Guidance for Reviewers of Data Management and Sharing Plans

Guidance Issued: September 2025

This guidance is effective for Office of Science proposals submitted after October 1, 2025

U.S. DEPARTMENT of ENERGY | Office of Science

Energy.gov/science

Data Management Guidance for Reviewers

- As a reviewer, you are asked to assess the Data Management and Sharing Plan (DMSP) as part of the merit review process for Office of Science (SC) research proposals
  - You are expected to determine if the DMSP has met the DOE requirements, plus any additional solicitation requirements, and provide constructive feedback the applicant

- Guiding questions provided to reviewers during the merit review may include:
  - To what extent does the DMSP enable data generated in the course of the research project to be publicly shared and preserved in a timely and fair manner that enables validation and replication of results?
  - *If the program topic does not require use of a specific data repository:* How well do the selected digital repositories enable appropriate sharing of scientific data?
  - *If applicable:* Does the DMSP address the specific requirements of the topic description?
  - Does the DMSP adequately justify any limitations of data sharing?
  - Are there any weaknesses in the DMSP that should be addressed prior to the start of the project?

Data Management and Sharing Requirements (1 of 3)

1. Validation and replication of results

The DMSP should describe how data generated in the course of the research project will be publicly shared and preserved in a timely and fair manner, without unnecessary limits or delays to access, that enables validation and replication of results. If data will not be publicly shared and preserved (see "Data sharing limitations"), the DMSP should describe how results could be validated and replicated.

2. Timely and fair access

The DMSP should provide a plan for making all scientific data displayed in peer-reviewed scholarly publications resulting from the proposed research open, machine-readable, and digitally accessible to the public at the time of publication. This includes data that are displayed in charts, figures, images, etc. In addition, the underlying digital scientific data used to generate peer-reviewed scholarly publications should be made freely available and publicly accessible at the time of publication, in accordance with the principles stated above. The published article should indicate how these data can be accessed. The DMSP should also provide a timeline for sharing digital scientific data produced under the DOE funded R&D effort not associated with peer-reviewed scholarly publications.

Data Management and Sharing Requirements (2 of 3)

3. Data repository selection

The DMSP should specify the use of digital repositories that align, to the extent practicable, with the National Science and Technology Council document entitled "Desirable Characteristics of Data Repositories for Federally Funded Research" *(see next slide)*. In general, DOE does not endorse or require sharing in any specific repository and encourages researchers to select the repository that is most appropriate for their data type and discipline, though individual sponsoring research offices may provide specific guidance or designate a specific repository.

4. Data management and sharing resources

The DMSP should describe the data management and sharing resources that may be available and used in the course of the proposed research. In particular, a DMSP that explicitly or implicitly commit data management and sharing resources at a facility beyond what is conventionally made available to approved users should be accompanied by written approval from that facility. In determining the resources available for data management and sharing at DOE scientific user facilities, researchers should consult the published description of data management resources and practices at that facility and reference it in the DMSP.

Desirable Characteristics of Data Repositories

- Guidance by the National Science and Technology Council (NSTC) Subcommittee on Open Science for federally funded research
  - Improves consistency in instructions to researchers about selecting data repositories
  - Helps ensure research data are findable, accessible, interoperable, and reusable (FAIR) to the greatest extent possible, while integrating privacy, security, and other protections

Organizational Infrastructure	Digital Object Management	Technology	Additional Considerations for Human Data
• Free and Easy Access • Clear Use Guidance • Risk Management • Retention Policy • Long-term Organizational Sustainability	• Unique Persistent Identifiers • Metadata • Curation and Quality Assurance • Broad and Measured Reuse • Common Format • Provenance	• Authentication • Long-term Technical Sustainability • Security and Integrity	• Fidelity to Consent • Security • Limited Use Compliant • Download Control • Request Review • Plan for Breach • Accountability

Desirable Characteristics of Data Repositories for Federally Funded Research, guidance by the NSTC Subcommittee on Open Science, published May 2022

Data Management and Sharing Requirements (3 of 3)

