Revenue & Average Price Path for the Transmission & Distribution Network Businesses

Western Power Corporation

ABN 38 362 983 875

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1. Summary

This paper defines the processes and associated formulae that enable the determination of the network business average price path and the associated target revenue entitlements over the access arrangement period. The target revenue is separately determined for the distribution and transmission network businesses.

The form of price control governing access to both Western Power's transmission and distribution networks is an incentive-based "Average Revenue Yield" regime. The rate of return is defined as “pre-tax real” and all formulae are designed to reflect this approach.

The initial access arrangement period will be for three years from July 2006, with successive access arrangement periods being five years.

The process to derive the average price path for this regime is as follows:

1. Determine the aggregate revenue requirement for each year of the access arrangement period,
2. Forecast network energy consumption for each year of the access arrangement period, and
3. Develop an average price path (or average revenue yield) to achieve the forecast target revenue over the access arrangement period.

In addition to the above, this paper describes the process for:

1. Annual correction of the target revenue, called the K factor,
2. Limiting annual movements of individual access prices (designed to prevent price shock),
3. The investment adjustment mechanism,
4. The adjustment for unforeseen events, and
5. The adjustment for technical rule changes.

Each of these processes is briefly described below.

Annual Aggregate Revenue Determination:

The starting point for determining the average revenue yield is determination of the annual aggregate revenue requirement (AARR) for each year of the access arrangement period. The AARR is a summation of the following components:

- "return on", and
- "depreciation of" the capital base of the network;

and

- recovery of efficient non-capital (operating) costs.

The capital base for the network is defined using the "optimised deprival value" methodology and it is the resultant value to which the rate of return is applied. The network business is not permitted a rate of return on new facilities investment funded by customers in the form of

capital contributions prior to June 30 2006. From that date capital contributions will be included in the target revenue and the network business will be permitted a rate of return on those associated assets.

The revenue formulae are structured so that the full value of the capital base is recognised in the revenue determination, but this revenue is fully offset by the revenue related to the accumulated value of capital contributions up to June 30, 2006. Capital contributions are treated identically to the asset base in that they are adjusted annually in real terms.

The Code allows for an "investment adjustment mechanism" whereby some (or all) capital related costs can be allocated to a category such that the return on and depreciation of that forecast investment can be adjusted ex-post to account for under or over expenditure, compared to the forecast amounts.

Where this option is applied the target revenue falls into two categories; that is revenue excluding that related to the investment adjustment mechanism and revenue related to the investment adjustment mechanism.

Determination of the Average Revenue Yield:

Determination of the forecast AARRs provides annual revenues which can be converted to a smoothed revenue path that provides the same total revenue, in NPV terms, over the access arrangement period. Where the investment adjustment mechanism is applied there will be two separate revenue paths that are added together to give total target revenue. The average revenue yield applies to the revenue path that excludes revenue related to the investment adjustment mechanism.

The "average revenue yield" regulatory regime is designed to give the network business annual revenue based on the total network usage (kWhs). That is to say, the target revenue for the network business (excluding that related to the investment adjustment mechanism) is the approved maximum average revenue yield (cents/kWh) multiplied by the total annual network usage (kWh).

The average revenue yield is adjusted each year for inflation, and a "real price adjustment factor", called the X factor. This "X" factor provides the required real average price path.

The mechanism for the price movement, defined as maximum average revenue yield (MARY) (cents/kWh), is shown in the following formula

$$MARY_{(k)} = MARY_{(k-1)} * (1 + CPI_{(k-1)} - X)$$

where

$MARY_k$	= the maximum average revenue yield for the year k,
$MARY_{(k-1)}$	= the maximum average revenue yield for the year k-1,
$cpi_{(k-1)}$	= the all capitals consumer price index for the year k-1,
X	= the real price adjustment factor (X factor) for the access arrangement period.

Determination of the Revenue Path for the Revenue related to the Investment Adjustment Mechanism (IAM):

Determination of the forecast AARRs for revenue related to the investment adjustment mechanism (IAM), provides annual revenues which can be converted to a smoothed revenue path that provides the same total revenue, in NPV terms, over the access arrangement period.

This revenue in each year of the access arrangement period will be determined by the formula:

$$REV(IAM)_{k+1} = REV(IAM)_k * (1 + Y)$$

for years k = 2 to 3

where

$REV(IAM)_k$ = Smoothed network annual aggregate revenue requirement related to the investment adjustment mechanism for year k,

Y = Smoothing factor to provide uniform price effect across access arrangement period.

This approach is discussed in section 5.19 of the Access Arrangement where FQE_t is the revenue related to the investment adjustment mechanism.

Annual Correction to Target Revenue:

The actual revenue collected from all users will normally be different to the target revenue. This arises because actual data is generally different to forecast data. This difference is carried forward to the following year as an adjustment (K factor) to the forecast revenue for that year.

The forecast target revenue for the following year is then defined as:

$$(Forecast\ Revenue)_k = MARY_k * Energy_k + REV(IAM)_k + K_k$$

where:

K_k is defined as the difference between the actual revenue received and the target revenue in year k-1.

Annual Adjustments to Individual Access Tariffs

Under an "average revenue yield" form of price control the average price is controlled in real terms. Individual Distribution bundled tariffs and Transmission Use of System and Common Service tariffs however are not directly controlled.

As such there exist secondary controls, called "side constraints", which limit the changes in any particular tariff. This has been set to:

1. Increase in any individual tariff being limited to CPI + 2% in any year, and
2. Increase in any individual tariff components (published figures) being limited to CPI + 2% in any year.

2. Network Access Revenue Formulae

The formulae employed in this paper apply equally to the transmission and distribution network businesses. The target revenues and average price paths are separately determined for each business. The total revenue for the covered services provided by Western Power is the sum of the two.

2.1. Determining the Annual Aggregate Revenue Requirement (AARR) - Overview

The network business allocates its capital base into three asset categories, being network (including SCADA and street lighting), metering and non-network assets. The annual aggregate revenue requirement (AARR) for the network business is defined as follows.

AARR = NAARR + MAARR + NNAARR + NAARR(IAM)

where

NAARR is the network AARR,

MAARR is the metering AARR, and

NNAARR is the non-network AARR.

NAARR(IAM) is the network investment adjustment mechanism AARR

Each of the components of the AARR is comprised of the asset related revenue offset by the relevant capital contribution related revenue as follows.

Network (excluding revenue related to the investment adjustment mechanism):

NAARR = NARR – NCCRR

where:

NARR is the network annual revenue requirement excluding revenue related to the investment adjustment mechanism, and

NCCRR is the network capital contribution revenue reduction.

Network (related to the investment adjustment mechanism):

The NAARR(IAM) is determined separately from the NARR. There is no revenue reduction for capital contributions because there is no expenditure and associated capital contributions in this category prior to June 30, 2006.

Metering:

MAARR = MARR - MCCRR

where:

MARR is the metering annual revenue requirement, and

MCCRR is the metering capital contribution revenue reduction.

