



NATIONAL ENERGY REGULATOR

**TARIFF METHODOLOGY FOR THE APPROVAL OF TARIFFS FOR PETROLEUM
LOADING FACILITIES AND PETROLEUM STORAGE FACILITIES**

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Tariff Methodology for Petroleum Loading facilities and Petroleum Storage facilities

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ABBREVIATIONS

AaOC	Actual average operating cost
AR	Allowable revenue
C	Clawback adjustment
CAPM	Capital asset pricing model
CPI	Consumer Price Index
CPIA	Consumer price index adjustment
CPI _f	Consumer price index forecast
D	Depreciation and amortization of inflation write-up
Da	Depreciation actual.
Dp	Depreciation projected
DA	Depreciation adjustment
d	Accumulated depreciation and accumulated amortisation of inflation write-up
da	Actual accumulated depreciation and amortisation of inflation write-up
dp	Projected accumulated depreciation and amortisation of inflation write-up
Dya	Actual number of days from the commencement of the financial year when the new operating asset became used
Dyp	Projected number of days from the commencement of the financial year when the new operating asset was estimated to become used
Dtp	Debt premium
DSCR	Debt service cover ratio
dtax	Deferred tax
Dt	Debt
E	Expenses: maintenance and operating for the tariff period under review
EaOC	Estimated average operating costs
EBIT	Earnings before interest and taxes
EBITDA	Earnings before interest, taxes, depreciation and amortisation
Eq	Equity
GA	General adjustment
K _d	Cost of debt

KdA	Cost of debt adjustment
K_e	Cost of equity
KeA	Cost of equity adjustment
MRP	Market return premium
NRBTA	Net revenue before tax allowance
Opex	Operating and maintenance expense
Opexa	Operating and maintenance expense actual
Opexp	Operating and maintenance expense projected
RAB	Regulatory asset base
Rf	Risk-free rate of interest
Rf_t	The average monthly marked-to-market real risk-free rate of interest for the preceding period indicated
T	Tax expense
t	Prevailing corporate tax rate of the licensee
Tff(s)	Tariff(s)
TOC	Trended original cost
Tr	Tax rate of relevant country
V	Value of property, plant, vehicles and equipment
(V)	Value of operating property, plant, vehicles and equipment
(V-d)A	Value of operating property, plant, vehicles and equipment adjustment.
Vola	Volumes actual.
VolA	Volumes adjustment
Volp	Volumes projected.
w	Net working capital
WACC	Weighted average cost of capital
WA β	Weighted average β of the proxy firms' asset betas
β	Beta: The systematic risk parameter for regulated entities providing pipeline, storage and loading facility services.

1 Introduction

Licensees may submit their applications using their own methodologies or use this methodology as a guide. However, the Energy Regulator will use this tariff methodology to evaluate tariff applications. Therefore, licensees must provide in their applications all the information necessary to apply this methodology.

It is intended to accommodate existing assets in the industry that are of long standing, the need for large new investment required in the industry, the diversity in the nature and size of the expected investors, anticipated competition and the limited size and nature of the markets for petroleum loading facilities and petroleum storage facilities in South Africa.

Clarifications of some aspects of this Methodology are given on NERSA's website in the form of Frequently Asked Questions.

2 Legal Basis

The legal basis for this tariff methodology lies in the Petroleum Pipelines Act, 2003 (Act No. 60 of 2003) ('the Act'). Section 28 (2) of the Act requires that tariffs must be:

- (i) *based on a systematic methodology applicable on a consistent and comparable basis;*
- (ii) *fair;*
- (iii) *non-discriminatory;*
- (iv) *simple and transparent;*
- (v) *predictable and stable; and*
- (vi) *such as to promote access to affordable petroleum products.*

Further, Section 28(3) of that Act requires that:

The tariffs set or approved by the Authority must enable the licensee to -

- (a) *recover the investment;*
- (b) *operate and maintain the system; and*
- (c) *make a profit commensurate with the risk.*

Naturally the Energy Regulator mandate flows from the entire Act including the objectives and powers and duties and not merely the two subsections quoted above.

