NB

ENERGY INDUSTRY STANDARD

OF THE PEOPLE'S REPUBLIC OF CHINA

ICS 27.160

F 12

Record No.: 37401-2012

NB/T 32001-2012

Technical Specification for Environmental Impact Assessment of Photovoltaic Power Station

光伏发电站环境影响评价技术规范

Issued on: August 23, 2012 **Implemented on: December 01, 2012**

Issued by: National Energy Administration

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Technical Specification for Environmental Impact Assessment of Photovoltaic Power Station

1 Scope

This Standard specifies the general principles, content, working procedures, methods and requirements for the environmental impact assessment of new construction, reconstruction and expansion of photovoltaic power stations.

This Standard is applicable to the new construction, reconstruction and expansion of the photovoltaic power stations.

2 Normative References

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this document.

HJ 2.4 Technical Guidelines for Noise Impact Assessment

HJ 19 Technical Guidelines for Environmental Impact Assessment - Ecological Impact

HJ/T 10.3 Guideline on Management Radioactive Environmental Protection Environmental Impact Assessment Methods and Standards on Electromagnetic Radiation

3 General

3.1 Basic tasks

The basic tasks of the environmental impact assessment of photovoltaic power stations include: invest and assess the environmental status; predict and assess the possible direct and indirect impacts of photovoltaic power stations on the environment; propose environmental protection measures and countermeasures; and provide the scientific basis for the decision-making of the location of photovoltaic power stations, engineering design and environmental management.

The environmental impact factors that may be involved in the construction period of photovoltaic power stations include ambient air, surface water, groundwater, acoustic environment, solid waste, ecological environment, and soil erosion, etc. The environmental impact factors that may be involved in the operation period include acoustic environment, solid waste, surface water, light environment, and electromagnetic environment, etc.; the environmental impact factors that may be involved in photovoltaic power stations after the service period expires include solid waste, ecological environment, etc.

The identification of environmental impact factors may adopt expert judgment method, matrix method and other qualitative analysis methods.

3.3.2 Assessment factor screening

According to the identification results of environmental impact factors, combined with the regional environmental function requirements and the determined environmental protection goals, screen and determine the assessment factors. Assessment factors shall focus on environmental constraints.

3.4 Environmental impact assessment scale and assessment period

3.4.1 Assessment scale

The assessment scale of the newly-constructed photovoltaic power station is based on the current capacity; and the planned capacity is also explained. The expansion and reconstruction of photovoltaic power stations shall be carried out according to the scale after completion of the expansion and reconstruction.

3.4.2 Assessment period

It includes three periods, such as the construction period, the operation period, and the service expiration period.

3.5 Working grade, assessment range and implementation standards of the environmental impact assessment

3.5.1 Classification of assessment work

Environmental factors such as ambient air, surface water, and groundwater may only be analysed briefly; the environmental impact assessment work level of environmental factors such as acoustic environment and ecological environment is determined by HJ 2.4 and HJ 19.

3.5.2 Assessment range

The environmental impact assessment range of environmental elements such as acoustic environment and ecological environment is determined by the corresponding

demolition and resettlement; technical and economic indicators; design service life, etc.

4.1.2 “Three construction sites” (borrow site, spoil site, material stacking and assembly site) during the construction period, main construction materials, construction methods, earth-rock work volume, etc.

4.1.3 The number of operating personnel, operation and maintenance methods during operation period.

4.1.4 For expansion and reconstruction projects, the basic information of the existing project's capacity, equipment overview, process flow, and general layout should be given.

4.2 Project analysis

4.2.1 Analyse the main pollution-producing links of the construction project during the construction period, operation period and service expiration period. For quantifiable environmental impact factors, the intensity of pollution sources shall be estimated.

4.2.2 For expansion and reconstruction projects, the pollution discharge and compliance status of the existing projects, the existing environmental protection problems and the rectification measures to be taken shall be explained.

5 Investigation and Assessment of Environmental Status

5.1 Principles of investigation and assessment

5.1.1 The investigation and assessment of the environmental status of photovoltaic power stations shall follow the principle of combining data collection and on-site investigation.

