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DEPARTMENT OF ENERGY

Review of Regulatory Controls of AADC, ADDC, ADSSC and TRANSCO for 2023 onwards

RC2 Final Decision

12 June 2023

DoE/PC/E02/006

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Foreword

The Department of Energy (DoE) published its draft proposals in March 2022 on review of the multi-year, incentive-based price controls that would apply to the following four water, wastewater, recycled water and electricity companies in the Emirate of Abu Dhabi from 2023 onwards:

1. Al Ain Distribution Company (AADC);
2. Abu Dhabi Distribution Company (ADDC);
3. Abu Dhabi Sustainable Water Solutions Company (ADSSC) (currently, Abu Dhabi Sustainable Water solutions Company - ADSWSC); and
4. Abu Dhabi Transmission and Despatch Company (TRANSCO).

The DoE received detailed responses to the draft proposals from the network companies. Accordingly, this document sets out our final decision on the RC2 to apply from 1 January 2023 for the four network companies, taking into account their responses to the draft proposals, our consultants' recommendations in their final reports on various inputs to the RC2 controls and the Abu Dhabi Government's decision on cost of capital. Our RC2 financial models (which set out separate maximum allowed revenue (MAR) profiles and notified values "a" and "b") as well as the consultant final reports are being issued alongside this final decision.

The DoE plans to make this paper publicly available on its website.

Eng. Ahmed Mohamed Al Rumaithi
Undersecretary-Department of Energy

Executive summary

Introduction (Section 2)

1. This document describes the DoE's final decision for RC2 controls for the four network companies (AADC, ADDC, ADSSC, and TRANSCO) that operate in the Abu Dhabi water and electricity sector. The paper summarises the stakeholders' responses to the DoE's RC2 draft proposals issued in March 2022, our assessment of these responses and our final decision on various aspects of the controls for 2023 onwards, taking into account the responses to our draft proposals, our consultant's recommendations in their final reports (being issued alongside this final decision) on various inputs to RC2, and the Abu Dhabi Government's decision on the cost of capital.

Form of controls (Section 3)

2. Our final decision on the form, structure, separation and duration of RC2 controls includes:

   (a) continuing with the CPI-X revenue cap form of controls for all companies;

   (b) retaining the current scope and separation of price controls for all companies but removing the SO function and related cost allowances from TRANSCO's price controls;

   (c) using a zero X factor for all businesses for RC2;

   (d) at this stage, not to proceed with output-based regulation (OBR). DoE accepted the network companies' suggestion to form a working group during RC2 and further study this initiative. We will continue monitoring the trends and upon the workgroup outcomes will consider whether to revisit this issue in the future price control reviews;

   (e) retaining the existing cost pass-through arrangements for all businesses;

   (f) setting RC2 control duration from 1 January 2023 to 31 December 2026 (or as otherwise required), with an ex-ante capex review at the time of

setting of RC2 in 2022, a mid-term capex review and adjustments, and annual specific opex allowance adjustments; and

(g) structuring the MAR formula for each company with a fixed element and a variable element linked to the output-based revenue driver, as follows, using the current licence definitions of revenue drivers with suitable change to the customer number definition for distribution companies to exclude dormant accounts:

Table 1: Revenue drivers – final decision

Company	Revenue-driver	Revenue-driver weight in MAR formula
AADC/ADDC (water & electricity)	Fixed term Number of customer accounts	85% 15%
AADC/ADDC (recycled water)	Fixed term	100%
TRANSCO (water & electricity)	Fixed term Global peak demand	95% 5%
ADSSC	Fixed term Annual flow at treatment plants	90% 10%

$$MAR_t = Pass\ through\ costs_t + a_t + (b_t \times Revenue\ driver_t) + L_t + Q_t - K_t$$

where:

i) "a_t" and "b_t" are the notified values for the year "t". For 2023, these values are determined by the DoE through price control calculations and are set out in this final decision. For subsequent years, the values of "a_t" and "b_t" are indexed against the UAE Consumer Price Index (CPI) less X-factor.

ii) "Q_t", "L_t", and "K_t" are the performance incentive amount, the DoE licence fee, and the correction factor for the year "t", respectively.

Operating expenditure (Section 4)

3. The DoE's opex consultants have used a hybrid approach, combining top-down and bottom-up methods, to estimate reasonable allowances for operating expenditure (opex) for all network companies over the RC2 period, based on consultation with the companies during 2021-2022, the companies' historical costs, benchmarks and particularly 2021 audited actual opex as the base level.

4. Our RC2 opex projections in 2023 prices adopted in this final decision and listed in Table 2 are based on the DoE's opex consultant's final report issued in November 2022. These opex allowances amount to around AED 4.2 billion per year (in 2023 prices) for RC2 for all four companies combined:

Table 2: RC2 opex projections - final decision

AED million, 2023 prices		2023	2024	2025	2026	Average
AADC	Electricity	685	684	670	656	674
	Water	325	315	326	329	324
	Recycled Water	8	10	11	11	10
	Total	1,017	1,009	1,007	996	1,007
ADDC	Electricity	727	752	759	765	751
	Water	794	660	632	635	680
	Recycled water	59	60	59	58	59
	Total	1,579	1,472	1,450	1,458	1,490
TRANSCO	Electricity	427	420	429	429	426
	Water	578	564	573	573	572
	Total	1,005	984	1,002	1,002	998
ADSSC	Total	765	725	704	687	720
Total		**4,366**	**4,190**	**4,163**	**4,142**	**4,215**

5. The above RC2 final opex projections provide:

   (a) allowances on a provisional basis for specific cost items where companies do not have control over the underlying cost drivers nor can estimate these costs with reasonable accuracy at the time of setting RC2, and we will make adjustments during the RC2 period using the outturn values of cost drivers such as allowances for Emiratisation and training; and

   (b) no allowances for uncertain costs items submitted by the companies for which the need of the proposed initiative was justified at a high level, but the benefits from the initiatives were not fully demonstratable at this stage. To receive the DoE's approval and allowances for any of these initiatives, the relevant company will need to submit a further business case to the DoE during the RC2 period. The DoE will consult on the details of this uncertainty mechanism and issue regulatory instructions and guidance to inform how this process will be conducted.

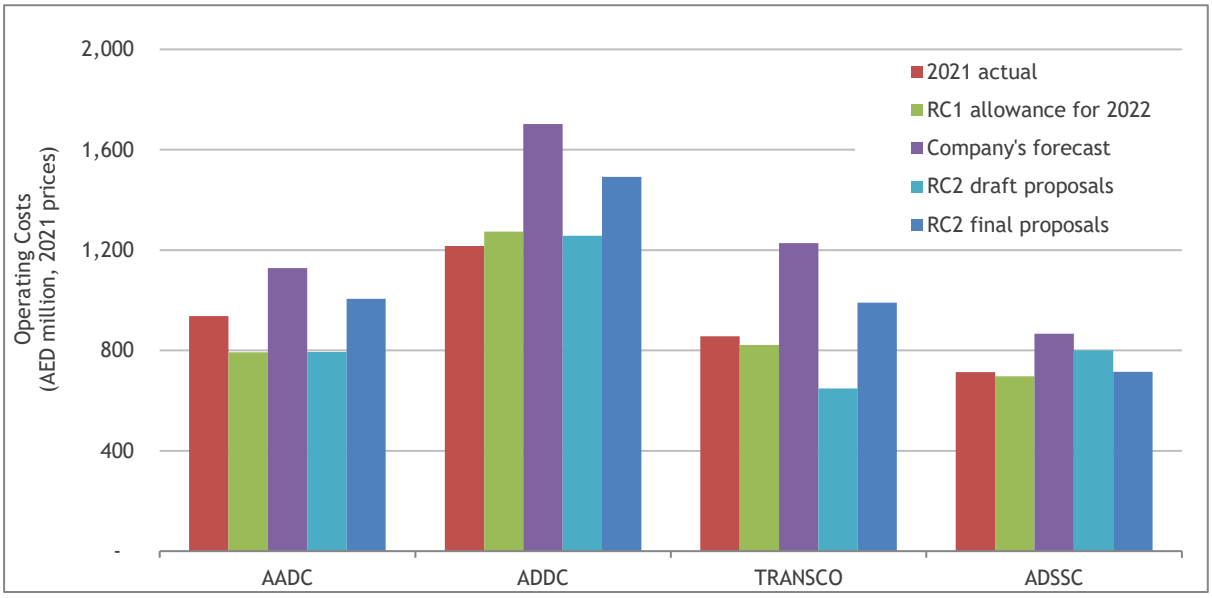
6. As depicted in the below figure, our final opex allowances for the four companies in aggregate are (in 2023 prices):

   (a) higher than the RC2 draft proposals by AED 700 million p.a. or 20%;

   (b) lower than the network licensees' forecasts by AED 700 million per year or 14% on average over the RC2 period for the four companies; and

   (c) higher than the RC1 opex levels by AED 400 million or 11%.

Figure 1: RC2 average annual opex projections - final decision's comparison



Capital expenditure (Section 5)

Totex

7. In line with the DoE consultant's conclusion in its totex final report issued in December 2021 and the RC2 draft proposals, the DoE has continued with the separate review and setting of opex and capex allowances for RC2, and we do not propose the transition to totex regime during RC3/future and further work on enablers during RC2. We will continue to monitor the trends and consider whether to revisit this issue in the future price control reviews.

Treatment of RC1 capex (2020-2021)

8. Accepting the network companies' suggestion, an ex-post review of 2020-2021 capex on unreviewed schemes has been carried out with downward adjustments

amounting to AED 1,210 million and AED 179 million made to the network companies' regulatory asset values (RAVs) and their MARs, respectively.

Treatment of RC1 capex (2022)

9. This final decision incorporates updated 2022 capex forecasts (received from the network companies) in the RAVs. With this update, we expect the adjustment for the difference between actual efficient and allowed capex will be insignificant, accordingly, the ex-post review of 2022 capex of unreviewed schemes will be carried out in 2025 (along with 2023-2024 capex) to adjust the 2026 MARs.

Treatment of RC2 capex

10. Based on the ex-ante review undertaken by the DoE's capex consultant, we have used the following capex allowances for the RC2 period in this final decision, comprising of:

    (a) Ex-ante approved new schemes (except those waiting Government approval, whose capex will be included in the RAV on receipt of such approval as part of the mid-term review, discussed below), justified across all the review areas within the capital needs assessment framework, reviewed and updated by the DoE capex consultant;

    (b) Ex-ante approved running schemes (approved by the Technical Assessor (TA)), using the capex forecasts previously approved by the TA; and

    (c) Unreviewed running schemes, using the companies' proposed forecasts reviewed by the DoE's RC2 capex consultant.

Table 3: RC2 capex allowances - final decision

AED million, 2023 prices		2023	2024	2025	2026	Total
AADC	Electricity	363	427	336	320	1,445
	Water	134	85	62	49	330
	Recycled Water	28	28	15	3	73
	Total	525	540	412	372	1,849
ADDC	Electricity	633	840	547	364	2,384
	Water	415	470	281	409	1,575
	Recycled water	102	48	49	26	225
	Total	1,150	1,358	877	799	4,184

TRANSCO	Electricity	1,272	1,991	1,585	1,125	5,974
	Water	752	616	608	551	2,527
	Total	2,024	2,607	2,193	1,676	8,501
ADSSC	Total	572	521	357	219	1,669
Total		**4,271**	**5,026**	**3,840**	**3,066**	**16,202**

11. The aggregate allowed annual capex for the four companies (AED 4.2 billion per year) are lower than the companies' adjusted forecasts (AED 5.4 billion per year) on average by about AED 1.2 billion per year or 23% mainly due to the capex for the schemes where the companies' justification and evidence were considered insufficient or the schemes pending Government approval at this stage. The capex allowances for ex-ante approved schemes (both new and running schemes) are subject to adjustments on completion of the scheme:

    (a) without carrying out any ex-post review, if it is not selected for ex-post review by the DoE; and/or

    (b) after carrying out an ex-post review of the change, if it is selected for the ex-post review by the DoE.

12. The companies will need to provide detailed analysis of actual and allowed capex for each ex-ante approved scheme, variance between the two, and initial detailed justification for variance for the DoE review. Based on this initial analysis, the DoE will select the schemes for further scrutiny via the detailed ex-post review of the variance for selected schemes. The DoE will be consulting with the companies to develop the regulatory instruction and guidance (RIG) in 2023 to formulate the details of such ex-post review.

13. The companies may undertake additional capex schemes that have not been approved through ex-ante review. Entire capex on such scheme will be subject to ex-post review and adjustment to the RAV, via mid-term reviews on a bi-annual basis.

14. A mid-term review will be carried out in 2025 to adjust 2026 RAVs and MARs of the companies for the following:

    (a) Inclusion of DoE approved capex in the RAVs for the schemes that will be approved by the Government until the mid-term review. These are the

schemes that are ex-ante approved at the time of setting of RC2 however, their capex is not included in the RAV pending Government approval;

(b) Adjustment for the difference between actual efficient and allowed 2022-2024 capex for unreviewed schemes; and

(c) Adjustment for the difference between actual efficient and allowed capex (with or without review, as applicable) for ex-ante reviewed schemes achieving completion status by the mid-term review.

Digitalisation

15. We look forward to the companies' development of coordinated and comprehensive 5 year digitalisation strategy for agreement with DoE which will then provide the overarching basis for subsequent well detailed, justified plans of each proposed digitalisation scheme (setting out the deliverables and targets) for DoE approval to receive allowance for each scheme during the RC2 period via ex-post reviews/annual opex adjustment mechanism, as the case may be.

Financial issues (Section 6)

16. We have maintained using a straight-line method for regulatory depreciation using the same asset life assumptions for new assets and DoE's approach for calculating opening and closing RAVs for each year of the RC2 as used in RC1.

17. Accepting the network companies' suggestions and our consultant's recommendations in their final report on weighted average cost of capital (WACC), the final decision is to use a bottom-up approach to consider the element-by-element estimation of the WACC based on local and international financial market data, cross checked against the overseas regulatory estimates relevant to Abu Dhabi. Applying this approach, our consultant analysis indicates a range for the WACC between 3.78% and 4.51%, based on which it proposed a real cost of capital of 4.29% for the RC2 period. However, and also in line with the consultant's review, the DoE considers that the unprecedented uncertainty in global financial markets during the last year can justify using the top of the range for the WACC. Our final proposals are therefore to use a WACC of 4.51% for RC2.

18. This WACC estimate is lower than both the WACC of 4.6% estimated for RC1 and the 5.3% proposed by the companies for RC2. However, this is consistent with the recent regulatory decisions in other jurisdictions (the UK, Australia and Ireland), which show a decreasing trend in the cost of capital of regulated utilities.

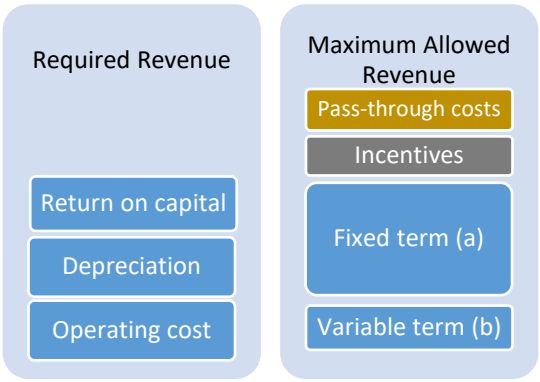
19. Since November 2022, when we concluded our final proposals for the RC2, we have continued engaging closely with the network companies, their shareholder TAQA, the Department of Finance, and Abu Dhabi's Government in order to conclude the RC2 review. As consequence of this further engagement, it was decided to establish the WACC for the sector at 4.9%. The RC2 final decision is therefore to use 4.9% as the WACC for the RC2 period. This does not however set any precedent for RC3 or any future WACC determinations.

20. The corporate income tax announced in the UAE will be addressed via adjustment to opex allowance on an ex-post basis. The provision of an opex allowance means that there is no additional adjustment required for such tax to the RC2 WACC – which is effectively a 'vanilla' WACC, providing for a pre-tax cost of debt and a post-tax cost of equity.

Price control calculations (Section 7)

21. Consistent with the previous work, a "building-block" approach has been adopted to determine the revenue requirement (comprising opex, depreciation and return on capital) and a net present value (NPV) framework to determine the notified values "a" and "b" for RC2.

Figure 2: Price control calculations framework



22. The notified values ('a' and 'b') determined in this final decision for 2023 (expressed in 2023 prices) are given below.

Table 4: Notified values for RC2 – final decision

2023 prices		X	a		b	
AADC	Electricity	0	AEDm	1,362.40	1,388.87	AED / customer account
	Water	0	AEDm	528.82	899.44	AED / customer account
	Recycled Water	0	AEDm	41.78	n/a	Not applicable
ADDC	Electricity	0	AEDm	2,072.54	813.02	AED / customer account
	Water	0	AEDm	1,106.16	521.06	AED / customer account
	Recycled Water	0	AEDm	205.00	n/a	Not applicable
TRANSCO	Electricity	0	AEDm	3,316.60	10.83	AED / kW
	Water	0	AEDm	2,052.22	155.73	AED / TIGD
ADSSC	Total	**0**	AEDm	**1,721.40**	**0.5439**	AED / m^3 wastewater treated

Notes: These notified values for 2023 are based on an assumed UAE CPI of 106.81 (base year 2014 = 100) for 2022.

23. The annual MARs projected for each business over the RC2 period are:

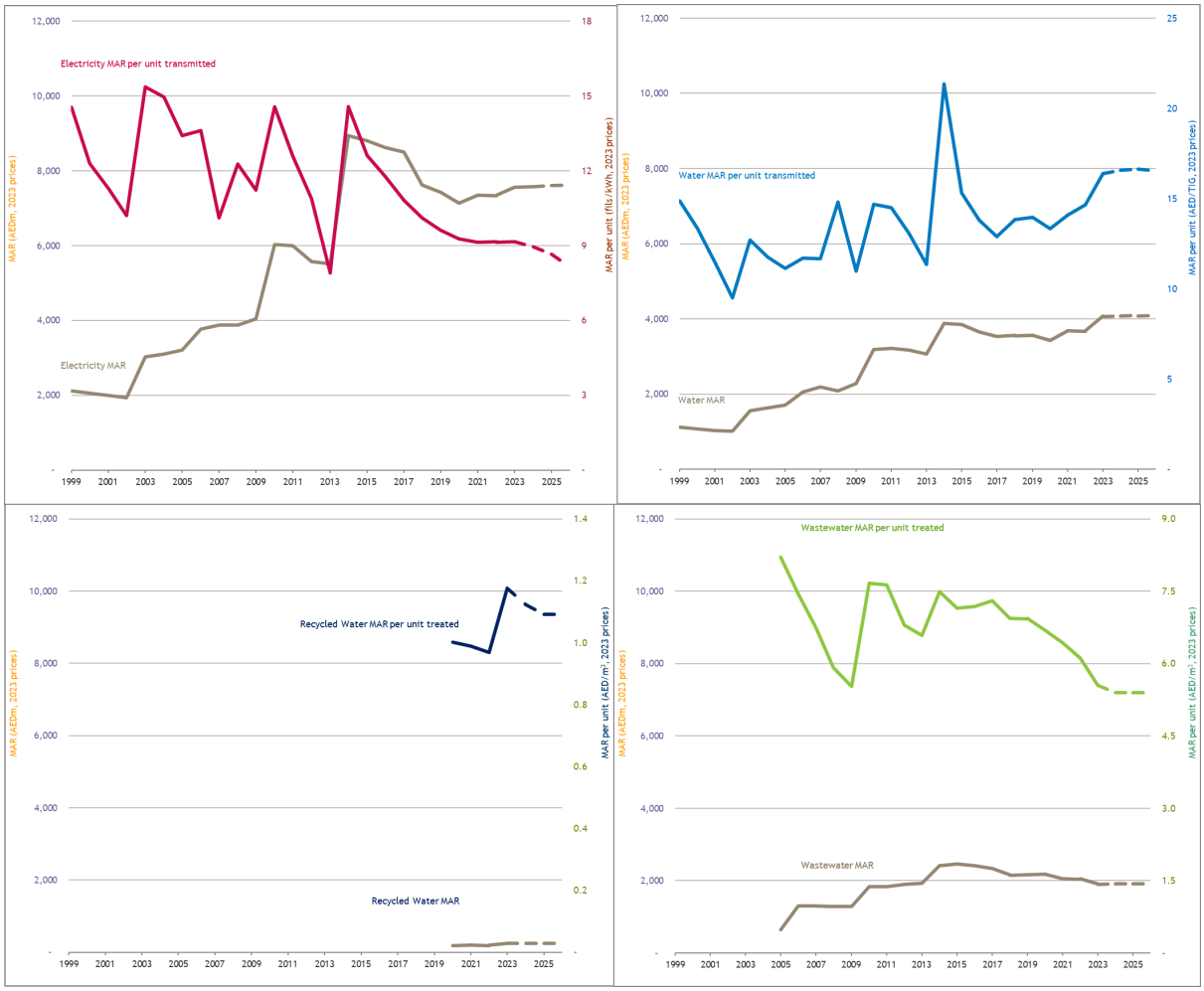
Table 5: Projected MAR over RC2 period – final decision

AED million, 2023 prices		2023	2024	2025	2026
AADC	Electricity	1,596	1,601	1,606	1,611
	Water	620	621	623	625
	Recycled Water	42	42	42	42
ADDC	Electricity	2,426	2,435	2,443	2,451
	Water	1,294	1,299	1,304	1,310
	Recycled Water	205	205	205	205
TRANSCO	Electricity	3,488	3,486	3,493	3,499
	Water	2,161	2,160	2,160	2,160
ADSSC	Total	1,908	1,914	1,914	1,914
Total		**13,739**	**13,763**	**13,789**	**13,817**
Total (using 4.51% WACC) – for information only		**13,383**	**13,405**	**13,431**	**13,458**

24. The total 2023 projected MAR is 4% higher than the 2021 actual MAR in real terms.

25. The charts below show the expected effect of this final decision on the total price-controlled costs and unit costs for electricity, water, recycle water and wastewater respectively. Broadly flatter total MARs and increasing demand over the RC2 mean that the final decision is expected to result in a generally declining trend for the unit cost for electricity, recycled water, and wastewater businesses and an increasing profile for water unit cost.

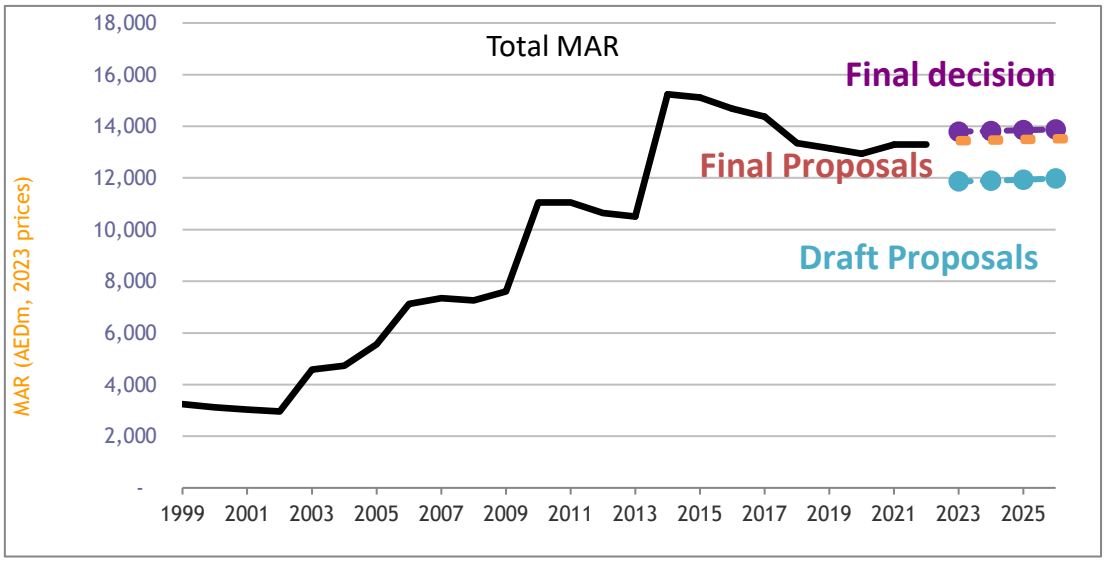
Figure 3: Projected trends of price-controlled MARs



26. Overall, the total profits for the four companies are expected to be of the order of AED 4.5 billion (2023 prices) a year on average over the RC2 period, as compared to the actual profit of AED 4.2 billion in 2021 (in 2023 prices), mainly due to higher WACC allowed for RC2 (4.90%) compared to RC1 (4.60%).

27. As the comparison in the following chart shows, the total MAR for RC2 projected in this final decision is higher than that in the draft proposals by about AED 1.9 billion per annum or 16 % on average over the RC2 period. . The increase in the WACC from 4.51% the final proposals to 4.9% in this final decision has increased the total MAR for RC2 by around AED 360 million per year or 2.7%

Figure 4: Total projected MAR – final decision vs final and draft proposals



Performance incentives (Section 8)

28. RC2 controls include a Performance Incentive Scheme (PIS) designed to encourage appropriate quality of service, outputs and performance. Under this scheme, companies are rewarded for improved service and output performance, and are penalised for deteriorating performance on an annual basis against a set of pre-defined performance indicators and targets. This financial reward or penalty is applied through upward or downward adjustment to MAR via the Q factor, often following verification of performance by the TA.

29. Our final decision for RC2 is to maintain the key overarching principles and SMART design to guide the selection and development of incentives based on outputs valued by the end-users, addressing areas where improvements are needed and where incentives would better deliver incremental benefits to the end-users. In relation to the design aspects, our final decision is to use:

    (a) both financial incentives and reputational incentives (i.e., with no automatic financial bonus or penalty) where we consider they add value;

    (b) symmetric bonus-penalty incentives as a rule, except in very specific cases e.g., meeting minimum regulatory requirements where asymmetric arrangements apply;

(c) caps of 0.5% of the core MAR (excluding pass-through costs) for each individual incentive, and 4% of MAR in aggregate for all incentives of each business except for the DSM incentive. For DSM, the incentive will be calculated only at the end of the RC2 period (2026), as a percentage (8%) of the NPV of actual/revised net benefits over the lifetime of the DSM initiatives;

(d) in-period incentives (with the exception of DSM incentive), where the reward period is normally one year;

(e) mix of relative and absolute targets, as applicable, with dead bands (where no bonus or penalty will apply) if appropriate; and

(f) definition of the appropriate incentive rates on a case-by-case basis.

30. The table below summarizes the individual incentives that we have proposed for RC2, highlighting the main changes to the existing incentives and the new incentives:

Table 6: Summary of final decision on RC2 incentives

Individual Incentive	Type	Company	Relevant businesses	Existing or New	Main change from existing incentive
Performance reporting					
SBAs/PCRs - timeliness and compliance	Financial	All	Electricity & Wastewater	Existing	Applied to electricity, asymmetric bonus/penalty
Financial performance ratios	Reporting	All	All	Existing	None
Total demand forecasting accuracy	Reporting	AADC, ADDC & ADSSC	All	New	New incentive
Quality of supply					
Water quality	Financial	AADC & ADDC	Water	Existing	Targets reviewed, updated metric
Water Meter Penetration	Reportig	AADC & ADDC	Water	Existing	Reporting
SAIDI	Financial	AADC & ADDC	Electricity	Existing	Target & metric reviewed, weighting removed
SAIFI	Financial	AADC & ADDC	Electricity	Existing	Target & metric reviewed, weighting removed
Transmission system availability	Reporting	TRANSCO	Electricity & Water	Existing	None
Removal of timed water supply	Reporting	ADDC & AADC	Water	Existing	Reporting
Unsupplied energy	Financial	TRANSCO	Electricity	Existing	VOLL updated
Recycled water quality compliance	Financial	ADSSC	Recycled water	Existing	Target reviewed, updated weightings
Network performance					
Interface metering	Financial	AADC & ADDC	Electricity & Water	Existing	Target reviewed
Distribution loss reduction	Financial	AADC & ADDC	Electricity	Existing	Target reviewed
Non-revenue water	Financial	AADC & ADDC	Water	Existing	Target reviewed, updated definition
Security of water supply	Financial	TRANSCO	Water	Existing	Target reviewed
Infiltrations	Reporting	ADSSC	Wastewater	Existing	New incentive
Blockages	Financial	ADSSC	Wastewater	New	New incentive
Customer service					
Customer complaints	Financial	AADC, ADDC & ADSSC	All	Existing	Targets reviewed, updated methodology
Customer satisfaction	Financial	AADC, ADDC & ADSSC	All	New	New incentive
Sustainability					
Biosolids reuse	Financial	ADSSC	Wastewater	Existing	Target reviewed
Demand side management	Financial	AADC & ADDC	Electricity & Water	New	New incentive

Note: Incentive C.1 SBAs/PCRs – timeliness and compliance applies to all businesses of a company, however, Q factor will only be applied to company's electricity MAR (and total MAR for ADSSC).

1. Glossary

AADC	Al Ain Distribution Company
ADDC	Abu Dhabi Distribution Company
ADHC	Abu Dhabi Development Holding Company (rebranded as ADQ)
ADPower	Abu Dhabi Power Corporation
ADSSC	Abu Dhabi Sewage Services Company (now ADSWC)
ADSWSC	Abu Dhabi Sustainable Water Solutions Company (formerly ADSSC)
ADQ	Abu Dhabi Development Holding Company PJSC
ADWEA	Abu Dhabi Water and Electricity Authority (now merged within DoE)
AMPC	Al Mirfa Power Company
BST	Bulk Supply Tariff
CAPM	Capital Asset Pricing Model
CPI	Consumer Price Index
DoE	Department of Energy
DoF	Department of Finance
DSM	Demand Side Management
EAD	Environmental Agency – Abu Dhabi
EWEC	Emirates Water and Electricity Company, (previously, ADWEC)
FTE	Full Time Employee
IPP	Independent Power Producer
ISTP	Independent Sewage Treatment Plant
IWPP	Independent Water and Power Plant
MAR	Maximum Allowed Revenue
Network companies	AADC, ADDC, TRANSCO and ADSSC
NPV	Net Present Value
OBR	Output Based Regulation
O&M	Operation and Maintenance
RC1	First Regulatory Control covering the period 2018-2022
RC2	Second Regulatory Control covering the period 2023-2026
PCR	Price Control Return
PIS	Performance Incentive Scheme
P(W)Pas	Power (and Water) Purchase Agreements
RASCO	Abu Dhabi Company for Servicing Remote Areas
RAG	Regulatory Accounting Guideline
RAV	Regulatory Asset Value

RIG	Regulatory Instructions and Guidance
SO	System Operator
STAs	Sewage Treatment Agreements
TA	Technical Assessor
TAQA	Abu Dhabi National Energy Company
TAQA companies	Price controlled companies AADC, ADDC and TRANSCO
TRANSCO	Abu Dhabi Transmission and Despatch Company
TuoS	Transmission Use of System charge
WACC	Weighted Average Cost of Capital

2. Introduction

1.1 Background

1.1.1 The four network companies (namely, AADC, ADDC, ADSSC and TRANSCO) in the electricity, water, recycled water and wastewater sector in the Emirate of Abu Dhabi are natural monopolies where competition is limited or impractical. This is in contrast to the electricity generation, water production and sewage treatment where there is competition between bidders to build new generation, desalination and sewage treatment plant. The DoE has therefore established a framework of multi-year CPI-X price controls to constrain the market power and to incentivise the performance of these monopoly companies:

(a) For AADC, ADDC, and TRANSCO, the first price controls (PC1) were set in 1999 to run for three years and were then extended for a further year to cover the four-year period (1999-2002). The second price controls (PC2) were set in 2002 to apply for three years (2003-2005), followed by the third price controls (PC3) set in 2005 for four years (2006-2009).

(b) In 2007, the DoE set the first price control for ADSSC to apply from the date of establishment of ADSSC (21 June 2005) until 31 December 2009.

(c) This was followed by the fourth price controls (PC4) set in 2009 for all the network companies for four years (2010-2013) and the fifth price controls (PC5) set in 2013 to apply for four years (2014-2017).

(d) In an attempt to revamp the price control framework to meet a number of strategic objectives, the first regulatory controls (RC1) were set in 2017 for all four network companies to apply for four years (2018-2021). In 2020, the first regulatory controls (RC1) were also set for the newly established recycled water businesses of AADC and ADDC to apply for four years (2018-2021).

1.1.2 These price controls are described in detail in the DoE previous consultation and proposal papers which are available on the DoE's website (www.doe.gov.ae).

Figure 1.1: Multi-year price controls for network companies

PC1	PC2	PC3	PC4	PC5	RC1	RC2
1999-2002	2003-2005	2006-2009	2010-2013	2014-2017	2018-2022	2023-2026

1.1.3 The current RC1 price controls for the four network companies were originally set to apply until 31 December 2021. However, due to the prevailing Covid-19 pandemic, the RC1 controls were extended in 2020 for another year to apply up to 31 December 2022.

1.1.4 Accordingly, this RC2 review is to set the new or second regulatory controls (to be referred to as "RC2") for all the network companies to apply from 2023 onwards.

1.2 The role and duties of the DoE

1.2.1 The DoE was established in accordance with Law No (11) of 2018 to implement various programmes, initiatives, and projects with the aim of achieving a sustainable society in the Emirate of Abu Dhabi, through its three roles relating to making (a) strategy, (b) policy, and (c) regulation for the energy sector. The DoE replaced Abu Dhabi Water and Electricity Authority (ADWEA) and Regulation and Supervision Bureau (RSB), that were established in 1999 under Law No (2) of 1998.

1.2.2 The Law No (11) of 2018, the Law No (2) of 1998 and the Law No (17) of 2005 define the duties and functions of the DoE. Entities wishing to undertake certain activities within the Energy Sector (as defined under Law No 11) will require a licence or other regulatory approval from the DoE. It is through licence conditions that we regulate the conduct of the four network companies. This approach is in line with Article 4(4) of Law No 11 whereby the DoE has the power to "regulate all aspects of the Energy Sector through developing policies, standards, rules, resolutions and executive and operating circulars for regulating the Sector." This is also in line with additional competencies provided to DoE pursuant to the Executive Council (EC) Chairman Resolution No. 26/2018, in particular Article 1(6) whereby DoE should "Regulate tariffs imposed on water and electricity consumers and how to apply and collect tariffs".

1.2.3 In conducting the price control reviews, the DoE also continues to be mindful of relevant legislative provisions from Law No (2) of 1998, including:

(a) DoE's exclusive powers (pursuant to Article 48 of Law No.2 of 1998) to "regulate all licensed operators economically and technically in accordance with this Law".

(b) DoE duty (pursuant to Article 53 of Law No.2 of 1998) "to ensure, so far as it is practicable for it to do so, the continued availability of potable water for human consumption and electricity for use in hospitals and centres for the disabled, aged and sick".

(c) DoE general duties (listed in Article 54 of Law No.2 of 1998), including to "ensure the operation and development of a safe, efficient and economic water, wastewater and electricity sector in the Emirate".

(d) DoE general functions (listed in Article 55 of Law No.2 of 1998), including "the regulation of prices charged to consumers ……and the methods by which they are charged."

(e) DoE responsibilities, in line with good regulatory practice (as per Article 96 of Law No.2 of 1998) to act consistently, to minimise the regulatory burden on licensees, to take account of the financial position of licensees, and to give reasons for its decisions.

1.2.4 This price control review will be governed by these and other statutory requirements.

1.3 Sector structure and background

1.3.1 The structure of the water and electricity sector in the Emirate of Abu Dhabi is characterised by its single-buyer structure, where:

(a) Emirates Water and Electricity Company (EWEC) (formerly Abu Dhabi Water and Electricity Company or ADWEC) purchases capacity and output from production companies including Independent Power Producers (IPPs) and Independent Power & Water Producers (IWPPs) under long-term Power and Water Purchase Agreements (PWPAs).

(b) EWEC also procures gas for supply to IPPs and IWPPs[1] that consume natural gas to produce power. In addition, from 1 January 2022, EWEC started performing the SO function for the water and electricity sector in the Emirate of Abu Dhabi (spun off from TRANSCO).

(c) EWEC then sells water and electricity:

i. to AADC and ADDC at the Bulk Supply Tariff (BST) as approved by the DoE on an annual basis[2] (referred to as EWEC's licensed procurement business): and

ii. to entities outside the Emirate of Abu Dhabi at negotiated tariffs (referred to as unlicensed procurement business properly ring-fenced from the licenced businesses in the Emirate of Abu Dhabi).

(d) In addition to the BST payments to EWEC, the two distribution companies (AADC and ADDC) also pay Transmission Use of System (TuoS) charges and connection charges to TRANSCO.

Figure 1.2: Payment flows in the water and electricity sector

Note: IWPP: Independent water and power producer, TuoS: Transmission use of system charge, BST: Bulk supply tariff

1.3.2 In the wastewater sector, ADSSC is responsible for all activities from wastewater collection through treatment to disposal. However, similar to EWEC, ADSSC has long-term Sewage Treatment Agreements (STAs) to procure wastewater treatment services from Independent Sewage Treatment Providers (ISTPs).

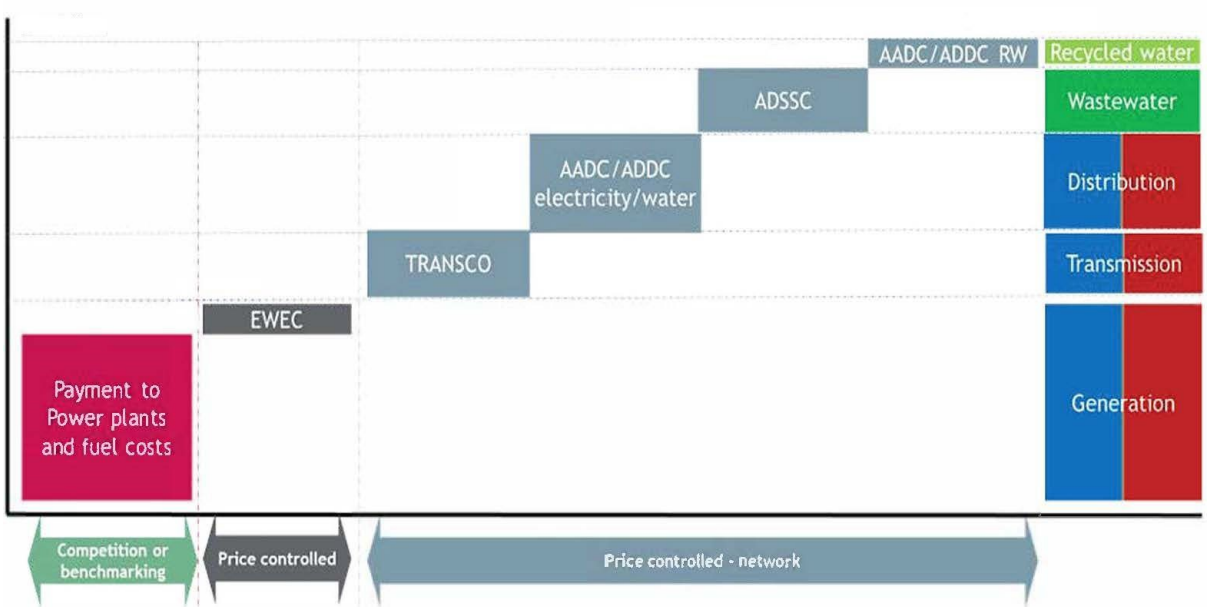
1.3.3 The revenues for the IPP, IWPPs and ISTPs are determined by the prices that were obtained through competitive tendering and are set out in the respective

[1] Note that EWEC does not procure nuclear fuel for ENEC / Barakah One which supplies power to the sector under a long-term PPA with EWEC

[2] In accordance with EWEC Law No.20 of 2018 – Article 13

P(W)PAs and STAs between these companies and the relevant off-taker (EWEC or ADSSC). For AADC, ADDC, ADSSC, EWEC and TRANSCO, the annual turnover is capped by their respective relevant price controls.

Figure 1.3: Sector costs and price controls



Note: Not to the scale

1.3.4 Effective 1 January 2018, it was decided to unbundle the recycled water sector resulting in a structure whereby:

(a) ADSSC is responsible for all activities in the wastewater sector related to the production of recycled water and its sale to AADC and ADDC; and

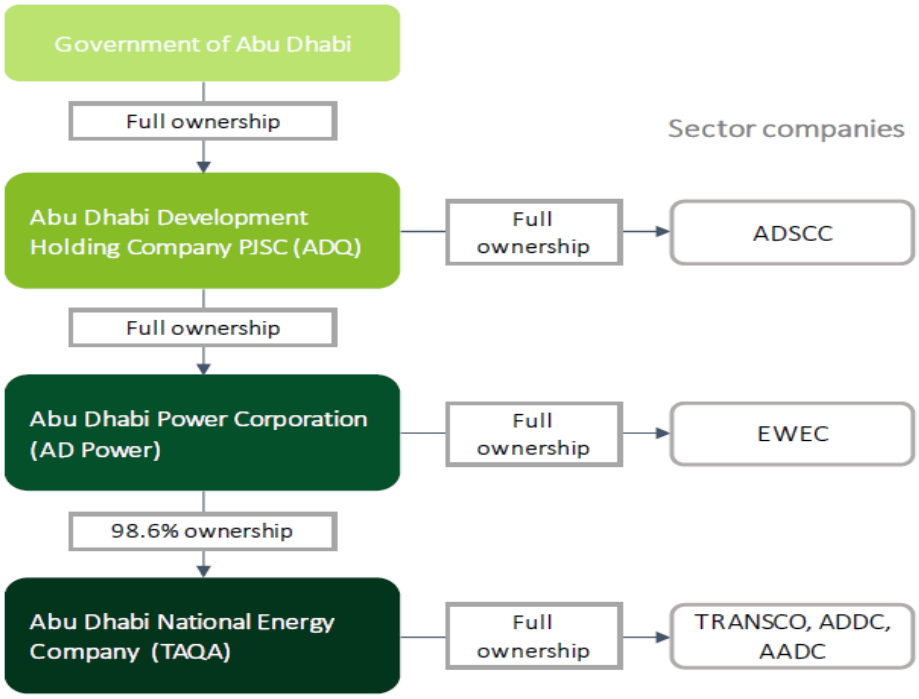
(b) AADC and ADDC are responsible for the distribution and supply of recycled water to end-users in the Emirate of Abu Dhabi, as per the licences issued by the DoE.

1.3.5 In addition, effective 1 January 2019, the Remote Area Services Company (RASCO) ceased to exist and its water production and electricity generation assets were transferred to a production company, Al Mirfa Power Company (AMPC), and the two distribution companies depending on the nature of such assets.

1.3.6 In relation to the ownership structure, AADC, ADDC, EWEC and TRANSCO were directly owned by ADWEA until 2017 and then by AD Power (a subsidiary of ADQ, which in turn is owned by Abu Dhabi Government). During 2020,

ADPower transferred the ownership of AADC, ADDC and TRANSCO to one of its subsidiaries, TAQA, a public company listed on the Abu Dhabi Stock Exchange. EWEC continues to be owned by AD Power. ADSSC is now owned by Sustainable Water Solutions Holding Company Limited which is owned by ADQ.

Figure 1.4: Ownership of network companies

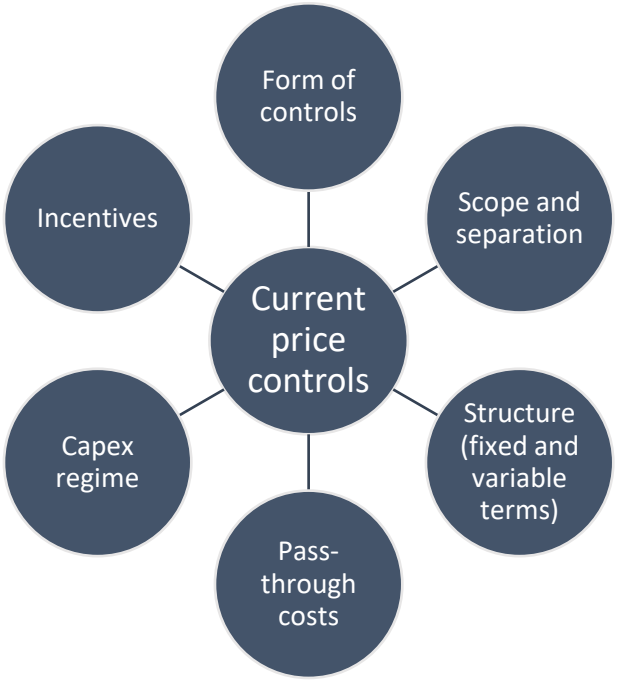


Note: During 2022 AD Power sold a part of its ownership of TAQA to other entities, reducing the ownership from 98.6% to 90.034%, without losing any control over any of the companies or assets within the portfolio.

1.4 Current price controls

1.4.1 The price controls for the network companies have broadly been in the form of CPI-X revenue caps, defining the maximum allowed revenue (MAR) for each company or business for each year of the price control period. In the previous consultation papers on RC2, we explained the main features of the price controls. In summary:

Figure 1.5: Main features of current price controls



(b) The MARs for network companies include a fixed term and one revenue driver (except for recycled water business which does not have any revenue driver) that link MAR with specific company's outputs.

(c) There are separate price controls for the water, recycled water and electricity businesses of AADC, ADDC and TRANSCO. For AADC and ADDC, price controls cover both distribution and supply businesses. For ADSSC, a single price control covers all of its three separate businesses (sewerage, wastewater treatment and disposal).

(d) Costs which are subject to competition or regulation in other parts of the supply chain (e.g. STA costs for ADSSC, and the BST, purchase of electricity from AMPC generated from xRASCO assets and TRANSCO's TuoS charges for distribution companies) are treated on a pass-through basis for the downstream companies.

(e) Price controls have been set to allow the companies to recover the efficient level of opex, regulatory depreciation and a return on regulatory asset value (RAV).

(f) Price controls provide incentives for companies to reduce costs since they are allowed to retain the benefit of any efficiency gains (in the form of

additional profits over and above those estimated or allowed at the time of price control review) within the price control period.

(g) The calculation of regulatory depreciation and returns to the network companies requires the determination of allowed capex. The treatment of capex has been based on a combination of ex-ante and ex-post assessments. Under the ex-post regime, the companies are given capex allowances without any review or with minimal review and approval of the relevant capex projects. The final, firm capex related allowance are determined by the DoE's efficiency reviews only after the capex is incurred. However, under the ex-ante approach to capex regulation, an allowance is provided to the companies through front-end review of the proposed schemes (subject to adjustment for actual capex, with or without ex-post review). During RC1, we have moved more towards an ex-ante regime in an attempt to limit the scope of the ex-post reviews.

(h) The network companies' opex allowances for the RC1 period were estimated using a hybrid of top-down and bottom-up approaches. These projections also include various specific cost allowances for additional roles, responsibilities or capability building in important areas.

(i) Regulatory depreciation allowances for AADC, ADDC and TRANSCO's pre-2018 and post-2018 investments have been based on an asset life assumption of 30 years and 40 years, respectively. For ADSSC, asset life assumptions of 50 years and 60 years have been applied for pre-2018 and post-2018 investments, respectively.

(j) The return on capital allowance has been calculated by applying a weighted average cost of capital (WACC) to the RAVs for network companies. The WACC has been based on international regulatory benchmarks, cross-checked against the analyst estimates from local and regional capital markets.

(k) Price controls also include incentives designed to encourage appropriate quality of service, outputs and performance. Companies are rewarded for improved service and output performance and are penalised for deteriorating performance on an annual basis against a set of pre-defined performance indicators and targets. With the exception of the DSM incentive, the maximum

bonus or penalty for network companies' individual performance indicators is capped at 0.5% with an overall cap of 4% of a company's own MAR (i.e. excluding pass-through costs) for all performance indicators together. The Technical Assessor (TA) and Regulatory Instructions and Guidance (RIG) play important roles in the price controls incentive framework.

(l) Some companies also undertake certain unlicensed activities – for instance, distribution companies' billing services to Municipalities – which are not subject to price controls. However, in the case of TRANSCO's unlicensed transmission activities in other Emirates, the difficulty of allocating assets to licensed and unlicensed activities and the requirement to apply the same TuoS charges to all users of the transmission system meant that the price controls also include the unlicensed activities.

1.4.2 The main features of existing price controls are summarised as follows:

Table 1.1: Main features of existing price controls

Company	Scope and separation	Pass-through items*	Revenue drivers	Incentives	Capex regime
AADC / ADDC	• Separate controls for water, recycled water and electricity. • No separation for distribution and supply businesses	• Water, recycled water and electricity purchases • Transmission charges • Embedded electricity purchases* • DoE licence fee	• Fixed term • Customer numbers registered	Financial incentives and reporting metrices	Ex-ante allowance for ex-ante approved new, ex-ante approved running and unreviewed running schemes
TRANSCO	• Separate controls for water and electricity. • No separation for SO (transferred out to EWEC) and licensed and unlicensed	• Electricity ancillary service costs • DoE licence fee	• Fixed term • Total units transmitted (irrespective of MDEC compliance)		
ADSSC	• Combined controls for collection, treatment and disposal businesses	• STA costs • DoE licence fee	• Fixed term • Annual flow at treatment plants		

Note: *Pass-through of all these costs (except for DoE licence fee) is subject to economic purchasing obligation

1.5 Timetable for RC2 review

1.5.1 As the current RC1 price controls were agreed to apply until the end of 2022, the objective of this review is to set RC2 price controls to apply from 1 January 2023. The table below sets out timetable for this review and the progress to date:

Table 1.2: Timetable for RC2 review

Approximate date	Task
March 2021	DoE published the **First Consultation Paper**
April 2021	Companies submitted 2020 audited Separate Business Accounts (SBAs)
May 2021	Companies responded to First Consultation Paper
September 2021	DoE published the **Second Consultation Paper**
November 2021	Companies responded to Second Consultation Paper
March 2022	DoE published the **Draft Proposals for Network Companies**
April 2022	Companies submitted 2021 audited SBAs
June 2022	Network Companies responded to Draft Proposals
March 2023	DoE publishes this **Final Decision for Network Companies**
1 January 2023	RC2 takes effect

1.5.2 This review spans over a period of about 2 years to provide sufficient opportunity for deliberations and consultations on the key issues. The timetable involves four consultation and proposal documents published by the DoE during 2021-2023, in addition to workshops, presentations and meetings at various stages. It allows the companies about 1-2 months to respond to each consultation and proposal paper. The timetable also allows focus and engagement on a number of parallel work streams which are summarised below, and that feed into, the main price control review.