Non-Network:

NNAARR = NNARR - NNCCRR

where:

NNARR is the non-network annual revenue requirement, and

NNCCRR is the non-network capital contribution revenue reduction.

Annual revenues are determined for the full access arrangement period based on the initial capital base, the weighted average cost of capital, and forecast non-capital and capital related costs. Expenditures for the full access arrangement period are all forecast values.

The access arrangement period will normally be 5 years although the first access arrangement period will be 3 years.

2.1.1. Network Capital Related Costs

The Code allows for an "investment adjustment mechanism" which effectively allows for some of the forecast capital related costs to be allocated to a category that allows for ex-post adjustment to the regulated return to allow for over or under expenditure compared to the forecast amount. The adjustment is undertaken in the subsequent access arrangement period.

Because the investment adjustment mechanism essentially allows for "rate of return" revenue on the expenditure, provided it is deemed to be prudent, the return on this category of expenditure will be treated separately as a fixed amount independent of the average price path. The ex-post adjustment will then be based on a defined revenue amount rather than revenue that relates to energy transported.

2.2. Determining the Annual Aggregate Revenue Requirement (AARR) – Detailed Formulae

2.2.1. Network Annual Revenue Requirement (NARR)

Network assets are treated in real terms and the rate of return is at a real pre-tax WACC. New network assets (or retired assets) are assumed commissioned (decommissioned) half way through the financial year.

The whole of the network asset can be treated as a single asset for the purpose of revenue determination or the asset can be broken into specific categories. In the case of the transmission network asset the revenue requirement is separately determined for network assets and for the SCADA assets. In the case of distribution, revenues for the network asset and street lighting are separately determined.

The following formula applies to each year (k) of the access arrangement period (for network assets excluding those related to the investment adjustment mechanism).

$$NARR_k = WACC*[ODV_{nk}*(1+cpi_k)] + WACC_{half}*[CE_{nk}]*(1+cpi_k)^{0.5} - WACC_{half}*[DA_{nk} + ADDA_{nk}]*(1+cpi_k) + DEP_{nk}*(1+cpi_k) + 0.5*[DCE_{nk}]*(1+cpi_k)^{0.5} - 0.5*[DDA_{nk} + DADDA_{nk}]*(1+cpi_k) + [ADDA_{nk} - 0.5*(DADDA_{nk})]*(1+cpi_k)^{0.5} + DTCn_k + OM_{nk}$$

for years k = 1 to 3.

where:

WACC	= the pre-tax real weighted average cost of capital,
ODV_{nk}	= the optimised deprival value of the network at the start of year k (excluding those assets related to the investment adjustment mechanism),
cpi_k	= the forecast all capitals headline cpi for the year k,
$WACC_{half}$	= the effective WACC for 6 months,
CE_{nk}	= the forecast capital related costs for network assets for the year k (excluding those assets related to the investment adjustment mechanism),
DA_{nk}	= the forecast decommissioned network assets for the year k (excluding those assets designated for accelerated depreciation),
DEP_{nk}	= the depreciation for the network asset as at the start of year k (excluding those assets related to the investment adjustment mechanism),
DCE_{nk}	= the annual depreciation of the forecast network capital related costs for the year k (excluding those assets related to the investment adjustment mechanism),
DDA_{nk}	= the annual depreciation for the forecast decommissioned network assets for the year k (excluding those assets designated for accelerated depreciation),
$ADDA_{nk}$	= the annual accelerated depreciation for forecast decommissioned network assets relating to government policy (for example, the retrospective undergrounding project), or other undergrounding undertaken at customer request, for the year k,
$DADDA_{nk}$	=the annual depreciation for the forecast decommissioned network assets related to the asset designated for accelerated depreciation, for the year k,
DTC_{nk}	= the network depreciation tax correction for the year k (excluding those assets related to the investment adjustment mechanism),
OMnk	= the forecast network non-capital costs for the year k,

2.2.2. Network Annual Aggregate Revenue Requirement related to Investment Adjustment Mechanism (NAARR(IAM))

$$NAARR(IAM)_k = WACC*[ODV(IAM)_{nk}*(1+cpi_k)] + WACC_{half}*[CE(IAM)_{nk}]*(1+cpi_k)^{0.5} + DEP(IAM)_{nk}*(1+cpi_k) + 0.5*[DCE(IAM)_{nk}]*(1+cpi_k)^{0.5} + DTC(IAM)_{nk}$$

for years k = 1 to 3.

where:

- $ODV(IAM)_{nk}$ = the optimised deprival value of the network assets related to the investment adjustment mechanism at the start of year k,
- $CE(IAM)_{nk}$ = the forecast capital related costs related to the investment adjustment mechanism for network assets for the year k,
- $DEP(IAM)_{nk}$ = the depreciation for the network asset related to the investment adjustment mechanism as at the start of year k,
- $DCE(IAM)_{nk}$ = the annual depreciation of the forecast network capital related costs related to the investment adjustment mechanism for the year k,
- $DTC(IAM)_{nk}$ = the network depreciation tax correction for assets related to the investment adjustment mechanism for the year k,

Note: Conservatively there has been no non-capital cost allocated to these assets.

2.2.3. Metering Annual Revenue Requirement (MARR)

Metering assets are treated in real terms and the rate of return is at a real pre-tax WACC. Any new metering assets (or retired assets) are assumed commissioned (decommissioned) half way through the financial year. The following formula applies to each year (k) of the access arrangement period.

$$MARR_k = WACC*[ODV_{mk}*(1+cpi_k)] + WACC_{half}*[CE_{mk}]*(1+cpi_k)^{0.5} - WACC_{half}*[DA_{mk} + ADDA_{mk}]*(1+cpi_k) + DEP_{mk}*(1+cpi_k) + 0.5*[DCE_{mk}]*(1+cpi_k)^{0.5} - 0.5*[DDA_{mk} + DADDA_{mk}]*(1+cpi_k) + [ADDA_{mk} - 0.5*(DADDA_{mk})]*(1+cpi_k)^{0.5} + DTC_{mk} + OM_{mk}$$

for k = 1 to 3.

where:

- WACC = the pre-tax real weighted average cost of capital,
- ODV_{mk} = the optimised deprival value of the metering asset at the start of year k,
- cpi_k = the forecast all capitals headline cpi for the year k,
- $WACC_{half}$ = the effective WACC for 6 months,
- CE_{mk} = the forecast metering capital related costs for the year k,
- DA_{mk} = the forecast decommissioned metering assets for the year k (excluding those assets designated for accelerated depreciation),
- DEP_{mk} = the depreciation for the metering asset as at the start of year k,
- DCE_{mk} = the annual depreciation for the forecast metering capital related costs for the year k,

DDA_{mk} = the annual depreciation for the forecast decommissioned metering assets for the year k (excluding those assets designated for accelerated depreciation),

$ADDA_{mk}$ = the annual accelerated depreciation for forecast decommissioned metering assets relating to government policy or undertaken at customer request, for the year k,

