 1999-2007. As with AADC, the increase in ADDC’s actual opex was higher for electricity than water.

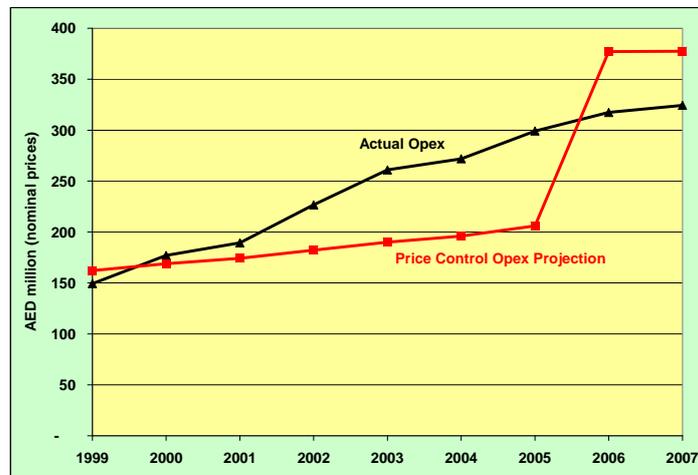
**Figure 4.2: Assessment of actual opex - ADDC**



### TRANSCO's opex performance

4.9 TRANSCO's overall performance on opex over the period 1999-2007 is in contrast to that of the other network companies. As the graph below shows, TRANSCO's actual opex (water and electricity combined) increased on average by about 10% per annum as compared to the increase in its price control projected opex of about 11% per annum over the said period. The turnaround in TRANSCO's performance occurred over 2006-2007 when TRANSCO was able to keep its actual opex below the opex projected by the Bureau for PC3 controls.

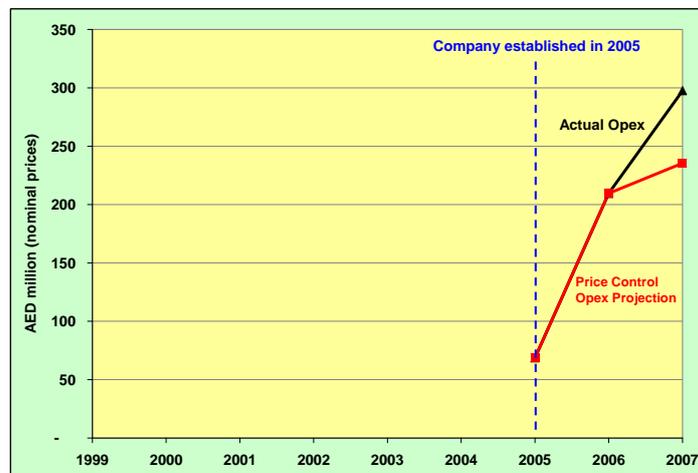
**Figure 4.3: Assessment of actual opex - TRANSCO**



### ADSSC's opex performance

4.10 The graph below shows ADSSC's actual opex against the price control projected opex from mid-2005 when the company was established:

**Figure 4.4: Assessment of actual opex - ADSSC**

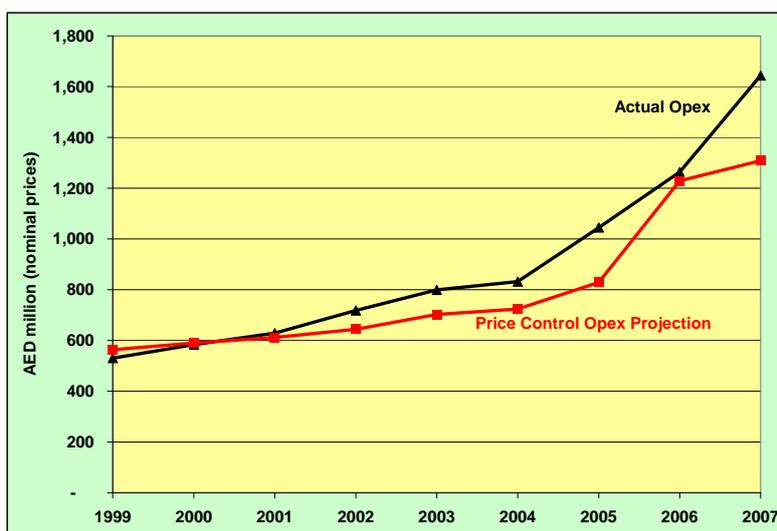


4.11 Over the short period since its inception, ADSSC's actual opex increased by 47% per annum on average, in contrast to the price control opex projections which increased by about 31% per annum (half-year opex for 2005 has been annualised appropriately). While this represented significant deviation from price control projections (which for 2005-2006 were set retrospectively to match actual opex spent), it could be argued that the opex for 2005-2006 for a company in its infancy were understated.

### Overall opex performance

4.12 The figure below compares the aggregate actual opex of the four network companies over the period 1999-2007 against the total opex projections adopted for the price controls:

**Figure 4.5: Assessment of actual opex – all network companies**



4.13 Total actual opex (in nominal terms) of the network companies (including ADSSC) increased from AED 531 million in 1999 to AED 1,644 million in 2007 i.e., by about 15% per annum. This compares unfavourably to the price control opex projections which (in nominal terms) increased from AED 564 million in 1999 to AED 1,455 million in 2007 i.e. by around 11% per annum.

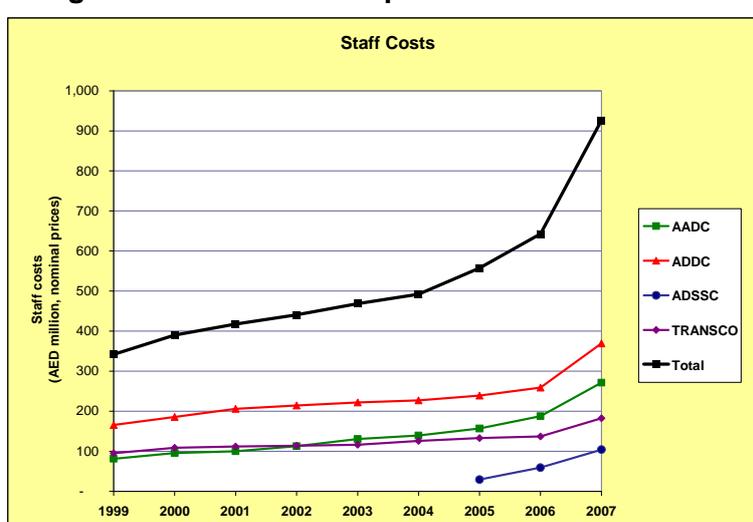
4.14 For water and electricity businesses only, actual opex increased by about 12% per annum over the period 1999-2007 whereas the price control projected opex increased by about 8% per annum.

4.15 By comparison, UAE CPI inflation over the period 1999-2007 averaged about 4.84% per annum. In other words, opex has risen at about three times the rate of inflation.

## Staff costs

- 4.16 For all network companies, staff costs (including salaries and all staff-related allowances) constitute a major (and often the largest) part of actual opex and hence merit a separate analysis. In 2007, staff costs accounted for about 56% to 66% of actual opex for water and electricity network companies (the figure is lower for ADSSC - about 35% - reflecting the greater extent of contracting out of its activities).
- 4.17 As shown in the graph below, total staff costs of the four network companies have increased from AED 342 million in 1999 to AED 926 million in 2007:

**Figure 4.6: Network companies' actual staff costs**



- 4.18 This graph also shows that staff costs increased particularly since 2004 reflecting the substantial increase in staff salaries and allowances implemented by the ADWEA group of companies. Total staff costs of network companies increased from 2004 to 2007 by 23.5% per annum (or cumulatively by around 88.3%) in nominal prices and by 15.6% per annum (or cumulatively by about 54.5%) in real prices. Total staff costs increased from 2004 to 2007 by AED 434 million in nominal prices (or AED 428 million in 2010 prices).

## Approach to opex projections

### Bureau's approach to date

- 4.19 The Bureau has used the following top-down approach for the current price controls for the sector companies:
- Base level of opex:** Determine a base level of opex by using the most recent actual level of opex;

- (b) **Adjustment for demand growth:** Adjust the base level of opex to reflect increased costs for future demand increases (a 0.75% increase in opex for each 1% increase in demand was adopted at the last price controls review);
- (c) **Adjustment for efficiency improvements:** Adjust the demand-adjusted opex for efficiency improvements expected over the control period (a 5% decrease in opex per year in real terms was used at the last price controls review); and
- (d) **Other adjustments:** Make further adjustments to opex projections which may be appropriate; for example, for one-off costs (or cost reductions) which were not observed in the past but are known about in advance for the future, or for anticipated changes in the real price of inputs used in the production process.

### ***First Consultation Paper***

- 4.20 The First Consultation Paper favoured the top-down approach explained above for PC4 controls in view of the main statutory considerations listed earlier. However, the paper expressed concerns on the increasing actual opex over time in excess of the opex allowances made in the price controls.
- 4.21 In order to exert a greater incentive for cost reduction, the paper suggested an alternative approach whereby opex projected for 2009 at the last price control reviews, converted into 2010 prices, should be used (wholly or partially) as the base level of opex for the PC4 controls.
- 4.22 The paper also expressed concern about the increasing levels of customer debt for AADC and ADDC over time to a level well in excess of international comparisons and suggested that an appropriate adjustment should be made to the opex allowances for the PC4 period by assuming a reduction in the bad debt provision in future.

### ***Responses***

- 4.23 Licensees generally expressed concerns on the potential base level of opex, assumptions for demand growth and efficiency adjustments, and adjustment for bad debt provision. The responses are summarised as follows:

#### ***Base level of opex for PC4***

- 4.24 AADC suggested that opex projected for 2009 at the last price control review should be used as the base level of opex for PC4 only if such base level reflects the recent increases in costs (e.g., staff costs) which may increase further. The company also

suggested considering the use of the company's budget for 2009 as the base opex level for PC4.

- 4.25 ADDC expressed its inability to accept the PC3 opex projection for 2009 as the base level for PC4, since it would not reflect the significant rise in staff costs and other indirect costs in Abu Dhabi over the PC3 period. To support its argument, ADDC presented its analysis to show increases in its opex over time in excess of PC3 opex projections and referred to media reports to highlight the recent increases in staff accommodation allowances due to shortage of rental accommodation. ADDC also highlighted the increase in the Bureau's licence fees over time due to these same reasons. It proposed that the company's expected opex for 2010 should be used as the base level. ADDC also asked for an additional opex allowance of around AED 500 million over the PC4 period for the education and certification of electricians and plumbers and an additional AED 250 million for active participation in Demand-Side Management (DSM) initiatives.
- 4.26 ADSSC proposed that the Bureau use the most recent audited figures of actual opex.
- 4.27 TRANSCO argued against using the 2009 opex projected at the last review as the PC4 base opex. It explained that there had been significant increases in staff salaries, allowances and housing costs as well as the Bureau's licence fees (which in TRANSCO's opinion could be due to the same cost increases), which would not be reflected in such base opex.

#### *Opex adjustments for demand growth and efficiency*

- 4.28 AADC sought clarification of the basis of the (0.75%) assumption for the opex adjustment for demand growth and the validity of its application to the company's current operations, particularly given the high infrastructure growth expected in the future.
- 4.29 ADDC expressed concerns on the assumptions for opex adjustments for demand growth and efficiency and presented its past performance on opex to show that such assumptions did not hold true for ADDC.
- 4.30 TRANSCO argued that the efficiency saving of 5% per annum is not achievable. In this regard, it highlighted the staff costs and the electricity costs of water pumping. The company stated its intention to analyse the increase in electricity consumption and its relationship with demand over the PC3 period and to present its findings in response to the Second Consultation Paper. However, its initial view was that 5% annual saving would not be achievable for electricity consumption and a separate efficiency target should be set for this cost component. TRANSCO also expressed its

concerns about the opex component relating to the Bureau's licence fees being subject to the same efficiency targets as other opex components and proposed that the Bureau's licence fees should be treated as a pass through cost.

- 4.31 Further, TRANSCO argued that, for it to benefit from the existing large user electricity tariff approved by the Bureau for water pumping, AADC and ADDC should be provided with incentives to install MDEC compliant 'time-of-day' meters and cooperate with TRANSCO to manage pumping load away from the peak hours. TRANSCO also stated that it has been undercharged by the distribution companies during the PC3 period for electricity consumption particularly at the generation sites in the Abu Dhabi region and indicated it would submit further analysis of this issue prior to the Draft Proposals.

#### *Bad debt reduction incentive*

- 4.32 AADC welcomed the incentive as it can highlight the importance of the issue for the attention of higher authorities. However, it suggested that efforts made by the businesses to date and their inability to reduce some debt should be recognised.
- 4.33 While acknowledging the Bureau's concerns regarding the level of customer debt, ADDC did not consider this incentive and the bad debt provision to be related. ADDC explained that its policy does not allow making any provision for bad debts in relation to either government or certain specified customers (which comprise the vast majority of customer debt) and that in some cases these debts are a result of disputed bills which were generated when customers were transitioned from fixed contracts to a metered service. ADDC expected that due to its continued efforts most of the debts of these customers would be cleared in 2009. It also highlighted the incentive inherent in reducing the provision for bad debts since this provision is made against the company's profit and argued that any further financial penalties for the company's failure to reduce bad debts would be punishment for failure to collect revenue which was already recognised as lost.