1.6 Engagement with the sector after release of draft proposals

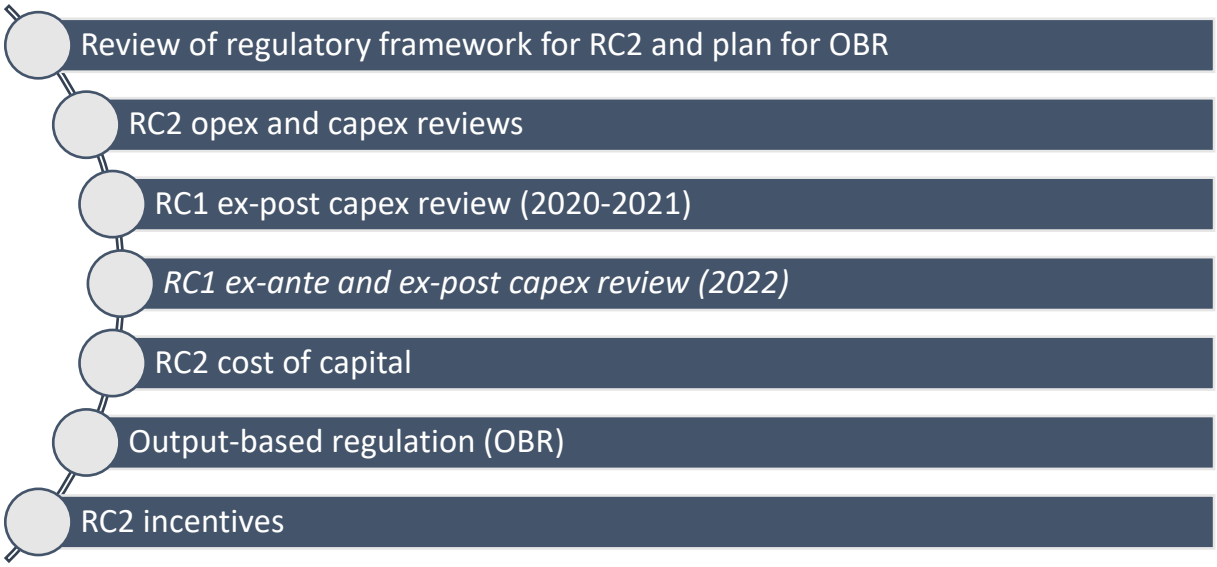
1.6.1 Immediately after release of the draft proposals, the DoE (with its consultants) extensively engaged with the network companies to facilitate their review of the proposals, deliberate on framework and methodologies for opex, capex, incentives, WACC and review companies' revised business plans together with detailed justifications for various opex cost items and capex schemes. Consequently, the deadline for responses to the draft proposals was extended twice and responses were received by the end of June 2022. Over this period, and until the end of July, there was significant exchange of data an information between the sector companies and the DoE, and extensive bilateral engagement with all network companies. Accordingly, this final decision takes into account the network companies' formal response to the RC2 draft proposals received in June 2022 and information received throughout the period from April 2022 till 31 July 2022 (and till October on specific topics relating to opex, financial issues and incentives).

1.6.2 In addition, since November 2022, when we concluded our final proposals for the RC2, we have continued engaging closely with the network companies, their shareholder TAQA, the Department of Finance, and Abu Dhabi's Government in order to conclude the RC2 review. This final decision takes into account the inputs provided and the outcome of this engagement.

1.7 RC2 related work streams

1.7.1 This price control review is being supported by a number of related work streams and the work of expert consultants. These workstreams are summarised below and are discussed further in the relevant sections of this paper. In April 2021, the DoE appointed an external consulting firm and held kick-off meeting with the relevant companies to initiate the consultant's work on these work streams.

Figure 1.6: RC2 related workstreams



Review of regulatory framework for RC2

1.7.2 This workstream involved studying whether transfer of ownership of AADC, ADDC and TRANSCO to TAQA (a listed company) requires any fundamental change in the regulatory framework for RC2 and includes the sector's deliberations on whether to move to an output-based regulation (OBR) in RC3 or later. This workstream also studied whether DoE should replace the existing

opex and capex frameworks and introduce a total expenditure (totex) approach in RC2.

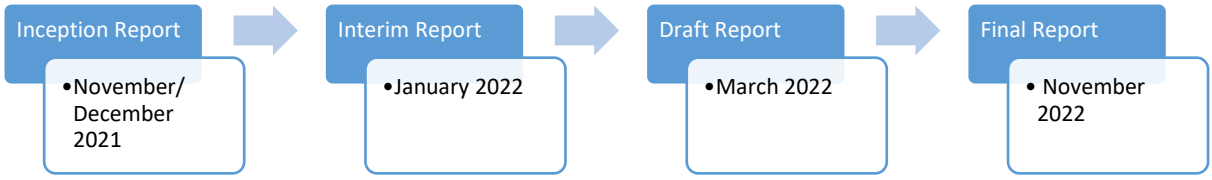
1.7.3 The consultant issued its final report in December 2021. This study concluded that the overall regulatory framework remained suitable for the new AADC, ADDC and TRANSCO ownership structure. It also concluded that separate assessments for opex and capex should continue for RC2 as per the DoE's approach to date and that the transition to totex approach should not be made.

RC2 opex and capex reviews

1.7.4 According to the conclusion of the above-mentioned regulatory framework study for RC2, the consultant has developed, separate reasonable and efficient opex and capex forecasts (comprising of ex-ante allowance for new schemes and running schemes) for the RC2 period.

1.7.5 The consultant's final reports have fed into the DoE's RC2 final decision.

Figure 1.7: Consultant deliverables on opex and capex workstream



RC1 ex-post capex review (2020-2021)

1.7.6 The revised capex allowances for 2020-2021, set through RC1 interim review, comprise of:

(a) Ex-ante allowance for planned schemes; and

(b) Ex-ante allowance for running schemes.

1.7.7 Ex-ante capex allowance for planned schemes may be subject to ex-post review on completion of the schemes.

1.7.8 However, the entire capex allowance for running schemes for these years is subject to ex-post review. This review has been undertaken by the TA during April-September 2022 with results incorporated in this final decision.

RC1 ex-ante and ex-post capex review (2022)

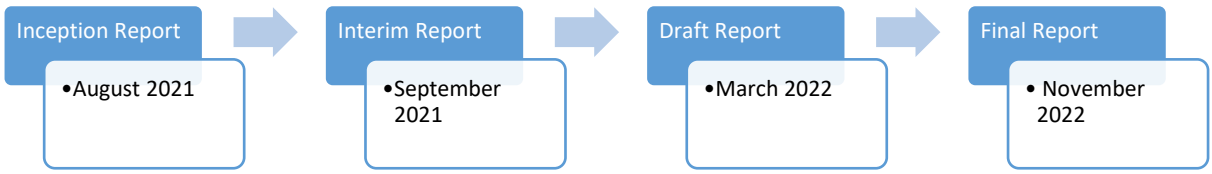
1.7.9 The DoE extended the RC1 by one year up to the end of 2022. This extension was provided by issuing derogations to the companies, allowing notified values for 2022 to be based on those for 2021, with an implied capex allowance embedded via the price control calculations. The 2022 capex allowance has now been updated with the forecasts from the companies. The entire capex relating to unreviewed schemes included in the allowance is subject to ex-post review.

RC2 cost of capital

1.7.10 The aforementioned consultant's scope of work also includes proposals for appropriate WACC that should be used as (a) the allowed rate of return for calculating return on capital in RC2, and (b) as the discount rate for net present value (NPV) calculations for calibrating the revenues and the respective notified values.

1.7.11 The consultant issued its final report in November 2022 which has fed into this final decision.

Figure 1.8: Consultant deliverables on WACC workstream



Output based regulation (OBR)

1.7.12 During 2018-2019, DoE extensively consulted with the network companies on the merits of moving to an OBR approach. While all the stakeholders appreciate the benefits OBR can bring to the sector, they also realise that this move requires extensive work on the enablers to allow the sector to embrace this change. Accordingly, the scope of work for the DoE's consultant included a selection of appropriate outputs to be used under an OBR regime, mechanism to track and monitor such outputs, and changes in regulatory regime and

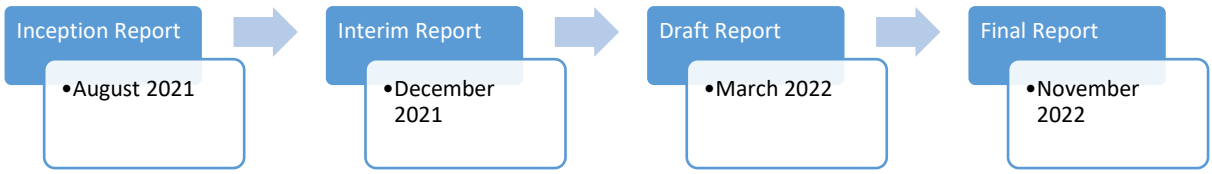
companies' processes that can be made in RC2 for sector's move to OBR in RC3 or later.

1.7.13 However, the DoE has accepted the network companies' suggestion to form a working group during RC2 and further study this initiative before setting out the specific enablers. Accordingly, the DoE has discontinued consultant's services on this workstream at this stage.

RC2 incentives

1.7.14 The consultant has also advised the DoE on changes to the existing incentives and introduction of new incentives for RC2.

Figure 1.9: Consultant deliverables on incentives workstream



1.7.15 The consultant issued its final report in November 2022 which has fed into this final decision.

1.7.16 Overall, the RC2 related workstreams and how the related consultant reports have fed into RC2 consultation process are summarised as follows:

Table 1.3: RC2 related workstreams

S. No.	Workstream	Consultant	Consultant report	Feeds into DoE's RC2 consultation / proposal document
1	Review of regulatory framework for RC2 and plan for OBR (Totex transition and impact of transfer of ownership of AADC, ADDC and TRANSCO to TAQA)	Deloitte	Draft report	Second consultation paper
			Final report	Draft proposals
	RC2 opex and capex reviews		Inception, interim and draft reports	Draft proposals
			Final report	Final decision
2	RC2 cost of capital		Inception and interim reports	Second consultation paper.
			Draft report	Draft proposals
			Final report	Final decision

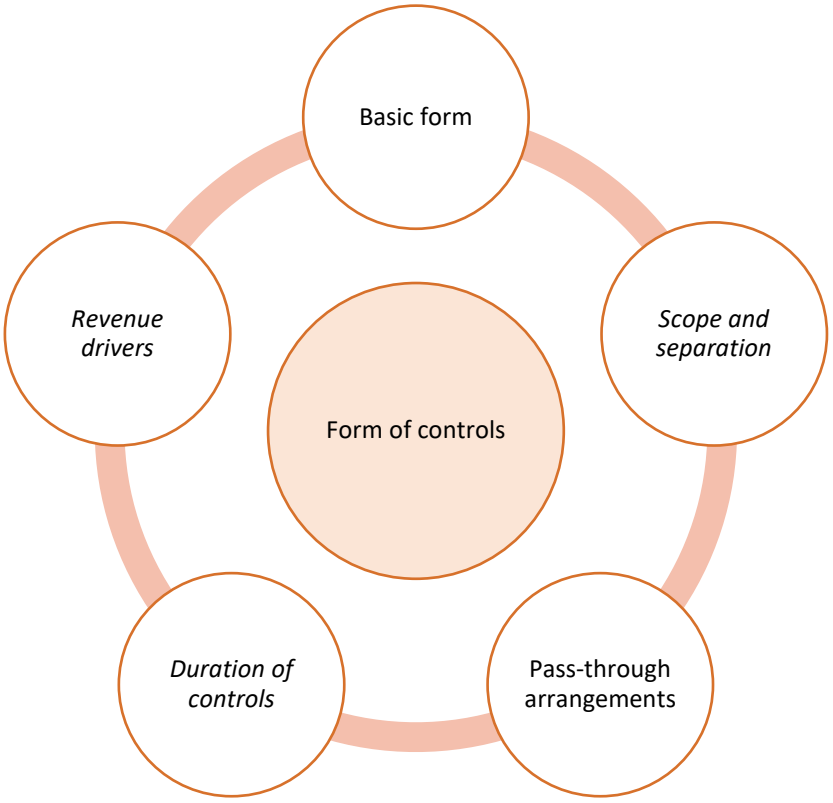
3	Output-based regulation (OBR)		Inception report	Second consultation paper
			Draft/Final reports	Discontinued
4	RC2 incentives		Inception report	Second consultation paper
			Interim and draft reports	Draft proposals
			Final report	Final decision
5	RC1 ex-post capex reviews for 2020-2021	Technical Assessor	Final reports	Final decision

3. Form of Controls

3.1 Introduction

3.1.1 The DoE's draft proposals described the key issues that should be considered while designing the RC2 controls for the network companies and the DoE's thinking at that time. Specifically, these issues relate to the form, scope, duration, separation and structure of price controls, revenue drivers, and the pass-through arrangements for specific costs.

Figure 3.1: Assessment of form of new controls



3.1.2 Price controls have various features designed to balance the advantages of providing efficiency incentives against the disadvantages of placing undue risks on licensees. For instance, each price control:

(a) includes cost pass-through terms allowing the recovery of costs over which the licensees have limited or no control (but regulated elsewhere in the supply chain);

(b) is set for a fixed number of years, allowing licensees to retain the benefits of efficiency savings for a number of years, until the next review;

(c) has a variable revenue term with a suitable revenue driver, to allow the revenue to vary with the actual demand or output that has an impact on the cost; and

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

3.1.3 The DoE's earlier consultation papers and draft proposals invited stakeholders to comment on whether the current form of the price controls remains appropriate. This section 3 summarises and assesses the stakeholders' responses to the draft proposals and sets out the DoE's final decision on the form of controls for RC2.

3.2 Basic form of price control

Draft Proposals

3.2.1 In our draft proposals, we have set out the intention to:

(a) continue with the CPI-X revenue cap form for RC2;

(b) use a zero X factor for all businesses for RC2; and

(c) not introduce totex and OBR in the RC2.

Responses

3.2.2 The network companies accepted the proposals to retain the CPI-X form of control for RC2. They also welcomed the decision not to implement totex and OBR in the RC2 period. The companies agreed to the proposal to create a working group to consider the enablers for OBR in RC3 or later, and requested to agree the terms of reference for the working group before it convenes. They also highlighted that no cost allowances for the implementation of OBR enablers are presently considered in RC2 and indicated that this should be

considered under a specific allowance or a targeted reopener, if and when required.

3.2.3 The network companies also highlighted that the X-factor as a tool for revenue smoothing in RC1 caused confusion and a disconnect between inputs and outputs, and thus considered that it should not be used within the structure of the price controls for RC2. They accepted however the proposal of a zero X-factor for all businesses as a pragmatic way forward.

Assessment and way forward

3.2.4 We welcome the companies' agreement on the CPI-X revenue cap form of controls, on not implementing totex or OBR in the RC2 and on using zero X factor for RC2.

3.2.5 In relation to the OBR, we will discuss with the sector and agree the terms of reference for the working group following the publication of this final decision. It is unclear at this stage whether any OBR related implementation will create incremental costs for sector, given the projects and business cases put forward by network companies for the RC2 period. We expect that the identification of specific activities, metrics, outputs, outcomes, and/or any incremental costs can be discussed as part of the working group scope.

Final Decision

3.2.6 Our final decision is to:

(a) continue with the CPI-X revenue cap form of price controls for RC2,

(b) use a zero X factor for all businesses for RC2; and

(c) not introducing OBR or totex in RC2.

3.3 Scope and separation of controls

Draft Proposals

3.3.1 Currently, there are separate price controls for the water and electricity businesses of AADC, ADDC and TRANSCO, and separate price control for recycled water business of the distribution companies. No such separation

exists for either ADSSC's sewerage, wastewater treatment and disposal businesses or the distribution companies' distribution and supply businesses.

3.3.2 In the draft proposals, we put forward the proposal to retain the current scope and separation of price controls for all network companies but to remove the SO function and related cost allowances from TRANSCO's price controls.

Responses

3.3.3 The network companies accepted the proposals to retain the current scope and separation of controls. TRANSCO highlighted that the removal of the SO function materially changes the scope, nature and risk profile of TRANSCO's activities.

Assessment and way forward

3.3.4 We welcome the sector agreement to maintain the current scope and separation of controls. We address TRANSCO's point regarding impacts of the changes on their business in the sections of this document relating to opex, capex and PIS.

Final Decision

3.3.5 In this final decision, we retain the current scope and separation of price controls for all companies. The only exception is the removal of the SO function from TRANSCO's price controls.

3.4 Cost pass-through arrangements

Draft Proposals

3.4.1 In the draft proposals, we considered that the existing cost pass-through arrangements for all the four network companies remain appropriate. These arrangements apply to the following costs:

(a) For AADC and ADDC, the bulk power and water purchases from EWEC/AMPC (for ex-RASCO assets), recycled water purchases from ADSSC and the transmission charges from TRANSCO;

(b) for ADSSC, the payments under the relevant long-term sewage treatment agreements (STAs); and

(c) for all companies, the DoE's annual licence fees.

Responses

3.4.2 The network companies agreed to retain the principle that efficient cost allowances should be provided for the operating companies' controllable costs together with pass-through for those costs which are outside their control. They welcomed the DoE proposal to maintain in the RC2 the set of pass-through costs allowed in the price controls.

Assessment and way forward

3.4.3 We note the network companies' agreement to our proposals to retain the existing cost pass-through arrangements for all their businesses.

Final Decision

3.4.4 Further to the companies' agreement noted above, our final decision is to retain the existing cost pass-through arrangements.

3.5 Duration of controls

Draft Proposals

3.5.1 Figure 3.2 below presents the price control durations to date. Since 2006 (from PC3), we have typically set the price controls for four years. The current RC1 controls were originally set for a duration of four years, but were subsequently extended for a fifth year due to the restrictions relating to the covid19 pandemic.

Figure 3.2: Multi-year price controls for network companies

PC1	PC2	PC3	PC4	PC5	RC1	RC2
1999-2002	2003-2005	2006-2009	2010-2013	2014-2017	2018-2022	2023-2026

3.5.2 Our draft proposals were accordingly to set the RC2 controls for 4 years for all companies with a one-time ex-ante capex review at the time of setting RC2 controls, ex-post capex adjustments every two years and annual specific opex allowance adjustments, where applicable.

Responses

3.5.3 The network companies provided in their response to the draft proposals an in-principle agreement to the duration of 4 years for the RC2. They however continued to reserve their position on this topic, based on the current significant uncertainties in the macroeconomic environment and potential impacts on the economy and their business costs, which may warrant a shorter price control period. The sector also highlighted that mid-term capex reviews, reopeners and uncertainty mechanisms are necessary to ensure a better balance between regulatory burden and investment certainty.

Assessment and way forward

3.5.4 We welcome the companies' in-principle agreement to the four year control duration. In relation to the arguments on the potential shorter price control period, we note that:

(a) We are introducing a number of mechanisms to deal with uncertainty in the RC2, in addition to the ones already exist in the price control framework. We expect that these will deliver an overall balanced RC2 package and address appropriately the concerns about the macroeconomic impacts. We discuss the proposed mechanisms to deal with uncertainty for opex and capex in the relevant sections of this document;

(b) In addition, we note that the risk from uncertainty caused by potential impacts of the current geopolitical macroeconomic events is also considered in the determination of WACC for RC2, which again will contribute to address the concerns about the duration of the price controls; and

(c) On a final note, we highlight that a shorter control duration weakens the key advantage or rationale of multi-year CPI-X price controls by virtue of their inherent incentive mechanism. In addition, part of the efficiency drive that the price control framework tries to promote is related with the sector ability to robustly forecast their businesses for the duration of the price control. These benefits are diluted if the price control period is too short.

Final Decision

3.5.5 In view of the sector responses and the arguments set out above, our final decision is to set the RC2 price controls from 1 January 2023 until 31 December 2026 (or as otherwise required), with:

(a) one-time ex-ante capex review (at the time of setting the price controls),

(b) a mid-term capex review and adjustments (further detailed in the capex section of this document),

(c) annual specific opex allowance adjustments, and

(d) an opex specific uncertainty mechanism being introduced for RC2 to deal with uncertainty from transformation projects (discussed further in the opex section of this document).

3.6 Revenue drivers

Draft Proposals

3.6.1 The draft proposals suggested structuring the MAR formula for each company with a fixed element and a variable element linked to the output-based revenue driver using 85:15 weights for calibrating the RC2 controls, as summarised in the table below. We also highlighted that we would be open to reconsider these weightings and, in the case of TRANSCO, welcomed views on changing the revenue driver to the global peak demand.

Table 3.1: Revenue-drivers – draft proposals

Company	Revenue-driver	Revenue-driver weight in MAR formula
AADC/ADDC (water & electricity)	Fixed term Number of customer accounts	85% 15%
AADC/ADDC (recycled water)	Fixed term	100%
TRANSCO (water & electricity)	Fixed term Total units transmitted (irrespective of MDEC compliance, and metered and non-metered)	85% 15%
ADSSC	Fixed term Annual flow at treatment plants	85% 15%

Responses

3.6.2 The network companies responded that, to best protect companies and customers interests, revenue drivers should be closely aligned to individual companies' cost structures and drivers. They added that this would minimise the risk of a mismatch between allowed and required revenues. On this basis:

(a) ADSSC accepted the DoE's proposal to base the b-term on wastewater treatment flows, but suggested that the weighting of the b-term or variable term should be reduced to 10%, which is in alignment with the variation in opex to the variation in MAR. They added that a future move to a b-term based on customer accounts should only be triggered following a bedding-in period to the introduction of tariff billing for wastewater services.

(b) AADC and ADDC accepted to retain the 100% fixed MAR for recycled water, and to base the b-term for electricity and water businesses on customer accounts (net of dormant accounts), retaining the 15% weighting of the b term.

(c) TRANSCO considered that, for its electricity and water businesses, the b term and its weighting should be amended to be based on global peak demand, with a weighting of 5% for the b term for both electricity and water.

Assessment and way forward

3.6.3 We welcome the distribution companies' agreement to the DoE draft proposals for revenue drivers of the respective electricity, water and recycled water businesses. We also welcome TRANSCO and ADSSC analysis and proposals on the most appropriate revenue drivers for their businesses. In our view:

(a) The proposal from TRANSCO for using global peak demand as the water and electricity businesses revenue driver is reasonable. We consider that peak demand may better reflect the nature of TRANSCO's businesses and the relationship between demand and required revenue; and

(b) The analysis provided by ADSSC and TRANSCO explains reasonably the relationship between revenue requirement, opex growth, and variation in demand. We therefore accept ADSSC and TRANSCO's proposals to reduce the weight of their revenue drivers to 10% and 5%, respectively. The table below provides the revenue drivers proposed for RC2, together with the respective weightings:

Table 3.2: Revenue-drivers – final decision

Company	Revenue-driver	Revenue-driver weight in MAR formula
AADC/ADDC (water & electricity)	Fixed term Number of customer accounts	85% 15%
AADC/ADDC (recycled water)	Fixed term	100%
TRANSCO (water & electricity)	Fixed term Global peak demand	95% 5%
ADSSC	Fixed term Annual flow at treatment plants	90% 10%

Revenue driver projections

3.6.4 To carry out price control calculations and calibrate the notified values of 'a' and 'b', we require reasonable forecasts of the proposed revenue drivers for the RC2 period. The four network companies provided their revenue driver projections in their latest 2021 business plans. These projections are set out in Table 1.2, below as adopted from the draft proposals.

Table 3.3: Revenue driver projections for RC2 – final decision

			2023	2024	2025	2026	CAGR 2023-2026
AADC	Electricity customer accounts	Customers	167,931	171,489	175,116	178,759	2.1%
	Water customer accounts	Customers	101,116	102,948	104,781	106,613	1.8%
ADDC	Electricity customer accounts	Customers	435,217	445,227	455,467	465,973	2.3%
	Water customer accounts	Customers	360,000	370,000	380,000	391,000	2.8%
TRANSCO	Electricity peak demand	MW	15,797	15,677	16,258	16,800	2.1%
	Water peak demand	MIGD	699	690	690	695	-0.2%
ADSSC	Annual wastewater flow treated	1000 m3	343,651	**354,625**	**354,625**	**354,625**	**1.1%**

Source: Companies 2021 business plans and wastewater tariff models.
Notes: CAGR stands for compounded average growth rate.

3.6.5 Table 3.4 below presents the actual data for the RC1 period on the same revenue drivers for comparison purposes. The companies' revenue driver projections listed in Table 3.3 seem reasonable in light of the annual growth and trends during recent years.

Table 3.4: Actual revenue driver data for earlier years

			2018	2019	2020	2021	CAGR 2018-2021
AADC	Electricity customer accounts	Customers	151,703	155,407	157,932	160,551	1.9%
	Water customer accounts	Customers	91,573	94,117	96,193	96,807	1.9%
ADDC	Electricity customer accounts	Customers	380,268	388,543	405,757	418,919	3.3%
	Water customer accounts	Customers	305,905	313,779	327,760	341,162	3.7%
TRANSCO	Electricity peak demand	GW	13,199	13,592	14,669	14,818	3.9%
	Water peak demand	MIGD	797	807	797	827	1.2%
ADSSC	Annual wastewater flow treated	1000 m3	311,859	312,151	325,408	319,263	**0.8%**

Source: Network companies' PCRs.
Source: CAGR stands for compounded average growth rate.

Final Decision

3.6.6 For this final decision, we:

(a) retain the revenue drivers for ADSSC, AADC and ADDC (albeit clarifying that the definition of customer accounts excludes dormant accounts), and adopt global peak demand as the revenue driver for TRANSCO;

(b) retain the 100% fixed term for the recycled water businesses of both distribution companies; and

(c) set out a 15% weight for the revenue drivers of AADC and ADDC, 10% weight for ADSSC, and 5% weight for TRANSCO.

3.7 Structure of RC2 controls

3.7.1 In light of the above discussions, the general structure of the MAR for each business for any year "t" of the RC2 period is as follows:

$$MAR_t = Pass\ Through\ Costs_t + a_t + (b_t \times Revenue\ Driver_t) \pm Q_t + L_t \pm K_t$$

where:

(a) "a_t" and "b_t" are the notified values for the year "t". For 2023, these values are determined by the DoE through price control calculations set out in this final decision. For subsequent years, the values of "a_t" and "b_t" are indexed against the UAE Consumer Price Index (CPI) less X-factor, as set out in the following paragraph.

(b) "Q_t", "L_t", and "K_t" are the performance incentive amount, the DoE licence fee, and the correction factor for the year "t", respectively.

3.7.2 The notified values "a" and "b" will be indexed using the following formulae from year t-1 to year t:

(a) $$a_t = a_{t-1} \times \left(1 + \frac{CPI-X}{100}\right)$$

(b) $$b_t = b_{t-1} \times \left(1 + \frac{CPI-X}{100}\right)$$

3.7.3 In this final decision, we have used the following UAE CPI figures, where the 2022 CPI figure of 106.81 is an estimate and will be adjusted to the actual figure through annual indexation formula in the audited PCRs during the RC2 period, as the 2022 actual figure becomes available.

Table 3.5: UAE CPI and inflation

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
UAE CPI	100.00	104.07	105.75	107.84	111.14	109.00	106.73	106.77	106.81	109.05	111.34	113.68
UAE Inflation		4.07%	1.62%	1.97%	3.06%	-1.93%	-2.08%	0.04%	0.04%	2.10%	2.10%	2.10%

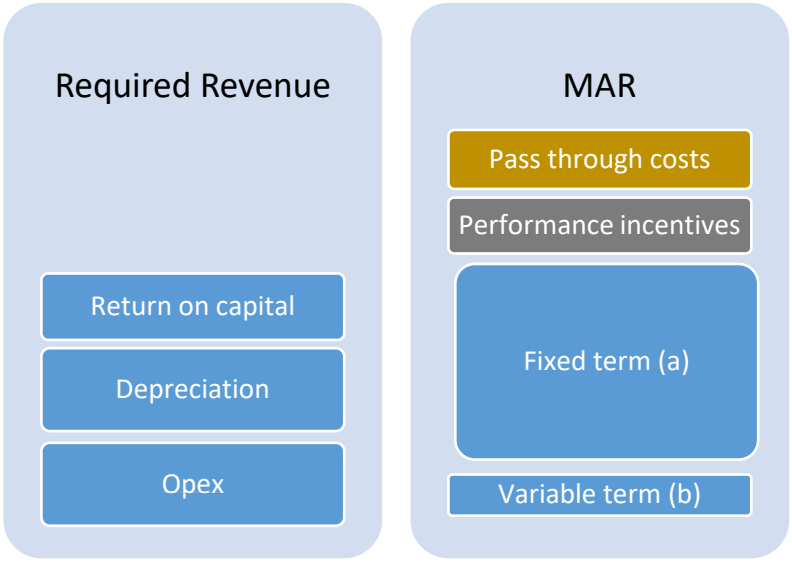
Source: Federal Competitiveness and Statistics Authority for 2014 – 2021(Base year 2014 = 100) and 2022 UAE CPIs is based on the previous year's inflation of 0.04%. 2023 onwards CPI values are based on IMF's inflation forecast for UAE.

3.8 Price control calculations

Draft Proposals

3.8.1 In the draft proposals, we suggested adopting an NPV-based approach to price control calculations based on three building blocks, namely, opex, regulatory depreciation, and return on capital and using the cost of capital as the discount rate. This is similar to the approach used for the RC1, but using zero X factor for all businesses for RC2.

Figure 3.3: Building blocks of revenue requirement



Responses

3.8.2 Network companies responded that they agreed to the principle that upward or downward revenue adjustments should be done on an NPV-neutral basis.

3.8.3 The companies also added, however, that financial adjustments should be brought closer in time to the timing of expenditure and the associated activities. The companies suggested annual truing-up and reviews of opex and PIS with financial adjustments made in the following tariff year. They also suggested a similar arrangement for the last year of the price control period, with a final reconciliation of all in-period allowances and adjustments in the following tariff year (rather than profiled over next price control period).

Assessment and way forward

3.8.4 We welcome the network companies' agreement to conduct revenue calibration in the price controls on an NPV-neutral basis.

3.8.5 In relation to the financial adjustments, we agree with the general principle to have revenue adjustments as close in time to the expenditure as possible. However, the financial adjustments require audited financial data from the network companies which constrains the timing of adjustments to the revenue requirements.

3.8.6 Nevertheless, the companies' suggested approach for annual adjustment in specific opex allowances and PIS in the following tariff year is already in place (except for few PIs that are adjusted with a 2 year lag due to the need to verify performance). This applies to all the years in the price control period including the last year. We consider that the arrangements for adjustments from capex reviews enable smoothing the impacts in any given year and thus are appropriate.

Final Decision

3.8.7 In light of the overall agreement, the final decision retains:

(a) the approach to calculate the revenue requirements based on the three building blocks, and to use a NPV approach sculpting the licensees' required revenues over the regulatory period, calculated at discount rate that reflects the estimated cost of capital; and

(b) the approach for timing of the financial adjustments during the price control period.

3.9 Other Items

Draft Proposals

3.9.1 In the draft proposals, we suggested maintaining the existing arrangements in relation to:

(a) inflation with no floor or cap;

(b) treat scrap materials and insurance claims' as regulated revenue to reduce the costs/subsidy for the companies;

(c) assets retired early, involving a downward adjustment equal to net book value (NBV) of the disposed assets made to the RAV;

(d) treat informative billing costs for ADSSC and services provided by licensees to third parties as unlicensed consented activities which remain outside the price controls.

Responses

3.9.2 In the responses to the draft proposals, the network companies accepted the DoE proposals not to change the current arrangements for the treatment of inflation in the price control.

3.9.3 The network companies noted that the issues related with services to third parties, scrap materials and insurance claims are not specific to RC2. They thus proposed to continue to engage with the DoE outside the RC2 process to develop agreed standardised approaches to these issues. In subsequent engagement, the companies agreed to maintain the existing treatment of scrap material.

3.9.4 On the treatment of assets retired early, network companies did not agree with the DoE's draft proposals, arguing that they should be kept whole in the event that any of its assets are retired or displaced early due to changes in demand and supply dynamics, which are completely outside of their control.

3.9.5 ADSSC did not agree with the DoE's draft proposals to provide a firm allowance for wastewater billing costs as opposed to treatment on a pass-through basis. ADSSC added that:

(a) It has been directed by the Government to obtain billing services from the distribution companies and has not been permitted to market test or benchmark the provision of these services with alternative providers. They have therefore not been able to "competitively procure" these services.

(b) Negotiation of the pricing and related terms and conditions of the services has been conducted directly between the distribution companies and the DoE, not with ADSSC.

(c) ADSSC assumes that DoE has tested the competitiveness and efficiency of the distribution companies proposed pricing as part of its assessment to ensure that the distribution companies are not cross-subsidising between their regulated and non-regulated activities.

(d) ADSSC cannot be held liable for the efficiency of these costs, and cannot be put at risk through the RC2 regulatory framework of not being able to recover the full costs that are passed on by the distribution companies.

Assessment and way forward

3.9.6 We welcome the companies' agreement to maintain the existing approach to inflation in the price controls.

3.9.7 We note the companies' request to discuss scrap materials, insurance claims, and services to third parties outside the RC2 process. It is possible that some elements in each of these topics may not be specific only to the RC2, as the network companies argued. However, all of these topics will be related with the regulated activities and costs from licensees – in particular, scrap material sales and insurance claims directly affect regulated business activities and related costs, and thus the price control of each business. Any changes to the existing arrangements need thus to be discussed and settled as part of RC2/price control review. In absence of any specific proposals, and in light of companies' subsequent agreement in relation to scrap materials, our final decision is to continue with the existing arrangements for these three topics.

3.9.8 Our draft proposals explained that the retired assets are removed from the RAV and any difference between sale value and NBV is treated as regulated revenue, which adjusts costs/subsidy for the companies. In this way the companies get a return on the assets until the disposal date and reimbursement for full amount of capex via (a) regulatory depreciation allowance until disposal date, (b) cash proceeds from sale of assets, and (c) the afore-mentioned adjustment to the costs/subsidy. We consider that the existing arrangements are fair and consistent with the international accounting standards and regulatory best practices.

3.9.9 We do not consider Government direction (if any) to ADSSC to obtain billing services from the distribution companies prevents ADSSC from benchmarking of the price of services offered by the distribution companies. Further, it is the responsibility of ADSSC under its licence to efficiently procure services including the billing services. The DoE's engagement with the distribution

companies on billing services is not efficiency review as the focus of DoE is on ensuring that the distribution companies costs are efficient and fairly allocated between licensed and consented activities in their SBAs rather than determining the price to be offered by these companies for the consented activities. The revenue of distribution companies or any other licensee sourced from charges to their customers for consented activities is unregulated revenue, and thus is not scrutinised by the DoE.

Final decision

3.9.10 In light of the above, we maintain the existing arrangements for:

(a) inflation with no floor or cap;

(b) treatment of scrap materials and insurance clams as regulated revenue;

(c) a downward adjustment equal to NBV of disposed assets in RAV; and

(d) no pass through treatment of informative billing costs for ADSSC.

4. Operating Expenditure

4.1 Introduction

4.1.1 Operating expenditure or opex constitutes one of the three building blocks of a company's required revenue; namely, opex, depreciation and return on capital. As opex is one of the main inputs to the price control calculations and essential for the day to day running of the business, it is therefore important to make appropriate allowances for operating costs. To this end, the DoE in its RC2 draft proposals suggested:

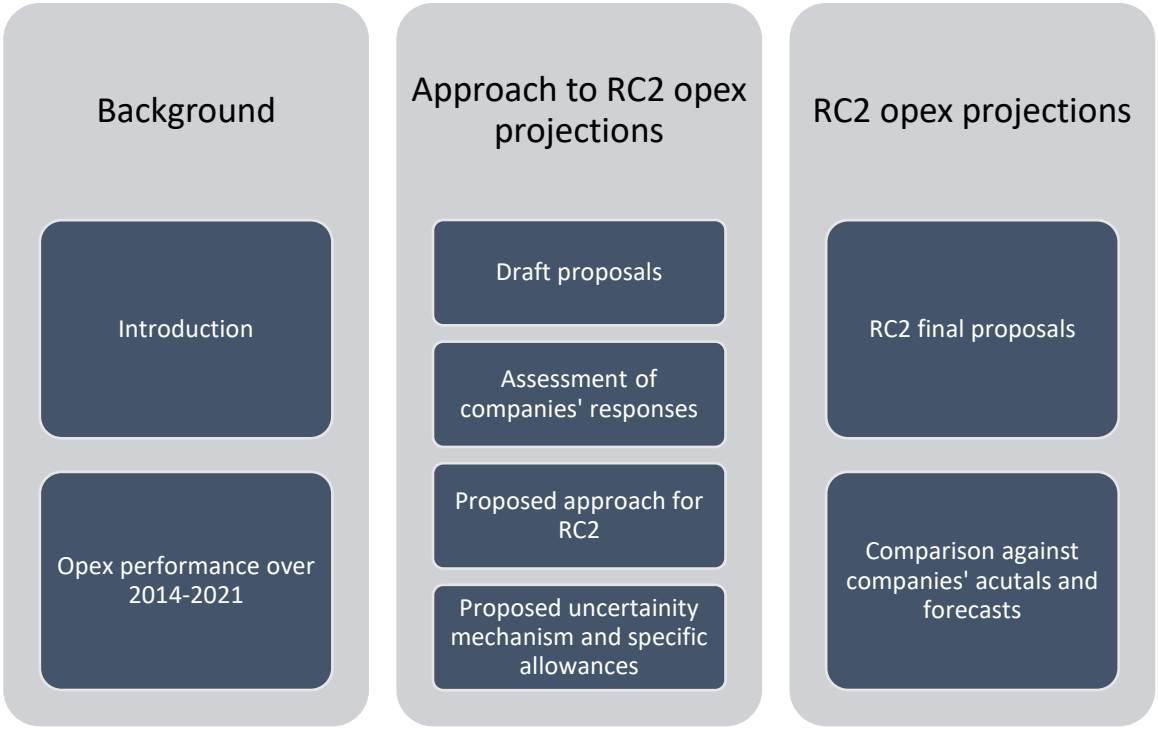
(a) a hybrid of both a high-level top-down approach and a more detailed bottom-up approach using an external consultant, Deloitte, similar to RC1, to set the base opex allowance projections for RC2; and

(b) a mechanism in which the provisional allowances are made for specific cost items (such as those currently included in RC1) in RC2 and then adjust these allowances during the RC2 period using the outturn values of cost drivers.

4.1.2 Our consultant has issued four reports during 2021-2022 – namely, the inception, interim, and draft reports on RC2 opex projections – with the final report issued in November 2022. The final report issued alongside this final decision sets out the final approach, the analysis and the final opex projections for the RC2 period (2023-2026) taking into consideration the information and comments provided by the companies in response to the consultant's draft report and our draft proposals.

4.1.3 This section summarises the four network companies' opex performance over 2014-2021 and the work completed by the DoE's consultant and presented in the consultant's final report. In addition, we have assessed the licensees' key responses to the RC2 draft proposals before presenting our final decision on RC2 opex allowances, based on the consultant's final report.

Figure 4.1: RC2 opex projections – outline of final decision

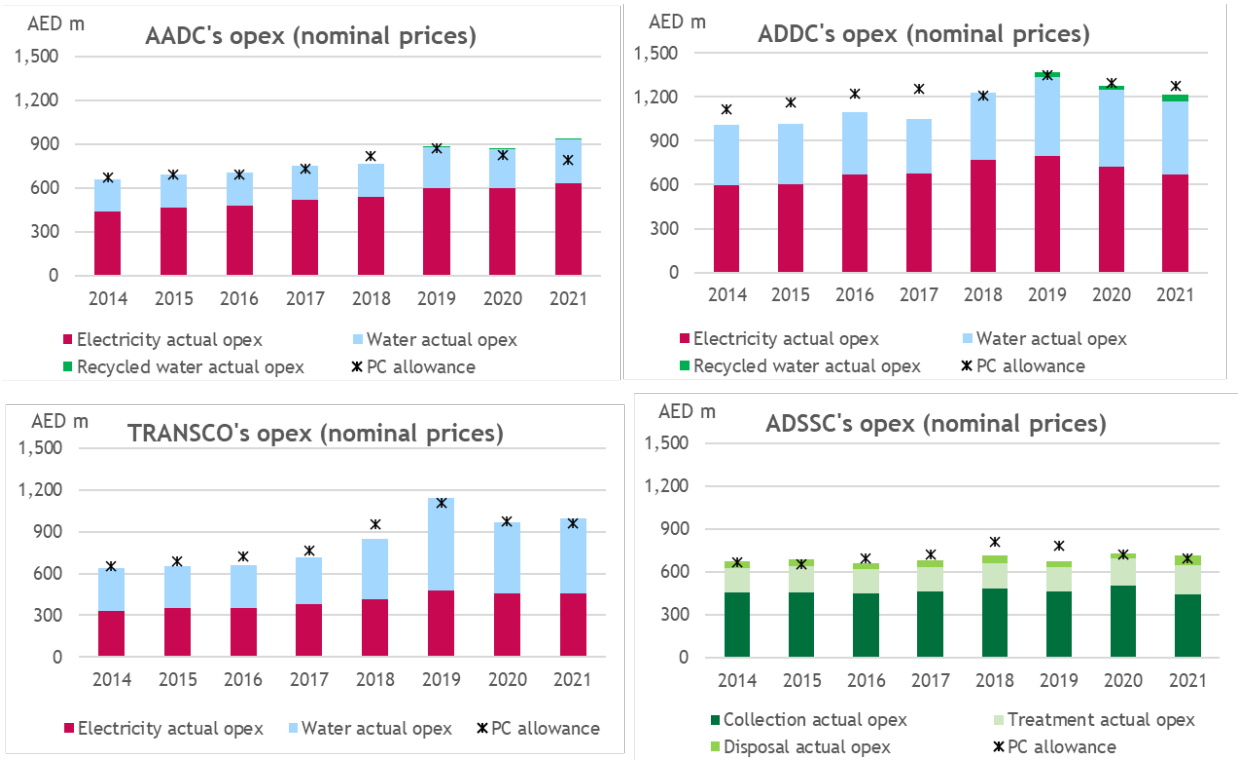


4.2 Companies' opex performance over 2014-2021

4.2.1 In the RC2 draft proposals, we assessed the companies' opex performance from 2014 to 2020 and observed that the companies' opex increased over this period broadly in line with inflation and growth in the businesses. We have now updated this analysis to take account of the actual opex for 2021 reported in the companies' 2021 SBAs (Figure 4.2).

4.2.2 During 2014-2021, the four network companies' aggregate opex increased on an average by about 3.5% per annum or AED 118 million per annum over this period (from AED 3 billion in 2014 to AED 3.8 billion in 2021 in nominal terms). In general, the network companies' opex spending closely mirrored the price control opex targets, marginally missing or exceeding the price control opex allowances. The factors that led to a step increase in opex of AADC, ADDC, and TRANSCO from 2018 to 2019 were summarised in the draft proposals and are therefore not reproduced here.

Figure 4.2: Companies' 2014-2021 actual opex performance (nominal prices)



Source: Companies' 2014-2021 SBAs. TRANSCO 2021 actual opex includes LDC costs, transferred to EWEC.
Notes: "PC allowance" stands for opex allowance provided under price controls for each company on an aggregate basis.

4.2.3 A number of trends can be observed from this analysis (with all figures in nominal prices):

(a) AADC's actual opex increased on average by almost 5% a year over the period of 2014-2021. In 2021, opex increased by AED 69 million (or 8%) primarily due to an increase in the administrative expenses. AADC did not meet the annual price control targets over historical period, except in 2014 and 2018;

(b) ADDC's actual opex increased on average by almost 2.7% a year over the period of 2014-2021. In 2021, opex decreased by AED 59 million (or 4.6%) due to decreases in electricity and water opex. ADDC outperformed the price control opex targets over the historical period except for 2018-2019;

(c) TRANSCO's actual opex (including LDC costs) increased on average by almost 6.6% a year over the period of 2014-2021. In 2021, opex increased by AED 23 million (or 2.4%) due to increases in administrative expenses which were partially offset by decreases in staff costs. TRANSCO outperformed the price control opex targets over the historical period except for 2019-2021. Starting 2022, SO function involving LDC costs has been transferred from

TRANSCO to EWEC. LDC costs are therefore no more part of TRANSCO and not covered by the RC2 controls for 2023 onwards. For 2022, a downward adjustment has been made to TRANSCO's MARs for both electricity and water to exclude the allowances relating to SO role; and

(d) ADSSC's actual opex increased on average by 0.9% a year over the period 2014–2021. Over this period, ADSSC met the price control opex targets with exception to the years 2014-2015 and 2020-2021.

4.3 Approach to opex projections and allowances

Draft Proposals

4.3.1 Our RC2 draft proposals summarised the reasons why the hybrid approach with efficiency targets embedded in the methodology should be retained from the RC1, for setting the RC2 controls, as opposed to adopting only a bottom-up approach. The proposals also encouraged the network companies to provide all required information with reasonable explanation and justification in time for our consultant's final report to update the opex allowance for final decision. The proposals highlighted:

(a) the DoE's commitment to allow the network companies to recover incremental costs of implementing any new Government policies and initiatives or changes in laws, if any, during the RC2 period; and

(b) the DoE's request to the companies to demonstrate the need and magnitude for working capital allowance with a detailed analysis that justifies the gap between cash inflows and outflows based on contractual arrangements, how the companies have managed this working capital requirement to date, and the future plans to reduce working capital and its cost.

Responses

4.3.2 In their responses to the draft proposals, the network companies summarised their understanding of the position shared between the companies and the DoE on the opex methodology (via discussions during April-June 2022), suggesting the following for the methodology to the RC2 opex projections:

(a) adjustments to the base costs for covid impact and TRANSCO's LDC costs using data from its 2021 SBAs;

(b) review and updates to the efficiency assumptions to account for the companies' actual performance to-date including during 2021 for the top-down approach;

(c) use of the companies' proposed value for opex/demand ratio for the bottom-up approach;

(d) use of a 0% frontier shift instead of the consultant's proposed 1%; and

(e) stripping out costs that are already deemed to be efficiently procured from the base costs before the application of efficiency assumption and applying no efficiency adjustment to the distribution companies' recycled water businesses which are currently in process of investing and improving their networks.

4.3.3 In parallel, the companies submitted their revised business plans and provided additional information and justification for various cost items including requirement and cost of working capital for the consultant's review.

4.3.4 The companies sought:

(a) 10% margin on DSM opex (as an incentive for delivery of approved initiatives) in addition to the full recovery of costs as a simple mechanism to start with in RC2, with the flexibility to revisit the same in RC3 in light of the customers' response to the initiatives;

(b) reimbursement of additional costs that may be incurred by the companies to comply with the DoE's recently released Cybersecurity Framework;

(c) reimbursement of costs on certain initiatives such as projects "Reflect", "Bright", "Cube" and "Synergy phase 2";

(d) treatment of employer contribution to the employees' pension fund as a specific allowance (ex-ante allowance with subsequent adjustment for the outturn results);

(e) opportunity to request additional costs arising from force majeure events (eg, costs due to unprecedented events such as the pandemic), corporate tax, innovation, initiatives to support net zero targets (such as EV charging) and impact of electricity and water tariffs on their own consumption;

(f) reimbursement of additional costs incurred during the RC1 period to absorb ADWEA staff, implementation of performance management to foster performance driven culture in the companies, and difference between actual and budgeted/paid subsidy for 2019-2021; and

(g) allowance for the cost of working capital for RC2 using the company's annual and monthly cashflow analysis based on 2021 data, where the companies argued to include, in the analysis, the full amount of inventory and customer receivables carried on their 2021 balance sheet at book value including the provision for slow moving and obsolete inventory / doubtful debts, without making any adjustment for efficient levels of inventory / customer receivables.

Assessment and way forward

4.3.5 We welcome the companies' suggestions on various elements of the hybrid approach proposed for the RC2 opex projections (such as, adjustments to the base costs, updates to efficiency assumptions, and cost-output ratios), implicitly supporting the continuation of the hybrid approach to set allowances for RC2. We have referred the companies' comments and suggestions on the RC2 opex methodology, revised business plans, additional information, and justification for the costs to the consultant for consideration. The consultant has assessed these suggestions in its final opex report, accepting many of these or providing detailed feedback where the suggestion is not accepted. These updated RC2 opex allowances are presented in the consultant's final opex report, being released along with this final decision.

