

Public Access Plan



U.S. Department of Energy
July 24, 2014

ENERGY.GOV

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Background

This document, the Public Access Plan (the Plan) for the Department of Energy (DOE or Department), including the National Nuclear Security Administration, presents the Department of Energy's plan for increasing access to the results of the research it supports in response to the February 22, 2013, Office of Science and Technology Policy (OSTP) Memorandum, "Increasing Access to the Results of Federally Funded Scientific Research."¹ This Plan outlines the Department's approach to implementing the objectives of the OSTP memorandum. Through policies and systems discussed in this Plan, scholarly publications and datasets resulting from research directly arising from DOE funding can become more readily accessible to the public, setting the stage for increased innovation, commercial opportunities, and accelerated scientific breakthroughs.

With regard to unclassified and otherwise unrestricted² research in scientific publications, the Department proposes a new policy and tool for providing access to peer-reviewed scholarly publications and associated metadata in which publishers retain their rights under copyright to the Version of Record (VoR). Both the policy and tool will be applied to scholarly publications resulting from unclassified and otherwise unrestricted research supported by the Department.

With regard to unclassified and otherwise unrestricted scientific data in digital formats, the Department proposes a set of principles and requirements to be adopted by all DOE offices supporting open research. Implementing strategies and timelines may differ across the Department depending on the specific communities supported and funding mechanisms used by each office.

Authority

This Plan was developed in response to OSTP's February 22, 2013, Memorandum, "Increasing Access to the Results of Federally Funded Scientific Research," and is consistent with DOE's current programs and policies for providing access to unclassified and otherwise unrestricted R&D results. These programs are based on existing DOE authorities, including but not limited to: the Atomic Energy Act of 1954, as amended, the America COMPETES Act of 2007, Department of Energy Acquisition Regulations and financial assistance regulations (48 CFR Chapter 9 and 10 CFR 600), and DOE Order 241.1B, Scientific and Technical Information Management.

¹ http://www.whitehouse.gov/sites/default/files/microsites/ostp/ostp_public_access_memo_2013.pdf

² In this document, "unclassified and otherwise unrestricted" refers generally to information that is identified as not exempt from disclosure under one or more of the exemptions to the Freedom of Information Act (FOIA), which includes Export Control, proprietary information, and National Security classified information.



Public Access to Scientific Publications

The Department proposes a model for ensuring public access to unclassified and otherwise unrestricted scholarly publications resulting from DOE funding that provides the public with access to the best available version of the article. The proposed model will enhance innovation and competitiveness for science- and research- driven businesses and other entities that drive the U.S. economy by increasing their access to the results of publicly-funded research. Under this proposal, the best version of the article is the VoR hosted by the publisher. In cases where this is not publicly accessible, the Department will provide access to accepted manuscripts in publicly accessible repositories. Specifically, DOE's Office of Scientific and Technical Information (OSTI) will maintain a repository of accepted manuscripts and can make individual, unclassified and otherwise unrestricted manuscripts publicly accessible if there is no other publicly available version.

The Department proposes to host, a portal and a search interface tool, the Public Access Gateway for Energy and Science (PAGES), to enhance the discoverability of unclassified and otherwise unrestricted scholarly publications resulting from DOE funding. PAGES will provide metadata and abstracts for such publications in a way that is open, readable, and available for bulk download. The PAGES metadata catalog will be included in the Department's Enterprise Data Inventory and Public Data Listing. PAGES will also link to the full text VoR hosted by the publisher when the article is available on the publisher's site openly and without charge. In instances where this is not the case, PAGES will link to a full-text version of the accepted manuscript twelve months from the article publication date and then link to the VoR when and if it becomes available. Metadata accompanying the accepted manuscript, e.g., author name, journal title, and digital object identifier (DOI) for the VoR, ensures that attribution to authors, journals, and original publishers will be maintained.

