Jemena Electricity Networks (Vic) Ltd

Customer Connections Capital Forecast Methodology

ELE PR 0019

Internal

31 January 2020

Jemena

An appropriate citation for this paper is:

Customer Connections Capital Forecast Methodology
Our Ref: ELE PR 0019

Authorisation

Name	Job Title	Date	Signature
Reviewed by:			
	Network Capacity Planning & Assessment Manager		
Approved by:			
	GM Asset Strategy Electrical		
	GM Asset Investment & Major Projects		

History

Rev No	Date	Description of changes	Author
1	02/04/2015	First issue	
2	30/10/2019	First revision	

Owning Functional Area

Business Function Owner:	Asset Strategy Electrical

Review Details

Review Period:	Revision Date/Last Review Date + 2 years
NEXT Review Due:	30/10/2021

TABLE OF CONTENTS

ABBREVIATIONS

Abbreviation	Expanded Name
ACIF	Australian Construction Industry Forum
AER	Australian Energy Regulator
CB	Business Supply > 10kVA
CD	Dual & Multiple Occupancy
CH	Medium Density Housing URD/ PURD
CIC	Customer initiated capital
CL	Public Lighting
CM	Service Wire Overhead and Underground
COWP	Capital and operational work plan
CPI	Consumer price index
CR	Capital rectification/recoverable works
CS	Low Density & Small Business Supplies < 10kVA
JEN	Jemena Electricity Networks
NAMP	Network Asset Management Plan
NER	National Electricity Rules
RIN	Regulatory information notice
TNSP	Transmission network service provider
URD	Underground Residential Distribution
VEDC	Victorian Electricity Distribution Code

OVERVIEW

Jemena Electricity Networks (JEN) is responsible for planning and developing its distribution network, as well as planning and directing the augmentation of its connection points with the transmission network, which are owned and maintained by the relevant transmission network service provider (TNSP).

JEN is also responsible to provide connection services and supply to customers and generators, undergrounding or asset relocation services, public lighting services, distribution services to other distributors and other excluded services. These distribution services are referred to as either direct control services or negotiated distribution services, and are classified by the Australian Energy Regulator (AER) in accordance with the National Electricity Rules (NER). Capital investments of these services are commonly referred to as customer connections capital or customer initiated capital (CIC). The terms are used interchangeably.

A number of regulatory instruments define JEN's obligations to provide direct control services and negotiated distribution services to customers. The regulatory instruments that set JEN's obligations to offer direct control services and negotiated distribution services to customers include JEN's Electricity Distribution Licence, Victorian Electricity Distribution Code (VEDC) and National Electricity Rules (NER).

Background

Historically, customer connections capital accounted for approximately 30% of the JEN total network capital expenditure. Therefore it is important to accurately forecast the capital investment required over the next 5 years (or 7 years as required).

The customer connections investment is driven by customers and is outside the direct control of JEN. Customer initiated projects are made up of a large number and a broad range of project types. Projects are ranging in values from several hundred dollars to several million dollars. The lifecycle of these projects ranges from weeks to several years depending on its capital value.

Forecast approach

Consistent with the capital expenditure objectives set out in Clause 6.5.7 (a) of the NER, this methodology is aimed at providing a consistent, transparent and auditable approach underpinning the forecast capital expenditure that is required to meet the expected demand for customer connections.

JEN derives its forecast capital expenditure using its consultant's and Australian Construction Industry Forum (ACIF) growth forecasts, which is consistent with the expected level of economic activities in Melbourne.

1. INTRODUCTION

Jemena Electricity Networks (JEN) is responsible for planning and developing its distribution network, as well as planning and directing the augmentation of its connection points with the transmission network, which are owned and maintained by the relevant transmission network service provider (TNSP).

JEN is also responsible to provide connection services and supply to customers and generators, undergrounding or asset relocation services, public lighting services, distribution services to other distributors and other excluded services. These distribution services are referred to as either direct control services or negotiated distribution services, and are classified by the Australian Energy Regulator (AER) in accordance with Clauses 6.2.1(a) and 6.12.1 (1) of the National Electricity Rules (NER). Direct control services are further split into Standard Control Services and Alternative Control Services. Capital investments of these services are commonly referred to as customer connections capital or customer initiated capital (CIC). The terms are used interchangeably.