Regulations also influence the way in which tariffs are set. The current Regulations in terms of the Petroleum Pipelines Act, 2003 (Act No. 60 of 2003), were published in Government Notice R342 GG 30905 of 4 April 2008.

3 Allowable Revenue (AR)

3.1 Allowable Revenue must be determined by applying the allowable revenue formula.

3.2 The following formula must be used to determine the Allowable Revenue:

$$\mathbf{AR = (RAB \times WACC) + E + D \pm C + T}$$

Where:

AR = Allowable revenue

RAB = Regulatory asset base

WACC = Weighted average cost of capital

E = Expenses: operating and maintenance expenses for the tariff period under review

D = Depreciation and amortisation of inflation write-up: the charge for the tariff period under review

C = Clawback adjustment: to correct for differences between actuals and forecasts in formula elements from a preceding tariff period in relation to the actual estimates for that tariff period.

T = Tax: estimated tax expense for the tariff period under review

Further details on each of the elements of this formula are provided below.

4 Regulatory Asset Base (RAB)

The following formula must be used to determine the value of the Regulatory asset base:

$$\text{RAB} = (V - d) + w \pm \text{dtax}$$

Where:

V = Value of operating property, plant, vehicles and equipment

d = Accumulated depreciation and accumulated amortisation of inflation write-up for the period up to the commencement of the tariff period under review

w = Net working capital

dtax = Deferred tax

Any deferred tax arising from accelerated wear and tear allowances is treated as neither equity nor debt. A deferred tax asset is added to the RAB and a deferred tax liability is deducted from the RAB.

In this formula only items relating to the timing difference of depreciation and wear and tear allowances will be allowed to be added/ deducted as deferred tax.

The addition or deduction of a deferred tax asset or deferred liability only applies when the notional tax method is used. There is no addition or deduction of a deferred tax liability or asset when the flow-through tax method is used.

4.1 Value of Operating Property, Plant, Vehicles and Equipment (V)

- 4.1.1 The value of prudently acquired¹ property, plant, vehicles and equipment that are used or will be used in the tariff period under review comprises only non-current assets plus a pro rata portion (see paragraph 4.1.12) of new or additional property, plant, vehicles and equipment that will be used during the tariff period under review. (For categories of non-current assets see Note 2: Asset and Liability Categories, 'Non-Current Assets').
- 4.1.2 Non-current operating assets, reduced by the values contemplated in sections 4.1.14 to 4.1.17, are to be valued on the trended original cost (TOC) basis or in accordance with sub-regulation 5.2 of the Regulations made in terms of the Petroleum Pipelines Act, 2003 (Act No. 60 of 2003) (GN R342 GG 30905 of 4 April 2008).
- 4.1.3 Where original cost does not exist, a regulatory asset valuation (RAV) should be conducted, which will be a once off valuation at the start of economic regulation.
- 4.1.4 Alternatively, the asset value that lies in the company accounts will be used as the asset base.
- 4.1.5 Historical asset value can be established by determining the depreciated net book value of the asset. Where no historical cost exists, the value should be estimated in accordance with Regulation 4 (7)(b).
- 4.1.6 The Starting Regulatory Asset Base for existing assets determined as explained above becomes the proxy for original cost to be trended for the future.
- 4.1.7 Inflation adjustments must be based on the CPI and the same CPI data must be used to convert nominal to real values.

¹ NERSA interprets "prudently acquired" to mean that a prudent process of acquiring an asset was followed such as being duly licensed and employing an "arm's length" competitive bidding or market testing process.

- 4.1.8 Non-current operating assets are calculated for each asset category and summed to arrive at the value for V.
- 4.1.9 Plant, property and equipment under construction is excluded from the RAB.
- 4.1.10 Non-current operating assets must/will be used in the tariff period under review, and of a long term economic lifespan (more than one year).
- 4.1.11 Capital expenditure is admitted to the Regulatory Asset Base when the asset concerned is/ will be used in the tariff period under review.
- 4.1.12 Non-current operating assets expected to be used during the forthcoming tariff period are admitted to the Regulatory Asset Base in proportion to the share of the tariff period under review during which they will be used. If the period for which an asset is admitted to the Regulatory Asset Base is different to the period estimated when the tariff was approved, a clawback adjustment is made in the subsequent tariff period after the information becomes available (see clawback adjustment paragraph 9.3).
- 4.1.13 Other costs of an unusual/infrequent nature, for example major storm damage repairs not insurable and recoverable from insurance may be included in the Regulatory Asset Base if the licensee decides to capitalise these costs.
- 4.1.14 Non-refundable contributions by customers to the licensee are deducted from V.
- 4.1.15 Contributions to a licensee such as equity, grants and deposits, will be deducted from V. This deduction will take the relevant taxation, if any, into account, and only the after-tax portion will be deducted. For the purposes of this paragraph “contributions” means contributions collected by means of Government imposed taxes, levies and the like that are collected only from customers of that licensee and or only from petroleum consumers that utilize or will utilize petroleum