PAGES will ensure that the public can read, download, and analyze in digital form final peer-reviewed manuscripts or final published articles. The portal will facilitate analysis of peer-reviewed scholarly publications directly arising from research funded by DOE. By ensuring public access while leveraging the public access efforts of the publishing community and other stakeholders, PAGES will maximize the potential for creative reuse of federally funded R&D to enhance the value to all stakeholders; avoid unnecessary duplication of existing mechanisms; and maximize the impact of the Federal research investment.

Scope

This section applies to scholarly publications (i.e., final, peer-reviewed and accepted manuscripts or, for participating publishers, the corresponding published journal article) produced in whole or in part by Department of Energy federal employees, National Laboratory and other Management and Operating (M&O) contractor employees, financial assistance awardees, other grantees, and other contractor entities where the publication describes unclassified and otherwise unrestricted research findings produced with complete or partial DOE funding, unless otherwise prohibited by law, regulation, or policy.



Requirements

All researchers receiving DOE funding will be required to submit metadata and a link to the full-text accepted manuscript (or the full text itself) to OSTI. Publishers who participate in DOE's public access activity will submit article metadata and links to OSTI. Classified or protected data and research will not be made publicly available.

Applicability

These requirements will apply for all publications of research results arising from complete or partial DOE funding, unless otherwise prohibited by law, regulation, or policy.

This Plan is subject to law; agency mission; resource constraints; U.S. national, homeland, and economic security; and the objectives detailed in the OSTP Memo: "Increasing Access to the Results of Federally Funded Scientific Research." Classified or protected data and research will not be made publicly available.

Roles and Responsibilities

DOE is responsible for communicating its public access requirements to all funding recipients including contractors and financial assistance awardees. In particular, DOE will ensure that the terms and conditions of research contracts and awards will contain the appropriate requirements for public access.

DOE-funded authors will be responsible for providing accepted manuscript links and metadata to OSTI.

DOE's OSTI is responsible for operating and maintaining DOE's public access system and network. The submission of accepted manuscripts and publication metadata to DOE will be a condition of funding. The Department will ensure compliance through mechanisms already in place for collecting research deliverables.

Publishers that voluntarily participate in DOE's public access program will provide to OSTI article links and metadata for articles resulting from DOE funding.

Planning

Since 1947, OSTI has made R&D findings available to DOE researchers and the public. OSTI has a well-developed program to identify certain types of scientific and technical information (STI) produced through DOE funding, such as technical reports, patents, and preprints, and to provide access to this STI through a number of search tools. Current DOE-funded authors are familiar with submission processes for these forms of STI; extending this program to authors' accepted manuscripts is an incremental step.

During the past several years, OSTI has worked with major publishers to identify DOE-affiliated articles and to share metadata. In particular, in March 2012, DOE and other funding bodies joined publishers and CrossRef³, an independent association of publishers, in a project called FundRef⁴, which, when fully

³ <http://www.crossref.org/>

⁴ <http://www.crossref.org/fundref/>



functional, will provide a standard metadata element to identify agency funding sources for published articles.

Implementation

The Department proposes to host a portal, PAGES, which will provide metadata and abstracts for publications resulting from DOE funding. In cases where the publisher's VoR is publicly available, PAGES will direct the user to this VoR with a direct link to the publisher's website. In cases where the publisher does not provide public access, PAGES will direct the reader to the accepted manuscript hosted in an institutional repository (e.g. at a national laboratory or grantee institution) with a link provided by the author. In cases where the full text is not publicly accessible through publisher or institutional repositories, OSTI will host the accepted manuscript, submitted by the author, available through PAGES.

To ensure long-term preservation and access, all DOE-funded authors will be required to submit accepted manuscript metadata to OSTI along with a document or link to a publicly accessible, full text version of the accepted manuscript available on an institutional repository. The metadata will include a DOI for the VoR.

