Forecast Improvement Plan initiative: Improve visibility of sectoral consumption

AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

24 April 2024 FRG Meeting

Purpose and agenda

The purpose of this presentation is to *Inform* the FRG of updates on an ongoing initiative to improve visibility of sectoral consumption, as part of the 2023 Forecast Improvement Plan (FIP).

Today's agenda includes:

- Background to project
- Improvements
- Next steps
- Sectoral insights
- Results
- Future applications

Timing	Relevant topic	Responsible
Nov 23 - Feb 24	Forecast Accuracy Report (FAR) consultation	AEMO, Stakeholders
Today	**Update on sectoral consumption initiative**	**AEMO**

Background to project

- Australian New Zealand Standard Industry Classifications (ANZSIC) are a hierarchy of codes used for industry statistics*
- First ANZSIC project (2021-22) provided a benchmark to assess the Australian Energy Statistics (AES) Table F for electricity consumption
- Current ANZSIC project extends this initial work by improving the approach to match business national meter identifiers (NMIs) to ANZSIC codes for industry sectors
- The result set is more granular than the state/territory level data available in Table F

*Further information on ANZSIC codes may be found here

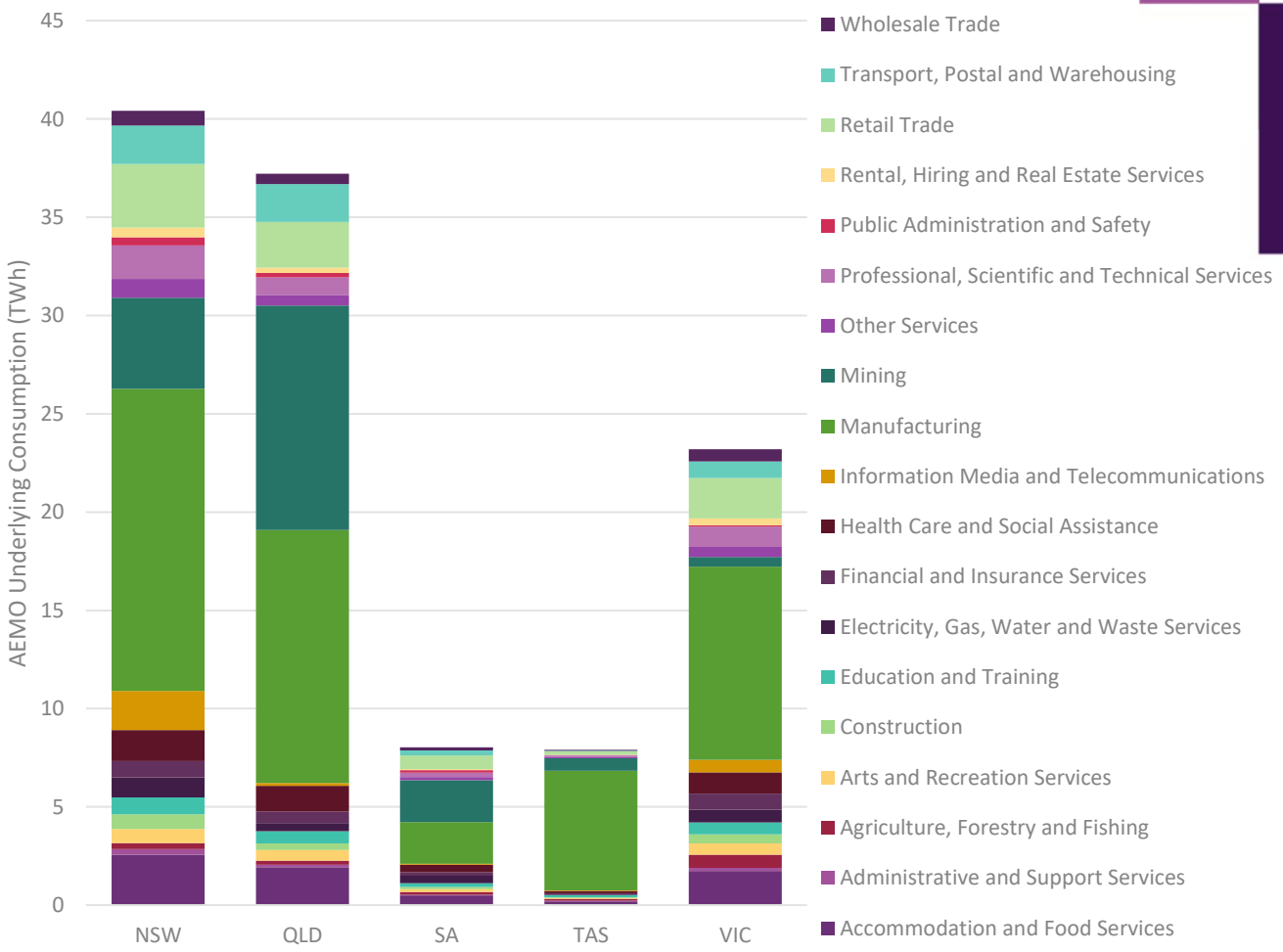
Background to project

- This project was funded by the Australian Government (DCCEEW) under the Regional and Cross-Sectoral Demand Transition workstream of the National Energy Transformation Partnership.
- This workstream aims to improve energy system planning by better understanding changing energy demand.

Improvements - results

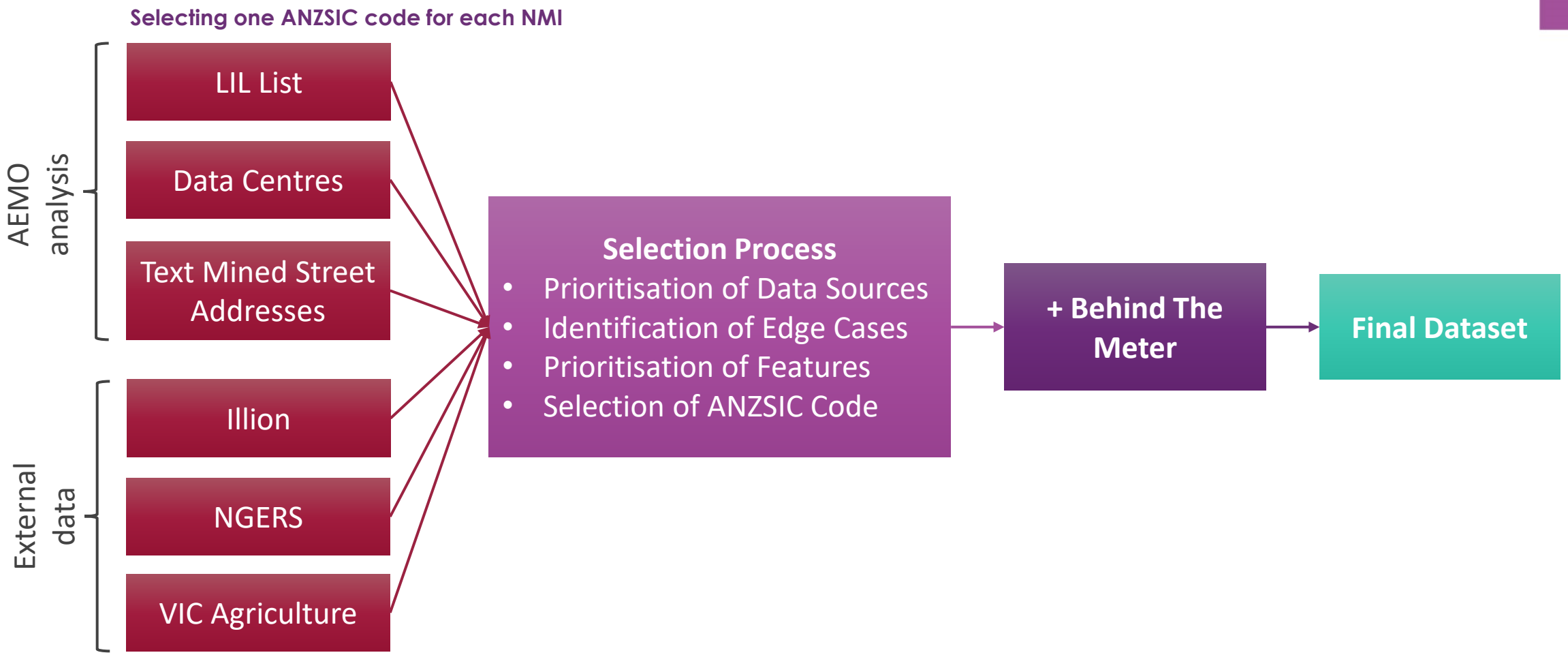
- Assigned ANZSIC* subdivision (2-digit) codes to 868,000 business NMIs
  - **Increase of 57%** on the 554,000 NMIs matched in 2022
- Accounts for 70% of NMIs and 86% of consumption for FYE23
- This analysis identifies the location and size of historical sectoral loads

