

acif
Australian Construction
Industry Forum

TECHNICAL NOTE:

**Building And Construction Activity Forecasts For
The Powercor Electricity Distribution Region**

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Introduction

The Australian Construction Industry Forum (ACIF) has provided Powercor Australia with forecasts of building and construction activity in the Powercor network distribution area covering much of Victoria. This note provides background information about these forecasts.

The ACIF Building and Construction Forecasts

The forecasts for the Powercor Region have been extracted from the forecasts prepared by ACIF for Victoria at large which were published in November 2018.

The ACIF forecasts are prepared by blending macro-economic forecasts of the domestic and international economy with information about the projected share of construction activity by sector and by region. The outlook for expenditure is supplemented by CoreLogic's detailed project database – a repository for the building and construction project pipeline. Industry insight into trends and changes in the outlook is injected through the activities of ACIFs Construction Forecasting Council, a body of leading experts and advisors in building and construction and supporting professions.

The forecasts cover Residential Building, Non-Residential Building and Engineering Construction. Detailed data is available for 20 sub-sectors. The value of building work done is measured using Chain Volume Measures (CVM) with 2015-16 as the reference year (that is in constant prices or "real" 2015-16 dollars).

The regional analysis splits Australia-wide projections by state and territory. This is based on ABS Cat No 8752.0 - Building Activity, Australia, Jun 2018, published 10/10/2018. Further splits are available for capital city and "rest of state" for residential and non-residential building activities. The sub-state splits are derived by applying a moving average of recent regional shares of building approvals to the respective state wide forecasts. The key source is "Building Approvals by Greater Capital Cities Statistical Area (GCCSA) and above" from data extracted on 02 October 2018 from "ABS.Stat" which is a beta version of the way that the ABS plans to release regional statistics, and which is still under development.

The forecasts are revised and updated twice a year. The November 2018 forecasts provided annual projections for the next ten years to 2027-28.

The forecasting methodology and the source of the data used is more fully documented in the Australian Construction Market Report published by ACIF and made available to subscribers.

The forecast data and supporting historical timeseries is available via an electronic "Dashboard" that can be found at acif.com.au.

Definition of the Powercor Region within the building activity statistics

The Powercor electricity supply distribution network footprint (the "Powercor Region" or "PCR") is not defined in the Australian Statistical Geography Standard (ASGS) used by the Australian Bureau of Statistics (ABS) and therefore it is not automatically identifiable in the building activity statistics used in the ACIF forecasts. It is necessary to estimate or approximate the spatial area covered by the Powercor Network in the building activity statistics.

Powercor Australia provided a list of the postcodes that are within the Powercor network area. Building Activity statistics are not available in terms of postcodes. The postcode

information is useful in obtaining a “first cut” in reconciling areas which fall within the boundaries of the relevant ABS regions.

It is necessary to refine the first cut estimation of the Powercor Region based on postcodes because the boundaries of the Powercor network area sometimes bisect suburbs and the relevant ABS regions, especially in the Eastern Edge of the Powercor network area. A reasonably detailed map of the Powercor network area which is made available from the Powercor Australia webpage (which is used to guide the community about outages in electricity supply in real time), has been used to assess where suburbs and ABS regions have been split by the boundary.

Figure 1: Powercor Network Area and Outage Map



Source: <https://m.powercor.com.au/outage-map>

As a result of this mapping and spatial allocation exercise the Powercor Region (or “PCR”) has been defined as falling into several complete SA4 regions and 2 partial SA4 regions.

Much of the regional and rural areas in the Western half of Victoria covered by the Powercor Australia network falls into complete SA4 regions. The SA4 regions are the largest sub-State regions in the Main Structure of the Australian Statistical Geography Standard (ASGS) and they have been designed for the output of a variety of regional data, including data from the Census of Population and Housing. SA4s have been designed to enclose a minimum of 100,000 residents within their boundaries.