During an "administrative interval" of up to twelve months, PAGES will not provide access to full-text manuscripts. During this time, metadata including links to the publishers' VoR will be discoverable through the PAGES search interface and via PAGES application programming interfaces (APIs). After one year, PAGES will link to a full text version of the accepted manuscript and then link to the publisher's VoR when and if it becomes available. Publishers retain their rights under copyright to their VoR. The metadata contained in PAGES will be in the public domain and available for unlimited use and downloading, and will be made available via API. Classified or protected data and research will not be made publicly available.

PAGES will automatically reconcile DOIs submitted by DOE authors and by publishers to determine whether the VoR is accessible by the end of the administrative interval. In cases where the VoR is not accessible, PAGES will display a link to the accepted manuscript.

In all cases, OSTI will maintain a dark archive of manuscripts to be used in the event links become broken or full-text access is otherwise interrupted or discontinued. This dark archive will be part of the Department's Enterprise Data Inventory.

PAGES will provide APIs to allow third parties to easily access metadata and links. The links will continue to resolve to the full text, which reside in distributed repositories. In terms of interoperability, PAGES will make metadata citations available in widely used formats such as MLA, APA, Chicago, and Bibtex.

Additionally, PAGES will support export of metadata citations to EndNote, Excel, and CSV. PAGES will also support machine-to-machine transfer of bibliographic citations, via APIs.



The distributed nature of PAGES' full-text content inherently makes unauthorized mass downloading and redistribution more difficult. For the limited full-text content it hosts publicly, OSTI will enforce a download limit and post appropriate fair use policies.

PAGES will comply with existing regulations and OSTP and OMB guidance. In terms of full-text interoperability, nonproprietary formats, such as PDF/A, will be the norm, which will allow for broader text mining capabilities while recognizing other controls that will be in place to prevent mass redistribution. Common metadata formats and nonproprietary full-text formats serve to promote interoperability and long-term preservation. In addition, with an existing major government STI web presence, OSTI uses a suite of tools and techniques to enable compliance with Section 508 of the Rehabilitation Act (29 U.S.C. 794d).

Individual content holders—publishers for articles and laboratories or institutions for manuscripts—will be monitored to ensure compliance with full-text interoperability standards, download capabilities, and 508 compliance. On a daily basis, DOE will perform random sampling of PAGES content to monitor individual content holders for compliance with applicable standards. In cases where externally held content does not meet these standards, DOE will instead link to corresponding content held in its dark archive of accepted manuscripts.

DOE will provide a mechanism as part of PAGES for accepting input and petitioning for changes to the administrative interval. For example, users are encouraged to access the DOE PAGES Feedback page, which provides multiple channels for this input, including email, phone, and mailing address. With respect to petitions for changing the administrative interval, such petitions should be evidence-based, that is, factually- and statistically-based evidence that a change in DOE's administrative interval will more effectively promote the quality and sustainability of scholarly publications while meeting the objectives of public access. In considering such evidence, DOE will work with other federal science agencies to promote consistent implementation of administrative intervals for specific scientific fields.

Metrics, compliance, and evaluation

FundRef, a publisher-agency collaboration to add funding agency identifiers to manuscript/article metadata, will facilitate the tracking of publications resulting from DOE funding and therefore assist DOE in assessing and addressing any gaps in the PAGES repository. While FundRef matures, OSTI will use various citation sources, mining "acknowledgement" and "affiliation" fields, to identify any gaps in PAGES metadata submissions. At full maturity, FundRef will be the primary tool for identifying the full universe of accepted manuscripts that PAGES should contain for a given year. Comparison of this figure to actual receipts in PAGES will identify specific gaps. OSTI will then work with STI managers at labs and with procurement officials for grants to acquire any missing manuscript links and metadata. Similarly, for the participating publishers in the Clearinghouse for Open Research of the United States (CHORUS), the FundRef tool will serve to identify any articles not properly represented and available through PAGES.

The PAGES tool and associated policies, including the choice of file format, will be reviewed periodically to ensure cost effectiveness and optimal support to public access objectives.