Breakdown of Business Electricity Consumption by ANZSIC* Division (FYE23)



*Australian New Zealand Standard Industry Classification

Improvements - methodology



Improvements – text mining

Data Source

- Industry terms can appear in a NMI address
- Examples: ‘preschool’, ‘shopping centre’, ‘office’
- Terms were identified and mapped to ANZSIC codes

Selection Process - Business Names

- NMI addresses can contain a business name
- A string metric was used to compare the similarity of the business name with the address

Selection Process - DID* Matches

- One NMI can map to many ANZSIC codes via a DID representing an entire street or locality
- A string metric was used to compare the NMI and business addresses to narrow down matches

*Delivery Identifiers (DIDs) are 8-digit numbers used by Australia Post to identify addresses. Further information can be found here

Next steps - methodology

- Investigate alternative data sources such as ABS, rather than commercial data providers (currently Illion) (proof of concept)
- Investigate sectoral breakdowns for multi-sector buildings using data from the National Australian Build Environment Rating System (NABERS)
- Formalise data sources and methodology
- Automate data pipeline for periodic refreshes

Sectoral insights

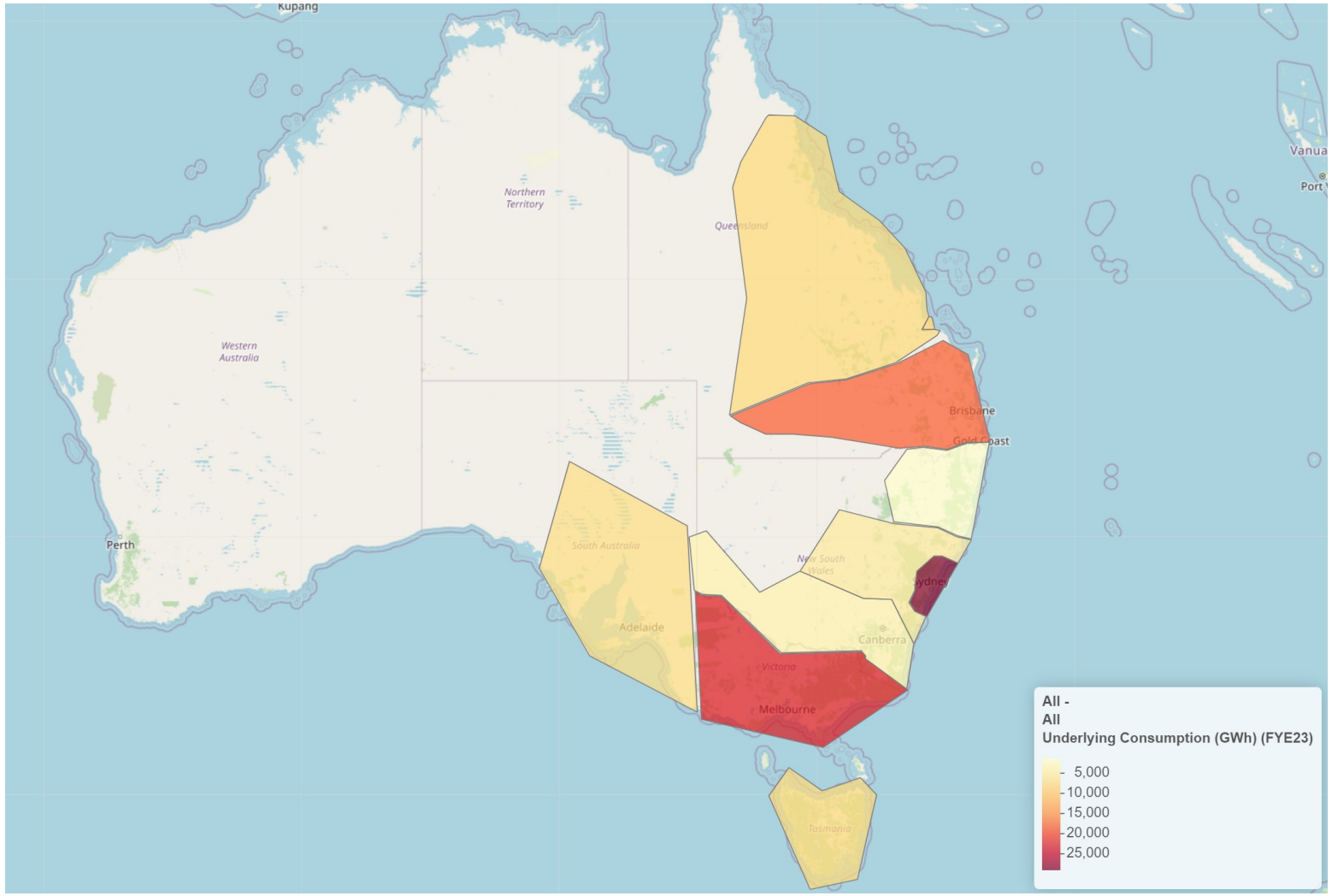
By geographical region

- Based on FY2023 electricity consumption
- Each business interval meter is linked to an address and ANZSIC code enabling AEMO to geographically map consumption
- Results shown use the following aggregations

Spatial	Sectoral	Scale of map
2022 ISP subregions	Total business consumption	Australia
ABS Statistical Area 2 (SA2)*	ANZSIC Division or Subdivision	Regions/cities

*SA2s are medium-sized geographical areas defined by the ABS. Further information can be found here