$DADDA_{mk}$ = the annual depreciation for the forecast decommissioned metering assets related to the asset designated for accelerated depreciation, for the year k,

DTC_{mk} = the metering depreciation tax correction for the year k,

OM_{mk} = the forecast metering non-capital costs for the year k,

2.2.4. Non-Network Annual Revenue Requirement (NNARR)

Non-network assets include land and easements, and other non-network assets which are included in the capital base but which are not distinctly network assets. Land and easements are valued at historical purchase price, and other non-network assets are valued at net book value. Land, easements and other non-network assets are treated in nominal terms and the rate of return is the nominal pre-tax WACC. The following formula applies to each year (k) of the access arrangement period.

$$NNARR_k = WACC_{nom}*[NBV_{onnk} + LE_k + WC_k] + (WACC_{half})_{nom}*[CE_{onnk} + LEA_k - DA_{onnk} - LED_k - ADDA_{onnk}] + DEP_{onnk} + 0.5*[DCE_{onnk} - DDA_{onnk} - DADDA_{onnk}] + [ADDA_{onnk} - 0.5*(DADDA_{onnk})] - PLE_k + ADMIN_{nnk}$$

for k = 1 to 3.

where:

$WACC_{nom}$ = the nominal pre-tax weighted average cost of capital,

NBV_{onnk} = the net book value of the other non-network assets at the start of year k,

LE_k = the historic cost of land and easements, at the start of year k

$(WACC_{half})_{nom}$ = the effective $WACC_{nom}$ for 6 months,

CE_{onnk} = the forecast other non-network capital related costs for the year k,

LEA_k = the forecast historic cost of land and easements acquired for the year k,

DA_{onnk} = the forecast other non-network decommissioned assets for the year k (excluding those assets designated for accelerated depreciation),

LED_k = the forecast historic cost of land and easements disposed of for the year k,

DEP_{onnk} = the depreciation for the other non-network assets as at the start of year k,

DCE_{onnk} = the annual depreciation for the forecast other non-network capital related costs for the year k,

DDA_{onnk} = the annual depreciation for the forecast other non-network decommissioned asset for the year k (excluding those assets designated for accelerated depreciation),

$ADDA_{onnk}$ = the annual accelerated depreciation for forecast decommissioned other non-network assets relating to government policy, for the year k,

$DADDA_{onnk}$ = the annual depreciation for the forecast decommissioned other non-network assets related to the asset designated for accelerated depreciation, for the year k,

PLE_k = the forecast profit (loss) on the disposal of land and easements for the year k,

$ADMIN_{nnk}$ = the forecast administration expenditure for the year k, and

WC_{nnk} = average annual working capital for the network business.

2.2.5. Network Capital Contribution Revenue Reduction (NCCRR)

Network capital contributions are treated in real terms. For regulated revenue determination purposes there will be no new capital contributions form July 2006. The revenue related to capital expenditure in the category that relates to the investment adjustment mechanism will have no revenue offset for capital contributions because this scheme commences from July 2006.

The following formulae apply to the accumulated value of capital contributions up to June 30, 2006.

Note: Where assets have been de-commissioned, any associated capital contribution (adjusted in real terms) is removed from the accumulated value of capital contributions.

$$NCCRR_k = WACC*[CCON_{nk}*(1+cpi_k)] + WACC_{half}*[CON_{nk} - RCON_{nk}]*(1+cpi_k)^{0.5} + DCCON_{nk}*(1+cpi_k) + 0.5*[DCON_{nk} - DRCON_{nk}]*(1+cpi_k)^{0.5} - CTC_{nk}$$

for k = 1 to 3.

where:

WACC = the pre-tax real weighted average cost of capital,

$CCON_{nk}$ = the cumulative value of network capital contributions at the start of year k (excluding those capital contributions related to the investment adjustment mechanism),

cpi_k = the forecast all capitals headline cpi for the year k,

$WACC_{half}$ = the effective WACC for 6 months,

CON_{nk} = the forecast network capital contributions for the year k (excluding those capital contributions related to the investment adjustment mechanism). This value will be zero from July 2006,

$RCON_{nk}$ = the forecast removed network capital contributions for the year k,

$DCCON_{nk}$ = the depreciation for the network capital contributions as at the start of year k (excluding those capital contributions related to the investment adjustment mechanism),

$DCON_{nk}$ = the annual depreciation for the forecast network capital contributions for the year k (excluding those capital contributions related to the investment adjustment mechanism). This value will be zero from July 2006.

$DRCON_{nk}$ = the annual depreciation for the forecast removed network capital contributions for the year k,

CTC_{nk} = the network capital contribution tax correction for the year k (excluding those capital contributions related to the investment adjustment mechanism). This value will be zero from July 2006.

2.2.6. Metering Capital Contribution Revenue Reduction (MCCRR)

Metering capital contributions are treated in real terms.

$$MCCRR_k = WACC*[CCON_{mk}*(1+cpi_k)] + WACC_{half}*[CON_{mk} - RCON_{mk}]*(1+cpi_k)^{0.5} + DCCON_{mk}*(1+cpi_k) + 0.5*[DCON_{mk} - DRCON_{mk}]*(1+cpi_k)^{0.5} - CTC_{mk}$$

for k = 1 to 3.

where:

WACC = the pre-tax real weighted average cost of capital,

$CCON_{mk}$ = the value of metering capital contributions at the start of year k,

cpi_k = the forecast all capitals headline cpi for the year k,

$WACC_{half}$ = the effective WACC for 6 months,

CON_{mk} = the forecast metering capital contributions for the year k. This value will be zero from July 2006

$RCON_{mk}$ = the forecast removed metering capital contributions for the year k,

$DCCON_{mk}$ = the depreciation for the metering capital contributions as at the start of year k,

$DCON_{mk}$ = the annual depreciation for the forecast metering capital contributions for the year k. This value will be zero from July 2006,

$DRCON_{mk}$ = the annual depreciation for the forecast removed metering capital contributions for the year k,

CTC_{mk} = the metering capital contribution tax correction for the year k. This value will be zero from July 2006.