transported by that licensees loading facilities or stored by that licensees storage facilities.

4.1.16 Any volumes of petroleum contracted for a storage or loading facility by means of a “host” or “product swap” agreement or the like will be included when determining the projected volumes for a tariff period under review and when determining a Volume Adjustment contemplated in paragraph 9.2. The proceeds of such a “hosting” agreement or the like will not be treated as “contributions” contemplated in paragraph 4.1.15.

4.1.17 Contributions received in lieu of connection charges representing non-refundable funds contributed by customers are deducted from V.

4.1.18 Leasehold improvement costs borne by the licensee means an investment in a right to use property and is admitted to the RAB.

4.1.19 Operating reserves such as cost-free funds used to support the regulatory asset-base investment, are deducted from the RAB.

4.2 Accumulated historic depreciation and accumulated amortisation of inflation write-up for the period up to the commencement of the tariff under review (d)

4.2.1 Accumulated historic depreciation and accumulated amortisation of inflation write-up is the cumulative depreciation against operating property, plant, vehicles and equipment in service (See Note 3 where an example is given on how to calculate the depreciation).

4.3 Net Working Capital (w)

4.3.1 Net working capital refers to various regulated activities or business operations funding requirements other than operating property, plant, vehicles and

equipment in service. These funding requirements include inventories, prepayments, minimum bank balances, cash working capital and other non-plant operating requirements. Working capital funding requirements funded by investors are legitimate Regulatory Asset Base allowances on which a return may be granted. See also Note 2: Asset and Liability Categories, "Current Assets".

4.3.2 The following formula must be used to determine net working capital:

Net working capital = inventory + receivables + operating cash + minimum cash balance – trade payables.

Working capital generated out of trading (and not storage) activities should not be included

4.3.3 Operating cash refers to the amount of investor-supplied funds needed to finance day-to-day operations. This is finance to bridge the gap between the time expenditures are made to provide service and the time collections are received for that service. It is the cash supplied by investors to finance operating costs during the time lag before revenues are collected.

4.3.4 Measurement of required operating cash must be based on the licensee's standard practice subject to a maximum 45 days' operating expenses, excluding depreciation and deferred taxes.

4.3.5 If an applicant has carried out an adequate lead-lag study to determine the net difference, in terms of days, between the point at which service is rendered and revenues are collected from customers, and the point at which costs are incurred until they are paid, the Energy Regulator may use this determination rather than the approach set out in the paragraph above.

4.3.6 Minimum cash balance refers to a requirement by a lending institution for a licensee to hold a minimum cash balance. Proof of such a requirement will be required and, if provided, such amount will be included in the net working capital determination less interest earned thereon.

4.3.7 Trade payables refers to current liabilities for which the amount to be settled is usually known rather than uncertain (as for provisions).

5 Weighted Average Cost of Capital (WACC)

5.1 The following formula must be used to determine the WACC based on the capital structure of the licensed activity:

$$WACC = \left[\left(\frac{Eq}{Dt + Eq} \right) * Ke \right] + \left[\left(\frac{Dt}{Dt + Eq} \right) * Kd \right]$$

Where:

Eq = Shareholders equity

Dt = Interest bearing debt

Ke = Post-tax, real cost of equity² derived from the capital asset pricing model (CAPM)

Kd = Post-tax, real³ cost of debt

Deferred tax is excluded from the capital structure for the purposes of this calculation.

² Note: Market return indices published by the JSE reflect after-tax returns.