4.3.6 Our assessment of the companies' requested allowances for various items is as follows:

(a) DSM costs for the approved business cases are included in the RC2 opex on an ex-ante basis. These costs are subject to adjustment for actual

costs via annual opex adjustment, provided that the present value of the current and future savings, net of all costs, on the initiative remains positive. Since the distribution companies have the option to stop the initiative as and when they see costs on an initiative would exceed the benefits, the companies are therefore not subject to a risk of non-recovery of costs. Accordingly, the price control provides full cost recovery to the distribution companies, in addition to potential for bonus (discussed in the Section 8 on incentives). In the absence of any risk on the cost recovery and reimbursement of full opex amount on an annual basis (unlike capex which is reimbursed over the lifetime of the assets, hence with return), the companies' requested 10% margin on DSM opex is not justified.

(b) We expect the costs allowed in the price controls for the companies' business-as-usual activities and proposed IT transformation initiatives should enable the companies to address the requirements of the cybersecurity framework without the need for any additional opex to specifically comply with this framework.

(c) The costs on the initiatives such as projects "Reflect" and "Bright" falling within RC2 are discussed in Deloitte's final report.

(d) In relation to the employer contribution for UAE National pension fund, we will welcome the company's submission of costs as a result of any change in the Law during the RC2 period requiring employer contributions to be higher than the existing rate for reimbursement via an annual opex adjustment;

(e) In general, we set firm price control opex allowances without the opportunity of claiming additional costs during the price control period to provide strong incentives for the companies to manage their costs efficiently by retaining any cost savings until at least the next price control review or else see reduction in their profits. Nevertheless, our assessment of the companies' requested opportunity for submission of additional costs during RC2 is as follows: (i) corporate tax (tax fairly allocated to each company if being part of the group) will be allowed to the companies on an ex-post basis via annual opex adjustments, (ii) the DoE maintains the view that a self-funding mechanism is appropriate for innovation, as discussed in Section 5, (iii) initiative to support

net zero targets fall under greenhouse gas (GHG) emissions incentive being introduced in RC2 (discussed in Section 8 on incentives), and finally (iv) the price controls will continue to allow flexibility for adjustment to the cost allowances for changes in the electricity and water tariff for TRANSCO and ADSSC, provided such change is not already captured elsewhere in the price control allowances. The mechanism already exists for reimbursement of full internal costs of AADC and ADDC's internal electricity and water consumptions as an internal revenue from different businesses to their supply businesses, a contra-account to the customer revenue account that increases subsidy.

(f) The costs relating to the RC1 period, including additional costs to absorb ADWEA staff, implementation of new performance management system and difference between actual and budgeted/paid subsidy for 2019-2021, are out of scope of RC2 consultation, therefore not assessed here.

(g) TRANSCO's monthly cash flow analysis shows positive cashflows throughout all months, demonstrating no need for working capital. However, the distribution companies' monthly analysis shows few months of negative net cashflows. Nonetheless, the adjustments to the distribution companies' working capital analysis for the efficient level of inventory (assuming twice of actual inventory consumed in 2021 in maintenance and projects as the efficient level of inventory, hence allowed in the calculation) and customer receivables (assuming receivable balance of 2 months average billing as the efficient level of receivables, hence allowed in the calculation) demonstrate no need for any working capital. However, considering where the distribution companies are today and the time required to achieve the efficient levels, we are minded to allow working capital as a specific allowance for RC2 by setting at zero at this stage and reimbursing the actual efficient financing costs paid to the bank(s) for any justified working capital via annual opex adjustments during the RC2 period.

Proposed approach to opex projections

4.3.7 In the final report issued in November 2022, the DoE's RC2 opex consultant proposed the following seven-step methodology, similar to RC1, for developing the RC2 opex projections. This methodology involves using both a high-level

top-down approach and a more detailed bottom-up approach that uses various cost and efficiency benchmarks from the sector and elsewhere:

(a) **Step 1** – establish the current recurring controllable cash ('CC') opex. This is achieved by taking the reported opex in the base year (2021 for this final decision) and subtracting any non-cash and atypical items, together with costs deemed for regulatory purposes to be non-controllable costs;

(b) **Step 2** – roll forward CC to start of RC2. This sets the likely level of opex for each company at the beginning of the price control period (2023) and is used to set an opex path over the price control period. For RC2, the roll forward approach has taken 2021 audited actual costs as a reference point, which is rolled forward to 2023 using a top-down (aggregate opex) and bottom-up approach. The former employs an overall assumption for the relationship between opex and demand to project costs, while the latter uses a range of cost drivers (such as customer numbers, or network length) associated with the relevant cost components or business units;

(c) **Step 3** – develop 'top-down' cost projections to the end of RC2. This step calculates the Top-down Cost Projections (TCP) calculated by comparing an efficient rate of change in cost levels for each year up to the end of the price control period, using CC rolled forward (Step 2) as a starting point. This is based on a top-down opex/demand relationship and expected productivity improvements. The purpose of the top-down opex projection is to provide an outer envelope for possible efficiency gains (that may be surpassed when companies' specific circumstances are considered in more detail);

(d) **Step 4** – The fourth step is to take the CC and assess whether the costs currently being incurred are efficient. This relies on using a set of 'bottom-up' benchmarks to provide an indicative cross-check on the potential efficiency gap between a Bottom-up Efficient Cost (BEC) and CC. It is intended to provide a perspective on the extent to which the top-down efficiency gains may be exceeded. This step included discussions to understand if there are any technical issues regarding network assets or internal resource resilience that may impact the future level of opex;

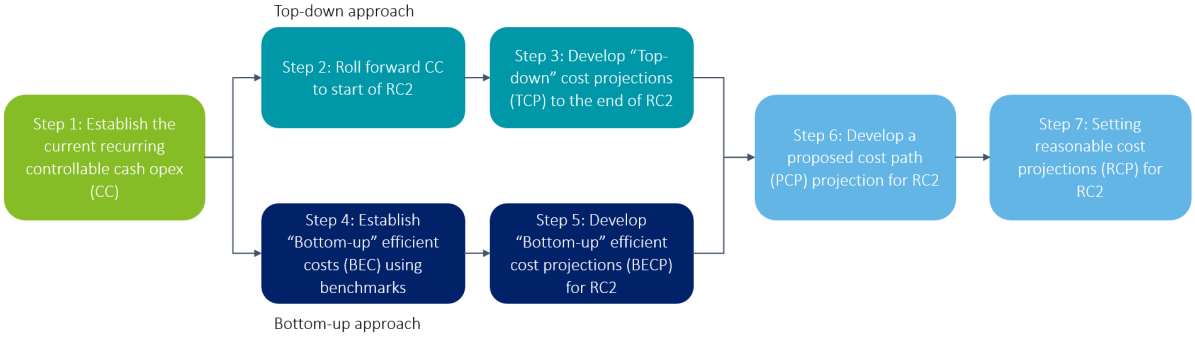
(e) **Step 5** – develop 'bottom-up' BEC projections to the end of RC2. This step calculates the BEC Projections (BECP) of efficient cost levels for each year up to the end of the price control period (2026). This is based on a 'bottom-up' estimate of an opex/demand relationship constructed using a business unit/cost type and associated cost driver;

(f) **Step 6** – develop proposed cost path projections for RC2. This takes into account the BECP and TCP projections and the likely starting point for opex in the RC2 period. The aim is for companies to catchup to the efficient level of opex over time; the PCP sets out the proposed path to achieve this. Where top-down projections are below bottom-up projections, the proposed allowance is set equal to the bottom-up projections; and

(g) **Step 7** – setting the projections of reasonable opex for RC2. The final step in developing the opex projections requires the additional non-controllable opex (where applicable) to be added to the PCP calculated in Step 6 to make a reasonable cost projection ('RCP').

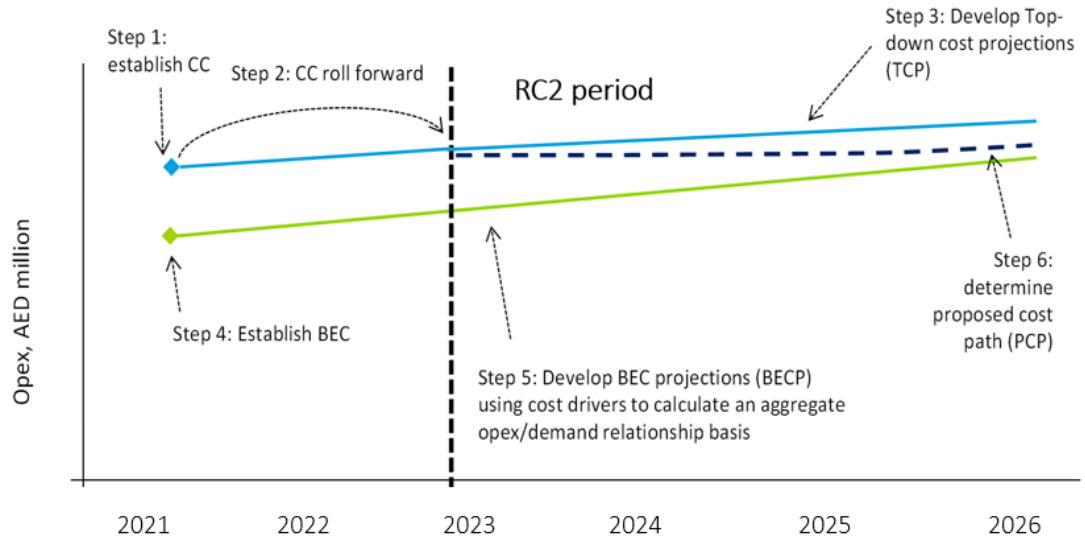
4.3.8 The consultant's methodology is further illustrated in Figures 4.3 and 4.4. The consultant's opex projections use the audited 2021 actual costs as the base-level and are expressed in 2021 prices.

Figure 4.3: Consultant's seven-step methodology to RC2 opex projections



Source: Deloi'te's final Report, November 2022
Notes: For illustration purposes only and not drawn to scale

Figure 4.4: Consultant's approach to RC2 opex projections



Source: Deloitte's final Report, November 2022
Notes: For illustration purposes only and not drawn to scale.

Operating cost projections

Companies' future opex forecasts

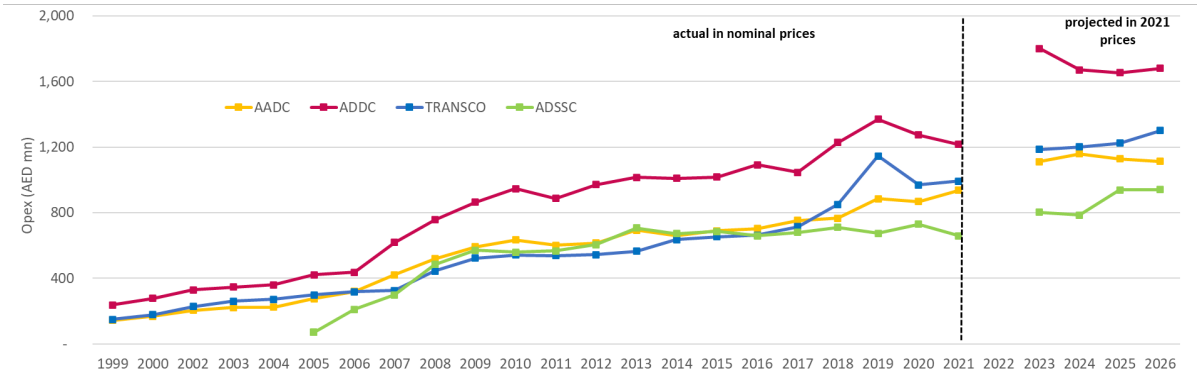
4.3.9 **Table 4.1** and **Figure 4.5** present the companies' actual opex to date and their opex projections for future years including RC2 period (2023-2026).

Table 4.1: Companies' RC2 opex forecasts

AED million, 2021 prices		2021	2023	2024	2025	2026
AADC	Electricity	630	747	778	754	742
	Water	301	351	364	357	353
	Recycled Water	6	14	18	18	18
	Total	937	1,112	1,159	1,128	1,113
ADDC	Electricity	669	872	880	886	901
	Water	502	871	732	709	719
	Recycled water	45	59	60	60	61
	Total	1,216	1,801	1,672	1,655	1,682
TRANSCO	Electricity*	355	538	547	561	603
	Water*	501	647	654	664	698
	Total	856	1,186	1,202	1,225	1,301
ADSSC	Total	714	802	786	939	940
Total		**3,724**	**4,901**	**4,819**	**4,947**	**5,035**

Source: 2021 actuals from the companies' 2021 SBAs. 2023-2026 forecasts from the RC2 opex report, based on companies' revised business plan. TRANSCO's 2021 actual opex, excluding LDC costs (transferred to EWEC in 2022) for direct comparison with the forecasts. ADSSC excludes STA costs.

Figure 4.5: Companies' 2023-2026 opex forecasts



Notes: Actual opex from the companies' SBAs and estimates from companies revised business plans.

4.3.10 The main trends in the companies' forecasts are as follows:

(a) The four network companies' aggregate annual opex is projected to increase from around AED 3.7 billion in 2021 to AED 4.9 billion in 2023 (showing a cumulative increase of 31% and annually 15%) and then broadly remain flat until 2026.

(b) It is important to highlight the company-specific trends from 2021 up to 2023 as follows:

i. AADC – increased by 19% cumulative or 9% a year on average to AED 1,112 million;
ii. ADDC – increased by 48% cumulative or 22% a year on average to AED 1,801 million;
iii. TRANSCO – increased by 38% cumulative or 18% a year on average to AED 1,186 million (after removing the impact of transfer of LDC costs to EWEC); and
iv. ADSSC – increased by 12.3% cumulative or 6% a year on average to AED 802 million.

(c) The companies' projections show significant increase from 2021 opex for reasons such as (i) catching up of costs in 2023 from suppressed opex in 2021 as a result of companies' response to the Government direction to reduce the opex, and (ii) the companies' plan to undertake a number of initiatives discussed below during RC2 that are not captured in the 2021 actual opex.

Consultant's base opex projections

4.3.11 In its final report, the DoE opex consultant calculated the base opex projections for each network company as summarized in the table below in 2021 prices, using the previously described seven-step methodology:

Table 4.2: Consultant's base RC2 opex projections

AED million, 2021 prices		2023	2024	2025	2026
AADC	Electricity	627	600	574	547
	Water	276	272	269	266
	Recycled Water	6	6	6	6
	Total	908	879	849	819
ADDC	Electricity	610	622	624	617
	Water	428	425	417	411
	Recycled water	57	57	56	53
	Total	1,095	1,103	1,097	1,081
TRANSCO	Electricity	359	356	355	352
	Water	330	324	322	318
	Total	690	680	677	670
ADSSC	Total	738	719	696	676
Total		**3,430**	**3,380**	**3,318**	**3,246**

4.3.12 The above base allowances are after incorporating the additional 0.5% year on year (y-o-y) efficiency adjustment, made to the original base allowances as result of the DoE's drive to set more stringent efficiency targets for the companies for the RC2 period. This adjustment resulted in a reduction of approximately AED 165 million in opex allowance over the RC2 period, as follows:

Table 4.2A: Additional 0.5% y-o-y efficiency incorporated in base allowances

AED million, 2021 prices		2023	2024	2025	2026
AADC	Electricity	3	6	9	11
	Water	1	3	4	5
	Recycled Water	0	0	0	0
	Total	5	9	13	16
ADDC	Electricity	3	6	9	12
	Water	2	4	6	8
	Recycled water	0	1	1	1
	Total	5	11	16	21
TRANSCO	Electricity	2	4	5	7

	Water	2	3	5	6
	Total	3	7	10	13
ADSSC	Total	4	7	10	13
Total		**17**	**34**	**50**	**64**

Consultant's specific cost allowances

4.3.13 The DoE's opex consultant also proposed, in its final report, certain specific costs in its opex projections and their proposed treatment, as follows:

Table 4.3: Specific costs and their treatment

Allowance for	Fixed/adjustable	Adjustment mechanism	Applicable to
Emiratisation	Adjustable	Actual Emiratisation percentage achieved	All network companies
Staff training costs	Adjustable	Actual training sessions	All network companies
Real price effects on staff costs	Fixed	Not applicable	All network companies
Demand side management (DSM)	Adjustable	Actual costs, until PV of savings net of costs remain positive	AADC and ADDC
Time of use (ToU) tariff costs	Adjustable	Adjustable based on extent of sampling done)	ADDC
Automatic metering interface (AMI)	Adjustable	Based on extent of work conducted - e.g. meters connected	AADC and ADDC
Water pumping costs	Adjustable	Actual cost	TRANSCO
Mega developments	Adjustable	Actual network length adopted	AADC, ADDC and ADSSC
Tankering costs	Adjustable	Number of tanker journeys based on the unit cost assumption	AADC and ADDC
Specific repair and maintenance	Fixed	Not applicable	TRANSCO and ADSSC
IT transformation costs	Adjustable	Evidence of work conducted, but maximum up to allowance provided	AADC, ADDC and TRANSCO
Resource resilience FTEs	Adjustable	Actual number of FTEs hired	AADC, ADDC and TRANSCO
Other adjustments	Fixed	Not applicable	AADC, ADDC and TRANSCO
Working capital	Adjustable	Actual efficient costs paid to the bank(s) for justified working capital financing	AADC, ADDC and TRANSCO

4.3.14 The assumptions used by the consultant for calculating the additional allowance for Emiratisation, are listed in the consultant's final report, in terms of:

(a) Total number of full-time employees (FTEs) – calculated by the consultant;

(b) Emiratisation rate (number of UAE National FTEs as a proportion of total FTEs); and

(c) additional cost of UAE National FTEs as compared to expatriate FTEs.

Table 4.4: Emiratisation allowances included in RC2 cost allowance

AED million, 2021 prices		**2023**	**2024**	**2025**	**2026**
AADC	Electricity	4.7	8.5	9.2	10.0
	Water	2.1	3.8	4.1	4.5

	Recycled Water	0.0	0.0	0.0	0.0
	Total	6.8	12.4	13.3	14.6
ADDC	Electricity	2.2	1.9	2.0	1.8
	Water	1.6	1.3	1.3	1.2
	Recycled water	0.0	0.0	0.0	0.0
	Total	3.8	3.2	3.3	3.0
TRANSCO	Electricity	3.2	3.2	3.2	3.2
	Water	1.6	1.5	1.5	1.5
	Total	4.8	4.7	4.7	4.7
ADSSC	Total	-6.9	-6.9	-6.8	-6.6
Total		**8.5**	**13.4**	**14.5**	**15.7**

4.3.15 Negative allowances for Emiratisation for ADSSC are due to projected decrease in Emiratisation percentage from the existing levels.

4.3.16 The consultant has included an allowance for staff training, as follows:

Table 4.5: Training costs included in RC2 cost allowance

AED million, 2021 prices		**2023**	**2024**	**2025**	**2026**
AADC	Electricity	8.1	8.1	8.7	8.7
	Water	3.9	3.9	4.2	4.2
	Recycled Water	0.0	0.0	0.0	0.0
	Total	12.0	12.0	13.0	13.0
ADDC	Electricity	12.3	12.3	12.3	12.3
	Water	9.5	9.5	9.5	9.5
	Recycled water	0.2	0.2	0.2	0.2
	Total	22.0	22.0	22.0	22.0
TRANSCO	Electricity	11.8	11.8	11.8	11.8
	Water	11.1	11.1	11.1	11.1
	Total	22.9	22.9	22.9	22.9
ADSSC	Total	1.8	2.3	2.7	2.9
Total		**58.7**	**59.2**	**60.6**	**60.8**

4.3.17 The consultant included an additional allowance listed below for each business for real increases in staff costs over the RC2 period in its opex projections, assuming a 2% real unit cost increase in staff basic salaries.

Table 4.6: Real price effects on staff costs included in RC2 opex projections

AED million, 2021 prices		**2023**	**2024**	**2025**	**2026**
AADC	Electricity	3.3	5.0	6.7	8.5
	Water	1.5	2.2	3.0	3.8

	Recycled Water	0.0	0.0	0.0	0.0
	Total	4.8	7.2	9.7	12.3
ADDC	Electricity	3.1	4.8	6.6	8.3
	Water	2.2	3.3	4.4	5.5
	Recycled water	0.1	0.1	0.1	0.1
	Total	5.4	8.2	11.1	13.9
TRANSCO	Electricity	4.0	6.0	8.1	10.2
	Water	5.0	7.4	10.1	12.6
	Total	9.0	13.4	18.2	22.8
ADSSC	Total	2.8	4.4	5.9	7.5
Total		**22.0**	**33.2**	**44.9**	**56.5**

4.3.18 The consultant included an allowance for Demand Side Management (DSM) for both AADC and ADDC. Costs related to DSM are subject to the DoE's approval of individual initiatives, which once approved are covered by additional opex allowances. Net benefits are also incentivised through the introduction of a new DSM incentive, further discussed in Section 8 on incentives. The resulting allowances are listed in the following tabl**e:**

Table 4.7: DSM allowances in RC2 opex projections

AED million, 2021 prices		**2023**	**2024**	**2025**	**2026**
AADC	Electricity	1.6	1.6	1.6	1.6
	Water	21.4	0.3	0.3	0.3
	Total	22.9	1.9	1.9	1.9
ADDC	Electricity	8.6	1.4	1.4	1.4
	Water	196.6	27.3	4.7	4.7
	Total	205.2	28.7	6.1	6.1
Total		**228.1**	**30.6**	**8.0**	**8.0**

4.3.19 In line with the business plans submitted by ADDC, additional allowances were provided for the proposed Time of Use (ToU) tariff schemes across ADDC's water and electricity businesses. The resulting allowances are listed in following tabl**e:**

Table 4.8: ToU tariff cost allowance in RC2 opex projections

AED million, 2021 prices		**2023**	**2024**	**2025**	**2026**
ADDC	Electricity	6.1	4.7	0.0	0.0
	Water	5.0	3.8	0.0	0.0
Total		**11.1**	**8.5**	**0.0**	**0.0**

4.3.20 The consultant included an allowance for AMI for both AADC and ADDC, summarised in the following table:

Table 4.9: AMI allowances in RC2 opex projections

AED million, 2021 prices		2023	2024	2025	2026
AADC	Electricity	13.6	11.8	12.0	12.3
	Water	8.3	7.2	7.4	7.5
	Total	22.0	19.0	19.4	19.8
ADDC	Electricity	18.8	22.9	23.4	24.0
	Water	15.4	18.7	19.2	19.6
	Total	34.2	41.6	42.6	43.6
Total		**56.2**	**60.6**	**62.0**	**63.4**

4.3.21 The consultant included an allowance for water pumping costs for TRANSCO's water business, summarised as follows:

Table 4.10: Water pumping costs allowances in RC2 opex projections

AED million, 2021 prices		2023	2024	2025	2026
TRANSCO	Water	**182.8**	**181.1**	**180.7**	**182.0**

4.3.22 The consultant included an allowance for operation and maintenance of assets to be adopted from mega real estate developers by both AADC and ADDC during the RC2 period, summarised as follows:

Table 4.11: Mega development assets allowances in RC2 opex projections

AED million, 2021 prices		2023	2024	2025	2026
AADC	Electricity	0.1	1.4	2.1	3.1
	Water	0.0	3.0	11.0	11.0
	Total	0.1	4.4	13.1	14.1
ADDC	Electricity	2.8	4.4	5.6	7.2
	Water	3.4	6.9	6.9	6.9
	Total	6.2	11.3	12.5	14.1
Total		**6.3**	**15.7**	**25.6**	**28.2**

4.3.23 The consultant included an allowance for water tanker costs for both AADC and ADDC during the RC2 period, summarised as follows:

Table 4.12: Water tankering allowances in RC2 opex projections

AED million, 2021 prices		2023	2024	2025	2026
AADC	Water	1.6	1.6	1.6	1.6
ADDC	Water	81.6	101.1	102.0	102.3
Total		**83.2**	**102.7**	**103.6**	**103.9**

4.3.24 The consultant included an allowance for specific business case for repair and maintenance costs for both TRANSCO and ADSSC during the RC2 period, summarised as follow**s:**

Table 4.13: Specific repair and maintenance costs in RC2 opex projections

AED million, 2021 prices		2023	2024	2025	2026
TRANSCO	Electricity	8.8	10.6	11.3	11.5
	Water	8.8	8.8	8.8	8.8
	Total	17.6	19.4	20.1	20.3
ADDC	Total	29.1	6.2	6.2	6.2
Total		**46.7**	**25.6**	**26.3**	**26.5**

4.3.25 The consultant included an additional allowance for IT transformation staff costs over the RC2 period in its opex projections, as listed in the following table.

Table 4.14: IT transformation costs included in RC2 opex projections

AED million, 2021 prices		2023	2024	2025	2026
AADC	Electricity	30.6	30.3	30.1	30.6
	Water	13.9	13.7	13.6	13.9
	Recycled Water	-	-	-	-
	Total	44.5	44.1	43.7	44.5
ADDC	Electricity	55.1	52.6	52.3	53.0
	Water	44.1	42.1	41.8	42.4
	Recycled water	1.0	1.0	1.0	1.0
	Total	100.2	95.7	95.1	96.4
TRANSCO	Electricity	15.9	15.6	15.7	15.9
	Water	14.7	14.5	14.6	14.7
	Total	30.6	30.1	30.3	30.6
ADSSC	Total	-	-	-	-
Total		**175.3**	**169.9**	**169.1**	**171.5**

4.3.26 The consultant included an additional allowance for full time equivalent (FTE) staff costs for resource resilience in various areas of the business (network maintenance, transmission coordination centre, operational continuity, recycled water, O&M and DSM) over the RC2 period in its opex projections, as listed in the following table.

Table 4.15: Resource resilience FTEs costs included in RC2 opex projections

AED million, 2021 prices		2023	2024	2025	2026
AADC	Electricity	17.1	22.9	25.7	28.7

	Water	8.3	11.2	12.6	14.0
	Recycled Water	1.3	3.9	5.2	5.2
	Total	26.7	37.9	43.4	47.8
ADDC	Electricity	23.1	28.1	28.3	32.6
	Water	18.2	22.2	22.3	25.7
	Recycled water	0.7	1.8	2.5	2.8
	Total	42.0	52.1	53.1	61.1
TRANSCO	Electricity	20.3	21.5	27.4	26.0
	Water	19.6	20.7	26.4	25.1
	Total	39.9	42.2	53.8	51.1
ADSSC	Total	-	-	-	-
Total		**108.6**	**132.2**	**150.3**	**160.0**

4.3.27 The consultant included other adjustments to allow increase in staff cost and disallow a portion of parent company charges over the RC2 period in the projections, as follows:

Table 4.16: Other adjustments included in RC2 opex projections

AED million, 2021 prices		**2023**	**2024**	**2025**	**2026**
AADC	Electricity	-21.5	-6.7	-0.8	4.9
	Water	-11.7	-4.2	-1.2	1.7
	Recycled Water	0.0	0.0	0.0	0.0
	Total	-33.2	-10.9	-2.0	6.6
ADDC	Electricity	-15.4	-2.9	2.2	7.1
	Water	-12.5	-1.3	2.3	5.9
	Recycled water	-0.8	-0.2	0.0	0.2
	Total	-28.7	-4.4	4.5	13.2
TRANSCO	Electricity	3.7	-5.3	-3.1	-1.5
	Water	3.4	-5	-2.9	-1.5
	Total	7.1	-10.3	-6	-3
ADSSC	Total	0	0	0	0
Total		**-54.8**	**-25.6**	**-3.5**	**16.8**

4.3.28 For AADC and ADDC, the consultant has provided specific allowance for working capital costs currently set at zero for RC2. The distribution companies' actual efficient costs paid to the bank(s), if any, for justified working capital during the RC2 period will be reimbursed via annual opex adjustments. We require these companies to optimise their billing and collections from customers and subsidy provider and work with the suppliers to ensure no or minimal need for the working capital and to minimize the financing costs.

4.3.29 Below table presents the total allowances for the specific costs, discussed above, for each business included in the consultant's final report. These total allowances for the four companies combined will range between AED 800 million and AED 950 million a year over the RC2 period. These allowances are dominated by ADDC (average AED 400 million a year) and TRANSCO (average over AED 300 million a year), followed by AADC (circa AED 150 million a year) and ADSSC (over AED 10 million a year).

Table 4.17: Total allowances for specific costs included in RC2 opex projections

AED million, 2021 prices		2023	2024	2025	2026
AADC	Electricity	57	83	95	108
	Water	49	43	57	62
	Recycled Water	1	4	5	5
	Total	108	130	157	176
ADDC	Electricity	117	130	134	148
	Water	365	235	214	224
	Recycled water	1	3	4	4
	Total	483	368	352	376
TRANSCO	Electricity	68	63	74	77
	Water	247	240	250	254
	Total	315	304	325	331
ADSSC	Total	27	6	8	10
Total		**933**	**807**	**842**	**893**

Consultant's total opex projections

4.3.30 In its final report, the opex consultant projected the network companies' opex using the top-down and bottom-up approaches for the period 2023-2026, in 2021 prices.

4.3.31 The consultant's total proposed opex allowance for the RC2 period is summarised in the table below. These projections include the specific allowances for all companies in relation to the items discussed above.

Table 4.18: Consultant's total RC2 opex projections

AED million, 2021 prices		2023	2024	2025	2026
AADC	Electricity	684	683	670	656
	Water	325	315	325	329
	Recycled Water	8	10	11	11
	Total	1,016	1,008	1,006	995
ADDC	Electricity	726	752	758	765

	Water	793	660	632	634
	Recycled water	59	60	59	58
	Total	1,578	1,471	1,449	1,457
TRANSCO	Electricity	427	420	429	429
	Water	577	564	572	572
	Total	1,004	983	1,001	1,001
ADSSC	Total	765	725	704	686
Total		**4,363**	**4,187**	**4,160**	**4,139**

Assessment of consultant's opex projections

Comparison against RC2 draft proposals

4.3.32 The table below compares the consultant's final opex projections adopted in this final decision against the initial opex projections presented in the RC2 draft proposals in terms of average annual opex for RC2. Clearly, for the reasons summarised below, the final opex projections are significantly higher than those in the draft proposals:

(a) Aggregate opex for the four companies in this final decision is higher than the draft proposals by about AED 700 million or 20% on average over the RC2 period.

(b) For individual companies, the final opex projections imply an increase by 18% to 54 % on average against the draft proposals except for ADSSC where the projections decreased by 10%.

Table 4.19: RC2 final opex projections - comparison against draft proposals

2021 prices	Average opex draft proposals	Average opex final decision	Difference between draft proposals and final decision	
	AED million	AED million	AED million	%
AADC	794	1,006	213	27%
ADDC	1,257	1,489	232	18%
TRANSCO	649	997	349	54%
ADSSC	801	720	-85	-10%
Total	**3,500**	**4,212**	**712**	**20%**

4.3.33 However, these significant differences are explained by the interim nature of the opex consultant's projections at the draft proposals stage and inclusion of significant amounts for specific cost allowances on receipt of further information and clarifications from the companies, particularly from:

(a) AADC and ADDC on DSM, AMI costs;

(b) TRANSCO on base year adjustments for staff costs and water pumping costs;

(c) All network companies on additional staff, Emiratisation, staff training, ETLAQ and IT transformation; and

(d) exclusion of billing costs for ADSSC, partially offsetting the increases.

Comparison against companies' opex forecasts

4.3.34 As the comparison between **Tables 4.1** and **4.18** indicates, the consultant's final total opex projections for the RC2 period (2023-2026) are lower than the companies' business plan forecasts for this period. The consultant's estimated aggregate opex for the four companies (AED 4.1-4.4 billion) are on average AED 700 million or 14% lower than the companies' forecasts (AED 4.8-5.0 billion) mainly due to:

(a) the different starting points used by the DoE consultant and the companies (most recent actual cost versus an estimated cost) to set the opex projections; and

(b) cost reductions included in the projects that are not in the companies' forecasts as well as cost increases that have not been included in the projections, such as:

i. a number of costs items such as a portion of repair and maintenance and parent company charges and salary adjustments requested by the companies and included in their forecasts but not included by the DoE consultant due to a lack of robust justification;
ii. a number of costs items such as transformation projects and parent company charge requested by the companies and included in their forecasts but not included by the DoE consultant at this stage, pending robust analysis of benefits (dealt with under uncertainty mechanism discussed below);
iii. efficiencies assumed by the consultant and an additional 0.5% y-o-y efficiency target set by the DoE in the cost projections where costs grow at

a lower rate relative to the growth in business (measured through demand, number of customers and network length). In contrast, the companies' business plans show costs increasing at a greater rate than business growth demand;

iv. non-staff cost efficiencies assumed by the DoE consultant for AADC, ADSSC and TRANSCO; and

v. specific allowances for Emiratisation included in the consultant's opex projections but not included in the companies' forecasts;

Comparison against companies' 2021 actual opex

4.3.35 The table below compares the consultant's final opex projections for RC2 against the companies' 2021 actual opex and highlights important expected trends:

Table 4.20: Consultant's final opex projections – comparison against 2021 actuals

AED million, 2021 prices	2021 actual opex	2023 projection against 2021 actual			2026 projection against 2021 actual		
		2023 opex	Difference	CAGR	2026 opex	Difference	CAGR
AADC	937	1,016	79	4%	995	58	1%
ADDC	1,216	1,578	361	14%	1,457	241	4%
TRANSCO	857	1,004	147	8%	1,001	144	3%
ADSSC	714	765	51	3%	686	-28	-1%
Total	**3,724**	**4,363**	**639**	**8%**	**4,139**	**415**	**2%**

TRANSCO opex excluding LDC costs, transferred to EWEC and ADSSC's operation and maintenance costs excluding STA costs.

(a) For AADC, the RC2 projections assume an opex increase from 2021 to 2023 and 2026 at an average annual rate of 4% and 1%, respectively mainly due to DSM, AMI, additional FTEs, IT transformation, mega developments, medical insurance and training costs;

(b) For ADDC, the RC2 projections assume an opex increase from 2021 to 2023 and 2026 at average annual rates of 14% and 4%, respectively mainly due to DSM, AMI, additional FTE, IT transformation and training costs;

(c) For TRANSCO, the RC2 projections assume an opex increase from 2021 to 2023 at average annual rates of 8% and 3% respectively mainly due to

the additional FTEs, training, IT transformation, medical insurance and maintenance costs; and

(d) For ADSSC, the RC2 projections assume an opex increase from 2021 to 2023 at an average annual rate of 3% mainly due to repair and maintenance costs and decrease to 2026 at an average annual rate of 1% due to negative Emiratisation allowance and efficiency targets.

Comparison against 2022 price control allowances

4.3.36 The table below compares the consultant's final opex projections for RC2 against the RC1 allowance for 2022 opex (the last year of RC1). This comparison highlights that the RC2 opex projections for 2023 include an increase in opex allowance for all network companies by 10% to 28% due to the same reasons as for increase from the 2021 actual costs described above.

Table 4.21: Consultant's final projections – comparison against 2022 allowance

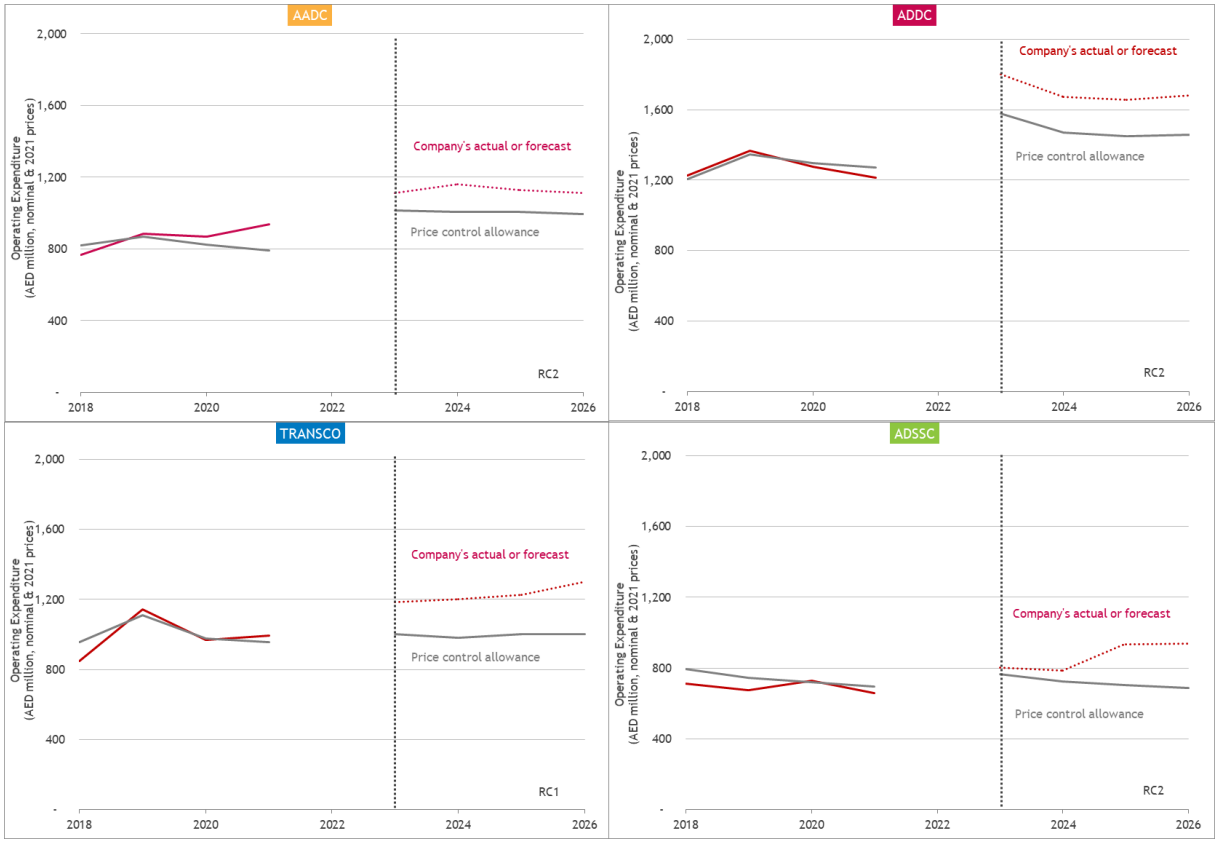
AED million, 2021 prices	2022 allowance	2023 projection against 2022 allowance			2026 projection against 2022 allowance		
		2023 opex	Difference	CAGR	2026 opex	Difference	CAGR
AADC	793	1,016	223	28%	995	202	6%
ADDC	1,274	1,578	304	24%	1,457	183	3%
TRANSCO	822	1,004	183	22%	1,001	180	5%
ADSSC	696	767	68	10%	686	-10	-0%
Total	**3,584**	**4,363**	**778**	**22%**	**4,139**	**555**	**4%**

Notes: 2022 opex allowance is considered to be equal to 2021 allowance considering RC1 extension derogation allow notified values of network companies' 2022 own MAR equal to 2021 (except for inflation and revenue drivers). TRANSCO opex allowance excluding LDC costs (assumed to be equal to actual costs).

Summary of comparisons

4.3.37 The following charts present the consultant's final RC2 opex projections, the above comparative analysis, the overall trends for the price control opex allowances, and the companies' actual opex.

Figure 4.6: Final RC2 opex projections for network companies (2021 prices)



4.3.38 As the above charts show, the proposed opex allowances for RC2 are generally lower than the companies' forecasts but are higher than the 2021 actuals and 2022 opex price control allowances.

Final decision

4.3.39 The DoE has adopted in this final decision the consultant's opex projections for RC2 from the consultant's final report of November 2022 as set out in **Table 4.17** above in 2021 prices and presented in the following table in 2023 prices.

Table 4.22: RC2 opex projections – final decision

AED million, 2023 prices		2023	2024	2025	2026	Average
AADC	Electricity	685	684	670	656	674
	Water	325	315	326	329	324
	Recycled Water	8	10	11	11	10
	Total	1,017	1,009	1,007	996	1,007
ADDC	Electricity	727	752	759	765	751
	Water	794	660	632	635	680
	Recycled water	59	60	59	58	59
	Total	1,579	1,472	1,450	1,458	1,490

TRANSCO	Electricity	427	420	429	429	426
	Water	578	564	573	573	572
	Total	1,005	984	1,002	1,002	998
ADSSC	Total	765	725	704	687	720
Total		**4,366**	**4,190**	**4,163**	**4,142**	**4,215**

4.3.40 The specific costs included in the allowances are subject to adjustment via annual opex adjustments during RC2 as per mechanism listed in Table 4.3 above.

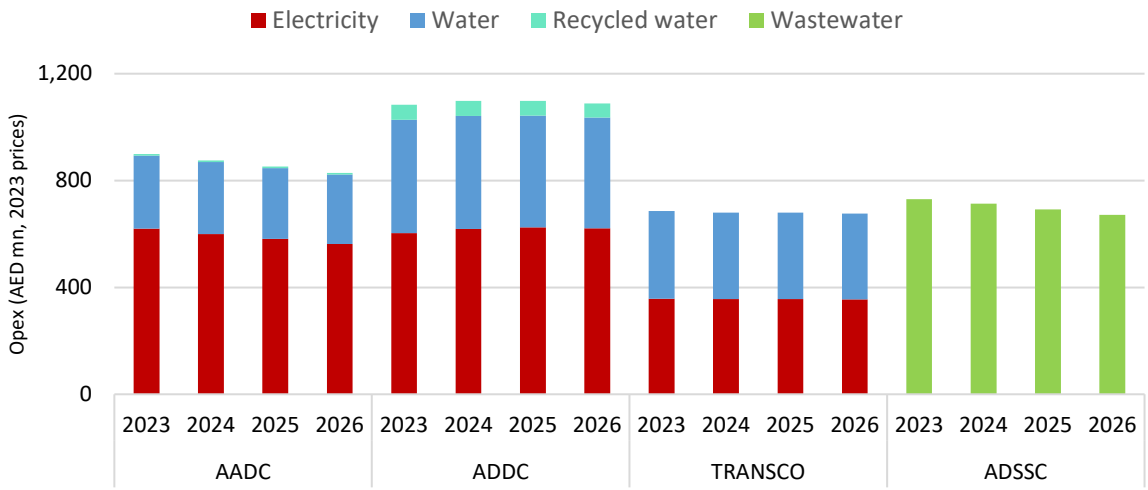
4.3.41 The following chart presents the above projections, highlighting:

(a) the profile of opex allowances over the RC2 period in real prices;

(b) the dominance of opex accounted for by ADDC (average AED 1,500 million p.a.), followed by AADC (average AED 1,000 million p.a.), TRANSCO (average AED 1,000 million p.a.) and ADSSC (average AED 700 million p.a.); and

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

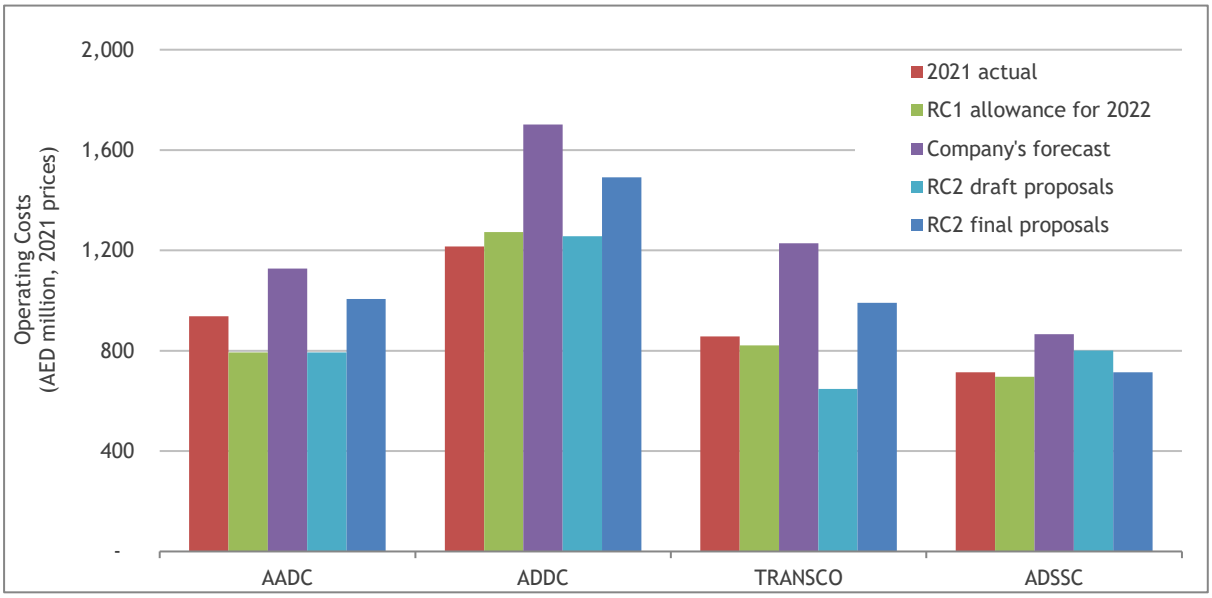
Figure 4.7: RC2 opex projections – final decision



4.3.42 The figure below summarises the above comparative analysis of our final RC2 opex projection averaged over the RC2 period in 2021 prices against the four comparator figures (i.e. 2021 actual opex, RC1 allowance for 2022, company's forecast average, and RC2 draft proposal average). As discussed above, our

final decision are higher than the RC2 draft proposals by AED 700 million p.a. (2021 prices) or 20% but lower than the network licensees' forecasts by AED 700 million or 14% on average over the RC2 period for the four companies.

Figure 4.8: RC2 average annual opex projections – final decision' comparison



4.4 Uncertain costs - Transformation allowance mechanism

4.4.1 In addition to the above costs allowed, there are certain cost items submitted by the companies for which the need of the proposed initiative was put forward at a high level, but the benefits from the initiatives were not fully demonstratable at this stage. The companies argued that these initiatives would enable the businesses to grow and respond to new challenges, and ultimately deliver benefits to the sector, Accordingly, the consultant has established a new mechanism, under which the following approach applies:

(a) For each company, there is a ceiling on the allowed costs over the RC2, set out based on information received from the companies;

(b) These uncertain costs are not included in the RC2 allowances. The total costs (ceiling) per company are as follows:

Table 4.23: Uncertain costs over RC2

AED million, 2021 prices	2023	2024	2025	2026	Total
AADC	63	86	58	53	260
ADDC	159	219	186	186	750

TRANSCO	66	80	54	58	258
ADSSC	214	207	356	356	1,133
Total	**502**	**592**	**654**	**653**	**2,401**

(c) To receive the DoE's approval and allowance for any of these initiatives, the relevant company will need to submit further detailed proposals to the DoE during the RC2 period. Detailed information requirements will be set out in appropriate regulatory guidance, but are likely to include: (i) explanation and quantification of expected benefits, (ii) demonstration of how these benefits will flow to customers, (iii) project plan, (iv) milestones, (v) deliverables, (vi) key performance indicators (new or existing, with base levels and how they will be impacted by the initiative), and (vi) breakdown of the costs mapped against each milestone..

4.4.2 The cost on these initiatives, that receive the DoE approval following the assessment of the business case submission, will be reimbursed on an ex-post basis, via an annual opex adjustment mechanism. This process for the transformation allowance mechanism, including the information requirements will also be set out in detail in the regulatory guidance following the completion of RC2 consultation.

4.4.3 The opportunity to make submission under the above uncertainty mechanism is strictly restricted to the areas listed below:

(a) TAQA direct recharge allowances for transformation programmes covering:

i. Health and Safety
ii. Operational Excellence
iii. Strategic Procurement
iv. Finance Transformation
v. Customer Satisfaction (distribution companies only)
vi. Capital Effectiveness
vii. HC and GS project & initiatives
viii. Regulatory capability development

(b) FTEs relating to the transformation programmes above

(c) For TRANSCO, residual of FTEs relating to the Strategic Maintenance Review and Critical Strategic Roles

(d) For ADDC, residual FTEs relating to Operational Continuity

(e) For AADC, residual FTEs relating to AMD and O&M

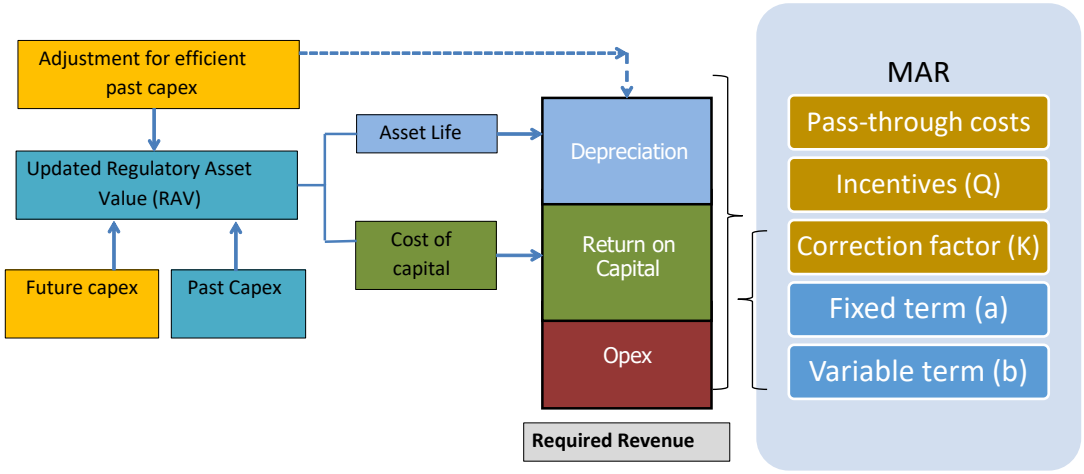
(f) For ADSSC, costs associated with customer billing and RO polishing plants.

