



AUSTRALIAN
ENERGY
REGULATOR

Preliminary Standardised Metering Capex and Opex Model
and
Metering Pricing Model

Model Description and Handbook

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Overview of the Models

Context and methodology overview

Metering Capex and Opex forecasting model

- The model provides capability to produce opex and capex forecasts
 - Opex module applies a Base Step Trend (BST) approach
 - Capex module applies a unit costs approach, based on forecast volumes for
 - » Meters
 - » Comms
 - Capex module also allows for annual 'project' based capex and overheads, and allows for an SCS/ACS allocation
- Outputs comprise:
 - » Opex forecast in the form needed as input to the PTRM
 - » Capex forecast by asset type, in the form needed as input to the PTRM and as input to the RFM

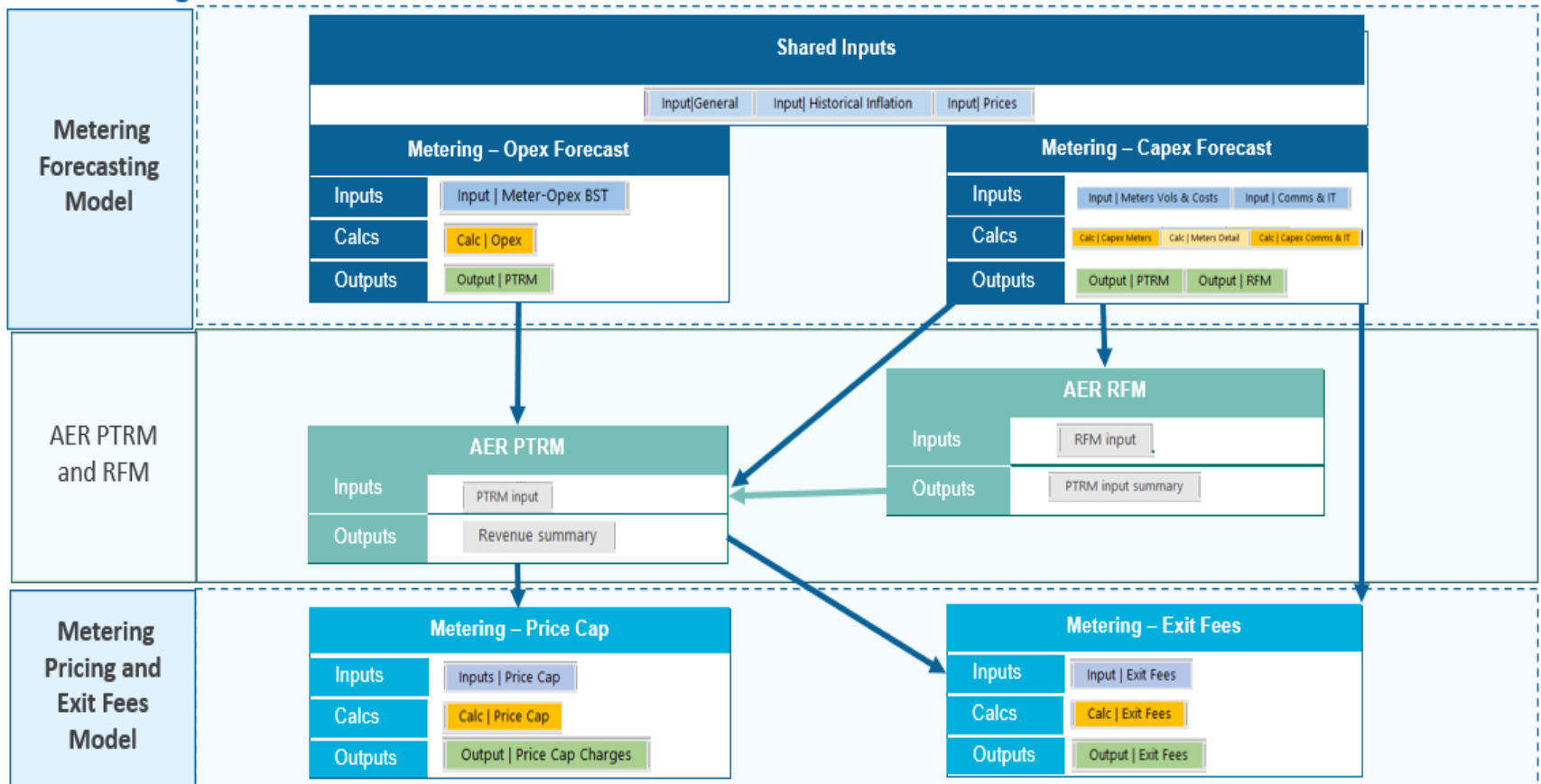
Metering Price Cap and Exit Fees model

- The Metering Price Cap and Exit fees model provides capability to determine:
 - Price caps for metering services (for price cap entities)
 - » The price cap module applies a 'P0 + (CPI-x)' approach from current 'base' tariffs, using macros to equalise NPV (similar to PTRM)
 - Exit fees (applicable to Victorian DNSPs)
 - » Exit fees are calculated based on recovering residual RAB, plus administration/processing costs

Flexible application

- Each model can be used for the required purpose only, depending on jurisdictional requirements
 - E.g. opex & capex forecast, or Opex forecast only; Price cap, or Exit Fees.

