

Port of Melbourne



# **2019 - 2020 TARIFF COMPLIANCE STATEMENT**

## **Cost allocation model user guide**

**31 May 2019**

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## Abbreviations and acronyms

Abbreviation / acronym	Description
Capex	Capital Expenditure
ESC	Essential Services Commission
Opex	Operating Expenditure
PMA	Port Management Act
The Model	The Cost Allocation Model
TCS	Tariff Compliance Statement

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## 1. Introduction

### 1.1 Model purpose

The cost allocation model (the **Model**) is used to attribute, or allocate, actual and forecast capital expenditure (**capex**) and operating expenditure (**opex**) to individual Prescribed Services in accordance with the cost allocation principles in the Pricing Order.<sup>1</sup>

This Model helps demonstrate that attributed or allocated capex or opex reported in Port of Melbourne's annual tariff compliance statement complies with the Pricing Order.

### 1.2 Version and review

The Model was first developed in early 2019 and is intended to support the 2019-20 tariff compliance statement (**TCS**) to be submitted by Port of Melbourne to the Essential Services Commission (**ESC**) in May 2019.

The Model is expected to be updated each year to support future TCSs submitted to the ESC.

### 1.3 Structure of the user guide

This user guide is structured into three further chapters:

- Chapter 2 provides background on the Model requirements
- Chapter 3 steps through each sheet of the Model, its purpose, and its structure
- Chapter 4 explains how to operate the Model, including to update key inputs.

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<sup>1</sup> Pricing Order made under the Port Management Act 1995 by the Victorian Government and gazetted on Friday 24 June 2016.

## 2. Background

Port of Melbourne incurs opex and capex each year to provide prescribed and non-prescribed services. Some of those costs can be directly attributed to either prescribed or non-prescribed services, others are shared across both types of service.

As described in Section 2.1, the Pricing Order includes principles that guide how costs should be attributed or allocated to prescribed services when determining tariffs for those services. These can be represented diagrammatically as shown in Section 2.2.

### 2.1 Requirements

Clause 5.2.1 of the Pricing Order sets out the principles for allocating costs when setting prescribed services' tariffs:

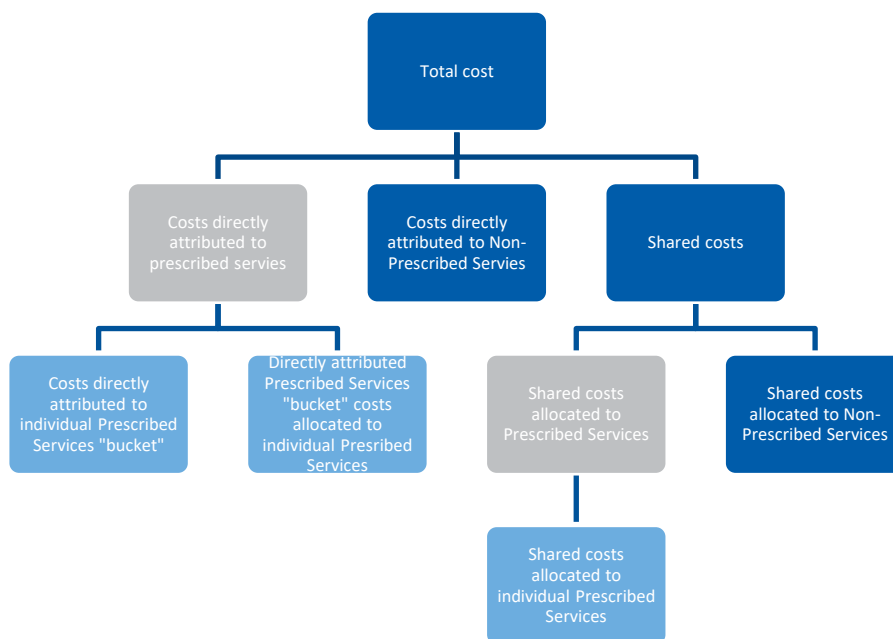
*Costs of the Port Licence Holder must be allocated between Prescribed Services and all other services provided by the Port Licence Holder in a manner consistent with the following cost allocation principles:*

- (a) *Costs that are directly attributable to the provision of the Prescribed Service must be attributed to that Prescribed Service; and*
- (b) *Costs that are not directly attributable to the provision of the Prescribed Service but which are incurred in the course of providing both one or more Prescribed Services and other services must be allocated to the Prescribed Service on the basis of its share of total revenue from all services provided by the Port Licence Holder.*

### 2.2 Cost allocation principles diagram

Figure 1 shows: how costs can be first identified as those directly attributed to either prescribed services or non-prescribed services, or simply left as shared costs; how shared costs can be allocated between prescribed and non-prescribed services; how costs attributed to prescribed services can be either directly attributed to individual services or allocated among them; and how shared costs allocated to prescribed services can be further allocated across individual services.

