Australian Government

Department of Industry, Science, Energy and Resources

DATA STRATEGY 2021–2024

Data-driven advice to support the department's strategic priorities

Australian Government

Supporting economic growth and job creation for all Australians

Message from the Secretary

The Department of Industry, Science, Energy and Resources plays a vital role driving economic and productivity growth, and job creation, for all Australians. To achieve this, the design and implementation of the Australian Government's policies, programs, services and regulations needs to be supported by a robust evidence base. In an increasingly complex economic environment, it is more important than ever that this is underpinned by high-quality data analysis and visualisation.

The *Data Strategy 2021–2024* builds on the department's existing data capabilities and lessons-learned from recent experiences to guide us through the next phase of our data evolution. Working in alignment with our *Digital Strategy 2021-23*, this Strategy outlines how we will continue fostering innovative ways of working that encourage all employees to make the most of our data capabilities and resources.

Under the Strategy, we will continue to grow a sustainable data-driven culture and maximise the data capabilities of all employees, from basic through to advanced data users. By giving our people the tools and skills they need to undertake data analytics and produce high quality visualisations, we will be better able to communicate insights from data to design and deliver robust, evidence-based policies and programs.

We will increase our collection of high quality location data and ensure we have the tools and capability to use it. This will help us provide location-specific insights, tailor programs to the diverse and specific circumstances and needs of all Australians, and understand the impact of initiatives across the country.

As we deal with more data than ever before, this Strategy will also guide our efforts to optimise the department's governance, management and security processes. By ensuring our data assets are well-managed and easily accessible to employees, we will increase their value.

Data is a key part of everything we do. This Strategy ushers in an exciting new phase in our evolution as a data-driven organisation. By the end of 2024, we will have advanced data activity in our department to ensure the best evidence is readily available and consistently used. This will drive strategic decisions at all levels and deliver positive outcomes for the Australian economy in an ever-changing landscape.

David Fredericks
Secretary
Department of Industry, Science, Energy and Resource

DATA STRATEGY 2021–2024: AT A GLANCE

Our vision

We are a data-driven organisation.

We use data effectively to support the development of a strong, modern and resilient economy for all Australians.

Our context

- Governments increasingly need quality, ready-made insights to inform policy, programs, regulation and services.
- We have increased opportunities to leverage data and digital transformation to improve our data maturity and capability across the department.
- Our stakeholders and the community expect a seamless, digitally enabled government.
- Increasing collaboration with other government agencies through data expertise and analytical capability to achieve better outcomes collectively.
- The public data agenda promotes the appropriate, ethical and secure use and sharing of relevant data.

Building on our previous data strategy

This strategy builds on the achievements of our *Data Strategy 2018–20*. Key highlights include:

- **People and capabilities** – We trained employees to analyse, visualise, use and share data in their work.
- **Culture** – We promoted the importance of data to all our work, engaging employees through communities of practice and activities such as Data Month.
- **Data** – We improved our data management and governance, by streamlining our data certification process and making more data accessible across the department.
- **Analytics and visualisation** – We implemented our Data Analytics Framework, and laid foundations for the development of new data science capabilities and tools. We also began improving collection, management and use of location data and enabled more self-service analytics.

Data Strategy 2021–2024 priorities

1. Capability and culture – from data literacy to data fluency	- Provide continuous learning and development for all roles and data capability levels, in line with the objectives of the APS Data Professional Stream. - Empower senior leaders to foster a data-driven approach to our work. - Raise awareness of best-practice examples and the Data Policy Branch's services and training. - Improve our data-sharing arrangements. - Influence data policy and the public data agenda across the APS.
2. Governance – optimise our data governance and management	- Ensure data is governed, well managed and secure from creation to destruction. - Make data governance more efficient through automation and better guidelines. - Improve processes and technology to make data more discoverable and accessible.
3. Analytics – best-practice, fit-for-purpose analytics	- Expand self-service analytics and visualisation offerings, including for Power BI. - Encourage employees to use data visualisation when communicating policy. - Upgrade tools for energy, emissions and climate change data. - Deploy secure enterprise-grade data tools for advanced analytics and qualitative data. - Embed best-practice analytics across the department through our Data Analytics Framework.
4. Location-based insights – enable greater use of location data	- Make employees aware of location data's value and our location data support services. - Work with business areas to implement better tools for collecting and analysing location data, including address validation and geocoding. - Collaborate across government to influence location data policy, practice and capability.

Strategic context

To support our further advancement as a data-driven organisation, the department must be responsive to a constantly evolving strategic landscape. The department must also accommodate the evolving needs and priorities of the Australian Government, businesses and the broader economy, industry and research stakeholders, and the Australian community.