2.2.7. Non-Network Capital Contribution Revenue Reduction (NNCCRR)

Non-network capital contributions are treated in nominal terms.

$$NNCCRR_{nnk} = WACC_{nom}*[CCON_{onnk} + CCON_{lek}] + (WACC_{half})_{nom}*[CON_{onnk} + CON_{lek} - RCON_{onnk} - RCON_{lek}] + DCCON_{onnk} + 0.5*[DCON_{onnk} - DRCON_{onnk}] - CTC_{nnk}$$

for k = 1 to 3.

where:

$WACC_{nom}$ = the nominal pre-tax weighted average cost of capital,

$CCON_{onnk}$ = the value of other non-network capital contributions at the start of year k,

$CCON_{lek}$ = the value of land and easement capital contributions at the start of year k,

$(WACC_{half})_{nom}$ = the effective nominal pre-tax WACC for 6 months,

CON_{onnk} = the forecast non-network capital contributions for the year k. This value will be zero from July 2006,

CON_{lek} = the forecast land and easement capital contributions for the year k. This value will be zero from July 2006,

$RCON_{onnk}$ = the forecast removed other non-network capital contributions for the year k,

$RCON_{lek}$ = the forecast removed land and easement capital contributions for the year k,

$DCCON_{onnk}$ = the depreciation for the other non-network capital contributions as at the start of year k,

$DCON_{onnk}$ = the annual depreciation for the forecast other non-network capital contributions for the year k. This value will be zero from July 2006,

$DRCON_{onnk}$ = the annual depreciation for the expected removed other non-network capital contributions for the year k,

CTC_{nnk} = the non-network capital contribution tax correction for the year k. This value will be zero from July 2006.

It is not expected that the non-network capital contributions will be significant. There have not been any such capital contributions to date.

2.3. Components of the Asset Revenue

This section describes the components of the revenue determination related to the assets of the network business. The section following describes the components of the revenue determination related to the capital contributions to the network business.

2.3.1. Weighted Average Cost of Capital (WACC)

The WACC is set for the access arrangement period by independent review. It is held constant for that period.

WACC = the real pre-tax WACC approved for use by the network business.

$WACC_{half}$ = the WACC for 6 months,

$WACC_{half}$ = (1+WACC)^0.5 - 1

$WACC_{nom}$ = the nominal pre-tax weighted average cost of capital,

$WACC_{nom}$ = [(1+WACC)*(1+cpi)] - 1

$(WACC_{half})_{nom}$ = the nominal pre-tax WACC for 6 months,

$(WACC_{half})_{nom}$ = (1+$WACC_{nom}$)^0.5 - 1

2.3.2. Optimised Deprival Value (ODV)

The ODV at the start of the first access arrangement period is determined by independent review. To determine the forecast revenue for each year during a access arrangement period the ODV of the network and metering assets is re-calculated for the start of each year of a access arrangement period for k = 2 to k = 3.

This "annual re-calculation" is carried out by;

- carrying forward the ODV as set at the start of the year (in real terms),
- adding forecast additions to the asset for the year (in real terms),
- subtracting depreciation of assets (in real terms), and
- removing (in real terms) any forecast decommissioned assets for the year.

Note that the non-network asset is valued in historic cost terms. New additions and deletions are treated in historic cost terms.

The forecast network ODV at the start of year k (excluding those assets related to the investment adjustment mechanism) is:

$$ODV_{nk} = ODV_{n(k-1)}*(1+cpi_{(k-1)}) - DEP_{n(k-1)}*(1+cpi_{(k-1)}) + [CE_{n(k-1)} - 0.5*DCE_{n(k-1)}]*(1+cpi_{(k-1)})^{0.5} - [DA_{n(k-1)} + ADDA_{n(k-1)} - (DDA_{n(k-1)} + DADDA_{n(k-1)})]*(1+cpi_{(k-1)})$$

for k = 2 to 3.

The forecast network ODV at the start of year k (assets related to the investment adjustment mechanism) is:

$$ODV(IAM)_{nk} = ODV(IAM)_{n(k-1)}*(1+cpi_{(k-1)}) – DEP(IAM)_{n(k-1)}*(1+cpi_{(k-1)}) + [CE(IAM)_{n(k-1)} - 0.5*DCE(IAM)_{n(k-1)}]*(1+cpi_{(k-1)})^{0.5}$$

for k = 2 to 3.

(Note – $ODV(IAM)_{n(k-1)}$ and $DEP(IAM)_{n(k-1)}$ will be zero for year 1)

The forecast metering ODV at the start of year k is:

$$ODV_{mk} = ODV_{m(k-1)}*(1+cpi_{(k-1)}) - DEP_{m(k-1)}*(1+cpi_{(k-1)})+ [CE_{m(k-1)} - 0.5*DCE_{m(k-1)})]*$$

$$(1+cpi_{(k-1)})^{0.5} - [DA_{m(k-1)} + ADDA_{m(k-1)} - (DDA_{m(k-1)} + DADDA_{m(k-1)})]*(1+cpi_{(k-1)})$$

for k = 2 to 3.

The forecast other non-network net book value (NBV) at the start of year k is:

$$NBV_{onnk} = NBV_{onn(k-1)} - DEP_{onn(k-1)} + CE_{onn(k-1)} - 0.5*DCE_{onn(k-1)} - [DA_{onn(k-1)} + ADDA_{onn(k-1)} - (DDA_{onn(k-1)} + DADDA_{onn(k-1)})]$$

for k = 2 to 3.

The forecast land and easement historic cost at the start of year k is:

$LE_k = LE_{(k-1)} + LEA_{(k-1)} - LED_{(k-1)}$

for k = 2 to 3.

2.3.3. Depreciation

Depreciation at the start of the first access arrangement period is determined by independent review.

To determine the forecast revenue for each year during an access arrangement period the depreciation is recalculated for the start of each year after the first. This "annual re-calculation" is carried out by:

- carrying forward the depreciation as set at the start of the year (in real terms),
- adding depreciation for forecast additions to the asset for the year (in real terms), and
- removing (in real terms) depreciation for any forecast decommissioned assets for the year.

Note that the non-network asset is valued in historic cost terms. New additions and deletions are treated in historic cost terms.

The forecast network depreciation (excluding assets related to the investment adjustment mechanism) in year k is equal to:

$$DEP_{nk} = DEP_{n(k-1)}*(1+cpi_{(k-1)}) + [DCE_{n(k-1)}]*(1+cpi_{(k-1)})^{0.5} - [DDA_{n(k-1)} + DADDA_{n(k-1)}]*(1+cpi_{(k-1)})$$

for k = 2 to 3.

The forecast network depreciation (assets related to the investment adjustment mechanism) in year k is equal to:

$$DEP(IAM)_{nk} = DEP(IAM)_{n(k-1)}*(1+cpi_{(k-1)}) + [DCE(IAM)_{n(k-1)}]*(1+cpi_{(k-1)})^{0.5}$$

for k = 2 to 3.

The forecast metering asset depreciation in year k is:

$$DEP_{mk} = DEP_{m(k-1)}*(1+cpi_{(k-1)}) + [DCE_{m(k-1)}]*(1+cpi_{(k-1)})^{0.5} - [DDA_{m(k-1)} + DADDA_{m(k-1)}]*(1+cpi_{(k-1)})$$

for k = 2 to 3.

The non-network depreciation is calculated in nominal terms. The Network businesses use a combination of straight line and declining value depreciation for the regulated non-network assets (other than land and easements for which there is no depreciation). All non-network depreciation values will be provided as forecast values at the start of the access arrangement period. That is to say, forecasts of the annual depreciation for the non-network asset at the start of each year and the depreciation associated with new additions and deletions for each year will be provided at the start of the access arrangement period.