**Figure 1: Diagrammatical representation of cost allocation principles**



### 3. The Model

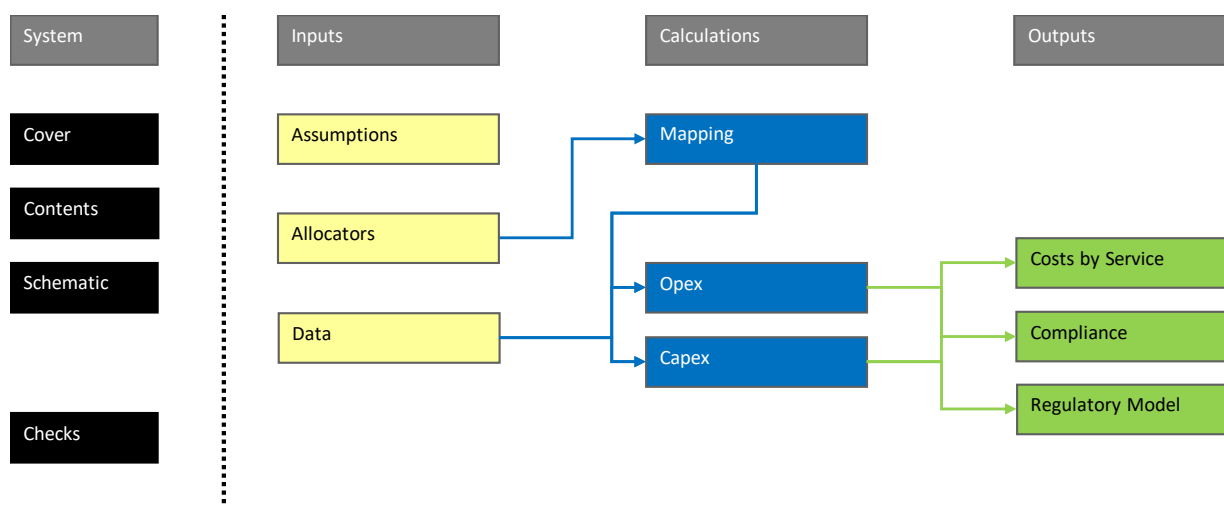
#### 3.1 Overview

The Model is structured to separate system controls, inputs, calculations and outputs:

- System control sheets include the **Cover**, **Contents**, **Schematic** and **Model Check** sheets – which are used to help navigate and structure the Model
- Input sheets include **Assumptions**, **Allocators** and **Data** – which are used to input all the data and user choices needed for the Model to work
- Calculation sheets include the **Mapping**, **Opex**, and **Capex** sheets – which are used to allocate the opex and capex from the **Data** sheet across services
- Output sheets include the **Cost by Service**, **Compliance**, and **Regulatory Model** sheets – which provide the key outputs from the Model.

The Model structure is summarised in Figure 2. The remainder of this chapter explains the purpose and operation of each of the system control, input, calculation and output sheets.

Figure 2: Model structure



#### 3.2 Cover, contents and schematic sheets

The **Cover** sheet provides the base information about the Model and includes a change log for any changes from one version of the model to the next. The **Contents** sheet lists and describes each sheet in the Model. The **Schematic** sheet includes Figure 2 above and relevant keys.

#### 3.3 Assumptions sheet

The **Assumptions** sheet inputs key assumptions that drive the presentation of the Model. As shown in Figure 3, key assumptions include the:

- Model start date – the first year of the horizon shown in the Model
- Display years – identifying what years are shown in each of the sheets that include data or calculations over time




- Actual years – identifying the years for which actual data is available.

All display years that are not actual years are identified as forecast years. This split treatment helps the Model User identifying whether displayed values are based on actual or forecast data.

The **Assumptions** sheet also includes key defined values used within the Model, such as ‘Millions’ and ‘Subsection’ (which is used to number subsection headings).

Figure 3: Assumptions sheet

Model 1 - Opex and Capex Allocation



3 Assumptions  
• No errors identified

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**3.01 Year Assumptions**

This table inputs key dates needed to structure the model

<b>Model Start</b>			
First year	Year		2015
Period start	Date		01-Jul-14
Period end	Date		30-Jun-15
<b>Display years</b>			
From	Year		2018
To	Year		2019
<b>Actual years</b>			
From	Year		2016
To	Year		2018
<b>Defined Values</b>			
Million	Value		1,000,000
Subsection	Value		0.01

**END**

### 3.4 Allocators sheet

The **Allocators** sheet enables inputs for two key mapping tables:

- Opex categories mapped to services (4.02)
- Asset classes mapped to services (4.03).