Historically, customer connections capital accounted for approximately 30% of the JEN total network capital expenditure. Therefore it is important to accurately forecast the capital investment required over the next 5 years (or 7 years as required).

The customer connections investment is driven by customers and is outside the direct control of JEN. The level of customer investment on the JEN network appears to be correlated with the level of economic activities in Melbourne and as such JEN derives its forecast capital expenditure using its consultant's and Australian Construction Industry Forum (ACIF) growth forecasts.

Customer initiated projects are made up of a large number and a broad range of project types. Projects are ranging in values from several hundred dollars to several million dollars. The lifecycle of these projects ranges from weeks to several years depending on its capital value.

JEN customer connections capital forecasts are grouped into the following activities, which is consistent with the activity-based financial reporting in SAP.

- CB Business Supply > 10kVA;
- CD Dual & Multiple Occupancy;
- CH Medium Density Housing URD/PURD;
- CL Public Lighting;
- CM Service Wire Overhead and Underground;
- CR Capital Rectification/Recoverable Works; and
- CS Low Density & Small Business Supplies < 10kVA

This document serves as an internal procedure that defines the methodologies, inputs and assumptions that must be followed when forecasting the level of investment that is required to meet the expected demand for customer connections.

1 — INTRODUCTION

1.1 DOCUMENT OBJECTIVE

This document's objective is to ensure the consistent, transparent and auditable approach underpinning the customer connections capital forecast that can be reviewed and improved over time. To achieve this, the document serves as a high-level, internal procedure that defines the:

- methodology for forecasting capital expenditure for each of the connection services,
- input data for applying this methodology, and
- sources of data when preparing the inputs and assumptions.

Exclusions

The broader aspects of customer connections forecast are not covered by this procedure, including:

- customer connections revenue forecasting,
- economic forecasting,
- cost estimating,
- unit price escalation forecasting, and
- JEN's governance processes.

1.2 REQUIREMENTS FOR APPLYING CUSTOMER CONNECTIONS CAPITAL FORECAST METHODOLOGY

When carrying out the customer connections capital forecast:

- Staff responsible for forecasting must apply the methodology and assumptions as outlined in this document,
- Any customer connections capital forecast for inclusion in JEN's plans, such as Network Asset Management Plan (NAMP) and annual Capital and Operational Work Plan (COWP), must be validated against this methodology,
- Input data and assumptions must be reviewed prior to developing forecast that underpin a regulatory proposal to the Australian Energy Regulator (AER).

1.3 DOCUMENT REVIEW

This document, including the underlying methods, inputs and assumptions, must be reviewed for suitability at least every two years, or less if circumstances require. The review should at the least cover:

- consideration of customer and regulator expectations,
- recent changes to the planning approach that may affect the assumptions,
- process performance i.e. comparison of forecast against actual expenditure – the rolling 12-month forecast should be within 10% of the actual expenditure,

- changes to the sources of input, and
- changes in legal and regulatory requirements.

2. REGULATORY OBLIGATIONS AND FORECAST APPROACH

2.1 RELEVANT REGULATORY INSTRUMENTS AND OBLIGATIONS

A number of regulatory instruments define JEN's obligations to provide direct control services and negotiated distribution services to customers. Important points relevant to these services include the following:

- JEN's Electricity Distribution Licence, the Victorian Electricity Distribution Code (VEDC) and National Electricity Rules (NER) are the regulatory instruments that set JEN's obligations to offer direct control services and negotiated distribution services to customers.
- JEN's Electricity Distribution Licence (Chapters 6 to 12) sets the obligations for JEN to offer connection services and supply to customers and embedded generators, undergrounding or asset relocation services, public lighting services, distribution services to other distributors and other excluded services.
- The AER determines the classification of services for JEN for each regulatory control period, in accordance with clause 6.2.1(a) and 6.12.1 (1) of the NER.
- The NER (Chapter 5 – Part A – Network Connection) sets the framework for connection to the JEN network.
- Clause 6.5.7 (a) of the NER also outlines the four capital expenditure objectives. The first two capital expenditure objectives that are relevant to the customer connections capital forecast include:

  "*A building block proposal must include the total forecast capital expenditure for the relevant regulatory control period which the Distribution Network Service Provider considers is required in order to achieve each of the following (the capital expenditure objectives):*

  (1) meet or manage the expected demand for standard control services over that period;

  (2) comply with all applicable regulatory obligations or requirements associated with the provision of standard control services;

  …"

- The VEDC (Chapter 2 – Connection of Supply) requires JEN to use best endeavours to connect the customer and sets out various obligations in relation to connection of supply.