## **Assessment of responses**

### ***Base level of opex for PC4***

- 4.34 The Bureau acknowledges that using the 2009 opex projected at the last price control reviews would result in lower opex projections for PC4 than using the most recent actual audited opex. **Table 4.1** below shows the base level of opex for 2010 (in 2010 prices) for each company or business based on the 2009 opex projected at the last price control reviews:

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**Table 4.1: Opex base level derived from 2009 opex projected at last reviews**

Company	Business	2009 opex projected at last review (AED million, 2006 prices)	Opex base level for 2010 (AED million, 2010 prices)
AADC	Electricity	162.64	232.67
	Water	74.78	106.99
	Total	237.43	339.66
ADDC	Electricity	240.79	344.47
	Water	133.36	190.78
	Total	374.15	535.25
ADSSC*	Total	220.40	334.83
TRANSCO	Electricity	120.42	172.27
	Water	235.71	337.20
	Total	356.13	509.47
<b>Total</b>			<b>1,719.21</b>

Source: (1) Bureau's Final Proposals for PC3, November 2005; (2) Bureau's Addendum to Final Proposals for PC3 for AADC and ADDC, January 2006; and (3) Bureau's Final Proposals for ADSSC's first price controls, January 2008.

Notes: \* (1) All figures in the third column are in 2006 prices, except for ADSSC which is in 2005 prices. (2) Last column has been calculated by Bureau from the third column by applying UAE CPI data presented earlier in Section 1.

4.35 **Table 4.2** below shows, by comparison, the base level of opex for 2010 that would result if latest actual opex is used (2007 actual opex is used here as 2008 actual opex will not be available until later this year):

**Table 4.2: Opex base level derived from 2007 actual audited opex**

Company	Business	2007 actual audited opex (AED million, 2007 prices)	Opex base level for 2010 (AED million, 2010 prices)
AADC	Electricity	287.48	376.32
	Water	125.47	164.25
	Total	412.95	540.57
ADDC	Electricity	405.85	531.27
	Water	202.86	265.55
	Total	608.71	796.83
ADSSC	Total	297.63	389.61
TRANSCO	Electricity	147.94	193.66
	Water	176.45	230.98
	Total	324.39	424.64
<b>Total</b>		<b>1,643.69</b>	<b>2,151.65</b>

Source: Companies' audited Separate Business Accounts for 2007.

Notes: Last column has been calculated by Bureau from the third column by applying UAE CPI data presented earlier in Section 1.

4.36 The above tables show that the 2010 opex would be about AED 432 million higher in the latter case. This difference is similar to the cumulative increase in staff costs for all network companies from 2004 to 2007, which amounts to about AED 428 million (in 2010 prices) – see **Figure 4.6**. Such a difference is expected to increase when 2008 actual opex is considered (companies' 2008 audited accounts are currently not

available but are expected to show higher opex than 2007). On a company level, the approach using the 2009 opex projected at the last reviews would result in lower base level of opex for each network company except for TRANSCO.

- 4.37 The above analysis suggests a need to recognise the staff cost increase since the last review. However, we believe that some staff cost increase (particularly salaries) should be met by the companies from their efficiency initiatives and optimisation of resources rather than simply from additional opex allowance under the price controls.
- 4.38 Nevertheless, the Bureau considers that its traditional approach to setting base opex level will continue to result in rising sector costs and hence subsidy requirements. Increasing actual opex over time also means that there is more room for efficiency in future. Further, the performance of one network company (i.e., TRANSCO) in the sector has shown that a reduction in opex was possible even with rising staff salaries and allowances. Finally, the expected easing of inflation in the near future, particularly of the costs influenced by the construction sector including staff accommodation costs, may potentially result in reductions (in real terms) in the opex for network companies over the PC4 period. This is evidenced from recent media reports (as referred earlier in Section 2 of this paper) including the media report referred to by ADDC in its response to the First Consultation Paper.
- 4.39 With regards to ADDC's suggestion for an additional opex allowance of up to AED 500 million for trade education and certification, the mechanism described in paragraph 4.19(d) above ("other adjustment") exists to allow new obligations to be financed, if approved by the Bureau. The same applies to the additional suggestion by ADDC that a further AED 250 million be allowed for its active participation in DSM initiatives. However, such potential new obligations have not yet been discussed with the Bureau in any detail. If it wishes such proposals to be considered in the course of the present price control review, ADDC is recommended to enter into a separate dialogue with the Bureau and must explain its proposals in more detail. Alternatively, if new obligations are imposed on licensees in the course of a price control period, the approved costs can be 'logged up' and remunerated at the next price control reviews.

### ***Opex adjustments for demand growth and efficiency***

- 4.40 The consultation papers published by the Bureau during the 2002 and 2005 price control reviews explained the basis of the Bureau's assumptions for opex adjustments for demand growth (0.75% opex increase for each 1% increase in demand) and efficiency (opex reduction by 5% per annum in real prices). They provided a number of pieces of supporting evidence including the World Bank's research reports and experience from other countries.

- 4.41 The fact that actual opex for the network companies has increased significantly over time indicates greater potential for future reduction in opex. TRANSCO's performance on opex since 2004 indicates that the Bureau's assumptions are more widely achievable in the sector.
- 4.42 TRANSCO's performance on actual opex over the period 2004-2007 is summarised in the table below. The table shows that TRANSCO's actual opex increased in real prices by an average of 6% per annum for the electricity business and reduced by 5% per annum for the water business. Opex per unit transmitted (in real prices) reduced by 11% per annum and 14% per annum for the electricity and water businesses, respectively. (Similar reductions have been achieved for opex per unit of peak demands). This analysis, which is based on actual data for a sector network company, clearly demonstrates the economies of scale and the potential for efficiency improvements for other network companies in the sector.

**Table 4.3: TRANSCO's performance on opex since 2004**

		2004	2005	2006	2007	CAGR
<b>Electricity</b>						
Actual opex	AEDm, nominal prices	102	99	135	148	13%
	AEDm, 2004 prices	102	95	121	121	6%
Total units transmitted	GWh	20,741	23,912	27,739	34,817	19%
Total peak demand	MW	3,788	4,186	4,819	5,850	16%
Actual opex per unit	Fils/kWh, 2004 prices	0.49	0.40	0.44	0.35	<b>-11%</b>
Actual opex per unit peak	AED/kW, 2004 prices	27.03	22.61	25.10	20.74	<b>-8%</b>
<b>Water</b>						
Actual opex	AEDm, nominal prices	170	200	182	176	1%
	AEDm, 2004 prices	170	190	163	145	-5%
Total units transmitted	MIG	139,001	166,873	175,176	187,268	10%
Total peak demand	MIGD	457	575	538	567	7%
Actual opex per unit	AED/TIG, 2004 prices	1.22	1.14	0.93	0.77	<b>-14%</b>
Actual opex per unit peak	AED/TIGD, 2004 prices	370.96	330.52	303.78	255.15	<b>-12%</b>

Source: Bureau's calculations based on TRANSCO's audited Separate Business Accounts 2004-2007 and TRANSCO's AIS 2007-2008.

Notes: CAGR means "compounded average growth rate".

- 4.43 With regards to TRANSCO's concerns regarding water pumping costs, it should be noted that the 5% opex efficiency target (and the 0.75% demand-opex relationship) is an overall target, based on achievements in similar circumstances elsewhere. Within this overall target, some cost elements will have greater scope for efficiency improvements, while some will have lesser scope. Indeed, TRANSCO indicates it may have been undercharged for such costs during the PC3 period.
- 4.44 The Bureau does not therefore see any reason for treating water pumping costs as a special case, given the incentive TRANSCO has to optimise its power requirements. However, in recognition of TRANSCO's concerns, where time-of-day metering is not yet complete, the Bureau will continue to exert pressure on the distribution

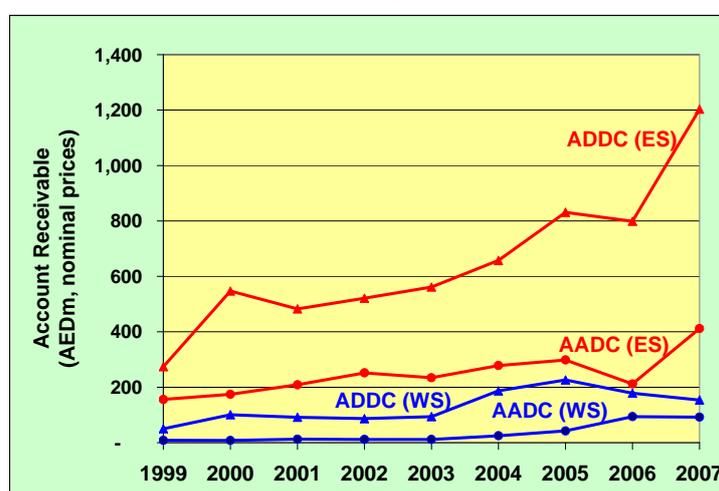
companies to comply with their obligations in a timely manner. In any case, the special customer tariff determined for TRANSCO's power requirements is structured in a way that the average tariff assumptions used for PC3 should work reasonably well even in the absence of such meters.

4.45 On the undercharging by the distribution companies for such electricity consumption over the PC3 period mentioned by TRANSCO, the Bureau will welcome the additional information to be submitted by TRANSCO to enable the Bureau to understand its implication for the price controls.

### **Customer debt reduction incentive**

4.46 While the Bureau acknowledges the incentive inherent in the accounting treatment of customer bad debts argued by ADDC, it is evident from distribution companies' performance on customer debts and doubtful debts that such an incentive has not been sufficient to improve their performance to date. As can be seen from the following chart, customer debts for both the distribution companies and for both water and electricity businesses have been increasing over time and particularly recently. Total customer debt (i.e. accounts receivable) for these companies has almost tripled since 1999 (i.e., an average annual increase of about 18% per annum) to about AED 1,861 million by end 2007.

**Figure 4.7: Distribution companies' performance on customer debts**



Source: AADC's and ADDC's audited Separate Business Accounts for 1999-2007.  
Notes: ES means "Electricity Supply" Business; WS means "Water Supply" Business.

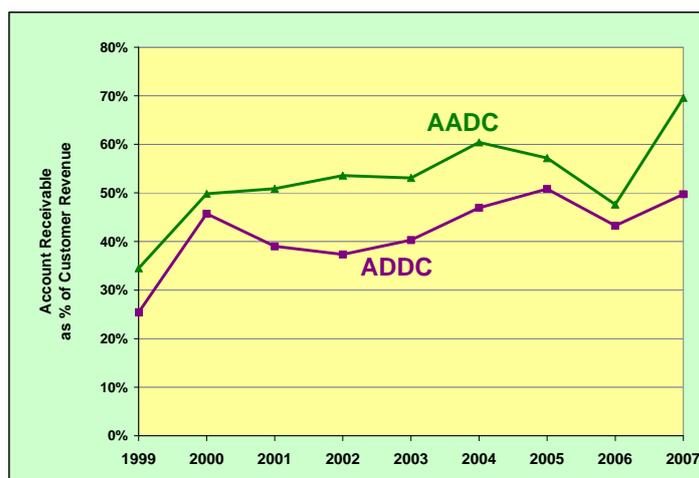
4.47 For each company, the customer account receivables as of end 2007 are as follows:

- (a) **AADC:** AED 412 million (electricity), AED 93 million (water); and
- (b) **ADD:** AED 1,203 million (electricity), AED 154 million (water).

4.48 As a percentage of customer revenue (i.e., revenue from tariff, connection and disconnection charges), customer debts have also increased significantly to 54% for both companies combined as shown in the following chart. By end 2007, the proportions of customer account receivables to customer revenues were as follows:

- (a) **AADC:** 65% (electricity); 99% (water); 70% (total); and
- (b) **ADDC:** 60% (electricity); 21% (water); 50% (total).

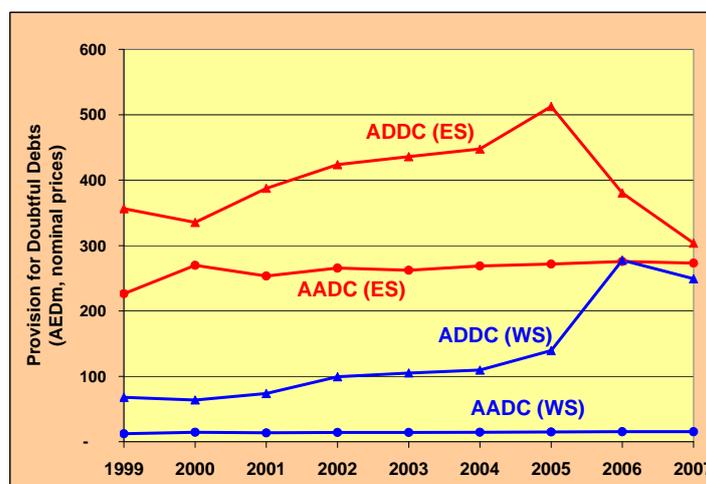
**Figure 4.8: Customer debts as percentage of customer revenue**



Source: Bureau's calculations based companies' audited SBAs for 1999-2007.

4.49 The above customer debts do not include doubtful or bad debts for which the companies have already made provisions (i.e., considered lost revenues, affecting their profits). The graph below shows the trend of these provisions for bad debts for each supply business of the distribution companies:

**Figure 4.9: Distribution companies' performance on bad debts**



Source: AADC's and ADDC's audited Separate Business Accounts for 1999-2007.

Notes: ES means "Electricity Supply" Business; WS means "Water Supply" Business.

- 4.50 There has been some significant reversal of bad debt provisions by the distribution companies over recent years, indicating their efforts to collect such debts. However, despite these efforts, the current levels of bad debts are still significant. As of end 2007, these bad debts amounted to a total of about AED 842 million.
- 4.51 These significant levels of customer debts and bad debts highlight the need for a mechanism to incentivise the distribution companies to reduce their customer debts. We however note ADDC's concern about any adjustment to the opex allowance for bad debt reduction being already recognised as a revenue lost. We also note AADC's suggestion to highlight the companies' performance on customer debt collection. The Bureau therefore now considers that the incentives to reduce customer debts may be better provided via the introduction of a new PIS Category A indicator at this review (see Section 7) rather than through an opex adjustment.

