

Draft American National Standard

IEEE Trial-Use Standard Definitions for Use in Reporting Electric Generating Unit Reliability, Availability, and Productivity

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Draft American National Standard
IEEE Trial-Use Standard
Definitions for Use in Reporting
Electric Generating Unit Reliability,
Availability, and Productivity

Sponsor
Power System Engineering Committee
of the
IEEE Power Engineering Society

Draft American National Standard

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Foreword

(This Foreword is not a part of ANSI/IEEE Std 762, Draft American National Standard IEEE Trial-Use Standard Definitions for Use in Reporting Electric Generating Unit Reliability, Availability, and Productivity.)

Measures of generating unit performance have been defined, recorded, and utilized by the electric power industry for over 40 years. Initially only a few terms such as forced outage rate and scheduled outage rate were needed. The increased focus on generating unit performance in recent years has caused regulatory agencies and the industry to place a greater emphasis on performance measures.

These contemporary constraints have amplified the difficulties that evolved from having generating unit statistics compiled by different organizations to meet their own specific needs. These difficulties in the past have included the interpretation of data within a given system by an outside agency and the correlation of data among the various systems.

The current problems have made clear the need for a standard to overcome these difficulties by providing terminology and indexes for use in existing data systems or in future systems. This standard is directed toward allowing for a meaningful exchange of electric generating unit performance data while attempting to retain as much of existing systems as possible.

No attempt is made here to standardize or to recommend methodologies or procedures for the collection of unit performance data. Furthermore, no attempt is made here to address the special requirements of electric generating units limited by fuel supplies, resources such as water (hydro), or environmental restrictions. It is expected that the methods used will continue to vary from system to system according to individual needs. What is attempted is to specify certain common terms and indexes which must be obtainable from each data base to provide for a basis of information exchange.

The Task Force has attempted to keep the list of terms and indexes as brief as possible. Performance cannot be measured by a single parameter, and several indexes are required to indicate the ability of a generating unit to produce power when called upon. The use of any single index to measure the performance of a unit or a class of units is misleading. This requirement has necessitated the inclusion of all of the terms and indexes as given here.

Some indexes are based on period hours. By use of such a common base, simple additive relationships between various indexes result, and the use of period hours gives sets of indexes that sum to 100%, as described in Appendix D. Other indexes are not based on period hours. For example, in the statistic FOR (see 6.12), $(SH + FOH)$ is used as a base because FOR is intended to estimate the probability of unplanned outage (Classes 1, 2, and 3) in the interval between planned outages. For other than base load service, further modifications are needed to estimate this probability correctly.¹ Because of the current state of power system reliability models, it is not yet practical to standardize the indexes needed for use in system studies.

It should be noted that even the use of all the indexes and terms cannot identify the underlying and sometimes compelling reasons for lost performance.

This trial use standard was prepared by the Power Plant Productivity Definitions Task Force of the Applications of Probability Methods Subcommittee of the Power System Engineering Committee. When this standard was approved the members of the working group were:

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¹A Four-State Model for Estimation of Outage Risk for Units in Peaking Service. IEEE Task Group on Models for Peaking Service Units, *IEEE Transactions*, vol PAS-91, 1972, pp 618-627.

†The task force wishes to dedicate this work in the memory of Veazey M. Cook, a pioneer in the application of generating unit outage data in system planning studies. The format and many of the terms used in this standard can be traced to Veazey Cook's work.

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