2.2 CUSTOMER CONNECTIONS CAPITAL FORECAST APPROACH

JEN regularly reviews its customer connections capital forecast methodology to ensure a consistent, transparent and auditable approach underpinning the capital forecast.

Consistent with the capital expenditure objectives set out in Clause 6.5.7 (a) of the NER, this methodology is aimed at providing a consistent, transparent and auditable approach underpinning the forecast capital expenditure that is required to meet the expected demand for customer connections.

JEN derives its forecast capital expenditure using its consultant's and ACIF growth forecasts, which is consistent with the expected level of economic activities in Melbourne.

3. CUSTOMER CONNECTIONS ACTIVITIES AND SERVICES CLASSIFICATION

In the current and next regulatory period (2016-20 and 2021-25), each group of customer connection activity is assigned to a regulatory service classification. See Table 3-1 for details.

Table 3-1: Customer connections activities and services classification (2016-20)

Service Code	Description	Service classification
CB	Business Supply > 10kVA	Direct control service (standard control service)
CD	Dual & Multiple Occupancy	Direct control service (standard control service)
CH	Medium Density Housing URD/PURD	Direct control service (standard control service)
CL	Public Lighting	Negotiated services
CM	Service Wire Overhead and Underground	Direct control service (alternative control service)
CR	Capital Rectification/Recoverable Works	Direct control service (standard control service)
CS	Low Density & Small Business Supplies < 10kVA	Direct control service (standard control service)

Notes

- *This document does not cover the connections capital expenditure forecast for 'Meters, Time Switches and Services – New'.*

A brief description of each service and what it covers is provided below.

3.1 CB BUSINESS SUPPLY > 10KVA

This activity covers all capital works associated with the provision of new or increased supply to all projects that require network augmentation and negotiated using the Industrial/ Commercial extension procedures, using low, medium and high density network methods.

3.2 CD DUAL AND MULTIPLE OCCUPANCY

This activity covers all capital works associated with the provision of additional supply points to existing lots from roadside mains including any minor upgrading of the roadside low voltage mains and installation of service cables and pits.

3.3 CH MEDIUM DENSITY HOUSING URD

This activity covers all capital works associated with High Voltage and Low Voltage underground and partial underground works, service pits and kiosks to provide supply to new medium density residential subdivisions, neighbourhood extensions both specific and general as well as minor low voltage extensions in medium density areas, supplied by extending or upgrading the network system.

3.4 CL PUBLIC LIGHTING

This activity covers all capital works associated with the provision of new or upgraded public lights including both major road schemes and minor road schemes. The new public lighting generally includes the lighting installation in the medium density housing URD projects. The actual costs are fully funded by the party requesting the work.

3.5 CM SERVICE WIRE OVERHEAD AND UNDERGROUND

This activity allows for new underground and overhead service connections.

3.6 CR CAPITAL RECTIFICATION/RECOVERABLE WORKS

This activity covers all capital works carried out for customers or other authorities in which actual costs are externally financed and for which the prime purpose is to satisfy a requirement other than new or increased supply. It also includes minor pole relocations that have been requested by customers or developers. The amount of work required varies annually, depending on the volume of customer requests. In addition, it also covers capital rectification works where damages has been caused by unknown third parties.

This activity continues to be covered by this document despite it has been classified as replacement expenditure (Repex) from 2016 because this remains a customer initiated activity.

3.7 CS LOW DENSITY/ SMALL BUSINESS SUPPLIES < 10KVA

This activity covers all capital works associated with the provision of new or increased overhead or underground supply to low density subdivisions and single/small group extensions.

4. EXISTING PROCESS AND FUTURE IMPROVEMENT

4.1 GENERAL

It is envisaged that this document will continue to be developed and improved over time as experience and knowledge is accumulated. The current systems and processes may be modified for improvement as required.