### **Bureau's current thinking**

- 4.52 In view of the above discussion, the Bureau's current thinking is to use the same top-down approach as used at the last price control reviews to project opex allowances for the PC4 period with the following features:
- (a) the same adjustments for demand growth (0.75% opex increase for each 1% demand increase) and efficiency (5% per annum in real terms) as used at the last reviews; and
  - (b) the use of the opex projected for 2009 at the last price control reviews, converted into 2010 prices, along with some additional opex for staff allowances (for example, housing costs), as the base level of opex for the PC4 controls.
- 4.53 Further, we are proposing a new PIS Category A indicator for AADC and ADDC to provide incentives to reduce customer debts (see Section 7).

## 5. Capex, asset valuation and depreciation

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### Introduction

- 5.1 As mentioned in Section 2, capital costs enter into the price control calculations in two ways, in the form of (i) return of capital (i.e., depreciation) and (ii) return on capital (i.e., allowed profit). The First Consultation Paper explained the calculation of these two building blocks of revenue requirements and the updating of the Regulatory Asset Values (RAVs) for capital expenditure (capex) and depreciation.
- 5.2 The Bureau has to date adopted the “ex-post” approach towards the treatment of capex for network companies subject to price controls as follows:
- (a) provisional allowances for future capex are incorporated into the price controls;
  - (b) actual capex spent by a company is assessed at the end of the control period against the efficiency criteria established by the Bureau; and
  - (c) necessary financial adjustments are then made at the subsequent price control review to compensate the company (taking account of the time value of money and financing costs foregone or unduly earned) for the difference between the provisional capex allowed in the price controls and the actual efficient capex.
- 5.3 The Bureau’s efficiency criteria (as established in 1999 and applied consistently thereafter) are that the capex will be considered efficient if it:
- (a) was required to meet growth in customer demand or relevant security standards; and
  - (b) was efficiently procured (procurement to be interpreted both in relation to both the tendering process and project management).
- 5.4 The application of the above approach to capex over each price control period to date is summarised in the following table:

**Table 5.1: Treatment of capex in price controls**

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

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

5.6 **Table 5.1** above demonstrates that:

- (a) PC1 capex is a closed matter requiring no further adjustment at this review;
- (b) The results of PC2 capex efficiency review need to be incorporated into PC4 controls for AADC, ADDC and TRANSCO at this review.
- (c) No adjustment is required at this review for past capex spent by ADSSC or for PC3 capex for the other network companies. The Bureau intends to undertake an efficiency review for such capex in 2010 when the audited accounts will be available for all the relevant years.
- (d) An approach to the treatment of PC4 capex (including any provisional allowances) needs to be agreed at this review and incorporated into PC4.

5.7 This Section 5 therefore discusses how the results of PC2 capex efficiency review should be incorporated into PC4 controls and how PC4 capex should be treated at this review. This section also briefly discusses comments made by some respondents concerning the treatment of PC3 capex.

## Treatment of PC2 capex

### *Provisional PC2 capex allowances in PC2*

5.8 **Table 5.2** below shows the provisional capex allowances for the PC2 period (2003-2005) which were incorporated into the PC2 controls for AADC, ADDC and TRANSCO at the 2002 price controls review. (The PC2 calculations at that review were carried out in 2003 prices). The calculations at this review will be performed in 2010 prices. These allowances are therefore also shown in 2010 prices, where appropriate.

**Table 5.2: Provisional PC2 capex allowances included in PC2 controls**

AED million, 2003 prices		2003	2004	2005	Total
AADC	Electricity	205.80	205.80	205.80	617.39
	Water	72.37	72.37	72.37	217.11
	Total	278.17	278.17	278.17	834.50
ADDC	Electricity	461.88	484.97	509.22	1,456.06
	Water	151.42	158.99	166.94	477.35
	Total	613.30	643.96	676.16	1,933.41
TRANSCO	Electricity	1,267.79	730.38	346.04	2,344.20
	Water	1,261.10	1,280.09	243.24	2,784.43
	Total	2,528.89	2,010.47	589.28	5,128.64
Total	2003 prices	3,420.35	2,932.59	1,543.60	<b>7,896.55</b>
	2010 prices	5,628.45	4,825.80	2,540.11	<b>12,994.36</b>

Source: Bureau's Final Proposals for PC2, November 2002.

Notes: All figures are in 2003 prices, except for 'Total' where figures are also expressed in 2010 prices for later comparisons.

5.9 As the above table shows, PC2 provisional capex allowances amounted to a total of AED 7,896 million in 2003 prices (or AED 12,994 million in 2010 prices).

### ***PC2 capex efficiency review***

5.10 It was agreed at the previous price control reviews that:

- (a) The assessment of PC2 capex efficiency for both water and electricity businesses will be undertaken in 2006 against the Bureau's efficiency criteria by independent consultants appointed by the Bureau, when audited data for all PC2 years become available; and
- (b) Any adjustment for differences between efficient and provisional PC2 capex (including foregone financing costs) will be incorporated at the 2009 price controls review in the same manner as used at the 2005 review for PC1 capex.

5.11 Accordingly, in September 2006, the Bureau appointed Sinclair Knight Merz (SKM) and WS Atkins as the independent consultants to undertake the efficiency review of PC2 capex for the electricity and water businesses, respectively. The consultants undertook this review over a period of about one year in close consultation with the Bureau and the companies. The consultants assessed both the capex processes and sample projects (of different types and sizes, and amounting for a majority of the capex spent) for each business, and produced several reports after considering the comments of all the stakeholders. The draft and final reports produced by the consultants for each company separately in May and November 2007 were shared with the companies.

5.12 The consultants' efficiency assessments of PC2 capex are summarised below:

**Table 5.3: Consultants' efficiency assessment of PC2 capex**

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

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

### **Actual audited PC2 capex**

5.13 The following table lists the actual PC2 capex as per the audited Separate Business Accounts (SBAs) of the three water and electricity network companies:

**Table 5.4: Actual PC2 capex as per audited SBAs**

AED million, nominal prices		2003	2004	2005	Total
AADC	Electricity	409.91	399.28	548.98	1,358.16
	Water	130.50	155.54	207.68	493.73
	Total	540.41	554.82	756.66	1,851.89
ADDC	Electricity	582.03	512.24	296.89	1,391.16
	Water	466.21	291.79	82.99	840.99
	Total	1,048.24	804.02	379.88	2,232.15
TRANSCO	Electricity	1,135.39	1,729.96	1,478.15	4,343.50
	Water	1,958.58	2,423.44	-859.25	3,522.76
	Total	3,093.96	4,153.40	618.90	7,866.26
Total	Nominal prices	4,682.61	5,512.24	1,755.44	<b>11,950.30</b>
	2003 prices	4,682.61	5,345.51	1,620.64	<b>11,648.77</b>
	2010 prices	7,705.59	8,796.43	2,666.89	<b>19,168.91</b>

Source: Companies' Audited Separate Business Accounts (SBAs) for 2003-2005

Notes: All figures are in 2003 prices, except for 'Total' where figures are also expressed 2010 prices for later comparisons. Negative figure for TRANSCO for 2005 are due to "Advances to Contractors" in earlier years.

5.14 The three companies therefore spent over the PC2 period a total capex of AED 11,950 million in nominal prices. When compared in 2010 prices, total actual capex was therefore higher than the total provisional allowances by about AED 6,175 million.

5.15 The above actual PC2 capex has been derived from the companies' cash flow statements in the audited SBAs as follows:

- (a) Purchase of property, plant and equipment;
- (b) Add: Advances to contractors;
- (c) Subtract: Proceeds from disposal of property, plant and equipment;

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

### ***First Consultation Paper***

5.16 The First Consultation Paper highlighted the Bureau's duty to promote sound investment processes and sought the views of the respondents on how the consultants' efficiency assessments should be applied to actual PC2 capex. The Bureau was particularly interested in approaches that take into account the relative efficiency performance of the businesses, so as to provide an incentive to the better-performing companies. The paper stated the Bureau's intention to use the consultants' efficiency review results (as set out in **Table 5.3** above) to inform the determination of efficient PC2 capex for AADC, ADDC and TRANSCO.

5.17 The paper also stated the Bureau's thinking that any foregone or unduly earned financing costs on PC2 capex would then be incorporated into the PC4 controls via an adjustment to the revenue allowance over the PC4 period, rather than through inclusion within the RAVs (over 30 years) as was done in the past for PC1 capex.

### ***Responses***

5.18 In their responses to the First Consultation Paper, the three water and electricity network companies sought clarifications on certain aspects of PC2 capex treatment and referred to their earlier comments on the two consultants' efficiency review. These responses are summarised as follows:

- (a) AADC referred to its previous comments on the consultants' findings and sought further clarification on the relative efficiency based approach mentioned in the paper.
- (b) ADDC reiterated many of its previous comments on the consultants' review relating to its concerns about the use of two different consultants and different efficiency assessment criteria and methodologies for water and electricity, the lack of recognition of the operating environment for the sector companies, and ADDC's limited control over projects managed by ADWEA. ADDC also reiterated that a permanent reduction in the capital value of assets that were

considered inefficient when acquired is inappropriate given the assets concerned are currently being used due to an exceptional demand growth. The company then supported the foregone financing costs to be remunerated via an adjustment to the revenue requirement over the PC4 period.

- (c) TRANSCO also repeated many of its previous comments on the consultants' review particularly relating to the failure of consultants' frontier company or best practice concepts to take account of the operating environment of the sector companies, arguments for or against the choice of certain specific type of pipe materials, into the difference in consultants' approaches and efficiency results for water and electricity businesses. TRANSCO reiterated its concern that it is being penalised twice for delays in the Shuwei hat water transmission pipeline through the capex efficiency assessment and the separate financial adjustment (discussed in Section 8). TRANSCO also supported the remuneration of the foregone financing costs via adjustment to the revenue requirement over the PC4 period as it argued for the same at the last price control review.

### ***Assessment of responses***

- 5.19 The companies' comments on the consultants' PC2 capex efficiency review and their findings were already raised and considered by the consultants during the efficiency review. Even though the consultants employed different methodologies for this review, they followed the same two efficiency criteria established by the Bureau (set out in paragraph 5.3 above). Moreover, the fact that the two consultants arrived at very similar conclusions strengthened each other's methodology and report.
- 5.20 With regards to TRANSCO's comment on the adjustment for the delay in the Shuwei hat water pipeline, the Bureau considers that the PC2 capex review took account of such delay in relation to its effect on the capex efficiency and hence the transmission network costs. In contrast to this, the Bureau's proposed financial adjustment (discussed in Section 8) relates to the effect of such delay on the production costs. This delay resulted in PWPA availability payments by ADWEC to Shuwei hat IWPP without utilising the available water production capacity.
- 5.21 The clarification sought by AADC on the relative-efficiency approach mentioned in the First Consultation Paper is provided in the next sub-section.
- 5.22 Finally, the Bureau welcomes the companies' support for remuneration of foregone financing costs relating to PC2 capex via adjustment to the revenue requirement over the PC4 period.

## **Possible approaches to apply PC2 capex efficiency results**

5.23 Three main options may be considered on how to apply the PC2 capex efficiency scores recommended by the consultants:

- (a) Apply consultants' capex efficiency scores without any adjustment – this reflects the strict application of the approach agreed at the 2002 price control review for the treatment of PC2 capex; or
- (b) Apply some proportion, say, half of the capex inefficiencies identified by the consultants – this will reduce the financial impact of the consultants' efficiency assessment on the network companies and also address many of the concerns expressed by the companies on such assessment; or
- (c) Apply a relative-efficiency based approach – this will reflect the relative rather than absolute efficiency assessment by the consultants, will have the benefits identified for the approach at (b) above. It will mean each company is assessed against its peers in the sector and will be a significant step towards the relative-efficiency based approach agreed for PC3 capex (with the difference that the PC3 capex approach also requires adjustment for movement of the sector's capital efficiency frontier).

5.24 Each of these approaches is discussed below:

### **Approach 1: Apply consultants' PC2 capex efficiency scores without any adjustment**

5.25 In this approach, the following efficiency scores, as determined by the two consultants, are applied to the actual audited PC2 capex (as shown in **Table 5.4** above) to determine the efficient PC2 capex:

**Table 5.5: Approach 1 - Consultants' PC2 capex efficiency scores**

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

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

5.26 The efficient PC2 capex as estimated by Approach 1 for each company are presented in **Table 5.6** below:

**Table 5.6: Approach 1 – Efficient PC2 capex**

AED million, 2003 prices		2003	2004	2005	Total	Total efficient capex over and above provisional allowances
AADC	Electricity	379.57	358.55	469.32	1,207.44	590.05
	Water	119.67	138.32	175.82	433.81	216.70
	Total	499.24	496.86	645.14	1,641.25	806.75
ADDC	Electricity	524.41	447.57	246.96	1,218.93	-237.13
	Water	410.27	249.00	67.43	726.70	249.34
	Total	934.68	696.57	314.38	1,945.63	12.21
TRANSCO	Electricity	1,062.72	1,570.26	1,277.31	3,910.29	1,566.09
	Water	1,688.29	2,025.82	-683.80	3,030.31	245.88
	Total	2,751.02	3,596.08	593.51	6,940.60	1,811.97
Total	2003 prices	4,184.93	4,789.52	1,553.03	<b>10,527.48</b>	<b>2,630.93</b>
	2010 prices				<b>17,323.75</b>	<b>4,329.39</b>

Notes: Bureau's calculations

Notes: All figures are in 2003 prices, except for 'Total' where figures are also expressed in 2010 prices for later comparisons.

5.27 Approach 1 therefore results in total efficient PC2 capex of about AED 2,631 million (2003 prices) for the three network companies over and above the provisional allowances incorporated into PC2 controls.

