

ICS 27.180
CCS P 61

NB

**ENERGY INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

NB/T 31032-2019

Replacing NB/T 31032-2012

**Specification for preparation of feasibility study report for
offshore wind power projects**

海上风电场工程可行性研究报告编制规程

Issued on: November 4, 2019

Implemented on: May 1, 2020

Issued by: National Energy Administration of the PRC

Table of Contents

1 General Provisions	1
2 Terms	2
3 Basic Requirements	3
4 Basic Data	4
5 Overview	7
6 Wind Energy Resources	10
6.1 General	10
6.2 Analysis of Regional Meteorological Conditions	10
6.3 Analysis of Observed Wind Data on Site	10
6.4 Wind Energy Resource Assessment	11
6.5 Tables and Figures	11
7 Marine Hydrology	13
7.1 General	13
7.2 Tide	13
7.3 Ocean Current	14
7.4 Wave	14
7.5 Sea Ice	14
7.6 Sediment	15
7.7 Other Marine Hydrological Elements	15
8 Engineering Geology	16
8.1 General	16
8.2 Regional Geology and Tectonic Stability	16
8.3 Site Engineering Geological Conditions	16
8.4 Assessment of Engineering Geological Conditions	17
8.5 Tables and Figures	17
9 Project Task and Capacity	19
10 Type Selection and Layout of Wind Turbines and Energy Output Estimation	21
10.1 Type Selection of Wind Turbines	21
10.2 Layout of Wind Turbines	21
10.3 Estimation of Energy Output	21
10.4 Tables and Figures	22
11 Electrical System	23

11.1 General	23
11.2 Electrical Primary System	23
11.3 Electrical Secondary System	26
11.4 Communications	28
11.5 Tables and Figures	29
12 Fire Protection Design	30
12.1 General	30
12.2 Project Fire Protection Design	30
12.3 Construction Fire Protection Design	31
12.4 Tables	31
13 Civil Works	32
13.1 Design Standards	32
13.2 Design Basis	32
13.3 Project General Layout	32
13.4 Wind Turbines Foundation	33
13.5 Onshore Step-Up Substation or Centralized Control Center	34
13.6 Offshore Step-Up Substation	34
13.7 Corrosion Prevention Design	36
13.8 Scour Protection Design	36
13.9 Ship Berthing and Anti-collision Design	36
13.10 Anti-Icing Design	37
13.11 Monitoring Design	37
13.12 Civil Design of Transmission Lines	37
13.13 Tables and Figures	38
14 Construction Organization Design	39
14.1 General	39
14.2 Construction Conditions	39
14.3 Construction Transportation	39
14.4 Cofferdam and Platform	40
14.5 Main Works Construction	40
14.6 Construction General Layout	42
14.7 General Construction Progress	43
14.8 Construction Material Supply	43
14.9 Figures	43
15 Sea and Land Use for Project Construction	44

15.1 Sea Use	44
15.2 Land Use	44
15.3 Figures	45
16 Environmental Protection and Soil and Water Conservation	46
16.1 Environmental Impact Assessment	46
16.2 Environmental Protection Design	46
16.3 Soil and Water Conservation Design	47
17 Occupational Health and Safety	49
17.1 General	49
17.2 Analysis on Main Hazards and Harmful Factors	49
17.3 Safety and Health Design	49
17.4 Set-Up of Safety Management Organizations, Design of Related Facilities and Safety Management	50
17.5 Special Investment Estimation for Occupational Health and Safety	50
17.6 Adoption of Recommendations and Measures Raised by Safety Pre-assessment Report	51
17.7 Main Conclusion and Recommendations	51
17.8 Tables	51
18 Energy Saving	52
18.1 Preparation Basis and Basic Data	52
18.2 Analysis of Energy Consumption Types and Quantities and Energy Consumption Indicators in Operation Period	52
18.3 Main Energy-Saving Measures	53
18.4 Analysis of Energy-Saving Benefits	53
18.5 Conclusion and Recommendations	53
19 Cost Estimation	55
20 Financial Evaluation and Social Effect Analysis	56
20.1 General	56
20.2 Financial Evaluation	56
20.3 Attached Tables for Financial Evaluation	56
20.4 Risk Analysis	57
20.5 Social Effect Evaluation	57
21 Bidding	58
21.1 General	58
21.2 Bidding Scope and Content	58
21.3 Bidding Planning	58

Appendix A Contents of Feasibility Study Report for Offshore Wind Power Project	59
Appendix B Contents of Research Report on Wind Turbines Foundation Design for Offshore Wind Power Project	63
Appendix C Contents of Research Report on Construction Planning for Offshore Wind Power Project	65
Appendix D Table of Project Characteristics	67
Explanation of Wording in This Specification	70
List of Quoted Standards	71
Addition: Explanation of Provisions	73

Foreword

This document was issued on 4 November 2019 by the National Energy Administration of the PRC and takes effect on 1 May 2020.

It is a NB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

It is classified under ICS 27.180, Chinese classification P 61.

It replaces NB/T 31032-2012, which is superseded.

NB/T 31032-2019 is an energy industry standard of the People's Republic of China, approved by the National Energy Administration through Announcement No. 6 of 2019, issued on 4 November 2019 and put into force on 1 May 2020. It replaces NB/T 31032-2012, which is withdrawn on the same date.

The revision was carried out in accordance with the requirements of the Notice of the General Department of the National Energy Administration on Issuing the 2017 Plan for the Formulation and Revision of Energy Sector Industry Standards and the Plan for Translation and Publication of English Versions (Guo Neng Zong Tong Ke [2017] No. 52). The drafting group conducted extensive investigation and research, carefully summarized practical experience, referred to relevant Chinese and foreign standards and revised the specification on the basis of soliciting opinions widely.

The main technical content of this specification comprises: basic data; overview; wind energy resources; marine hydrology; engineering geology; project task and capacity; type selection and layout of wind turbines and energy output estimation; electrical system; fire protection design; civil works; construction organization design; sea and land use for project construction; environmental protection and soil and water conservation; occupational health and safety; energy saving; cost estimation; financial evaluation and social effect analysis; and bidding.