4.2 DESCRIPTION OF PROCESSES

The methodology used for customer connections capital forecasting is divided into three phases, as listed below.

- Phase 1: Data Analysis
- Phase 2: Growth Factors Selection
- Phase 3: Forecast and Reporting

4.2.1 PHASE 1: DATA ANALYSIS

The purpose of this phase is to establish an appropriate baseline on which the forecast is based on.

The actual capital expenditure in relation to customer connection is first compiled and grouped by service code (as listed in Table 3-1).

To ensure a prudent capital forecast, all major one-off projects are excluded from the base year capital amounts. For example, [redacted].

4.2.2 PHASE 2: GROWTH FACTORS SELECTION

Once the baseline financial data is determined, the appropriate growth factors need to be established.

JEN undertakes economic growth review as part of the forecasting process. JEN sources its growth forecast from the following:

- Acil Allen Consulting, providing forecasts on JEN's customer numbers and energy; and
- ACIF, providing forecast on capital expenditure by sector in Victoria.

To derive the growth rate applicable to residential related activities, JEN uses the rate of change in the growth of residential customer (Acil's forecast). For non-residential related activities, JEN adopts the capital expenditure growth in the relevant sectors presented in ACIF report. The basis for growth applicable to each service code is shown in Table 4-1 below.

Table 4-1 Growth Factor by Services

Service code	Description	Growth Basis
CB	Business Supply > 10kVA	ACIF, relevant non-residential sectors: • Industrial; • Other Commercial; • Miscellaneous.
CD	Dual & Multiple Occupancy	Acil Allen, rate of change in residential customer growth
CH	Medium Density Housing URD/PURD	Acil Allen, rate of change in residential customer growth
CL	Public Lighting	Acil Allen, rate of change in residential customer growth
CM	Service Wire Overhead and Underground	Acil Allen, rate of change in residential customer growth
CR	Capital Rectification/Recoverable Works	ACIF, relevant engineering sectors: • Roads, • Bridges Railways Harbours
CS	Low Density & Small Business Supplies < 10kVA	ACIF, relevant non-residential sectors: • Industrial; • Other Commercial; • Miscellaneous.

Price Escalation (labour or material) for each service is not included in this capital expenditure forecast. It would be addressed at a higher level in JEN's capital expenditure forecasting model.

4.2.3 PHASE 3: FORECAST AND REPORTING

JEN carries out its CIC forecast in two parts:

a) Baseline forecast;

This is produced by applying the relevant growth rates (as discussed in section 4.2.1) to the 'base year' expenditure.

The 'base year' expenditure is generated using the average of three years historical baseline capital expenditure (see section 4.2.1).

b) Major projects.

One-off major projects with high probability of proceeding are added in the year(s) they are expected to take place.

The total CIC forecast is also presented in several ways:

- Baseline forecast is carried out at the higher level of two letter service code (e.g. CB for business supply). It is then further broken down to three letter service codes; e.g. CBE (business supply, LV extension), CBH (business supply, HV customer) etc.
- The allocation of forecast from two letter service code to three letter service code is based on the actual cost split in the base year (2018).
- The monthly forecast at the two letter service code level is also reported. It is assumed that the capital expenditure incurred evenly throughout the year.