These tables are used first in the **Mapping** sheet and then the **Opex** and **Capex** sheets to map the expenditure data in the **Data** sheet to services.

The first table (4.02) shows what opex categories are used to provide each service. In most cases an opex category is used to provide more than one service (e.g. the Port Licence Fee).

The second table (4.03) shows what asset classes are used to provide each service. Similar to the first table, in most cases an asset class is used to provide more than one service (e.g. the wharfs asset class is used to provide the various wharfage services).

These mapping tables are not expected to change significantly from one year to the next.

### 3.5 Data sheet

The **Data** sheet enables inputs revenue by service, opex by category and capex by asset class – in separate tables. All data in the sheet is shown for the display years entered in the **Assumptions** sheet and may include both actual and forecast data.

The opex and capex data is allocated across services in the **Opex** and **Capex** sheets. The revenue data is used with the mapping tables to allocate the opex and capex data to services.

The revenue table (5.02) covers:

- prescribed services by service
- other prescribed revenue, such as contract revenue and rebates
- non-prescribed revenue.

The opex (5.03) and capex tables (5.04) include expenditure:

- dedicated to prescribed services only
- dedicated to non-prescribed services only, or
- shared across both prescribed and non-prescribed services.

All data should be entered in nominal dollars (i.e. dollars of the day incurred).

### 3.6 Mapping sheet

The **Mapping** sheet takes the two tables from the **Allocators** sheet and transposes the rows and columns. Both the original tables and the transposed tables are used to allocate the opex and capex data to services.

The opex table (6.01) identifies whether a given opex category is dedicated to prescribed services, dedicated to non-prescribed services, or shared across both prescribed and non-prescribed services.

### 3.7 Opex sheet

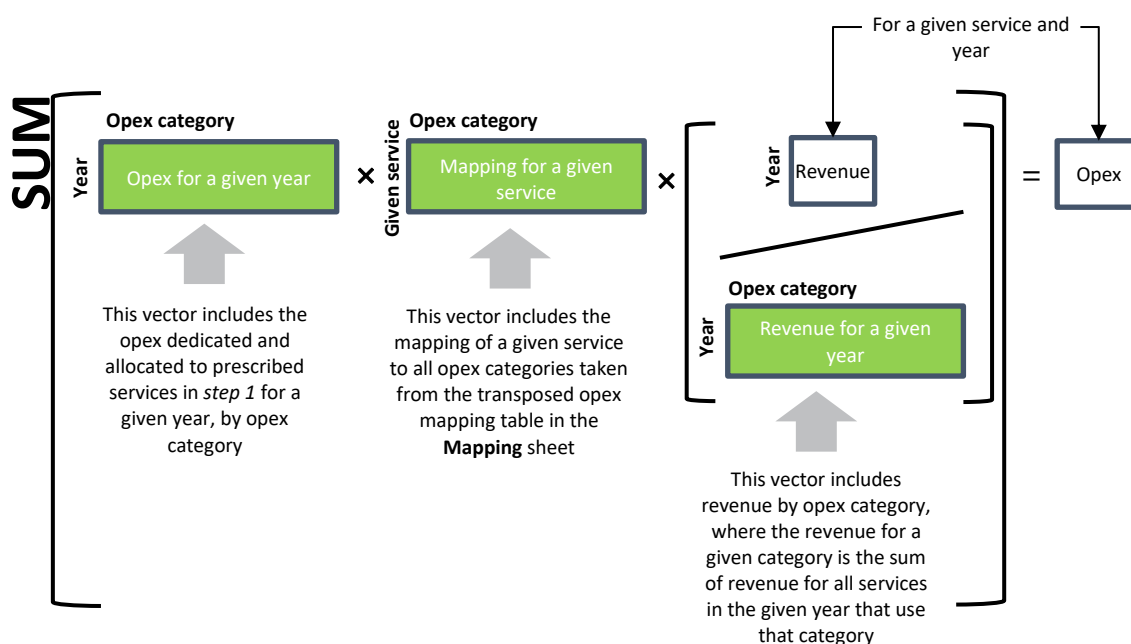
The **Opex** sheet allocates the opex data from the **Data** sheet across services.