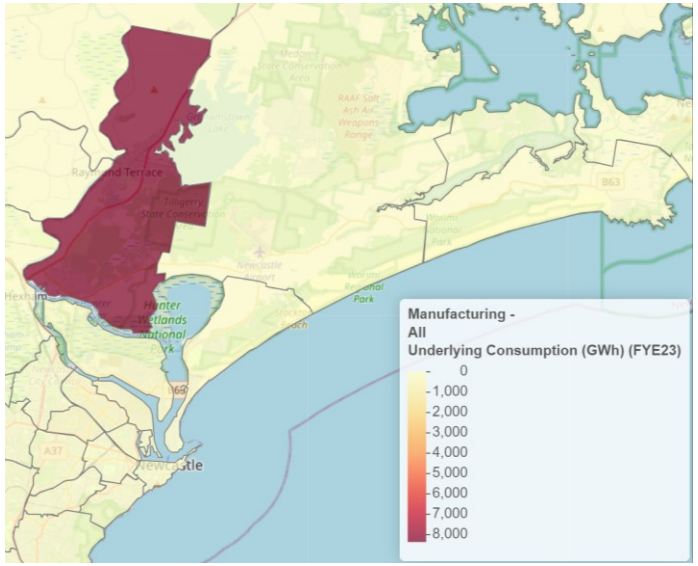
Sectoral insights
by ISP Subregion



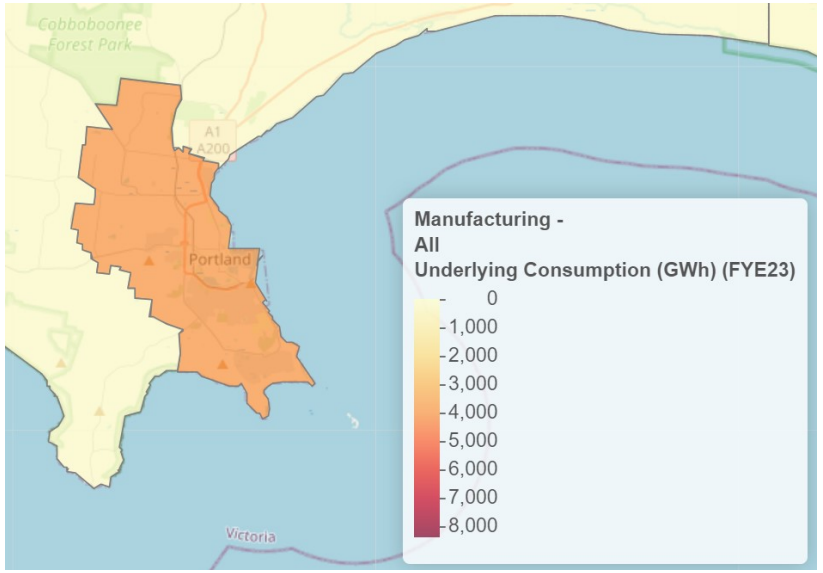
Sectoral insights

Manufacturing Division by SA2 area

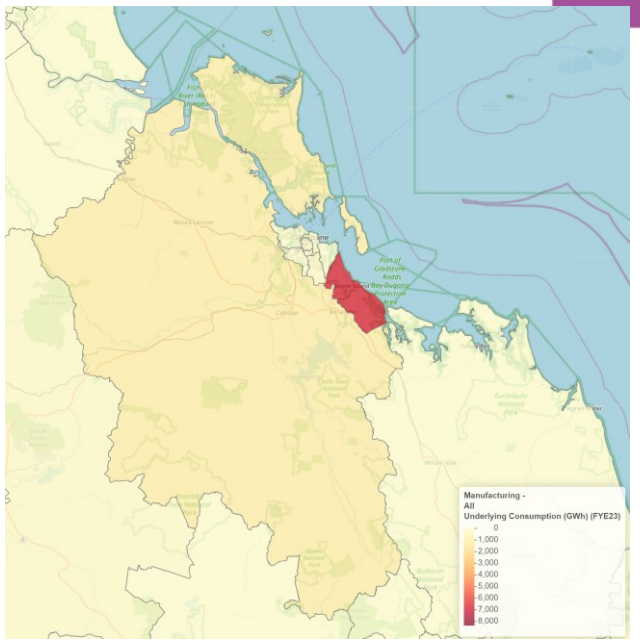
Newcastle, NSW



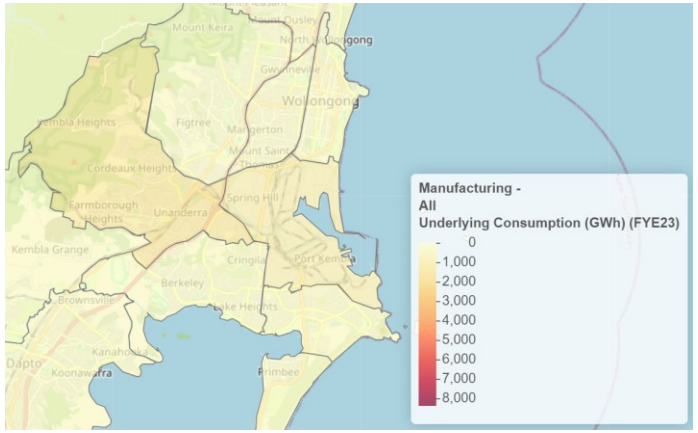
Portland, VIC



Gladstone, QLD



Illawarra, NSW