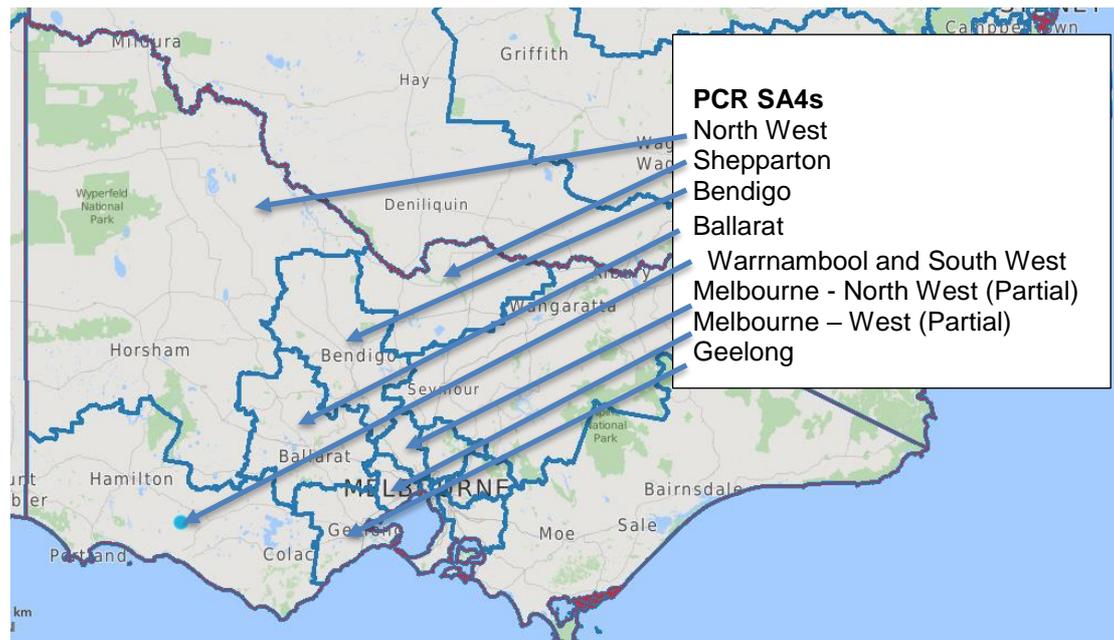
Whole SA4s aggregate to Greater Capital City Statistical Areas (divided into Greater Capitals and the Rest of State for each State and Territory). The Greater Capital City Statistical areas aggregate to each State and Territory without overlap or omissions.

The Powercor network area bisects two SA4 regions in the Greater Melbourne area. The parts of these SA4 regions that are viewed as falling within the PCR have been estimated with the use of the SA2 level of spatial disaggregation. The ABS describe SA2s as being a general-purpose medium-sized area built to represent a community that interacts together socially and economically. SA2s generally have a population range of 3,000 to 25,000 persons and they have an average population of about 10,000 persons. Within cities, the SA2s represent gazetted suburbs. In regional and remote areas, gazetted localities were usually too small to represent an SA2 in their own right and they are often combined on the

basis of whether they formed part of what the ABS views to be a “functional area”. LGA boundaries were often considered by the ABS when forming SA2s.

The extent of the PCR has been estimated by allocating whole SA2 areas to it where the Powercor network area has been judged to cover most of the SA2 or a significant element of the built-up area of the SA2. This allocation procedure has left some of the Powercor Australia network area outside of the estimated PCR where the majority of the built-up area appears to be outside of the Powercor Australia network area.

Figure 2: ABS SA4 regions in Victoria



Source: <http://stat.abs.gov.au/itt/r.jsp?ABSMAPS>

The definition of the Powercor Region (“PCR”) by whole and partial SA4 (including the SA2 regions within the SA4 regions used) is outlined in the table below. The table also illustrates the relative size of the various regions with reference to the ABS Estimated Resident Population (ERP). Statistics are provided for the PCR (and its component parts). Statistics are also provided for Greater Melbourne, the rest of Victoria and Victoria at large, for comparison.

Some key points to be drawn from review of the PCR follow.

- The PCR comprises around half of the land area in Victoria and less than a quarter of the population of the state.
- As the PCR is comprised of parts of Greater Melbourne and parts of the Rest of Victoria, the rate of population growth is between that of Greater Melbourne and growth in the rest of the state.
- The smaller regions in the PCR (in terms of population) have seen considerable volatility in population growth.