### **Approach 2: Apply half of PC2 capex inefficiencies identified by consultants**

5.28 In this approach, the following efficiency scores are applied to the actual audited PC2 capex (as shown in **Table 5.4** above) to determine the efficient PC2 capex:

**Table 5.7: Approach 2 - Adjusted PC2 capex inefficiencies**

Company	Electricity	Water
<b>AADC</b>	96.30%	95.85%
<b>ADDC</b>	95.05%	94.00%
<b>TRANSCO</b>	96.80%	93.10%

Source: Bureau's calculations

5.29 To clarify how Approach 2 scores have been derived, the score for AADC's electricity business is explained. For this business, the consultant assessed the efficiency to be 92.6%. Capex inefficiency identified by the consultant is therefore 7.4% (i.e., 100% minus 92.6%). Half of this inefficiency is 3.7%. In the above table, the efficiency score for AADC's electricity business is therefore 96.3% (i.e., 100% less 3.7%, or 92.6% plus 3.7%).

5.30 The efficient PC2 capex for each company determined by this approach are presented in **Table 5.8** below:

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**Table 5.8: Approach 2 – Efficient PC2 capex**

AED million, 2003 prices		2003	2004	2005	Total	Total efficient capex over and above provisional allowances
AADC	Electricity	394.74	372.87	488.07	1,255.68	638.29
	Water	125.08	144.58	183.78	453.44	236.33
	Total	519.82	517.45	671.85	1,709.12	874.63
ADDC	Electricity	553.22	472.15	260.52	1,285.90	-170.16
	Water	438.24	265.98	72.02	776.24	298.89
	Total	991.46	738.14	332.55	2,062.14	128.73
TRANSCO	Electricity	1,099.05	1,623.95	1,320.98	4,043.98	1,699.77
	Water	1,823.44	2,187.97	-738.54	3,272.88	488.44
	Total	2,922.49	3,811.92	582.44	7,316.85	2,188.22
Total	2003 prices	4,433.77	5,067.51	1,586.84	<b>11,088.12</b>	<b>3,191.57</b>
	2010 prices				<b>18,246.33</b>	<b>5,251.97</b>

Source: Bureau's calculations

Notes: All figures are in 2003 prices, except for 'Total' where figures are also expressed in 2010 prices for later comparisons.

5.31 Approach 2 therefore results in total efficient PC2 capex of about AED 3,192 million (2003 prices) for the three network companies over and above the provisional allowances incorporated into PC2 controls.

**Approach 3: Apply consultants' relative PC2 capex efficiency scores**

5.32 In this approach, relative efficiency scores have been derived from the consultants' recommended efficiency scores. Relative scoring is carried out separately for water and electricity businesses. For example, the highest efficiency score for electricity businesses is 93.6% for TRANSCO. TRANSCO's electricity business is therefore assigned a relative efficiency score of 100%. The other two companies are then assigned scores relative to this. AADC's electricity business (which has a consultant's efficiency score of 92.6%) is therefore assigned a relative efficiency score of 98.93% (i.e. 92.6% divided by 93.6%). Similarly, ADDC's electricity business (with a consultant's efficiency score of 90.1%) is assigned a relative efficiency score of 96.26% (i.e. 90.1% divided by 93.6%). These resulting relative efficiency scores are shown below:

**Table 5.9: Approach 3 - Relative PC2 capex efficiency scores**

Company	Electricity	Water
AADC	98.93%	100.00%
ADDC	96.26%	95.97%
TRANSCO	100.00%	94.00%

Source: Bureau's calculations

5.33 This results in the following efficient PC2 capex for each company:

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**Table 5.10: Approach 3 – Efficient PC2 capex**

AED million, 2003 prices		2003	2004	2005	Total	Total efficient capex over and above provisional allowances
AADC	Electricity	405.53	383.06	501.41	1,289.99	672.61
	Water	130.50	150.84	191.74	473.08	255.97
	Total	536.03	533.90	693.14	1,763.07	928.57
ADDC	Electricity	560.27	478.17	263.84	1,302.28	-153.78
	Water	447.40	271.54	73.53	792.47	315.12
	Total	1,007.67	749.71	337.37	2,094.75	161.34
TRANSCO	Electricity	1,135.39	1,677.63	1,364.65	4,177.66	1,833.46
	Water	1,841.11	2,209.18	-745.69	3,304.59	520.16
	Total	2,976.49	3,886.81	618.95	7,482.26	2,353.62
Total	2003 prices	4,520.19	5,170.42	1,649.47	<b>11,340.08</b>	<b>3,443.53</b>
	2010 prices				<b>18,660.94</b>	<b>5,666.58</b>

Source: Bureau's calculations

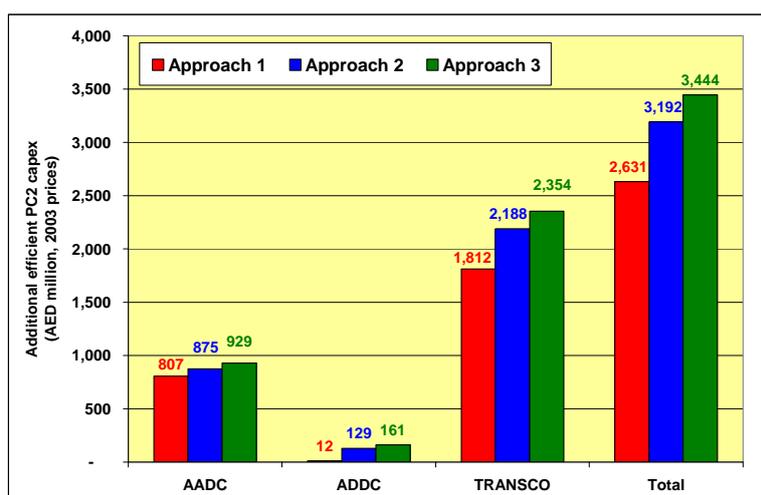
Notes: All figures are in 2003 prices, except for 'Total' where figures are also expressed in 2010 prices for later comparisons.

5.34 Approach 3 therefore results in total efficient PC2 capex of about AED 3,444 million (2003 prices) for the three network companies over and above the provisional allowances incorporated into PC2 controls.

#### Summary of results from three approaches

5.35 **Figure 5.1** below present the efficient PC2 capex over and above provisional allowances (in AED million, 2003 prices), as estimated for the three approaches, for each company and its respective business:

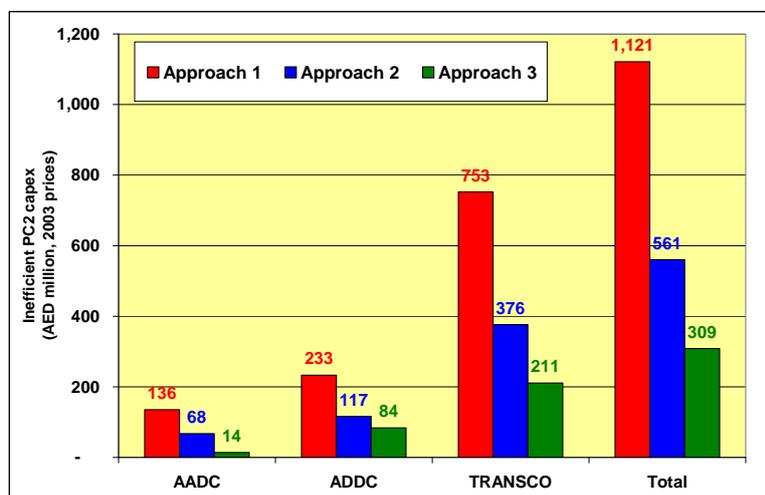
**Figure 5.1: Additional efficient PC2 capex under three approaches**



5.36 **Figure 5.2** below presents the results of these approaches in terms of the amounts of inefficient PC2 capex (which could be disallowed from the price controls). The highest inefficient amount is estimated under Approach 1 at around AED 1,121

million (2003 prices), followed by that for Approach 2 at about AED 561 million (2003 prices) and Approach 3 at AED 309 million (2003 prices).

**Figure 5.2: Inefficient PC2 capex under three approaches**



5.37 The above tables and graphs show that Approach 3 (i.e., applying relative efficiency scores) gives the most favourable results for the companies, followed by Approach 2 (i.e., applying half of consultants' inefficiency scores) and Approach 1 (i.e., applying consultants' efficiency scores without any adjustment).

### ***Bureau's current thinking***

5.38 The Bureau's duty is to promote sound investment processes and the agreement at the 2002 price control review suggests that the independent consultants' efficiency review results (as set out in **Table 5.3**) above should be applied to the PC2 capex. However, in light of the responses to the First Consultation Paper, the Bureau seeks views of the respondents on the alternative two approaches discussed above, particularly the relative-efficiency based approach.

5.39 The Bureau's current thinking is that any foregone or unduly earned financing costs relating to the PC2 capex should be incorporated into the PC4 controls via an adjustment to the revenue allowance over the PC4 period.

## **Treatment of PC3 capex**

### ***First Consultation Paper***

5.40 The First Consultation Paper described the approach agreed at the 2005 price controls review to the treatment of capex spent over the PC3 period (2006-2009). Provisional allowances for PC3 capex were incorporated into the PC3 controls. An

efficiency review of such capex would be undertaken in 2010 when actual audited data would be available for all the relevant years. A relative-efficiency based approach, along with an adjustment reflecting the movement in the capex efficiency frontier of the sector, would then be applied to determine the efficient PC3 capex. Any difference between the efficient and provisional PC3 capex (along with the foregone or unduly earned financing costs) would be incorporated into future price controls at the next price control review.

## **Responses**

- 5.41 While no further action is required at this review in relation to the PC3 capex, ADDC sought clarification on the treatment of payments to be made by the company to the developers of mega projects to acquire their newly built network assets. ADDC did not agree with the relative-efficiency based approach mentioned in the First Consultation Paper for the treatment of PC3 capex and argued that incentivising efficiency by penalising the least efficient company while rewarding the most efficient company in the sector is redundant since these incentives neutralise each other at the level of ADWEA (which owns all the network companies).
- 5.42 TRANSCO sought further clarification on the precise operation of the relative-efficiency based approach agreed for the treatment of PC3 capex and emphasised that setting the efficient frontier in the correct place would be the key challenge having significant impact on the companies and hence should be transparent.

## **Assessment of responses**

- 5.43 The Bureau would like to clarify that all capex (incurred over PC3 or PC4 period) including payments to the developers of mega projects are subject to assessment against the Bureau's efficiency criteria. In the case of mega projects, the emphasis of such an assessment would however be on the role and performance of the network companies in ensuring the reasonableness and efficiency of project designs, specifications and procurement processes used by the developers. The Bureau believes that subjecting mega projects-related capex to the efficiency review and not treating such capex on a pass through basis is in the interest of the sector. This is because it provides a leverage for the licensees in dealing with the developers.
- 5.44 The relative-efficiency based approach for the PC3 capex was agreed at the 2005 price control review and is not an issue for consultation at this review. Further, the efficiency incentives are targeted towards individual licensees (rather than ADWEA, which is not a licensee) and towards benefiting the sector customers (or the government, as the subsidy provider to the sector).

- 5.45 The operation of Approach 3 described earlier for PC2 capex should provide further clarification on the relative-efficiency approach agreed for the PC3 capex. However, setting of the capital efficiency frontier for PC3 capex (not considered in Approach 3 for the PC2 capex) would be discussed at the next price control review when actual audited PC3 capex would be available for efficiency assessment.

## **Treatment of PC4 capex**

### ***First Consultation Paper***

- 5.46 The price control calculations use future capex projections to update the RAV from year to year over the control period. The First Consultation Paper discussed in some detail the ex ante and ex post approaches (as well as some variants thereof, for example, menu regulation) to the assessment and treatment of future capex while setting the price controls. The paper highlighted the advantages and disadvantages of these approaches, particularly in terms of data requirements, risks and efficiency incentives for the companies.
- 5.47 At the previous price control reviews, the Bureau indicated its willingness to consider the ex-ante approach to capex in the future. However, given the uncertainty associated with capex forecasts (particularly those relating to new developments in Abu Dhabi) and the satisfactory working of the ex-post approach over the years, the paper stated the Bureau's thinking to continue with its ex-post approach for PC4 capex. That is, provisional capex allowances for the PC4 period should be financed at this review and actual capex spent over the PC4 period should then be assessed against the Bureau's efficiency criteria for any financial adjustment at the next review.
- 5.48 It was noted that the provisional capex used in setting the price control is solely to facilitate the financing of capex and the smoothing of the price control revenue from one period to another. It is not intended to be indicative of the Bureau's views of the appropriate or efficient level of capex. Once the audited accounts for all the years of the PC4 period are available, the actual capex spent by all the network companies (including ADSSC) over the PC4 period will be assessed using the relative-efficiency score approach as agreed for PC3 capex for the water and electricity network companies.

### ***Responses***

- 5.49 The respondents to the First Consultation Paper were supportive of the continuation of the ex post approach to the treatment of PC4 capex at this review. ADDC suggested that the capex relating to the purchase of network assets from the

developers of the mega projects should be included in the provisional allowances for PC4 capex.

### **Assessment of responses and PC4 capex forecasts**

5.50 The Bureau welcomes the respondents' support for the adoption of ex post approach to the treatment of PC4 capex. The Bureau is open minded on including mega projects related capex in the provisional PC4 capex allowances if such capex can be forecast with reasonable accuracy and supporting explanation or justification. However, no such forecasts are available to the Bureau at this stage. In any case, the main advantage of the ex-post approach is that it can handle well the unanticipated investments such as those relating to mega projects. The company will be remunerated for all efficient capex at a future date while taking account of foregone financing costs and time value of money.