Public consultation experience

The PAGES concept and demonstrations of the PAGES prototype have been shared with a broad cross section of stakeholders internal and external to DOE including briefings and demonstrations of PAGES to key officials in most federal science agencies. Stakeholders include Federally-funded researchers and universities, libraries, publishers, users of Federally-funded research results, and civil society groups. Going forward, DOE will continue to solicit the views and input of stakeholders and will use multiple channels for such feedback, including e-mail, phone, and mailing addresses on the PAGES website. DOE will take stakeholder feedback into account, through various channels including a PAGES user focus group, in revising and improving its public access model.

Public notice

The requirements in the Plan are consistent with existing Departmental policies and regulations; accordingly, no additional public notice is necessary.

Update and re-evaluation of the Plan

DOE's public access plan will be reviewed and revised as part of the periodic reporting requirements to OSTP and OMB. Principally, the Plan will be a tool for documenting and communicating the ongoing improvement and evolution of public access in DOE.

Timeline for implementation

Beginning in August 2014, DOE will implement a publicly accessible "beta" version of PAGES for demonstration and socialization purposes within its DOE-funded author communities. During this projected 12-month test period, DOE will communicate and socialize author submission requirements, which are incremental enhancements of existing requirements to submit other forms of STI. During this transition, users with questions, comments, or suggestions will be encouraged to access the DOE PAGES Feedback page, which provides multiple channels for input, including email, phone and mailing address. Starting October 1, 2014, the Department will begin to include requirements for the submission of accepted manuscripts and publication metadata in award agreements.

Resources

DOE will use existing OSTI and other DOE resources to implement this plan. OSTI has redirected resources by streamlining and consolidating a number of information products. This Plan proposes only incremental changes to existing mechanisms and tools for collecting and providing access to unclassified and otherwise unrestricted scientific and technical information. The publishing community is developing a multi-publisher portal, the Clearinghouse for Open Research of the United States (CHORUS), to provide access to journal articles resulting from government funding. Such an activity offers considerable economies in the integration of article metadata and links for publishers who want to participate in DOE's public access efforts. PAGES, however, can operate successfully independent of CHORUS.



Public Access to Scientific Data in Digital Formats

The Department affirms that the following principles for the management of digital research data support its mission and align with the objectives of the OSTP memo.

- 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, with the fewest constraints possible, and consistent with the requirements and other principles stated in this document, 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.

The Department is taking a phased approach to the implementation of requirements set forth by the OSTP memo. In particular, the Office of Science, which supports roughly two-thirds of the total R&D for the Department, plans to pilot a data management policy with the requirements described below by July 28, 2014. Other DOE Offices and elements with over \$100 million in annual conduct of research and development expenditures will implement data management plan requirements that satisfy the requirements of the OSTP memo no later than October 1, 2015 in such a way that there is a single DOE policy for data management planning.

The result will be a Department-wide policy. Should it be necessary, additional supplementary guidance and requirements addressing specific needs would be issued by each Office or element and coordinated centrally.

Scope

This section applies to unclassified and otherwise unrestricted digital research data (i.e. digital data required to validate research findings⁵) produced in whole or in part by Department of Energy federal employees, National Laboratory and other Management and Operating (M&O) contractor employees, financial assistance awardees, other grantees, and other contractor entities where the data are produced with complete or partial DOE funding, unless otherwise prohibited by law, regulation, or policy.

Requirements and Applicability

To integrate data management planning into the overall research plan, the Department will ensure that all research proposals selected for funding include a Data Management Plan (DMP).

⁵ See OMB Circular A-110 for a definition of “Research Data” (http://www.whitehouse.gov/omb/circulars_a110)



DMPs should describe whether and how data generated in the course of the proposed research will be shared and preserved and, at a minimum, describe how data sharing and preservation will enable validation of results, or how results could be validated if data are not shared or preserved.

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. The published article should indicate how these data can be accessed. Individual research offices will encourage researchers to deposit data in existing community or institutional repositories or to submit these data to the article publisher as supplemental information.