2.3.4. Depreciation Taxation Correction

The depreciation taxation correction is to compensate the network business for the taxation liability incurred because the allowed regulatory depreciation is different to the depreciation permitted for taxation purposes.

For the network asset (excluding assets related to the investment adjustment mechanism) the taxation correction is:

$$DTC_{nk} = \{\{DEP_{nk}*(1+cpi_k) + 0.5*[DCE_{nk}]*(1+cpi_k)^{0.5} - 0.5*[DDA_{nk} + DADDA_{nk}]*(1+cpi_k) + [ADDA_{nk} - 0.5*DADDA_{nk}]*(1+cpi_k)^{0.5} - [DCCON_{nk}]*(1+cpi_k) - 0.5*[DRCON_{nk}]*(1+cpi_k)^{0.5}\} - \{DEP_{nktax}\}\}*\{(t*(1-\gamma))/(1-t*(1-\gamma))\}$$

for k = 1 to 3

where

t = company taxation rate

γ = imputation factor

DEP_{nktax} = the depreciation allowed for the network asset, for taxation purposes, for the year k (including the write-off of those assets designated for accelerated depreciation).

For the network asset (assets related to the investment adjustment mechanism) the taxation correction is:

$$DTC(IAM)_{nk} = \{\{DEP(IAM)_{nk}*(1+cpi_k) + 0.5*[DCE(IAM)_{nk}]*(1+cpi_k)^{0.5}\} - \{DEP(IAM)_{nktax}\}\}*\{(t*(1-\gamma))/(1-t*(1-\gamma))\}$$

for k = 1 to 3

where

$DEP(IAM)_{nktax}$ = the depreciation allowed for the network asset related to the investment adjustment mechanism, for taxation purposes, for the year k.

For the metering asset the taxation correction is:

$$DTC_{mk} = \{\{DEP_{mk}*(1+cpi_k) + 0.5*[DCE_{mk}]*(1+cpi_k)^{0.5} - 0.5[DDA_{mk} + DADDA_{mk}]*(1+cpi_k) + (ADDA_{mk} - 0.5*DADDA_{mk})*(1+cpi_k)^{0.5} - [DCCON_{mk}*(1+cpi_k) - 0.5*(DRCON_{mk})*(1+cpi_k)^{0.5}]\} - \{DEP_{mktax}\}\}*\{(t*(1-\gamma))/(1-t*(1-\gamma))\}$$

for k = 1 to 3

where

DEP_{mktax} = the depreciation allowed for the metering asset, for taxation purposes, for the year k (including the write-off of those assets designated for accelerated depreciation).

There is no taxation correction for the non-network asset as the regulated depreciation is equal to the depreciation allowed for taxation purposes.

2.3.5. Non-capital Costs (OM_k)

The forecast non-capital costs are determined for each year during the access arrangement period.

For the transmission network business, separate amounts are approved for the following activities:

- Network;
- Control System Services; and
- Non-network.

For the distribution network business, separate amounts are approved for the following activities:

- Network;
- Metering;
- Streetlights; and
- Non-network.

2.3.6. Administration Expenditure ($ADMIN_{nnk}$)

The forecast administration expenditure is determined for each year during the access arrangement period. It relates to the non-network activity of the regulated network business and will include the following activities;

- finance and administration,
- human resources,
- regulation, and
- the corporate costs.

2.4. Components of the Capital Contributions Revenue Offset

The revenue determination related to the network, metering and administration functions is offset by the effect of capital contributions. This section describes the components of this revenue offset.

2.4.1. Value of Capital Contributions (CCON)

The CCON related to the network and metering regulated businesses at the start of the access arrangement period is determined by the accumulated value of capital contributions carried forward in real terms.

To determine the forecast revenue for each year during an access arrangement period, after the first, the forecast value of CCON at the start of each of the succeeding years of the access arrangement period is determined as follows;

- carrying forward the CCON as set at the start of the year (in real terms),
- removing (in real terms) any forecast capital contributions related to decommissioned assets for the year.

Note that the non-network asset is valued in historic cost terms and any capital contributions to those assets are treated also in historic terms.

The forecast network CCON (excluding capital contributions related to the investment adjustment mechanism) in year k is:

$$CCON_{nk} = CCON_{n(k-1)}*(1+cpi_{(k-1)}) - DCCON_{n(k-1)}*(1+cpi_{(k-1)}) - [RCON_{n(k-1)}]*(1+cpi_{(k-1)})^{0.5} + 0.5*[DRCON_{n(k-1)}]*(1+cpi_{(k-1)})^{0.5}$$

for k = 2 to 3.

The forecast metering CCON in year k is:

$$CCON_{mk} = CCON_{m(k-1)}*(1+cpi_{(k-1)}) - DCCON_{m(k-1)}*(1+cpi_{(k-1)}) - [RCON_{m(k-1)}]*(1+cpi_{(k-1)})^{0.5} + 0.5*[DRCON_{m(k-1)}]*(1+cpi_{(k-1)})^{0.5}$$

for k = 2 to 3.

The forecast other non-network capital contributions (CCON) in year k is:

$$CCON_{onnk} = CCON_{onn(k-1)} - DCCON_{onn(k-1)} - [RCON_{onn(k-1)}] + 0.5*[DRCON_{onn(k-1)}]$$

for k = 2 to 3.

The forecast land and easement capital contributions (CCON) in year k is:

$$CCON_{lek} = CCON_{le(k-1)} - RCON_{le(k-1)}$$

for k = 2 to 3.

2.4.2. Depreciation of Capital Contributions

Depreciation of the network and metering related capital contributions is set at the start of the access arrangement period based on the accumulated capital contributions. The value of new capital contributions is set to zero for the revised regulatory approach.

To determine the forecast revenue for each year during an access arrangement period the depreciation of capital contributions is recalculated for the start of each year after the first. This "annual re-calculation" is carried out by;

- carrying forward the depreciation of capital contributions as set at the start of the year (in real terms),
- removing (in real terms) depreciation for any capital contributions related to forecast decommissioned assets for the year.

Note that capital contributions related to non-network assets are depreciated in historic cost terms. New additions and deletions are similarly treated in historic cost terms.

The forecast network capital contribution depreciation (excluding capital contributions related to the investment adjustment mechanism) in year k is:

$$DCCON_{nk} = DCCON_{n(k-1)}*(1+cpi_{(k-1)}) - [DRCON_{n(k-1)}]*(1+cpi_{(k-1)})^{0.5}$$

for k = 2 to 3.

The forecast metering capital contribution depreciation in year k is:

$$DCCON_{mk} = DCCON_{m(k-1)}*(1+cpi_{(k-1)}) - [DRCON_{m(k-1)}]*(1+cpi_{(k-1)})^{0.5}$$

for k = 2 to 3.

The non-network capital contribution depreciation is calculated in nominal terms. All non-network capital contribution depreciation values will be provided as forecast values at the start of the access arrangement period. That is to say, the annual depreciation for the non-network asset at the start of each year and the depreciation associated with deletions for each year will be provided at the start of the access arrangement period.