5.1.2 The depth of the investigation and assessment of the environmental status of the photovoltaic power station shall meet the requirements of the corresponding environmental impact assessment work level. When the existing data cannot meet the requirements, on-site monitoring shall be organized.

5.2 Investigation range

5.2.1 Basic requirements

The scope of the investigation and assessment of the environmental protection of the photovoltaic power station is based on the principle that it can explain the basic conditions of the surrounding environment of the photovoltaic power station, and shall meet the requirements of environmental impact prediction and assessment.

5.3.6 Investigation of ecological environment and soil erosion status

5.3.6.1 Collect information on the nature of the land, vegetation types and distribution, and animal species in the area where the project is located; and understand whether there are any animals and plants that need special protection. If necessary, conduct an on-site investigation.

5.3.6.2 The current status of soil erosion in the area where the project is located.

5.3.7 Monitoring of electromagnetic environment status

Photovoltaic power stations with an output voltage level of 110kV and above shall carry out current monitoring of the power frequency electric field and power frequency magnetic field of the environmental protection targets around the site and within the assessment range.

5.3.8 Social environment investigation

Collect social, economic, and cultural information in the county-level administrative area where the project is located.

5.3.9 Investigation of environmental protection objectives

Investigate the environmentally sensitive areas within the assessment range, and explain the specific situation of the environmental protection objectives and the relative positional relationship with the project such as distance and orientation.

5.4 Assessment of environmental status

5.4.1 Assessment of acoustic environment status

According to the status monitoring results, the method of direct comparison with the assessment standard (single factor method) is adopted to analyse whether the environmental protection target noise level around the site and within the assessment range meets the requirements of the corresponding standards, indicating the affecting degree of existing main sound sources on the acoustic environment function area where the site is located.

5.4.2 Assessment of electromagnetic environment status

According to the status monitoring results, the method of direct comparison with the assessment standard (single factor method) is adopted to analyse whether the power frequency electric field and power frequency magnetic field of the environmental protection target around the site and within the assessment scope meet the requirements of the corresponding standards, indicating the affecting degree of existing electromagnetic interference source on them.

Disposal of building foundation and ecological restoration, etc. The key points of selection shall include the recycling and disposal of solid waste such as solar panels, storage batteries and booster station transformers, the disposal of building foundations, and ecological restoration, etc.

6.1.4 Prediction method

6.1.4.1 Briefly analyse the possible loss of surface vegetation due to earth excavation and filling and foundation construction during the construction period; water and soil loss shall be quantitatively predicted by models.

6.1.4.2 Ecological impacts are qualitatively or quantitatively predicted according to the level of assessment work.

6.1.4.3 The noise impact is calculated by the prediction model specified in HJ 2.4. According to the calculation results, predict whether the noise emission at the boundary of the photovoltaic power station and the acoustic environment of the environmental protection target after the completion of the photovoltaic power station meet the corresponding standard limit.

6.1.4.4 The analogy prediction method specified in HJ/T 10.3 is adopted for the electromagnetic environment impact. The various parameters of the analogy booster station (substation) and the booster station of the construction project are as consistent as possible. According to the analogy monitoring results, predict whether the power frequency electric field and the power frequency magnetic field of the station boundary and environmental protection targets after the completion of the photovoltaic power station meet the corresponding standard limits value.

6.1.4.5 Quantitative prediction is adopted for domestic sewage and industrial waste water.

6.1.4.6 Quantitative prediction is adopted for solid wastes such as domestic garbage and used batteries.

6.2 Environmental impact assessment

6.2.1 Assessment principles

Based on the environmental status investigation results and the environmental impact prediction results, assess the environmental impacts under different site-selection plan, and different protection measures at each assessment periods (construction period, operation period, and service expiration period) of photovoltaic power station; and recommend the plan with the minimum environmental impact through comparing the assessment results.

6.2.2 Assessment range

The assessment range is the same as the prediction range in 6.1.1.

6.2.3 Assessment factor

The assessment factor is the same as predictive factor in 6.1.3.

6.2.4 Assessment method

The noise impact assessment of photovoltaic power station adopts the method in HJ 2.4; the electromagnetic impact assessment adopts the method in HJ/T 10.3; the ecological environment impact assessment adopts the method in HJ 19.