³ First convert from pre to post tax and then from nominal to real.

5.2 The actual interest bearing debt and the equity pertaining to the regulated assets for the tariff period under review must be used subject to the Energy Regulator finding the licensee's debt to equity ratio reasonable.

5.3 Reasonableness checks for the debt to equity ratio may include:

- (a) consulting financiers for their assessment of a reasonable debt to equity ratio for the applicant;
- (b) taking expert advice;
- (c) comparing the licensee's cost of debt with its cost of equity;
- (d) considering the remaining service life of the asset; and / or
- (e) benchmarking the debt to equity ratio against similar enterprises.

5.4 If after making reasonableness checks the Energy Regulator finds the debt to equity ratio to be unreasonable, the Energy Regulator must assume a reasonable debt to equity ratio.

5.5 It will be assumed that the licensee will have a minimum debt to total capital level of 30%.

5.6 **Cost of equity (Ke)**

5.6.1 The cost of equity capital must be determined according to the capital asset pricing model (CAPM), in real terms, as described below and the result must be subjected to reasonableness checks.

5.6.2 The cost of equity must be determined by the capital asset pricing model (CAPM), in real terms, by applying the following formula:

$$K_e = (R_f + CRA) + (MRP * \beta) + SSP + \alpha + LP$$

Where:

Ke = Post-tax, real cost of equity

Rf = Real risk free rate of interest

This is the average of the real monthly marked-to-market riskfree rate for the preceding 300 months for all government bonds⁴ with at least a 10 year maturity as at twelve months before the commencement of the tariff period under review

CRA = Country risk adjustment

The real CRA will be added to risk free rate. The CRA is for assets in another country outside South Africa that are an integral part of the same assets within South Africa. The adjustment is for that other country concerned.

MRP = Post-tax, real market risk premium

The proxy used for the market is the Johannesburg Stock Exchange (JSE) All Share Total Return Index (ALSI) for the preceding 300 months as at twelve months before the commencement of the tariff period under review

Note:

Formulas for determining the MRP as well as of converting Market Returns (MR) from nominal to real terms are provided in FAQs such as the one already posted on the NERSA website.

⁴ Data on government bonds are sourced from the South African Reserve Bank and published by NERSA.

β = 'Beta' is the systematic risk parameter for regulated entities providing pipeline, storage and loading facility services. The licensee will propose a beta, along with details of proxies used and its calculation of the proposed beta. The Energy Regulator will approve an appropriate beta.⁵

SSP = Small Stock Premium.

Size of the licensed entity if the circumstances warrant such an adjustment. This tends to follow a qualitative analysis process, but will be informed by authoritative publications on prevailing practices by local corporate finance practitioners.

α = Project specific risk if the circumstances warrant such an adjustment

LP = Liquidity premium to accommodate companies which are not publicly traded if the circumstances warrant such an adjustment

Note:

Liquidity adjustments would not apply to government owned entities.

OR

5.6.3 Any other appropriate model.

⁶ Tariff applicants must provide the estimates made by their lenders in writing.

5.7 Cost of debt (Kd)

5.7.1 The actual cost of debt is the cost of interest bearing debt incurred by the licensee.

5.7.2 The cost of debt used must be after tax, real values determined as follows:

$$Kd_{\text{post-tax,nominal}} = \frac{1 + [Kd_{\text{pre-tax,nom}} * (1 - t)]}{1 + CPI_f} - 1$$

Where:

$Kd_{\text{pre-tax,nominal}}$ = Projected cost of debt, pre-tax, nominal, for the tariff period under review

t = Prevailing corporate tax rate of the licensee

CPI_f = Consumer price index forecast: most recent forecast for the tariff period under review

5.7.3 The actual cost of interest bearing debt incurred by the licensee converted from pre to post-tax values and from nominal to real values, must be used subject to the Energy Regulator finding it reasonable through the application of reasonableness tests.