2.4.3. Capital Contribution Taxation Correction

The revised approach to the treatment of capital contributions has removed any requirement for tax compensation for capital contributions from July 2006.

3. Price Path Determination (Excluding Revenue related to the Investment Adjustment Mechanism) – Determination of the X-Factor

This section describes the average price path for the target revenue excluding revenue related to the investment adjustment mechanism. The revenue related to the investment adjustment mechanism is separately treated as described in Section 4.

3.1. Purpose

The "average revenue yield" price control is designed to give the network business annual revenue based on the total network usage (kWhs). That is to say, the target revenue for the network business is the approved maximum average revenue yield (cents/kWh) multiplied by the total annual network usage (kWh).

The revenue requirement of the networks, as described in the previous sections, may be quite varied from year to year. This is especially so for the transmission networks whose capital related costs are based on specific system augmentation. The use of the CPI-X regime smooths out what may be yearly upward and downward movements in real average price to one that has a consistent trend for the access arrangement period.

The average revenue yield is adjusted each year for inflation and a smoothing factor, called the X factor. The value of X is calculated from the revenue path that contains efficiencies in non-capital and capital related costs.

This "X" factor provides the required real average price path.

The mechanism for the average price (defined as maximum average revenue yield) movement is shown in the following formula

$$MARY_{(k)} = MARY_{(k-1)} * (1 + CPI_{(k-1)} - X)$$

where

$MARY_k$	= the maximum average revenue yield for the year k,
$MARY_{(k-1)}$	= the maximum average revenue yield for the year k-1,
$cpi_{(k-1)}$	= the all capitals consumer price index for the year k-1,
X	= the smoothing factor (X factor) for the access arrangement period.

3.2. Calculation of "X"

The Value of X is set at the start of the access arrangement period based on an agreed forecast of the annual aggregate revenue requirement ($AARR_k$) and forecast energy transported (FE_k) for each year of the access arrangement period. The value of X is constant throughout the access arrangement period.

X is set to a value so that the Net Present Value (NPV) of $AARR_k$ over the access arrangement period, is equal to the NPV of the $MARY_k * FE_k$. The AARR is calculated in

terms of pre-tax nominal dollars, and hence the appropriate discount rate for the calculation is the nominal pre-tax WACC.

The following formula describes this determination

$$\sum_{i=1}^{i=k} (AARR_k - NAARR(IAM)_k)* \text{ discount factor}_k = \sum_{i=1}^{i=k} MARY_k * FE_k * \text{discount factor}_k$$

where

$\text{discount factor}_k = (1 + WACC_{nom})^{-(k-1)}$

$AARR_k$ = Annual Aggregate Revenue Requirement for year k,

$NAARR(IAM)_k$ = the network annual aggregate revenue requirement related to the investment adjustment mechanism for year k,

$MARY_k$ = the maximum average revenue yield for year k.

For k=1;

$MARY_k = (AARR_1 - NAARR(IAM)_1)/FE_1$

where FE_1 = forecast energy for year 1

and for k > 1,

$MARY_k = MARY_{(k-1)} * (1 + CPI_{(k-1)} - X)$

4. Revenue Path Determination (Revenue Related to the Investment Adjustment Mechanism)

In accordance with section 5.25 of this Access Arrangement, this section describes the revenue path for the target revenue for revenue related to the investment adjustment mechanism. The revenue determination for the capital base and expenditure, excluding that which is related to the investment adjustment mechanism, is described in section 3. This category of expenditure and revenue is separately determined.

The revenue related to the investment adjustment mechanism is determined in accordance with section 2, which provides revenue amounts for each year of the access arrangement period. However it is clear that these revenue amounts must be smoothed so that the price impact is uniform over the access arrangement period. This can be achieved by ensuring that the NPV of the individual annual target revenues is equal to the NPV of the smoothed revenues.

4.1. Formulae

The network annual revenue requirement for each year of the access arrangement period related to the investment adjustment mechanism is $NAARR(IAM)_k$ for years k = 1 to 3.

This revenue is then smoothed across the access arrangement period to avoid price discontinuities using the following formula.

$$\sum_{i=1}^{i=3} NAARR(IAM)_k * \text{discount factor}_k = \sum_{i=1}^{i=3} REV(IAM)_k * \text{discount factor}_k$$

where

$\text{discount factor}_k = (1 + WACCnom)^{-(k-1)}$

NAARR(IAM)k = Network annual aggregate revenue requirement related to the investment adjustment mechanism for year k,

$REV(IAM)_k$ = Smoothed target revenue requirement related to the investment adjustment mechanism for year k,

The target revenue related to the investment adjustment in each year of the access arrangement period will be determined by the formula:

$$REV(IAM)_{k+1} = REV(IAM)_k * (1 + Y)$$

For years k = 2 to 3

where

Y = Smoothing factor to provide uniform price effect across the access arrangement period. The value most appropriate for Y is the expected average annual energy growth rate for the access arrangement period.

5. Investment Adjustment Mechanism Adjustment for future Access Arrangements

5.1. Introduction:

The investment adjustment mechanism is designed to enable Western Power to include in the access arrangement provision to protect the return on some or all of the forecast capital expenditure within an access arrangement period. The return is protected by adjusting the revenue entitlement in the next access arrangement review to take into account the over or under recovery of revenue related to the capital investment nominated under this provision.

The category of expenditure that is very uncertain is that related to new transmission-connected generation and major transmission connected loads. Under the new deregulated electricity market new generation investment takes place to meet investor and market requirements. The network business is a full participant in the planning and negotiation process for new generation, but does not participate in the decision to proceed and has no prior information to make accurate expenditure forecasts.

This category of expenditure can only be forecast on the information at hand and on the relative probability of projects proceeding.

5.2. Revenue Treatment

Western Power is proposing a revenue yield regime in which the revenue entitlement is directly related to the energy transported through the network. It is proposed that the expenditure included in the investment adjustment mechanism be treated separately as a defined revenue component. Therefore the revenue entitlement for any year would be:

Revenue entitlement = (MARY*Energy transported) + (Specific revenue related to investment adjustment mechanism)

The primary reason for specifically identifying the revenue related to the investment adjustment mechanism relates to the decoupling of expenditure and revenue that occurs in a revenue yield regime. Because it is proposed to correct for actual verses forecast revenue within this expenditure category, it is necessary that the expenditure and associated revenue remain directly coupled.

The following sections describe the process by which the investment adjustment mechanism will be implemented.