6.2.5 Assessment requirements

For assessment factors whose predicted results cannot meet the corresponding environmental protection requirements, specific reasons shall be explained; and feasible environmental protection measures and countermeasures shall be proposed. On this basis, the prediction and assessment of the corresponding assessment factors shall be carried out again until the corresponding environmental protection requirements are met.

7 Public Participation

7.1 Principles of public participation

7.1.1 The construction of photovoltaic power stations located in areas with residence as the main function shall be consulted and reflect the wishes of the public and relevant social organizations in the affected areas to construct photovoltaic power stations.

7.1.2 Public participation shall be extensive and representative. In areas inhabited by ethnic minorities, representatives of ethnic minorities shall participate.

7.2 Forms of public participation

Public participation may be carried out by visiting and issuing public opinion investigation forms, listening to group opinions, and holding hearings, symposiums, and coordination meetings.

7.3 Range of public participation

The range of public participation shall focus on the public and relevant social organizations within the range of the assessment.

7.4 Statistics and processing of public comments

The solicited public and organization opinions shall be summarized and counted. Clear

Appendix A

(Informative)

Preparation Requirements for Environmental Impact Report Form of the Photovoltaic Power Station

A.1 General

A.1.1 Preparation basis

It shall include relevant laws and regulations, relevant policies and plans, relevant guidelines and technical specifications, relevant technical documents and working documents that should be implemented by the photovoltaic power station, as well as the materials cited in the preparation of the environmental impact report form.

A.1.2 Assessment factors and assessment criteria

The status assessment factors and prediction assessment factors are listed separately; and the environmental quality standards, emission standards, other relevant standards and specific limits implemented by each assessment factor are given.

A.1.3 Assessment work level and assessment focus

Explain the work level of each special assessment and clarify the key assessment content.

A.1.4 Assessment range and environmentally sensitive areas

Illustrate the assessment range and the environmental function category or level of each environmental element in the form of graphs and tables, as well as illustrate the environmentally sensitive areas and functions of each environmental element, and their relative positional relationship with photovoltaic power stations.

A.2 Project overview and analysis

Use a combination of diagrams and text to generally illustrate the basic situation, composition, process flow, project layout, and relationship with the original and projects under construction of the photovoltaic power station.

Analyse and explain the overall composition of the photovoltaic power station, and the environmental impact factors of the entire behaviour process during the construction period, operation period and service expiration period, as well as their impact characteristics, extent, and methods; highlight the key points; and analyse the rationality of the general layout plan from the prospects of protecting the surrounding

environment, landscape and environmental protection targets.

A.3 Investigation and assessment of environmental status

According to the characteristics of the local environment and the characteristics of photovoltaic power stations, the corresponding content is selected from the natural environment, social environment, environmental quality and main environmental issues of the local area to conduct status investigation and assessment.

A.4 Environmental impact prediction and assessment

The prediction period, prediction content, prediction range, prediction method and forecast result are given; and the environmental impact of the power station is assessed according to environmental quality standards or assessment indicators.

A.5 Environmental protection measures and their economic and technical demonstration

Clarify the specific environmental protection measures to be taken in the photovoltaic power station project. Based on the results of the environmental impact assessment, the feasibility and effectiveness of the environmental protection measures to be taken by the photovoltaic power station are demonstrated.

According to the different periods of photovoltaic power station project implementation, list the environmental protection investment amount and analyse its rationality. Give a list of measures and investment estimates.

A.6 Investigation speciality of Public Opinion

For photovoltaic power station projects located in areas with residence as the main function, the adopted investigation methods, the investigation objects, the main opinions of the public on environmental protection, and the acceptance of public opinions are given.

A.7 Special assessment of environmental feasibility

For the environmental impact assessment range of photovoltaic power station project involves environmentally sensitive areas such as nature reserves, scenic spots, world cultural and natural heritage sites, drinking water source protection areas, etc. It shall demonstrate the environmental feasibility from the prospects of whether coordinating with the planning, whether meeting the regulation requirements, whether meeting the requirements for the environmental functional area, and whether the impact on environmentally sensitive areas is acceptable.

A.8 Environmental impact assessment conclusion

The conclusion of the environmental impact assessment shall generally include the

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