5.51 To make provisional allowances for PC4 capex at this review, the Bureau has reviewed the PC4 capex forecasts presented in the companies' latest (2008) AIS. These forecasts are summarised in the table below:

**Table 5.11: PC4 capex forecasts as per companies' 2008 AIS**

AED million, 2008 prices		2010	2011	2012	2013	Total
AADC	Electricity	1,061.39	1,072.18	1,049.59	1,052.99	4,236.14
	Water	198.15	140.38	130.00	138.00	606.53
	Total	1,259.54	1,212.56	1,179.59	1,190.99	4,842.67
ADDC	Electricity	1,496.78	1,500.60	1,500.21	1,500.21	5,997.80
	Water	682.47	681.78	680.64	680.64	2,725.52
	Total	2,179.25	2,182.39	2,180.85	2,180.85	8,723.33
TRANSCO	Electricity	8,621.93	5,454.78	2,984.00	764.46	17,825.16
	Water	2,955.49	2,182.36	3,197.25	2,774.51	11,109.60
	Total	11,577.41	7,637.13	6,181.25	3,538.97	28,934.76
ADSSC	Total	5,977.73	5,962.00	5,229.78	5,623.35	22,792.86
<b>Total</b>		<b>20,993.93</b>	<b>16,994.08</b>	<b>14,771.46</b>	<b>12,534.15</b>	<b>65,293.62</b>

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

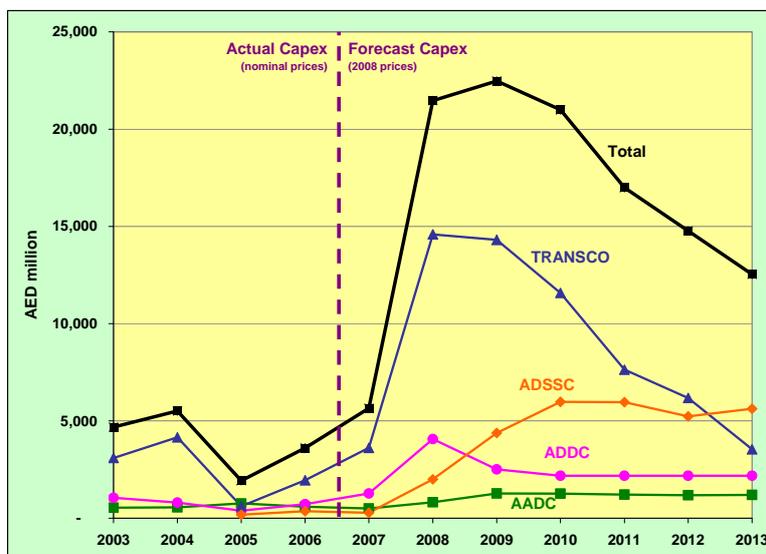
5.52 The four network companies have forecast to incur a capex of about AED 65 billion in total or over AED 16 billion a year (in 2008 prices) over the PC4 period. The majority of such capex is projected to be spent by TRANSCO (AED 29 billion in total) and ADSSC (AED 23 billion in total).

5.53 The following chart portrays these forecasts (including those for 2008 and 2009) against the actual audited capex over recent years (2003-2007):

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**Figure 5.3: Assessment of PC4 capex forecasts against historical actual capex**



Source: Actual capex as per companies' audited SBAs 2003-2007 and forecast capex as per companies' 2008 AIS

5.54 The above graph clearly shows substantial increases in the capex forecasts for all companies, particularly for TRANSCO and ADSSC, as compared to the past levels of actual capex. More specific comparison between future forecasts and past capex is summarised in the table below:

**Table 5.12: Assessment of PC4 capex forecasts against past capex levels**

AED million		Actual past capex 2003-2007 (nominal prices)		PC4 capex forecasts 2010-2013 (2008 prices)	
		Total	Annual average	Total	Annual average
AADC	Electricity	2,269	454	4,236	1,059
	Water	659	132	607	152
	Total	2,928	586	4,843	1,211
ADDC	Electricity	2,878	576	5,998	1,499
	Water	1,341	268	2,726	681
	Total	4,220	844	8,723	2,181
TRANSCO	Electricity	8,534	1,707	17,825	4,456
	Water	4,893	979	11,110	2,777
	Total	13,427	2,685	28,935	7,234
ADSSC	Total	806	269	22,793	5,698
<b>Total</b>		<b>21,381</b>	<b>4,276</b>	<b>65,294</b>	<b>16,323</b>

Source: Bureau's calculations based on companies' 2008 AIS submissions and audited SBAs for 2003-2007

5.55 The above table shows that the companies' total capex forecast for the four-year PC4 period (2010-2014) amounts to over AED 65 billion in total, which is around three times the total actual capex spent in the past five years (2003-2007).

- 5.56 While the Bureau understands that the sector companies are expecting significant growth in infrastructure, the magnitude of the projected growth discussed above would require further analysis given the recent slow down in the global and local economy and the resource capabilities available in the sector companies to undertake such capex. While the Bureau is intending to review such projections in detail as part of sector's 2009 capacity planning processes (five-year planning statements), we are currently minded to base the provisional PC4 capex allowances on the actual capex spent by the companies in recent years up to 2008 (for which the audited accounts are expected by end June 2009) rather than on their respective capex forecasts.
- 5.57 Notwithstanding the foregoing, if such forecast capex does indeed materialise, the proposed ex-post approach is both robust enough to deal with it through remuneration of capex at the future price control review and to incentivise companies to procure such capex as efficiently as possible.

### ***Bureau's current thinking***

- 5.58 An ex post approach, along with the relative-efficiency based approach agreed for PC3 capex, should be adopted for PC4 capex regulation.
- 5.59 For each company, provisional allowance for PC4 capex based on the actual capex spent by the companies in recent years up to 2008 should be incorporated into the PC4 controls.

## **Depreciation**

### ***First Consultation Paper***

- 5.60 As mentioned in Section 2, depreciation is one of the three building blocks of the revenue requirement in the price control calculations. Depreciation for any year is calculated in relation to both the opening RAV for that year and the capex allowed for that year. It requires assumptions about the appropriate depreciation profile and the average asset lives for the company.
- 5.61 For all the companies, price control calculations to date have used the straight-line depreciation method both for initial RAVs and new capex. **Table 5.13** below shows the average asset life assumption for the price controls to date for both initial RAVs and new capex:

**Table 5.13: Asset life assumptions at previous price control reviews**

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

Source: Bureau

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

5.62 For the calculation of the depreciation for the PC4 controls, the First Consultation Paper mentioned the Bureau's thinking to continue with the straight-line method and the asset life assumptions used to date for price controls as set out in the above table.

### **Responses**

5.63 In its response to the First Consultation Paper, ADSSC, while agreeing to the use of straight-line depreciation method, considered an average asset life assumption of 50 years for all of its new assets to be inappropriate. It argued that many of its new assets would be mechanical and electrical in nature (and would therefore have shorter asset lives than 50 years).

### **Assessment of responses**

5.64 The average asset life assumption for ADSSC's new assets was discussed at the 2007 review while setting its first price controls. The Bureau then found that the weighted average asset life assumption of 50 years for future assets was not contradicted by the data for asset lives of different asset classes presented by ADSSC. In fact, the company accepted this assumption at the last review. It should also be noted that a significant element of ADSSC's future capex programme relates to the construction of a major sewerage 'tunnel' on the Island of Abu Dhabi which is expected to have an asset life in excess of 100 years.

5.65 The Bureau therefore remains satisfied with its average life assumption for ADSSC's future assets.

### **Bureau's current thinking**

5.66 Depreciation should continue to be calculated on a straight line method and the asset life assumptions should be as set in **Table 5.13** above.

## 6. Cost of capital

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### Introduction

6.1 Setting the price controls for network companies requires the determination of an allowed rate of return to be applied to the RAV each year to calculate the return on capital component of the annual revenue requirement. This allowed rate of return on capital is the regulator's estimate of the cost of capital of the companies. The Bureau has to date calculated the cost of capital as the forward-looking, post-tax Weighted Average Cost of Capital (WACC) for the companies by applying the Capital Asset Pricing Model (CAPM) to the data available from local and international capital markets. Since the Bureau's price control calculations are carried out in **real terms** (i.e. excluding inflation), the inputs to the cost of capital calculation have also been in real terms. The First Consultation Paper described the theoretical framework and the Bureau's approach to cost of capital calculations.

6.2 This Section 6 summarises the Bureau's cost of capital calculations to date, the issues set out in the First Consultation Paper, the responses to that paper and our assessment of these responses as well as recent data from capital markets.

### First Consultation Paper

#### ***Bureau's cost of capital estimates to date***

6.3 The Bureau's cost of capital calculations to date have drawn heavily on the estimates of cost of capital components used by regulators of similar businesses in the UK and Australia subject to a similar regulatory regime. However, with the continuing improvements in the local and regional capital markets, these estimates were cross-checked against the information available from such markets in order to capture any particular factors that may be specific to the businesses operating in Abu Dhabi. The following table summarises the cost of capital used by the Bureau at the previous price control reviews:

**Table 6.1: Bureau's cost of capital estimates to date**

	1999 price control review	2002 price control review	2005 price control review	2007 price control review for ADSSC
<b>Real, post-tax WACC</b>	6.00%	6.00%	5.00%	5.00%

Source: Bureau

Notes: At 2005 price control review, certain additional premiums were included in the cost of capital for AADC and ADDC due to risks and considerations specific to these companies.

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6.4 The Bureau's cost of capital calculations adopted for setting the PC3 controls for water and electricity companies are shown in more detail in the following table:

**Table 6.2: Bureau's cost of capital calculations for PC3 review**

	Low	High
Risk-free rate (real)	2.9%	3.0%
Debt premium	1.3%	1.3%
Corporation Tax	30.0%	30.0%
Post-tax cost of debt (real)	2.9%	3.0%
Equity Risk Premium	4.3%	4.7%
Equity Beta	0.86	1.00
Post-tax cost of equity (real)	6.5%	7.7%
Gearing	55.0%	45.0%
<b>Post-tax cost of capital (real)</b>	<b>4.5%</b>	<b>5.6%</b>

Source: Bureau's Final Proposals for PC3, 2005 Price Controls Review, 14 November 2005

### ***Overseas regulatory decisions***

6.5 The First Consultation Paper presented the regulatory decisions in the UK and Australia published during 2007 showing that the overseas regulators estimated the real post-tax cost of capital in the range of 3.83% - 5.20%, with a mid-point average of 4.52%. The paper therefore highlighted these decisions indicate a lower cost of capital than 5% used by the Bureau in the last price control reviews.

### ***Latest capital market developments***

6.6 The First Consultation Paper also highlighted the following main developments on the capital markets which suggest a lower cost of capital than the Bureau's estimate at the last reviews:

- (a) Upgrading of the UAE's country rating by Moody's Investor Services by one level from A1 to Aa3, indicating a lower cost of capital for UAE companies than before.
- (b) Assigning of a credit rating of Aa3 by Moody's to Abu Dhabi National Energy Company (or TAQA), a subsidiary of ADWEA holding significant ownership of the IWPPs in Abu Dhabi. This indicates a lower rate of return (by approximately 0.5 to 1 percentage points) for Abu Dhabi companies than that estimated by the overseas regulators, who base their analysis on a (lower) investment grade credit rating.
- (c) Recent significant volatility in the equity markets and declines in the risk-free rate (as low as 2% p.a. in nominal terms) and the overall cost of debt in global markets and in the UAE inter-bank interest rates (implying a negative interest rate in real terms with current UAE CPI inflation estimated in double digits).

## Responses to First Consultation Paper

- 6.7 In its response to the First Consultation Paper, AADC raised the issue of whether the same WACC should be used for all companies or a company-specific WACC should be used for each company, considering that these companies may differ, for example, in terms of their debt to equity ratio.
- 6.8 ADDC considered the overseas regulators' cost of capital range (3.83%-5.20%) indicated in the paper to be unacceptable. It argued that, while ADWEA secures funding for it either through equity contribution or commercial loans, it receives all funds from ADWEA as equity contributions. The cost of capital for ADDC should therefore be solely return on equity. ADDC considered the overseas regulatory decisions on cost of capital mentioned to be outdated and not reflective of the GCC region and presented the following evidence to argue for a higher cost of capital:
- (a) Australian Energy Regulator's (AER) proposal (December 2008) for a nominal vanilla WACC of 8.60%; and
  - (b) Filings with the Alberta Utilities Commission showing actual return on rate base during 2007 in the range of 5.13%-7.78% with an average of 6.56%.
- 6.9 ADSSC concurred with the Bureau's intention to draw upon the latest estimates of cost of capital of overseas companies similar to Abu Dhabi companies with the same regulatory regime.
- 6.10 TRANSCO was concerned that a lower cost of capital at only 4.5%, along with its performance on capital efficiency and the metered units-related revenue drivers, would increase its risk of lower returns, higher volatility of its returns and higher equity beta. It also pointed out that recent events in the world financial markets significantly changed the complexion of the business market and the ease and cost of borrowing.
- 6.11 ADDC and TRANSCO referred to ADWEA for information on their actual cost of capital calculation.
- 6.12 ADWEA informed the Bureau that it has financed the power and water projects from the local banks at competitive rates in the range of Emirates Inter-Bank Offered Rate (EIBOR) plus 75 basis points to EIBOR plus 350 basis points. Comparing against these rates, ADWEA considered the cost of capital range mentioned in the First Consultation Paper to be on the lower side. It also highlighted the current financial crisis indicating higher interest rates in the future.

## Assessment of responses

- 6.13 With regard to AADC's suggestion for company-specific WACC calculation, the Bureau considers that the network companies in the sector have quite similar capital structure and are subject to similar risks. However, the Bureau's WACC calculations do not simply assume the continuation of company's current capital structure, which is dominated by equity financing as ADDC pointed out. The Bureau's WACC calculations instead are based on a more efficient capital structure, combining both debt and equity financing. This is consistent with the international best practice in efficient, private companies' financing and incentive-based regulation. The gearing level (45%-55%) assumed in the Bureau's WACC calculations is still on the lower side when compared against international and local comparator companies. However, it aims at incentivising the companies to gradually progress towards an optimal capital structure.
- 6.14 Other comments of the respondents relate to the comparison of the Bureau's WACC estimates against the data from other sources. While our WACC calculations are in real terms, cost of capital data from other sources are often presented in nominal terms. For a like to like comparison, **Table 6.3** below therefore converts the Bureau's real WACC estimates from **Table 6.2** above into nominal WACC estimates assuming a conservative medium-term UAE inflation of 5% per annum:

**Table 6.3: Bureau's cost of capital calculations for PC3 in nominal prices**

	Estimates in real terms	Equivalent estimates in nominal terms (based on 5% inflation assumption)
Post-tax cost of debt	2.9% - 3%	7.9% - 8%
Post-tax cost of equity	6.5% - 7.7%	11.5% - 12.7%
Gearing	45% - 55%	45% - 55%
<b>Post-tax cost of capital</b>	<b>4.5% - 5.6%</b>	<b>9.5% - 10.6%</b>

Source: Bureau's calculations using a simpler formula (nominal WACC = real WACC + inflation) than the actual relationship.