Metering forecasting and pricing model: Context diagram



Metering Capex and Opex Model

General notes and steps overview

General

- Note colour coding of cells, specifically
 - Input cells
 - Cells requiring external links (or pasted data from another model)
 - Cells with internally linked calculations (and which should not be altered)
 - (Cells formats are also provided for NSPs to signal updated data or for use by AER in replacing data)
- Input cells utilise dropdown lists, where possible:
 - E.g. where inputs are restricted to certain values and to minimise duplicate data entry
- Regulatory periods entered as YYYY-YY are interpreted as June years; those entered as YYYY are interpreted as December years
- Model allows flexibility for \$ input basis and \$ output basis, and flexibility for 'base year' (up to 3 years before RP)

Overview of main steps

- General
 - Enter General Inputs information
 - Copy in ABS historical inflation data, and enter inflation and real price escalation forecasts

Overview of main steps (continued)

- Opex-specific
 - Enter historical opex and any base year adjustments
 - Enter any opex steps
 - Enter relevant 'rate of change' information
- Capex specific
 - Meters
 - Define relevant meter types (and optionally categorise)
 - Define relevant meter-related actions
 - Enter meters equipment unit costs and labour rate information
 - Enter meter base year population and forecast volumes for each meter-related action, by meter type
 - Comms
 - Define relevant comms equipment types
 - Define relevant comms-related actions
 - Enter comms equipment unit costs and installation cost information
 - Enter comms base year population and forecast volumes for each comms-related action, by comms type
 - IT
 - Enter annual capex forecast by 'project'
 - All
 - Enter overheads, SCS allocation, real price escalation information, asset disposal or capital contribution proceeds if/as applicable

User notes on inputs (1)

Input | Prices

- CPI
 - Model utilises ‘historical inflation’ data (assumed to be ABS) where this is entered
 - Entered forecast inflation is applied for years after which historical data is not entered within the model
- Labour price change
 - Model has provision for up to four separate indices, with weights applied to each
 - Note that the indices are assumed to be REAL price change indices

Input | Meter-Opex BST

- Base
 - Historical information (prior to ‘base year’) is entered for information only
 - Up to 4 base year adjustments can be applied (and labelled)
- Step
 - Up to 4 step changes can be applied (and labelled), with year-by-year values
 - Note that any steps shown prior to the RP commencement are for information only

Input | Meter-Opex BST (continued)

- Trend
 - Up to 4 output growth drivers can be entered, and weighted
 - A weighting is required for labour costs as a proportion of total opex
 - There is provision for an ‘economies of scale’ factor, with the default is assumed to be 100% (in the absence of contrary evidence)
 - Opex productivity values are applied with positive values treated as productivity improvements change’ information

User notes on inputs (2)

Input | Meter Vols & Costs

- Meter types
 - Any relevant meter type name can be defined
 - Optionally, user may enter a RIN subcategory, AER meter type (e.g. 4, 5, 6) or internally-used meter code
 - These are not used directly in the model, but may be used to group expenditure for presentation purposes
 - Entered forecast inflation is applied for years after which historical data is not entered within the model
- Meter actions
 - Model contains a meter population roll-forward module, that is based on the 'actions'
 - Therefore for each action, the 'effect on meter population' needs to be defined (note dropdown)
 - Note there is also provision for whether an action requires a meter equipment cost (that is recoverable through ACS)
 - 'Subtract' can be entered here to accommodate (e.g.) refurbished meters reducing the need for new meters
- Overheads and additional meter-related costs
 - Note that overheads method can be selected as a proportion, or a single fixed amount, or annual amounts
 - Entry cells change to 'blue' depending on selection
 - Asset disposal proceeds and capital contributions should be entered as positive values (they are treated as deductions in calculating Net capex)

Input | Meter Vols & Costs (continued)

- Labour rates and time
 - An installation time can be input for each metering-related action, by meter type
 - Any actions with no installation cost, or for which the installation cost is not recoverable through metering ACS, can be ascribed zero hours
- Equipment unit costs
 - Enter meter costs for each meter type
- Meter population and meter actions
 - After entering the base year meter population, the meter volumes are entered for each action, for each meter type
 - Note that the meter actions are automatically populated as defined.
 - Meter action volume entry fields not used are labelled NOT USED
 - The model then calculates the roll forward of Gross Meter Population at year end, and Additional Meters required

User notes on inputs (3)

Input | Comms & IT

- Equipment types
 - Define any relevant comms equipment type
- Action / driver
 - Define any relevant comms-related action or driver, and its effect on the population of the relevant comms equipment
- Unit costs and cost allocation
 - An equipment cost and an installation cost can be ascribed to any relevant combination of equipment type and action
 - Note that equipment types and actions are populated in the dropdown menus based on the equipment types and actions defined above.
 - (It is recommended to use these dropdowns to ensure that there are no discrepancies due to naming, when the costs are applied)
 - SCS allocation can be defined for each equipment type and action
 - Where certain actions are attributable to a strategic program that may be wholly or partially SCS, then this can be defined accordingly
 - Project costs
 - Any comms-related any IT 'project' related costs can be entered directly as annual values