This is done using a three-step process:

- *Step 1* – takes the opex data from the **Data** sheet and allocates this into:
  - (A) costs directly allocated to prescribed services only
  - (B) costs directly allocated to non-prescribed services only, and
  - (C) costs shared between prescribed services and non-prescribed services
- *Step 2* – uses the ratio of prescribed services revenue to total revenue from the **Data** sheet to determine the share of shared costs (from C) that is allocated to prescribed services (D), as per Clause 5.2.1 of the Pricing Order
- *Step 3* – takes the costs directly allocated to prescribed services only (from A) and the share of shared costs allocated to prescribed services (from D) and allocates these costs across those prescribed services to which they relate based on their relative revenue shares.

The overall approach used is summarised diagrammatically in Figure 4, which shows how the opex for a given service is determined. The green boxes represent vectors of data.

Figure 4: Opex allocation approach



The steps are applied through a series of tables (or sections) in the **Opex** sheet.

The first table (7.03) inputs the revenue and opex data. The second table (7.04) applies step 1 to split opex between prescribed, non-prescribed and shared services. The third table (7.05) applies step 2 to allocate shared opex between prescribed and non-prescribed services.

The fourth table (7.06) contains two interim calculations needed to apply step 3.

- The *first* calculation aggregates, by category, opex either directly attributed to prescribed services (in step 1) or allocated to prescribed services (in step 2).
- The *second* calculation determines the revenue divisor (i.e denominator) needed to weight a given cost to the prescribed services that use it. In effect, the revenue divisor for a given cost category and year is the sum of revenue in that year from all prescribed services that benefit from that cost being incurred.

The fifth and final table (7.07) uses the interim calculations and the original opex mapping table from the **Mapping** sheet to allocate opex attributed and allocated to prescribed services to each prescribed service.

### 3.8 Capex sheet

The **Capex** sheet allocates the capex data from the **Data** sheet across services.

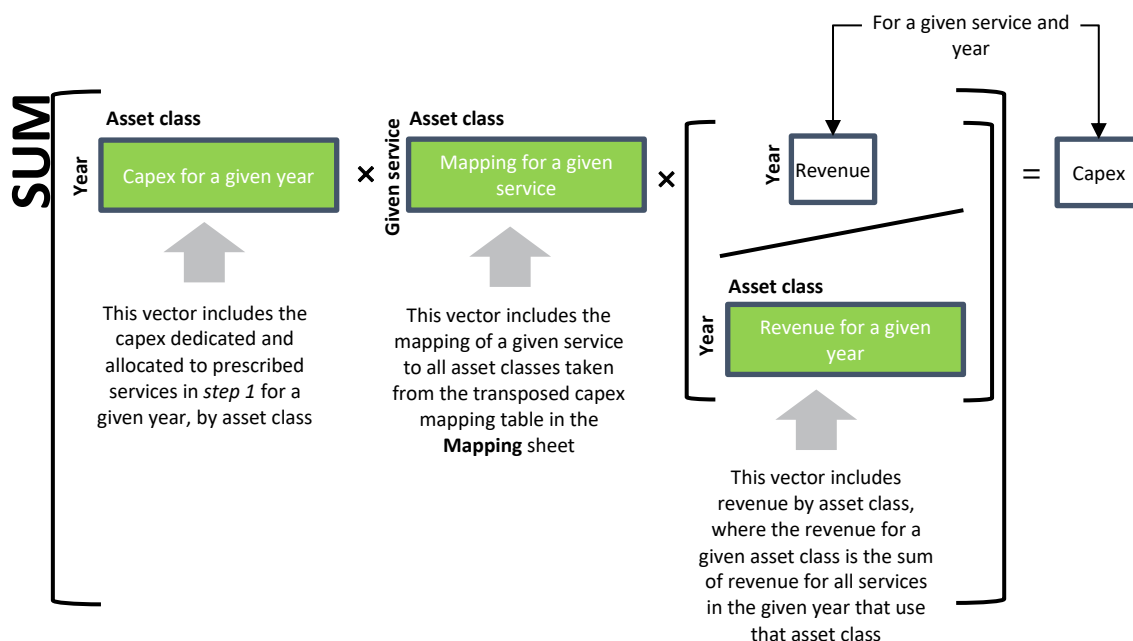
This is done using a three-step process (which is effectively the same as that used in the **Opex** sheet):

- *Step 1* – takes the capex data from the **Data** sheet and allocates this into:
  - (A) costs directly allocated to prescribed services only
  - (B) costs directly allocated to non-prescribed services only, and
  - (C) costs shared between prescribed services and non-prescribed services
- *Step 2* – uses the ratio of prescribed services revenue to total revenue from the **Data** sheet to determine the share of shared costs (from C) that is allocated to prescribed services (D), as per Clause 5.2.1 of the Pricing Order

- *Step 3* – takes the costs directly allocated to prescribed services only (from A) and the share of shared costs allocated to prescribed services (from D) and allocates these costs across those prescribed services to which they relate based on their relative revenue shares.