- 6.15 This table shows that the Bureau's calculations at the last review give a nominal cost of debt of 7.9-8% and a nominal cost of capital of 9.5%-10.6%, for a 5% inflation assumption. The following sub-paragraphs compare the estimates quoted by the respondents to the First Consultation Paper against those in the above table:
- The nominal WACCs or rates of return quoted by ADDC from AER's proposal and Alberta Utilities Commission filings lie in the range of 5.13%-8.60%. By comparison, the Bureau's nominal cost of capital estimate is 9.5%-10.6%.
  - The actual cost of borrowing by ADWEA for the sector companies is in the range of 3.75%-6.50% assuming EIBOR at 3%, and in the range of 4.75%-7.50% assuming EIBOR at 4%. By comparison, the Bureau's nominal cost of debt estimate is 7.9%-8%.

6.16 The Bureau is therefore satisfied that even with a conservative inflation assumption, its proposals are, if anything, on the higher side compared to the evidence submitted by respondents.

### Assessment of latest local capital market estimates

6.17 The following table summarises recent cost of capital estimates by some local capital market analysts for the UAE companies operating in the transport, telecom, district cooling and real estate sectors:

**Table 6.4: Recent local capital market estimates of cost of capital (nominal terms)**

Analyst	Company	Sector	Date	Cost of equity	Cost of debt	WACC
1. EFG Hermes	Aldar	Real estate	Jun 2008	11.04%		9.25%
2. Morgan Stanley	Tabreed	Cooling water	Jun 2008	14.00%	5.00%	8.00%
3. EFG Hermes	Air Arabia	Airline	Jul 2008	10.50%		
4. Citigroup	Air Arabia	Airline	Jul 2008	10.90%	6.00%	
5. NBK Capital	Du	Telecom	Dec 2008	12.75%		
6. Prime Holding	Emaar	Real estate	Dec 2008	15.51%	6.86%	12.5%
7. HSBC	Sorouh	Real estate	Jan 2009	12.30%	6.50%	10.00%
<b>Range of decisions</b>				<b>10.5%-15.51%</b>	<b>5%-6.860%</b>	<b>8%-12.5%</b>
<b>Mid-point</b>				<b>13%</b>	<b>5.93%</b>	<b>10.25%</b>

Source: Various research reports by the analyst firms listed above.

6.18 Comparing these local capital market estimates against the Bureau's nominal estimates in Table 6.3 above, the following can be noted:

- (a) The nominal cost of equity estimated by analysts (10.5%-15.51%) is consistent with range estimated by the Bureau (11.5%-12.7%);
- (b) The analysts' estimates of nominal cost of debt (5%-6.86%) are consistent with ADWEA's actual cost of borrowing (3.75%-7.50%) but significantly lower than the Bureau's previously estimated cost of debt (7.9%-8%); and
- (c) The analysts' estimates of overall nominal WACC (8%-12.5%) are consistent with the Bureau's nominal WACC estimates (9.5%-10.6%).

### Bureau's current thinking

6.19 The evidence provided by the respondents to the First Consultation Paper and the latest local capital market estimates indicate a cost of capital lower than the Bureau's estimate at the last reviews. The Bureau's current thinking is to use a real, post-tax WACC of 4.50% for PC4 calculations for all network companies.

# 7. Performance Incentive Scheme

## Introduction

7.1 The Performance Incentive Scheme (PIS) links important aspects of each company's performance to its price controls. Under this scheme, companies are rewarded for improved service and output performance, and penalised for deteriorating performance. The current PIS for all businesses has two types of performance indicator:

- (a) Category A indicators (listed below) with precise definitions, targets and incentive rates, and an automatic annual revenue adjustment for performance via a term "Q" in the MAR formulae, subject to an overall cap at 4% of MAR each year; and
- (b) Category B indicators, less precisely defined but subject to a possible financial adjustment at the following review for exceptionally good or poor performance, subject to an overall cap at 2% of MAR each year.

**Table 7.1: Current Category A Indicators**

Company	Electricity	Water	Wastewater
<b>AADC / ADDC</b>	Timeliness of Audited SBAs	Timeliness of Audited SBAs	
	Timeliness of Audited PCR	Timeliness of Audited PCR	
	Timeliness of AIS	Timeliness of AIS	
	No. of Interruptions per Customer	Water Quality	
	Customer Minutes Lost per Customer		
<b>TRANSCO</b>	Timeliness of Audited SBAs	Timeliness of Audited SBAs	
	Timeliness of Audited PCR	Timeliness of Audited PCR	
	Timeliness of AIS	Timeliness of AIS	
	Availability	Water Quality	
	Energy Lost (Unsupplied)		
<b>ADSSC</b>			Timeliness of Audited SBAs
			Timeliness of Audited PCR
			Timeliness of AIS

Notes: SBAs = Separate Business Accounts; PCR = Price Control Return; AIS = Annual Information Submission

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

7.3 Given the positive results that the PIS has achieved in terms of improving companies' performance on the targeted measures, the First Consultation Paper stated the

Bureau's belief that it should be further expanded to other aspects of companies' performance, where possible. The paper therefore discussed a number of changes for further improvement of the scheme.

7.4 This Section 7 summarises and assesses the responses to the First Consultation Paper on those potential changes and sets out the Bureau's current thinking.

## **Changes to Category A timeliness indicators**

### ***PIS bonuses for timeliness indicators***

7.5 The submissions of audited PCRs, audited SBAs and the AIS are requirements of the companies' licences irrespective of the PIS. The Category A indicators for timeliness of these submissions have served their purpose in incentivising the companies to put in place the systems required for timely submissions. The First Consultation Paper therefore raised the issue as to whether bonuses should continue to be available simply for meeting a licence requirement. The paper argued that the PIS bonuses for one or more of the timeliness indicators should be removed so that only a penalty for delayed submission should apply.

7.6 The responses to the First Consultation Paper on this are summarised as follows:

- (a) AADC and ADSSC argued against the removal of PIS bonuses for any timeliness indicators. AADC suggested applying bonuses for submissions earlier than the target dates.
- (b) ADDC proposed that, if such bonuses are to be removed, the penalty should apply only to late submission rather than to the company's failure to implement the Technical Assessor's (TA) recommendations.
- (c) TRANSCO agreed to the removal of PIS bonuses for timeliness of audited SBA submissions. However, it argued for retention of such bonuses for PCR and AIS submissions in view of their more extensive requirements than SBAs. In particular, TRANSCO highlighted the licence requirement for implementation of the TA's recommendations in relation to the PCR and AIS submissions. In view of the value of recommendations to the company, TRANSCO recommended that bonuses should remain be associated with satisfactory submission (in terms of both timeliness and completeness) of AIS and PCR.

7.7 The Bureau's views on these responses are as follows:

- (a) There is no value in receiving a submission much earlier than the target date and such submission may not reflect the associated interdependencies among the companies often highlighted by the companies themselves.
- (b) The submissions of audited PCRs and AIS without the TA's confirmation of implementation of its previous year's recommendations are not in compliance with the licence requirements. ADDC's suggestion for not applying penalty to such non-compliant submissions is not reasonable. The Bureau's view is that the existing licence mechanism relating to implementation of the previous year's recommendations should be considered as a relaxation for the licensees. This is because the TA may identify any shortcomings in the processes, methodologies or systems used for the preparation of such submissions in a year and may recommend certain improvements. However, the said mechanism allows such submissions to be considered licence compliant pending the implementation of the recommendations in the following year.
- (c) While the Bureau acknowledges the significant amount of work on the AIS submission highlighted by TRANSCO, it does not consider that similar workload is required for the preparation of PCRs. Further, Category A for timeliness of AIS is a relatively new addition to the PIS (introduced at the last price control reviews) and hence can be continued with bonuses for sometime to incentivise further improvement in the required systems. In contrast, the audited PCR has been a licence requirement since 1999 and the relevant Category A indicator was introduced at the 2002 price controls review.

7.8 In view of the above, the Bureau believes that PIS bonuses for Category A timeliness indicators for audited SBAs and audited PCRs should be removed, but retained for the AIS.

**Table 7.2: PIS bonuses for Category A timeliness indicators**

Category A indicator	Current arrangement	First Consultation Paper	Bureau's current thinking
Audited SBA timeliness	Both bonus / penalty	Only penalty	Only penalty
Audited PCR timeliness	Both bonus / penalty	Only penalty	Only penalty
AIS timeliness	Both bonus / penalty	Only penalty	Both bonus / penalty

Notes: SBAs = Separate Business Accounts; PCR = Price Control Return; AIS = Annual Information Submission

### ***PIS target dates for timeliness indicators***

7.9 At present, audited PCRs, audited SBAs and the AIS are required to be submitted by 31 March, 30 June and 30 September of each year, respectively. The First Consultation Paper argued for changing the target dates of both PCRs and SBAs to a common date (30 April). This was in view of similar contents and similar work

requirements of the two submissions, and to avoid differences between them due to different preparation dates. It would also help address distribution companies' concern about the effect of delays in ADWEC finalising the BST Exceptional Charges for the prior year on the ability of other companies to meet the March deadline for the PCRs. This new target date (30 April) would also be consistent with the audited accounts requirements of the UAE Commercial Companies Law No.8 of 1984 for the companies. The paper also proposed that the target date for the AIS be changed to 31 October, to address the licensees' concerns that the present submission date (30 September) falls too close to the main summer holiday period.

- 7.10 The respondents to the First Consultation Paper were generally supportive of the indicated changes to the PIS target dates. However, AADC suggested retention of the current target date (30 June) for submission of audited SBAs, arguing different and significant work involved in preparation of SBAs than PCRs. ADDC suggested considering the staggering of the AIS target dates among companies to facilitate consistency between companies' AIS submissions, for example, on demand forecasts.
- 7.11 The Bureau welcomes these supportive responses and believes that these revised target dates provide sufficient time for the tasks involved. The Bureau appreciates the companies' efforts to date (for which the companies have been rewarded through the PIS) to develop the systems necessary for these submissions. The SBAs and PCRs have a number of inputs in common with each other, and the Bureau believes there will be significant benefits in aligning the target dates for these submissions. The revised target date gives an additional month for the companies for the preparation of AIS. The Bureau does not believe it appropriate to 'stagger' AIS submission dates, as this could lead to confusion in the operation of the PIS.
- 7.12 The Bureau is therefore currently minded to revise the PIS target dates for timeliness indicators as indicated in the First Consultation Paper.

**Table 7.3: PIS target dates for Category A timeliness indicators**

Category A indicator	Current target dates	First Consultation Paper	Bureau's current thinking
Audited SBA timeliness	30 June	30 April	30 April
Audited PCR timeliness	31 March	30 April	30 April
AIS timeliness	30 September	31 October	31 October

Notes: SBAs = Separate Business Accounts; PCR = Price Control Return; AIS = Annual Information Submission

### ***Timeliness indicator for Five-Year Planning Statement***

- 7.13 Each network company has a licence obligation to produce a Five-Year Planning Statement each year, for the Bureau's approval, setting out the forecasts of future demands, system expansion requirements and related capex over the following five

years. These planning statements are considered important not only for the ex-post assessment of capex but also for any future move towards an ex-ante approach to capex regulation.

- 7.14 However, the experience to date has not been wholly satisfactory, in that the statement in some cases has not been produced at all or not produced in the form required or has been delayed unreasonably. We are therefore considering a new Category A indicator for all the network companies to incentivise the timely submission of each such statement for our approval by a pre-defined target date. Each company can agree with the Bureau a timetable to be followed for the submission of draft statements, for our review and comments on such drafts, and submission of the final draft statements addressing such comments. The Bureau's current thinking is to define the PIS target dates for approval of such planning statements each year as follows: 30 June for AADC, ADDC and ADSSC (as per their respective existing licence conditions); 31 May for TRANSCO; and 30 April for ADWEC.

**Table 7.4: PIS target dates for Planning Statement timeliness indicators**

Category A indicator	ADWEC	TRANSCO	AADC / ADDC / ADSSC
PIS target date for Bureau's approval	30 April	31 May	30 June

- 7.15 Related to this, we are also currently minded to amend the relevant paragraphs of Condition 15 of TRANSCO's licence to bring its planning statement requirements in line with those of other network companies. Among other things, this amendment aims at quantification of capex for major projects, explanation of material differences between actual and forecast capex for the previous year, and more detailed justification for each major project.

## Changes to Category A technical indicators

### *Individual cap on PIS bonus/penalty for Category A*

- 7.16 In contrast to the caps on total incentives for all Category A indicators, and on incentives for individual Category A timeliness indicators, there are presently no such caps for individual technical indicators. Over recent years, one technical indicator (Energy Lost) for TRANSCO has shown significant variability. The resulting large bonuses and penalties for this indicator (exceeding the 4% overall cap) would have made TRANSCO indifferent to its performance on other Category A indicators. Such effects are undesirable and contrary to the objective of the PIS. The First Consultation Paper therefore indicated the need for an individual cap (equal to 1% of annual MAR) on the PIS bonus and penalty for each Category A technical indicator.