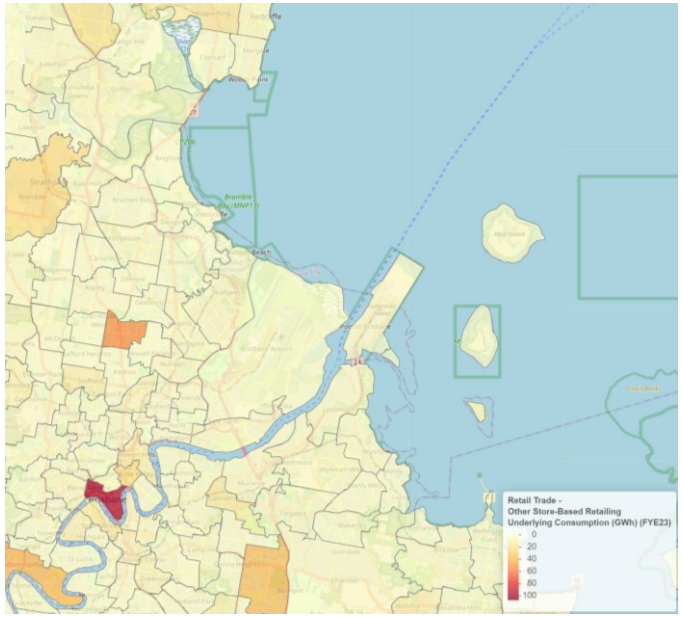


Sectoral insights

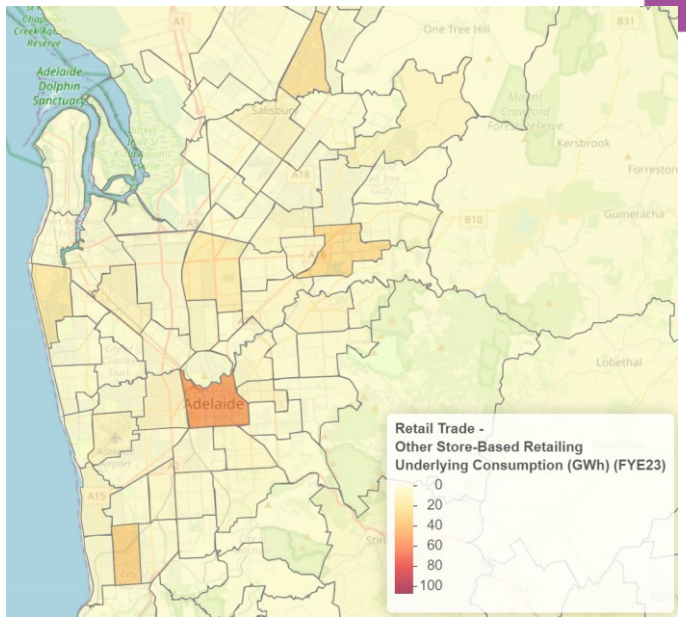
Shopping Centres by SA2 area

Sydney

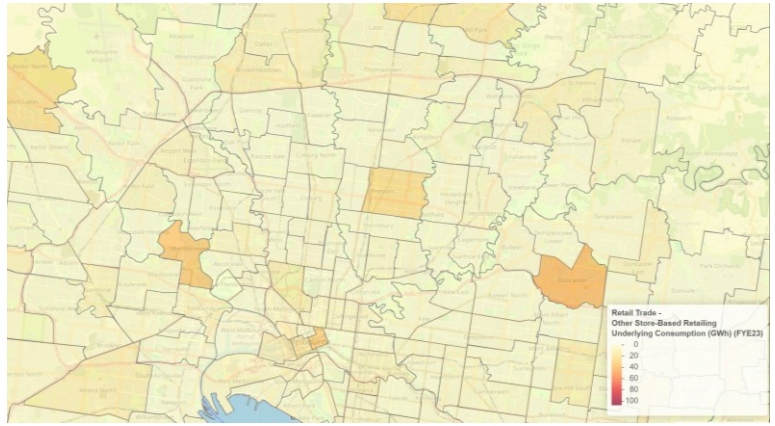
Brisbane



Adelaide



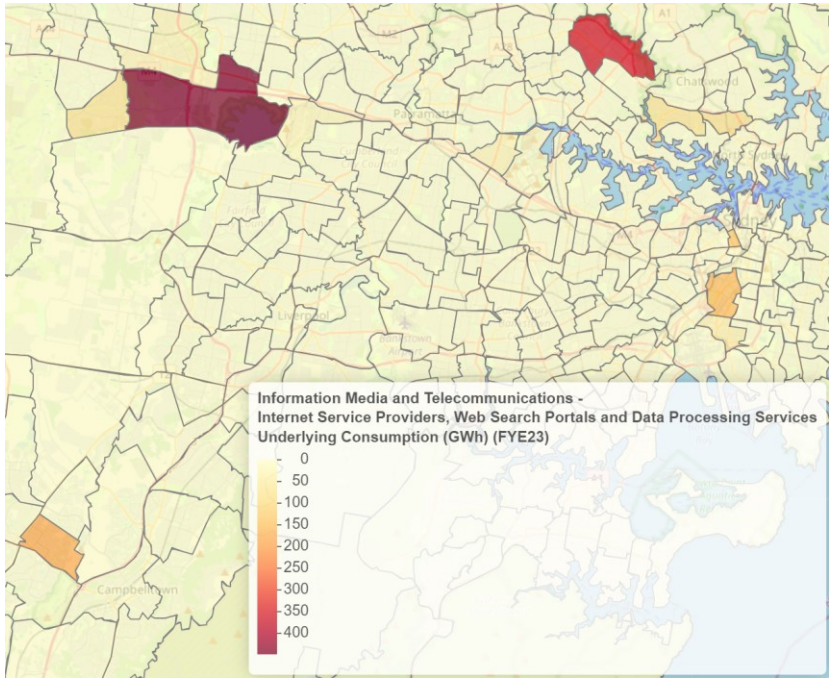
Melbourne



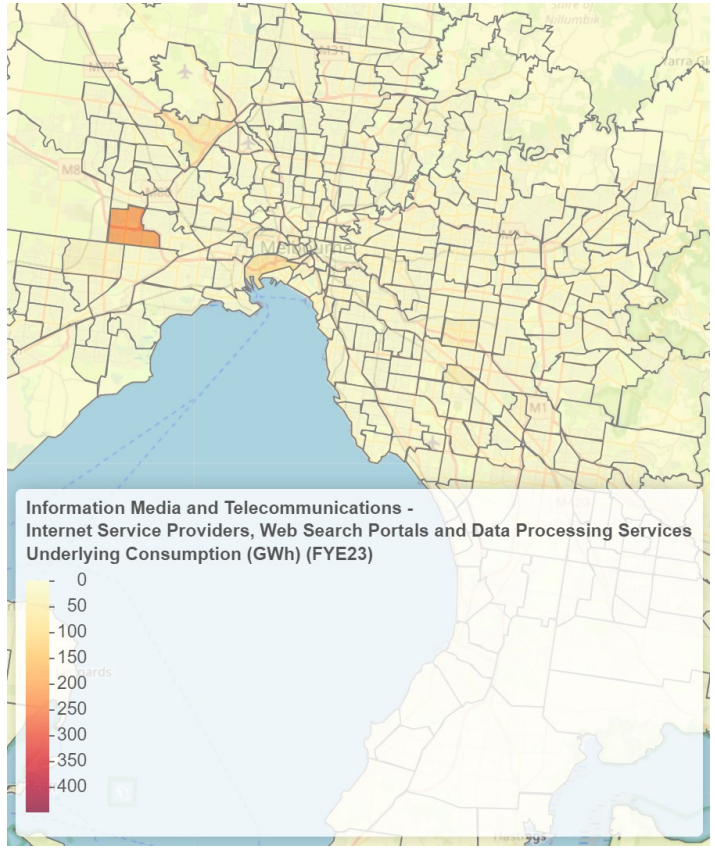
Sectoral insights

Data Centres by SA2 area

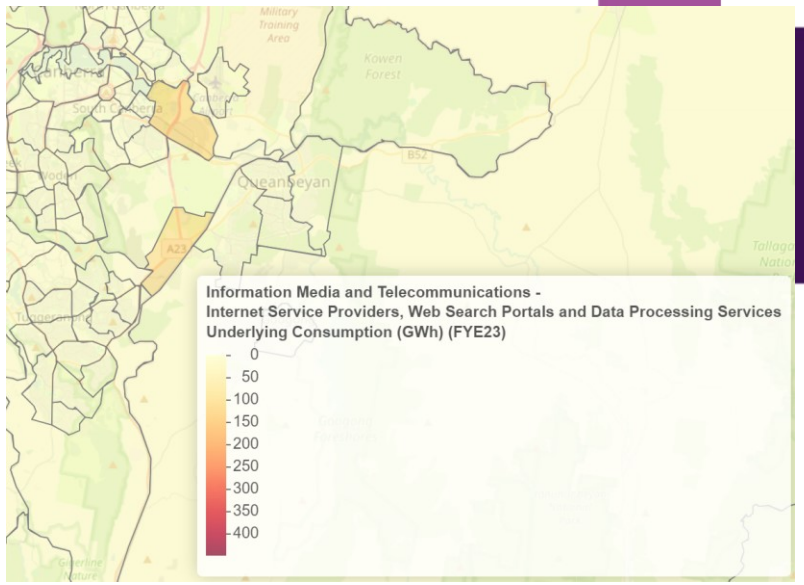