4.2.4 UNIT COST

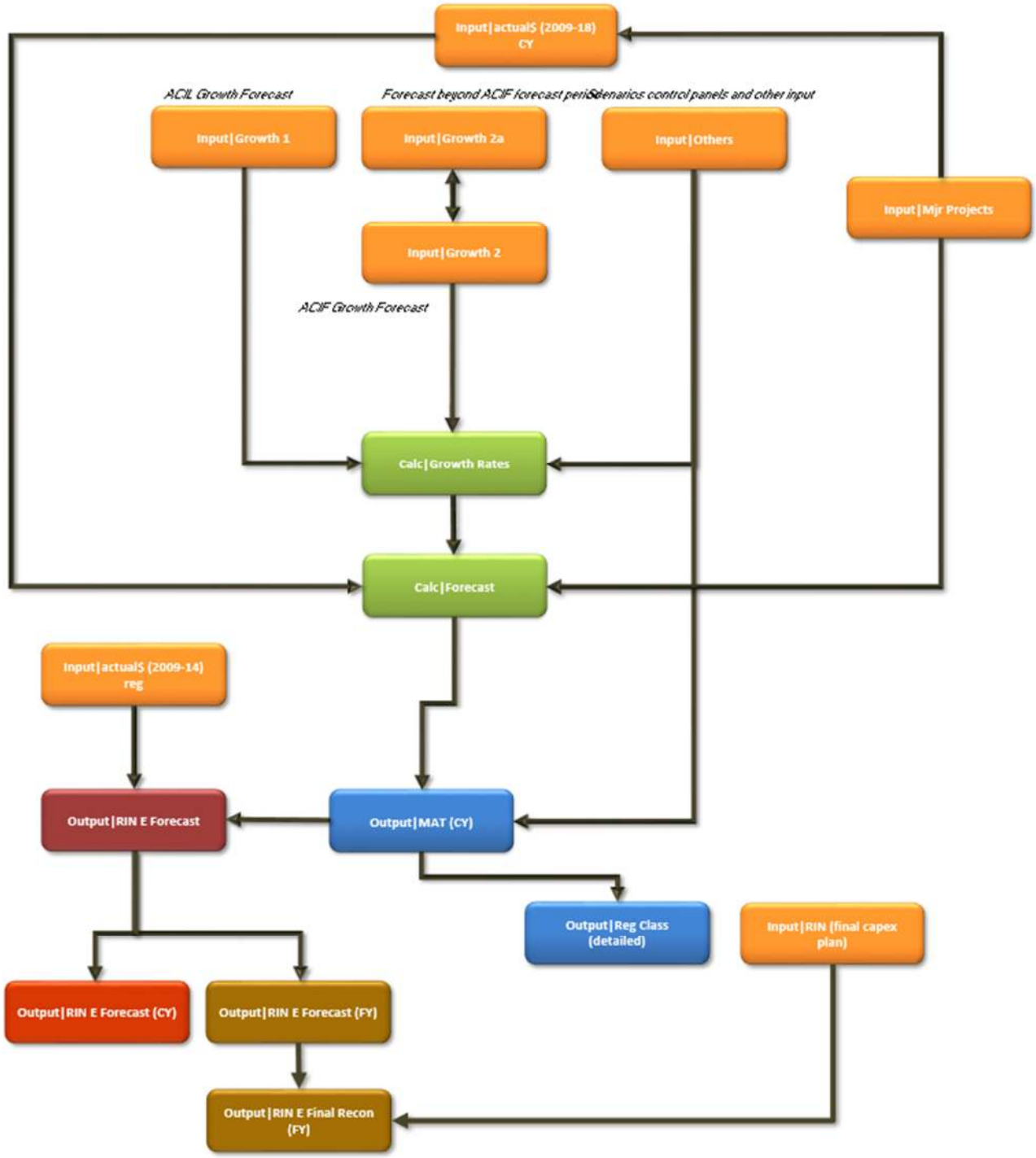
As JEN's connection forecast is made at the MAT code level, no separate forecast on connection unit cost by customer type has been undertaken.

However, the outcome of a unit cost based forecast would be consistent with the capital forecast generated using methodology as detailed in this paper.

Note: Unit cost based forecast = unit cost $_{(customer\ type)}$ *x volume* $_{(customer\ type)}$ *x applicable growth rate*

4.3 FORECASTING PROCESS FLOWCHART

The flowchart of the forecasting model is outlined in Figure 4.1.



5. APPENDIX 1: CONSULTANT'S FORECASTS

As mentioned earlier in the document, JEN uses a consultant (Acil Allen) residential customer number forecast to derive its forecast volume growth rates for the residential sector.

Year	Residential Customers
2006	257,927
2007	270,637
2008	272,464
2009	273,637
2010	275,568
2011	275,510
2012	278,085
2013	282,529
2014	285,834
2015	290,122
2016	295,992
2017	302,576
2018	310,712
2019	316,232
2020	321,600
2021	326,854
2022	332,077
2023	337,202
2024	342,293
2025	347,434
2026	352,555
2027	357,640

[redacted]