5.3. Process Formulae

As described previously the transmission capital expenditure for as yet uncommitted new generation projects, will be forecast as a separate category for the purposes of the investment adjustment mechanism. The revenue entitlement for each year of the regulatory period will include a component for this category of expenditure. The revenue entitlement of the network business is thus restated as follows:

$$NARR_k = MARY_k * Energy_k + REV(IAM)_k$$

for k = 1 to 3

where:

$NARR_k$ = the network revenue entitlement for the year k,

$MARY_k$ = the maximum average revenue yield for the year k,

$Energy_k$ = the total energy transported in the year k,

$REV(IAM)_k$ =the smoothed target revenue requirement associated with the investment adjustment mechanism expenditure for the year k,

The revenue related to the investment adjustment mechanism expenditure will be specifically calculated each year. The formulae to calculate these revenue amounts are contained in earlier sections of this report. This section defines the process to determine the carry forward amount into the next access arrangement period.

The cumulative revenue amount, related to the investment adjustment mechanism expenditure, over the three-year regulatory period is defined as follows.

$$NARR_{forecast}(IAM) = [REV_{forecast}(IAM)_1] * (1+WACC_{nom})^{2.5} + [REV_{forecast}(IAM)_2] * (1+WACC_{nom})^{1.5} + [REV_{forecast}(IAM)_3] * (1+WACC_{nom})^{0.5}$$

where:

$NARR_{forecast}(IAM)$ = the total forecast network revenue entitlement related to the investment adjustment mechanism for the regulatory period, and

$WACC_{nom}$ = the pre-tax nominal weighted average cost of capital.

The identical formula is then used to calculate the actual total revenue entitlement for the regulatory period.

$$NARR_{actual}(IAM) = [NAARR_{actual}\ (IAM)_1] * (1+WACC_{nom})^{2.5} + [NAARR_{actual}\ (IAM)_2] * (1+WACC_{nom})^{1.5} + [NAARR_{actual}\ (IAM)_3] * (1+WACC_{nom})^{0.5}$$

where:

$NARR_{actual}(IAM)$ = the total actual network revenue entitlement related to the investment adjustment mechanism for the regulatory period.

The difference between the forecast revenue entitlement and the actual revenue entitlement related to the investment adjustment mechanism is then the difference between the two amounts. This is the "investment difference" as defined in section 6.14 of the Code and section 5.24 of this Access Arrangement.

$$\Delta NARR(IAM) = NARR_{actual}(IAM) - NARR_{forecast}(IAM)$$

where:

$\Delta NARR(IAM)$ = the total difference in network revenue entitlement related to the investment adjustment mechanism for the regulatory period.

If $\Delta NARR(IAM)$ is positive, there was an over investment and Western Power is entitled to revenue compensation during the next regulatory period. Similarly if $\Delta NARR(IAM)$ is negative then there was an under investment and Western Power is required to return the revenue excess.

The amount to be added or subtracted to the revenue entitlement for the next regulatory period will then be the amount $\Delta NARR(IAM)$ divided by the number of years in the regulatory period. That amount is then adjusted each year by the nominal pre-tax WACC to

determine the actual amount that is added or subtracted each year of the regulatory period. This adjustment ensures that the amount reflects the actual under or over recovery in return.

This amount is defined each year as:

$$\Delta NARR(IAM)_k = \{[\Delta NARR(IAM)]/n\} * (1+WACC_{nom})^{k-0.5}$$

for k = 1 to n

where:

$\Delta NARR(IAM)_k$ = the annual revenue adjustment for the next regulatory period for the year k.

6. Correction Factor (K Factor)

6.1. Purpose

The target revenue for the network business is the approved maximum average revenue yield (MARY) (cents/kWh) multiplied by the total annual network usage (kWh), plus the revenue related to the investment adjustment mechanism.

The actual revenue collected from all users will normally be different to the target revenue. This arises because actual data is generally different to forecast data. This difference is carried forward to the following year as an adjustment (K factor) to the allowed revenue for that year.

The general principles for determining the MARY and K factors are outlined as follows.

The MARY in the first year of the access arrangement period is the annual aggregate revenue requirement, excluding revenue related to the investment adjustment mechanism, divided by the forecast total network usage.

$$MARY_1 = AARR_1/FEnergy_1$$

where

$MARY_1$ = the maximum average revenue yield for year 1,

$AARR_1$ = the annual aggregate revenue for year 1, and

$FEnergy_1$ = the forecast total energy transported on the network in year 1.

The MARY for each of the succeeding years of the access arrangement period is defined as;

$$MARY_k = MARY_{(k-1)} * (1+cpi_{(k-1)} - X)$$

for k = 2 to 3

where

$MARY_k$ = the maximum average revenue yield for the year k,

$MARY_{(k-1)}$ = the maximum average revenue yield for the year k-1,

$cpi_{(k-1)}$ = the all capitals consumer price index for the year k-1, and

X = the smoothing factor (X factor) for the access arrangement period.

The K factor adjustment for any year is defined as the difference between the actual revenue received and the target revenue based on the actual network usage for the previous year and the target revenue related to the investment adjustment mechanism. The K factor is further adjusted by the nominal WACC to reflect the interest earned/forfeited on excess/deficit revenue.

$$K_k = \{MARY_{(k-1)}*Energy_{k-1} + REV(IAM)_{k-1} - \sum_{i=1}^{i=n} Revenue_{i(k-1)}\} *\{1+WACC_{nom}\}$$

for k = 2 to 3

where

K_k = the correction factor (K factor) for the year k,

$Revenue_{i(k-1)}$ = the actual revenue for network tariff i for the year k-1 (n is the total number of network tariffs),

$Energy_{k-1}$ = the actual total network usage for year k-1, and

$REV(IAM)_{k1-}$ = Smoothed network annual aggregate revenue requirement related to the investment adjustment mechanism for year k,

Note: K_1 is zero because there is no carry over from the previous regime.

The target revenue for the first year of the access arrangement period is defined as;

$$(\text{Target Revenue})_1 = MARY_1 * Energy_1 + REV(IAM)_1$$

where

$(\text{Target Revenue})_1$ = the target revenue for year 1,

$Energy_1$ = the actual total network usage for year 1, and

$REV(IAM)_1$ = Smoothed network annual aggregate revenue requirement related to the investment adjustment mechanism for year 1.

The target revenue for the succeeding years of the access arrangement period is defined as;

$$(\text{Target Revenue})_k = MARY_k * Energy_k + REV(IAM)_k + K_k$$

for k = 2 to 3

6.2. Data Time Lag

The MARY for the forth-coming year is determined before the end of the current financial year. As such, actual revenue and cpi data will only be available for the first nine months of the current year. The outcome is that the MARY for the forth-coming year will still contain forecast components within the K factor and cpi.

This potential source of error is overcome by applying the correction to the actual data for the year to March, rather than the year to June.

Hence the MARY for any year is based on data not from the previous financial year, but upon a period to March 31 immediately prior to the year for which MARY is being set.

1. For year 2 of the first access arrangement period, the 9 months 1 July to 31 March of year 1.
2. For subsequent years, the 12 months 1 April to 31 March immediately prior to that year.

This is described by the following formulae.