Table 1: Population by ABS Statistical Areas and within the PCR

SA4	Sub SA2	ERP in 2017	% of VIC	% change 2016 to 2017
Melbourne - North West	Keilor	9,054	0.1	0.7
Melbourne - North West	Gisborne	13,637	0.2	2.4
Melbourne - North West	Macedon	3,566	0.1	1.2
Melbourne - North West	Riddells Creek	4,241	0.1	1.6
Melbourne - North West	Mickleham – Yuroke	4,839	0.1	35.2
Melbourne - West	Ardeer – Albion	8,342	0.1	1.7
Melbourne - West	Cairnlea	10,421	0.2	2.1
Melbourne - West	Deer Park – Derrimut	28,222	0.4	2.5
Melbourne - West	Delahey	8,844	0.1	0.0
Melbourne - West	Keilor Downs	13,937	0.2	0.0
Melbourne - West	Sunshine	10,409	0.2	1.6
Melbourne - West	Sunshine North	12,331	0.2	1.7
Melbourne - West	Sunshine West	19,898	0.3	1.9
Melbourne - West	Altona	13,443	0.2	1.8
Melbourne - West	Altona Meadows	20,315	0.3	1.0
Melbourne - West	Altona North	15,026	0.2	1.6
Melbourne - West	Williamstown	16,635	0.3	1.5
Melbourne - West	Braybrook	19,794	0.3	3.0
Melbourne - West	Yarraville	15,893	0.3	1.5
Melbourne - West	Hillside	22,918	0.4	7.6
Melbourne - West	Melton	19,835	0.3	1.4
Melbourne - West	Melton South	26,479	0.4	9.2
Melbourne - West	Melton West	19,009	0.3	4.7
Melbourne - West	Rockbank - Mount Cottrell	4,051	0.1	28.7
Melbourne - West	Taylors Hill	20,673	0.3	2.3
Melbourne - West	Laverton	10,279	0.2	9.5
Ballarat	All	162,362	2.6	1.5
Bendigo	All	157,827	2.5	1.5
Geelong	All	294,004	4.7	2.7
North West	All	152,094	2.4	0.1
Shepparton	All	132,910	2.1	0.6
Warrnambool and South West	All	124,718	2.0	0.2
PCR		1,396,006	22.1	1.9
Greater Melbourne	All	4,843,781	76.6	2.7
Rest of Vic.	All	1,477,867	23.4	1.3
Victoria	All	6,321,648	100.0	2.4

Source: ABS

Powercor Region Building and Construction Forecasts

Forecasts of building activity have been prepared for the PCR for the following categories of Residential and Non-Residential building activity.

- New Houses
- New Other Residential

- Alterations and Additions (large)
- Other (mainly small alterations and additions)
- Retail/Wholesale trade
- Offices
- Other commercial
- Industrial
- Educational
- Health and aged care
- Entertainment and recreation
- Accommodation
- Miscellaneous

The forecasting methodology for the PCR follows the broad approach used in the ACIF November 2018 Australian Construction Market Report. Forecasts are prepared using “top down” and “bottom up” information sources for Australia and for each of the 8 States and Territories.

Forecasts for Sub-state regions are prepared using ACIF’s “shares” model based on a timeseries of building activity indicators. The key assumptions that are implicit in the “shares” approach used for subregions are that building activity in the subregions will be influenced by the same factors that are shaping projected outcomes for the state and Australia at large, and that the shares for subregions will change gradually and be highly influenced by the most recent outcomes.

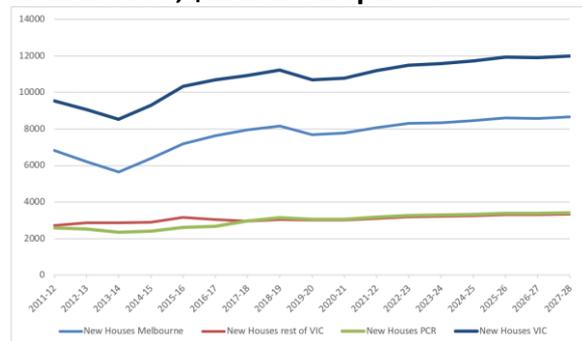
Estimates of the share of activity that is expected to apply in the PCR in the future has been based on trends in the share of building activity in each category of activity that has been observed in recent years in the PCR. The data used to calculate PCR shares of activity is the latest available from the ABS which extends to the end of the December quarter 2018. Forecast shares are based on a moving average of the historical shares obtained from ABS building activity data for each building type (which is only available for Residential and Non-Residential Building activities). The forecasts for the initial years in the PCR shares are sometimes modified in order to reflect the views of the ACIF Construction Forecasting Council about expected market developments that deviate from the trend, where they have made similar adjustments in the State and National forecasts. (This reflects the point that the ACIF forecasts use “bottom up” information held by participants in the building and construction industries).

Results of the PCR regional analysis have been provided in terms of forecasts for the value of work done in each building activity in real terms in the excel spreadsheet listed below.