5. Capital Expenditure

5.1 Introduction

5.1.1 Capital expenditure (capex) is important for electricity, water, recycled water and wastewater network companies. It allows for the timely meeting of demand and the replacement or betterment of existing network infrastructure. Overall, it has a significant impact on the security and reliability of supplies provided by networks. In price controls, capex is financed through two building blocks of the required revenue, namely, the depreciation allowances and the returns on regulatory asset values (RAVs).

Figure 5.1: Financing capex in price controls



5.1.2 For electricity, water and recycled water businesses of AADC, ADDC and TRASCO, the RC1 capex allowances for 2020-2021 (set through RC1 interim ex-ante review in 2020) included a combination of:

(a) allowances for ex-ante approved schemes; and

(b) allowances for unreviewed running schemes.

5.1.3 These two capex allowances were previously termed as firm and provisional allowances, respectively. However, as these have now evolved and encompassed new cases and situations that have made these allowances less firm or provisional in nature, we have revised their nomenclatures to address the companies' requests for clarity. Since ADSSC did not participate in the RC1 interim review, its current price controls did not include allowances for ex-ante

approved schemes and included only capex allowance for unreviewed schemes.

5.1.4 The ex-ante approach introduced in the RC1 involves review of the front-end elements (such as need case, optioneering and budgeting) of the companies' proposed capex schemes, before any actual spending, to provide capex allowance for approved schemes (or firm capex allowance, as previously referred) in the price controls. This approach does not involve any ex-post review at a later stage, unless the review criteria is triggered (discussed later). The ex-ante approach aims at providing more certainty to companies (and other stakeholders including customers) about the allowed capex before the actual spending and minimises the extent of an ex-post assessment and adjustment. Any scheme not submitted or not approved in the ex-ante review is subject to a full ex-post efficiency review and accordingly will be used to adjust future price controls. The high-level efficiency criteria for capex assessment (for both the ex-ante and the ex-post reviews) remain the same as established by the DoE in 1999 which considers any capex as efficient if:

(a) the capex was required to meet growth in customer demand (as captured in the sector's demand forecasts) or relevant security and performance standards; and

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

5.1.5 This section 5 discusses four main aspects of the regulatory approach to capex for the RC2, listed in the Figure 5.2, assesses the companies' responses to the DoE's RC2 draft proposals, and sets out the DoE's final decision on these topics including proposed capex allowances for RC2.

Figure 5.2: Main topics for consultation on capex regulation

5.2 Totex transition

Draft Proposals

5.2.1 The RC2 consultation papers summarised the DoE's approach to capex regulation to date and highlighted that the current approach involving separate reviews and setting of opex and capex allowances may create a capex bias for the companies. The papers discussed that the solution to this capex bias could be an alternative approach, whereby opex and capex are assessed on a total expenditure (totex) basis. The DoE's consultant, Deloitte, undertook a detailed study on the proposed totex transition, focusing on what are the potential problems that totex approach could address, what are the possible risks and challenges of such transition, and whether companies are ready for this transition.

5.2.2 In light of the consultant's final report on totex transition (issued in September 2021) and network companies' responses to the consultation papers, our draft proposals suggested:

(a) to continue with the separate review and setting of opex and capex allowances for RC2; and

(b) at this stage, not to proceed with the transition to totex regime during RC3/future and with further work on enablers during RC2. We agreed to continue to monitor the trends and consider whether to revisit this issue in the future price control reviews.

Responses

5.2.3 In their responses to the draft proposals, the network companies acknowledged and supported the DoE's thinking not to introduce the totex regime in RC2.

Assessment and way forward

5.2.4 We welcome the companies' agreement on this topic.

Final Decision

5.2.5 We retain our draft proposals stated above on the totex transition.

5.3 Treatment of RC1 capex

RC1 ex-post capex review (2018-2019)

5.3.1 As is the case with PC1-PC5 capex, the RC1 (2018-2019) capex is already closed, requiring no further adjustments to the price controls as explained in the draft proposals.

RC1 ex-post capex review (2020-2021)

Draft Proposals

5.3.2 The capex allowances for 2020-2021 incorporated in the RC1 controls via the interim capex review are a combination of allowances for ex-ante approved schemes and unreviewed running schemes, as summarized in the table below:

Table 5.1: RC1 (2020-2021) capex

AED million, nominal prices		Ex-ante approved schemes *		Unreviewed running schemes		Total	
		2020	2021	2020	2021	2020	2021
AADC	Electricity	197	352	498	284	695	636
	Water	16	88	122	54	138	142
	Recycled water	-	-	2	9	2	9
	Total	213	440	622	347	835	787
ADDC	Electricity	208	388	404	213	612	601
	Water	61	144	188	140	250	284
	Recycled water	341	547	32	9	373	556
	Total	610	1,079	624	362	1,234	1,440
TRANSCO	Electricity	68	518	1,183	737	1,251	1,255
	Water	3	104	590	396	593	500
	Total	71	622	1,773	1,133	1,844	1,755
ADSSC	Total	-	-	1,060	1,010	1,060	1,010

Total	895	2,141	4,078	2,851	4,973	4,992

The ex-ante approved schemes capex figures for 2020-2021 are as per RC1 interim capex review reports.

5.3.3 The entire capex allowance relating to the unreviewed running schemes shown in the above table (AED 4.1 billion and AED 2.9 billion for 2020 and 2021, respectively) is subject to ex-post review. The ex-ante approved schemes related capex is subject to an ex-post review only if it meets the criteria (discussed below):

Figure 5.3: Treatment of RC1 capex

2018-2019 capex	• Entire capex allowance included in RC1 was subject to ex-post review • Ex-post review already undertaken and financial adjustment made • Closed
2020-2021 capex	• Entire capex for unreviewed running schemes included in RC1 is subject to ex-post review • Ex-ante approved schemes reviewed by TA and included in RC1 are subject to ex-post review only if meet critera • Ex-post review and adjustments being made in this review
2022 capex	• Capex allowance embeded in the price control calculation via RC1 extension, now being updated with approved forecasts for ex-ante reviewed schemes and latest forecast for unreviewed schemes • Same ex-post mechanism as is applicable on 2020-2021 capex.

5.3.4 Considering that (a) the ex-post capex review adjustment can only be made when final efficiency scores along with actual audited capex are available with the DoE well ahead of issuance of the final decision to incorporate adjustments in the RC2 financial models and (b) such review is a resource intense and time taking exercise for already occupied DoE/companies teams, our draft proposals suggested undertaking the 2020-2021 ex-post capex review during 2023 (also covering the 2022 capex) and incorporating the resulting adjustments to the network companies' RAVs and their MARs for 2024.

Responses

5.3.5 The network companies reiterated their preference for undertaking the ex-post review of the 2020-2021 capex expeditiously, so that the resulting adjustments

can be made in the RC1 closing RAVs (or RC2 opening RAVs) prior to the commencement of RC2 and avoid large adjustments wherever possible.

5.3.6 In parallel, the companies initiated the review and submitted TA's draft and final reports to the DoE in July/August 2022 and November 2022, respectively.

Assessment and way forward

5.3.7 We agree to the network companies' preference for incorporating adjustments in a timely fashion to minimize large adjustments in future and welcome companies' submission of TA's draft and final reports to the DoE. We have calculated and incorporated the required adjustment in the RAVs for 2020-2021 in the RC2 financial models.

5.3.8 We calculated the companies' efficient capex spent during 2020-2021 by applying the TA's proposed efficiency scores to the companies' actual capex for these years (excluding the capex for ex-ante approved schemes). In aggregate, the network companies had efficient capex of AED 5.6 billion, which was AED 1.2 billion lower than the allowance of AED 6.8 billion for the two years.

Table 5.2: RC1 (2020 - 2021) capex efficiency scores and adjustment – final decision

AED million, 2023 prices		Efficiency score (%)	Capex allowance adjustment		
			2020	2021	Total
AADC	Electricity	98.45%	-105.6	71.4	-34.1
	Water	97.44%	-44.5	8.7	-35.8
	Recycled Water	97.44%	-1.8	-8.5	-10.2
	Total		-151.8	71.7	-80.2
ADDC	Electricity	97.90%	-124.1	250.2	126.0
	Water	98.70%	-38.6	26.5	-12.1
	Recycled Water	99.20%	-14.9	-1.3	-16.2
	Total		-177.6	275.4	97.8
TRANSCO	Electricity	99.24%	-225.2	-122.1	-347.4
	Water	99.48%	-13.3	218.5	205.2
	Total		-238.6	96.3	-142.2
ADSSC	Total	97.24%	-410.7	-675.9	-1,085.9
Total			**-978.1**	**-232.5**	**-1,210.6**

Final decision

5.3.9 The amounts listed in Table 5.2 have been clawed-back via appropriate adjustments to the companies' RAVs as explained in Section 6, inclusive of the time value of money and financing costs unduly earned or foregone from the year of spending (2020 or 2021) to the end of the RC1 period (2022).

RC1 ex-post capex review (2022)

Draft Proposals

5.3.10 As explained in the RC2 draft proposals, the DoE extended the RC1 by a year to apply until 2022 by issuing derogations that allowed the four network companies to receive the 2022 MARs (in real prices) equal to the respective 2021 MARs without carrying out detailed calculations and updates to the price control financial models. These derogations also set out that the 2022 capex allowances in the network companies' RAVs will be treated as equal to the 2021 capex. Since this capex allowance was not set through any ex-ante review and approval of schemes, the entire amount of the 2022 capex embedded within the extended RC1 controls is subject to an ex-post capex review.

5.3.11 The draft proposals also suggested to carry out the ex-post capex review of 2022 along with 2020-2021 during 2023 with the resulting adjustments to be made to the companies' 2024 MARs.

Responses

5.3.12 The network companies agreed to treat the 2022 capex allowance equal to the 2021 allowance and carryout the ex-post capex review in 2023 for final adjustment in the 2024 MAR. However, the companies sought:

(a) Clarification on the full amount of the 2022 capex being subject to the ex-post review suggested in the draft proposals, albeit suggesting ex-ante approved schemes' capex falling in 2022 to be excluded from such ex-post review; and

(b) Opportunity to (provisionally) adjust the 2022 capex in the RAV based on the companies' latest estimate for the year with final adjustment in 2024.

Assessment and way forward

5.3.13 We welcome companies support for a pragmatic approach to the treatment of the 2022 capex being equal to the 2021 capex and the review of the 2022 capex in 2023. We also accept their two suggestions as follows:

(a) Given that the relevant schemes were already reviewed and approved ex-ante, we accept the companies' suggestion to exclude ex-ante approved schemes' capex falling in 2022 from such ex-post review (and deal with the same as per mechanism for the ex-post review and adjustment for ex-ante approved capex).

(b) Considering that the 2022 capex had to be updated in any case (even treating it equal to 2021 capex) in the RC2 final decision due to the adjustment for 2020-2021 capex in the RAVs, we accept the company's proposals to update the 2022 capex in the RC2 final decision based on the forecasts submitted by the companies to the DoE during September 2022. We have used the companies' forecasts because the review of 2022 capex, initially added to the RC2 capex consultant's scope, was scoped out on the companies' request made in their responses to the consultant's initial capex report.

(c) Considering the 2022 capex has been updated based on the latest forecasts, the expected adjustment for the difference between 2022 actual and efficient capex for unreviewed schemes is likely to be insignificant. Accordingly, we propose to carry out the ex-post capex review of 2022 along with 2023-2024 (as part of mid-term review) during 2025 with the resulting adjustments to be made to the companies' 2026 MARs.

Table 5.3: Updates to 2022 capex allowance

AED million, nominal prices		Capex allowance included in the RAV		
		RC2 draft proposals	RC2 final decision	Difference
AADC	Electricity	636	488	-148
	Water	142	104	-37
	Recycled Water	9	11	2
	Total	787	604	-183
ADDC	Electricity	601	693	92

	Water	284	334	50
	Recycled Water	556	92	-463
	Total	1,440	1,119	-321
TRANSCO	Electricity	1,255	711	-544
	Water	500	454	-46
	Total	1,755	1,165	-590
ADSSC	Total	1,010	466	-544
Total		**4,992**	**3,354**	**-1,638**

Final decision

5.3.14 This final decision incorporates the updated 2022 capex allowances (as received from the companies) into the RAVs. The ex-post review of 2022 capex relating to unreviewed schemes will be carried out in 2025 (along with the 2023-2024 capex) to adjust the 2026 MARs.

5.4 Treatment of RC2 capex

Draft Proposals

5.4.1 The draft proposals suggested the RC2 capex allowances to be set through onetime ex-ante review at the time of setting price controls and comprise the ex-ante allowances for:

(a) Unreviewed running schemes (running before RC2), which have never been reviewed for regulatory purposes on an ex-ante basis in the past;

(b) Ex-ante approved running schemes that have already been reviewed on an ex-ante basis in the past, based on the cashflow forecasts approved via the previous ex-ante review; and

(c) All ex-ante approved new schemes (starting in 2022 or RC2) as per the ex-ante review undertaken by the DoE's RC2 capex consultant.

5.4.2 Based on the RC2 capex consultant's draft report, the draft proposals suggested an allowance of AED 16.5 billion for the four network companies, combined for RC2 period.

5.4.3 The draft proposals outlined:

(a) the entire allowance for the unreviewed running schemes to be subject to an ex-post review on a bi-annual basis;

(b) the ex-ante allowance for a scheme approved under an ex-ante review to be subject to an ex-post efficiency review (at the completion of the scheme), only if the scheme's scope or actual capex changes from the ex-ante approval by more than 10%; and

(c) the scope of a scheme to be defined in the form of easily measurable indictors (such as network length, demand, customer numbers the scheme is expected to serve) for objectively establishing at the completion of the scheme whether its actual scope changed from the ex-ante approved scope by more than 10% or not, inviting network companies' suggestions on such definition.

Responses

5.4.4 The network companies in general supported the DoE's draft proposal to use ex-ante reviews to set RC2 capex allowances, segregated into new, ex-ante approved running and unreviewed running schemes.

5.4.5 The companies reiterated importance of four outcomes that the regulatory framework should ensure, namely: setting fair and transparent capital allowances, move to ex-ante assessment and minimise ex-post evaluation, flexibility to include large special schemes, and visibility on the regulatory treatment of investment. The companies proposed few changes in the capex regime to achieve these outcomes, mainly:

(a) Accepting the DoE's proposal for one-time ex-ante review at the time of setting of the controls, the companies suggested allowing for a mid-term review to undertake over/under spend adjustments to the RAV / MAR, capex reporting analysis and delivery investigation, and ex-ante review of new business cases (though, without resetting ex-ante capex allowances and notified values/MAR).

(b) For ex-ante approved running schemes, the companies sought flexibility to allow major scope variations and adjustments to the ex-ante allowances considering the scale of the scope variation, instead of freezing the cashflow forecasts approved via the previous review; and

(c) The companies sought opportunity for an ex-ante review (not for the purpose of allowance inclusion in the MAR but to facilitate timely delivery) of

special marquee schemes that are very large in terms of scope, innovative or mandated by the third parties, either prior to the proposed mid-term review or at an interval agreed with the DoE.

5.4.6 Commenting on the DoE's proposed capex allowance in the draft proposals, the companies expressed concerns that the proposed allowances are insufficient and do not adequately represent the required capex during the RC2 period. The companies submitted enhanced business cases and additional information to the DoE capex consultant during April-July 2022.

5.4.7 The companies supported the proposals for entire allowance for unreviewed running scheme to be subject to ex-post review, albeit requesting continuation of the ex-post methodology applied in recent assessments and such reviews on annual rather than bi-annual basis to avoid large adjustments.

5.4.8 For the ex-ante approved schemes, the companies recognised and welcomed an appropriate level of scrutiny into the outturn costs/value for money on completion of schemes, suggesting such review to be limited only to the variation and applying either of the following mechanism for selection of schemes for the ex-post review (in subsequent meetings, the companies supported the mechanism in item (b) below):

(a) **Use threshold of variation between approved and outturn scope/capex to select schemes for ex-post review**: Commenting on the DoE's proposed ±10% threshold for this purpose, the companies argued that it is almost impossible to ensure cost predictions within 10% variation at the business case stage. Accordingly, application of this criteria will simply result into selection of significant number of ex-ante reviewed schemes for ex-post assessment. The companies presented examples of international scholarly articles and industry books on what cost estimate tolerances are considered realistic, depending on the project stage when such estimate is made showing a range of -50% to +100%. Building on this analysis and tailoring it to local conditions, the companies suggested widening and revising the proposed ±10% threshold to make it -20% to +40%. The companies also suggested taking account of extraneous factors such as inflation, commodity price volatility and supply chain issues, in application of the threshold criteria. The companies

further proposed excluding those schemes from the ex-post review where variation between scope and costs are proportionate to each other; or

(b) **Capex outturn investigation**; Referring to the discussions in the meetings with the DoE during May 2022, the companies suggested further exploring alternative mechanism whereby none of the schemes is automatically selected for an ex-post review. Instead, the DoE would examine performance of the schemes across all attributes (referred to as capex outturn investigation) based on extensive reporting and initial analysis/justification for variances between actual and approved capex and consider whether a detailed ex-post review is required for any of the schemes. The companies highlighted the need for a RIG that would identify the scope and depth of the information requirement and the investigation.

5.4.9 The companies highlighted challenges in defining the scope of a scheme in simple and easily measurable outputs form, particularly for the schemes that involve several types of assets. Nonetheless, the companies suggested defining the scope in the form of a scheme's physical, functional and locational attributes, each having several metrics. For the sake of simplicity companies further suggested using dominant metric, that could relate to physical and/or functional attributes as proxy for assessment of actual versus planned delivery. However, the companies cautioned on the circumstances where mechanistic application of the criteria might trigger undesired ex-post review due to delivery of favourably disproportionate value of asset/function against the costs.

Assessment and way forward

5.4.10 We welcome the network companies' general support for an ex-ante review approach to set the RC2 capex allowances. We agree that the capex framework should strive to achieve the four outcomes highlighted by the companies as these ultimately lead to and complement the primary objective of cost efficiency and security of supply. Our assessment of the companies' proposed changes to the capex regime is as follows:

(a) We accept the companies' suggestion for a mid-term ex-post review (assuming it is bi-annual review) and the related adjustment to the RAV for

unreviewed running schemes and ex-ante approved schemes reaching the completion stage. However, we do not see benefit of carrying out an ex-ante review of new schemes as part of this mid-term review because - as per the companies' own suggestion - this review will not be used to adjust capex allowances at this stage. Consequently, the results of such review will only be used after two years once the DoE sets next price control. However, by then, the ex-ante approval, particularly, the approved capex forecasts would have been outdated. We also draw companies' attention to the opportunity for the interim ex-ante review allowed in RC1 that was agreed upfront at the time of setting of RC1 for the two main reasons (a) ex-ante regime was introduced for the first time in the sector, and (b) owing to this and other reasons, the capex allowances for later years of the RC1 period were unreasonably low (capex for ADDC electricity business for 2021 in the original RC1 was only AED 8 million). This is not the case in RC2 because (i) the companies have undergone ex-ante review twice before this RC2 review, and (ii) the capex allowances for later years of RC2 are broadly similar to the companies' actual capex spending during the recent years – negating the need for an interim ex-ante review of any new scheme.

(b) We consider that the companies' suggestion to allow for scope variations and adjustments to the allowances for ex-ante approved running schemes is unjustified. This is because:

i. freezing the capex allowance in respect of ex-ante approved schemes incentivises the companies to put all reasonable efforts in robust capex forecasting at the time of setting the allowance. Further, the capex review is a resource intensive exercise for both the companies and the DoE, therefore, price control needs to make full use of the outcome of such review. This will not be possible if revisions are allowed in the allowance every two year; and
ii. the required flexibility already exists in the regime in the form of adjustments to RAV for the difference between approved and actual capex, subject to ex-post review on completion of the scheme, negating the need for earlier revisions before scheme's completion.

(c) Notwithstanding the proposals for review of usual schemes, we accept the companies' proposal for ex-ante review and approval during the control period of a scheme mandated by or requiring Government (Executive Council) approval to facilitate its timely delivery.

5.4.11 In relation to the companies' concerns on the capex allowances proposed in the draft proposals, we note that subsequent enhanced business cases and extensive information exchanged between the companies and the DoE capex consultant have resulted into ex-ante approval of additional schemes and upward revisions to these allowances, addressing the companies' concerns.

5.4.12 We note the companies' proposals for continuation of the existing ex-post methodology and annual (instead of proposed bi-annual) reviews to minimise the amount of adjustment to RAV/MAR. Our proposed bi-annual ex-post review attempts to strike a right balance between regulatory burden of the review and adjustment required in the allowance. We expect the ex-post adjustments for unreviewed schemes will steadily reduce with diminishing share of the unreviewed capex in the total capex due to ex-ante review of all new schemes since RC1. On the ex-post review methodology, while we acknowledge the benefits of its continuation, yet we do not see the need for an upfront commitment to continue the same methodology. We may evaluate, in consultation with the companies, whether the methodology for ex-post capex review remains fit for purpose at the time of such review in future.

5.4.13 We appreciate the companies' acknowledgement of the need to assess delivery of an ex-ante approved scheme against the allowance at its completion. We agree and confirm that such assessment will focus only on the variation, without reopening the original approved allowance or business case. Our assessment of the companies' comments on the approach for selection of an ex-ante approved scheme for ex-post review is as follows:

(a) We note the companies' concerns on use of a threshold for variation between approved and outturn scope/capex for automatic selection of a scheme for ex-post review, in particular the challenges in setting an appropriate level for the threshold, even if it only triggers a review and does not reject a variation in the cost. We also acknowledge the challenges in defining the

scheme's scope that can easily be used to assess magnitude of variation between approved and outturn scope.

(b) Accordingly, we accept the companies' suggestion to apply the capex outturn investigation approach described above that would mean more detailed and regular reporting and initial analysis/justification for variances between actual and approved capex and scope for all schemes for our review in order for the DoE to select schemes for the detailed ex-post review.

(c) We also acknowledge the companies' proposals and will be consulting with them to develop the RIGs in 2023 to formulate details of such ex-post review including the companies' suggested consideration of extraneous factors and proportionality of variation between scope and costs for inclusion/exclude of the schemes from the review.

5.4.14 A high-level summary of the final proposed approach is provided in the following table.

Table 5.4: Approach to RC2 capex – final decision

Particulars	Final decision
RC2 capex to include	▪ Unreviewed running schemes ▪ Ex-ante approved running schemes ▪ Ex-ante approved new schemes
Allowance to be based on: ▪ Unreviewed running schemes ▪ Ex-ante approved running schemes ▪ Ex-ante approved new schemes	▪ Companies' latest forecasts ▪ Previously approved forecasts ▪ DoE approved estimated costs for green assessed business cases (except for those pending Government approval)
Ex-post review (as part of mid-term review): ▪ Unreviewed running schemes ▪ Ex-ante approved schemes ▪ Approach/methodology	▪ Entire capex subject to ex-post review ▪ Ex-post review of schemes selected by DoE based on initial review of detailed reporting applying RIGs (to be developed) ▪ RIGs, to be formulated in consultation with the companies in 2023
Mid-term review (to be carried out in 2025 for adjustment to 2026 MARs)	▪ Ex-post review and adjustment for 2022-2024 capex on unreviewed schemes ▪ Ex-post review of selected ex-ante approved schemes (while ex—post review will be carried out only for selected schemes, yet the adjustment in the RAV will be made for all ex-ante approved schemes achieving completion (with or without ex-post review, as applicable) ▪ Inclusion of DoE approved capex in the RAVs for schemes approved by the Government until mid-term review. These are the schemes that were ex-ante approved at the time of setting of RC2 however, their capex was not included in the RAV pending Government approval.

5.4.15 The companies can undertake additional capex schemes that have not been approved through ex-ante review. The entire capex for such schemes will be subject to ex-post review and adjustment to the RAV via bi-annual reviews.

5.4.16 The proportion of capex allowance for the approved schemes in the total capex allowance will increase over time with completion of the unreviewed running schemes. This, in turn, will reduce the requirements for ex-post reviews.

Ex-ante allowances for RC2

5.4.17 As described in the draft proposals, the DoE consultant:

(a) started the review with a kick-off meeting with the network companies in April 2021 and shared a detailed information request to provide the business cases for new schemes (on the same format / template as used in the RC1 original / interim review);

(b) Extended the timelines for submission of the business cases until mid-October 2021 on the companies' request and finally received the first set of business cases in mid-November 2021;

(c) continued sharing its feedback on the business cases for the network companies to provide additional information and justify the business cases and costs;

(d) held individual meetings with the companies to further explain the requirements and bridge information gaps during November 2021 – January 2022;

(e) issued in March 2022 the draft reports setting out the RC2 draft capex allowances, identifying the gaps for the schemes that were not approved;

(f) reviewed the network companies' enhanced business cases during April-July 2022; and

(g) issued its final reports in November 2022, setting out the final RC2 allowances (in nominal prices), summarised in Table 5.5, below.

5.4.18 The consultant's proposed RC2 capex allowances in the final reports comprise the allowances for ex-ante reviewed and approved schemes (approved by TA in the past or RC2 capex consultant now) and the unreviewed running schemes.

Table 5.5: RC2 capex allowances as per ex-ante capex review

AED million, nominal prices		2023	2024	2025	2026	Total
AADC	Electricity	363	436	350	340	1,489
	Water	134	87	64	53	338
	Recycled Water	28	28	16	3	75
	Total	525	551	430	396	1,902
ADDC	Electricity	633	857	571	388	2,449
	Water	415	480	293	435	1,623
	Recycled water	102	49	51	27	229
	Total	1,150	1,387	915	850	4,301
TRANSCO	Electricity	1,272	2,033	1,653	1,197	6,155
	Water	752	629	634	586	2,601
	Total	2,024	2,662	2,286	1,784	8,757
ADSSC	Total	572	532	372	233	1,709
Total		**4,271**	**5,132**	**4,003**	**3,263**	**16,668**

The capex figures in this table are higher than the amounts communicated to the network companies via DoE letters during October 2022 due to inclusion of capex relating to IT and staff cost capitalisation.

5.4.19 The above capex allowances do not include capex for certain ex-ante approved schemes pending the Government approval. DoE approved capex for such schemes will be included in the RAVs at the mid-term review for the schemes that will be approved by the Government by the mid-term review.

5.4.20 The capex consultant's final report for each company identifies the gaps for schemes that did not pass the ex-ante assessment. Nevertheless, the ex-ante capex review and capex allowances for RC2 do not stop the companies from undertaking capital projects or schemes that are not submitted to or approved by the DoE but in the companies' view may be required to meet customer demands, security standards or Government directives. Such capex will then be subject to full ex-post review.

Companies' capex projections for RC2

5.4.21 The below table presents the companies' 2021 actual capex (the latest actual capex available) and their capex projections for the RC2 period.

Table 5.6: Companies' capex projections for RC2

AED million, nominal prices		2021	2023	2024	2025	2026	Total 2023-2026
AADC	Electricity	418	367	478	405	384	1,635
	Water	80	148	95	71	58	372
	Recycled Water	1	31	31	17	3	82
	Total	499	546	604	494	445	2,089
ADDC	Electricity	694	752	954	648	480	2,834
	Water	185	443	503	313	464	1,723

	Recycled water	464	108	55	57	30	251
	Total	1,343	1,303	1,513	1,018	974	4,808
TRANSCO	Electricity	712	1,685	2,964	2,124	1,368	8,142
	Water	619	779	762	829	689	3,059
	Total	1,330	2,464	3,726	2,953	2,058	11,201
ADSSC	Total	344	769	828	727	850	3,174
Total		**3,517**	**5,081**	**6,671**	**5,192**	**4,327**	**21,272**

5.4.22 The main trends in these adjusted forecasts over 2021-2026 are as follows:

(a) the four network companies' aggregate annual capex is projected to increase from around AED 3.5 billion in 2021 to AED 4.3 billion in 2026 (cumulative increase of 24% and annually 4%).

(b) AADC – decrease by 2% a year on average to AED 445 million;

(c) ADDC – decrease by 6% a year on average to AED 974 million;

(d) TRANSCO – increase by 9% a year on average to AED 2,058 million; and

(e) ADSSC – increase by 20% a year on average to AED 850 million.

Assessment of consultant's capex projections

5.4.23 As the comparison between **Tables 5.5** and **5.6** indicates that (all figures in nominal prices):

(a) the DoE consultant's capex projections totalling around AED 16.6 billion for the RC2 period (2023-2026) are lower than the companies' forecasts of about AED 21.3 billion for this period, by AED 4.7 billion or 28%;

(b) the consultant's proposed annual capex for the four companies (AED 3.2-5.1 billion per year) are lower than the companies' forecasts (AED 4.3-6.8 billion per year) on average by about AED 1.2 billion per year or 23%; and

(c) the consultant's capex projections reflect the following cost reductions or exclusions from the companies' forecasts:

i. 10% general contingency, included in the companies' forecasts;
ii. Specific contingencies included by companies in certain schemes;

iii. Capex for the schemes where the companies' justification and evidence were considered insufficient; and

iv. Downward adjustments to the capex requirement for the schemes where the companies were able to justify the schemes but did not provide sufficient evidence on the cost estimates.

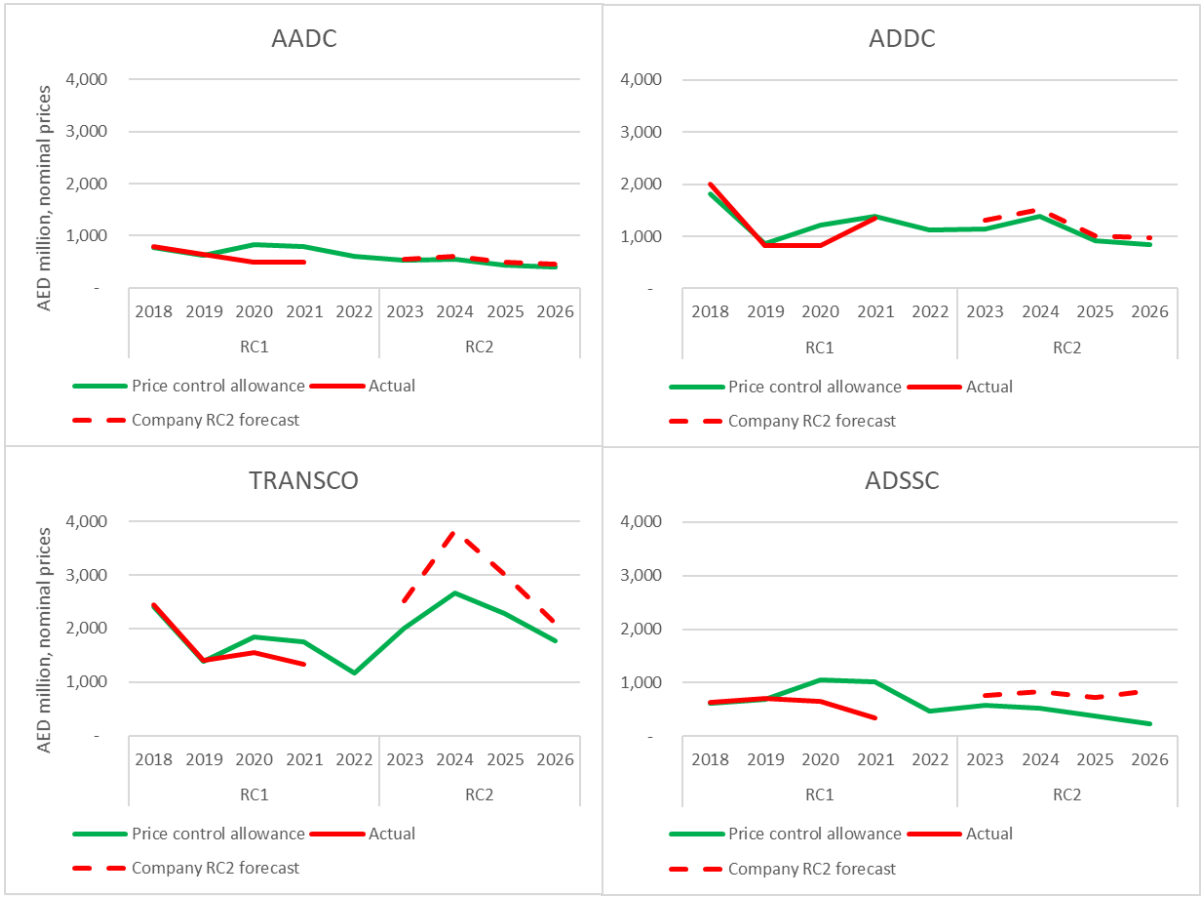
5.4.24 Following table compares the consultant's capex projections for RC2 against the companies' 2021 actual capex and highlights important trends:

Table 5.7: Consultant's final capex projections – comparison against 2021 actuals

AED million, nominal prices	**2021 capex**	**2023 projection against 2021 actual**			**2026 projection against 2021 actual**		
		2023 capex	**Difference**	**CAGR**	**2026 capex**	**Difference**	**CAGR**
AADC	499	525	26	5%	396	-103	-21%
ADDC	1343	1150	-193	-14%	850	-493	-37%
TRANSCO	1,330	2,024	694	52%	1,784	454	34%
ADSSC	344	572	228	66%	233	-111	-32%
Total	**3,517**	**4,271**	**755**	**21%**	**3,263**	**-254**	**-7%**

5.4.25 As the above tables show, the proposed capex allowances for RC2 are generally lower than the companies' forecasts but are broadly close to their 2021 actuals for the reasons stated above.

Figure 5.4: Actual, allowed and companies' adjusted forecast capex



Final decision

5.4.26 Based on the DoE consultant's capex projections in the final reports, Table 5.8 below sets out the DoE's proposed ex-ante capex allowances for the RC2 period, for inclusion in RC2 control calculations presented in Sections 6 and 7. These allowances are derived after converting figures in nominal price from Table 5.5 into 2023 prices, by applying the UAE CPI assumptions as set out in Section 2.

Table 5.8: RC2 Capex allowances – final decision

AED million, 2023 prices		2023	2024	2025	2026	Total
AADC	Electricity	363	427	336	320	1,445
	Water	134	85	62	49	330
	Recycled Water	28	28	15	3	73
	Total	525	540	412	372	1,849
ADDC	Electricity	633	840	547	364	2,384
	Water	415	470	281	409	1,575
	Recycled water	102	48	49	26	225

	Total	1,150	1,358	877	799	4,184
TRANSCO	Electricity	1,272	1,991	1,585	1,125	5,974
	Water	752	616	608	551	2,527
	Total	2,024	2,607	2,193	1,676	8,501
ADSSC	Total	572	521	357	219	1,669
Total		**4,271**	**5,026**	**3,840**	**3,066**	**16,202**

5.4.27 The capex schemes we approved through ex-ante review may see changes in their actual expenditure against the ex-ante approved allowance. On completion of an ex-ante approved scheme, the difference between actual capex and ex-ante approved capex allowance will be adjusted in the RAV:

(a) Without carrying out any ex-post review, if it is not selected by the DoE for an ex-post review by the DoE; and

(b) after carrying out an ex-post review of the change, if it is selected by the DoE for the ex-post review by the DoE.

5.4.28 The companies will need to provide detailed analysis of actual and allowed capex and scope for each ex-ante approved scheme, their variance, detailed justification for variance for the DoE review. Based on this initial analysis, the DoE will select the schemes for further scrutiny via the detailed ex-post review of the variance for selected schemes. The DoE will be consulting with the companies to develop the RIGs in 2023 to formulate details of such ex-post review. This review and adjustment will be carried out along with bi-annual ex-post capex review of un-reviewed schemes and ex-ante review of any scheme that is mandated by the Government or requires Government approval.

5.4.29 The companies may undertake additional capex schemes that have not been approved through ex-ante review. Entire capex on such scheme will be subject to ex-post review and adjustment to the RAV, on a bi-annual basis.

5.4.30 A mid-term review will be carried out in 2025 to adjust RAVs and 2026 MARs of the companies for the following:

(a) Inclusion of DoE approved capex in the RAVs for the schemes that will be approved by the Government until the mid-term review. These are the schemes that have been ex-ante approved at the time of setting of RC2

however, their capex have not been included in the RAV pending the Government approval;

(b) Adjustment for the difference between actual efficient and allowed 2023-2024 capex for unreviewed schemes; and

(c) Adjustment for the difference between actual efficient and allowed capex (with or without review as applicable) for ex-ante reviewed schemes achieving completion status by the mid-term review.

5.5 Digitalisation strategy

Draft Proposals

5.5.1 The DoE and network companies have agreed a pragmatic and flexible approach for cost allowances for digitalisation initiatives and to work over the coming months to obtain ex-ante approval, where possible, for these strategies / initiatives and the associated cost allowances. The draft proposals on digitalisation set out DoE expectations from the companies to:

(a) Develop digitalisation strategy and well detailed, justified plans (setting out the deliverables and targets) under the umbrella of the strategy to provide upfront ex-ante capex allowance for each scheme in RC2 or during the RC2 period via ex-post reviews/annual opex adjustment mechanism, as the case may be; and

(b) provide feedback on the proposed self-funding sustainable mechanism for operational innovation, which would mean no specific funding for innovation via the price controls.

Responses

5.5.2 Committing to progress the development of the strategy and the detailed initiatives with clear measurable deliverables, the companies' responses to the RC2 draft proposals alluded to their preference for:

(a) no requirement for the companies to finalise the digitalisation strategy ahead of RC2 to be able to submit detailed initiatives for cost allowance during the RC2 period;

(b) limit the submission of detailed initiatives to a predefine frequency (twice a year maximum) and use of independent technical consultant to carry out such reviews; and

(c) digitalisation related capex to be part of the initiative, not subject to usual capex efficiency review.

Assessment and way forward

5.5.3 We welcome the network companies' commitment to work on the digitalisation strategy and well detailed, justified initiatives (setting out the deliverables and targets). Our responses to the companies' suggestions/preferences are as follows:

(a) While we encourage the companies to develop the coordinated and comprehensive 5-year digitalisation strategy as soon as practicable, it does not have to be ahead of RC2. The companies may finalise the strategy during the RC2 period and then submit subsequent detailed initiatives with clear line of sight to the strategy objectives, for the DoE's review and approval;

(b) We welcome the companies' suggestion to limit the windows for submission for detailed initiatives to the maximum of twice a year;

(c) The companies' request for no efficiency review at all for digitalisation capex is however not justified. Like any other cost allowed through the price controls, digitalisation capex has to be reviewed for efficiency, be it on an ex-ante or ex-post basis. As such, the need case statement of such capex would automatically be reviewed as part of detailed initiative review, and allowable recovery of costs would be subject to demonstrable delivery of agreed milestones and desired outputs for each phase, inherently addressing a number of capex efficiency metrics. Accordingly, capex efficiency review would focus on the rest of the areas.

Final decision

5.5.4 In this final decision, we broadly retain our draft proposals: that is, the companies' are required to develop a 5 year (minimum) coordinated digitalisation strategy for agreement with the DoE which will provide the

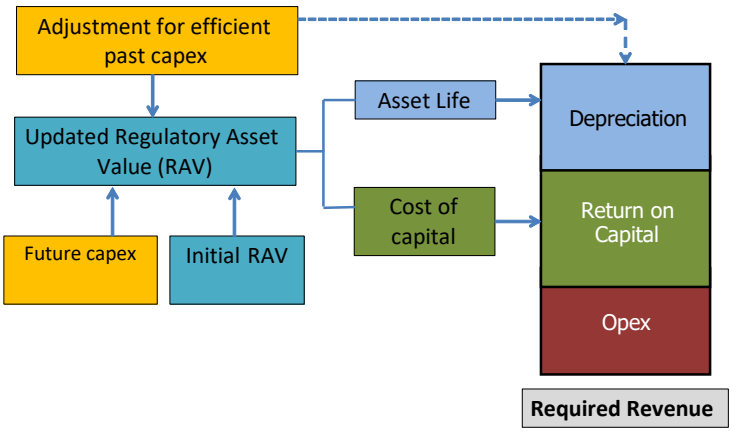
overarching basis for subsequent well detailed, justified plans for each proposed digitalisation scheme (setting out the deliverables and targets) during the RC2 period for approval by DoE to receive capex and/or opex via the DoE's ex-post reviews and/or annual opex adjustment mechanism.

6. Financial Issues

6.1 Introduction

6.1.1 The revenue allowed in the price controls enables the network companies to finance their capex as well as their opex. Since capex relates to assets that have an economic life of (and deliver benefits over) many years, it is appropriate to allow for the recovery of these costs over an extended period of time. This is achieved by allowing these costs to be capitalised, and added to the Regulatory Asset Value (RAV) with an annual allowance in the price controls for depreciation to allow recovery of these costs. It is also appropriate to allow the company to earn a return, or cost of capital, on the RAV, in order to provide return to their fund providers. Depreciation and return on capital allowances are two of the three key building-blocks used to establish the overall level of core price control revenue.

Figure 6.1: Financial issues in price control calculations



6.1.2 The DoE's RC2 previous consultation papers described our thinking to maintain the RC1 approach to calculation of the appropriate allowances for regulatory depreciation and update the RAVs for RC2. In the RC2 draft proposals, we accepted the companies' suggestion to use a bottom-up methodology to estimate each individual element of the weighted average cost of capital (WACC).

6.1.3 This Section 6 discusses the companies' responses to these issues and sets out the DoE's final decision on the treatment of depreciation, updating RAVs, and the WACC for RC2.

6.2 Regulatory depreciation and updating RAV

Draft Proposals

6.2.1 In the RC2 draft proposals, we indicated our intention to maintain a similar approach as used in the previous price controls to calculate regulatory depreciation and update the RAV, namely:

(a) Approach to calculation of depreciation allowance, where:

i. the regulatory depreciation allowance for any year is calculated as the sum of the depreciation on the existing RAV at the start of the price control period and the depreciation on the future capex allowance made for the RC2 period at this price control review;

ii. the overall approach to capitalisation used in the companies' SBAs should also be used for price control purposes;

iii. the straight-line method should be used to calculate regulatory depreciation;

iv. the assumptions with respect to asset lives used to date (and in case of ADDC's battery energy storage system (BESS) agreed with ADDC during 2020 as an exceptional arrangement), summarised in the table below should be used; and

v. at the end of the respective life shown in the table below, there are no further allowances for depreciation or returns for that tranche of assets; and

Table 6.1: Asset life assumptions at previous price control reviews

Business	Initial RAV				Life of New Capex	
	RAV Year	RAV AED m	Depreciation AED m	Implied Life years	Pre-2018 capex years	Post-2018 capex Years
AADC E	1999	1,516.14	78.78	19.25	30	40
AADC W	1999	129.32	3.85	33.59	30	40
AADC RW	2018	447.00	9.85	45.38	N/A**	40
ADDC E	1999	2,939.20	130.95	22.45	30	40
ADDC E BESS	2016/2018	N/A*	N/A*	N/A*	15	15

ADDC W	1999	845.56	57.13	14.80	30	40
ADDC RW	2018	969.00	26.57	36.46	N/A**	40
TRANSCO E	1999	2,907.10	115.10	25.26	30	40
TRANSCO W	1999	2,053.19	113.65	18.07	30	40
ADSSC	2005	4,430.48	324.92	13.64	50	60

Notes: "E "stands for Electricity business, "W" stands for Water business, and "RW" stands for Recycled Water business; All AED figures are expressed in price terms of the RAV year.
* ADDC (E) BESS is not a separate business with its own price controls and had no initial RAVs once first recognised in the price controls for AADC (E) business.
** Recycled water (RW) businesses for AADC and ADDC and the related separate price controls were introduced from 2018 and therefore had no pre-2018 capex.

(b) Approach to update the RAVs for past and future capex, where:

i. the opening RAV for 2023 (the first year of the RC2 control period) is derived from the 2021 closing RAV (calculated at the RC1 interim review, subsequently adjusted for 2018-2019 ex-post capex adjustment), by adding the capex and subtracting depreciation for 2022;

ii. for RC2, the RAVs are calculated by adding RC2 ex-ante capex allowance and subtracting the estimated regulatory depreciation for each year of the RC2 period; and

iii. the MAR over the RC2 period will be adjusted for any financing costs unduly earned or foregone due to ex-post capex reviews.

Responses

6.2.2 TAQA companies agreed with DoE's draft proposal to continue with the straight-line method for regulatory depreciation, using the same asset life assumption as used for RC1. They also noted that adopting an asset life which more closely aligns with the type of asset class would not be problematic.

6.2.3 In their response, the network companies requested for the completion of the 2020-2021 ex-post assessment prior to the conclusion of the RC2 review. This would allow efficient additions to the RAVs in a timely fashion and avoid large adjustments wherever possible. The companies indicated that the TA was assessing the 2020-2021 capex for ex-post efficiency, so that the outcome could be incorporated into the RAVs and the DoE's RC2 financial models before the commencement of the RC2 period.

6.2.4 ADSSC noted the importance of depreciating the assets it operated at an appropriate and realistic level. ADSSC indicated that the benchmarks used by the DoE consultant during the RC1 review, being based in Australia and Ireland, were not relevant. Based on its analysis of financial statements from benchmarks in the US, emerging countries and GCC, ADSSC argued that the benchmarked average useful asset life was 29 years. The company disagreed with the 60 year asset life proposed by the DoE, and requested reducing the asset lives closer to that of the water distribution licensees, and in line with international benchmarks.

Assessment

6.2.5 We welcome the network companies' general support for the current regime for updating the RAVs, and acknowledge TAQA companies' views on maintaining the approach for depreciation and asset life assumptions. We consider that the single weighted average asset life assumption for the purposes of the price control has proved simple and efficient over the years, and will thus maintain it in the RC2.

6.2.6 Following the publication of the draft proposals, in our engagement with the network companies, we agreed to consider the ex-post capex review for the years 2020-2021 within the outcomes of this RC2 review, subject to the assessment being completed before mid-July 2022. We note that this has been completed and we have accordingly included the outcome of the 2020-21 ex-post capex review in the RC2 final decision (further details on these outputs are included in Section 5).

6.2.7 In relation to ADSSC's response on asset life assumptions, we agree that benchmarks are one tool that needs to be treated in conjunction with other sources of information where possible. In this regard, the use of financial statements data in ADSSC's benchmark analysis is likely of limited value in informing asset life assumptions for the purposes of price controls – for example, statutory accounts will also use assumptions with regards to asset life, and the aggregate nature of the financial data does not allow a detailed analysis of different asset values or their life expectancy. We must clarify that

the work conducted in the RC1 and the approach used by the DoE and its consultant was not solely based on benchmarks. At the time of setting the RC1, the DoE consultant employed technical experts who developed a comprehensive and sound methodology in consultation with the companies for the review of asset life assumptions, undertook site visits, held meetings with the companies, and the companies – including ADSSC – actively contributed to the development of that work and the conclusions of the study. We summarise below the work and conclusions of this study:

(a) The objective and scope of the review was for the DoE's consultant to recommend updates in asset life assumption used in the price controls considering the technological advancements and improvements in companies' procedures for asset design, installation, operation and maintenance since inception, when the asset life assumptions were first set;

(b) As detailed in the final report issued in June 2017, the consultant applied a triangulation approach for assessment of asset life assumptions. This consisted of:

i. **International best practice and benchmarks**: The consultant, in coordination with the companies, categorised the companies' fixed asset register (FAR) in accordance with asset function and technical life and mapped the same with the best practice asset categories to the extent possible. The consultant compiled a detailed list of benchmarks giving due consideration to the local operating environment.

ii. **Company capabilities regarding the asset life-cycle management**: Since the companies' management of asset can have an impact on the asset lives, the consultant evaluated the various phases that surround the asset life-cycle through review of the companies' policies and procedures and inspection of assets during site visits - particularly reviewing the companies'

practices with respect to asset specification and design, construction, maintenance and refurbishment.

iii. **Current asset condition and performance**: The consultant assessed the asset condition and performance through meetings with representatives of the network companies and site visits. The consultant also assessed the capabilities and effort that the companies put in practice to understand the asset condition and performance and how this information is used in the asset lifecycle management decisions.

(c) Taking account of the above, the consultant recommendations in relation to the wastewater business were to increase the asset life by (i) 10 years during RC1, and (ii) another 5 years during next price control review (RC2). The proposed increase would apply only to new assets.

(d) We consider that this work was the most robust study conducted in recent years on this topic, and there is no reason to change again asset life assumptions, which is expected to be a relatively stable parameter over time. Finally, we decided not to pursuit the further increase in the asset life assumptions in the RC2 review suggested by the study, mentioned above. If this is revisited in future price control reviews, we will consult appropriately with the licensees at that time.

Final Decision

6.2.8 In view of the above, our final decision for RC2 is to:

(a) use a straight-line method for regulatory depreciation using the same asset life assumptions for new assets as used for RC1;

(b) continue with the DoE's approach for calculating opening and closing RAVs for each year of the RC2 as follows:

i. the opening RAV for 2023 (the first year of the RC2 control period) is derived from the 2021 closing RAV (calculated at the RC1 interim review, subsequently adjusted for 2020-21 ex-post capex

adjustment), by adding the capex and subtracting depreciation for 2022; and

ii. for RC2, the RAVs are calculated by adding RC2 ex-ante capex allowance and subtracting the regulatory depreciation for each year of the RC1 period.

6.2.9 **Annexes A and B** set out the detailed calculations of the updated RAVs and depreciation calculations and describe these calculations on a line-by-line basis.

