BUREAU OF INDIAN STANDARDS
DRAFT FOR COMMENTS ONLY

(Not to be reproduced without the permission of BIS or used as a standard)

Draft Indian Standard

Renewable Energy Power Forecasting Technology

(ICS 29.020)

Grid Integration of Renewables Sectional Committee, ETD 46	Last date for comments- 16-08-2025

NATIONAL FOREWORD

This draft Indian Standard which is Identical to IEC TR 63043: 2020 'Renewable energy power forecasting technology' issued by the International Electrotechnical Commission (IEC) is proposed to be adopted by the Bureau of Indian Standards on the recommendation of the Grid Integration of Renewables Sectional Committee and approval of the Electrotechnical Division Council.

The text of the IEC Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appears referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker, while in Indian Standards the current practice is to use a point (.) as the decimal marker.

The technical committee has reviewed the provision of the following International Standard referred in this adopted standard and has decided that it is acceptable for use in conjunction with this standard:

International Standard	*Title*
IEC 61400-12-2	Wind turbines – Part 12-2: Power performance of electricity-producing wind turbines based on nacelle anemometry

Only English language text has been retained while adopting it in this Indian Standard, and as such the page numbers given here are not the same as in the International Standard.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test, shall be rounded off in

accordance with IS 2: 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

NOTE — The technical content of their document has not been enclosed as there are identical with the corresponding IEC standards for details, please refer the corresponding IEC TR 63043: 2020 or kindly contact:

Head
Electrotechnical Department
Bureau of Indian Standards
9, Bahadur Shah Zafar Marg,
New Delhi-110002
Email: eetd@bis.gov.in
Telephone: 011-23231192 / 8284

INTRODUCTION

The purpose of this Technical Report (TR) is to describe common practices and the state of the art for renewable energy power forecasting, which includes general data requirements, methods for renewable energy power forecasting and forecast error evaluation. Various stakeholders, including transmission system operators, transmission system owners, utilities, renewable energy generation plant developers, academic units, research institutions, certifying bodies and standardization groups, require a common understanding of renewable energy power forecasting methods, data and evaluation techniques so they can incorporate them in their operations. Renewable energy power forecasting finds a broad application in many areas of electrical engineering related to design, analysis, market trading, and optimization of the power system. Among others, forecasting could be as an input to the operation and management of the renewable energy generation plants and can improve the economic efficiency and reliability of the power system. Renewable energy power forecasting is increasingly important in multi-stakeholder systems where renewable plant manufacturers, renewable energy generation plant developers and operators, as well as the power system operators, need to have a common understanding about the capabilities and methods associated with renewable energy power forecasting.

SCOPE

This Technical Report, which is informative in its nature, describes common practices and state of the art for renewable energy power forecasting technology, including general data demands, renewable energy power forecasting methods and forecasting error evaluation.

For the purposes of this document, renewable energy refers to variable renewable energy, which mainly comprises wind power and photovoltaic (PV) power – these are the focus of the document. Other variable renewable energies, like concentrating solar power, wave power and tidal power, etc., are not presented in this document, since their capacity is small, while hydro power forecasting is a significantly different field, and so not covered here. The objects of renewable energy power forecasting can be wind turbines, or a wind farm, or a region with lots of wind farms (respectively PV systems, PV power stations and regions with high PV penetration). This document focuses on providing technical guidance concerning forecasting technologies of multiple spatial and temporal scales, probabilistic forecasting, and ramp event forecasting for wind power and PV power. This document outlines the basic aspects of renewable energy power forecasting technology.