Sydney



Melbourne



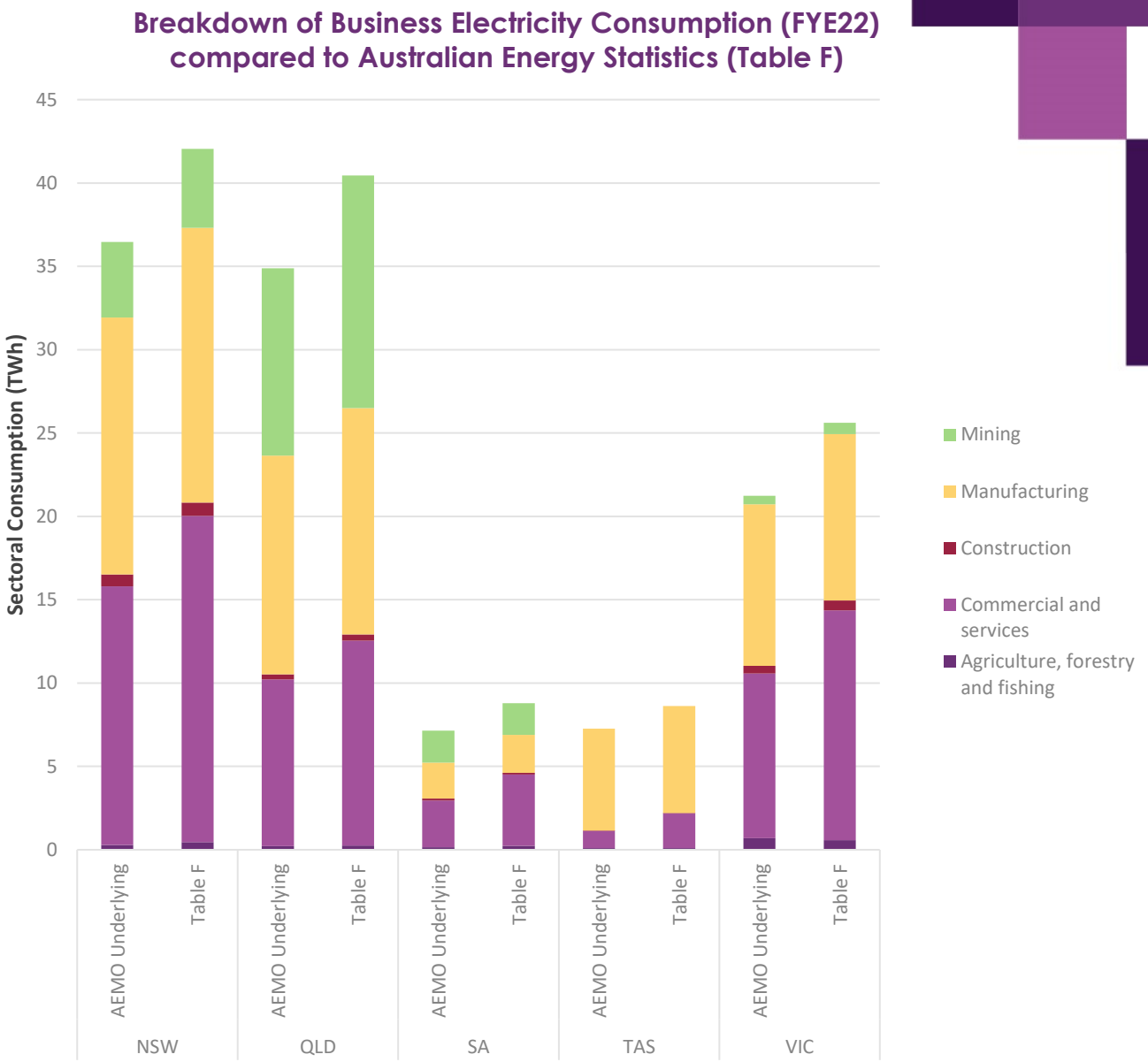
Canberra



Results align well with Australian Energy Statistics

Project achievements

- ✓ All sectors achieved a minimum 75% match in terms of total electricity consumption:
  - Division C Manufacturing 95%
  - Division A Agriculture, Forestry and Fishing 86%
- ✓ Improved alignment of Commercial and Services divisions compared to first ANZSIC project (2021-22)
- ✓ Serves as a future benchmark for validating Australian Energy Statistics (Table F).



Project insights to improve consumption forecasting

- Provides the ability for AEMO to accurately track consumption over time by industry type.
- Consideration to use in place of Australian Energy Statistics (Table F) as a key input for key component modelling (economic, multisectoral and energy efficiency).
- Enables identification of fast-growing sectors such as data centres.
- Enables sub-regional analysis of consumption growth.

Discussion

Ask your questions in the chat or raise your hand