

Project Justification Statement

Proposed Revision to:

DOE Handbook 1092-2013, Electrical Safety

1. Organization Name/Code.

Office of Worker Safety and Health Policy, AU-11

2. Author's Name (Contact Information: Phone, E-mail).

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3. Senior Line Manager (First SES-level manager above the author).

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Acting Director, AU-11 date

4. How will this new or proposed revision to the DOE Technical Standard support DOE?

The proposed revision is consistent with the procedures provided in DOE O 252.1A *Technical Standards Program*. Specifically, DOE-TSPP-9 *Technical Standards Program Topical Committees* indicates that the 5 year review is due for DOE Handbook 1092, Electrical Safety (DOE-HDBK-1092) which was last updated in 2013. Furthermore, DOE-TSPP-9 outlines the actions to be taken during periodic document review. AU-11's document review identified several areas of DOE-HDBK-1092 that need to be updated and corrected to be consistent with newer electrical safety requirements and practices. The proposed revision will remove content that is adequately covered by the current *National Electric Code (NEC)* and *NFPA 70E: Handbook for Electrical Safety in the Workplace*. Instead the reader will be directed to the applicable sections of NEC and NFPA 70E, which are the available Voluntary Consensus Standards (VCS), by reference.

The proposed revision is supported by the Energy Facilities Contractors Group, Electrical Safety Task Group. Members include electrical safety subject matter experts (SME) from across the DOE complex. The DOE-HDBK-1092 is used by electrical safety SMEs at their DOE sites. The Handbook serves as a resource for information on areas of electrical safety that are unique to DOE and are not adequately covered in the NEC or NFPA 70E. These unique areas of electrical safety specific to DOE's facilities include the safety topics of: capacitors, inductors, alternate energy sources, radio frequency sources, sub radiofrequency sources, lithium ion batteries, large battery banks, impulse batteries, high power lasers, all classes of accelerators, induction furnaces, x-ray generating devices, electrical equipment in unique environments (e.g., glove boxes), impulse generators, flux compression generators and electrical equipment in explosives environments.

The proposed revision to DOE-HDBK-1092 is necessary to provide implementation information that is up-to-date with the requirements of 10 CFR 851 *Worker Safety and*

Health Program that in January 2017 incorporated the 2015 NFPA 70E. The current version of DOE-HDBK-1092 is based on 2012 NFPA 70E. The explanatory material for the application of the NEC and NFPA 70E will also be updated. In addition, 2015 NFPA 70E introduced the concept of risk assessment for managing electrical hazards. This new concept, as well as the development and application of the risk assessment as it applies to DOE, will be included in the revision.

The revised DOE-HDBK-1092 will provide crucial explanations on the legal aspects of the Authority Having Jurisdiction function and how it is used to facilitate electrical work that is not addressed in available VCSs.

In addition, the electrical safety program guidance that is currently in Appendices (Appendices A, C, D and F) of DOE-HDBK-1092 will be moved into the body.

5. After conducting a search for Voluntary Consensus Standards (VCS) what possible standards were considered for use in lieu of developing or revising the subject DOE Technical Standard?

In preparation for the proposed revision to DOE-HDBK-1092, a thorough search of existing VCS was conducted. The search engines used for this research included Google and Yahoo. The specific sites sourced included those hosted by: IEEE (Institute of Electrical and Electronic Engineers; NFPA (National Fire Protection Association); ISA (International Society of Automation); and NEMA (National Electrical Manufacturers Association. The applicable elements of NEC and NFPA 70E will be referenced, rather than reproduced, in the revision. Furthermore, the search revealed no consensus standards for electrical design or safe work practices applicable to DOE's unique Research and Development (R&D) laboratories. NFPA 70E Article 350, *Safety-Related Work Requirements: Research and Development Laboratories*, was added in 2009, and enhanced in 2018. The language contained in Article 350 allows for R&D laboratories to have a program to cover their unique hazards; however, the Article does not provide details outlining what should be included in that program. The DOE-HDBK-1092 would bridge the gap by providing the only source for electrical safety design and safe work practices at DOE's R&D laboratories including direct current DC capacitors and inductors, and equipment such as specialized laser and capacitor banks, etc. In summary, AU-11's research showed there are no VCSs or other sources for safe electrical design and work practices applicable to DOE's R&D laboratories.

6. Provide reasoning for not using potentially applicable Voluntary Consensus Standards.

The content of the revised DOE-HDBK-1092 will focus on areas unique to DOE and not covered by NEC and NFPA 70E, which are the most relevant VCSs. The revised DOE-HDBK-1092 is necessary for electrical safety in DOE's R&D laboratories and other applications unique to DOE, such as electrical equipment used for explosives work.

7. Will this new or proposed revision to the DOE Technical Standard have an impact on any DOE Directives or a Rule? If so, please list the impacted Directive(s) or Rule(s).

DOE-HDBK-1092 is not invoked by any other DOE Directive or Rule.

8. Provide reasoning for selecting document type (DOE Standard, DOE Handbook, and DOE Specification). Please refer to DOE O 252.1A, *Technical Standards Program*, Appendix A, Technical Standard Document Types. Note: DOE Handbooks must not include requirements statements (“shall” statements).

The content of DOE-HDBK-1092 best matches the definition of DOE Handbook as provided in DOE O 252.1A, Appendix A:

DOE HANDBOOKS.

- a. Provide a compilation of good practices, lessons-learned, or reference information that serve as resources on specific topics.
 - b. Provide general, textbook-type information on a variety of subjects.
9. Provide target development milestones:
 - a. Planned Start (3 /2018) – Start developing draft
 - b. Planned Coordination (10/2018) – Submit for TSP RevCom Review
 - c. Planned Completion (12/2018) – Approval and Issuance