In this context, the key drivers for this strategy are as follows:

DEPARTMENTAL	WHOLE OF GOVERNMENT AND APS	NATIONAL
■ Supporting ministerial and portfolio priorities to deliver economic growth and job creation ■ Executive Board priorities and strategy ■ Our Portfolio Budget Statements and Corporate Plans ■ Alignment with our *Digital Strategy 2021–23* ■ Our *People Strategy 2020–22*, including employee capability	■ Supporting key government priorities, including Budget and COVID-19 response initiatives ■ *Data Availability and Transparency Bill 2020* ■ Improved data sharing across the APS ■ Community expectations of a modern, digitally-enabled APS and tailored service delivery ■ Secretaries and Deputy Secretaries Data Groups' priorities and initiatives, including the Data Professions Stream	■ Supporting government responses during national crises and significant events ■ Building public trust in the way government uses and shares data ■ Office of the National Data Commissioner ■ Office of the Australian Information Commissioner ■ Data and Digital Ministers' Meeting and National Cabinet priorities.

Challenges and opportunities

While we will face a range of data-related challenges over the term of this strategy, these offer opportunities for us to improve how we collect and use data in our day-to-day work.

CHALLENGES		OPPORTUNITIES
Using data to respond to, support and implement the government's priorities.	→	Provide better data and evidence to support government priorities and address implementation challenges.
Strong data culture and analytical capability is not uniform across our department.	→	Build a data-driven culture and increase our technical capabilities by engaging experts and leaders who can share their knowledge.
Growing number and complexity of policy and program functions, business systems and data holdings.	→	Integrate functions and data sources to improve our policy and program capability.
A changing data and technology landscape, including the *Data Availability and Transparency Bill 2020*.	→	Use new technologies and data-sharing frameworks to provide new ways to manage, use and share data.

1. Capability and culture – from data literacy to data fluency

People are at the core of our strategy. We can only progress a sustainable data-driven culture by maximising the data capabilities of employees across the department. Through this strategy we will build on our strong foundation of broad data literacy to achieve greater data fluency.

Data fluency is more than knowing how to access and use data. It includes:

- knowing what data to use to solve problems;
- applying critical thinking to understand and address data's strengths and limitations;
- using data strategically to shape policy and deliver effective programs, regulations and services; and
- using data to tell a compelling story.

We will achieve data fluency by continuing to equip all employees with data skills. By helping employees at all levels think critically about the data they need to support the department's activities, we will create a more mature data culture.

Key initiatives and activities

Equip and empower employees with data skills and capabilities

- Provide learning and development opportunities for all employees. Opportunities range from broad skills for basic data users to specialised training for advanced data users. This links to the APS Data Professional Stream, particularly the initiatives to develop sophisticated data users and establish a Data Professional Network.
- Share examples of best-practice data use across the department.
- Engage in data workforce planning across government. This will enable recruitment, retention and ongoing development of employees with data capabilities across the department and APS.

Help senior leaders foster a data-driven approach

- Extend data training opportunities for Senior Executive Service (SES) employees in line with the APS Data Professional Stream initiative to embed data capability across the SES..
- Regularly update executives on key data capability measures and opportunities to improve data capability across the department, including through the department's Data Governance Board.

Raise awareness of the Data Policy Branch's services and training

- Create accessible content that promotes data services and training available for employees.
- Identify opportunities for peer-to-peer data advocacy and coaching across the department.
- Share examples of good data use across the department.
- Clarify the Data Policy Branch's key activities and services, including guidelines on when and how they can offer support.
- Update our Data Capability Framework to include more roles and promote new informal learning opportunities.

Influence data policy and the public data agenda across the APS

- Continue collaborating with other agencies to shape the whole-of-government data agenda.
- Promote activities relevant to the whole-of-government data agenda to all employees. We will focus on activities that improve our data capability, including relevant data-sharing opportunities.

Capability and culture in practice

Nicola works in the Climate Change Division. She was interested in learning more about working with data in Power BI.

With her manager's support, Nicola enrolled in our Power BI Bootcamp. Using the skills and knowledge she gained, she was able to completely reshape the way Australia reports emissions data.

Nicola and the Climate Change Division used Power BI to produce an interactive graph showing emissions by quarter and sector. This graph is now a key part of our National Greenhouse Gas Inventory Quarterly Updates.

2. Governance – optimise our data governance and management

Data governance means having authority and control over data assets, including planning, monitoring and following best-practice. It guides all other data management functions including metadata management, data quality and data security.

