# Department of Energy (DOE)

## Data types and sources

### The sections in the template outline are based on Suggested Elements of a DMP (see Links tab) provided by DOE, but DMPs are not required to follow this template. Consult the funding solicitation for guidance about when and how to submit a DMP. For the data types and sources suggested element, a brief, high-level description of the data to be generated or used through the course of the proposed research and which of these are considered digital research data necessary to validate the research findings may be included.

\*Requirement #1: DMPs should describe whether and how data generated in the course of the proposed research will be shared and preserved. If the plan is not to share and/or preserve certain data, then the plan must explain the basis of the decision (for example, cost/benefit considerations, other parameters of feasibility, scientific appropriateness, or limitations discussed in the Protection section). At a minimum, DMPs must describe how data sharing and preservation will enable validation of results, or how results could be validated if data are not shared or preserved.

Detailed instructions can be found on the [**DOE Policy for Digital Research Data Management**](http://www.energy.gov/datamanagement/) page.

Check with your specific office or program to see if there are [**Requirements and Guidance from DOE Sponsoring Offices**.](http://www.energy.gov/datamanagement/doe-policy-digital-research-data-management#Requirements%20and%20Guidance)

The term **digital data** encompasses a wide variety of information stored in digital form including: experimental, observational, and simulation data; codes, software and algorithms; text; numeric information; images; video; audio; and associated metadata. It also encompasses information in a variety of different forms including raw, processed, and analyzed data, published and archived data.

This statement focuses on **digital research data**, which are research data that can be stored digitally and accessed electronically. **Research data** are defined in regulation ([**2 CFR 200.315 (e)**](http://www.ecfr.gov/cgi-bin/text-idx?node=2:1.1.2.2.1.4.30.16&rgn=div8), continuing the definition from 2 CFR 215 ([**OMB Circular A-110**](http://www.whitehouse.gov/omb/circulars_a110#36)) as follows:

“Research data is defined as the recorded factual material commonly accepted in the scientific community as necessary to validate research findings, but not any of the following: preliminary analyses, drafts of scientific papers, plans for future research, peer reviews, or communications with colleagues. This 'recorded' material excludes physical objects (e.g., laboratory samples). Research data also do not include:

(A) Trade secrets, commercial information, materials necessary to be held confidential by a researcher until they are published, or similar information which is protected under law; and

(B) Personnel and medical information and similar information the disclosure of which would constitute a clearly unwarranted invasion of personal privacy, such as information that could be used to identify a particular person in a research study.”

## Content and format

### A statement of plans for data and metadata content and format including, where applicable, a description of documentation plans, annotation of relevant software, and the rationale for the selection of appropriate standards. (Existing, accepted community standards should be used where possible. Where community standards are missing or inadequate, the DMP could propose alternate strategies that facilitate sharing, and should advise the sponsoring program of any need to develop or generalize standards.)

DMPs should reflect relevant standards and community best practices for data and metadata, and make use of community accepted repositories whenever practicable.

## Sharing and preservation

### A description of the plans for data sharing and preservation.

\*Requirement #2: DMPs should provide a plan for making all research data displayed in 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 research data used to generate the displayed data should be made as accessible as possible to the public in accordance with the principles stated above. This requirement could be met by including the data as supplementary information to the published article, or through other means. The published article should indicate how these data can be accessed.

\*Requirement #3: DMPs should consult and reference available information about data management resources to be used in the course of the proposed research. In particular, DMPs that explicitly or implicitly commit data management 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 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 DMP.

The section on sharing and preservation should include, when appropriate:

* - the anticipated means for sharing and the rationale for any restrictions on who may access the data and under what conditions;
* - a timeline for sharing and preservation that addresses both the minimum length of time the data will be available and any anticipated delay to data access after research findings are published;
* - any special requirements for data sharing, for example, proprietary software needed to access or interpret data, applicable policies, provisions, and licenses for re-use and re-distribution, and for the production of derivatives, including guidance for how data and data products should be cited;
* - any resources and capabilities (equipment, connections, systems, software, expertise, etc.) requested in the research proposal that are needed to meet the stated goals for sharing and preservation. (This could reference the relevant section of the associated research proposal and budget request);
* - cost/benefit considerations to support whether/where the data will be preserved after direct project funding ends and any plans for the transfer of responsibilities for sharing and preservation;
* - whether, when, or under what conditions the management responsibility for the research data will be transferred to a third party (e.g. institutional, or community repository);
* - any other future decision points regarding the management of the research data including plans to reevaluate the costs and benefits of data sharing and preservation.

## Protection

### A statement of plans, where appropriate and necessary, to protect confidentiality, personal privacy, Personally Identifiable Information, and U.S. national, homeland, and economic security; recognize proprietary interests, business confidential information, and intellectual property rights; and avoid significant negative impact on innovation, and U.S. competitiveness.

\*Requirement #4: DMPs must protect confidentiality, personal privacy, Personally Identifiable Information, and U.S. national, homeland, and economic security; recognize proprietary interests, business confidential information, and intellectual property rights; avoid significant negative impact on innovation, and U.S. competitiveness; and otherwise be consistent with all applicable laws, regulations, and DOE orders and policies. There is no requirement to share proprietary data.

## Rationale

### A discussion of the rationale or justification for the proposed data management plan including, for example, the potential impact of the data within the immediate field and in other fields, and any broader societal impact.

\*Requirement #1: DMPs should describe whether and how data generated in the course of the proposed research will be shared and preserved. If the plan is not to share and/or preserve certain data, then the plan must explain the basis of the decision (for example, cost/benefit considerations, other parameters of feasibility, scientific appropriateness, or limitations discussed in the Protection section). At a minimum, DMPs must describe how data sharing and preservation will enable validation of results, or how results could be validated if data are not shared or preserved.

Principles related to the management of digital research data:

* - Effective data management has the potential to increase the pace of scientific discovery and promote more efficient and effective use of government funding and resources. Data management planning should be an integral part of research planning.
* - Sharing and preserving data are central to protecting the integrity of science by facilitating validation of results and to advancing science by broadening the value of research data to disciplines other than the originating one and to society at large. To the greatest extent and with the fewest constraints possible, and consistent with the requirements and other principles of this Statement, data sharing should make digital research data available to and useful for the scientific community, industry, and the public.
* - Not all data need to be shared or preserved. The costs and benefits of doing so should be considered in data management planning.

## Software & Codes

### For office and program specific guidance, refer to the Requirements and Guidance from DOE Sponsoring Offices webpage.

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