Calculation of regulatory depreciation for RC2

6.2.10 At this price control review, we have updated the Excel-based model developed at the previous review to create the "**RC2 Depreciation Model**". This calculates, for each business separately, the depreciation on all allowed investments to date. This is done by separately calculating and adding depreciation on:

(a) the initial RAVs set in 1999 for AADC, ADDC and TRANSCO's electricity and water businesses, in 2018 for AADC and ADDC's recycled water businesses, and in 2005 for ADSSC;

(b) each annual efficient capex determined to date i.e. during PC1, PC2, PC3, PC4, PC5 and RC1 periods; and

(c) the foregone financing costs in relation to PC1 efficient capex previously added to the RAV.

6.2.11 The depreciation on ex-ante RC2 capex allowance is calculated separately in the main price control financial model (discussed in Section 7 of this document).

6.2.12 The RC2 Depreciation Model uses, for the initial RAVs and subsequent capex until the end of the RC1, the average asset life assumptions and the capex efficiency assumptions adopted at the previous reviews. In addition, when any capex becomes fully depreciated, its depreciation for future years is set to zero. There are separate worksheets in the model for each business. Overall, the model's output is the total annual depreciation on the initial RAV and the capex to date, expressed in nominal and real prices.

6.2.13 The table below shows the total depreciation to date in 2023 prices, for each business. This is calculated by using the RC2 Depreciation Model, for each year of the RC2 period. These calculations are in respect of the initial RAVs and the capex incorporated into the price controls for each price control period from PC1 to RC1.

Table 6.2: Depreciation on initial RAV and on capex to date (excluding RC2 capex)

AED million, 2023 prices		2023	2024	2025	2026
AADC	Electricity	486	486	486	486
	Water	170	170	170	170
	Recycled Water	10	10	10	10
ADDC	Electricity	936	936	936	936
	Water	315	315	315	315
	Recycled water	49	49	49	49
TRANSCO	Electricity	1,839	1,670	1,612	1,612
	Water	857	857	857	857
ADSSC	Total	398	398	398	398
Total		**5,060**	**4,891**	**4,833**	**4,833**

6.2.14 The above table excludes depreciation in respect of the ex-ante RC2 capex. Instead, this is calculated in the main price control financial model, and is presented in the table below. See Section 7 for details on the main price control financial model and Annexes A and B for line-by-line descriptions of RC2 Depreciation Model and the main price control financial model, respectively.

Table 6.3: Depreciation on RC2 ex-ante capex

AED million, 2023 prices		2023	2024	2025	2026
AADC	Electricity	5	14	24	32
	Water	2	4	6	8
	Recycled Water	0	1	2	2
ADDC	Electricity	8	26	44	55
	Water	5	16	26	34
	Recycled Water	1	3	4	5
TRANSCO	Electricity	16	57	101	135
	Water	9	27	42	56
ADSSC	Total	5	14	21	26
Total		**51**	**163**	**270**	**354**

6.2.15 The table below presents the total annual depreciation for each business on all assets, namely the initial RAV and efficient capex for PC1-RC2 periods. Each amount in this table is the sum of corresponding amounts shown in the preceding two tables.

Table 6.4: Total depreciation for RC2 calculations – final decision

AED million, 2023 prices		2023	2024	2025	2026
AADC	Electricity	491	500	510	518
	Water	171	174	176	177
	Recycled Water	10	11	12	12
ADDC	Electricity	944	962	979	991
	Water	321	332	341	350
	Recycled Water	50	52	53	54
TRANSCO	Electricity	1,855	1,727	1,713	1,747
	Water	866	883	899	913
ADSSC	Total	403	412	420	424
Total		**5,111**	**5,054**	**5,103**	**5,187**

Updating RAVs for RC2

6.2.16 The RAVs will need to be updated for the actual efficient capex spend for the year 2022, a process which will include the remuneration of any foregone or unduly-earned financing costs (relating to both depreciation and return on capital) for the period between the point when the capex was undertaken and the time when it will be financed. This exercise will be undertaken following the ex-post capex review for that year.

6.2.17 As such, the opening RAVs for 2023 will be the closing RAVs for 2021 (as per the RC1 financial model, updated for RC1 interim review, 2018-2019 and 2020-2021 ex-post capex adjustments), updated by adding the capex for 2022 in the price controls (discussed in Section 5) and subtracting total depreciation for 2022. The difference between the efficient RC1 (2020-2021) capex and the RC1 (2020-2021) capex allowances (as shown in Section 5) needs to be rolled into the RAVs. The foregone or unduly-earned financing costs (both depreciation and return on capital) relating to the RC1 (2020-2021) capex is remunerated over the RC2 period. These financing costs relate to the period between (a) the time when the RC1 (2020-2021) capex was undertaken, and (b) the time when it will be financed. The results are summarised in **Table 6.5** below.

Table 6.5: Updated RAVs at the beginning of the RC2

AED million, 2023 prices		2022 opening RAV	2022 capex	2022 depreciation	2020-2021 capex adjustment	2022 closing / 2023 opening RAV
AADC	Electricity	8,988	488	480	-30	8,966
	Water	2,812	104	168	-33	2,714
	Recycled Water	413	11	10	-10	405

ADDC	Electricity	15,350	693	927	124	15,241
	Water	5,636	334	311	-11	5,648
	Recycled Water	1,759	93	48	28	1,832
TRANSCO	Electricity	28,796	711	1,830	-329	27,348
	Water	14,749	454	851	198	14,550
ADSSC	Total	17,405	466	394	-1,052	16,425
Total		**95,908**	**3,355**	**5,020**	**-1,115**	**93,128**

6.2.18 The total NPV of adjustments, up to 2023, for unduly-earned financing costs for the RC1 (2020-2021) capex, for all businesses, amounts to AED 178 million (in 2023 prices). In the price control calculations (presented in Section 7), this NPV amount is spread over the companies' revenue requirements for the RC2 period. **Annex A** shows how this has been done for each business of the network companies.

6.2.19 In relation to updating the RAVs for the ex-ante RC2 capex, these are illustrated for each business in **Annexes A-1 to A-7**. **Table 6.6** summarises the results.

6.2.20 The total RAV for all the businesses remains relatively stable at around AED 89-93 billion over the course of the RC2 period (after adjustments for RC2 ex-ante capex). The RAVs shown in Table 6.6 are used as inputs to the RC2 price control calculations in Section 7.

Table 6.6: Opening RAVs updated for RC2 ex-ante capex

AED million, 2023 prices		2023	2024	2025	2026	2027
AADC	Electricity	8,966	8,839	8,765	8,590	8,392
	Water	2,714	2,677	2,588	2,474	2,346
	Recycled Water	405	423	439	443	434
ADDC	Electricity	15,241	14,930	14,807	14,375	13,749
	Water	5,648	5,742	5,881	5,820	5,879
	Recycled Water	1,832	1,883	1,879	1,875	1,846
TRANSCO	Electricity	27,348	26,765	27,030	26,902	26,280
	Water	14,550	14,436	14,168	13,878	13,516
ADSSC	Total	16,425	16,594	16,702	16,640	16,434
Total		**93,128**	**92,288**	**92,260**	**90,997**	**88,876**

6.3 Cost of capital

Draft Proposals

6.3.1 In the RC2 draft proposals, we agreed to set out the rate of return for the RC2 based on a real weighted average cost of capital (WACC) and notional gearing level. We also agreed to use a bottom-up methodology to determine the WACC,

which calculates each individual element of the WACC using international market data. This would include where appropriate (i) adjustments to ensure relevance to the sector companies' specific geography and business characteristics, and (ii) cross-checks against the relevant regulatory decisions, both for the individual elements of WACC and the overall estimate of WACC.

6.3.2 Based on the above approach, the RC2 draft proposals suggested a real WACC of 3.40% for the RC2 period. We indicated that we would continue to monitor the global capital markets and monetary policy developments and seek to update WACC estimates in the final decision.

6.3.3 We also welcomed the network companies' feedback on the impacts of the recently announced corporate income tax in the UAE, in particular on the options to allow the recovery of corporate tax by adjusting the WACC to a pre-tax cost of equity, or using a post-tax equity based WACC and provide a specific allowance for corporate tax in opex or MAR.

6.3.4 The table below presents our RC2 draft proposal for the WACC:

Table 6.7: Cost of capital calculations for the RC2 – Draft proposals

	Low	High	Mid-Point Average
Risk-free rate (real)	-0.20%	0.02%	-0.09%
Country risk premium	0.49%	0.49%	0.49%
Total Market Return	6.10%	8.42%	7.26%
Equity Risk Premium	6.30%	8.40%	7.35%
Equity Beta	0.64	0.76	0.70
Cost-of-equity (real)	4.32%	6.89%	5.55%
Cost-of-debt (real)	1.06%	2.22%	1.64%
Gearing	45%	65%	55%
Cost of capital (real)	**2.85%**	**3.86%**	**3.40%**

Source: Deloitte Draft Report on WACC for RC2

Responses

6.3.5 The network companies rejected the WACC of 3.4% proposed by the DoE in the RC2 draft proposals. They indicated that the DoE had not properly

considered the feedback previously provided nor the inflation-interest rate cycle that is emerging for the RC2 period. The network companies also provided a revised proposed WACC based on their updated analysis:

Table 6.8: Cost of capital calculations from the sector

	Initial sector position (Nov 2021)	Revised sector position (May 2022)
Risk-free rate (real)	0.58%	0.42%
Country risk premium	0.79%	0.88%
Total Market Return	7.81%	7.81%
Equity Risk Premium	8.39%	8.23%
Equity Beta	0.98	0.93
Cost-of-equity (real)	8.92%	8.68%
Cost-of-debt (real)	2.72%	2.55%
Gearing	55%	55%
Cost of capital (real)*	**5.51%***	**5.31%***

Notes: * Includes 0.50% aiming-up factor. Source: Sector responses to RC2 draft proposals

6.3.6 Since the publication of the draft proposals, we and our consultant engaged extensively with the sector companies to discuss WACC for RC2. We had several meetings and exchanges of data and information on the WACC between April and August 2022. In their responses by the end of June 2022 to the RC2 draft proposals, the network companies highlighted some of the areas in the WACC estimation where the discussions led to a common understanding and way forward on specific aspects of the approach and methodology. They also indicated other areas where there were differences between the DoE and the sector positions.

6.3.7 The companies' feedback, provided in their formal responses to the draft proposals and throughout our engagement, has been taken into account by our consultant and addressed in the consultant's final report on WACC, being published with this final decision. We refer to our consultant's final report on WACC for the full details of the network companies' views and respective responses and assessment.

6.3.8 The remaining paragraphs in this sub-section summarise briefly only the key aspects of the network companies' responses on different elements of the WACC calculations:

(a) In the network companies' view, the negative risk free rate proposed in the RC2 draft proposals was unrealistic given the global financial market landscape. The sector suggested that it was more appropriate to estimate the risk free rate by using a 6 month trailing average of (i) 20 year US Treasury Inflation-Protected Securities (TIPS), (ii) real AAA corporate bond yields (according to respondents, intended to provide a 'convenience premium' to counterbalance the downward bias in sovereign bonds) and (iii) a forward uplift applied to the estimate (to take account of an anticipated rise in interest rates during the RC2 period). In our subsequent engagement over the last months, the network companies agreed to use both 10 and 20 year TIPS and drop the use of corporate bonds in the estimation of the risk free rate.

(b) The network companies suggested that the WACC estimate should include a country risk premium of 0.88%. This is based on analysis conducted by the sector based on market data (primarily the spread between US and Abu Dhabi government bonds, cross-checked by proprietary analysis conducted by the sector's consultant and direct quotes provided by banks). The sector indicated that the inclusion of this parameter by the DoE corrected a previous flaw in the cost of equity calculation, but considered the DoE approach (with the use of a single data point) limited and not acceptable.

(c) On total market returns, the network companies used what they characterise as 'a widely used dataset of the total real US equity return from Dimson, Marsh and Staunton (DMS)', which ranges from 1900 to 2020, based on which they suggested a 7.81% estimate. In subsequent engagement, the sector agreed to use data sourced from the 10 and 20 year holding periods only, but also suggested using the data from Bloomberg covering the period 2000-2020. Based on this approach, they suggested a total market return of 7.62%. The network companies added

that if the DoE were to apply a US centric approach to the risk free rate then the same should apply to this parameter, and thus no weight should be put on data from other jurisdictions (e.g. UK).

(d) In relation to the equity beta, the network companies argued that the DoE's proposed figure has been set to a non-credible low level. They added that the DoE used a narrow list of comparators and did not consider Abu Dhabi specific factors which will influence the beta level. In our engagement over the last months, we agreed with the network companies to using a sample of 30 asset betas from international transmission and distribution companies (with at least 70% of their businesses in the transmission and distribution activities and with minimum exposure to wholesale generation and other trading activities). We also agreed to use equity betas from three international utility supply companies, the approach to de-lever and re-lever the equity betas, and in this process use a debt beta based on recent regulatory decisions from relevant jurisdictions and other market evidence. The network companies requested using higher weighting for the three supply businesses, based on which they suggested an equity beta of 0.93.

(e) The network companies suggested a cost of debt of 2.55%. They suggested to calculate cost of debt by adding to the risk free rate a debt premium and/or yield to maturity and expected long-term inflation for the UAE. They also defended the use of quotes from financial institutions to provide market pricing on new bond issues, as well as the inclusion of the actual debt transaction costs in real cost of debt estimates. The sector argued that the DoE proposed a non-credible cost of debt in the RC2 draft proposals, which had not been cross-checked with the market data.

6.3.9 In their response to the RC2 draft proposals, the network companies also defended the introduction of an 'aiming-up' factor to uplift the final WACC value. According to the sector, this parameter has been included in multiple overseas regulators' WACC determinations, and have provided 'a decade's worth of benchmarks to the DoE. The network companies' response highlighted that the

risk of setting a WACC which is too low will have material consequences on sector priorities, such as security of supply or attracting inward investment.

Assessment and way forward

6.3.10 We note the companies' agreement to have a real WACC for the RC2, estimated using a bottom-up methodology to calculate the WACC individual components, as well as the use of the CAPM model to estimate the cost of equity and a 55% notional gearing.

6.3.11 In relation to approach and methodology for calculating each WACC component and the key aspects of sector's response as summarised above, we summarise below the conclusions from our consultant, and also our position based on all the evidence made available to us:

(a) Our RC2 final proposal is to estimate the **real risk free rate** by using six month trailing averages of the 10 and 20 year US TIPS. We note that there is a stronger regulatory precedent for the use of 10 year government bonds, but on balance consider that the current level of global markets uncertainty may justify using 20 year tenures in the risk free rate estimation.. Based on this assessment of global uncertainty, we also propose to estimate a forward risk free rate. On the points raised by the sector, there are multiple examples of negative real sovereign bonds (e.g. in Europe and Asia), which thus are not only theoretical possible but also observed on the ground. We welcome the network companies' agreement to not using the corporate bonds for estimating the risk free rate, as it would contradict the purpose of finding a *risk free* instrument, and there is no ground nor established regulatory precedent for its use.

(b) Our WACC estimate for RC2 uses a **country risk premium** of 0.69%, based on Damodaran's updated estimate (June 2022) for Abu Dhabi. The utilisation of a country risk premium in the WACC estimation does not gather consensus both in terms of regulatory precedent and finance theory. While theoretically the use of benchmarks could justify an adjustment for differing levels of risk for different countries, the need for such adjustment will very much depend on the exact approach and

datasets used for benchmarking the WACC components (for example, where more than one country is used in the benchmarks, or where estimates are within the boundaries of cross-checks using local or regulatory decisions data, this may indicate that country risk may already be implicitly accounted for). The generic view that the absence of a country risk premium deems the WACC estimate flawed or incorrect, therefore is not accurate. On balance we consider that the level of current uncertainty in global financial markets (and the relatively higher emphasis on the US datasets in the RC2 WACC estimation) may justify using a country risk premium at this time. As indicated in the draft proposals, we source our country risk premium from Damodaran (June 2022), cross-checked with other sources (IHS Markit, which has a lower estimate for Abu Dhabi's country risk premium, and the companies' own higher estimate, albeit emphasising that this data/analysis is not publicly available and not validated).

(c) To estimate the **total market return**, we use the DMS dataset on the US equity markets, applying the average total returns for 10 and 20 year holding periods across four different approaches used by DMS. The total market return estimate for the RC2 WACC is 7.26%. We do not see benefit in adding Bloomberg data to the datasets used by DMS – we agree with the sector that DMS is widely used and accepted by regulators and finance practitioners. This approach is US focussed, albeit we do not consider that under finance theory principles using a US centric approach for the risk free rate would require exclusively using the US data also for the total market return. While the estimate is based on the DMS, we do cross-check it with datasets from the UK and from other regulators, which provide assurance that our proposed total market return is reasonable and within ranges observed elsewhere. Finally, we do recognise that focussing on the US market is likely to provide a total market return estimate towards the upper end of range. We consider that on balance this is acceptable at this time based on our assessment of current uncertainty levels in global financial markets.

(d) The RC2 final proposal for **equity beta**, to be used in the WACC estimation, is 0.829. We consider that the 14 benchmarks used in the RC2 draft proposals are a reasonable sample to estimate the equity beta, as it provides for comparators which more closely resemble the transmission and distribution businesses in Abu Dhabi. We consider that this sample would account for Abu Dhabi specific factors – because the capex approach in the regulatory framework adequately addresses investment risks and eliminates risks typically observed in competition-based utility markets such as those in the UK, and the US Dollar pegged currency effectively removes significant exchange rate and imported inflation risks. In addition, the risks from supply activities in Abu Dhabi – a geographic monopoly activity – are very different in nature and relatively insignificant when compared with other jurisdictions (in particular, the ones from which the three supply benchmarks proposed by the sector come). We are also aware that the sample selected leads to an estimated beta that sits along the top end of the benchmarks range from a wide set of other jurisdictions. In any case, and again based on our perception of the current uncertainty, we consider appropriate and propose to use at this stage the 33 benchmarks – with appropriate weighting for the three supply benchmarks – in the WACC estimation for RC2.

(e) The **cost of debt** is 2.04%. This is estimated by adding to the risk free rate a debt premium calculated from the average of Aa2/A1-rated default spread for the US non-financial firms. This has been cross-checked with estimates calculated based on the US denominated bonds issued by Abu Dhabi Government, and with estimates determined in recent regulatory decisions. Quotes from financial institutions are not public information and cannot be validated. The information characteristics surrounding private quotes are also likely to be significantly different from, and not consistent with, a notional efficient company in a regulated environment setting, and as such cannot be used as part of the regulatory process to estimate the WACC. Nevertheless, we acknowledge the constructive engagement from the sector in this area

and agree to use the bank quotes data as a high-level cross-check to the reasonability of our estimate. Our estimate for the cost of debt also includes debt transaction costs which relies less on regulatory precedent and more on our assessment of the current uncertainty.

6.3.12 Finally, the DoE considers that there is no justification for introducing **aiming-up** in the WACC estimation as proposed by the sector. In our view, this type of uplift factor is arbitrary, lacks any grounds in finance or economic theory, and we maintain that it has no established regulatory precedent to justify it. We acknowledge the examples of regulatory decisions provided by the sector, but note that this set of examples is very limited and many more regulatory decisions exist where no specific aiming-up factor was considered. Where global financial markets are operating under normal circumstances, the established regulatory best practice is therefore not to have an aiming-up uplift in the WACC. We agreed with the sector to consider the merits of introducing it for the RC2, and our assessment and the assessment of our consultant is that introducing this factor in the way proposed is not justified. We note in particular that in relation to the issues or risks identified by the sector to justify the aiming-up:

(a) Under the capex regulatory framework, the capex reviews together with the regular, annual processes to plan network investments over the short, medium and long term, appears to address adequately the issue about the identification of required investments. We see no evidence – either in plans put forward for the RC2 period and beyond, or in historic performance – to suggest that there are issues with a (lower) level of investment in Abu Dhabi.

(b) We also note that the uncapped DSM incentive likely means a relatively higher upside from the incentives package in Abu Dhabi. Even in the absence of the DSM incentive, the upside/downside difference in the incentives package would be in the single digit figures. This is no justification for introducing any aiming-up, and clearly no justification for approximately AED 500 million/year that would need to be paid by end users and Government if the 0.50% aiming-up proposed by the sector

would be introduced, based purely on risk-aversion from players and decision makers in the sector.

(c) On a final note, the 4.51% WACC in our final proposals is not the mid-point but rather the top of the range. As explained above and detailed also further below in this section, there are also a number of areas where we considered the current levels of uncertainty, and thus risks, to come to the final view on the estimation of the individual WACC components and overall WACC. We consider that this approach is more reasonable, evidence-based and structured than simply and arbitrarily uplifting the WACC by an aiming-up factor. As a result of this approach and based on the assessment of the specific circumstances of local and world financial markets at the time that this review is undertaken – the WACC proposed for RC2 is not only above the typical regulatory approach of using the mid-point of the range identified, but the range for the WACC that we have come up with is itself higher than it would otherwise be if the future economic environment was assessed to be less uncertain. In conclusion, we do not consider that there is any case for introducing aiming-up in the WACC estimation as proposed by the sector companies.

WACC approach and estimates for the RC2

6.3.13 Based on the companies' supporting feedback, our final proposals for RC2 maintain the use of the CAPM approach to estimate the cost of equity, the use of a notional gearing, and setting WACC in real terms.

6.3.14 Accepting the network companies' suggestions and our consultant's final report recommendations, the final proposals use a bottom-up approach to consider the element-by-element estimation of the WACC. These results are then cross-checked with individual components estimated by relevant regulators in other jurisdictions.

6.3.15 Based on our assessment set out above, and the consultant's final report for the details on the analysis and estimation of each individual element of the WACC, the table below presents our final proposal for the cost of capital

calculations for the RC2. This indicates a range of 3.78% to 4.51%, with a point estimate of 4.29% for the overall real cost of capital in the RC2.

Table 6.9: RC2 cost of capital calculations – RC2 consultant proposals

	Low	High	Point estimate
Risk-free rate (real)	0.08%	0.39%	0.23%
Country risk premium	0.33%	0.88%	0.69%
Total Market Return	6.72%	8.51%	7.62%
Equity Risk Premium	6.64%	8.12%	7.38%
Equity Beta	0.797	0.861	0.829
Cost-of-equity (real)	5.70%	8.26%	**7.04%**
Cost-of-debt (real)	1.43%	2.49%	**2.04%**
Gearing	45%	65%	**55%**
Cost of capital (real)	**3.78%**	**4.51%**	**4.29%**

Source: Deloitte Final Report on WACC for RC2

6.3.16 The consultant's WACC estimate for these final proposals is higher than the RC2 draft proposals WACC of 3.40%. This is in part justified by the events that took place since mid-February 2022, in particular the effects of the war in Ukraine and the aftermath of covid in economic conditions worldwide. The impact of these events meant higher inflation that led to the central banks raising interest rates. Yields from sovereign bonds are increasing since the beginning of last year and this effect has accelerated from the second quarter of 2022. The increase in these yields directly impacts the estimated risk free rate, and thus the estimated cost of capital for the RC2.

6.3.17 The consultant's proposed WACC is 4.29% (which represents the percentile 70 of the range for the WACC). However, the financial markets recently have been characterised by significant volatility and uncertainty and economies around the world still face unprecedented uncertainty. Accordingly, as also noted by the consultant, selecting a WACC towards the top end of the range could be an effective approach in the price control in order to deal with such volatility. Based on our consultant's analysis and our assessment of the unprecedented

uncertainty in the financial markets at the time of setting RC2, our final proposals to use a WACC of 4.51%.

Role of our assessment of uncertainty level in WACC estimation

6.3.18 As alluded above in this section, the past year was characterised by a number of events that impacted the global economic and financial conditions. The aftermath of Covid19, that the world started to realise by the end of 2021, resulted in disruption of supply chains that remained beyond the end of covid related lockdowns. It also resulted in high inflation in most developed and developing economies, with levels not seen in the last three decades. The war in Ukraine compounded economic worries, led to a crisis in energy markets and further accelerated inflation. All these events resulted in higher volatility and increased uncertainty for the world economies in the short and medium terms.

6.3.19 As mentioned above, one immediate effect of this increased uncertainty has been the increase in government bond yields worldwide. We have considered the impacts of this increased uncertainty when coming to a view on the reasonable estimate of each individual WACC component. In our final decision, this has gone well beyond updating the risk free rate based on the latest higher yields that result directly from the recent interest rates hikes. In fact, our assessment of the current, unprecedented levels (at least in recent history) of uncertainty in global financial markets resulted in selection of datasets and/or approaches that in most cases led to higher estimates of individual WACC components, in relation to what would be the case under an environment of normal economic cycles. This is the case in most of the individual WACC components:

(a) In the risk free rate, where we use the US treasury bonds of 20 year tenures in addition to the more established use of the 10 year bonds in regulatory practice, and use a forward uplift to the estimate; we also put less focus on data from other jurisdictions, like the UK and Australia, which would likely push down the estimate;

(b) In the country risk premium, both because its utilisation is not widely accepted in regulatory practice, and the estimate we use is on the top end of the data that we have available from public sources;

(c) In the total market return, given our emphasis on the US sourced data and the fact that the US likely represents the top end in what concerns investment returns during the last century;

(d) In the equity beta, where the dataset selected results in an estimate which is at the top end of a wide set of regulatory decisions in recent years; and

(e) In the cost of debt, where we include an explicit uplift for debt transaction costs.

6.3.20 As indicated in our assessment above in this section, we consider that our final proposal on WACC is adequate and strikes a balance between the interest of consumers and the Government and the needs to finance the sector – but this is purely based on our assessment of the current levels of uncertainty in global markets. For clarity, the datasets, approaches and methodologies highlighted above on the estimation of individual WACC components, including our decision to propose the top of the range for the WACC, are not and should in no way be interpreted as regulatory precedent for future decisions and price control reviews. They result from the extraordinary circumstances that we observe in global markets at the time of conducting this review, and unless such extraordinary circumstances are repeated, it is not likely that future reviews will apply the same approaches.

Cross-check against recent estimates from relevant regulatory decisions

6.3.21 Our final proposals for RC2 WACC (4.51%) is slightly lower than the WACC of 4.6% estimated for the RC1 period. This is consistent with the recent regulatory decisions in other jurisdictions (the UK, Australia and Ireland), which show a decreasing trend in the cost of capital of regulated utilities. Table 6.9 below summarises these recent cost of capital estimates from the relevant overseas regulators with similar regulatory regime as Abu Dhabi.

Table 6.10: WACC estimates from recent regulatory decisions – UK, Australia and Ireland

Regulator	Sector	Past WACC estimates	Current RPI-Vanilla WACC
Ofwat	Water & wastewater	3.74% (2014)	1.96% (2019)
Ofgem	Gas & Transmission	4.2% (2012) [39]	1.98% (2020)
CMA	Water & wastewater	3.78% (2015)	2.20% (2021)
UR	Water & wastewater	3.44% (2014)	1.99% (2021)
AER	Electricity and gas	6.37% (2016)	4.91% (2021)
ESCOSA	Water	7.10% decreasing to 6.35% (2016)	5.1% decreasing to 4.55% by 2024 (2020)
ERA	Rail (PTA)	5.56% (2016)	3.95% (2021)
CRU	Electricity transmission and distribution	4.7% (2015)	2.65% to 4.0% (2020)
CRU	Water	5.05% (2016)	3.60% (2019)

Source: RC2 Final Report, Deloitte

(1) UK estimates represent real RPI-vanilla WACC.
(2) The 2012 figure corresponds to RIIO-GD1, using the first-year value for the cost of debt. The values for transmission (T1) were higher than the GD1 figure – around 4.5% on average using the first-year value for the cost of debt.
(3) WACC estimates in Australia and Ireland are expressed in nominal terms (and thus are higher than those estimated by UK regulators).

6.3.22 The above figures from the recent overseas regulatory decisions may not be directly comparable to the WACC estimate for Abu Dhabi, for example due to different treatment of tax (pre-tax or post-tax) and inflation (real or nominal). However, these figures and the capital market estimates highlight a key downward trend in the cost of capital.

6.3.23 This provides further support to the WACC estimate in our final proposals. Our consultant has however also taken into account the latest developments where we have seen increase in the interest rates in the capital markets and central banks' monetary policies, which as explained above raised the WACC from 3.40% in the RC2 draft proposals to 4.51% in these final proposals.

6.3.24 Since November 2022, when we concluded our final proposals for the RC2, we have continued engaging closely with the network companies, their shareholder TAQA, the Department of Finance, and Abu Dhabi's Government in order to conclude the RC2 review. As consequence of this further engagement, it was decided to establish the WACC for the sector at 4.9%. The RC2 final decision is therefore to use 4.9% as the WACC for the RC2 period. This does not however set any precedent for RC3 or any future WACC determinations.

Corporate tax

6.3.25 Further to the Government announcement in January 2022 about the introduction of corporate tax in the UAE, the price control framework will be adjusted to allow the recovery of corporate tax costs through an appropriate opex allowance. The provision of an opex allowance to be made for corporate tax means that there is no additional adjustments required to the RC2 WACC – which is effectively a 'vanilla' WACC, providing for a pre-tax cost of debt and a post-tax cost of equity.

Final decision

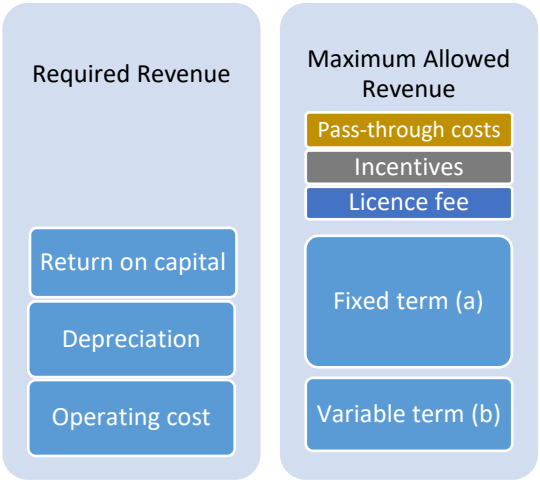
6.3.26 For this final decision, the real WACC for the RC2 price controls is 4.90%.

7. Price control calculations

7.1 Introduction

7.1.1 The price control calculations involve using allowances for operating costs, regulatory depreciation and returns, together with the present value calculations to derive the companies' own or core price control revenues (i.e. revenue requirement excluding pass-through costs). We then use these core price control revenues to determine base values for the new price controls, which will be included in the new price control conditions in the licences for the four companies. Once the new price control arrangements are put in place, this level of base revenue will be subject to cost pass-through terms (see Section 3), and incentive arrangements (see Section 8), allowing the determination of the total price control revenue.

Figure 7.1: Building blocks of revenue requirement



7.1.2 This Section 7 describes the overall framework for price control calculations used in this final decision. Earlier sections discuss and set out various inputs required for these calculations. This section then describes the price control calculations in detail and sets out the results and implications. We are issuing two Excel based financial models to the companies (RC2 Financial Model to update the RAVs and calibrate the notified values and RC2 Depreciation Model referred to in Section 6) alongside this final decision. Annexes A and B set out the main calculations from the RC2 Financial Model and RC2 Depreciation

Model and line-by-line description of these calculations by reference to the models.

7.2 Framework for price control calculations

7.2.1 Setting the price controls means determining the values of the fixed term 'a' and the coefficient of revenue driver 'b' in the MAR formula, and the value of the X-factor. In this final decision, the DoE has used the following framework for its price control calculations, which with a few differences, is consistent with the one used at the previous price control review.

NPV approach

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

Required revenue = Opex + Depreciation + Return on capital
+ RC1 additional efficient capex financing costs foregone

where:

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

(b) Depreciation is calculated using a straight-line method and an assumed average asset life separately in respect of the initial RAV (at the time of first price control setting) and each year's capex during PC1 to RC1 and extended life for capex during RC1 and onwards.

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

(d) NPV of the foregone financing costs in respect of the additional efficient RC1 capex, are applied to the NPV of the required revenue over the RC2 period.

7.2.3 The projected MAR for each year of the control period is calculated using the revenue driver projections, appropriate weightings for the fixed and variable terms, and an appropriate 'X' factor (set to zero for all businesses in RC2), using the MAR formula and revenue driver projections set out in Section 2:

$$MAR_t = a_t + (b_t \times Revenue\ driver_t)$$

7.2.4 For the purpose of these calculations, pass-through costs, DoE's licence fee (term "L"), incentive amount (term "Q") and correction factor (term "K") are excluded from the MAR formula.

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

NPV of projected annual MARs = NPV of required annual revenues

7.2.6 All calculations are carried out in real prices (i.e., in 2023 prices, excluding the effect of inflation for future years).

Financial models

7.2.7 We have developed a Microsoft Excel based financial model to carry out the RC2 price control calculations (referred to as the "**RC2 Financial Model**") leading to determination of the notified values "a" and "b" for each company or business. The same model also includes the calculations discussed in Section 6 relating to efficient RC1 capex and related foregone financing costs and updating of RAVs for such capex as well as ex-ante RC2 capex.

7.2.8 As discussed in Section 6, another separate Excel based model (the RC2 Depreciation Model) has also been developed to calculate annual depreciation on the initial RAV (i.e. RAV at the time of first price control setting) and on subsequent efficient or provisional capex for each year up to 2022. The RC2 Financial Model takes the total depreciation on RAV and capex to date (in 2023 prices) directly from this RC2 Depreciation Model.

7.2.9 The RC2 Financial Model is substantially the same as the models used at the previous price control reviews. At this review, all calculations are carried out in real, 2023 prices. The discount rate used in the present value or NPV

calculation is the real cost of capital. The NPV of costs is calculated on a mid-year basis.

7.2.10 Both RC2 Financial Model and RC2 Depreciation Model are being issued to the network companies along with this final decision. Annexes A and B describe these models on a line by line basis.

7.3 Price control calculations

7.3.1 Annex B to this paper presents detailed price control calculations for each business (extracted from the relevant spreadsheets of the RC2 Financial Model) separately in nine sub-annexes, namely Annexes B.1 through B.9. These calculations are presented in a standard format for all businesses. They are explained in Annex B with reference to "Line" numbers used in these Annexes and in the RC2 Financial Model.

Notified values

7.3.2 Based on these price control calculations, the DoE's final decision for the notified values for RC2 are summarised in Table 7.1 below. The notified values given in this table (to the accuracy to decimal places expressed therein) will be those used to calculate MARs when the price controls are implemented.

Table 7.1: Notified values for RC2 – final decision

2023 prices		X	a		b	
AADC	Electricity	0	AEDm	1,362.40	1,388.87	AED / customer account
	Water	0	AEDm	528.82	899.44	AED / customer account
	Recycled Water	0	AEDm	41.78	n/a	Not applicable
ADDC	Electricity	0	AEDm	2,072.54	813.02	AED / customer account
	Water	0	AEDm	1,106.16	521.06	AED / customer account
	Recycled Water	0	AEDm	205.00	n/a	Not applicable
TRANSCO	Electricity	0	AEDm	3,316.60	10.83	Fills / kW
	Water	0	AEDm	2,052.22	155.73	AED / TIGD
ADSSC	Total	0	AEDm	**1,721.40**	**0.5439**	AED / m^3 wastewater treated

7.3.3 These notified values are for 2023, the first year of RC2, expressed in 2023 prices based on the assumed UAE CPI of 106.81 (base year 2014 = 100). The adjustment for actual inflation for 2022 will be done upon its availability during 2023 i.e. during the RC2 period itself via the Price Control Return (PCR)

process. For subsequent years, these notified values will be adjusted by CPI-X indexation in the usual way.

7.3.4 Table 7.2 presents the projected MAR in respect of "own" costs (i.e., excluding pass-through costs, if applicable, licence fee, Q and K terms) for each business for 2023-2026:

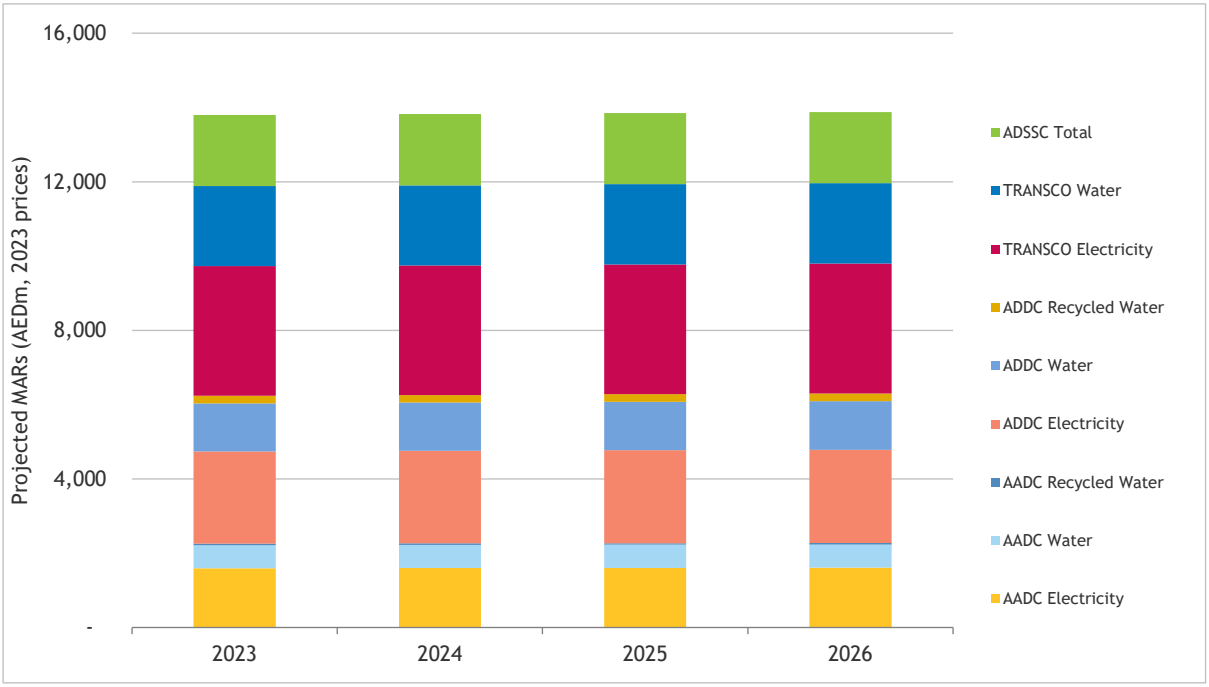
Table 7.2: Projected MAR over RC2 period – final decision

AED million, 2023 prices		2023	2024	2025	2026
AADC	Electricity	1,596	1,601	1,606	1,611
	Water	620	621	623	625
	Recycled Water	42	42	42	42
ADDC	Electricity	2,426	2,435	2,443	2,451
	Water	1,294	1,299	1,304	1,310
	Recycled Water	205	205	205	205
TRANSCO	Electricity	3,488	3,486	3,493	3,499
	Water	2,161	2,160	2,160	2,160
ADSSC	Total	1,908	1,914	1,914	1,914
Total		**13,739**	**13,763**	**13,789**	**13,817**
Total (using 4.51% WACC) – for information only		**13,383**	**13,405**	**13,431**	**13,458**

7.3.5 In total, the four network companies' MAR (excluding pass-through costs) is expected to be around AED 13.7 billion in 2023 reaching AED 13.8 billion by 2026.

7.3.6 Figure 7.2 presents the projected MAR profile for each company over the RC2 period, indicating that TRANSCO accounts for the largest share (about 41%) of the companies' total MAR, followed by ADDC (29%), AADC (16%) and ADSSC (14%):

Figure 7.2: Projected MARs over RC2 period – to be updated



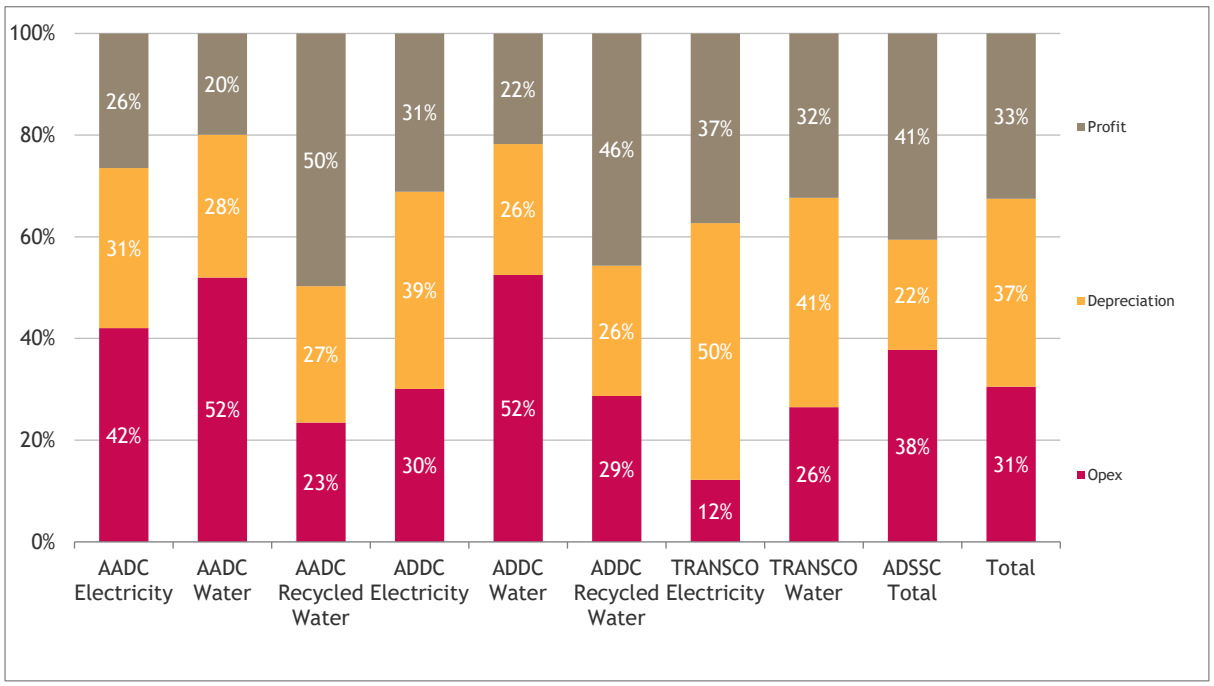
7.4 Analysis of final decision

Constituents of projected MARs

7.4.1 Figure 7.3 below presents the percentage breakdown of total revenue (excluding pass-through costs) into projected opex, depreciation and profits in NPV terms for each company. For this purpose, the RC1 capex related foregone financing costs have been treated as part of the profits.

7.4.2 This figure shows that capital cost related components (i.e. depreciation and return on capital) account for a significant proportion of the revenue for each company (around 68%), compared to opex which accounts for only 32% of revenue.

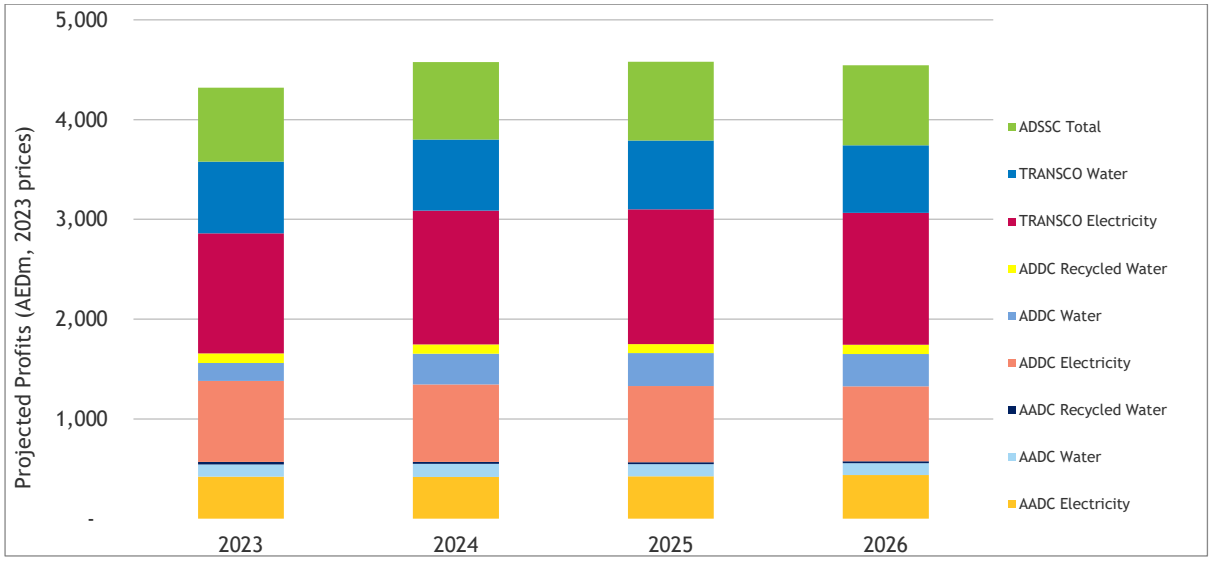
Figure 7.3: Constituents of MARs (excluding pass-through costs) – RC2 final decision



Projected Profits

7.4.3 Figure 7.4 shows the profile of projected profit (or more precisely, the return on capital) for the companies.

Figure 7.4: Projected profits over the RC2 period



7.4.4 Overall, the total profits for the four companies are expected to be of the order of AED 4.5 billion (2023 prices) a year on average over the RC2 period, as compared to the actual profit of AED 4.2 billion in 2021 (in 2023 prices). The

average projected profit for each company over the RC2 period is as follows (2023 prices):

(a) AADC: about AED 570 million per annum

(b) ADDC: about AED 1,100 million per annum

(c) ADSSC: about AED 780 million per annum

(d) TRANSCO: about AED 2,000 million per annum

7.4.5 The main driver for higher annual average profit over the RC2 period compared to the actual accounting profits observed during the RC1 period is the higher WACC allowed for RC2 (4.90%) compared to RC1 (4.60%), partially offset by the factors that make accounting profit higher than the implied regulatory profit such as:

(a) Lower accounting depreciation (cost used to calculate accounting profit) than the regulatory depreciation (cost to calculate regulatory profit); and

(b) Correction factor (for TRANSCO), net of PIS bonuses, other incomes and reversals of provisions for doubtful debt and obsolete inventory for any company, reflected in the actual profit but not reflected in the implied regulatory profit.

Effect of final decision on sector costs

7.4.6 Figures 7.5, 7.6, 7.7 and 7.8 show the expected effect of this final decision on the total price-controlled costs and unit costs for electricity, water, recycled water and wastewater, respectively (in 2023 prices). The MAR per unit has been calculated using units transmitted for electricity and water businesses (in fils/kWh and AED/TIG, respectively), and units treated for sewerage business (in AED/m^3).