- 7.17 The respondents to that paper were supportive of such a cap. ADDC suggested this cap should be 1% of its “own” MAR (i.e. excluding pass-through costs) rather than its entire MAR. While TRANSCO agreed to the 1% cap, it suggested alternative mechanisms and formulae for its technical indicators. These involved absolute values for its performance targets (in lieu of or in addition to the existing targets based on previous year’s performance) to address the performance volatility issue as well as other considerations.
- 7.18 In response to ADDC’s concern, the Bureau confirms that the proposed individual caps are in relation to each company’s “own” MAR (i.e. excluding pass-through costs), in line with the existing caps on PIS incentives. With regards to TRANSCO’s suggestions, the Bureau considers the suggested mechanisms are unduly complex and not necessary to address the volatility issue (assuming a 1% individual cap is introduced). Further, the Bureau considers that the suggested performance targets in absolute terms are not appropriate at this stage.
- 7.19 The Bureau’s current thinking is therefore to cap the PIS bonus and penalty for individual Category A technical indicator at 1% of each company’s “own” MAR.

### ***Loss-related Category A indicators***

- 7.20 The First Consultation Paper discussed the undesirable incentives inherent in the existing “metered units distributed” revenue driver for AADC and ADDC and indicated the need for methods to provide positive incentives for metering and loss reduction via a new revenue driver or a PIS Category A indicator.
- 7.21 Section 2 of this paper discusses the responses on this issue and sets out the Bureau’s current thinking to (a) reduce the weighting of ‘metered units distributed’ in the MARs and (b) introduce a new term “Distribution Loss Reduction Incentive” in the MAR formulae for AADC and ADDC.

### ***Water network reliability / availability related Category A indicators***

- 7.22 In line with the reliability and availability-related Category A indicators for electricity networks (measured in terms of interruptions, customer minutes lost, energy lost or otherwise), the First Consultation Paper sought suggestions for similar indicators for the water networks of AADC, ADDC and TRANSCO.
- 7.23 In its response, ADDC suggested that any such new measure should first be introduced as a Category B indicator before being considered as a Category A indicator, to allow sufficient time to gain confidence in such an indicator before moving it to Category A.

- 7.24 As discussed in Section 2, while the Bureau agrees in principle to testing a measure first under Category B, a measure can be (and has been in the past) introduced directly as Category A indicator if it meets the relevant objective criteria.
- 7.25 At present, the Bureau is considering introducing a water network availability related Category A indicator for TRANSCO to be defined in a similar manner as the existing Category A indicator for electricity transmission system availability, as follows:
- (a) “Availability” for the water transmission system in any year will be defined as 1.00 minus the ratio between (a) the sum, over all the “Components”, of duration (in hours) during which a Component is not available in that year, and (b) the sum of the product of the number of Components and the number of hours in that year.
  - (b) Possible “Components” (to be defined) may include pumps, main pipes reservoirs, power supply equipment and surge equipment, which form part of the water transmission system.
  - (c) A Component shall be considered non-available only if it is not available for a duration in excess of one hour, due to any reason whatsoever and whether planned or unplanned, but excluding any Exceptional Events as confirmed by the TA in accordance with the licence.
- 7.26 The main issues on which the Bureau would welcome views are the definitions of the “Components” mentioned under (b) above and the minimum duration of non-availability, which is suggested as one hour in relation to water availability. This is in contrast to the existing minimum duration of three minutes for an Interruption on the electricity transmission system. A longer duration for the water system is justified because water can be stored to mitigate the effects of an interruption for short durations.
- 7.27 While the Bureau considers that this availability indicator is appropriate for the water transmission system, it seeks suggestions on a similar or suitable equivalent indicator for the water distribution systems. One possibility is that a pressure measure at the customer supply points of the water distribution systems (which is a “Technical KPI” and thus an existing technical indicator in Category B) could be precisely defined with a minimum pressure target (say, 1.25 bar) to be considered for Category A. However, such an indicator may not be appropriate for Category A at this review given the status of monitoring and measurement in the distribution companies.

### ***Interface metering-related Category A indicator for AADC and ADDC***

- 7.28 As discussed in Section 2, recognising the shared responsibility of TRANSCO and the distribution companies to ensure MDEC compliant interface metering, the Bureau is currently minded to introduce a new Category A indicator for AADC and ADDC to incentivise interface metering (for both water and electricity). (TRANSCO already has this incentive via the revenue driver term in its MAR formula).
- 7.29 For each of the water and electricity business of AADC and ADDC, this indicator can be defined, in relation to a year, as the ratio between (a) the number of water or electricity units entering the respective distribution system as measured by MDEC complaint interface meters and (b) the total number of water or electricity units entering the distribution system (whether metered or estimated otherwise) during that year. Total units entering the distribution system can simply be the total units charged by ADWEC to the relevant distribution company under the BST.
- 7.30 The company's actual performance on this indicator during a year can be used as the target for the next year or the Bureau can prescribe suitable annual targets. Further, the performance on this indicator will be subject to audit by an independent TA.

### ***Category A technical indicator(s) for ADSSC***

- 7.31 Currently, all network companies other than ADSSC have certain technical indicators in PIS Category A. One or more Category A indicators should be considered for ADSSC to provide incentives to improve technical aspects of its operations, such as network availability and reliability. The First Consultation Paper therefore sought suggestions for suitable measures for ADSSC.
- 7.32 In its response, ADSSC welcomed the discussion on the introduction of Category A technical indicators. It however did not suggest any measure for this.
- 7.33 The Bureau's current thinking is that no appropriate technical performance indicators are yet available which can be precisely defined and measured sufficiently accurately so as to be introduced as Category A indicator for ADSSC at this review. However, we are considering the introduction of "Technical KPIs" as Category B indicators for ADSSC which would be monitored and developed over the PC4 period as a candidate for Category A at the next review.

### ***SAIFI-related Category A indicator(s) for AADC and ADDC***

- 7.34 The electricity businesses of AADC and ADDC currently have two Category A technical indicators, namely the number of interruptions per customer and the customer minutes lost per customer (sometimes referred to as System Average

Interruption Duration Index (SAIDI)). The former measure is similar to, but not exactly the same as, the technical KPI of System Average Interruption Frequency Index (SAIFI), also often used by utilities. The First Consultation Paper therefore raised the issue of whether an additional Category A indicator defined and measured as SAIFI is needed to provide incentives which are not provided by the existing indicators.

- 7.35 In their responses, both AADC and ADDC supported the introduction of SAIFI as a Category A indicator. The Bureau is therefore currently minded to introduce a new Category A indicator defined in terms of SAIFI.
- 7.36 The technical indicators discussed above target the distribution companies' performance on a total system basis but do not provide strong incentives in respect of particular customer groups, who may be receiving a particularly poor service. It is therefore for consideration whether another new Category A or Category B indicator is needed to provide incentives to reduce repeated interruptions for 'worst served customers'. Such an indicator could be calculated as the sum of SAIFIs calculated separately for customers connected to distribution systems at low voltage (LV) and high voltage (HV) levels. The 'worst served customers' would then be those customers who face interruptions most frequently, for example, 3 or more times a year in the case of HV customers and 5 or more times in case of LV customers.<sup>3</sup> It is also for consideration whether a further distinction between urban and rural customers (who can have different minimum numbers of interruptions to qualify as 'worst served customers') is practical at this stage. The Bureau would welcome respondents' comments on these suggestions.

### ***Water Quality Indicator***

- 7.37 A performance indicator for overall water quality was introduced into the PIS for the first time during the PC3 period, for AADC, ADDC and TRANSCO. The First Consultation Paper indicated that the Bureau was considering whether to further develop this indicator into a system of water quality indices focusing on important water quality parameters specified in the Bureau's Water Quality Regulations.
- 7.38 In its response to the paper, AADC suggested a need for a new Category A indicator to address the effect of the failure of an upstream business on the water quality performance of the downstream business. AADC suggested adding controllability by the company to the Bureau's five-point objective criteria for selection of Category A

<sup>3</sup> An "Interruption" is already defined in AADC/ADDC's licences as any interruption, whether planned or unplanned, on the electricity distribution system, having a duration in excess of three minutes, due to any reasons whatsoever, but excluding any Exceptional Events as confirmed by the TA in accordance with the licence.

indicators. TRANSCO was concerned that there might be parameters over which it has no or little control and sought details on the specific indices under consideration to enable it to respond appropriately.

- 7.39 On the controllability issue raised by AADC, it is worth clarifying that the PIS and particularly its Category A indicators already aim at incentivising a company to improve its “own” performance. The objective of the “Exceptional Events” concept in the licence is to ensure a company is not penalized for the effect of any uncontrollable event, specifically including an event or incident on the upstream systems, on its performance on Category A technical indicators. The controllability requirement is therefore already inherent in the PIS.
- 7.40 With regards to TRANSCO’s request for further details, the Bureau is initiating a separate consultation process with the companies to discuss the design of the water quality indices in the Water Quality Regulations. In this regard, a consultation paper is being published by the Bureau to describe the proposed indices. In essence, there will be three indices for the water business of each of AADC, ADDC and TRANSCO:
- (a) Disinfection and disinfection by-product Control Index (DCI), measuring the effectiveness of the disinfection system;
  - (b) Reservoir Integrity Index (RII), measuring the efficiency of hygiene system at water service reservoirs; and
  - (c) Transmission or Distribution Maintenance Index (TMI or DMI), measuring the maintenance status of transmission or distribution pipelines and mains.
- 7.41 Each of these indices is envisaged to be calculated in the same manner as the existing water quality indicator, but from pre-selected parameters rather than all parameters specified in the Bureau’s Water Quality Regulations; that is, the ratio of (a) total number of tests passed for relevant parameters to (b) the total number of tests required for such parameters. The new indicator would then be an appropriately weighted combination of the three indices.
- 7.42 The existing Category A indicator for water quality has taken effect only from 2008 and a number of issues faced during this initial phase have been discussed extensively and resolved for smooth implementation in the future. It is therefore for consideration whether the new indices system should first be introduced as a Category B indicator at this review, before considering its introduction as a Category A indicator at the next review.

### **Confidence grading system for all technical indicators**

- 7.43 In line with the regulatory practice elsewhere, the First Consultation Paper raised the issue of whether a more sophisticated confidence grading system (one grading both the reliability and the accuracy of data) should be introduced for all Category A technical indicators. At present, the TA has developed and used a system to assess the reasonableness of the methods and data for both technical indicators and AIS against the licence requirements.
- 7.44 ADDC, ADSSC and TRANSCO expressed certain concerns on the introduction of such a system. The Bureau is currently minded to discuss and assess with the companies this matter in connection with the TA's work, separately to this price control review.

### **New Category A indicator for customer debt reduction**

- 7.45 As discussed in Section 4, we are proposing a new Category A indicator for AADC and ADDC to be introduced at this review to incentivise these companies to reduce their accounts receivable or customer debts. There will be separate Category A indicators for water and electricity businesses.
- 7.46 The company's actual performance on this indicator during a year can be used as the target for the next year or the Bureau can prescribe suitable annual targets. The company's actual performance in a year will be measured in terms of the increase or decrease in customer debts as per its audited accounts for the relevant years. The company can then be rewarded or penalised for any improvement (i.e. reduction) or deterioration (i.e. increase) in its performance on customer debts through the Q term in the MAR formula.

### **Bureau's current thinking**

- 7.47 The Bureau's current thinking is to retain the existing PIS for all companies for the new controls, with the following changes:
- (a) The PIS bonuses of the Category A timeliness indicators for audited SBAs and audited PCRs should be removed so that only a penalty for delayed submission should apply.
  - (b) The PIS target dates for both PCRs and SBAs should be changed to 30 April, while extending the target date for AIS to 31 October.
  - (c) The PIS bonus and penalty for each Category A technical indicator should be subject to an individual cap of 1% of the company's "own" MAR.

- (d) The following new Category A indicators should be introduced:
- (i) For all network companies: a timeliness indicator for the Five-Year Planning Statements with target dates for approval of 30 June for AADC, ADDC and ADSSC and 31 May for TRANSCO, along with relevant changes to TRANSCO's licence in line with current licence requirements for other network companies;
  - (ii) For TRANSCO: water system availability indicator; and
  - (iii) For AADC and ADDC: interface metering indicator, SAIFI indicator for overall system, SAIFI indicator for worst served customers only, and customer debt reduction indicator.
- (e) The Bureau is also considering the replacement of the current water quality-related Category A indicator for AADC, ADDC and TRANSCO with a system of water quality indices representing particular group of parameters.
- (f) "Technical KPIs" to be developed and monitored for ADSSC over PC4 period should be introduced as a new Category B indicator at this review.

## 8. Financial adjustments

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### Introduction

- 8.1 The First Consultation Paper identified a number of potential financial adjustments which may be required at this review. Many of the adjustments relate to past years. Where appropriate, the adjustment will be made in the same NPV terms as if it had been made at the time of occurrence of the event to which it relates.
- 8.2 The paper noted that the items listed might not be an exhaustive list of all possible financial adjustments required at this review. During the course of this review, the Bureau would therefore consult with the companies on any other financial adjustment that may be required.
- 8.3 This Section 8 summarises and assesses the responses to the First Consultation Paper on these financial adjustments and sets out the Bureau's current thinking. (If a financial adjustment is specific to a company, the name of the company is shown in brackets against such adjustment in the heading).

### Financial adjustments for performance on PIS Category B

- 8.4 At the previous price control reviews, it was agreed that the companies' performance on PIS Category B indicators will be monitored during the present control period<sup>4</sup> for a possible positive or negative financial adjustment to the future revenue at the 2009 price control review for particularly good or poor performance. Any such adjustment would be limited to 2% of the respective company's "own" MAR (i.e. excluding pass-through items) for the year in question.
- 8.5 The First Consultation Paper expressed the Bureau's concerns on the performance of some companies on certain Category B indicators, for example timeliness of planning and charging statements. The paper indicated the Bureau's intention to continue monitoring the companies' performance until the publication of the Final Proposals on PC4 in September 2009. However, any adjustments for performance in respect of the 2009 financial year may need to be deferred to the next price controls review (i.e., 2013). The companies therefore have opportunity and more time before the conclusion of this review to further improve their performance to increase net rewards (reduce net penalties) under the scheme.