The overall approach used is summarised diagrammatically in Figure 5, which shows how the capex for a given service is determined. The green boxes represent vectors of data.

Figure 5: Capex allocation approach



The steps are applied through a series of tables (or sections) in the **Capex** sheet.

The first table (8.03) inputs the revenue and capex data. The second table (8.04) applies step 1 to split capex between prescribed, non-prescribed and shared services. The third table (8.05) applies step 2 to allocate shared capex between prescribed and non-prescribed services.

The fourth table (8.06) contains two interim calculations needed to apply step 3.

- The *first* calculation aggregates, by asset class, capex either directly attributed to prescribed services (in step 1) or allocated to prescribed services (in step 2).
- The *second* calculation determines the revenue divisor needed to weight a given cost to the prescribed services that use it. In effect, the revenue divisor for a given asset class and year is the sum of revenue in that year from all prescribed services that benefit from that asset class.

The fifth and final table (8.07) uses the interim calculations and the original capex mapping table from the **Mapping** sheet to allocate capex attributed and allocated to prescribed services to each prescribed service. This is done for each year and each prescribed service.

### 3.9 Cost by Service sheet

The **Cost by Service** sheet simply outputs the opex by prescribed service and capex by prescribed service from the **Opex** and **Capex** sheets respectively (i.e. from tables 7.07 and 8.07).

### 3.10 Compliance sheet

The **Compliance** sheet shows how, for a user selected year (at cell E12), total opex and capex is allocated between costs directly attributed to prescribed services, shared costs allocated to prescribed services, and costs attributed or allocated to non-prescribed services.

This data is presented in table format (table 10.02) and in graphs (table 10.03).

### 3.11 Regulatory Model sheet

The **Regulatory Model** sheet outputs the opex by category and capex by asset class data for prescribed services that are input to the Port of Melbourne's Regulatory Model.

### 3.12 Checks sheet

The **Checks** sheet includes a check from each of the Model input, calculation and output sheets – and based on the results of those checks provides an overall model check. If any of the sheet checks fails, then the overall model check fails and the message "*The model contains one or more errors*" is noted at the top of each sheet.

The check for a given sheet combines the results of the individual checks on that sheet, which vary by number and purpose depending on what is included in that sheet.

These checks are one tool to assist the Model User to review and validate the inputs, calculations and outputs in the Model. However, not all errors will be picked up by these checks. A Model User should undertake care and diligence when operating the Model to ensure that its outputs remain accurate.

## 4. Operating the Model

### 4.1 Inputting assumptions, allocators and data

All inputs to the Model are contained within the **Assumptions**, **Allocators** and **Data** sheets. The only exception is the compliance year input in the **Compliance** sheet, which the Model uses to adjust what data is presented.

To update the Model from one year to the next:

1. Update the display years and the actual data years in the **Assumptions** sheet to reflect the intended horizon – for instance, if the model is being used to show allocated costs out to 2025 with actual costs only out to 2020, then update cell E18 to 2020 and cell E22 to 2025
2. Check that the allocation tables in the **Allocators** sheet remain accurate – in most cases these tables should not change significantly (if at all) from one year to the next
3. Replace forecast data with actual data where this is available and input any further forecast data needed to cover the horizon set in step 1.

Apply these steps will update the outputs in the **Costs by Service** sheet and allow the user to update the analysis shown in the **Compliance** sheet (by changing cell E12 of that sheet).

### 4.2 Using Model outputs

The allocated opex and capex output in the **Costs by Service** sheet can be used to monitor how the costs for a given prescribed service relate to the tariff for that service.

The graphs and numerical data in the **Compliance** sheet can be used to show how total costs are allocated across prescribed and non-prescribed services.

### 4.3 Adding new tariffs

The Model is set up to allow for new prescribed services to be added. For instance, the mapping tables in the **Allocators** sheet allows for up to five further prescribed services to be included, as does the revenue data inputs in the **Data** sheet. Using these spare service inputs does not require any changes to the model structure.

If more than five new prescribed services need to be inserted, or the structure of existing prescribed services changed, then this may require changes to the structure of the model. This will involve tracing through the dependencies of the inputs to ensure that calculations that depend on them continue to work.

Changes to the Model structure should be issued as a new version of the model, with any changes captured in the change log included in the **Cover** sheet.