5.7.4 The actual percentage cost of debt must be determined in the following ways:

5.7.4.1 By estimating the weighted average interest charged on debt or the actual weighted average interest achieved by the licensee for its regulated assets for the tariff period under review, where known. Where actual interest rates are not known (for example where interest rates fluctuate) the lender's estimate of interest rates for the

forthcoming tariff period must be used.⁶ At the end of the tariff period the actual interest rates achieved must be compared with the estimated interest rates and any adjustment necessary must be made in the allowable revenue at the first tariff review after the information becomes available (see clawback adjustment). Where the licensee has business activities that are not regulated by the Energy Regulator and the licensee raises corporate debt on behalf of the regulated activity/business the actual cost of debt charged to the regulated activities must fairly reflect causality with the regulated activity and the cost of debt associated with the assets in this risk class as well as the benefits received and is subject to approval by the Energy Regulator;

5.7.4.2 By testing the actual weighted average cost of debt achieved by the licensee for reasonableness in the following four ways:

- (a) employing the real projected cost of debt formula based on an average of the preceding 120 months risk free rate and the following formula must be used:

$$Kd = \left(\frac{\sum_{t=1}^{120 \text{ months}} Rft}{120 \text{ months}} \right) + Dp$$

Where:

$Kd_{\text{post-tax,real}}$ = Post-tax, real cost of debt. The consumer price index forecast independently sourced by NERSA as at 12 months before the commencement of the tariff

⁶ Tariff applicants must provide the estimates made by their lenders in writing.

period under review will be used to convert nominal to real values.

Rf_t = Real risk-free rate of interest

This is the average monthly marked-to-market risk-free rate of interest for the preceding 120 months for all Government bonds with at least a ten (10) year maturity period as at twelve (12) months before the commencement of the tariff period under review and calculated by using the following formula:

$$\frac{1 + [(Rfnom) * (1 - t)]}{1 + CPI} - 1$$

Government bond data will be sourced from the South African Reserve Bank and published by NERSA.

Dtp = Debt premium expected for the tariff period under review, the actual value to be approved on a case – by - case basis by Energy Regulator after having been tested for reasonableness. For reasonableness checks see sub-paragraphs (b) to (d) below

- (b) corporate loans with binding bids for balance sheet funding must be compared with the proposed debt premium;

- (c) if a tariff application is made for a facility that is project financed, the debt premium sought must be compared with at least three bids from financiers (all costs to be included); and
- (d) such other reasonableness tests as may be appropriate.

6 Expenses – Operating and Maintenance (E)

6.1 Regulation 5(2) refers to Regulation 4(2) which states that:

The tariffs set by the Authority must enable an efficient licensee to—

- (a) *recover the reasonable operational and maintenance expenses of the storage and loading facility in the year in which they are incurred;*

Such expenses will be allowed. The reasonableness of such expenses will, subject to paragraph 6.3, be determined by the Energy Regulator on a case by case basis.

6.2 These expenses are to be categorised in accordance with the regulatory reporting manuals⁷.

6.3 The fully-allocated cost attribution approach for the allocation of costs is used. This approach is as per the methodology contemplated in the regulatory reporting manuals.

6.4 Principles regarding expenses

6.4.1 Expenses are those planned for the efficient operation and maintenance of the core business.

⁷ Note: The Energy Regulator has approved regulatory reporting manuals. Volume One and Volume Four (Gazetted on 10 September 2008) apply to the petroleum storage and loading facilities. These manuals are intended for general regulatory reporting by licensees and outline the format and content of information required to inform tariff applications.

- 6.4.2 Procurement practices must meet the criteria of being competitive, at “arm’s length” and prudent.
- 6.4.3 Internal expenses must meet the criteria of being competitive in comparison to appropriate benchmarks.
- 6.4.4 Research and development expenses are permitted, subject to adequate justification.
- 6.4.5 Reasonable joint costs⁸, (see Note 1: Joint Costs) may be permitted, subject to adequate justification and in accordance with the regulatory reporting manuals.
- 6.4.6 Provision for land rehabilitation costs are permitted, subject to adequate justification. These funds must be kept in accordance with the Petroleum Pipelines Act 2003 (Act No. 60 of 2003) sub-regulation 9 of the Regulations made in terms of the Act published under GN R342 in *Government Gazette* 30905 of 4 April 2008.
- 6.4.7 Operating costs which are not related to the operations of the regulated assets that are used or will be used in the tariff period under review are not allowed.
- 6.4.8 Costs relating to corporate social responsibility and donations are not allowed, unless it can be shown that these costs benefit tariff paying customers.
- 6.4.9 Litigation costs incurred in the production of income in accordance with South African Revenue Services rules are allowed. The costs of litigation arising from the transgression of laws are not allowed.
- 6.4.10 The justifiable costs of marketing are allowed but only those relating to the marketing of regulated activities.