Our Data Governance Framework sets out the rules, processes and roles that help us ensure robust data management and governance practices. Good data governance minimises risk, establishes rules for using data, helps us meet compliance requirements, improves communication, increases the value of data, and reduces the cost of managing data.

Our data management and governance is already mature. To date we have focused on compliance with our data standards, and identifying and managing data for analytics. We have also established a Data Governance Board made up of departmental executives to champion the effective, safe and ethical use of data.

However, the amount of data we are responsible for is growing. This creates new challenges for employees to navigate, analyse and interpret data appropriately. Given this, we need to improve our data governance to:

- ensure the security of our data holdings;
- improve evidence-based advice;
- use automation to minimise manual intervention and human error;
- continue considering the whole data lifecycle;
- prioritise our most important data assets; and
- be more dynamic.

Key initiatives and activities

Make data assets more discoverable and accessible

- Ensure the department collects key metadata in line with our data standards.
- Improve data cataloguing. This includes being able to search for datasets and access metadata and documentation related to data assets.
- Make data easier to find and access on DataHub, our internal data repository. This will help employees use the right data for the right purpose.

Make data governance more efficient

- Proactively develop our current and emerging priority data assets to better connect activities with business and economic outcomes.
- Use automation to reduce the administrative burden of governing and managing our assets.
- Update our data governance framework and implement a self-service governance model for data stewards and custodians.

Ensure data is governed, well managed and secure across the whole data lifecycle

- Ensure good governance for data systems we design and develop. This includes data security and risk management approaches in line with the Digital Transformation Agency's whole-of-government *Hosting Strategy* and the department's *Digital Strategy 2021–23*.
- Update our data collection standards, including incorporating relevant national and international standards.
- Review and streamline data management practices, including certifying data and collecting core data items, to ensure they are fit for purpose.
- Finalise and implement our Data Quality Framework so that data quality issues are managed consistently across the department.

Data governance in practice

Sarah wanted to include data about support for small-to-medium businesses in a policy proposal.

She used our dataset register to access information about the 'Entrepreneurs' Programme – Accelerating Commercialisation Grants' internal dataset. She contacted the data steward listed on the dataset, who checked and cleared the data in Sarah's proposal.

Sarah could then finalise the briefing, confident she is using accurate data that can be shared.

3. Analytics – best-practice, fit-for-purpose analytics

Analytics lets us turn data into useable information, which is critical for developing and delivering evidence-based policy. The Australian Government and community expect us to use data to develop, implement and evaluate policies and programs.

We significantly improved our analytical capability under the previous data strategy. This included creating our Data Analytics Framework – a guide to best-practice data analytics in the department.

Under this strategy we will:

- Embed analytics and visualisation capability at all levels of the department;
- Modernise our data analysis processes to ensure they are fit-for-purpose and serve our strategic goals;
- Give employees the tools and support they need for data analytics and visualisation that provide robust evidence using the best available data;
- Continue to foster an analytics-rich culture; and
- Improve our analytical capabilities and make advanced analytics tools available to all employees.

Key initiatives and activities

Embed best-practice analytics across the department
- Identify the analytics needs and data sources that support each business area's priorities.
- Contribute to the new energy technologies 2020–21 Budget measure to improve energy and emissions data analytics, tools and reporting in alignment with the department's *Digital Strategy 2021–23*.
- Encourage employees to use data visualisation when communicating policy.
- Provide learning and development opportunities that help employees use data analytics and visualisation to construct arguments.
- Promote the Data Analytics Framework and what it means for employees.
- Develop and promote case studies that highlight important analytics work and global best practice.

Expand self-service analytics and visualisation offerings
- Make Power BI more accessible to content users and analysts.
- Explore more advanced analytics in Power BI and improve compatibility with other applications.
- Promote examples of best-practice self-service analytics and visualisation tools.

Provide accessible, ready-to-use analytics and support for decisions
- Provide more automated data products and reports, and make them more accessible in alignment with the department's *Digital Strategy 2021–23*.
- Explore options for automated data-cleaning in the department.
- Support the use of advanced analytics to improve outcome monitoring and evaluation.

Improve data science tools and capability
- Assess our data science tools and capability and identify improvements.
- Enhance secure, enterprise-grade data tools for advanced analytics in alignment with the department's *Digital Strategy 2021–23*.

Increase our understanding, management and use of qualitative data
- Review and improve our use of qualitative data sources and analysis tools.
- Improve metadata for our qualitative data, as well as our ability to use qualitative data from our CRM and other sources.