Input | Comms & IT (continued)

- Population
 - Base year equipment population is entered
- Forecast volumes
 - Forecast volumes can be entered directly for each year
 - Select '*Enter annual volume*' under '*Volume basis*'
 - Alternatively, there are options to calculate forecast volumes within the model, either through a factor relationship with:
 - total meter population, or
 - the population of the relevant comms equipment type
 - (These may be useful, for example, where the volume forecast is based on a forecast fault or failure rate, or end of life rate or where new comms equipment is a function of new meters installed)
 - (note that where forecast volumes are calculated within the model, the relevant values are shown in the table below the entry table)

Calculations and outputs

Calc | Opex

- Model applies a BST calculation based on the inputs provided
 - Note that Forecast Opex is in the \$ basis specified by the user for the Opex forecast
 - Depending on the \$ basis entered by the user, this may differ from the \$ basis for the Output to the PTRM (shown in the Output | PTRM sheet)

Calc | Capex Meters

- Labour and non-labour (equipment)
 - Model shows the capex calculation by labour and non-labour components
 - Calculation also shows any allocation between ACS and SCS
- Output – meter capex
 - Combines meter costs with overheads and any additional 'project-related' costs

Calc | Meters Detail

- Shows disaggregation of costs by action / by meter type

Calc | Capex Comms & IT

- Comms equipment and installation cost
 - Shows comms equipment and comms installation-related capex, by action / by comms type
- Comms and IT costs
 - Aggregates Comms equipment and installation costs, with any comms project costs and overheads
 - Also shows any IT project costs and overheads
 - Shows results of any allocation between SCS and ACS
 - Allocates project costs and overheads

Output | PTRM

- Gross and net capex, plus opex, for export to PTRM
 - \$ real terms, capex by asset type (meters, comms, IT)

Output RFM

- Gross and net capex, for export to RFM
 - Nominal terms

Metering Pricing Model

User notes - General and for use as Price Cap model

Macro and links

- This model contains macros that must be enabled
- Links are optional
 - Some cells are shown as 'external links', where values are assumed to be linked from other models (e.g. the PTRM or the Metering ACS Forecasting Model)
 - However, there is relatively little linked data and pragmatically these input cells may be populated with copied values (provided these are consistent between the models)

Input | General

- Model used for....
 - As the model will be used either for price cap or exit fee purposes, the relevant 'use' can be defined using the drop-down menu and the non-relevant sheets can then be hidden by applying the macro beside

Inputs | Price cap

- Linked inputs
 - The model requires the core 'building block' unsmoothed revenue requirement, from the metering PTRM

Inputs | Price Cap (continued)

- Each tariff is entered by name
 - Each tariff is assumed to have a capital and non-capital component
 - (Note that entering the tariff name in the 'total' row also copies that value up to the relevant non-capital and capital rows)
- Enter base year tariffs and volumes, and forecast volumes
 - Because the model applies a P0 + CPI-X forecast, the base year volume is required in order to calculate to P0
 - The base year is the final year of the current RP
 - Note that volumes (of customers for each tariff) are entered separately for non-capital and capital components
- Set X-factors
 - The P0 and X factors are set separately for the capital and non-capital components, using the same functionality as the AER PTRM
 - ar tariffs and volumes
 - Base year equipment population is entered

Output | Price Cap Charges

- The model calculates annual charges for each metering tariff, to meet the price cap
 - Outputs are also shown in terms of annual X-factors, and a weighted average cost metric is shown (for information purposes)

User notes - For use as an Exit Fees model

Input | Exit Fees

- Linked inputs - RAB
 - The model requires the opening RABs for meters, and for Comms and IT, together with forecast capex and regulatory depreciation
 - This data can be linked from the PTRM
- Linked inputs – Meter unit costs and meter population
 - Meter unit costs are required only for ‘weighting’ purposes.
 - This data may be linked from the Metering ACS Forecasting model
 - Gross meter population forecasts are required
 - This data may be linked from the Metering ACS Forecasting Model
- Defining exit fees and current charge amount
 - The Exit Fee names are defined, along with the allowed Exit Fee charge for the final year of the current RP
 - A designated Exit Fee is ascribed to each meter Type
- Admin and handling fees
 - There is provision to enter these according to hourly rates, or according to ‘fixed cost actions’ which are proportionate to the number of meters to which exit fees apply

Calc | Exit Fees

- Weighted RAB allocation per meter
 - The model allocates the meters-related RAB to each Exit Fee using unit costs and volumes as weights
 - This is then divided by the relevant volume to determine a per-unit meter-related charge component
 - Comms RAB is divided by the total volume to determine an equal per-unit comms-related charge component
 - The model adds Admin and handling charge component, to determine an aggregate Exit Charge for each Exit Fee

Output | Exit Fee

- The annual Exit Fees are shown annually in nominal terms, and in terms of derived P0 and X factors from the current RP (final year) Exit Fees