⁸ Although not precisely the same, joint costs are sometimes referred to as shared services, corporate costs or common costs.

6.4.11 Maintenance costs for mothballed plant that the licensee plans to bring back into use in future are admitted as expenses. The licensee must have a plan to use them in future.

7 Tax Expense (T)

7.1 Each licensee must make a once off election between the use of either (a) flow-through (actual tax) payment, or (b) notional tax payment. Once that choice has been made the option selected will be used in future for all that licensee's assets.

7.2 If the licensee opts for the flow-through tax payment method the estimate of the flow through taxation for the tariff period under review will be used. This tax expense will be the actual tax liability for the tariff period under review. The calculation is to be performed by applying the following formula:

$$\text{Tax} = \{(\text{NRBTA}) / (1-t)\} * t$$

Where:

NRBTA = Net revenue before tax allowance
= $\{(RAB * WACC) + E + D(\text{historic \& write up}) + F \pm C\} -$
 $\{E + \text{wear and tear}(\text{historic}) + Kd(\text{nominal})\}.$

t = Prevailing corporate tax rate of the licensee

7.3 Notional tax refers to a licensee's estimate notional tax expense with respect to the regulated activity for the tariff period under review. If the licensee opts for the notional tax approach, the calculation is to be performed by applying the following formula:

$$\text{Tax} = \{t(\text{NRBTA}) / (1-t)\} * t$$

Where:

NRBTA = Net revenue before tax allowance

= $\{(RAB * WACC) + E + D(\text{historic \& write up}) + F \pm C\} - \{E + D(\text{historic})\}$.

t = Prevailing corporate tax rate of the licensee

7.4 Tax penalties and interest on tax due are not allowed.

8 Depreciation and Amortisation of Inflation Write-up (D)

8.1 The depreciation amount calculated on a straight line basis over the service life of each of the assets or classes of assets in the regulatory asset base for the tariff period under review is included in the allowable revenue.

8.2 The only form of accelerated or decelerated depreciation that is allowed is when there is a change approved by the Energy Regulator in the estimated service life of the asset.

8.3 An appropriate depreciation rate must be used in computing depreciation charges to reflect the different estimated service lives of the respective assets in each class of plant accounts, or each plant account, or each class of assets within a plant account.

8.4 The depreciation rate must be based on the estimated service life of plant, as developed by a study of the company's history and experience (taking into account all relevant factors including variations in use, increasing obsolescence or inadequacy) and such engineering, economic or other depreciation studies and other information as may be available with respect to future operating conditions.

8.5 When a licensee makes a tariff application, it must include information on depreciation rates for each of the assets or classes of assets and be

accompanied by a statement on their basis and the methods employed in their computation.

- 8.6 Depreciation and amortisation of write-up is to be calculated by using the method given in the example at Note 3: Method to Determine Depreciation and Amortisation Write-up.

9 Clawback Adjustment (C)

- 9.1 The following formula must be used to determine the clawback adjustments:

$$\text{Clawback adjustment} = \text{VoIA} + \text{DA} + \text{KdA} + (\text{V-d})\text{A} + \text{CPIA} + \text{GA}$$

Where:

VoIA = Volume adjustment

DA = Depreciation adjustment

KdA = Cost of debt adjustment

(V-d)A = Value of operating property, plant, vehicles and equipment adjustment

CPIA = Consumer price index adjustment

GA = General adjustment for any remaining differences between projected allowable revenue and actual allowable revenue not resulting from efficiency gains including tax.

Note: The adjustments need to be made according to the following formula:

9.2 Volumes adjustment (VoIA)

- 9.2.1 The volume adjustment compensates licensees and customers for differences between budgeted volume when the tariff is approved and the total actual volume throughput during the tariff period. The following formula applies:

$$\text{VoIA} = (\text{Vola} - \text{Volp})\text{Tff}(s)$$

Where:

VoIA = Volume adjustment

Volp = volumes projected base on the history of previous volumes

Vola = Volumes actual

Tff = Tariff(s)

9.2.2 Any adjustment in allowable revenue due to volume will be applicable in the tariff period subsequent to the licensee's audited financial statements of the applicable tariff period becoming available.