DMPs should consult and reference available information about data management resources to be used in the course of the proposed research.

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.

The merits of the DMPs will be evaluated. This evaluation will take into account the relative values of long-term preservation and access and the associated cost and administrative burden. Additional requirements and review criteria for the DMP may be identified by the sponsoring Office, program, sub-program, or in the solicitation.

In instances where the Department intends to collect digital data resulting from the supported research, additional requirements for data management may be necessary to ensure the Department meets the requirements of the Open Data Policy⁶. For elements of the Department for which the collection of researcher data is not already practiced, DOE will consult with its research communities through public forums such as Federal Advisory Committee Meetings and public announcements to identify which research data are appropriate for the DOE to collect or otherwise include in the public listing of agency data required by the Open Data Policy, and suitable mechanisms for doing so.

The Office of Energy Efficiency and Renewable Energy (EERE) will include detailed requirements to ensure specific research data are submitted to the Open Energy Information Platform (OpenEI), a centralized and secure resource for publicly accessible energy data managed by the National Renewable

⁶ “Open Data Policy—Managing Information as an Asset” (M-13-13) (<http://www.whitehouse.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf>) accompanying Executive Order “Making Open and Machine Readable the New Default for Government Information” (<http://www.whitehouse.gov/the-press-office/2013/05/09/executive-order-making-open-and-machine-readable-new-default-government->)

Energy Laboratory (NREL). All publicly accessible data on OpenEI will be integrated into the Department of Energy's Enterprise Data Inventory and its Public Data Listing, which can be found on energy.gov/data. The Public Data Listing is a machine readable file that is routinely harvested and populates the main data catalog at data.gov. This Data Listing is expected to be part of the comprehensive public listing of agency data that is required by the 2013 May 9 Executive Order and OMB Memorandum M-13-13. This integration will include use of the Project Open Data metadata schema to describe each dataset supporting broader use and understanding of information in private or non-profit sectors. Limited restricted data may be deposited in OpenEI for more appropriate sharing with the option of making these data publicly available once the associated research findings have been published or any sensitive data are released from moratorium. Finally, EERE will provide guidance about data management best practices in the form of a high level template DMP to include direction on leveraging subject matter specific repositories such as BioEnergy Knowledge Discovery Framework (KDF) and the National Geothermal Data System (NGDS).

Roles and Responsibilities

The Department is responsible for including the Requirements into all solicitations and invitations for research funding and ensuring that the DMPs are appropriately reviewed through, for example, additional review questions specific to the DMP.

The Department's Office of Scientific and Technical Information (OSTI) can provide digital object identifiers (DOIs) to data sets resulting from DOE-funded research. To improve the discoverability of and attribution for datasets created and used in the course of the research, DOE encourages the citation and identification of datasets with persistent identifiers such as DOIs.

Researchers should propose DMPs that reflect relevant standards and community best practices for data and metadata, and make use of community accepted repositories and publicly accessible databases whenever practicable.

Researchers submitting proposals for research funding to the Department are responsible for proposing appropriate DMPs, and adhering to the final, agreed DMP as part of the overall research activity.

Members of the research community serving as reviewers of research proposals are responsible for reviewing the DMP as part of those proposals.

The Department is responsible for initiating activities to review the effectiveness of the requirements, including compliance with DMPs, and making any improvements to the existing requirements and accompanying documentation.

The Department, with input from the research communities, private and public sectors, is responsible for long range planning for investments in data infrastructure and research including considerations for enhanced data discovery tools and data commons.



Implementation

The Department will include its requirements in all Funding Opportunity Announcements (FOAs) and Laboratory Announcements and other invitations for research funding. Direct and indirect costs associated with the DMP may be included in the proposed budget. Proposals submitted without a DMP may be rejected without further review.

The DMP, as an integral part of any research proposal selected, will be appropriately reviewed. Similar review processes will be used when evaluating DOE laboratory research activities as a part of the well-established periodic performance reviews.