Data analytics in practice

Our Fraud and Audit team had to manually check large numbers of grant applications for fraud indicators.

Wanting to improve the process, they developed a proof-of-concept system that used advanced artificial intelligence and machine learning techniques to check applications.

Drawing on existing departmental datasets, the system showed that we can use data science techniques to automatically identify potential fraud indicators in grant applications.

# 4. Location-based insights – enable greater use of location data

Everything that happens, happens somewhere, and location data (often called geospatial or spatial data) is that somewhere.

We regularly collect, manage and use location data when dealing with businesses and stakeholders.

We now have an opportunity to improve how we collect location data and the tools we use to analyse and visualise it.

By 2024, we will:

- be collecting high-quality, fit-for-purpose, spatially accurate location data;
- have the tools and capability to effectively manage, analyse and visualise this data; and
- be using location data more effectively to provide insights, tailor policies and programs, and understand the impact of initiatives in particular locations.
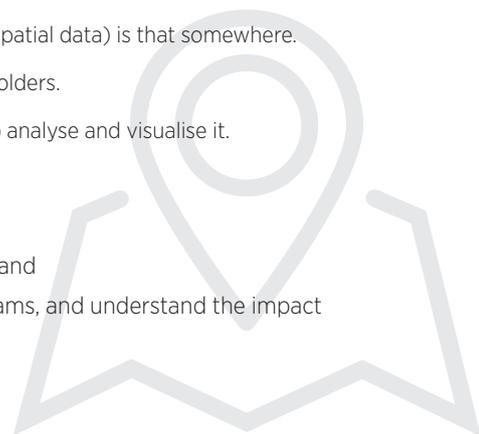
Key initiatives and activities

Increase awareness of the value of location data and location data support services

- Develop communications to raise awareness on what location data is and why it is important. We will also promote the analytical capabilities, tools and support available to help employees use location data.

Improved tools and capability to collect and use location data

- Promote best-practice approaches for collecting, managing and using location data. This includes no longer using postcodes as a key method our main method of identifying location.
- Work with data custodians to improve location elements in our data holdings. This includes better address validation and geocoding processes when collecting data.
- Scope and implement better geocoding and analysis tools in alignment with the department's *Digital Strategy 2021–23*.
- Scope and provide ongoing resources for specialist location data technical support, including mapping and analysing data.
- Provide training resources to employees for basic location data analysis, mapping and visualisation.
- Offer employees the chance to shadow our location analysis specialists. This will help build ongoing location data capability in the department.

Influence location data policy, practice and capability across government

- Participate in department and whole-of-government policy and capability location forums.
- Collaborate with other government agencies on location data analysis, mapping and visualisation.

Location data in practice

The devastating 2019–20 bushfires highlighted how we can use location data to make quick decisions and deliver better services.

At the height of the bushfire season, the Analysis and Insights Division linked a range of spatial, emergency, demographic and business datasets, including:

- Emergency Management Spatial Information Network Australia;
- Geoscience Australia's satellite burn fire scar and Discrete Global Grid System;
- Australian Business Register;
- Business Grants Hub data; and
- data from the Australian Bureau of Statistics.

By joining these datasets, we were able to quickly identify bushfire-affected areas, businesses and industries.

This helped us quickly develop and provide support, including a bushfire information hub and targeted business advice through the AusIndustry National Outreach Network.

Our blueprint for change

CURRENT STATE	MAJOR ACTIONS: 2021–2024	FUTURE STATE (2024 AND BEYOND)
■ 1 in 5 employees have undertaken foundational data capability training. ■ Many employees use data every day to meet our goals. They are supported by mature governance practices. ■ Executives support a data-driven culture, including through the Data Pledge. ■ Common understanding of data governance practices. ■ We store data securely and centrally. ■ Many ready-to-use data products are available for employees. ■ Data Analytics Framework guides best practice.	■ Implement 2020–21 Budget Measures, including the Modern Manufacturing Strategy and Data Management Energy, Emissions and Climate Change capability upgrades. ■ Offer more training and support (both online and face to face) to strengthen foundational data literacy and capability across the department. ■ Work towards data fluency, where employees use critical thinking to improve foundational data literacy skills across the department. ■ Better promote Data Policy Branch services (including self-service options) ensuring employees can access the right data at the right time. ■ Make the DataHub more accessible and user-friendly. ■ Enhance secure enterprise-grade data tools in alignment with the department's *Digital Strategy 2021–23*. ■ Improve the use of location data in our department. ■ Review data governance processes (including certification) to ensure employees can find their data faster and that it reflects strategic priorities. ■ Use more automation and accessible analytical tools in alignment with the department's *Digital Strategy 2021–23*.	■ All employees have established data capabilities. Employees can access data training and support for their specific needs. ■ We are data fluent – employees know how to use data and apply critical thinking to drive policy and program outcomes. ■ The right data can be found quickly and easily by anyone who needs it. ■ Employees understand what data they can use in their work. ■ We use advanced analytics and visualisation, including data science, across the department. ■ We use automation for efficient data cleaning and analytics. ■ Data is a business-as-usual activity and drives strategic decisions at all levels. ■ We have made measurable progress against the key areas of this data strategy.