ACIFforecastsplusPCRregionsMar2019

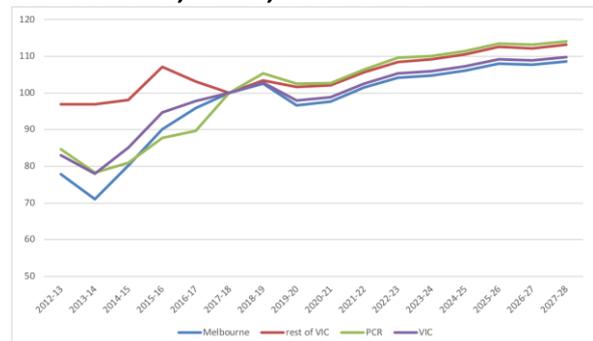
Figure 3: Building Work Done: Victoria, Melbourne, Rest of Victoria and the PCR

New Houses, \$m 2015-16 prices



Source: ABS and ACIF CFC

New Houses, Index, 2017-18=100



Source: ABS and ACIF CFC

New Other Residential, \$m 2015-16 prices



Source: ABS and ACIF CFC

New Other Residential, Index, 2017-18=100



Source: ABS and ACIF CFC

Note: Actuals to 2017-18. ACIF forecasts to 2027-28.

Forecasts Within The Powercor Region (PCR)

ACIF have also provided forecasts for sub-regions within the PCR. Forecasts have been prepared for the sub-regions (SA4s) within the PCR including:

- Melbourne – North West (partial)
- Melbourne – West (partial)
- Ballarat
- Bendigo
- Geelong
- North West
- Shepparton
- Warrnambool and South West

Forecasts for the following building activities have been prepared.

- New Houses
- New Other Residential

- Alterations and Additions (large)
- Retail/Wholesale trade
- Offices
- Other commercial
- Industrial
- Educational
- Health and aged care
- Entertainment and recreation
- Accommodation
- Miscellaneous

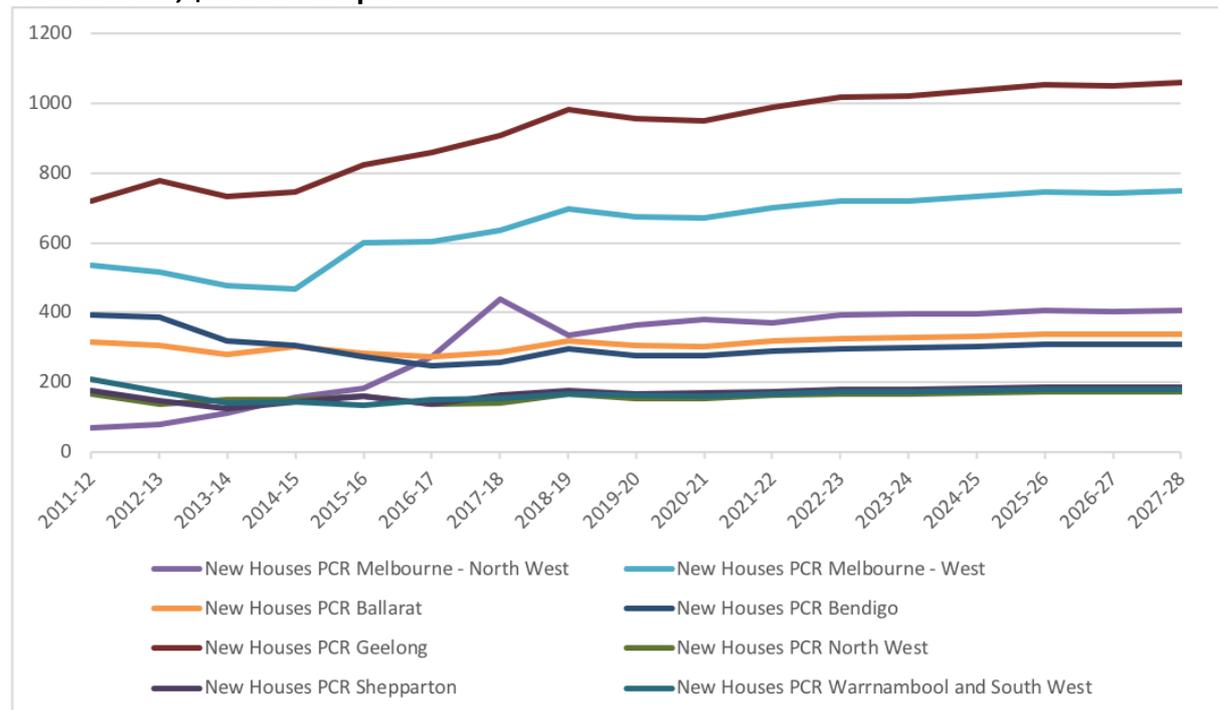
The forecasts for PCR subregions have also been built using ACIF's regional shares model. The main variation is that the shares are based on building activity in each of the SA4 regions and partial SA4 regions as a proportion of activity in the PCR at large (rather than the total for Victoria).