9.2.3 Projected volumes used in performing the calculation must be those used to determine the allowable revenue for the tariff period concerned.

9.2.4 Any unexpected deviations from projected volumes and the factors that have led to such deviations must be explained by the licensee.

9.3 **Depreciation adjustment (DA)**

9.3.1 The depreciation adjustment provides for the differences between the projected depreciation made at the time the allowable revenue was determined and the actual depreciation for the specific tariff period.

$$\text{DA} = \text{Da} - \text{Dp}$$

Where:

DA = Depreciation adjustment

Da = Depreciation actual

Dp = Depreciation projected

9.4 **Cost of Debt adjustment (KdA)**

9.4.1 If there is a difference between the estimated cost of debt in the allowable revenue and the actual cost of debt for that tariff period then the allowable revenue must be recalculated using the actual cost of debt and the difference added to or subtracted from the clawback adjustment. The following formula must be used to determine the KdA:

$$\text{KdA} = \text{Allowable Revenue recalculated using actual cost of debt} - \text{Allowable Revenue calculated using projected cost of debt}^{\circ}$$

9.5 **Value of new operating property, plant, vehicles and equipment adjustment (V-d)A**

9.5.1 The operating asset adjustment compensates licensees and customers for differences in timing between the estimated date of a new asset becoming used and the actual date that the asset became used. The following formula must be used to determine the operating asset adjustment:

$$\text{Operating asset adjustment} = (V-d)_{\text{new assets}} (DypA - DypP) / 365 \times \text{WACC}$$

Where:

$(V-d)_{\text{new assets}}$ = The value of the operating assets that will become used during the tariff period under review and which will be added to the RAB in the course of the tariff period under review

Dya = the actual number of days from the commencement of the financial year when the new asset/plant became used

⁹ Note: All other factors and quantum in estimated Allowable Revenue remain the same.

DypP = the projected number of days from the commencement of the financial year when the new asset/plant was estimated to become used

9.6 CPI Adjustment (CPIA)

9.6.1 The inflation adjustment compensates licensees and customers for differences between forecast and actual inflation rates.

$$\text{CPIA} = \text{CPIa} - \text{CPIp}$$

Where:

CPIA = Consumer Price Index Adjustment

CPIa = Consumer Price Index actual

CPIp = Consumer Price Index projected

10 Tariff Design and Tariff Structures

The Energy Regulator will approve tariff designs and structures appropriate to the nature of a facility.

11 Review and Modification of the Tariff Methodology

The Energy Regulator will conduct a review of the Methodology every 3 years to ensure that the contents of the Methodology reflect the regulatory circumstances existing at the time of the review. The Energy Regulator also recognizes that special circumstances may arise that may necessitate changes to be effected, perhaps sooner than the envisaged 3 years formal review cycle. This provision for a review after 3 years would therefore not preclude on-going incorporation by the Energy Regulator of justifiable changes that are considered necessary to immediately capture clarity, transparency and regulatory efficiency benefits.

The Energy Regulator will give decisions on the interpretation of the various clauses of the Methodology, but any party will be entitled at any stage to take decisions of the Energy Regulator on review or appeal as contemplated in the enabling legislations.

NOTES

Note 1: Joint Costs

- 1 Joint Costs – are those costs which do not have a specific, identifiable causal relationship with a particular entity or affiliate, but which benefit all affiliates/business units, or more than one. Joint costs are also referred to as common costs, and include corporate costs.
- 2 To the maximum extent possible, joint costs should be assigned directly to licensee/ affiliates on the basis of causation or usage, and where cost causation cannot be easily ascertained or established cost drivers should be selected based on benefits received.