Figure 7.5: Projected trend of price-controlled MAR for RC2 – electricity

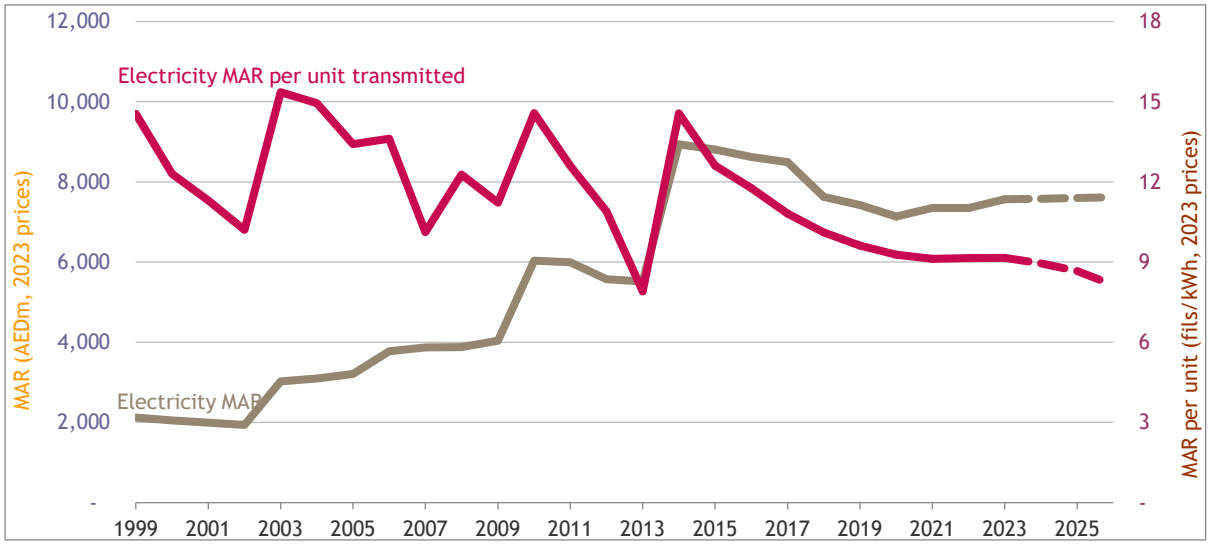


Figure 7.6: Projected trend of price-controlled MAR for RC2 – water

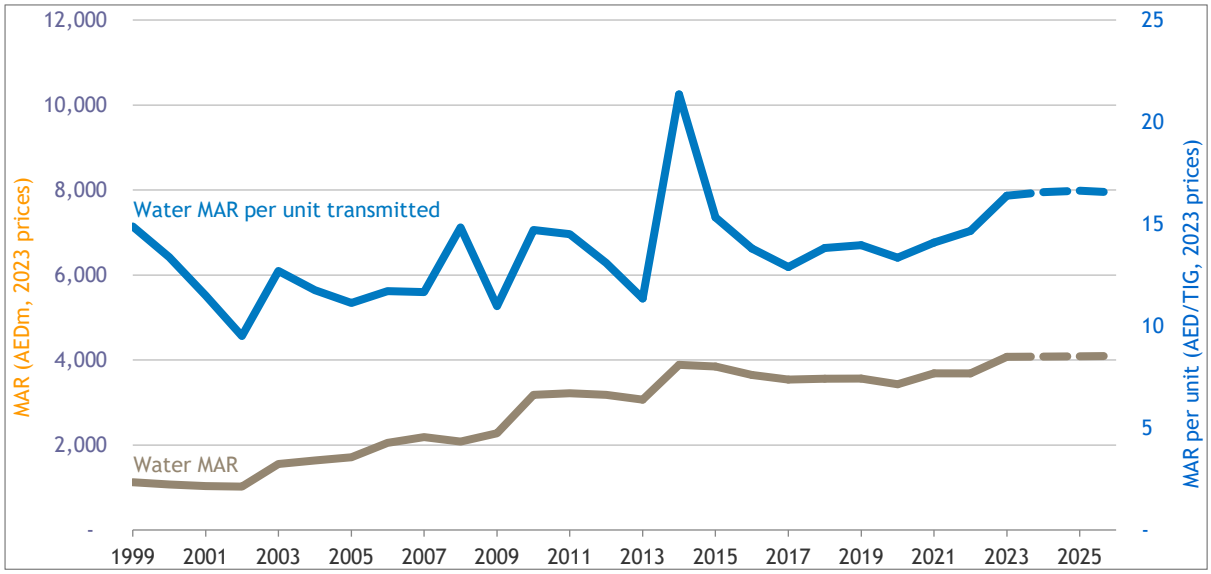


Figure 7.7: Projected trend of price-controlled MAR for RC2 – recycled water

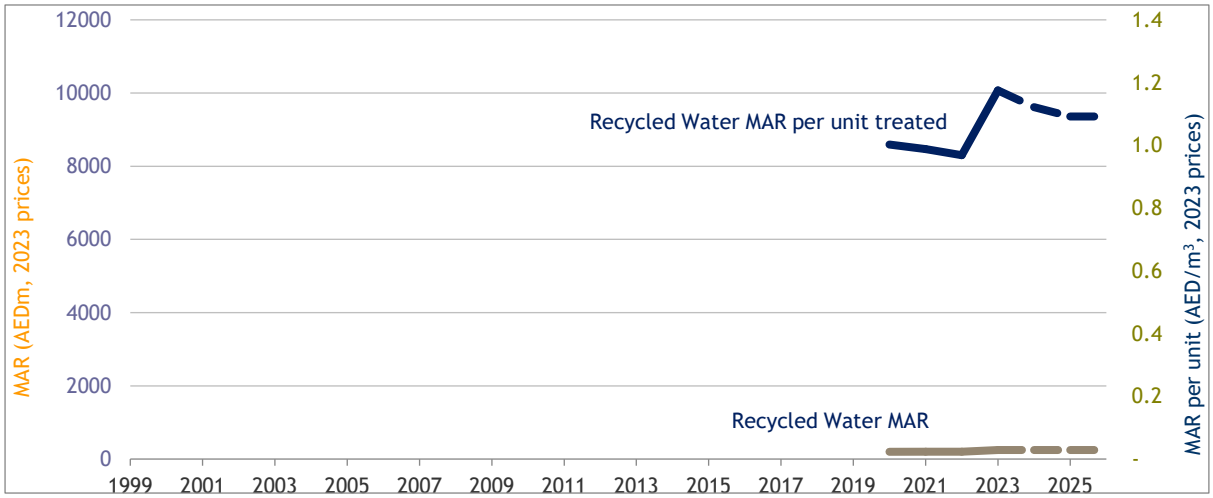
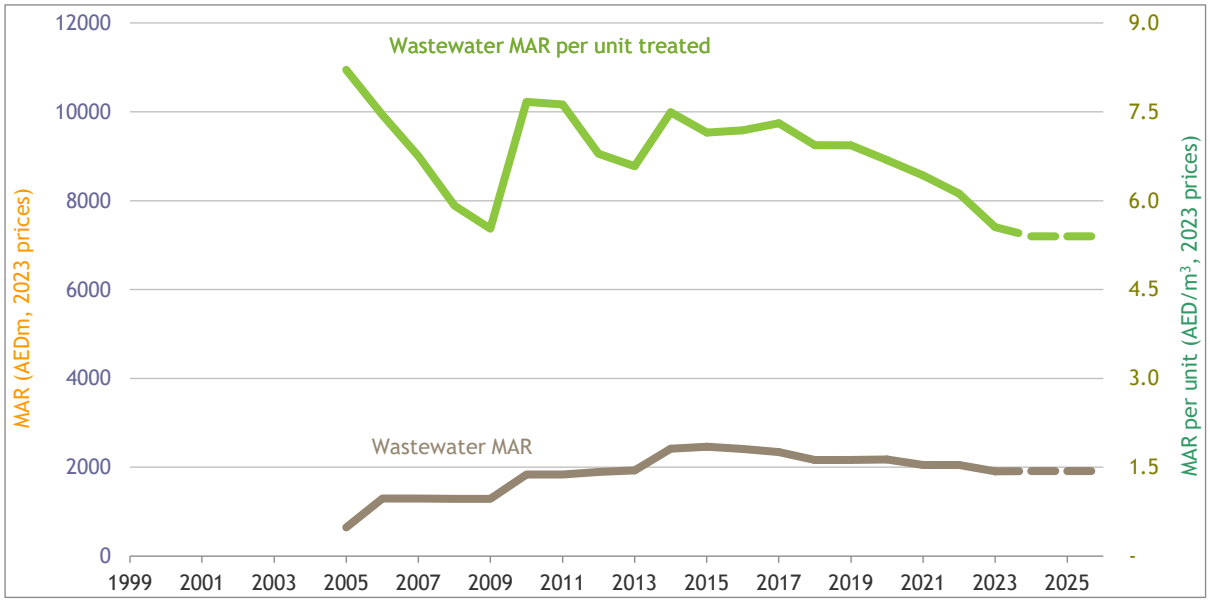


Figure 1.10: Projected trend of price-controlled MAR for RC2 – wastewater



7.4.7 These charts indicate that the annual MARs are expected to increase from inception to date. However, the increase in total MAR is less than the projected increase in demand. This means that the final decision is expected to result in a declining/stable trend for the unit cost for electricity, water, recycled water, and wastewater businesses. This shows that:

(a) For electricity: while the total MAR for AADC, ADDC and TRANSCO (excluding pass-through costs) is expected to increase by 257% from 1999 to 2026 (in real terms), the MAR per unit transmitted is expected to be lower by 44% than that in 1999 (in 2023 prices);

(b) For water: the total MAR for AADC, ADDC and TRANSCO (excluding pass-through costs) is expected to increase by 265% from 1999 to 2026 (in real terms), but the MAR per unit transmitted is expected to increase only by 11% than that in 1999 (in 2023 prices);

(c) For recycled water: MAR for AADC, ADDC (excluding pass-through costs) is expected to increase by 24% from 2020 to 2026 (in real terms) with corresponding 9% increase in the MAR per unit over the same period (in 2023 prices); and

(d) For wastewater: the total MAR (excluding pass-through costs) is expected to increase by 48% from 2005 to 2026 (in real terms), the MAR per unit is expected to be lower by 34% than that in 2005 (in 2023 prices)

Comparison against 2021 actual MARs

7.4.8 Table 7.3 compares the projected MARs for RC2 against the 2021 actual MARs. This comparison excludes performance bonuses and penalties, correction factors, pass-through costs and other financial adjustments or derogations.

7.4.9 The total 2023 projected MAR is 4% higher than the 2021 actual MAR in real terms. The projected MARs only marginally increase over the RC2 period.

7.4.10 Similarly, MAR per unit transmitted or treated is projected to decline (in 2023 prices) from 2021, except for water and recycled water as follows:

(a) Electricity: decline by about 1.05 fils/kWh or 11% by 2026;

(b) Water: increase by about 2.45 AED/TIG or 17% by 2026;

(c) Recycled Water: increase by about 0.10 AED/m^3 or 11% by 2026; and

(d) Wastewater: decline by approximately 1.03 AED/m^3 or 16% by 2026.

Table 7.3: Comparison of RC2 projected MARs against 2021 actual MARs

AED million		2021 actual MAR		2023 MAR (2023 prices)		2026 MAR (20123 prices)	
		2021 prices	2023 prices	MAR	% increase from 2021	MAR	% increase from 2021
AADC	Electricity	1,337	1,338	1,596	19%	1,611	20%
	Water	559	559	620	11%	625	12%
	Recycled water	49	49	42	-14%	42	-14%
ADDC	Electricity	2,505	2,507	2,426	-3%	2,451	-2%
	Water	1,058	1,059	1,294	22%	1,310	24%
	Recycled water	152	152	205	35%	205	35%
TRANSCO	Electricity	3,503	3,505	3,488	0%	3,499	0%
	Water	2,066	2,068	2,161	5%	2,160	4%
ADSSC	Total	2,050	2,052	1,908	-7%	1,914	-7%
Total		**13,278**	**13,288**	**13,739**	**3%**	**13,817**	**4%**

Comparison against RC1 average MARs

7.4.11 Table 7.4 compares the projected average MARs for the four network companies during the RC2 period against the corresponding average MARs during the RC1 period. This comparison excludes performance bonuses and penalties, correction factors, pass-through costs and other financial adjustments or derogations.

Table 7.4: Comparison of projected RC2 and RC1 average MARs

AED million, 2023 prices		RC1 average MARs	RC2 average MARs	Difference	
				AED million	%
AADC	Electricity	1,373	1,603	231	17%
	Water	554	622	68	12%
	Recycled Water	49	42	-7	-14%
	Total	1,975	2,267	292	15%
ADDC	Electricity	2,482	2,439	-44	-2%
	Water	1,053	1,302	249	24%
	Recycled Water	151	205	54	36%
	Total	3,686	3,945	259	7%
TRANSCO	Electricity	3,521	3,491	-30	-1%
	Water	1,978	2,160	182	9%
	Total	5,499	5,652	152	3%
ADSSC	Total	2,121	1,913	-208	-10%
Total	**Grand total**	**13,281**	**13,777**	**496**	**4%**

7.4.12 The average RC2 MARs are AED 496 million higher than the average RC1 MARs due to AED 700 million higher annual opex allowances and AED 250 million return on capital with higher WACC allowed in RC2 (4.90%) than RC1 (4.60%), partially offset by:

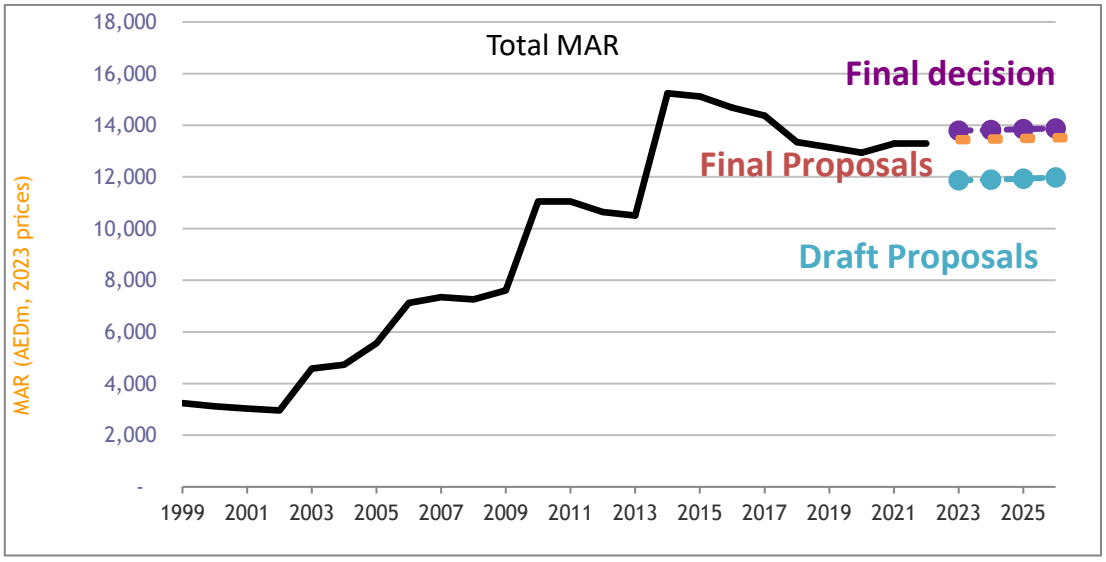
(a) AED 125 million transfer of SO costs from TRANSCO to EWEC; and

(b) AED 300 million net decrease in depreciation allowance, being the net impact of: (i) AED 500 million decrease in annual depreciation on initial RAVs for electricity businesses of ADDC and TRANSCO and on initial RAVs for ADSSC in RC2 on completion of their useful lives, offset by (b) AED 200 million increase in average annual depreciation allowance for new capex allowed in RC2.

Comparison against draft proposals

7.4.13 Figure 7.8 below compares the total MAR for RC2 projected in this final decision against that in the draft proposals:

Figure 7.8: Total projected MAR - final decision vs draft and final proposals



7.4.14 The table below shows that the RC2 final decision represent an increase in the total annual MAR by about AED 1.9 billion (2023 prices) or about 16% compared to the RC2 draft proposals, mainly due to increase in opex allowances and WACC, addressing the companies concerns (discussed in Sections 4 and 6) on the RC2 MARs proposed in the RC2 draft proposals.

Table 7.5: Average annual projected MARs for RC2 – final v draft proposals

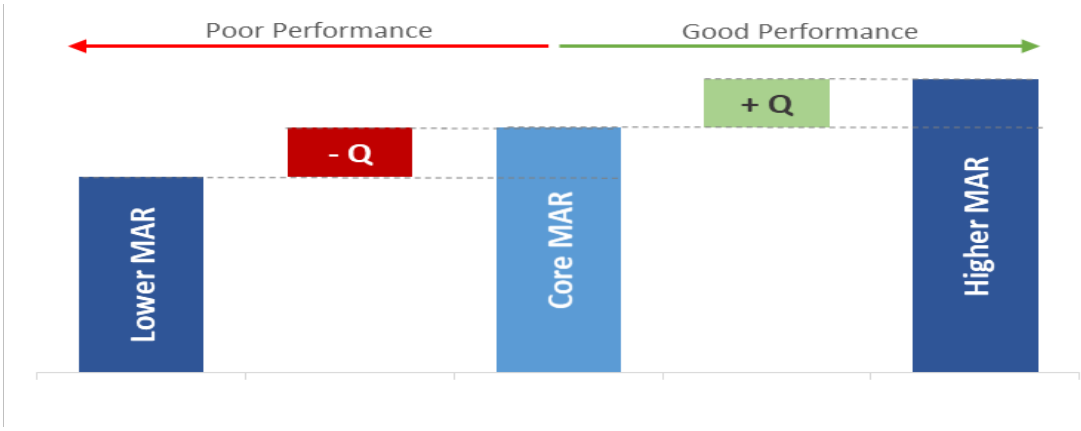
AED million, 2023prices		Draft proposals average MARs	Final decision average MARs	Difference AED million	Difference %
AADC	Electricity	1,340	1,603	263	20%
	Water	520	622	102	20%
	Recycled Water	32	42	9	29%
	Total	1,893	2,267	375	20%
ADDC	Electricity	2,150	2,439	288	13%
	Water	1,068	1,302	234	22%
	Recycled Water	161	205	44	27%
	Total	3,379	3,945	566	17%
TRANSCO	Electricity	3,014	3,491	477	16%
	Water	1,778	2,160	382	21%
	Total	4,792	5,652	859	18%
ADSSC	Total	1,854	1,913	59	3%
Total	**Grand total**	11,918	13,777	1,859	16%

8. Incentives

8.1 Introduction

8.1.1 Price controls for network companies include a Performance Incentive Scheme (PIS) designed to encourage improvements in the quality of service, outputs and performance. Companies are rewarded and penalised for improved and deteriorating performances respectively on an annual basis against pre-defined performance indicators and targets. This financial reward or penalty is applied through an upward or downward adjustment to MAR via a Q factor, often following verification of performance by an independent TA. In RC1, we also introduced reputational incentives where the companies report their performance on certain indicators without any financial reward or penalty.

Figure 8.1: Performance incentive scheme



8.1.2 This Section 8 clarifies the overall approach to formulating performance incentives, along with their key principles, respective performance areas, design specifics, calibration details and magnitude. It also summarises the licensees' responses to the RC2 draft proposals, our assessment of these responses, and our final decision on the incentives.

8.1.3 Full details of the proposed incentives – including the licensees' responses to the draft proposals, the assessment of those responses and the way forward– are included in our consultant's final report on incentives which is being issued to the four network companies (or 'licensees') alongside this final decision.

8.2 Key principles and areas for incentives

Draft Proposals

8.2.1 In the RC2 draft proposals, we:

(a) Maintained the key overarching principles to guide the selection and development of incentives based on:

i. Outputs valued by end-users, providing flexibility to the network companies to make the appropriate strategic and operational decisions (e.g. design the processes or develop the projects) to meet specific output performance levels;

ii. Addressing areas where improvements are needed and where incentives would better deliver incremental benefits to end users; and

iii. SMART (i.e., specific, measurable, achievable, relevant and time based) design.

(b) Categorised incentives into five key areas: performance reporting, quality of supply, network performance, sustainability and customer service, in addition to reputational incentives.

Responses

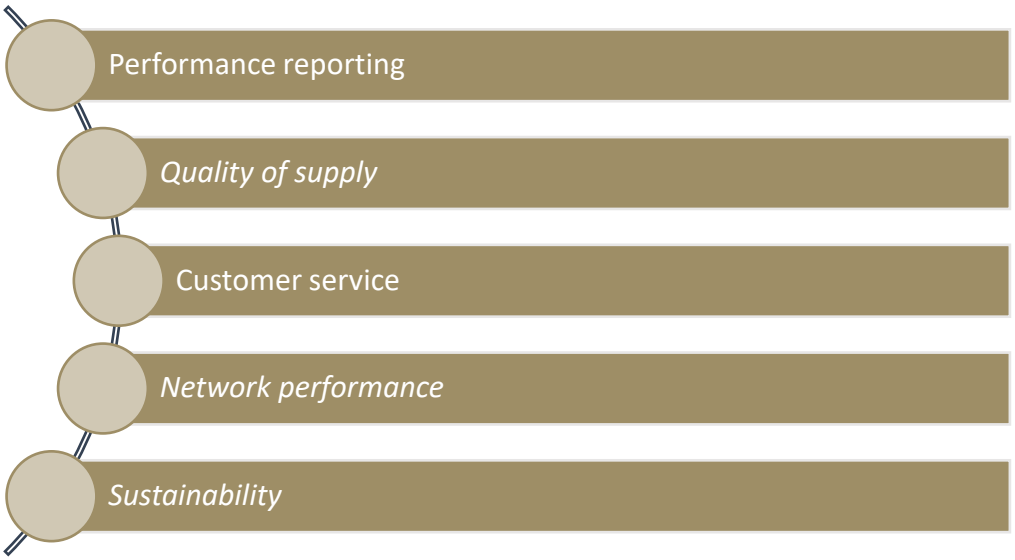
8.2.2 The network companies welcomed the expansion of incentives categories, and accepted the concept of SMART, though highlighting the rationale for their proposed selection criteria to add more categories to these criteria and make it more auditable.

8.2.3 The network companies also indicated that in principle they were not against the overarching objective that performance incentives should be based on outputs that meet customer needs. However, they defended that incentives should not be based on the idea of customers' needs only, but may relate to a range of deliverables from customer expectations to societal and government needs and requirements. They also indicated that many incentives are not incremental in nature and require long-term investment plans before the customer-centric outputs can be delivered.

Assessment and way Forward

8.2.4 We welcome the sector's positive response and, accordingly, our final decision will maintain five key high-level areas of incentives for the RC2, as set out in the draft proposals and shown in the figure below:

Figure 8.2: Main areas of the performance incentives – final decision



8.2.5 We note the sector companies' view that customer centricity should not be the sole criteria for incentives selection. The DoE's intention was to base the selection of incentives on the required performance outputs that address many aspects of the licensees' performance deliverables/outputs with the customer valued needs being the core criteria. We accept the principle that outputs can cover a wider variety of benefits including societal and governmental, and this is not exclusive of incentives being also customer centric.

8.2.6 We also clarify that incremental benefits do not necessarily mean linear, uniform periodic benefits and that, depending on the incentive, the magnitude of benefits may vary year on year. We agree that some incentives may generate benefits at a faster pace in early years and then may slow down in subsequent years, and the opposite is also possible – as in the example provided by the sector companies, where investments may take longer to realise in tangible benefits. Nonetheless, the fundamental principle behind the notion of incremental benefits is not in our view related with the constant pace or uniformity of benefits. It is rather the notion that incentives are linked to

continuous improvements in performance (and thus financial rewards), or put in a different way, they are related with a fundamental principle of incentivising non-deterioration or improvement in performance, regardless of the magnitude of improvements in performance year-on-year.

Final Decision

8.2.7 In light of the above, our final decision on the key principles and areas of incentives remain the same as the draft proposals.

8.3 Design of incentives

Draft Proposals

8.3.1 In the RC2 draft proposals, we set out our views on important aspects of the design of incentives, as follows:

(a) Use of both financial incentives and reputational incentives where we consider they add value;

(b) Symmetric bonus-penalty incentives as a rule, except in very specific cases e.g. meeting minimum regulatory requirements whereby only penalty applies;

(c) Caps of 0.5% of MAR to each individual incentive and 4% of MAR in aggregate to all incentives of each business;

(d) In-period incentives, where the reward period is normally one year. We are open to discuss incentives which require longer delivery times for the final decision, subject to receiving detailed proposals and justified rationale;

(e) Use of dead bands where appropriate;

(f) Definition of the appropriate incentive rates on a case-by-case basis; and

(g) Use mix of relative and absolute targets, as applicable.

Responses

8.3.2 The network companies responded on each element of the design of incentives as follows:

(a) Welcoming the concept that incentives should primarily be financial, they accepted the notion of reputational incentives but suggested that they should not be part of an incentive scheme. They believe that reputational incentives are measurements of performance rather than incentives, and thus are better employed elsewhere. In our engagement over the last months, the companies suggested that instead of reputational incentives these measurements should be named 'reporting metrics'.

(b) They accepted symmetric incentives and rejected the notion of a penalty-only incentive under any circumstances. The network companies argued that there is no risk or reward structure with such an incentive and this form of incentive seeks to influence behaviour rather than serve a specific need. They also highlighted that the DoE has other ways to ensure companies comply with a range of licence conditions and imposing financial penalties should not be one of them.

(c) They also accepted the need to cap penalties and bonuses as a way to protect all sector stakeholders. However, the network companies requested more uniform distribution across all sector companies in the opportunity to obtain potential bonuses, highlighting that TRANSCO in particular had fewer incentives than any other sector company.

(d) The network companies suggested that there were performance incentives where annual or even in-period measurements are not suitable, and there was an advantage to move them towards a more long-term structure. They also questioned the current mechanism of a 0.5% of MAR bonus not being sufficient to warrant the companies to invest and meet the new targets when capex investments are not supported.

(e) The use of dead bands, where appropriate, was also welcomed by the network companies, and they requested further discussion on targets and incentive rates.

Assessment and way forward

8.3.3 We welcome the network companies' agreement to using dead bands in the incentives design where appropriate. In relation to the responses on the other elements of the design of incentives:

(a) We agree that reputational incentives in principle would require additional action subsequently to receiving the performance data from the network companies (e.g. by publishing a league table). If this action is being taken, we recognise that there would be a (reputational) potential risk/reward for licensees. The DoE considers that such risk/reward mechanism is precisely what makes reputational incentives a useful tool that can be used alongside financial incentives in the price control framework. Regardless, for RC2' we accept to continue using the RC1 approach – meaning that these performance indicators continue being reported and assessed for accuracy by the TA, without any specific action to enact the risk/reward mechanism. As such, we agree that any metrics using this approach can be renamed from 'reputational incentives' to 'reporting metrics' in the RC2.

(b) We note the network companies' opposition to penalty-only incentives. We agree that incentives should be symmetric bonus-penalty as a rule. However, as explained previously, the exception would be in relation to cases where the incentive relates to meeting minimum core regulatory requirements. In such cases, rewarding achievement of mandatory minimum requirements is not justified, though it may be pragmatic to address those cases through the incentive framework. Were this to happen – as it happens with the provision of regulatory information – a penalty-only incentive could be an effective way to promote the desired outputs. In our engagement over the last months, the network companies requested for the RC2 to work as a transition period where a bonus, even if asymmetric, could be applied. We agree to transitorily maintaining an asymmetrical bonus to the SBAs/PCRs incentive (the only incentive where this design aspect would apply). The next price control will no longer consider a bonus for any provision of information

incentive (or other incentive related with the delivery of minimum regulatory requirements).

(c) We welcome the agreement of the network companies to apply a cap of 0.5% on penalty and bonuses to individual incentives and 4% in aggregate to all incentives. We will accordingly apply these caps to all incentives, except to DSM – where an individual 4% cap will apply, irrespective of any aggregate incentive cap. We recognise that TRANSCO has fewer incentives than other network companies. We however note that incentives in the price control framework serve the purpose to address areas/issues where they are more likely to deliver desired outputs. In addition, we note that TRANSCO has requested and agreed to the transfer of some of its previous incentives (e.g. water quality on its transmission network) to EWEC as part of the transfer of the system operation function to EWEC. We are not looking to revisit those agreements, but note that a judgement was made to reach them, and that in our view there was scope for some of those incentives to have remained within TRANSCO's remit. This explains in part why TRANSCO has now fewer incentives.

(d) In relation to the companies' suggestion that there were performance incentives where in-period measurements are not suitable, we question whether such areas would be suitable for price control incentives in the first place. We note that key features of incentives include measurability and auditability of the metrics, as well as the periodic signals that bring about continuous performance improvements. These features do not seem to be compatible with areas not suitable for in-period measurements. We remain open to design and apply incentives – now for the next price control period – where the in-period measurement cannot be on annual basis. We would expect that the measurement period would nonetheless be within the price control period – in other words, we expect that within a price control period any incentive would be able to be measured and show variability in performance and thus signalling to network companies the direction of performance and

whether any in-period action may be required to change it. We remain convinced that this is the case with all incentives we are proposing for the RC2 and that in almost all cases except for DSM the periodic measurement to assess and reward performance should be and is 'annual'. We propose this period to be the end of the RC2 price control period in the case of DSM incentive, as clarified in our consultant's final report on incentives.

Final Decision

8.3.4 Our final decision in relation to the design aspects across the incentives are to:

(a) Use both financial incentives and 'reputational incentives' (renamed now as 'reporting metrics') where we consider they add value.

(b) Symmetric bonus-penalty incentives as a rule, except in very specific cases e.g. meeting minimum core regulatory requirements whereby only penalty applies. However, for RC2, as a transitory approach, we will apply an asymmetric bonus to the provision of regulatory information incentive (the only incentive where this design feature would apply);

(c) Caps of 0.5% of MAR to each individual incentive and 4% of MAR in aggregate to all incentives of each business, except for DSM – where an individual 4% cap will apply, irrespective of any aggregate incentive cap;

(d) In-period incentives to be applied on an annual basis, with the exception of the DSM incentive to be at the end of the RC2 period;

(e) Use of dead-bands where appropriate;

(f) Definition of the appropriate incentive rates on a case-by-case basis; and

(g) Use mix of relative and absolute targets, as applicable.

8.4 Final decision for existing and new existing for the RC2

8.4.1 We summarise below our final decision, based on the consultant's final report recommendations, for each incentive priority area and respective individual incentives. The Consultant incentive report sets out the details of each

incentive. We also refer to the consultant's final report on incentives for the full details on the assessment of the different aspects of each incentive.

In relation to incentives for **performance reporting**, our final decision is to:

(a) retain the incentive for SBAs/PCRs timelines and compliance with the following changes for the RC2 period:

(i) asymmetrical bonus/penalty under electricity MAR, with bonus of 25% of the incentive rate (where incentive rate is equal to 0.5% of the electricity MAR) if delivered on time with all TA areas of improvement 'made', and otherwise incremental penalty (up to maximum penalty of 0.5% electricity MAR) with amount of delay and/or incomplete/non-compliant submissions. The asymmetric bonus is a transitory arrangement for the RC2, and this incentive will have no bonus in future price controls; and

(ii) covering compliance of all separate businesses, but applied only to the electricity business of AADC, ADDC and TRANSCO, while ADSSC continues to have as a single incentive at the company level;

(b) retain the reporting of the financial ratios as part of the audited SBA submissions; and

(c) introduce a new reporting metric on demand forecasting accuracy, applied to AADC, ADDC and ADSSC.

8.4.2 In relation to incentives for **quality of supply**, our final decision is as follows:

(a) For electricity and water distribution businesses of AADC and ADDC:

(i) retain the prerequisite for receiving bonus to be based on meeting the Connectivity Model (CM) accuracy requirement as per the applicable RIG and amend the SAIDI/SAIFI incentive to promote a 3% year-on-year improvement in performance over the RC2 period, with the removal of distinction between planned and unplanned interruptions and revised targets and dead-band;

(ii) retain the 'removal of timed water supplies' and the 'water meter penetration', both as reporting metrics over the RC2 period for AADC and ADDC;

(iii) amend the water quality indicator to cover non-piped water distribution as tested at the filling stations and entering the tankers, and cover parameters as per the Water Quality Regulations with amended targets, dead-band and formulae to promote increase in number of tests taken to meet required number and percentage of tests passed; and

(iv) not to apply the recycled water quality incentive for AADC and ADDC.

(b) For electricity and water transmission network of TRANSCO:

i. maintain the electricity and water system availability incentives as reporting metrics in RC2; and

ii. retain the dead-band and update the value of lost load (VOLL) for the unsupplied energy.

(c) For recycled water incentive for ADSSC, amend the weightings of the sanitary, microbiological and trace elements components, and tighten the incentive dead-band.

8.4.3 In relation to incentives for **network performance**, our final proposal is to:

(a) For electricity and water distribution businesses of AADC and ADDC:

(i) retain the electricity/water 'interface metering' incentives as a symmetric incentive, with revised targets and dead-band;

(ii) amend the 'non-revenue water' incentive targets and dead-band, and revise the definition of units entering the distribution system to include and account for unmetered units; and

(iii) retain the 'electricity distribution loss' incentive definition / formulae and revise the targets and dead-band.

(b) For electricity and water transmission network of TRANSCO, retain the 'security of water supply' incentive for TRANSCO, with a revised target and dead-band;

(c) For ADSSC's wastewater collection, treatment and disposal business, introduce:

(i) a new reporting metric on infiltrations and salinity; and

(ii) a new financial incentive on public network blockages.

8.4.4 In respect of incentives for **sustainability**, our final decision is to:

(a) amend the existing biosolids incentive for ADSSC, to be implemented from 2024, introduce a dead-band and allow ADSSC to keep a proportion of the revenue obtained from the sale of biosolids for reuse purposes; and

(b) introduce a new incentive for DSM, applied to the water and electricity businesses of AADC and ADDC.

8.4.5 In relation to incentives for **customer service**, our final decision is to:

(a) retain the electricity and water customer complaints incentives for AADC and ADDC (and ADSSC with a two-year transition following the implementation of billing for wastewater services), with a revised metric to drive the companies' performance in closing complaints within the time limits for the relevant complaints' categories (as set out in the Customers Complaints Handling Procedure); and

(b) introduce a new customer satisfaction incentive for AADC and ADDC under their respective electricity businesses (and ADSSC with a two-year transition following the implementation of billing) .

8.4.6 In addition, during our engagement over June-July 2022, the DoE and the network companies agreed to the creation of a workgroup to assess the feasibility and to potentially develop an incentive for the reduction of greenhouse gas emissions. If the workgroup deliberations result in the development of a new incentive during the RC2 period, it will be implemented for the remaining years of the RC2 period.

8.4.7 The table below summarises our final decision of incentives for each of the five key areas, indicating for each business the existing ("✓" symbol) and new ("☑" symbol) incentives.

Table 8.1: Incentives in the RC2 price controls by area – final decision

	Type	AADC (E)	AADC (W)	AADC (RW)	ADDC (E)	ADDC (W)	ADDC (RW)	TRANSCO (E)	TRANSCO (W)	ADSSC
Annex 4A - Performance reporting										
SBAs/PCRs - timeliness and compliance	Financial	✓			✓			✓		✓
Financial performance ratios	Reporting	✓	✓		✓	✓		✓	✓	✓
Total demand forecasting accuracy	Reporting	☑	☑		☑	☑				☑
Annex 4B - Quality of supply										
Water quality	Financial		✓			✓				
Water Meter Penetration	Reporting		✓			✓				
SAIDI	Financial	✓			✓					
SAIFI	Financial	✓			✓					
Transmission system availability	Reporting							✓	✓	
Removal of timed water supply	Reporting		✓			✓				
Unsupplied energy	Financial							✓		
Recycled water quality compliance	Financial									✓
Annex 4C - Network performance										
Interface metering (electricity & water)	Financial	✓	✓		✓	✓				
Distribution loss reduction	Financial	✓			✓					
Non-revenue water	Financial		✓			✓				
Security of water supply	Financial								✓	
Infiltrations	Reporting									☑
Blockages (No.)	Financial									☑
Annex 4D - Customer service										
Customer complaints	Financial	✓	✓		✓	✓				✓
Customer satisfaction	Financial	☑			☑					☑
Annex 4E - Sustainability										
Biosolids reuse	Financial									✓
Demand side management	Financial	☑	☑		☑	☑				
Number of existing incentives for RC2	Financial	6	4	0	6	4	0	2	1	4
	Reporting	1	3	0	1	3	0	2	2	1
Number of new incentives for RC2	Financial	2	1	0	2	1	0	0	0	2
	Reporting	1	1	0	1	1	0	0	0	2
Total number of incentives for RC2	Financial	8	5	0	8	5	0	2	1	6
	Reporting	2	4	0	2	4	0	2	2	3
Total number of incentives for RC2	**All**	**10**	**9**	**0**	**10**	**9**	**0**	**4**	**3**	**9**

" ✓" represents an incentive introduced prior to RC2; "☑" represents a new incentive proposed for RC2

8.5 Incentive mechanism and Q-term

8.5.1 The RC2 final decision for incentives include the following possible types of financial incentives and outputs:

(a) Formula-based incentives for performance against metrics specified as part of this price control review (which constitute the majority of the proposed incentives) – The formulae, targets and incentives are incorporated into the licence, and where applicable more detailed definitions and reporting arrangements are set out in RIGs. The TA assessments and the incentive rates defined in this document apply to these incentives; and

(b) Incentives that are identified at a high level, that is, the greenhouse gas emissions reduction incentive –where the detailed specification or underlying data will require further development, may be introduced during the RC2 period or the next price control period.

8.5.2 The next sub-sections detail further the operation of incentive mechanisms and the targets and incentive rates applied to each incentive.

Operation of incentive mechanism

8.5.3 The incentive structure for RC2 will operate in the same manner as the current price controls, with a financial reward or penalty provided via the "Q" term in the MAR formula to adjust the company's allowed revenue upward or downward. The term $\boldsymbol{Q_t}$, relates to such financial adjustment for year t, and shall be calculated in AED terms as follows:

$$Q_t = Q1_t + Q2_t + Q3_t + \ldots + QN_t$$

where $Q1_t$ …. QN_t are the revenue financial adjustments (positive for bonus and negative for penalty) in respect of the incentive indicators 1, 2, …., N, respectively.

8.5.4 Similar to the current price controls, the Q term in the year "t" is calculated on an annual basis and relates to performance on incentive performance indicators in year "t-2". This is to allow time to verify a company's performance or submission and to discuss and address any issues before the financial bonus or penalty is calculated and applied, accordingly. Therefore, the performance reporting in year "t-1", as verified by the TA in year "t-1" would relate to the actual performance in the previous year "t-2", with the application of the Q-factor to MAR in year "t". For example, the Q-factor relating to the timely submission of compliant audited SBAs/PCRs for the financial year 2023, as assessed/validated by the TA and audited by the financial auditors in 2024, would be applied to the MAR for 2025. This applies to all categories of performance indicators except for DSM incentive. In the case of the DSM incentive, the company's performance is monitored annually, but is only assessed in the last year of the RC2 period for a financial bonus or penalty. The mechanism and timeline of calculating the Q-factor in year t is as demonstrated in following figure.

Figure 8.3: Operation of incentive schemes

8.5.5 The following paragraphs describe the DoE's proposed general formulae to determine the Q terms for various incentives for the RC2 period. These formulae are structured so that, for symmetric incentives, the Q term will automatically take a positive sign if a reward is required (i.e. actual performance is better than the target) and a negative sign if a penalty is required (i.e. actual performance is below the target). Methods and formulae to assess a company's performance and to calculate the relevant performance indicator are described in the DoE consultant's final report on incentives which is being issued with this final decision. These methods and formulae can be further clarified and refined by the DoE in Regulatory Instructions and Guidelines (RIGs) to be issued and modified from time to time following consultation with the respective licensees.

Q terms for audited SBAs/PCRs

8.5.6 For information incentives relating to the audited SBAs/ PCR, the value of the Q term will be determined as follows based on the timeliness and compliance/completeness of submission and, where applicable, the companies' completion of the TA's areas for improvement (AoIs) from the previous year:

(a) For any delay in submission beyond the target date or non-compliance of the submission in any year, the company will receive a penalty calculated as follow

$$Q = -Incentive\ rate\ x\ \frac{(Delay\ ratio + TA\ ratio)}{2}$$

(b) The maximum penalty for any submission will be capped at 0.5% of the electricity MAR for AADC, ADDC and TRANSCO and 0.5% of wastewater MAR for ADSSC; by

(c) The incentive rate will be expressed in AED and equal 0.5% of the electricity MAR for AADC, ADDC and TRANSCO and wastewater MAR for

ADSSC. The 'Delay ratio' is the ratio between the number of months of delay in submission against the target date of 30 April and the number of months of worst-case delay (set to 6 months). For example, if the submission is delayed by 3 months, the Delay ratio would be 3/6 or 0.5. The 'TA ratio' means the ratio between the number of TA's previous year's AoIs 'not made' and the total number of TA's previous year's AoIs.

(d) If the submission for all separate businesses for year t of a licensee is on time i.e. by 30 April of each subsequent year t+1 and with all AoI 'made' in the same relevant year t, the licensee will receive a bonus calculated as follows:

$$Q = +\ 25\%\ \text{x Incentive rate}$$

Q terms for other performance incentives

8.5.7 For other performance indicators, where a performance indicator with a lower value than the target is considered a better performance (eg, SAIFI, SAIDI, water quality or distribution losses), the bonus or penalty in a year will generally be of the following form:

$$Q = \ Incentive\ rate\ x \left(\frac{Target\ performance\ -\ Actual\ performance}{Target\ performance}\right) x\ 100$$

However, for performance indicators where a higher value than the target is considered better performance (eg, system availability), the sign in the above formula for Q will be reversed. That is:

$$Q = \ Incentive\ rate\ x \left(\frac{Actual\ performance\ -\ Target\ performance}{Target\ performance}\right) x\ 100$$

8.5.8 The multiplicative factor of 100 is used because the deviation in actual performance from the target in the parenthesis is assessed as a percentage of target performance with an incentive rate expressed in AED per 1% deviation in performance from the target. For some incentives (such as sewer blockages incentives), actual performance would be assessed against an absolute target (e.g. 11.30 blockages per 100 km in 2023) and the factor of 100 will not be required, or a different factor may be needed for some incentives. These

specific formulas are described in the consultant's final report and incorporated into the draft licence modifications being issued with this final decision.

8.5.9 In some cases, the deviation in performance from the target is measured in percentage points rather than percentage. The formula for Q term will then not involve a target performance in the denominator and the incentive rate will be expressed in AED per 1 percentage point of deviation.

8.5.10 For unsupplied energy, the incentive rate is the value of lost load (VOLL) in AED per kWh.

8.5.11 For DSM, the incentive bonus/penalty will be calculated only at the end of the RC2 period (2026). The bonus or penalty will be calculated as a percentage (8%) of the NPV of actual/revised net benefits over the lifetime of the DSM initiatives.

8.6 Performance targets and incentive rates

Performance targets for incentives

8.6.1 Based on the suggestions set out by the DoE's consultant in its final report, the following table lists the proposed targets/dead-bands for all incentives to be incorporated into the network companies' licences at this price control review.

Table 8.2: Performance targets for RC2 incentives – final decision

Individual Incentive	Type	Company	Relevant businesses	Existing or New	Main change from existing incentive
Performance reporting					
SBAs/PCRs - timeliness and compliance	Financial	All	Electricity & Wastewater	Existing	Applied to electricity, asymmetric bonus/penalty
Financial performance ratios	Reporting	All	All	Existing	None
Total demand forecasting accuracy	Reporting	AADC, ADDC & ADSSC	All	New	New incentive
Quality of supply					
Water quality	Financial	AADC & ADDC	Water	Existing	Targets reviewed, updated metric
Water Meter Penetration	Reportig	AADC & ADDC	Water	Existing	Reporting
SAIDI	Financial	AADC & ADDC	Electricity	Existing	Target & metric reviewed, weighting removed
SAIFI	Financial	AADC & ADDC	Electricity	Existing	Target & metric reviewed, weighting removed
Transmission system availability	Reporting	TRANSCO	Electricity & Water	Existing	None
Removal of timed water supply	Reporting	ADDC & AADC	Water	Existing	Reporting
Unsupplied energy	Financial	TRANSCO	Electricity	Existing	VOLL updated
Recycled water quality compliance	Financial	ADSSC	Recycled water	Existing	Target reviewed, updated weightings
Network performance					
Interface metering	Financial	AADC & ADDC	Electricity & Water	Existing	Target reviewed
Distribution loss reduction	Financial	AADC & ADDC	Electricity	Existing	Target reviewed
Non-revenue water	Financial	AADC & ADDC	Water	Existing	Target reviewed, updated definition
Security of water supply	Financial	TRANSCO	Water	Existing	Target reviewed
Infiltrations	Reporting	ADSSC	Wastewater	Existing	New incentive
Blockages	Financial	ADSSC	Wastewater	New	New incentive
Customer service					
Customer complaints	Financial	AADC, ADDC & ADSSC	All	Existing	Targets reviewed, updated methodology
Customer satisfaction	Financial	AADC, ADDC & ADSSC	All	New	New incentive
Sustainability					
Biosolids reuse	Financial	ADSSC	Wastewater	Existing	Target reviewed
Demand side management	Financial	AADC & ADDC	Electricity & Water	New	New incentive

8.6.2 As per the above, targets are specific to the form of incentive, as follows:

(a) In the case of audited SBAs/PCRs incentives, the targets are in the form of a specific date of 30 April, by which a compliant/complete and audited SBA/PCR submission to the DoE is required according to the licence and RIGs, with all AOIs 'made'. A timely and complaint submission with all AoIs made will trigger a bonus. A delay in a compliant/complete submission beyond the target date or any AoI 'not made' will trigger a financial penalty, which will be calculated on a monthly basis.

(b) For some incentives (which have relative targets), the performance target for a year is based on the company's actual/historical performance in the preceding year(s) as assessed and verified by the TA, as follows:

i. For the existing incentives, the company's actual performance in 2022 would be verified under the RC2 arrangement and can be used to set the target for 2023.

ii. However, in some instances where we have proposed a new/significantly modified incentive or there is a time-bound prerequisite work/system to be developed/finalised and implemented before an incentive can be applied (e.g. ADSSC study for Biosolids reuse), then the subsequent year t+1 will be the first year when the performance will be subject to incentives and the performance in year t will only be verified by TA to set the target for year t+1.

(c) There are however other incentives where performance targets are proposed in absolute terms rather than based on the previous year's performance (e.g. electricity distribution loss reduction, interface metering and sewer blockages). Such incentives can be introduced from the first year of RC2 period (ie, 2023).

(d) We have proposed for a number of incentives a dead-band for performance where a company will not be subject to any bonus or penalty.

Overall approach on calculating incentive rates

8.6.3 The incentive rates for most financial incentives (the exception being SBAs/PCRs, unsupplied energy and DSM incentive) have been calculated using the following approach, which is similar to that used at the previous price control reviews:

(a) First, determine the total amount "at risk" (the maximum penalty or reward) for each incentive as 0.50% of the average forecast core MAR (i.e. excluding the pass-through costs) for the RC2 period;

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

i. Water quality incentive: 2% deviation;

ii. SAID/SAIFI incentives: 2% deviation;

iii. Recycled water quality compliance and Interface metering (electricity/water) incentives: 2 percentage points (ppt) deviation;
iv. Distribution loss reduction incentive: 1 ppt deviation;
v. Non-revenue water: 0.5 ppt deviation
vi. Security of water supply incentive: 0.015 ppt deviation;
vii. Blockages incentive: 10% deviation;
viii. Customer complaints and Customer satisfaction incentives: 5 ppt deviation;
ix. Biosolids re-use incentive: 10 ppt deviation; and

(c) For the SBAs/PCRs, the incentive rate is the amount at stake, i.e. 0.5% of the electricity/wastewater MARs;

(d) For the unsupplied energy, the incentive rate is the VOLL expressed in AED / kWh;

(e) For the DSM incentive, the incentive rate is 8% of the NPV of the net benefits for the relevant initiatives, that is, the Actual Net Benefits (ANB).

8.6.4 It is worth noting that the above assumptions are used only for the purpose of the initial calibration of the scheme and play no further role in the implementation of the incentive schemes.

Calculation of incentive rates

8.6.5 The table below shows:

(a) the average MAR forecast for each business for the RC2 period;

(b) the amount 'at stake' for each incentive based on 0.50% of the average MAR forecast (except for unsupplied energy and DSM incentives); and

(c) the incentive rate for each indicator (rounded off appropriately) calculated by dividing the amount at stake by the calibration assumption in most cases, or set equal to the amount at stake in some cases (eg SBAs/PCRs incentive), or set equal to VOLL for unsupplied energy incentive where VOLL calculation is described in the DoE consultant's final report on incentives.

8.6.6 As expected, the incentive rates vary significantly from business to business, reflecting the size (or MAR) of each business. Further, for any business, the actual incentive rate will depend on the targets set and the particularities of the incentive scheme.

8.6.7 The incentives (existing and new) and their respective new incentive rates proposed for RC2 will take effect as follows:

(a) Existing indicators will continue to be subject to the existing incentive rates as long as the performance year (for performance indicators) or submission year (for audited SBAs/PCRs incentives) falls within the RC1 period (i.e. up to 2022). These indicators will however be subject to the new RC2 incentive rates as calculated in **Table 8.3** below when the performance or submission year falls during the RC2 period (i.e. 2023-2026).

(b) The new incentives or indicators will take effect from the first performance of RC2 period (i.e. either 2023 or 2024) as listed in **Table 8.2** above and their incentive rates will apply to adjust MAR in 2025 or later as per the timeline shown in **Figure 8.3** above.

Table 8.3 Incentive rates – RC2 final decision

		Calibration assumption		AADC (E)	AADC (W)	ADDC (E)	ADDC (W)	TRANSCO (E)	TRANSCO (W)	ADSSC
Average RC2 MAR	AED million			**1,603**	**622**	**2,439**	**1,302**	**3,491**	**2,160**	**1,913**
Amount at stake	AED million	0.50%	of MAR	**8.02**	**3.11**	**12.19**	**6.51**	**17.46**	**10.80**	**9.56**
Performance reporting										
SBAs/PCRs - timeliness and compliance	AED million	0.50%	of MAR	8,016,000		12,194,000		17,457,000		9,564,000
Financial performance ratios	n/a									
Total demand forecasting accuracy	n/a									
Quality of supply										
Water quality	AED / 1%	2	% deviation		1,556,000		3,254,000			
Water Meter Penetration	n/a									
SAIDI	AED/1%	2	% deviation	4,008,000		6,097,000				
SAIFI	AED/1%	2	% deviation	4,008,000		6,097,000				
Transmission system availability	n/a									
Removal of timed water supply	n/a									
Unsupplied energy	AED/kWh	22.5	AED/kWh					22.5		
Recycled water quality compliance	AED / 1 ppt	2	ppt deviation							4,782,000
Network performance										
Interface metering - electricity	AED/1 ppt	2	ppt deviation	4,008,000		6,097,000				
Interface metering - water	AED/1 ppt	2	ppt deviation		1,556,000		3,254,000			
Distribution loss reduction	AED/0.1 ppt	1	ppt deviation	802,000		1,219,000				
Non-revenue water	AED/0.1 ppt	0.5	ppt deviation		622,000		1,302,000			
Security of water supply	AED/0.001 ppt	0.015	ppt deviation						720,000	
Infiltrations	n/a									
Blockages	AED/1%	10	% deviation							956,000
Customer service										
Customer complaints	AED/1 ppt	5	ppt deviation	1,603,000	622,000	2,439,000	1,302,000			1,913,000
Customer satisfaction	AED/1 ppt	5	ppt deviation	1,603,000		2,439,000				1,913,000
Sustainability										
Biosolids reuse	AED/1 ppt	10	ppt deviation							956,000
Demand side management	% ANB	8%	of ANB	8% ANB	8% ANB	8% ANB	8% ANB			

8.7 Detailed design of individual incentives

8.7.1 RC2 consultant's incentive report is being issued to the network companies with this document to describe the individual incentives in full detail and briefly discussed in this section and annexes C to G of this paper along with the rationale and considerations to support our final decision on their detailed design.

8.7.2 The following table lists these individual incentives that we propose for RC2 based on the consultant's final report as summarised in this section. The table also specifies for each incentive:

(a) the businesses which the incentive relates to;

(b) whether the incentive is financial or a reporting metric;

(c) whether the incentive is existing or a new one; and

(d) the main change(s) to the incentive in the RC2 final decision if it is an existing one.