Experience gained over a number of decades in applying this forecasting approach for sub-state regions shows that the forecasts are reasonably reliable in the short to medium term and for categories of building activity that involve regular, more numerous building projects/activities, such as the building of houses. Forecasts for activities such as Accommodation, which are characterised by the arrival of a small number of relatively large hotel projects, which enter (and depart) quite quickly in the timeseries, can be more volatile and they are therefore less reliable.

Increasing the geographic detail (that is, when forecasting in smaller regions) increases the problem with volatility and reduced reliability. Reference to the detailed forecasts provided for the PCR region split into SA4 subregions will show that there are some building categories in some of the smaller regions where expected activity has been "zero-ed out". This reflects the fact that activity is infrequent in these areas and has been zero in recent years. This is an attribute of the volatility mentioned earlier. It is difficult to reliably forecast when these areas will in fact receive the benefit of infrequent construction activity. This is much less of a problem when the subregions are aggregated into the whole PCR which essentially increases the sample size sufficiently to produce more consistent expected values in the forecasts.

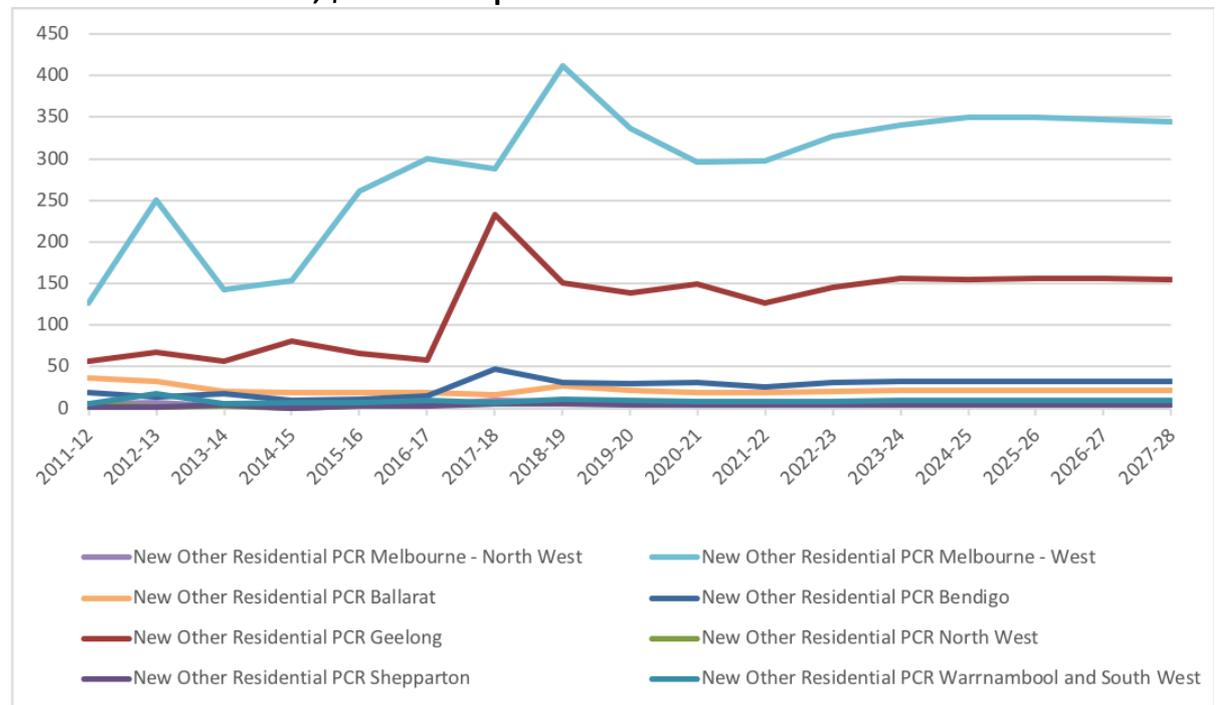
Figure 4: Building Work Done: PCR SA4 Subregions

New Houses, \$m 2015-16 prices



Source: ABS and ACIF CFC

New Other Residential, \$m 2015-16 prices



Source: ABS and ACIF CFC

Note: Actuals to 2017-18. ACIF forecasts to 2027-28.