Note 2: Asset and Liability Categories

Further clarity on the meaning of non-current assets can be gained from the Regulatory Reporting Manual which gives the following classifications:

ASSETS AND OTHER DEBITS

Current Assets

100	Cash and Cash Equivalents
110	Accounts Receivable
110.003	Accounts Receivable-Trade
110.004	Accounts Receivable-Other
115	Accumulated Provision for Doubtful Debts
120	Inventory
120.001	Materials and Operating Supplies
120.003	Petroleum Inventory

- 125 Prepayments
- 135 Other Current Assets

Deferred Debits

- 142 Preliminary Surveys and Investigation Charges
- 147 Other Deferred Debits

Non-Current Assets

- 171.001 Plant in Service
- 171.002 Accumulated Depreciation-Plant in Service
- 172.001 Plant under capital leases and Improvements to leased facilities
- 172.002 Accumulated Depreciation—Leased Plant and Improvements
- 176 Line Fill
- 195.002 Other Intangible Assets

LIABILITIES AND OTHER CREDITS

Current Liabilities

- 200 Bank Overdraft
- 205 Accounts Payable
- 206 Account Payable to Affiliated Companies
- 212 Obligations under Capital Leases – Current Portion
- 216 Interest Payable and Accrued
- 220 Dividends Payable
- 230 Accrued Income Taxes Payable
- 235 Other Current Liabilities

Deferred Credits

238	Unamortized Debt Premium and Expenses
241	Other deferred credits

Non-Current Liabilities

245	Provision for Pension and Benefits
255	Long-Term Debt
256	Long-Term Debt-Advances from Affiliated Companies
265	Other Non-Current Liabilities
265.001	Obligations under capital lease- non-current
265.002	Accumulated provision for self insurance

Owners' Equity

275	Equity Issued
275.001	Ordinary shares issued
275.002	Preference shares issued
280	Contributed Surplus
285	Reserves including excess of appraisal value over depreciated plant cost
290	Retained Earnings

Note 3: Method to Determine Depreciation and Amortization write-up

This example of the method to determine depreciation is based on the following assumptions–

- a) historic cost of asset is R100 which is 100% of its value;
- b) inflation is 5% per annum;
- c) depreciation is on a straight line basis over 10 years;
- d) the service life of the asset is 10 years;

The table below demonstrates how depreciation must be calculated.

Trending of Asset Value (TOC)		A	B	C	D	E	F	G	H	I	J	K
1	Tariff Period	Formula for year 2 (column "C")										
2	Remaining Asset Useful Life		10	9	8	7	6	5	4	3	2	1
3	Depreciated Original Cost b/f	+B3-B4		90.0	80.0	70.0	60.0	50.0	40.0	30.0	20.0	
4	Depreciation		100.00	0	0	0	0	0	0	0	0	10.00
5	Depreciated original cost (V-d) RAB Bal c/f	+\$B\$3/\$B\$2	10.00	0	0	0	0	0	0	0	0	10.00
6												
7	Inflation write-up balance											
8	Inflation write-up bal b/f	+B12				11.0	12.9	13.8	13.6	12.2		
9	Current period inflation write-up	+B13*\$A\$9	5%	0.00	4.50	8.20	3	3	1	0	1	9.55
10	Write up balance on which WACC should be earned	=SUM(C8:C9)	5.00	4.73	4.41	4.05	3.65	3.19	2.68	2.11	1.48	0.78
11	Amortization of write-up	+B10/C2			12.6	15.0	16.5	17.0	16.2	14.3	11.0	
12	Write-up bal net of amortization carried forward	=C10-C11	5.00	9.23	1	9	8	0	8	2	3	6.29
13	TOC Closing Balance (c/f)	=C5+C12	100	94.50	0	3	3	1	0	1	5	0.00
14	TOC Opening Balance (b/f) balance to inflate	+B13		94.5	88.2	81.0	72.9	63.8	53.6	42.2	29.5	
15	Total depreciation	B4 + B11	100.00	0	0	3	3	1	0	1	5	15.51
16	Total amount on which WACC should be earned		10.5	11.0	11.6	12.2	12.8	13.4	14.1	14.8	15.5	16.3
10				99.2	92.6	85.0	76.5	67.0	56.2	44.3	31.0	
			105.00	3	1	9	8	0	8	2	3	16.29

¹⁰ Line 16 is before deduction or addition of deferred tax liability or asset using the normalised tax approach