5.1 Approximate number of people expected to be actively involved in the development of this project: 35

5.2 Scope: This guide identifies and discusses design procedures to provide direct stroke shielding of outdoor distribution, transmission, and generating plant substations. Known methods of shielding from direct strokes were investigated during the preparation of this guide, and information is provided on two methods found to be widely used:

a) The classical empirical method
b) The electrogeometric model

A third approach, which involves the use of non-conventional lightning terminals and related design methods is also reviewed. This guide does not purport to include all shielding methods that may have been developed. The guide also does not address protection from surges entering a substation over power or communication lines or the personnel safety issues. Users of this guide should thoroughly acquaint themselves with all factors that relate to the design of a particular installation and use good engineering judgment in the application of the methods given here, particularly with respect to the importance and value of the equipment being protected.

5.3 Is the completion of this standard dependent upon the completion of another standard: No

Changes in purpose: Direct strokes from lightning may damage substation equipment and bus work. To protect equipment, substation engineers can install direct stroke lightning shielding. This guide is intended to provide design engineers with information pertaining to the interception of damaging direct lightning strokes to outdoor substations. This guide includes methods that have been utilized for decades as well as some that have been developed more recently. The general nature of lightning is...
discussed, and the problems associated with providing shielding from direct strokes are described. Tables, formulas, and examples are provided to calculate whether substation equipment is effectively shielded from direct lightning strokes. Because of the unpredictability of lightning and the costs associated with damage from direct lightning strokes, research into lightning phenomenon is ongoing. This guide includes descriptions of four non-conventional modeling methods for lightning interception, as well as a review of active lightning terminals. The four non-conventional methods are in various stages of development and are presented as a sample of the continuing research in direct lightning stroke shielding. These methods have potential to be used as design models for substation direct lightning stroke shielding. A bibliography for further study is included to provide the substation shielding engineer with additional lightning research.

5.5 Need for the Project: This revision will add new material and update existing material in the guide to present day technology and research.

5.6 Stakeholders for the Standard: Electrical utilities

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<th>Intellectual Property</th>
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<tr>
<td>6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: No</td>
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<tr>
<td>6.1.b. Is the Sponsor aware of possible registration activity related to this project?: No</td>
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7.1 Are there other standards or projects with a similar scope?: No

7.2 Joint Development

| Is the intent to develop this document jointly with another organization?: No |

8.1 Additional Explanatory Notes (Item Number and Explanation): A finding of a procedural appeal hearing in August, 2011 found in favor of a plaintiff. One of several options offered by the Appeal Panel was to modify the Purpose statement.