Measuring our success

PRIORITY	MEASURE	OUTCOME FROM DATA STRATEGY 2018–2020	TARGET FOR DATA STRATEGY 2021–2024
1. Capability and Culture	**Self-reported data capability** – the percentage of employees who report strong confidence in using data to support their daily work	45%	55%
	Formal data training uptake – the proportion of DISER employees who completed one or more formal data training courses	21%	25%
	Formal data training effectiveness – proportional improvement in self-reported data capability following formal data training	100% (from 3.6 to 7.2 on a 10 point scale)	125%
	Awareness of importance of data – the percentage of employees who consider data to be important in their role	Not applicable under *Data Strategy 2018–2020*	New activity under *Data Strategy 2021-2024*
	Use of e-learning materials – views of Power BI training videos as a proportion of employees	17%	60%
	Power BI bootcamp – the number of times annually Power BI bootcamp training is offered	1	3
2. Governance	**Dataset quality assurance** – proportion of flagship datasets in Dataset Register that have been quality assured and incorporate comprehensive metadata	Not applicable under *Data Strategy 2018–2020*	New activity under *Data Strategy 2021–2024*
	Accessibility of internal data sources – the percentage of employees who know how to access internal data sources	59%	70%
	Capability to use external data sources – the percentage of employees who know how to access external data sources	77%	85%
	Confidence in internal data quality – the percentage of employees who agree that the internal data they access on a regular basis is of high quality	40%	50%
	Confidence in internal data collection – the percentage of employees who agree that the collection of data across the department is effective	62%	70%
	Leadership awareness of key data governance resources – the percentage of SES respondents who are aware of the Data Governance Framework and Dataset Register	15%	50%

PRIORITY	MEASURE	OUTCOME FROM DATA STRATEGY 2018–2020	TARGET FOR DATA STRATEGY 2021–2024
3. Analytics	**Use of analytical reporting platform** – proportion of employees who are active Power BI users	30%	35%
	Creation of analytical and visualisation contents – the total number of Power BI reports and apps created	1381 report and 100 apps	2000 reports and 150 apps
	Active participation in analytics communities – the total number of participants in Data Analytics Guild	122	160
	Self-reported team analytical capability – the percentage of employees who feel confident their work area has sufficient skills and resources to analyse data effectively	33%	40%
	Self-reported level of analytical maturity – proportion of employees who report their work area is undertaking predictive analysis	11%	20%
	Dataset automation - number of datasets where automation is built in to collation and/or analysis	Not applicable under *Data Strategy 2018–2020*	New activity under *Data Strategy 2021–2024*
4. Location-based insights	**Awareness of importance of location data** – the percentage of employees who consider location data to be important in their role	Not applicable under *Data Strategy 2018–2020*	New activity under *Data Strategy 2021–2024*
	Self-reported team location data capability – the percentage of employees who report their area has at least moderate capability to undertake location data analysis and visualisation	23%	30%
	Complex location data support – the total number of requests received annually from line areas for complex location data support provided by Data Policy Branch	40	50
	Location data tool availability – the percentage of employees who report they have the necessary tools to perform location data analysis activities relevant to their role	Not applicable under *Data Strategy 2018–2020*	New activity under *Data Strategy 2021–2024*
	Automated address validation and geocoding – the proportion of program and administrative areas reporting automated address validation and geocoding at the first point of data collection	Not applicable under *Data Strategy 2018–2020*	New activity under *Data Strategy 2021–2024*
	Specialist location resources – the number of ongoing specialist location resources	10	18

Notes:

1. Where possible, these measures are baselined against information collected in the *Data Strategy 2018–20* review report, Data Use and Capability Survey (2020), Division Head Survey (2020), APS census results and other relevant internal surveys and resources from across the department.

2. Baselines and targets for new measures will be established in the annual Data Use and Capability Survey (2021) and other relevant surveys and resources from across the department.

3. Where possible, performance will be measured at a Divisional level across the department.