Table 8.4: Incentives for RC2 – Summary of DoE's final decision

Individual Incentive	Type	Company	Relevant businesses	Existing or New	Main change from existing incentive
Performance reporting					
SBAs/PCRs - timeliness and compliance	Financial	All	Electricity & Wastewater	Existing	Applied to electricity, asymmetric bonus/penalty
Financial performance ratios	Reporting	All	All	Existing	None
Total demand forecasting accuracy	Reporting	AADC, ADDC & ADSSC	All	New	New incentive
Quality of supply					
Water quality	Financial	AADC & ADDC	Water	Existing	Targets reviewed, updated metric
Water Meter Penetration	Reporting	AADC & ADDC	Water	Existing	Reporting
SAIDI	Financial	AADC & ADDC	Electricity	Existing	Target & metric reviewed, weighting removed
SAIFI	Financial	AADC & ADDC	Electricity	Existing	Target & metric reviewed, weighting removed
Transmission system availability	Reporting	TRANSCO	Electricity & Water	Existing	None
Removal of timed water supply	Reporting	ADDC & AADC	Water	Existing	Reporting
Unsupplied energy	Financial	TRANSCO	Electricity	Existing	VOLL updated
Recycled water quality compliance	Financial	ADSSC	Recycled water	Existing	Target reviewed, updated weightings
Network performance					
Interface metering	Financial	AADC & ADDC	Electricity & Water	Existing	Target reviewed
Distribution loss reduction	Financial	AADC & ADDC	Electricity	Existing	Target reviewed
Non-revenue water	Financial	AADC & ADDC	Water	Existing	Target reviewed, updated definition
Security of water supply	Financial	TRANSCO	Water	Existing	Target reviewed
Infiltrations	Reporting	ADSSC	Wastewater	New	New incentive
Blockages	Financial	ADSSC	Wastewater	New	New incentive
Customer service					
Customer complaints	Financial	AADC, ADDC & ADSSC	All	Existing	Targets reviewed, updated methodology
Customer satisfaction	Financial	AADC, ADDC & ADSSC	All	New	New incentive
Sustainability					
Biosolids reuse	Financial	ADSSC	Wastewater	Existing	Target reviewed
Demand side management	Financial	AADC & ADDC	Electricity & Water	New	New incentive

Note: Incentive SBAs/PCRs – timeliness and compliance applies to all businesses of a company, however, Q factor will only be applied to company's electricity MAR (and total MAR for ADSSC).

Annex A: Updating RAVs

Introduction

A.1 This **Annex A** to the final decision for RC2 describes and sets out the updating of the opening 2023 RAVs projected at the last price control reviews updated for:

(a) Ex-ante capex allowances for RC2 period for all the four companies;

(b) Adjustment for ex-post review of 2020-2021 capex for unreviewed schemes for all the four companies; and

(c) Updates in 2022 capex allowance for all the four companies.

A.2 Annexes A.1 through A.9 show how this has been done for the electricity, water, and recycled water businesses of AADC, ADDC, and electricity and water businesses for TRANSCO, and collection, treatment, and disposal businesses of ADSSC, The format of tables and calculations in each of these Annexes is standardised. The following paragraphs explain these calculations with reference to "Line" numbers used in these Annexes and in the RC2 Financial Model (a Microsoft Excel based computer model developed by the DoE to carry out RC2 calculations).

A.3 The results of these calculations are summarised and discussed in Sections 6 and 7 of this document. Various assumptions and inputs used in these calculations (such as, UAE CPI, actual, efficient and approved capex, efficiency scores, depreciation profile, and cost of capital) are described in Sections 2 through 6 of this document.

A.4 In this Annex A:

(a) RC1 period refers to 2018-2022 for the network companies.

Updating RAVs for efficient RC1 (2020-2021) capex

A.5 Lines 1 through 31 of Annexes A.1 through A.9 set out the updating of opening 2023 RAVs, additional efficient RC1 (2020-2021) capex for each of the water, recycled water and electricity businesses of AADC, ADDC, TRANSCO, and ADSSC.

A.6 Line 1 shows the CPI data used for price base conversion.

A.7 Lines 2-8 contain the calculations of additional efficient RC1 (2020-2021) capex to be allowed in RC2.

(a) Line 2 shows the actual capex in nominal terms as per the audited accounts. Line 2A and 2B provide breakdown of actual capex, received from network companies in September, into the capex relating to, respectively: (i) ex-ante approved schemes (not used in the updates to the RAV, pending completion of these schemes) and (ii) unreviewed schemes (this is the one used in the updates to the RAV)

(b) Line 3 shows the relevant efficiency scores for 2020-2021 capex for unreviewed schemes as per the Technical Assessor's (TA) reports finalised in September

(c) Line 4 show the efficient actual capex based on these efficiency scores in nominal prices

(d) Line 5 show the efficient capex in 2023 prices

(e) Line 6 shows the total capex allowed for 2020-2021 in the price controls in nominal terms (sourced from RC1 interim review financial model). Line 6A and 6B provide breakdown of allowed capex into the capex relating to, respectively: (i) ex-ante approved schemes (not used in the updates to the RAV, pending completion of these schemes) and (ii) unreviewed schemes (this is the one used in the updates to the RAV). The capex for RC1 ex-ante approved schemes is sourced from TA's RC1 interim review reports.

(f) Line 7 expresses 2020-2021 allowed capex for unreviewed schemes in 2023 prices, and

(g) Line 8 then calculates the additional efficient 2020-2021 capex relating to unreviewed schemes (in 2023 prices) as the difference between efficient capex (from Line 5) and allowed capex (from Line 7). The results are shown in Section 5 of this document.

A.8 Lines 9-11 show the calculation of depreciation foregone (in 2023 prices) during 2020-2022 on the additional efficient RC1 (2020-2022) capex, using the additional efficient capex from Line 8 and average asset life assumption from Line 9. The depreciation so calculated in Line 11 is then used in Lines 12-15 to calculate the depreciated closing value of additional efficient capex at the end of Line 15, which is to be added to the opening 2022 RAV, in 2023 prices.

A.9 Lines 12-18 show the calculation of return on capital foregone (in 2023 prices) during 2020-2022, using the additional efficient capex from Line 8 and the cost of capital used for RC1 from Line 17. This return on capital (in 2023 prices) is calculated in Line 18 by applying the relevant cost of capital to the average of opening and closing values of the additional efficient capex for each year. The return on capital foregone so calculated (line 18) is to be added along with the depreciation foregone in Line 11, in net present value (NPV) terms, to the required revenue over RC2 in the price control calculations in Annex B. This NPV is calculated in Line 27.

A.10 Lines 19-27 contain the calculation of NPV (in 2023 prices) at 1 January 2023 of total foregone financing costs on efficient RC1 capex during 2020-2022 for unreviewed schemes. This is done by adding the depreciation foregone (from Line 11) and the return on capital foregone (from Line 18). The total financing costs foregone so calculated in Line 21 is then used to calculate the NPV of such costs in Line 27 as follows:

(a) Lines 22-24 are not used

(b) Lines 25-27 calculate the present value of the sum of 2020-2021 related costs at 1 January 2023 by using the RC1 cost of capital from Line 17 as the discount rate

A.11 The resulting NPV of the total foregone financing cost for each business is presented in section 7 of this document. This NPV amount needs to be added to the required revenue for the RC1 period (see Section 7 of this document and price control calculations in **Annex B**).

A.12 Lines 28-31 show how the depreciated closing value of additional efficient RC1 capex over and above the approved allowances (from Line 15) has been rolled forward into the

initial 2023 RAV (in 2023 prices) from the RC1 financial model (updated for RC1 interim review and for 2018-2019 ex-post capex adjustments). At the start of these calculations, Line 28 shows the 2022 opening RAV in 2018 prices. Line 29 shows the opening RAV in the new price control terms (in 2023 prices). Line 29A shows 2022 capex (in 2023 prices) and Line 29 B shows depreciation for 2022 capex. Line 29C shows the 2023 opening RAV in 2023 prices. Line 30 shows the adjustment of the opening 2023 RAV from RC1 calculations in 2023 prices, which is required for RC2 price control calculations in Section 7, Annex B. The opening 2023 RAVs so updated are listed in Section 5 of this document.

Updating RAVs for ex-ante RC2 capex

A.13 Annexes A.1 through A.9 to this paper also show the updating of RAVs for ex-ante RC2 capex for each of AADC, ADDC, ADSSC and TRANSCO (all figures are in 2023 prices).

A.14 Line 32 shows the new average asset life assumption for RC2, onwards capex (see section 6 of this document).

A.15 The beginning of Line 33 shows the RAV updated for efficient RC1 capex from Line 31 (see section 6 of this document).

A.16 Line 34 lists the Ex-ante RC2 capex as shown in Section 5 of this document.

A.17 Line 35 lists the total depreciation on RAV and all capex to date (excluding RC2 capex) as calculated by the ***RC2 Depreciation Model*** and presented in Section 6 of this document.

A.18 Line 36 calculates the depreciation on Ex-ante RC2 capex as presented in Section 6 of this document.

A.19 Line 37 calculates the total depreciation by adding Lines 35 and 36 (results shown in section 6 of this document).

A.20 Line 38 calculates the closing RAV for each year by adding the RC2 capex (from Line 34) and deducting the total depreciation (from Line 37) from, the opening RAV for that year (from Line 33). The closing RAV in Line 38 for a year becomes the opening RAV for the next year in Line 33.

A.21 The updated opening RAVs for all businesses are listed in Section 6 of this document.

Table A.1 : AADC electricity – Updating RAV

Calculating foregone financing costs and updating 2023 Opening RAV for RC1 Efficient Capex

Line No.

	UAE CPI Assumptions	2015	2016	2017	2018	2019	2020	2021	2022
1	CPI (2014 = 100) used in calculations	104.07	105.75	107.84	111.14	109.00	106.73	106.77	106.81

			RC1		
	Additional Efficient RC1 Capex to be allowed at this Review		**2020**	**2021**	**2022**
2	Actual RC1 capex - total	AEDm, nominal prices	418.5	418.0	
2A	Actual RC1 capex - ex-ante approved schemes	AEDm, nominal prices	22.4	57.3	
2B	Actual RC1 capex - unreviewed schemes	AEDm, nominal prices	396.2	360.7	
3	Applied capex efficiency factor	%	98.45%	98.45%	
4	Efficient RC1 capex - unreviewed schemes	AEDm, nominal prices	390.0	355.1	
5	Efficient RC1 capex - unreviewed schemes	AEDm, 2023 prices	382.2	355.4	
6	Allowed RC1 capex - total	AEDm, nominal prices	695.0	636.0	
6A	Allowed RC1 capex - ex-ante approved scheme	AEDm, nominal prices	197.3	352.2	
6B	Allowed RC1 capex - unreviewed schemes	AEDm, nominal prices	497.8	283.8	
7	Allowed RC1 capex - unreviewed schemes	AEDm, 2023 prices	487.8	284.0	
8	**Additional efficient RC1 capex to be allowed at RC2**	**AEDm, 2023 prices**	**(105.6)**	**71.4**	

	Depreciation foregone on Additional Efficient RC1 Capex			**2020**	**2021**	**2022**
9	Assumed average asset life for new investment	years	40			
10	Additional efficient RC1 capex to be allowed at RC2	AEDm, 2023 prices		-105.56	71.43	0.00
11	**Depreciation on additional efficient RC1 capex** (half-year depreciation for the first year of each annual capex)	AEDm, 2023 prices		**-1.32**	**-1.75**	**-0.85**

	Return on Capital foregone on Additional Efficient RC1 Capex		**2020**	**2021**	**2022**
12	Additional efficient RC1 capex - Opening value	AEDm, 2023 prices	0.00	-104.24	-31.06
13	Additional efficient RC1 capex	AEDm, 2023 prices	-105.56	71.43	0.00
14	Depreciation on additional efficient RC1capex	AEDm, 2023 prices	-1.32	-1.75	-0.85
15	Additional efficient RC1 capex - Closing value	AEDm, 2023 prices	-104.24	-31.06	**-30.20**
16	Average of Opening and Closing values	AEDm, 2023 prices	-52.12	-67.65	-30.63
17	Cost of capital (real)	%	4.60%	4.60%	4.60%
18	**Return on capital foregone**	**AEDm, 2023 prices**	**-2.40**	**-3.11**	**-1.41**

	Financing Costs foregone on Additional Efficient RC1 Capex		**2020**	**2021**	**2022**
19	Depreciation foregone	AEDm, 2023 prices	-1.32	-1.75	-0.85
20	Return on capital foregone	AEDm, 2023 prices	-2.40	-3.11	-1.41
21	Total financing costs foregone	AEDm, 2023 prices	-3.72	-4.86	-2.26
22	Not used				
23	Not used				
24	Not used				
25	Years from year mid point to 31 Dec 2022 (RC1 capex)	AEDm, 2023 prices	2.50	1.50	0.50
26	NPV @ 31 Dec 2022 of financing costs foregone (RC1 capex)	AEDm, 2023 prices	-4.16	-5.20	-2.31
27	**Accumulated NPV (@ 31 Dec 2022) of financing costs foregone**	**AEDm, 2023 prices**			**-11.67**

	Updated 2023 Opening RAV (including Additional Efficient RC1 Capex)		**2023**
28	Initial Opening 2022 RAV	AEDm, 2018 prices	9,074.3
29	Initial Opening 2022 RAV	AEDm, 2023 prices	8,987.6
29A	2022 capex	AEDm, 2023 prices	488.3
29B	2022 depreciation	AEDm, 2023 prices	479.9
29C	Initial Opening 2023 RAV	AEDm, 2023 prices	8,996.0
30	Add: Additional efficient RC1 capex - Closing value @ 31 Dec 2022	AEDm, 2023 prices	(30.2)
31	**Updated Opening 2023 RAV including Additional Efficient RC1 capex**	**AEDm, 2023 prices**	**8,965.7**

Updating RC2 RAVs for RC2 ex-ante Capex

	Updated RC2 RAVs including RC2 ex-ante Capex AEDm, 2023 prices			RC2 2023	2024	2025	2026
32	Assumed average asset life for new investment	years	40				
33	**Opening RAV**	**AEDm, 2023 prices**		**8,965.75**	**8,838.58**	**8,764.82**	**8,590.45**
34	RC2 ex-ante capex	AEDm, 2023 prices		363.40	426.68	335.60	319.74
35	Total Depreciation on RAV and capex (excluding RC2 ex-ante capex)	AEDm, 2023 prices		486.02	486.02	486.02	486.02
36	Depreciation on RC2 ex-ante capex (half-year depreciation for first year)	AEDm, 2023 prices		4.54	14.42	23.95	32.14
37	**Total depreciation for RC2**	AEDm, 2023 prices		**490.56**	**500.44**	**509.97**	**518.16**
38	**Closing RAV**	AEDm, 2023 prices		**8,838.58**	**8,764.82**	**8,590.45**	**8,392.03**

Table A.2 : AADC water – Updating RAV

Calculating foregone financing costs and updating 2023 Opening RAV for RC1 Efficient Capex

Line No.

	UAE CPI Assumptions	2015	2016	2017	2018	2019	2020	2021	2022
1	CPI (2014 = 100) used in calculations	104.07	105.75	107.84	111.14	109.00	106.73	106.77	106.81

			RC1		
	Additional Efficient RC1 Capex to be allowed at this Review		2020	2021	2022
2	Actual RC1 capex - total	AEDm, nominal prices	80.3	80.3	
2A	Actual RC1 capex - ex-ante approved schemes	AEDm, nominal prices	1.7	16.3	
2B	Actual RC1 capex - unreviewed schemes	AEDm, nominal prices	78.6	64.0	
3	Applied capex efficiency factor	%	97.44%	97.44%	
4	Efficient RC1 capex - unreviewed schemes	AEDm, nominal prices	76.6	62.4	
5	Efficient RC1 capex - unreviewed schemes	AEDm, 2023 prices	75.1	62.4	
6	Allowed RC1 capex - total	AEDm, nominal prices	137.8	141.6	
6A	Allowed RC1 capex - ex-ante approved scheme	AEDm, nominal prices	15.8	88.0	
6B	Allowed RC1 capex - unreviewed schemes	AEDm, nominal prices	122.0	53.6	
7	Allowed RC1 capex - unreviewed schemes	AEDm, 2023 prices	119.6	53.7	
8	**Additional efficient RC1 capex to be allowed at RC2**	**AEDm, 2023 prices**	**(44.5)**	**8.7**	

	Depreciation foregone on Additional Efficient RC1 Capex			2020	2021	2022
9	Assumed average asset life for new investment	years	40			
10	Additional efficient RC1 capex to be allowed at RC2	AEDm, 2023 prices		-44.51	8.73	0.00
11	**Depreciation on additional efficient RC1 capex** (half-year depreciation for the first year of each annual capex)	AEDm, 2023 prices		**-0.56**	**-1.00**	**-0.89**

	Return on Capital foregone on Additional Efficient RC1 Capex		2020	2021	2022
12	Additional efficient RC1 capex - Opening value	AEDm, 2023 prices	0.00	-43.95	-34.22
13	Additional efficient RC1 capex	AEDm, 2023 prices	-44.51	8.73	0.00
14	Depreciation on additional efficient RC1capex	AEDm, 2023 prices	-0.56	-1.00	-0.89
15	Additional efficient RC1 capex - Closing value	AEDm, 2023 prices	-43.95	-34.22	**-33.33**
16	Average of Opening and Closing values	AEDm, 2023 prices	-21.98	-39.09	-33.77
17	Cost of capital (real)	%	4.60%	4.60%	4.60%
18	**Return on capital foregone**	**AEDm, 2023 prices**	**-1.01**	**-1.80**	**-1.55**

	Financing Costs foregone on Additional Efficient RC1 Capex		2020	2021	2022
19	Depreciation foregone	AEDm, 2023 prices	-0.56	-1.00	-0.89
20	Return on capital foregone	AEDm, 2023 prices	-1.01	-1.80	-1.55
21	Total financing costs foregone	AEDm, 2023 prices	-1.57	-2.80	-2.45
22	Not used	-			
23	Not used	-			
24	Not used	-			
25	Years from year mid point to 31 Dec 2022 (RC1 capex)	AEDm, 2023 prices	2.50	1.50	0.50
26	NPV @ 31 Dec 2022 of financing costs foregone (RC1 capex)	AEDm, 2023 prices	-1.75	-3.00	-2.50
27	**Accumulated NPV (@ 31 Dec 2022) of financing costs foregone**	**AEDm, 2023 prices**			**-7.25**

	Updated 2023 Opening RAV (including Additional Efficient RC1 Capex)		2023
28	Initial Opening 2022 RAV	AEDm, 2018 prices	2,838.76
29	Initial Opening 2022 RAV	AEDm, 2023 prices	2,811.64
29A	2022 capex	AEDm, 2023 prices	104.29
29B	2022 depreciation	AEDm, 2023 prices	168.30
29C	Initial Opening 2023 RAV	AEDm, 2023 prices	2,747.6
30	Add: Additional efficient RC1 capex - Closing value @ 31 Dec 2022	AEDm, 2023 prices	(33.33)
31	**Updated Opening 2023 RAV including Additional Efficient RC1 capex**	**AEDm, 2023 prices**	**2,714.30**

Updating RC2 RAVs for RC2 ex-ante Capex

Updated RC2 RAVs including RC2 ex-ante Capex AEDm, 2023 prices			RC2 2023	2024	2025	2026
32	Assumed average asset life for new investment	years	40			
33	**Opening RAV**	**AEDm, 2023 prices**	**2,714.30**	**2,676.94**	**2,588.39**	**2,474.06**
34	RC2 ex-ante capex	AEDm, 2023 prices	133.91	85.46	61.54	49.43
35	Total Depreciation on RAV and capex (excluding RC2 ex-ante capex)	AEDm, 2023 prices	169.60	169.60	169.60	169.60
36	Depreciation on RC2 ex-ante capex (half-year depreciation for first year)	AEDm, 2023 prices	1.67	4.42	6.25	7.64
37	**Total depreciation for RC2**	AEDm, 2023 prices	**171.28**	**174.02**	**175.86**	**177.24**
38	**Closing RAV**	AEDm, 2023 prices	**2,676.94**	**2,588.39**	**2,474.06**	**2,346.25**

Table A.3 : AADC recycled water – Updating RAV

Calculating foregone financing costs and updating 2023 Opening RAV for RC1 Efficient Capex

Line No.

	UAE CPI Assumptions	2015	2016	2017	2018	2019	2020	2021	2022
1	**CPI (2014 = 100) used in calculations**	**104.07**	**105.75**	**107.84**	**111.14**	**109.00**	**106.73**	**106.77**	**106.81**
			Assumed in RC1	108.00					

			RC1		
	Additional Efficient RC1 Capex to be allowed at this Review		**2020**	**2021**	**2022**
2	Actual RC1 capex - total	AEDm, nominal prices	-	0.8	
2A	Actual RC1 capex - ex-ante approved schemes	AEDm, nominal prices	-	-	
2B	Actual RC1 capex - unreviewed schemes	AEDm, nominal prices	-	0.8	
3	Applied capex efficiency factor	%	97.44%	97.44%	
4	Efficient RC1 capex - unreviewed schemes	AEDm, nominal prices	-	0.7	
5	Efficient RC1 capex - unreviewed schemes	AEDm, 2023 prices	-	0.7	
6	Allowed RC1 capex - total	AEDm, nominal prices	1.8	9.2	
6A	Allowed RC1 capex - ex-ante approved schem	AEDm, nominal prices	-	-	
6B	Allowed RC1 capex - unreviewed schemes	AEDm, nominal prices	1.8	9.2	
7	Allowed RC1 capex - unreviewed schemes	AEDm, 2023 prices	1.8	9.2	
8	**Additional efficient RC1 capex to be allowed at RC2**	**AEDm, 2023 prices**	**(1.8)**	**(8.5)**	

	Depreciation foregone on Additional Efficient RC1 Capex			**2020**	**2021**	**2022**
9	Assumed average asset life for new investment	years	40			
10	Additional efficient RC1 capex to be allowed at RC2	AEDm, 2023 prices		-1.76	-8.46	0.00
11	**Depreciation on additional efficient RC1 capex** (half-year depreciation for the first year of each annual capex)	AEDm, 2023 prices		**-0.02**	**-0.15**	**-0.26**

	Return on Capital foregone on Additional Efficient RC1 Capex		**2020**	**2021**	**2022**
12	Additional efficient RC1 capex - Opening value	AEDm, 2023 prices	0.00	-1.74	-10.05
13	Additional efficient RC1 capex	AEDm, 2023 prices	-1.76	-8.46	0.00
14	Depreciation on additional efficient RC1capex	AEDm, 2023 prices	-0.02	-0.15	-0.26
15	Additional efficient RC1 capex - Closing value	AEDm, 2023 prices	-1.74	-10.05	**-9.80**
16	Average of Opening and Closing values	AEDm, 2023 prices	-0.87	-5.90	-9.93
17	Cost of capital (real)	%	4.60%	4.60%	4.60%
18	**Return on capital foregone**	**AEDm, 2023 prices**	**-0.04**	**-0.27**	**-0.46**

	Financing Costs foregone on Additional Efficient RC1 Capex		**2020**	**2021**	**2022**
19	Depreciation foregone	AEDm, 2023 prices	-0.02	-0.15	-0.26
20	Return on capital foregone	AEDm, 2023 prices	-0.04	-0.27	-0.46
21	Total financing costs foregone	AEDm, 2023 prices	-0.06	-0.42	-0.71
22	Not used	-			
23	Not used	-			
24	Not used	-			
25	Years from year mid point to 31 Dec 2022 (RC1 capex)	AEDm, 2023 prices	2.50	1.50	0.50
26	NPV @ 31 Dec 2022 of financing costs foregone (RC1 capex)	AEDm, 2023 prices	-0.07	-0.45	-0.73
27	**Accumulated NPV (@ 31 Dec 2022) of financing costs foregone**	**AEDm, 2023 prices**			**-1.25**

	Updated 2023 Opening RAV (including Additional Efficient RC1 Capex)		**2018**
28	Initial Opening 2022 RAV	AEDm, 2018 prices	418.07
29	Initial Opening 2022 RAV	AEDm, 2023 prices	413.47
29A	2022 capex	AEDm, 2023 prices	11.44
29B	2022 depreciation	AEDm, 2023 prices	9.90
29C	Initial Opening 2023 RAV	AEDm, 2023 prices	415.0
30	Add: Additional efficient RC1 capex - Closing value @ 31 Dec 2022	AEDm, 2023 prices	(9.80)
31	**Updated Opening 2023 RAV including Additional Efficient RC1 capex**	**AEDm, 2023 prices**	**405.20**

Updating RC2 RAVs for RC2 ex-ante Capex

				RC2			
	Updated RC2 RAVs including RC2 ex-ante Capex AEDm, 2023 prices			**2023**	**2024**	**2025**	**2026**
32	Assumed average asset life for new investment	years	40				
33	**Opening RAV**	**AEDm, 2023 prices**		**405.20**	**422.75**	**439.46**	**442.78**
34	RC2 ex-ante capex	AEDm, 2023 prices		27.94	27.81	14.94	2.57
35	Total Depreciation on RAV and capex (excluding RC2 ex-ante capex)	AEDm, 2023 prices		10	10	10	10
36	Depreciation on RC2 ex-ante capex (half-year depreciation for first year)	AEDm, 2023 prices		0.3	1.0	1.6	1.8
37	**Total depreciation for RC2**	AEDm, 2023 prices		**10.39**	**11.09**	**11.62**	**11.84**
38	**Closing RAV**	AEDm, 2023 prices		**422.75**	**439.46**	**442.78**	**433.51**

Table A.4 : ADDC electricity – Updating RAV

Calculating foregone financing costs and updating 2023 Opening RAV for RC1 Efficient Capex

Line No.

	UAE CPI Assumptions	2015	2016	2017	2018	2019	2020	2021	2022
1	CPI (2014 = 100) used in calculations	104.07	105.75	107.84	111.14	109.00	106.73	106.77	106.81
	Assumed in PC4								

			RC1	
	Additional Efficient RC1 Capex to be allowed at this Review		2020	2021	2022
2	Actual RC1 capex - total	AEDm, nominal prices	454.4	693.6	
2A	Actual RC1 capex - ex-ante approved schemes	AEDm, nominal prices	171.3	220.3	
2B	Actual RC1 capex - unreviewed schemes	AEDm, nominal prices	283.0	473.3	
3	Applied capex efficiency factor	%	97.90%	97.90%	
4	Efficient RC1 capex - unreviewed schemes	AEDm, nominal prices	277.1	463.3	
5	Efficient RC1 capex - unreviewed schemes	AEDm, 2023 prices	271.5	463.7	
6	Allowed RC1 capex - total	AEDm, nominal prices	611.7	600.9	
6A	Allowed RC1 capex - ex-ante approved scheme	AEDm, nominal prices	207.9	387.5	
6B	Allowed RC1 capex - unreviewed schemes	AEDm, nominal prices	403.8	213.4	
7	Allowed RC1 capex - unreviewed schemes	AEDm, 2023 prices	395.7	213.5	
8	**Additional efficient RC1 capex to be allowed at RC2**	**AEDm, 2023 prices**	**(124.1)**	**250.2**	
	Depreciation foregone on Additional Efficient RC1 Capex		**2020**	**2021**	**2022**
9	Assumed average asset life for new investment	years	40		
10	Additional efficient RC1 capex to be allowed at RC2	AEDm, 2023 prices	-124.12	250.17	0.00
11	**Depreciation on additional efficient RC1 capex** (half-year depreciation for the first year of each annual capex)	AEDm, 2023 prices	**-1.55**	**0.02**	**3.15**
	Return on Capital foregone on Additional Efficient RC1 Capex		**2020**	**2021**	**2022**
12	Additional efficient RC1 capex - Opening value	AEDm, 2023 prices	0.00	-122.57	127.58
13	Additional efficient RC1 capex	AEDm, 2023 prices	-124.12	250.17	0.00
14	Depreciation on additional efficient RC1capex	AEDm, 2023 prices	-1.55	0.02	3.15
15	Additional efficient RC1 capex - Closing value	AEDm, 2023 prices	-122.57	127.58	**124.42**
16	Average of Opening and Closing values	AEDm, 2023 prices	-61.28	2.50	126.00
17	Cost of capital (real)	%	4.60%	4.60%	4.60%
18	**Return on capital foregone**	**AEDm, 2023 prices**	**-2.82**	**0.12**	**5.80**
	Financing Costs foregone on Additional Efficient RC1 Capex		**2020**	**2021**	**2022**
19	Depreciation foregone	AEDm, 2023 prices	-1.55	0.02	3.15
20	Return on capital foregone	AEDm, 2023 prices	-2.82	0.12	5.80
21	Total financing costs foregone	AEDm, 2023 prices	-4.37	0.14	8.95
22	Not used	-			
23	Not used	-			
24	Not used	-			
25	Years from year mid point to 31 Dec 2022 (RC1 capex)	AEDm, 2023 prices	2.50	1.50	0.50
26	NPV @ 31 Dec 2022 of financing costs foregone (RC1 capex)	AEDm, 2023 prices	-4.89	0.15	9.15
27	**Accumulated NPV (@ 31 Dec 2022) of financing costs foregone**	**AEDm, 2023 prices**			**4.41**

	Updated 2023 Opening RAV (including Additional Efficient RC1 Capex)		2023
28	Initial Opening 2022 RAV	AEDm, 2018 prices	15,498.36
29	Initial Opening 2022 RAV	AEDm, 2023 prices	15,350.33
29A	2022 capex	AEDm, 2023 prices	693.02
29B	2022 depreciation	AEDm, 2023 prices	927.15
29C	Initial Opening 2023 RAV	AEDm, 2023 prices	15,116.2
30	Add: Additional efficient RC1 capex - Closing value @ 31 Dec 2022	AEDm, 2023 prices	124.42
31	**Updated Opening 2023 RAV including Additional Efficient RC1 capex**	**AEDm, 2023 prices**	**15,240.63**

Updating RC2 RAVs for RC2 ex-ante Capex

Updated RC2 RAVs including RC2 ex-ante Capex AEDm, 2023 prices			RC2 2023	2024	2025	2026
32	Assumed average asset life for new investment	years	40			
33	**Opening RAV**	**AEDm, 2023 prices**	**15,240.63**	**14,929.91**	**14,807.38**	**14,375.38**
34	RC1 ex-ante capex (excl BESS)	AEDm, 2023 prices	633.02	839.62	547.48	364.12
35	Total Depreciation on RAV and capex (excluding RC2 ex-ante capex)	AEDm, 2023 prices	935.82	935.82	935.82	935.82
36	Depreciation on RC2 ex-ante capex (half-year depreciation for first year)	AEDm, 2023 prices	7.91	26.32	43.66	55.05
37	**Total depreciation for RC2**	AEDm, 2023 prices	**943.74**	**962.14**	**979.48**	**990.88**
38	**Closing RAV**	AEDm, 2023 prices	**14,929.91**	**14,807.38**	**14,375.38**	**13,748.63**

Table A.5 : ADDC water – Updating RAV

Calculating foregone financing costs and updating 2023 Opening RAV for RC1 Efficient Capex

Line No.

	UAE CPI Assumptions		2015	2016	2017	2018	2019	2020	2021	2022
1	**CPI (2014 = 100) used in calculations**		**104.07**	**105.75**	**107.84**	**111.14**	**109.00**	**106.73**	**106.77**	**106.81**
	Assumed in PC4		93.57							

			RC1		
	Additional Efficient RC1 Capex to be allowed at this Review		**2020**	**2021**	**2022**
2	Actual RC1 capex - total	AEDm, nominal prices	174.3	185.1	
2A	Actual RC1 capex - ex-ante approved schemes	AEDm, nominal prices	23.3	16.9	
2B	Actual RC1 capex - unreviewed schemes	AEDm, nominal prices	150.9	168.2	
3	Applied capex efficiency factor	%	98.70%	98.70%	
4	Efficient RC1 capex - unreviewed schemes	AEDm, nominal prices	149.0	166.0	
5	Efficient RC1 capex - unreviewed schemes	AEDm, 2023 prices	146.0	166.1	
6	Allowed RC1 capex - total	AEDm, nominal prices	249.6	283.7	
6A	Allowed RC1 capex - ex-ante approved schemes	AEDm, nominal prices	61.2	144.2	
6B	Allowed RC1 capex - unreviewed schemes	AEDm, nominal prices	188.4	139.5	
7	Allowed RC1 capex - unreviewed schemes	AEDm, 2023 prices	184.6	139.6	
8	**Additional efficient RC1 capex to be allowed at RC2**	**AEDm, 2023 prices**	**(38.6)**	**26.5**	**0.00**

	Depreciation foregone on Additional Efficient RC1 Capex			**2020**	**2021**	**2022**
9	Assumed average asset life for new investment	years	40			
10	Additional efficient RC1 capex to be allowed at RC2	AEDm, 2023 prices		-38.61	26.53	0.00
11	**Depreciation on additional efficient RC1 capex** (half-year depreciation for the first year of each annual capex)	AEDm, 2023 prices		**-0.48**	**-0.63**	**-0.30**

	Return on Capital foregone on Additional Efficient RC1 Capex		**2020**	**2021**	**2022**
12	Additional efficient RC1 capex - Opening value	AEDm, 2023 prices	0.00	-38.13	-10.96
13	Additional efficient RC1 capex	AEDm, 2023 prices	-38.61	26.53	0.00
14	Depreciation on additional efficient RC1capex	AEDm, 2023 prices	-0.48	-0.63	-0.30
15	Additional efficient RC1 capex - Closing value	AEDm, 2023 prices	-38.13	-10.96	**-10.66**
16	Average of Opening and Closing values	AEDm, 2023 prices	-19.07	-24.55	-10.81
17	Cost of capital (real)	%	4.60%	4.60%	4.60%
18	**Return on capital foregone**	**AEDm, 2023 prices**	**-0.88**	**-1.13**	**-0.50**

	Financing Costs foregone on Additional Efficient RC1 Capex		**2020**	**2021**	**2022**
19	Depreciation foregone	AEDm, 2023 prices	-0.48	-0.63	-0.30
20	Return on capital foregone	AEDm, 2023 prices	-0.88	-1.13	-0.50
21	Total financing costs foregone	AEDm, 2023 prices	-1.36	-1.76	-0.80
22	Not used	-			
23	Not used	-			
24	Not used	-			
25	Years from year mid point to 31 Dec 2022 (RC1 capex)	AEDm, 2023 prices	2.50	1.50	0.50
26	NPV @ 31 Dec 2022 of financing costs foregone (RC1 capex)	AEDm, 2023 prices	-1.52	-1.89	-0.82
27	**Accumulated NPV (@ 31 Dec 2022) of financing costs foregone**	**AEDm, 2023 prices**			**-4.23**

	Updated 2023 Opening RAV (including Additional Efficient RC1 Capex)		**2023**
28	Initial Opening 2022 RAV	AEDm, 2018 prices	5,690.35
29	Initial Opening 2022 RAV	AEDm, 2023 prices	5,636.00
29A	2022 capex	AEDm, 2023 prices	333.77
29B	2022 depreciation	AEDm, 2023 prices	311.31
29C	Initial Opening 2023 RAV	AEDm, 2023 prices	5,658.5
30	Add: Additional efficient RC1 capex - Closing value @ 31 Dec 2022	AEDm, 2023 prices	(10.66)
31	**Updated Opening 2023 RAV including Additional Efficient RC1 capex**	**AEDm, 2023 prices**	**5,647.79**

Updating RC2 RAVs for RC2 ex-ante Capex

	Updated RC2 RAVs including RC2 ex-ante Capex AEDm, 2023 prices			RC2 2023	2024	2025	2026
32	Assumed average asset life for new investment	years	40				
33	**Opening RAV**	**AEDm, 2023 prices**		**5,647.79**	**5,742.05**	**5,880.53**	**5,820.30**
34	RC2 ex-ante capex	AEDm, 2023 prices		414.93	470.21	280.90	408.63
35	Total Depreciation on RAV and capex (excluding RC2 ex-ante capex)	AEDm, 2023 prices		315.49	315.49	315.49	315.49
36	Depreciation on RC2 ex-ante capex (half-year depreciation for first year)	AEDm, 2023 prices		5.19	16.25	25.64	34.26
37	**Total depreciation for RC2**	AEDm, 2023 prices		**320.67**	**331.74**	**341.12**	**349.74**
38	**Closing RAV**	AEDm, 2023 prices		**5,742.05**	**5,880.53**	**5,820.30**	**5,879.19**

Table A.6 : ADDC recycled water – Updating RAV

Calculating foregone financing costs and updating 2023 Opening RAV for RC1 Efficient Capex

Line No.

	UAE CPI Assumptions	2015	2016	2017	2018	2019	2020	2021	2022
1	CPI (2014 = 100) used in calculations	104.07	105.75	107.84	111.14	109.00	106.73	106.77	106.81
			Assumed in RC1	108.00					

				RC1		
	Additional Efficient RC1 Capex to be allowed at this Review		2019	2020	2021	2022
2	Actual RC1 capex - total	AEDm, nominal prices	118.4	201.7	464.2	
2A	Actual RC1 capex - ex-ante approved schemes	AEDm, nominal prices	-	185.2	456.7	
2B	Actual RC1 capex - unreviewed schemes	AEDm, nominal prices	118.4	16.5	7.5	
3	Applied capex efficiency factor	%	97.03%	99.20%	99.20%	
4	Efficient RC1 capex - unreviewed schemes	AEDm, nominal prices	114.8	16.4	7.5	
5	Efficient RC1 capex - unreviewed schemes	AEDm, 2023 prices	110.4	16.1	7.5	
6	Allowed RC1 capex - total	AEDm, nominal prices	65.9	372.9	555.9	
6A	Allowed RC1 capex - ex-ante approved schem	AEDm, nominal prices	-	341.3	547.1	
6B	Allowed RC1 capex - unreviewed schemes	AEDm, nominal prices	65.9	31.6	8.8	
7	Allowed RC1 capex - unreviewed schemes	AEDm, 2023 prices	63.3	30.9	8.8	
8	**Additional efficient RC1 capex to be allowed at RC2**	**AEDm, 2023 prices**	**47.0**	**(14.9)**	**(1.3)**	

	Depreciation foregone on Additional Efficient RC1 Capex			2020	2021	2022
9	Assumed average asset life for new investment	years	40			
10	Additional efficient RC1 capex to be allowed at RC2	AEDm, 2023 prices	47.03	-14.88	-1.34	0.00
11	**Depreciation on additional efficient RC1 capex** (half-year depreciation for the first year of each annual capex)	AEDm, 2023 prices	**0.59**	**0.99**	**0.79**	**0.77**

	Return on Capital foregone on Additional Efficient RC1 Capex		2019	2020	2021	2022
12	Additional efficient RC1 capex - Opening value	AEDm, 2023 prices	0.00	46.45	30.58	28.45
13	Additional efficient RC1 capex	AEDm, 2023 prices	47.03	-14.88	-1.34	0.00
14	Depreciation on additional efficient RC1capex	AEDm, 2023 prices	0.59	0.99	0.79	0.77
15	Additional efficient RC1 capex - Closing value	AEDm, 2023 prices	46.45	30.58	28.45	**27.68**
16	Average of Opening and Closing values	AEDm, 2023 prices	23.22	38.51	29.52	28.07
17	Cost of capital (real)	%	4.60%	4.60%	4.60%	4.60%
18	**Return on capital foregone**	**AEDm, 2023 prices**	**1.07**	**1.77**	**1.36**	**1.29**

	Financing Costs foregone on Additional Efficient RC1 Capex		2020	2021	2022
19	Depreciation foregone	AEDm, 2023 prices	0.99	0.79	0.77
20	Return on capital foregone	AEDm, 2023 prices	1.77	1.36	1.29
21	Total financing costs foregone	AEDm, 2023 prices	2.76	2.14	2.06
22	Not used	-			
23	Not used	-			
24	Not used	-			
25	Years from year mid point to 31 Dec 2022 (RC1 capex)	AEDm, 2023 prices	2.50	1.50	0.50
26	NPV @ 31 Dec 2022 of financing costs foregone (RC1 capex)	AEDm, 2023 prices	3.09	2.29	2.11
27	**Accumulated NPV (@ 31 Dec 2022) of financing costs foregone**	**AEDm, 2023 prices**			**7.49**

	Updated 2023 Opening RAV (including Additional Efficient RC1 Capex)		2023
28	Initial Opening 2022 RAV	AEDm, 2018 prices	1,778.93
29	Initial Opening 2022 RAV	AEDm, 2023 prices	1,759.33
29A	2022 capex	AEDm, 2023 prices	92.52
29B	2022 depreciation	AEDm, 2023 prices	47.92
29C	Initial Opening 2023 RAV	AEDm, 2023 prices	1,803.9
30	Add: Additional efficient RC1 capex - Closing value @ 31 Dec 2022	AEDm, 2023 prices	27.68
31	**Updated Opening 2023 RAV including Additional Efficient RC1 capex**	**AEDm, 2023 prices**	**1,831.62**

Updating RC2 RAVs for RC2 ex-ante Capex

	Updated RC2 RAVs including RC2 ex-ante Capex AEDm, 2023 prices			RC2 2023	2024	2025	2026
32	Assumed average asset life for new investment	years	40				
33	**Opening RAV**	**AEDm, 2023 prices**		**1,831.62**	**1,882.84**	**1,878.91**	**1,874.56**
34	RC2 ex-ante capex	AEDm, 2023 prices		101.56	48.28	49.08	25.81
35	Total Depreciation on RAV and capex (excluding RC2 ex-ante capex)	AEDm, 2023 prices		49	49	49	49
36	Depreciation on RC2 ex-ante capex (half-year depreciation for first year)	AEDm, 2023 prices		1.27	3.14	4.36	5.30
37	**Total depreciation for RC2**	AEDm, 2023 prices		**50.34**	**52.21**	**53.43**	**54.37**
38	**Closing RAV**	AEDm, 2023 prices		**1,882.84**	**1,878.91**	**1,874.56**	**1,846.00**

Table A.7 : TRANSCO electricity – Updating RAV

Calculating foregone financing costs and updating 2023 Opening RAV for RC1 Efficient Capex

Line No.

	UAE CPI Assumptions	2015	2016	2017	2018	2019	2020	2021	2022
1	CPI (2014 = 100) used in calculations	104.07	105.75	107.84	111.14	109.00	106.73	106.77	106.81

				RC1		
	Additional Efficient RC1 Capex to be allowed at this Review			**2020**	**2021**	**2022**
2	Actual RC1 capex - total	AEDm, nominal prices		971.6	711.7	
2A	Actual RC1 capex - ex-ante approved schemes	AEDm, nominal prices		11.2	92.1	
2B	Actual RC1 capex - unreviewed schemes	AEDm, nominal prices		960.3	619.6	
3	Applied capex efficiency factor	%		99.24%	99.24%	
4	Efficient RC1 capex - unreviewed schemes	AEDm, nominal prices		953.1	614.9	
5	Efficient RC1 capex - unreviewed schemes	AEDm, 2023 prices		933.9	615.4	
6	Allowed RC1 capex - total	AEDm, nominal prices		1,250.7	1,254.8	
6A	Allowed RC1 capex - ex-ante approved schemes	AEDm, nominal prices		67.8	517.8	
6B	Allowed RC1 capex - unreviewed schemes	AEDm, nominal prices		1,182.9	737.0	
7	Allowed RC1 capex - unreviewed schemes	AEDm, 2023 prices		1,159.1	737.5	
8	**Additional efficient RC1 capex to be allowed at RC2**	**AEDm, 2023 prices**		**(225.2)**	**(122.1)**	**0.00**
	Depreciation foregone on Additional Efficient RC1 Capex			**2020**	**2021**	**2022**
9	Assumed average asset life for new investment	years	40			
10	Additional efficient RC1 capex to be allowed at RC2	AEDm, 2023 prices		-225.24	-122.14	0.00
11	**Depreciation on additional efficient RC1 capex** (half-year depreciation for the first year of each annual capex)	AEDm, 2023 prices		**-2.82**	**-7.16**	**-8.68**
	Return on Capital foregone on Additional Efficient RC1 Capex			**2020**	**2021**	**2022**
12	Additional efficient RC1 capex - Opening value	AEDm, 2023 prices		0.00	-222.42	-337.41
13	Additional efficient RC1 capex	AEDm, 2023 prices		-225.24	-122.14	0.00
14	Depreciation on additional efficient RC1capex	AEDm, 2023 prices		-2.82	-7.16	-8.68
15	Additional efficient RC1 capex - Closing value	AEDm, 2023 prices		-222.42	-337.41	**-328.72**
16	Average of Opening and Closing values	AEDm, 2023 prices		-111.21	-279.91	-333.06
17	Cost of capital (real)	%		4.60%	4.60%	4.60%
18	**Return on capital foregone**	**AEDm, 2023 prices**		**-5.12**	**-12.88**	**-15.32**
	Financing Costs foregone on Additional Efficient RC1 Capex			**2020**	**2021**	**2022**
19	Depreciation foregone	AEDm, 2023 prices		-2.82	-7.16	-8.68
20	Return on capital foregone	AEDm, 2023 prices		-5.12	-12.88	-15.32
21	Total financing costs foregone	AEDm, 2023 prices		-7.93	-20.03	-24.01
22	Not used	-				
23	Not used	-				
24	Not used	-				
25	Years from year mid point to 31 Dec 2022 (RC1 capex)	AEDm, 2023 prices		2.50	1.50	0.50
26	NPV @ 31 Dec 2022 of financing costs foregone (RC1 capex)	AEDm, 2023 prices		-8.87	-21.43	-24.55
27	**Accumulated NPV (@ 31 Dec 2022) of financing costs foregone**	**AEDm, 2023 prices**				**-54.86**
	Updated 2023 Opening RAV (including Additional Efficient RC1 Capex)					**2023**
28	Initial Opening 2022 RAV	AEDm, 2018 prices				29,073.49
29	Initial Opening 2022 RAV	AEDm, 2023 prices				28,795.80
29A	2022 capex	AEDm, 2023 prices				711.08
29B	2022 depreciation	AEDm, 2023 prices				1,830.11
29C	Initial Opening 2023 RAV	AEDm, 2023 prices				27,676.8
30	Add: Additional efficient RC1 capex - Closing value @ 31 Dec 2022	AEDm, 2023 prices				(328.72)
31	**Updated Opening 2023 RAV including Additional Efficient RC1 capex**	**AEDm, 2023 prices**				**27,348.05**

Updating RC2 RAVs for RC2 ex-ante Capex

	Updated RC2 RAVs including RC2 ex-ante Capex AEDm, 2023 prices			RC2 2023	2024	2025	2026
32	Assumed average asset life for new investment	years	40				
33	**Opening RAV**	**AEDm, 2023 prices**		**27,348.05**	**26,765.44**	**27,029.84**	**26,902.14**
34	RC2 ex-ante capex	AEDm, 2023 prices		1,272.30	1,991.20	1,585.33	1,125.11
35	Total Depreciation on RAV and capex (excluding RC2 ex-ante capex)	AEDm, 2023 prices		1,839.00	1,670.10	1,611.62	1,611.62
36	Depreciation on RC2 ex-ante capex (half-year depreciation for first year)	AEDm, 2023 prices		15.90	56.70	101.40	135.28
37	**Total depreciation for RC2**	AEDm, 2023 prices		**1,854.90**	**1,726.80**	**1,713.03**	**1,746.91**
38	**Closing RAV**	AEDm, 2023 prices		**26,765.44**	**27,029.84**	**26,902.14**	**26,280.34**

Table A.8 : TRANSCO water – Updating RAV

Calculating foregone financing costs and updating 2023 Opening RAV for RC1 Efficient Capex

Line No.