The maximum average revenue yield (MARY) is calculated as:

$$MARY_k = MARY_{k-1} * (1+cpi_{k-1} - X)$$

for k = 2 to 3

where

$MARY_k$	= the maximum average revenue yield for year k,
$MARY_{(k-1)}$	= the maximum average revenue yield for year k-1,
$cpi_{(k-1)}$	= the all capitals consumer price index for year k-1, being from April 1 for year k-2 to March 31 for year k-1, and
X	= the smoothing factor for the access arrangement period.

The formula for the K-factor is restated as follows.

$$K_k = \{MARY_{(k-1)}*Energy_{(k-1\ July\ to\ March)} - \sum_{i=1}^{i=n} Revenue_{i(k-1\ July\ to\ March)} + 0.75*REV(IAM)_{(k-1\ July\ to\ March)}\} * \{1+WACC_{nom}\}$$

for k = 2

and

$$K_k = \{[MARY_{(k-2)}*Energy_{(k-2\ April\ to\ June)} + 0.25*REV(IAM)_{(k-2\ April\ to\ June)} + (0.25*K_{k-2}) - \sum_{i=1}^{i=n} Revenue_{i(k-2\ April\ to\ June)}] + [MARY_{(k-1)}*Energy_{(k-1\ July\ to\ March)} + 0.75REV(IAM)_{(k-1\ July\ to\ March)} + (0.75*K_{k-1}) - \sum_{i=1}^{i=n} Revenue_{i(k-1\ July\ to\ March)}]\} * \{1+WACC_{nom}\}$$

for k = 3

The target revenue for each year are as previously defined and are restated here. The target revenue for the first year of the access arrangement period is defined as:

$$(Target\ Revenue)_1 = MARY_1*Energy_1 + REV(IAM)_1$$

where

$(Target\ Revenue)_1$	= the actual target revenue for year 1, and
$Energy_1$	= the actual total network usage for year 1.

The target revenue for the succeeding years of the access arrangement period is defined as;

$$(Target\ Revenue)_k = MARY_k*Energy_k + REV(IAM)_k + K_k$$

for k = 2 to 3

7. Side Constraints for Tariffs

Under an "average revenue yield" regulatory regime the average price is controlled but individual Distribution bundled tariffs and Transmission tariffs are not directly controlled. This could see customers receiving price shocks from year to year. In addition, inappropriate re-balancing of tariffs could lead to the emergence of cross-subsidies over time.

As such there exist secondary controls, called side constraints, which limit the changes in any particular tariff. These constraints that will apply for the second and third year of the access arrangement period are as follows.

1. Increase or decrease in any individual tariff being limited to CPI + 2% in any year, and
2. Increase or decrease in any individual tariff components (published figures) being limited to CPI + 2% in any year.

8. Network Access Tariffs

A set of network tariffs is derived from the forecast target revenue and forecast network usage.

The network tariffs in the first year are set to recover the forecast target revenue for that first year based on the forecast energy sales for that year, less the forecast capital contributions for that year. Tariffs are then adjusted from year to year to take account of the changes in target revenue and forecast energy sales.

These annual adjustments are within the side constraints defined in section 7 above.

Transmission and Distribution network access prices are "bundled" for distribution-connected customers. Transmission-connected customers utilise the Transmission access prices. The Distribution access tariffs will be published as "bundled" tariffs but the individual transmission and distribution components will be explicitly provided.

9. Revenue Adjustment for Technical Rule Changes

In accordance with section 5.5 and 5.6 of this Access Arrangement, the target revenue for the next access arrangement period may be adjusted for changes to the technical rules that occur during the first access arrangement period.

This section describes the process under which Western Power will determine the revenue amount that may be added in the next access arrangement period. Western Power must carry the cost of any such changes that occur during the first access arrangement period.

9.1. Revenue Treatment

It is proposed that the expenditure included in the adjustment to target revenue for changes to technical rules be treated as an addition or subtraction to the forecast revenue entitlement submitted in the next access arrangement period. It is proposed that this amount be spread across the whole of the next access arrangement period.

9.2. Process Formulae

The cumulative cost, related to the target revenue adjustment for technical rule changes, over the three-year access arrangement period is defined as follows.

$$TRR_{total} = [TRR_1]* (1+WACC_{nom})^{2.5} + [TRR_2] * (1+WACC_{nom})^{1.5} + [TRR_3] * (1+WACC_{nom})^{0.5}$$

where:

TRR_{total} = the total technical rule related revenue cost or saving related to technical rules changes for the access arrangement period that is to be carried into the next access arrangement period,

TRR_1 = the net technical rule related revenue cost (positive amount) or saving (negative amount) related to technical rules changes for year 1 of the access arrangement period,

TRR_2 = the net technical rule related revenue cost (positive amount) or saving (negative amount) related to technical rules changes for year 2,

TRR_3 = the net technical rule related revenue cost (positive amount) or saving (negative amount) related to technical rules changes for year 3,

$WACC_{nom}$ = the pre-tax nominal weighted average cost of capital.

This amount is then carried into the next access arrangement period as additions to the forecast revenue spread over each year of the next access arrangement period. This amount is defined each year as:

$$TRR_k = \{[TRR_{total}]/n\} * (1+WACC_{nom})^{k-0.5}$$

for k = 1 to n

where:

TRR_k = the annual revenue adjustment for the next access arrangement period for the year k.

10. Revenue Adjustment for Unforeseen Events

In accordance with section 5.4 of this Access Arrangement, the target revenue for the next access arrangement period may be adjusted for unforeseen events that occur in the first access arrangement period.

This section describes the process under which Western Power will determine the revenue amount that may be added in the next access arrangement period. Western Power must carry the cost of any force majeure event that occurs during a access arrangement period. There is no provision in forecast expenditures to account for possible force majeure events although there is provision to cover reasonable insurance costs. This provision covers those costs which are not able to be recovered through insurance and which the Authority consider were incurred prudently.

10.1. Revenue Treatment

It is proposed that the expenditure included in the adjustment to target revenue for unforeseen events be treated as an addition to the forecast revenue entitlement submitted in the next access arrangement period. This amount is to be spread evenly across the whole of the next access arrangement period.

10.2. Process Formulae

The cumulative cost, related to the target revenue adjustment for unforeseen events, over the three-year access arrangement period is defined as follows. (This amount is net of any insurance payment or other cost recovery.)

$$FM_{total} = [FM_1]* (1+WACC_{nom})^{2.5} + [FM_2] * (1+WACC_{nom})^{1.5} + [FM_3] * (1+WACC_{nom})^{0.5}$$

where:

FM_{total} = the total force majeure cost related to unforeseen events for the access arrangement period that is to be carried into the next access arrangement period, and

$WACC_{nom}$ = the pre-tax nominal weighted average cost of capital.

This amount is then carried into the next access arrangement period as additions to the forecast revenue spread over each year of the next access arrangement period. This amount is defined each year as:

$$FM_k = \{[FM_{total}]/n\} * (1+WACC_{nom})^{k-0.5}$$

for k = 1 to n

where:

FM_k = the annual revenue adjustment for the next access arrangement period for the year k.