Program Managers will be instructed to consider and comment on the DMP in selection statements for funding.

The development of knowledge and skills necessary for effective management, analysis, storage, preservation, and stewardship of scientific data are integrally tied to the training and education of students and professionals within the scientific and technical disciplines in which the scientific data are being produced. The Department supports ongoing efforts within its research programs to train undergraduates, graduate students, and postdocs in the scientific and technical areas aligned with the Department's mission areas and the best practices in scientific data management and analysis as part of those efforts. In addition, the Department supports training programs, such as targeted research opportunities for undergraduate and graduate students at the DOE national laboratories, which include research in areas of data-intensive science. DOE coordinates its workforce development and training activities with other agency partners through interagency working groups such as the National Science and Technology Council's Committee on STEM Education (CoSTEM) and the Networking and Information Technology Research and Development program (NITRD), and with industry and the public through activities of the DOE Federal Advisory Committees.

DOE currently supports a number of publicly accessible repositories of research data and, with input from public, private, and academic stakeholders, is active in developing new repositories to meet mission goals. This practice will continue as resources are developed for data sharing and preservation. DOE leads by example through its broad support of increased open access to publicly accessible energy data as fuel for innovation. Through the increased use of machine-readable and open formats, strong data interoperability standards, appropriate use of open licenses and use of common core and extensible metadata, DOE will work to improve access to all publicly accessible energy data across private and public sectors. DOE will continue to use public private partnerships as needed to enhance the usability of and access to energy data.

Metrics, Compliance, and Evaluation

Metrics and Evaluation: It is envisioned that the long-term needs for data sharing will be assessed by individual Offices or programs beginning about three years after the policy goes into effect to allow time for the completion of research activities with associated DMPs. This will provide a venue for evaluating the impact of the DMP requirements on data sharing and preservation practices of the various research communities.



Compliance: The DMP is part of the overall research proposal and, as such, it is expected that researchers will follow, to the best of their ability, the proposed research and associated data management plan. Failure to do so will negatively influence future funding opportunities. Furthermore, current oversight of grants and other financial assistance allows for withholding or adjustment of funds at the end of each performance period. Further input from the research communities will be solicited through Federal Advisory Committees and during workshops sponsored by the agency to assess the impact of the proposed DMP requirements and ensure compliance with agreed DMPs.

Public Consultation

In early 2012, OSTP published the responses to its Requests for Information on Public Access to Digital Data and Public Access to Publications. The Department has taken these responses into account in formulating the policies and plans stated here.

In May, 2013, the Department participated as observers in the “Meetings on Public Access to the Results of Federally Funded Research”—a public forum hosted by the National Academies on behalf of a consortium of agencies including DOE.

The requirements stated here have been vetted by the Federal Advisory Committees of each of the six Office of Science research programs through a series of presentations and charges for input.

Further input from the research communities will be solicited through Federal Advisory Committees and during workshops sponsored by the agency to assess the impact of the proposed DMP requirements and ensure compliance with agreed DMPs.

Public Notice

These requirements are consistent with existing Departmental policies and regulations; accordingly, no additional public notice is required.

Update and Re-evaluation of the Plan

The Offices of Science will pilot the Data Management Plan requirements for the Department in FY 2015. Based on this experience, the Requirements and other guidance may be adjusted for FY 2016.

Guidance for what to include in a DMP will be reviewed annually in consultation with other agency partners.

Timeline for Implementation

The Office of Science intends to publish its data management plan requirements on July 28, 2014. Starting October 1, 2014, the Requirements will be included in all invitations and solicitation for research funding issued by the Office of Science.

Other DOE Offices and elements will implement data management plan requirements no later than October 1, 2015. The result will be a Department-wide policy. Should it be necessary, additional supplementary guidance and requirements addressing specific needs would be issued by each Office or element and coordinated centrally.



Resources

Incremental funding for data management will be supported through existing research budgets.