	UAE CPI Assumptions	2015	2016	2017	2018	2019	2020	2021	2022
1	CPI (2014 = 100) used in calculations	104.07	105.75	107.84	111.14	109.00	106.73	106.77	106.81

			RC1		
	Additional Efficient RC1 Capex to be allowed at this Review		**2020**	**2021**	**2022**
2	Actual RC1 capex - total	AEDm, nominal prices	580.4	618.6	
2A	Actual RC1 capex - ex-ante approved schemes	AEDm, nominal prices	1.0	1.1	
2B	Actual RC1 capex - unreviewed schemes	AEDm, nominal prices	579.4	617.5	
3	Applied capex efficiency factor	%	99.5%	99.5%	
4	Efficient RC1 capex - unreviewed schemes	AEDm, nominal prices	576.4	614.3	
5	Efficient RC1 capex - unreviewed schemes	AEDm, 2023 prices	564.8	614.8	
6	Allowed RC1 capex - total	AEDm, nominal prices	593.1	500.2	
6A	Allowed RC1 capex - ex-ante approved schemes	AEDm, nominal prices	3.2	104.2	
6B	Allowed RC1 capex - unreviewed schemes	AEDm, nominal prices	590.0	396.0	
7	Allowed RC1 capex - unreviewed schemes	AEDm, 2023 prices	578.1	396.3	
8	**Additional efficient RC1 capex to be allowed at RC2**	**AEDm, 2023 prices**	**(13.3)**	**218.5**	**0.00**

	Depreciation foregone on Additional Efficient RC1 Capex			**2020**	**2021**	**2022**
9	Assumed average asset life for new investment	years	40			
10	Additional efficient RC1 capex to be allowed at RC2	AEDm, 2023 prices		-13.31	218.47	0.00
11	**Depreciation on additional efficient RC1 capex** (half-year depreciation for the first year of each annual capex)	AEDm, 2023 prices		**-0.17**	**2.40**	**5.13**

	Return on Capital foregone on Additional Efficient RC1 Capex		**2020**	**2021**	**2022**
12	Additional efficient RC1 capex - Opening value	AEDm, 2023 prices	0.00	-13.15	202.92
13	Additional efficient RC1 capex	AEDm, 2023 prices	-13.31	218.47	0.00
14	Depreciation on additional efficient RC1capex	AEDm, 2023 prices	-0.17	2.40	5.13
15	Additional efficient RC1 capex - Closing value	AEDm, 2023 prices	-13.15	202.92	**197.80**
16	Average of Opening and Closing values	AEDm, 2023 prices	-6.57	94.89	200.36
17	Cost of capital (real)	%	4.60%	4.60%	4.60%
18	**Return on capital foregone**	**AEDm, 2023 prices**	**-0.30**	**4.36**	**9.22**

	Financing Costs foregone on Additional Efficient RC1 Capex		**2020**	**2021**	**2022**
19	Depreciation foregone	AEDm, 2023 prices	-0.17	2.40	5.13
20	Return on capital foregone	AEDm, 2023 prices	-0.30	4.36	9.22
21	Total financing costs foregone	AEDm, 2023 prices	-0.47	6.76	14.35
22	Not used	-			
23	Not used	-			
24	Not used	-			
25	Years from year mid point to 31 Dec 2022 (RC1 capex)	AEDm, 2023 prices	2.50	1.50	0.50
26	NPV @ 31 Dec 2022 of financing costs foregone (RC1 capex)	AEDm, 2023 prices	-0.52	7.23	14.67
27	**Accumulated NPV (@ 31 Dec 2022) of financing costs foregone**	**AEDm, 2023 prices**			**21.38**

	Updated 2023 Opening RAV (including Additional Efficient RC1 Capex)		**2023**
28	Initial Opening 2022 RAV	AEDm, 2018 prices	14,891.54
29	Initial Opening 2022 RAV	AEDm, 2023 prices	14,749.31
29A	2022 capex	AEDm, 2023 prices	454.26
29B	2022 depreciation	AEDm, 2023 prices	851.21
29C	Initial Opening 2023 RAV	AEDm, 2023 prices	14,352.4
30	Add: Additional efficient RC1 capex - Closing value @ 31 Dec 2022	AEDm, 2023 prices	197.80
31	**Updated Opening 2023 RAV including Additional Efficient RC1 capex**	**AEDm, 2023 prices**	**14,550.16**

Updating RC2 RAVs for RC2 ex-ante Capex

	Updated RC2 RAVs including RC2 ex-ante Capex AEDm, 2023 prices			RC2 **2023**	**2024**	**2025**	**2026**
32	Assumed average asset life for new investment	years	40				
33	**Opening RAV**	**AEDm, 2023 prices**		**14,550.16**	**14,435.96**	**14,168.49**	**13,877.86**
34	RC2 ex-ante capex	AEDm, 2023 prices		752.09	615.91	608.06	550.91
35	Total Depreciation on RAV and capex (excluding RC2 ex-ante capex)	AEDm, 2023 prices		856.88	856.88	856.88	856.88
36	Depreciation on RC2 ex-ante capex (half-year depreciation for first year)	AEDm, 2023 prices		9.40	26.50	41.80	56.29
37	**Total depreciation for RC2**	AEDm, 2023 prices		**866.29**	**883.39**	**898.69**	**913.17**
38	**Closing RAV**	AEDm, 2023 prices		**14,435.96**	**14,168.49**	**13,877.86**	**13,515.60**

Table A.9: ADSSC – Updating RAV

Calculating foregone financing costs and updating 2023 Opening RAV for RC1 Efficient Capex

Line No.

	UAE CPI Assumptions	2015	2016	2017	2018	2019	2020	2021	2022
1	CPI (2014 = 100) used in calculations	104.07	105.75	107.84	111.14	109.00	106.73	106.77	106.81

			RC1		
	Additional Efficient RC1 Capex to be allowed at this Review		**2020**	**2021**	**2022**
2	Actual RC1 capex - total	AEDm, nominal prices	659.72	344.14	
2A	Actual RC1 capex - ex-ante approved schemes	AEDm, nominal prices	-	-	
2B	Actual RC1 capex - unreviewed schemes	AEDm, nominal prices	659.72	344.14	
3	Applied capex efficiency factor	%	97.24%	97.24%	
4	Efficient RC1 capex - unreviewed schemes	AEDm, nominal prices	641.51	334.64	
5	Efficient RC1 capex - unreviewed schemes	AEDm, 2023 prices	628.62	334.89	
6	Allowed RC1 capex - total	AEDm, nominal prices	1,060.00	1,010.00	
6A	Allowed RC1 capex - ex-ante approved schemes	AEDm, nominal prices	-	-	
6B	Allowed RC1 capex - unreviewed schemes	AEDm, nominal prices	1,060.00	1,010.00	
7	Allowed RC1 capex - unreviewed schemes	AEDm, 2023 prices	1,038.70	1,010.76	
8	**Additional efficient RC1 capex to be allowed at RC2**	**AEDm, 2023 prices**	**-410.08**	**-675.87**	**0.00**

	Depreciation foregone on Additional Efficient RC1 Capex		**2020**	**2021**	**2022**
9	Assumed average asset life for new investment	years	60		
10	Additional efficient RC1 capex to be allowed at RC2	AEDm, 2023 prices	-410.08	-675.87	0.00
11	**Depreciation on additional efficient RC1 capex** (half-year depreciation for the first year of each annual capex)	AEDm, 2023 prices	**-3.42**	**-12.47**	**-18.10**

			1		
	Return on Capital foregone on Additional Efficient RC1 Capex		**2020**	**2021**	**2022**
12	Additional efficient RC1 capex - Opening value	AEDm, 2023 prices	0.00	-406.66	-1,070.06
13	Additional efficient RC1 capex	AEDm, 2023 prices	-410.08	-675.87	0.00
14	Depreciation on additional efficient RC1capex	AEDm, 2023 prices	-3.42	-12.47	-18.10
15	Additional efficient RC1 capex - Closing value	AEDm, 2023 prices	-406.66	-1,070.06	**-1,051.96**
16	Average of Opening and Closing values	AEDm, 2023 prices	-203.33	-738.36	-1,061.01
17	Cost of capital (real)	%	4.60%	4.60%	4.60%
18	**Return on capital foregone**	**AEDm, 2023 prices**	**-9.35**	**-33.96**	**-48.81**

	Financing Costs foregone on Additional Efficient RC1 Capex		**2020**	**2021**	**2022**
19	Depreciation foregone	AEDm, 2023 prices	-3.42	-12.47	-18.10
20	Return on capital foregone	AEDm, 2023 prices	-9.35	-33.96	-48.81
21	Total financing costs foregone	AEDm, 2023 prices	-12.77	-46.43	-66.91
22	Not used	-			
23	Not used	-			
24	Not used	-			
25	Years from year mid point to 31 Dec 2022 (RC1 capex)	AEDm, 2023 prices	2.50	1.50	0.50
26	NPV @ 31 Dec 2022 of financing costs foregone (RC1 capex)	AEDm, 2023 prices	-14.29	-49.67	-68.43
27	**Accumulated NPV (@ 31 Dec 2022) of financing costs foregone**	**AEDm, 2023 prices**			**-132.39**

	Updated 2023 Opening RAV (including Additional Efficient RC1 Capex)		**2023**
28	Initial Opening 2022 RAV	AEDm, 2018 prices	17,572.75
29	Initial Opening 2022 RAV	AEDm, 2023 prices	17,404.91
29A	2022 capex	AEDm, 2023 prices	466.25
29B	2022 depreciation	AEDm, 2023 prices	394.45
29C	Initial Opening 2023 RAV	AEDm, 2023 prices	17,476.7
30	Add: Additional efficient RC1 capex - Closing value @ 31 Dec 2022	AEDm, 2023 prices	(1,051.96)
31	**Updated Opening 2023 RAV including Additional Efficient RC1 capex**	**AEDm, 2023 prices**	**16,424.75**

Updating RC2 RAVs for RC2 ex-ante Capex

Updated RC2 RAVs including RC2 ex-ante Capex AEDm, 2023 prices			RC2			
			2023	**2024**	**2025**	**2026**
32	Assumed average asset life for new investment	years	60			
33	**Opening RAV**	**AEDm, 2023 prices**	**16,424.75**	**16,593.61**	**16,702.37**	**16,639.63**
34	RC2 ex-ante capex	AEDm, 2023 prices	571.96	520.98	356.78	219.19
35	Total Depreciation on RAV and capex (excluding RC2 ex-ante capex)	AEDm, 2023 prices	398.34	398.34	398.34	398.34
36	Depreciation on RC2 ex-ante capex (half-year depreciation for first year)	AEDm, 2023 prices	4.77	13.87	21.19	25.99
37	**Total depreciation for RC2**	AEDm, 2023 prices	**403.10**	**412.21**	**419.53**	**424.33**
38	**Closing RAV**	AEDm, 2023 prices	**16,593.61**	**16,702.37**	**16,639.63**	**16,434.49**

Annex B: RC2 price control calculations

B.1 This **Annex B** to the Final Decision for RC2 comprises **Annexes B.1 through B.9** and presents detailed price control calculations for each of the four network companies (i.e., AADC, ADDC, ADSSC and TRANSCO), separately for water, recycled water, electricity and wastewater businesses, where applicable. These calculations have been extracted from the relevant spread sheets of the ***RC2 Financial Model*** – a Microsoft Excel based computer model developed by the DoE to carry out RC2 calculations. The results of these calculations are described in Section 7 of this document. Various assumptions and inputs used in these calculations (such as, UAE CPI, revenue driver projections and weights, opex allowances, and cost of capital) are described in Sections 2 through 6 of the document.

B.2 The calculations in each of Annexes B.1 through B.9 are presented in a standard format for all businesses. They are explained below with reference to "Line" numbers used in these Annexes and in the RC2 Financial Model.

B.3 In this Annex B, RC2 period refers to the four year period 2023-2026 for AADC, ADDC, TRANSCO and ADSSC.

Inputs (Lines 1-14)

B.4 Lines 1-14 show the inputs to the main price control calculations:

(a) Line 1 shows the opex allowance for each year of the RC2 period in 2023 prices as per Section 4.

(b) Lines 2 and 3 list the opening and closing RAVs, respectively, in 2023 prices for each year of the RC2 period (see Section 6 and **Annexes A1-A9** for details). Line 4 shows the mid-year RAV for each year calculated as the average of the opening and closing RAVs for that year.

(c) Line 5 lists the total annual depreciation over the RC2 period as determined in Section 6 and calculations in **Annex A**.

(d) Lines 6-8 list the assumptions for the revenue drivers. The assumptions for the variable revenue drivers are as per Section 3, whereas the fixed revenue driver is set to unity.

(e) Line 9 shows the NPV as of 1 January 2023 of the financing costs foregone.

(f) Line 10 shows the real cost of capital proposed for RC2 in Section 6. This is used in the calculation of NPVs as well as the return on capital component of the annual revenue requirement.

(g) Lines 11-13 list the weights for the revenue drivers in the price-controlled revenue as per Section 3.

(h) Line 14 shows the DoE's assumption for the X factor, set to zero.

Required revenue calculations (Lines 15-21)

B.5 Lines 15-21 show the calculations of required revenue for RC2 in 2023 prices:

(a) Lines 15 and 16 reproduce the annual opex allowances and depreciation for the RC2 period from Lines 1 and 5. Line 17 calculates the annual return on capital by multiplying the mid-year RAVs (Line 4) by the cost of capital (Line 10). The final column in each line shows the NPV of the relevant allowances over the RC2 period.

(b) Line 18 calculates the annual revenue requirement for the RC2 period by adding opex, depreciation and return on capital from Lines 15-17. The final column of Line 18 calculates the NPV of the annual revenue requirements over the RC2 period.

(c) Line 19 calculates, on an annual basis, the discounted annual revenue requirements. The last column figure is the simple sum of these discounted annual revenue requirements over the period and reconciles to the last column figure of Line 18.

(d) The last column in Line 20 reproduces the NPV of RC1 capex foregone financing costs from Line 9.

(e) Line 21 shows the NPV of the revenue requirement after RC1 capex foregone financing costs added, calculated by adding the last columns of Lines 19 and 20. This is the figure used in setting the price controls.

Revenue forecast and profiling (Lines 22-35)

B.6 Lines 22-35 describe the process for calibrating the controls, which utilises the 'Solver' function (an optimisation tool) of Excel:

(a) Lines 22-25 relate to the fixed revenue term (referred to as "Revenue Driver 1" in the RC2 Financial Model), Lines 26-29 relate to the first variable revenue term (or "Revenue Driver 2"). Lines 30-33 in previous price controls related the second variable revenue term (or "Revenue Driver 3") which has been discontinued in RC2 (discussed in section 3).

(b) Lines 22-25 relate to Revenue Driver 1 (the fixed revenue term) and run as follows:

i. Line 22 shows the revenue driver forecast, which in this case is set to unity due to the fixed nature of this driver.

ii. Line 23 shows the notified value 'a' for each year of the price control period. Initially, this value is unknown. However, the model incorporates formulae which ensure that the value 'a' changes by the X factor (set to zero in RC2) from year to year. Therefore, once the value for 2023 is known, those for the subsequent years of the RC2 period are automatically calculated. Refer to paragraph (f) below for determining the values of 'a', and 'b' for 2023. Value of notified value 'c' is zero.

iii. In Line 24, forecast of revenue from this revenue driver is calculated by multiplying Line 22 (driver forecast) with Line 23 (value of 'a'). The last figure in Line 24 is the NPV of the revenue forecast related to Revenue Driver 1 over the control period.

iv. Line 25 calculates the share of revenue related to Revenue Driver 1 in the total annual revenue by dividing Line 24 (revenue forecast for Revenue Driver 1) by Line 34 (annual revenue). The last column figure in Line 25 is

the ratio of the NPV of revenue forecast for Revenue Driver 1 to the NPV of total revenue shown as the second last column of Line 35 (total discounted allowed revenue at 1 January 2023). This NPV share is unknown initially but is one of the constraints used in Excel solver.

(c) Lines 26-29 follow the same format as Lines 22-25 but are related to Revenue Drivers 2 (i.e. the variable revenue driver). As explained above, Lines 30-33 to calculate the share of revenue driver 3 are not used.

(d) Line 34 calculates the annual revenue forecast as the sum of revenue forecasts for each of the revenue drivers (i.e., Lines 24, 28 and 32).

(e) Line 35 simply shows, on an annual basis, the discounted figures for annual revenues shown in Line 34 and, in the penultimate column, the total NPV of the revenues over the control period. The last column in Line 35 ("Difference") is used to equate this to the NPV of the total required revenue after RC1 capex foregone financing costs from Line 21.

(f) After inputting the required data and formulae in Lines 22-33, the Excel solver is run to set the last column figure in Line 35 (the "Difference") as the target to a value of zero. The solver is able to do so by changing the values of 'a' and 'b' for 2023 (in Lines 23 and 27), subject to the constraint that the shares of the NPVs of revenue forecasts for the revenue drivers (shown at the end of Lines 25 and 29) in the NPV of total revenue forecast (Line 35) must be equal to the weights set out in Section 3 (as shown in Lines 11 and 12, respectively). The target cell, variable cells and constraint cells for the solver are shown as shaded cells in the Annexes and also indicated by arrows.

(g) As the result of the solver run, the values of 'a' and 'b' for 2023 are determined. The values of 'a' and 'b' for subsequent years of the RC2 period are then automatically calculated by the model in 2023 prices by applying the X factor.

Results (Lines 36-39)

B.7 These lines summarise the values of the 'a', 'b' and 'c' (not used) and the X factor (set to zero) as set by the above calculations.

Implied financial indicators (Lines 40-41)

B.8 These two lines calculate two financial indicators in real terms to assess the financing viability of the business as a result of the price control calculations:

B.9 Line 40 shows the implied annual profit, calculated by subtracting Line 1 (opex allowance) and Line 5 (total depreciation) from Line 34 (annual allowed revenue).

B.10 Line 41 calculates the implied return on the mid-year RAVs in percentage terms by dividing Line 40 (implied annual profit) by Line 4 (mid-year RAVs).

Table B.1 : AADC electricity – RC2 calculations

Line No. **(All figures are in 2023 prices)**

				RC2			
	Inputs			**2023**	**2024**	**2025**	**2026**
1	Operating expenditure allowance	AEDm		684.51	683.61	670.20	656.19
2	Opening RAV	AEDm		8,965.75	8,838.58	8,764.82	8,590.45
3	Closing RAV	AEDm		8,838.58	8,764.82	8,590.45	8,392.03
4	Mid-Year RAV	AEDm		8,902.17	8,801.70	8,677.64	8,491.24
5	Total depreciation for RC2	AEDm		490.56	500.44	509.97	518.16
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	Customer Accounts		167,931	171,489	175,116	178,759
8	Forecast for revenue driver 3	GWh		0	0	0	0
9	PV of financing costs foregone on RC1 capex	AEDm	-11.67				
10	Cost of capital (real)		4.90%				
11	Weight in revenue for Revenue driver 1		85.00%				
12	Weight in revenue for Revenue driver 2		15.00%				
13	Weight in revenue for Revenue driver 3		0.00%				
14	X Factor		-				

			RC2				
	RC2 Required Revenue Calculations		**2023**	**2024**	**2025**	**2026**	**PV over RC2 Period at 1 January 2023**
15	Operating expenditure allowance	AEDm	684.51	683.61	670.20	656.19	2,454.30
16	Total depreciation for RC2	AEDm	490.56	500.44	509.97	518.16	1,835.52
17	Return on mid-year RAV	AEDm	436.21	431.28	425.20	416.07	1,556.52
18	Annual revenue requirement	AEDm	1,611.28	1,615.33	1,605.37	1,590.42	5,846.34
19	Discounted annual revenue requirement	AEDm	1,573.20	1,503.49	1,424.42	1,345.23	5,846.34
20	PV of financing costs foregone on RC1 capex	AEDm					-11.67
21	PV of revenue requirement (after foregone financing costs)	AEDm					**5,834.67**

	RC2 Revenue Forecast and Profiling		**2023**	**2024**	**2025**	**2026**	**PV Share in TOTAL**	
22	**Revenue driver 1**		1.00	1.00	1.00	1.00		
23		AEDm	**1,362.40**	1,362.40	1,362.40	1,362.40		
24		AEDm	1,362.40	1,362.40	1,362.40	1,362.40	4,959.47	
25		%	85%	85%	85%	85%	**85%**	
26	**Revenue driver 2**	Customer Accounts	167,931	171,489	175,116	178,759	**Constraints for Solver Run**	
27		AED / Customer	**1,388.87**	1,388.87	1,388.87	1,388.87		
28		AEDm	233.23	238.18	243.21	248.27	875.20	
29		%	15%	15%	15%	15%	**15%**	
30	**Revenue driver 3**	kWh	0	0	0	0		
31		fils / kWh	**-**	-	-	-		
32		AEDm	-	-	-	-	-	
33		%	0%	0%	0%	0%	**0%**	
		Variables for Solver Run						
34	Annual revenue	AEDm	1,595.64	1,600.58	1,605.61	1,610.67	**TOTAL**	Difference
35	**Discounted annual revenue at 1 January 2023**	AEDm	1,557.92	1,489.75	1,424.63	1,362.36	**5,834.67**	**0.00**
							Target for Solver Run	

	Results		**2023**
36	**X Factor**		**0.0**
37	**Fixed revenue term (a)**	**AED million**	**1,362.40**
38	**Co-efficient of variable revenue term (b)**	**AED / Customer Account**	**1,388.87**
39	**Co-efficient of variable revenue term (c)**	**fils / kWh metered**	**0.0000**

	Implied Financial Indicators		**2023**	**2024**	**2025**	**2026**	**Average**
40	Implied annual profit	AEDm	420.56	416.53	425.44	436.32	424.71
41	Implied return on mid-point RAV	%	4.72%	4.73%	4.90%	5.14%	4.87%

Table B.2 : AADC water – RC2 calculations

Line No. **(All figures are in 2023 prices)**

				RC2			
	Inputs			**2023**	**2024**	**2025**	**2026**
1	Operating expenditure allowance	AEDm		325.04	315.44	325.54	328.75
2	Opening RAV	AEDm		2,714.30	2,676.94	2,588.39	2,474.06
3	Closing RAV	AEDm		2,676.94	2,588.39	2,474.06	2,346.25
4	Mid-Year RAV	AEDm		2,695.62	2,632.66	2,531.23	2,410.16
5	Total depreciation for RC2	AEDm		171.28	174.02	175.86	177.24
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	Customer Accounts		101,116	102,948	104,781	106,613
8	Forecast for revenue driver 3	MIG		0	0	0	0
9	PV of financing costs foregone on RC1 capex	AEDm	-7.25				
10	Cost of capital (real)		4.90%				
11	Weight in revenue for Revenue driver 1		85.00%				
12	Weight in revenue for Revenue driver 2		15.00%				
13	Weight in revenue for Revenue driver 3		0.00%				
14	X Factor		0.00				

			RC2				
	RC2 Required Revenue Calculations		**2023**	**2024**	**2025**	**2026**	**PV over RC2 Period at 1 January 2023**
15	Operating expenditure allowance	AEDm	325.04	315.44	325.54	328.75	1,177.87
16	Total depreciation for RC2	AEDm	171.28	174.02	175.86	177.24	635.15
17	Return on mid-year RAV	AEDm	132.09	129.00	124.03	118.10	458.97
18	Annual revenue requirement	AEDm	628.41	618.46	625.43	624.09	2,272.00
19	Discounted annual revenue requirement	AEDm	613.55	575.63	554.93	527.88	2,272.00
20	PV of financing costs foregone on RC1 capex	AEDm					-7.25
21	PV of revenue requirement (after foregone financing costs)	AEDm					**2,264.74**

	RC2 Revenue Forecast and Profiling		**2023**	**2024**	**2025**	**2026**	**PV Share in TOTAL**	
22	**Revenue driver 1**		1.00	1.00	1.00	1.00		
23		AEDm	**528.82**	528.82	528.82	528.82		
24		AEDm	528.82	528.82	528.82	528.82	1,925.03	
25		%	85%	85%	85%	85%	**85%**	
26	**Revenue driver 2**	Customer Accounts	101,116	102,948	104,781	106,613	**Constraints for Solver Run**	
27		AED / Customer	**899.44**	899.44	899.44	899.44		
28		AEDm	90.95	92.60	94.24	95.89	339.71	
29		%	15%	15%	15%	15%	**15%**	
30	**Revenue driver 3**	TIG	0	0	0	0		
31		AED/TIG	-	-	-	-		
32		AEDm	-	-	-	-	-	
33		%	0%	0%	0%	0%	**0%**	
		Variables for Solver Run						
34	Annual revenue	AEDm	619.77	621.41	623.06	624.71	**TOTAL**	Difference
35	**Discounted annual revenue at 1 January 2023**	AEDm	605.12	578.39	552.83	528.40	**2,264.74**	**0.00**
							Target for Solver Run	

	Results		**2023**
36	**X Factor**		**0.0**
37	**Fixed revenue term (a)**	**AED million**	**528.82**
38	**Co-efficient of variable revenue term (b)**	**AED / Customer Account**	**899.44**
39	**Co-efficient of variable revenue term (c)**	**AED / TIG metered**	**0.0000**

	Implied Financial Indicators		**2023**	**2024**	**2025**	**2026**	**Average**
40	Implied annual profit	AEDm	123.45	131.96	121.66	118.72	123.95
41	Implied return on mid-point RAV	%	4.58%	5.01%	4.81%	4.93%	4.83%

Table B.3 : AADC recycled water – RC2 calculations

Line No. **(All figures are in 2023 prices)**

				RC2			
	Inputs			**2023**	**2024**	**2025**	**2026**
1	Operating expenditure allowance	AEDm		7.51	9.91	11.11	11.01
2	Opening RAV	AEDm		405.20	422.75	439.46	442.78
3	Closing RAV	AEDm		422.75	439.46	442.78	433.51
4	Mid-Year RAV	AEDm		413.97	431.11	441.12	438.15
5	Total depreciation for RC2	AEDm		10.39	11.09	11.62	11.84
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	Customer Accounts		0	0	0	0
8	Forecast for revenue driver 3	MIG					
9	PV of financing costs foregone on RC1 capex	AEDm	-1.25				
10	Cost of capital (real)		4.90%				
11	Weight in revenue for Revenue driver 1		100.00%				
12	Weight in revenue for Revenue driver 2		0.00%				
13	Weight in revenue for Revenue driver 3		0.00%				
14	X Factor		0.00				

			RC2				
	RC2 Required Revenue Calculations		**2023**	**2024**	**2025**	**2026**	**PV over RC2 Period at 1 January 2023**
15	Operating expenditure allowance	AEDm	7.51	9.91	11.11	11.01	35.72
16	Total depreciation for RC2	AEDm	10.39	11.09	11.62	11.84	40.80
17	Return on mid-year RAV	AEDm	20.28	21.12	21.61	21.47	76.80
18	Annual revenue requirement	AEDm	38.18	42.12	44.35	44.32	153.32
19	Discounted annual revenue requirement	AEDm	37.28	39.20	39.35	37.49	153.32
20	PV of financing costs foregone on RC1 capex	AEDm					-1.25
21	PV of revenue requirement (after foregone financing costs)	AEDm					**152.07**

	RC2 Revenue Forecast and Profiling		**2023**	**2024**	**2025**	**2026**	**PV Share in TOTAL**	
22	**Revenue driver 1**		1.00	1.00	1.00	1.00		
23		AEDm	**41.78**	41.78	41.78	41.78		
24		AEDm	41.78	41.78	41.78	41.78	152.07	
25		%	100%	100%	100%	100%	**100%**	
26	**Revenue driver 2**	Customer Accounts	0	0	0	0	**Constraints for Solver Run**	
27		AED / Customer	-	-	-	-		
28		AEDm	-	-	-	-	-	
29		%	0%	0%	0%	0%	**0%**	
30	**Revenue driver 3**	TIG	0	0	0	0		
31		AED/TIG	-	-	-	-		
32		AEDm	-	-	-	-	-	
33		%	0%	0%	0%	0%	**0%**	
		Variables for Solver Run						
34	Annual revenue	AEDm	41.78	41.78	41.78	41.78	**TOTAL**	Difference
35	**Discounted annual revenue at 1 January 2023**	AEDm	40.79	38.88	37.07	35.33	**152.07**	**0.00**
							Target for Solver Run	

	Results		**2023**
36	**X Factor**		**0.00**
37	**Fixed revenue term (a)**	**AED million**	**41.78**
38	**Co-efficient of variable revenue term (b)**	**AED / Customer Account**	-
39	**Co-efficient of variable revenue term (c)**	**AED / TIG metered**	-

	Implied Financial Indicators		**2023**	**2024**	**2025**	**2026**	**Average**
40	Implied annual profit	AEDm	23.88	20.78	19.04	18.92	20.66
41	Implied return on mid-point RAV	%	5.77%	4.82%	4.32%	4.32%	4.81%

Table B.4 : ADDC electricity – RC2 calculations

Line No. **(All figures are in 2023 prices)**

				RC2			
	Inputs			**2023**	**2024**	**2025**	**2026**
1	Operating expenditure allowance	AEDm		726.74	752.36	758.57	765.47
2	Opening RAV	AEDm		15,240.63	14,929.91	14,807.38	14,375.38
3	Closing RAV	AEDm		14,929.91	14,807.38	14,375.38	13,748.63
4	Mid-Year RAV	AEDm		15,085.27	14,868.64	14,591.38	14,062.00
5	Total depreciation for RC2	AEDm		943.74	962.14	979.48	990.88
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	Customer Accounts		435,217	445,227	455,467	465,973
8	Forecast for revenue driver 3	GWh		0	0	0	0
9	PV of financing costs foregone on RC1 capex	AEDm	4.41				
10	Cost of capital (real)		4.90%				
11	Weight in revenue for Revenue driver 1		85.00%				
12	Weight in revenue for Revenue driver 2		15.00%				
13	Weight in revenue for Revenue driver 3		0.00%				
14	X Factor		0.00				

			RC2				
	RC2 Required Revenue Calculations		**2023**	**2024**	**2025**	**2026**	**PV over RC2 Period at 1 January 2023**
15	Operating expenditure allowance	AEDm	726.74	752.36	758.57	765.47	2,730.36
16	Total depreciation for RC2	AEDm	943.74	962.14	979.48	990.88	3,524.15
17	Return on mid-year RAV	AEDm	739.18	728.56	714.98	689.04	2,617.02
18	Annual revenue requirement	AEDm	2,409.66	2,443.07	2,453.03	2,445.39	8,871.54
19	Discounted annual revenue requirement	AEDm	2,352.71	2,273.91	2,176.53	2,068.40	8,871.54
20	PV of financing costs foregone on RC1 capex	AEDm					4.41
21	PV of revenue requirement (after foregone financing costs)	AEDm					**8,875.95**

	RC2 Revenue Forecast and Profiling		**2023**	**2024**	**2025**	**2026**	**PV Share in TOTAL**	
22	**Revenue driver 1**		1.00	1.00	1.00	1.00		
23		AEDm	**2,072.54**	2,072.54	2,072.54	2,072.54		
24		AEDm	2,072.54	2,072.54	2,072.54	2,072.54	7,544.55	
25		%	85%	85%	85%	85%	**85%**	
26	**Revenue driver 2**	Customer Accounts	435,217	445,227	455,467	465,973	**Constraints for Solver Run**	
27		AED / Customer	**813.02**	813.02	813.02	813.02		
28		AEDm	353.84	361.98	370.30	378.84	1,331.39	
29		%	15%	15%	15%	15%	**15%**	
30	**Revenue driver 3**	kWh	0	0	0	0		
31		fils / kWh	-	-	-	-		
32		AEDm	-	-	-	-	-	
33		%	0%	0%	0%	0%	**0%**	
		Variables for Solver Run						
34	Annual revenue	AEDm	2,426.38	2,434.52	2,442.85	2,451.39	**TOTAL**	Difference
35	**Discounted annual revenue at 1 January 2023**	AEDm	2,369.04	2,265.95	2,167.49	2,073.47	**8,875.95**	**0.00**
							Target for Solver Run	

	Results		**2023**
36	**X Factor**		**0.0**
37	**Fixed revenue term (a)**	**AED million**	**2,072.54**
38	**Co-efficient of variable revenue term (b)**	**AED / Customer Account**	**813.02**
39	**Co-efficient of variable revenue term (c)**	**fils / kWh metered**	**0.0000**

	Implied Financial Indicators		**2023**	**2024**	**2025**	**2026**	**Average**
40	Implied annual profit	AEDm	755.90	720.01	704.80	695.04	718.94
41	Implied return on mid-point RAV	%	5.01%	4.84%	4.83%	4.94%	4.91%

Table B.5 : ADDC water – RC2 calculations

Line No. **(All figures are in 2023 prices)**

				RC2			
	Inputs			**2023**	**2024**	**2025**	**2026**
1	Operating expenditure allowance	AEDm		793.59	659.99	631.97	634.88
2	Opening RAV	AEDm		5,647.79	5,742.05	5,880.53	5,820.30
3	Closing RAV	AEDm		5,742.05	5,880.53	5,820.30	5,879.19
4	Mid-Year RAV	AEDm		5,694.92	5,811.29	5,850.41	5,849.74
5	Total depreciation for RC2	AEDm		320.67	331.74	341.12	349.74
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	Customer Accounts		360,000	370,000	380,000	391,000
8	Forecast for revenue driver 3	MIG		0	0	0	0
9	PV of financing costs foregone on RC1 capex	AEDm	-4.23				
10	Cost of capital (real)		4.90%				
11	Weight in revenue for Revenue driver 1		85.00%				
12	Weight in revenue for Revenue driver 2		15.00%				
13	Weight in revenue for Revenue driver 3		0.00%				
14	X Factor		0.00				

			RC2				
	RC2 Required Revenue Calculations		**2023**	**2024**	**2025**	**2026**	**PV over RC2 Period at 1 January 2023**
15	Operating expenditure allowance	AEDm	793.59	659.99	631.97	634.88	2,486.87
16	Total depreciation for RC2	AEDm	320.67	331.74	341.12	349.74	1,220.36
17	Return on mid-year RAV	AEDm	279.05	284.75	286.67	286.64	1,034.30
18	Annual revenue requirement	AEDm	1,393.32	1,276.48	1,259.77	1,271.26	4,741.53
19	Discounted annual revenue requirement	AEDm	1,360.39	1,188.10	1,117.77	1,075.27	4,741.53
20	PV of financing costs foregone on RC1 capex	AEDm					-4.23
21	PV of revenue requirement (after foregone financing costs)	AEDm					**4,737.30**

	RC2 Revenue Forecast and Profiling		**2018**	**2019**	**2020**	**2021**	**PV Share in TOTAL**	
22	**Revenue driver 1**		1.00	1.00	1.00	1.00		
23		AEDm	**1,106.16**	1,106.16	1,106.16	1,106.16		
24		AEDm	1,106.16	1,106.16	1,106.16	1,106.16	4,026.70	
25		%	86%	85%	85%	84%	**85%**	
26	**Revenue driver 2**	Customer Accounts	360,000	370,000	380,000	391,000	**Constraints for Solver Run**	
27		AED / Customer	**521.06**	521.06	521.06	521.06		
28		AEDm	187.58	192.79	198.00	203.73	710.60	
29		%	14%	15%	15%	16%	**15%**	
30	**Revenue driver 3**	TIG	0	0	0	0		
31		AED/TIG	-	-	-	-		
32		AEDm	-	-	-	-	-	
33		%	0%	0%	0%	0%	**0%**	
		Variables for Solver Run						
34	Annual revenue	AEDm	1,293.75	1,298.96	1,304.17	1,309.90	**TOTAL**	Difference
35	**Discounted annual revenue at 1 January 2023**	AEDm	1,263.17	1,209.01	1,157.16	1,107.96	**4,737.30**	**0.00**
							Target for Solver Run	

	Results		**2023**
36	**X Factor**		**0.0**
37	**Fixed revenue term (a)**	**AED million**	**1,106.16**
38	**Co-efficient of variable revenue term (b)**	**AED / Customer Account**	**521.06**
39	**Co-efficient of variable revenue term (c)**	**AED / TIG metered**	**0.0000**

	Implied Financial Indicators		**2023**	**2024**	**2025**	**2026**	**Average**
40	Implied annual profit	AEDm	179.48	307.23	331.07	325.28	285.76
41	Implied return on mid-point RAV	%	3.15%	5.29%	5.66%	5.56%	4.91%

Table B.6 : ADDC recycled water – RC2 calculations

Line No. **(All figures are in 2023 prices)**

				RC2			
	Inputs			**2023**	**2024**	**2025**	**2026**
1	Operating expenditure allowance	AEDm		58.64	59.64	59.44	57.64
2	Opening RAV	AEDm		1,831.62	1,882.84	1,878.91	1,874.56
3	Closing RAV	AEDm		1,882.84	1,878.91	1,874.56	1,846.00
4	Mid-Year RAV	AEDm		1,857.23	1,880.88	1,876.74	1,860.28
5	Total depreciation for RC2	AEDm		50.34	52.21	53.43	54.37
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	Customer Accounts		0	0	0	0
8	Forecast for revenue driver 3	MIG					
9	PV of financing costs foregone on RC1 capex	AEDm	7.49				
10	Cost of capital (real)		4.90%				
11	Weight in revenue for Revenue driver 1		100.00%				
12	Weight in revenue for Revenue driver 2		0.00%				
13	Weight in revenue for Revenue driver 3		0.00%				
14	X Factor		0.00				

			RC2				
	RC2 Required Revenue Calculations		**2023**	**2024**	**2025**	**2026**	**PV over RC2 Period at 1 January 2023**
15	Operating expenditure allowance	AEDm	58.64	59.64	59.44	57.64	214.27
16	Total depreciation for RC2	AEDm	50.34	52.21	53.43	54.37	191.15
17	Return on mid-year RAV	AEDm	91.00	92.16	91.96	91.15	333.33
18	Annual revenue requirement	AEDm	199.99	204.02	204.84	203.16	738.75
19	Discounted annual revenue requirement	AEDm	195.26	189.90	181.75	171.84	738.75
20	PV of financing costs foregone on RC1 capex	AEDm					7.49
21	PV of revenue requirement (after foregone financing costs)	AEDm					**746.24**

	RC2 Revenue Forecast and Profiling		**2023**	**2024**	**2025**	**2026**	**PV Share in TOTAL**	
22	**Revenue driver 1**		1.00	1.00	1.00	1.00		
23		AEDm	**205.00**	205.00	205.00	205.00		
24		AEDm	205.00	205.00	205.00	205.00	746.24	
25		%	100%	100%	100%	100%	**100%**	
26	**Revenue driver 2**	Customer Accounts	0	0	0	0	**Constraints for Solver Run**	
27		AED / Customer	-	-	-	-		
28		AEDm	-	-	-	-	-	
29		%	0%	0%	0%	0%	**0%**	
30	**Revenue driver 3**	TIG	0	0	0	0		
31		AED/TIG	-	-	-	-		
32		AEDm	-	-	-	-	-	
33		%	0%	0%	0%	0%	**0%**	
		Variables for Solver Run						
34	Annual revenue	AEDm	205.00	205.00	205.00	205.00	**TOTAL**	Difference
35	**Discounted annual revenue at 1 January 2023**	AEDm	200.15	190.80	181.89	173.39	**746.24**	**0.00**
							Target for Solver Run	

	Results		**2023**
36	**X Factor**		**0.00**
37	**Fixed revenue term (a)**	**AED million**	**205.00**
38	**Co-efficient of variable revenue term (b)**	**AED / Customer Account**	-
39	**Co-efficient of variable revenue term (c)**	**AED / TIG metered**	-

	Implied Financial Indicators		**2023**	**2024**	**2025**	**2026**	**Average**
40	Implied annual profit	AEDm	96.01	93.14	92.12	92.99	93.57
41	Implied return on mid-point RAV	%	5.17%	4.95%	4.91%	5.00%	5.01%

Table B.7: TRANSCO electricity – RC2 calculations

Line No. **(All figures are in 2023 prices)**

				RC2			
	Inputs			**2023**	**2024**	**2025**	**2026**
1	Operating expenditure allowance	AEDm		427.32	419.81	429.22	429.42
2	Opening RAV	AEDm		27,348.05	26,765.44	27,029.84	26,902.14
3	Closing RAV	AEDm		26,765.44	27,029.84	26,902.14	26,280.34
4	Mid-Year RAV	AEDm		27,056.74	26,897.64	26,965.99	26,591.24
5	Total depreciation for RC2	AEDm		1,854.90	1,726.80	1,713.03	1,746.91
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	Peak demand (MW)		15,797	15,677	16,258	16,800
8	Forecast for revenue driver 3	GWh		82,628	84,676	87,699	93,617
9	PV of financing costs foregone on RC1 capex	AEDm	-54.86				
10	Cost of capital (real)		4.90%				
11	Weight in revenue for Revenue driver 1		95.00%				
12	Weight in revenue for Revenue driver 2		5.00%				
13	Weight in revenue for Revenue driver 3		0.00%				
14	X Factor		0.00				

			RC2				
	RC2 Required Revenue Calculations		**2023**	**2024**	**2025**	**2026**	**PV over RC2 Period at 1 January 2023**
15	Operating expenditure allowance	AEDm	427.32	419.81	429.22	429.42	1,552.03
16	Total depreciation for RC2	AEDm	1,854.90	1,726.80	1,713.03	1,746.91	6,415.83
17	Return on mid-year RAV	AEDm	1,325.78	1,317.98	1,321.33	1,302.97	4,795.66
18	Annual revenue requirement	AEDm	3,608.00	3,464.59	3,463.58	3,479.30	12,763.52
19	Discounted annual revenue requirement	AEDm	3,522.73	3,224.70	3,073.17	2,942.92	12,763.52
20	PV of financing costs foregone on RC1 capex	AEDm					-54.86
21	PV of revenue requirement (after foregone financing costs)	AEDm					**12,708.66**

	RC2 Revenue Forecast and Profiling		**2023**	**2024**	**2025**	**2026**	**PV Share in TOTAL**	
22	**Revenue driver 1**		1.00	1.00	1.00	1.00		
23		AEDm	**3,316.60**	3,316.60	3,316.60	3,316.60		
24		AEDm	3,316.60	3,316.60	3,316.60	3,316.60	12,073.22	
25		%	95%	95%	95%	95%	**95%**	
26	**Revenue driver 2**	kW	15,797,000	15,677,000	16,258,000	16,800,000		
27		AED / kW	**10.83**	10.83	10.83	10.83		
28		AEDm	171.15	169.85	176.14	182.01	635.43	
29		%	5%	5%	5%	5%	**5%**	
30	**Revenue driver 3**	kWh	0	0	0	0	**Constraints for Solver Run**	
31		fils / kWh	-	-	-	-		
32		AEDm	-	-	-	-	-	
33		%	0%	0%	0%	0%	**0%**	
		Variables for Solver Run						
30	Annual revenue	AEDm	3,487.75	3,486.45	3,492.74	3,498.62	**TOTAL**	Difference
31	**Discounted annual revenue at 1 January 2023**	AEDm	3,405.32	3,245.04	3,099.05	2,959.25	**12,708.66**	**0.00**
							Target for Solver Run	

	Results		**2023**
32	**X Factor**		**0.0**
33	**Fixed revenue term (a)**	**AED million**	**3,316.60**
34	**Co-efficient of variable revenue term (b)**	**fils / kWh**	**0.0000**
35	**Co-efficient of variable revenue term (c)**	**AED / kW**	**10.83**

	Implied Financial Indicators		**2023**	**2024**	**2025**	**2026**	**Average**
36	Implied annual profit	AEDm	1205.53	1339.84	1350.49	1322.29	1304.54
37	Implied return on mid-point RAV	%	4.46%	4.98%	5.01%	4.97%	4.85%

Table B.8 : TRANSCO water – RC2 calculations

Line No. **(All figures are in 2023 prices)**

				RC2			
	Inputs			**2023**	**2024**	**2025**	**2026**
1	Operating expenditure allowance	AEDm		577.73	564.12	572.73	572.53
2	Opening RAV	AEDm		14,550.16	14,435.96	14,168.49	13,877.86
3	Closing RAV	AEDm		14,435.96	14,168.49	13,877.86	13,515.60
4	Mid-Year RAV	AEDm		14,493.06	14,302.22	14,023.17	13,696.73
5	Total depreciation for RC2	AEDm		866.29	883.39	898.69	913.17
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	Peak demand (MIGD)		699	690	690	695
8	Forecast for revenue driver 3	MIG		248,639	246,355	245,722	247,543
9	PV of financing costs foregone on RC1 capex	AEDm	21.38				
10	Cost of capital (real)		4.90%				
11	Weight in revenue for Revenue driver 1		95.00%				
12	Weight in revenue for Revenue driver 2		5.00%				
13	Weight in revenue for Revenue driver 3		0.00%				
14	X Factor		0.00				

			RC2				
	RC2 Required Revenue Calculations		**2023**	**2024**	**2025**	**2026**	**PV over RC2 Period at 1 January 2023**
15	Operating expenditure allowance	AEDm	577.73	564.12	572.73	572.53	2,081.58
16	Total depreciation for RC2	AEDm	866.29	883.39	898.69	913.17	3,237.81
17	Return on mid-year RAV	AEDm	710.16	700.81	687.14	671.14	2,523.01
18	Annual revenue requirement	AEDm	2,154.18	2,148.32	2,158.55	2,156.84	7,842.40
19	Discounted annual revenue requirement	AEDm	2,103.26	1,999.56	1,915.24	1,824.33	7,842.40
20	PV of financing costs foregone on RC1 capex	AEDm					21.38
21	PV of revenue requirement (after foregone financing costs)	AEDm					**7,863.78**

	RC2 Revenue Forecast and Profiling		**2023**	**2024**	**2025**	**2026**	**PV Share in TOTAL**
22	**Revenue driver 1**		1.00	1.00	1.00	1.00	
23		AEDm	**2,052.22**	2,052.22	2,052.22	2,052.22	
24		AEDm	2,052.22	2,052.22	2,052.22	2,052.22	7,470.59
25		%	95%	95%	95%	95%	**95%**
26	**Revenue driver 2**	TIGD	699,000	690,000	690,000	695,000	
27		AED / TIGD	**155.73**	155.73	155.73	155.73	
28		AEDm	108.86	107.46	107.46	108.23	393.19
29		%	5%	5%	5%	5%	**5%**
30	**Revenue driver 3**	TIG	0	0	0	0	**Constraints for Solver Run**
31		AED/TIG	**0.00**	0.00	0.00	0.00	
32		AEDm	-	-	-	-	-
33		%	0%	0%	0%	0%	**0%**
		Variables for Solver Run					
30	Annual revenue	AEDm	2,161.08	2,159.68	2,159.68	2,160.46	**TOTAL** Difference
31	**Discounted annual revenue at 1 January 2023**	AEDm	2,110.01	2,010.14	1,916.24	1,827.39	**7,863.78** **0.00**
							Target for Solver Run

	Results		**2023**
32	**X Factor**		**0.0**
33	**Fixed revenue term (a)**	**AED million**	**2,052.22**
34	**Co-efficient of variable revenue term (b)**	**AED / TIG**	**0.0000**
35	**Co-efficient of variable revenue term (c)**	**AED / TIGD**	**155.73**

	Implied Financial Indicators		**2023**	**2024**	**2025**	**2026**	**Average**
36	Implied annual profit	AEDm	717.06	712.17	688.27	674.76	698.07
37	Implied return on mid-point RAV	%	4.95%	4.98%	4.91%	4.93%	4.94%

Table B.9 : ADSSC – RC2 calculations

Line No. **(All figures are in 2023 prices)**

				RC2			
	Inputs			**2023**	**2024**	**2025**	**2026**
1	Operating expenditure allowance	AEDm		765.07	725.04	704.13	686.51
2	Opening RAV	AEDm		16,424.75	16,593.61	16,702.37	16,639.63
3	Closing RAV	AEDm		16,593.61	16,702.37	16,639.63	16,434.49
4	Mid-Year RAV	AEDm		16,509.18	16,647.99	16,671.00	16,537.06
5	Total depreciation for RC2	AEDm		403.10	412.21	419.53	424.33
6	Forecast for revenue driver 1	Fixed term		1.00	1.00	1.00	1.00
7	Forecast for revenue driver 2	m3		343,651,199	354,625,000	354,625,000	354,625,000
8	Forecast for revenue driver 3	Customer Accounts		0	0	0	0
9	PV of financing costs foregone on RC1 capex	AEDm	-132.39				
10	Cost of capital (real)		4.90%				
11	Weight in revenue for Revenue driver 1		90.00%				
12	Weight in revenue for Revenue driver 2		10.00%				
13	Weight in revenue for Revenue driver 3		0.00%				
14	X Factor		0.00				

			RC2				
	RC2 Required Revenue Calculations		**2023**	**2024**	**2025**	**2026**	**PV over RC2 Period at 1 January 2023**
15	Operating expenditure allowance	AEDm	765.07	725.04	704.13	686.51	2,627.27
16	Total depreciation for RC2	AEDm	403.10	412.21	419.53	424.33	1,508.40
17	Return on mid-year RAV	AEDm	808.95	815.75	816.88	810.32	2,959.29
18	Annual revenue requirement	AEDm	1,977.13	1,953.01	1,940.53	1,921.16	7,094.96
19	Discounted annual revenue requirement	AEDm	1,930.40	1,817.78	1,721.80	1,624.98	7,094.96
20	PV of financing costs foregone on RC1 capex	AEDm					-132.39
21	PV of revenue requirement (after foregone financing costs)	AEDm					**6,962.57**

	RC2 Revenue Forecast and Profiling		**2023**	**2024**	**2025**	**2026**	**PV Share in TOTAL**	
22	**Revenue driver 1**		1.00	1.00	1.00	1.00		
23		AEDm	**1,721.40**	1,721.40	1,721.40	1,721.40		
24		AEDm	1,721.40	1,721.40	1,721.40	1,721.40	6,266.31	
25		%	90%	90%	90%	90%	**90%**	
26	**Revenue driver 2**	m3	343,651,199	354,625,000	354,625,000	354,625,000	**Constraints for Solver Run**	
27		AED/m3	**0.5439**	0.5439	0.5439	0.5439		
28		AEDm	186.90	192.87	192.87	192.87	696.26	
29		%	10%	10%	10%	10%	**10%**	
30	**Revenue driver 3**	Customer Accounts	0	0	0	0		
31		AED / Customer	**-**	-	-	-		
32		AEDm	-	-	-	-	-	
33		%	0%	0%	0%	0%	**0%**	
		Variables for Solver Run						
34	Annual revenue	AEDm	1,908.30	1,914.27	1,914.27	1,914.27	**TOTAL**	Difference
35	**Discounted annual revenue at 1 January 2023**	AEDm	1,863.20	1,781.72	1,698.49	1,619.16	**6,962.57**	**0.00**
							Target for Solver Run	

	Results		**2023**
36	**X Factor**		**0.0**
37	**Fixed revenue term (a)**	**AED million**	**1,721.40**
38	**Co-efficient of variable revenue term (b)**	**AED / m3**	**0.5439**
39	**Co-efficient of variable revenue term (c)**	**AED / Customer Account**	**0.00**

	Implied Financial Indicators		**2023**	**2024**	**2025**	**2026**	**Average**
40	Implied annual profit	AEDm	740.12	777.01	790.61	803.43	777.79
41	Implied return on mid-point RAV	%	4.48%	4.67%	4.74%	4.86%	4.69%