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<sup>4</sup> Any such adjustment would also cover 2005 (the last year of PC2 period), since data for this year only became available after the conclusion of the 2005 price controls review.

- 8.6 No company made any comments on this particular financial adjustment in response to the First Consultation Paper. ADSSC however made a general comment about financial adjustments (which seem relevant to adjustments relating to Category B indicators and PCRs), emphasising that any such adjustments should be fully justified and should not be due to changes in data resulting from improvements in data accuracy or quality.
- 8.7 The Bureau will continue to monitor companies' performance on Category B indicators as mentioned above. In particular, the Bureau is considering applying a negative financial adjustment in respect of TRANSCO's 2007 Five-Year Planning Statement (Electricity), which the Bureau was not able to approve.

### **PCR-related financial adjustments**

- 8.8 The First Consultation Paper identified the possible need for financial adjustments for mis-statement of some revenue drivers and/or regulated revenues in the companies' past PCRs (which provided undue financial benefits to the companies), unless such errors were corrected in the following year's PCR.
- 8.9 In its response, ADDC suggested that such adjustments should be handled on a case-to-case basis. As mentioned earlier, ADSSC emphasised the need for complete justification for any such adjustment and for not discouraging changes resulting from improvements in data accuracy or quality. The Bureau can confirm that each adjustment (if necessary to be made) will be explained on a case-to-case basis.
- 8.10 The Bureau is presently assessing whether any such adjustments are required for both the PC2 period and the current control period to date. If any specific necessary adjustments are identified, these will be discussed in the Draft Proposals due in June 2009 (by which time 2008 audited PCRs should also be available).

### **Financial adjustments for asset disposal or transfer**

- 8.11 The First Consultation Paper discussed the need for excluding assets disposed of or transferred by a company (irrespective of the proceeds thereof) to another party from the company's RAVs, so that it does not earn any return on asset and depreciation under the price controls from the date of the disposal or transfer.
- 8.12 The approach discussed in Section 5 (paragraph 5.15) to the calculation of actual PC2 capex from companies' audited SBAs automatically deducts the net book value of certain assets disposed of or transferred by the company from the capex.
- 8.13 Further adjustments may be required depending on whether or not incomes from asset sales / transfers have been included within the "regulated revenue" in the

audited PCRs. The Bureau is therefore currently reviewing the PCRs and SBAs since the last price controls review and, if necessary, will propose appropriate financial adjustments in the Draft Proposals on PC4 due in June 2009.

## **Other financial adjustments**

8.14 At present, the Bureau is aware of the following additional areas where a financial adjustment at this review may be necessary:

### ***Implementation of Bureau's approved large customer tariff (AADC)***

8.15 The First Consultation Paper discussed the implementation by ADDC of the large-user special tariff determined in accordance with Condition 30 of its licence for application to supply of electricity to TRANSCO's water pumps. However, the paper expressed concern that AADC had yet to introduce the same tariff. The paper therefore indicated the likelihood of applying a negative financial adjustment to AADC's future revenue equal to the amount billed by AADC to TRANSCO in excess of the approved special tariff.

8.16 Subsequent to the publication of that paper, the Bureau was informed by AADC (via an email dated 30 November 2008) that it was in the process of applying the special tariff for TRANSCO. In its response to the paper, AADC suggested that if it applies the special tariff for TRANSCO, there should be no negative financial adjustment.

8.17 The Bureau welcomes this positive progress and seeks confirmation that the special tariff is now being implemented by AADC for TRANSCO. The Bureau is presently minded not to make the financial adjustment for the delay in such implementation if AADC has now implemented the special tariff for TRANSCO.

### ***Impact of transmission system constraints (TRANSCO)***

#### ***Financial adjustment for past constraints***

8.18 At the 2005 price controls review, the Bureau determined that an adjustment would be calculated and applied to TRANSCO's future revenue at the 2009 price control review for the delays in the completion of the water transmission system associated with the Shuwei hat (S1) production project. This would be equal to 50% of the availability payments unnecessarily incurred by ADWEC under the PWPA for S1 project. The First Consultation Paper therefore stated the Bureau's intention to implement this adjustment at this review.

8.19 The Bureau has now estimated the required adjustment to be about minus AED150 million (in nominal prices at the time of constraints i.e. 2004-2007) as follows:

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- (a) The calculation is based on S1 project related data received from ADWEC and TRANSCO on actual water availability payments, the actual volume of available water for despatch and the actual volume of water entered into the transmission system.
- (b) The calculation covers the period from May 2004 (when ADWEC commenced availability payments to S1), through the commissioning of the project in end June 2005, up to end August 2007. This latter date was when, according to TRANSCO's monthly constraint report of 23 October 2007, the relevant transmission constraints were completely removed.
- (c) During the period from May 2004 to June 2005, it has been assumed that the entire S1 water capacity of 100 MIGD was available. For the remaining period until August 2007, actual availability has been used. The actual quantity of water entering the transmission system has then been subtracted from such available water to estimate the quantity of water which was available but could not be despatched due to transmission constraints.

8.20 As some of the data used in the above calculations are of confidential nature, the calculation of the adjustment is not presented in this paper. The Bureau is however willing to share the calculation with TRANSCO for review and any comments.

8.21 The Bureau's current thinking is therefore to make a negative adjustment of AED150 million (in nominal prices of 2004-2007) at this review to TRANSCO's water business future revenue requirement.

#### *Incentives for future constraint removal*

8.22 In 2007, the Bureau announced its intention to introduce a similar incentive mechanism for TRANSCO to remove other water network transmission constraints, particularly in relation to water supplies to AADC which have been subject to transmission constraints for a number of years. In April 2008, the Bureau confirmed that, from 1 January 2009, TRANSCO will bear a cost equal to 50% of the availability payments paid by ADWEC to the production companies under the PWPAs in respect of water which is made available by producers but which cannot be supplied to final customers due to transmission constraints. TRANSCO is therefore provided with a very strong incentive to minimise any further delays in addressing constraints in its transmission system.

8.23 As discussed in the First Consultation Paper, the Bureau will monitor TRANSCO's performance on transmission constraints from 2009 onwards, and any required financial adjustment will be made at the next price control review.

## ***Delay in customers' water asset installations (AADC)***

### *First Consultation Paper*

- 8.24 At the 2005 price controls review, the Bureau agreed to AADC's request to finance in the PC3 controls for AADC an additional opex allowance of AED 25 million spread evenly across 2006 and 2007. This was for costs associated with the upgrading of customers' water installations to facilitate the completion of a 24-hour water supply in AADC area. However, AADC has subsequently informed the Bureau that it has only spent a small proportion of the allocated amount, and has been unable to provide the Bureau with a clear plan of its proposed future expenditure in this area.
- 8.25 In view of the lack of significant progress on such work by mid-2008, the Bureau in August 2008 expressed its intention to make a financial adjustment at this review to ensure AADC does not receive financial benefit from not expending (or from the delay in expending) the allotted funds. Further, the Bureau granted, on AADC's request, an 18-month extension for completion of this program up to 30 June 2009 and requested AADC to explain its plan for such completion.
- 8.26 Accordingly, the First Consultation Paper stated the Bureau's intention to make appropriate financial adjustment at this review for AADC based on the actual (perhaps audited) costs and actual timings of costs incurred by 30 June 2009.

### *Development since First Consultation Paper*

- 8.27 There has been no positive development on this matter since the publication of the First Consultation Paper. In the absence of any response to its August 2008 queries, the Bureau wrote again to AADC on 22 December requesting a response by 15 January 2009. AADC did not respond until 23 February 2009 when it informed us that the requisite programme could not be completed by 30 June 2009 and sought a further, indefinite extension of time for completion of the programme.
- 8.28 An opex allowance of AED 25 million was allowed in PC3 on AADC's request in 2005 for the programme to be completed by 2007. After four years from that request, AADC has not made any material progress and is still not in a position to commit or propose a full timetable.

### *Bureau's current thinking*

- 8.29 The Bureau's current thinking is therefore to make a negative adjustment at this review to AADC's water revenue requirement to remove the entire opex allowance of AED 25 million in 2003 prices (while taking account of the time value of money and inflation) previously granted to AADC. Keeping in view the need to facilitate this

important work, the Bureau will continue discussion with AADC to ensure the completion of works as soon as possible. AADC will then be remunerated at the next price control review for its reasonable costs (up to a maximum of AED 25 million) incurred on the programme.

### ***Delay in water interface metering (AADC / ADDC)***

#### *First Consultation Paper*

- 8.30 TRANSCO has a licence obligation to ensure that MDEC-compliant meters are installed at the water network interfaces between TRANSCO and distribution companies. However, the interface meters themselves are owned by the distribution companies. In practice, the procurement of the meters has been undertaken partly by TRANSCO and partly by the distribution companies.
- 8.31 The First Consultation Paper discussed the impact of delays in completing the installation of MDEC-compliant meters at the water network interfaces between TRANSCO and distribution companies. This has led to a lower MAR for TRANSCO during the PC3 period than projected when the PC3 controls were set but distribution companies have not been affected financially. The paper also summarised TRANSCO's argument that, as the delays in completing the interface metering are attributable to some degree to the distribution companies, they should share some of the financial (MAR) impact borne by TRANSCO due to such delays.

#### *Responses*

- 8.32 In its response to the paper, ADDC argued that, despite the resulting financial penalty, TRANSCO has not done enough to sufficiently raise this issue with either ADDC or ADWEA, or to progress these meters. According to ADDC, TRANSCO has had full power to install these meters on AADC's behalf and has not achieved markedly different results from those achieved in the ADDC area.
- 8.33 On the other hand, TRANSCO argued that, while it has the licence obligation to ensure such metering, it does not have the ability to ensure that the distribution companies install or maintain such meters. According to TRANSCO, while it has been penalised by over AED830 million in recent years in terms of lost MAR for the delays in meter installation, the distribution companies currently are not held accountable for fulfilling their MDEC obligations.

#### *Assessment of responses*

- 8.34 As discussed in Section 2, the Bureau recognises the shared responsibility of TRANSCO and distribution companies for the interface metering. While TRANSCO

may not have exhausted all reasonable efforts to comply with its obligations, the Bureau does not agree to ADDC's arguments which highlight obligations for TRANSCO only and none for ADDC. On the loss of revenue highlighted by TRANSCO, such losses would not have arisen were it not for TRANSCO's forecasting errors in its revenue driver projections which were adopted for setting the PC3 controls.

### *Bureau's current thinking*

- 8.35 In view of the above, the Bureau is considering whether to make a negative financial adjustment for ADDC (and possibly for AADC) at this review for delays in the installation of interface metering to date. The Bureau will address this matter further once TRANSCO's audited PCR for the 2008 financial year (showing metered units transmitted in 2008) is received at the end of March 2009.
- 8.36 For the future, the Bureau intends to introduce a new PIS Category A indicator for the distribution companies to incentivise them to play their due role in ensuring interface metering for both water and electricity (see Section 7), while retaining the existing metered units transmitted revenue driver for TRANSCO (see Section 2).

### **Guaranteed Standards and Bill Payment Methods (AADC/ADDC)**

- 8.37 At the 2005 price controls review, the Bureau expressed its intention to assess the "customer satisfaction" related PIS Category B indicator over the PC3 period in terms of the performance of AADC and ADDC on the implementation of Guaranteed Standards (GS) and Overall Standards (OS).<sup>5</sup>
- 8.38 The Bureau has recently appointed Ernst & Young as the consultant to audit the implementation of GS standards and the required systems and processes. There is potential for a negative financial adjustment for AADC and ADDC if the Bureau finds that such standards or associated systems and processes are not implemented properly. The Bureau will wait for the consultant's findings.
- 8.39 We are also currently assessing the various customer bill payment methods being implemented by AADC and ADDC. The Bureau is particularly concerned with a lack of an internet based payment method. It however understands that the distribution companies are introducing and testing their web portal for such payments. The Bureau intends to apply a negative financial adjustment if such web portal is not operational by the publication of the Draft Proposals for PC4 (due in June 2009).

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<sup>5</sup> Refer to Section 11.3 of Bureau's "Final Proposals for PC3", November 2005.

## Bureau's current thinking

8.40 The Bureau's current thinking is to make the financial adjustments listed in the table below:

**Table 8.1: Bureau's current thinking on financial adjustments at this review**

S.No.	Financial adjustment for	Company
1.	Performance on PIS Category B indicators	All network companies (under review)
2.	Performance on 2007 Five-Year Planning Statement	TRANSCO (electricity)
3.	Mis-statement of revenue drivers or regulated revenues in audited PCR (if any)	All network companies (under review)
4.	Asset disposal or transfer (if related incomes not already included within regulated revenue in audited PCRs)	All network companies (under review)
5.	Delay in implementation of Bureau's approved large customer tariff for TRANSCO (if commencement of such implementation is not confirmed)	AADC (pending confirmation)
6.	Impact of S1 transmission system constraints (amounting to about AED 150 million in 2004-2007 prices)	TRANSCO
7.	Delay in customers' water asset installations (amounting to about AED 25 million in 2003 prices)	AADC
8.	Delay in water interface metering	ADDC (and possibly AADC)
9.	Implementation of Guaranteed Standards (depending on consultant's report on performance) and internet-based bill payment methods (depending on web portal operation by June 2009)	AADC and ADDC

Notes: SBAs = Separate Business Accounts; PCR = Price Control Return; AIS = Annual Information Submission

8.41 The Bureau has also introduced a mechanism for TRANSCO under which a financial adjustment (equal to 50% PWPA availability payments unnecessarily incurred by the sector) would be made at the next price control review for any water transmission constraints remaining for 2009 onwards.