5. Data sharing limitations

The DMSP should address any limitations of data sharing to facilitate the protection of confidentiality, privacy, business confidential information, and/or security; avoid negative impact on intellectual property rights, innovation, program and operational improvements, and U.S. competitiveness; consider maximizing appropriate sharing through risk-mitigated limited access; preserve the balance between the relative value of long-term preservation and access and the associated cost and administrative burden; and otherwise be consistent with all applicable laws, regulations, and DOE orders and policies. Depending on the DOE funding agreement, a contractor or financial award recipient may have the right to assert copyright to or protect from public release for certain scientific data. When contractors or award recipients assert copyright of scientific data, the DMSP should address licensing requirements and any limitations for sharing the copyrighted data. When contractors or award recipients assert data protection, the scientific data will not be shared with the public during the data protection period.

Suggested Elements of a DMSP

- Provides applicants with a logical framework for developing a DMSP that is responsive to DOE requirements
- Elements may pertain to more than one DMSP requirement
- While there are valid reasons to limit data sharing, SC encourages maximal appropriate data sharing
  - Approaches to maximize sharing may include deidentifying data, providing tiered access to data, or releasing aggregated data
  - Alignment with best practices in a scientific domain is encouraged

Overview of Suggested Elements of a DMSP

Data types, sources, and standards

The type(s) of scientific data that will be used or generated, including size, formats, data standards, and key metadata

Related tools, software, and code

Any code, software, or specialized tools needed to make use of the data

Data access and reuse considerations

Target reuse cases and applicable factors that limit public sharing of the scientific data, with any opportunities to maximize appropriate sharing

Data security, preservation, and sharing

Plans and timelines for data security, preservation, and appropriate sharing, including repository selection and the use of persistent identifiers, such as Digital Object Identifiers (DOIs)

Oversight of data management and sharing

How the implementation of the DMSP scope for the relevant project will be monitored and managed

Reviewer Feedback Examples:
Connecting Suggested Elements to DMSP Requirements

- **Data types, sources, and standards:** [A]* The DMSP does not provide enough detail about the data that will be generated to understand how to best manage. [B] The applicant should consider incorporating data from repository X in their research. [C] The DMSP does not include the format in which the data will be saved. [D] The data format is not the open, standard format used by the community, consider format X instead. [E] The DMSP does not provide a timeline for releasing data not related to publications. *(DMSP Requirements 1, 2, & 3)*
- **Related tools, software, and code:** [A] The project could use DOE User Facility X's analysis software on-site to process data in addition to developing data analysis software that will be made available in software repository X. [B] Recommend the DMSP references assigning DOIs to software they develop. *(DMSP Requirements 1, 2, & 4)*

** Bracketed letters indicate separate examples*

Reviewer Feedback Examples:
Connecting Suggested Elements to DMSP Requirements

- **Data access and reuse considerations:** [A]* Though the data generated will include proprietary information, the DMSP does not address data protection mechanisms. [B] The applicant should consider adding their data to the community database, X, to enable reuse by others in the field. [C] The applicant should consider whether it would be a better use of resources to recreate the data with the shared software than share the raw data. *(DMSP Requirements 1, 2 & 5)*
- **Data security, preservation, and sharing:** [A] DMSP lacked detail about where the data will be stored or how it will be preserved. There is a discipline specific community repository X that could be used for data storage and preservation. [B] Recommend that DOIs be assigned to data produced so they can be referenced by the publication and help with validation and reuse. [C] DMSP discusses large amount of data that will be generated but does not detail if any or all of the data will be made publicly available for validation of research results. *(DMSP Requirements 1, 2 & 3)*

** Bracketed letters indicate separate examples*

Reviewer Feedback Examples:
Connecting Suggested Elements to DMSP Requirements

- **Oversight of data management and sharing:** [A]* DMSP discusses management of data prior to publishing associated journal articles, but should also address how data will be managed or made available for longer-term preservation. [B] DMP discusses data transfer from the user facility, but associated costs are not included in the proposal budget. *(DMSP Requirements 1, 2, 4 & 5)*

** Bracketed letters indicate separate examples*