

NERC/NOPR/CN04606

NIGERIAN ELECTRICITY REGULATORY COMMISSION

PUBLIC NOTICE

NOTICE OF PROPOSED RULEMAKING ON POWER PURCHASE AGREEMENTS FOR CAPTIVE CUSTOMERS

In exercise of power conferred under Section 96 (2) of the Electric Power Sector Reform Act 2005, the Nigerian Electricity Regulatory Commission has drafted Regulations on the Review of Power Purchase Agreements (PPAs). The rationale for the Regulation is to create a credible, transparent and standardized questionnaire for licence applicants interested in developing electricity generating plants above 50MW.

The information supplied would allow the Commission to collect and review information on the price and risk allocations of proposed PPAs in a systematic way.

Accordingly, comments are hereby invited from all stakeholders and members of the public on the draft Regulation. The draft Regulation can be downloaded from NERC's website at www.nercng.org.

Notice is hereby given that persons who wish to make comments should send their comments not later than 28th February 2007 to:

Mr. Alex Amakom
Nigerian Electricity Regulatory Commission
Adamawa Plaza, Plot 1099 First Avenue
Central Business District
Abuja

Or

By e-mail: comments@nercng.org

For further information, please contact Mr. Alex Amakom (aamakom@nercng.org, phone: 09-672 3206) or Mrs Ifey Ikeonu (iikeonu@nercng.org, phone: 09-672 3205)

REF: NERC / CN04606

Nigerian Electricity Regulatory Commission

**Public Consultation
On A Notice of Proposed Rulemaking (NOPR)
For
Review of PPAs to Supply Captive Customers**

December, 2006

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1. Introduction.

1.1 Purpose of Consultation

1. The purpose of this consultation is to seek the views of current and future participants in the Nigerian power sector on procedures and questionnaires that the Nigerian Electricity Regulatory Commission (the Commission) proposes to adopt in reviewing power purchase agreements (“PPAs”) that will be used to supply captive customers¹ in the Nigerian power sector.
2. The Commission is cognizant of Nigeria’s need for major investments in additional generating capacity. The lack of adequate and reliable grid-connected, generating capacity has imposed painful costs on the nation’s citizens and its economy. For example, it has led to significant and costly capital expenditures by Nigerian enterprises and households on expensive, stand-alone generators because of the inability of PHCN, its predecessor and its successor companies to provide reliable power supplies from the grid. Given this difficult situation, it is important that our regulatory procedures be clear and efficient to avoid any uncertainty or delays. However, we cannot just “rubber stamp” PPAs. If PPAs result in unnecessarily high prices or transfer too many risks to the Purchaser that could better borne by the Seller, Nigerian electricity consumers will end up paying for inflated and unnecessary costs for many years in the future.² But, at the same time, we also recognize that private investment is ultimately voluntary. Private investment cannot be conscripted by regulatory rules or mandates. Therefore, while protecting consumers, we also have a basic obligation to ensure that investors are able to recover their costs and earn a return that it is commensurate with the risks that they bear (i.e., their investments must be “bankable”).
3. The Commission is genuinely interested in hearing the views of producers, consumers and wholesale and retail suppliers in the sector. To make the consultation as productive as possible, the Notice of Proposed Rulemaking (NOPR) describes our proposed process for review of future PPAs and presents drafts of questionnaires and tables that will be used to ensure that our review is informed and objective. The questionnaires and tables have been designed to assist us in evaluating the reasonableness

¹ A captive customer is defined as an end use consumer of electricity who is legally required to buy from a specific licensee (most likely from the local distribution licensee to whom the customer is connected). In Nigeria, captive customers are end use customers who are not “eligible customers.” Eligible customers are customers that have the right to purchase electricity from licensees other than a distribution licensee. (See Section 100 of the EPSR Act.) Finally, captive customers are not “captive generators.” The latter term refers to generators who generate electricity for purposes of consumption by the generator and who do not sell the electricity that they generate to other parties.

² The costs of generation constitute about 55 to 60 percent of the final price of electricity for an average Nigerian household.

of the price and non-price terms of power purchase agreements in cases when a generation licensee intends to sell the electrical output from a new fossil-fuel fired generating plant to a Bulk Supply licensee,³ a distribution licensee, or other type of licensee, with captive customers.⁴ For purposes of this review, a power purchase agreement is defined as a legally binding contractual agreement by which an entity such as a distribution licensee or a Bulk Supply licensee undertakes to purchase the power generated by an independent or affiliated power producer under specified terms for a multi-year period.

1.2 Legal Authority

4. The Commission is required to perform these regulatory reviews under the Electricity Power Sector Reform Act of 2005 (EPSR Act). Under Section 32 (1)(d) of the 2005 Act, the Commission has been assigned the objective “to ensure that the prices charged by licensees are fair to consumers and are sufficient to allow the licensees to finance and to allow for reasonable earnings for efficient operation.” In addition, the EPSR Act gives us the authority under Section 71(2)(b) to specify terms and conditions in a license to ensure that a licensee will “purchase power and other resources in an economical and transparent manner.” Therefore, our overall purpose in conducting these reviews is to ensure that our regulatory actions are “fair and balanced” (Section 32(1)(f)) to all parties who will be directly and indirectly affected by the transaction.

1.3 Consultation Process

5. As noted above, we genuinely seek the views of current and future participants in the Nigerian power sector as well as the views of knowledgeable organizations and individuals outside of Nigeria on our proposed procedures, questionnaires and tables for reviewing PPAs. This is intended to be a full consultation. We will carefully review the comments received and, if we find merit in specific comments, we will

³ Under the EPSR Act, a Bulk Supply licensee is envisioned as a transitional entity which may buy power from Independent Power Producers and then resells that power to Distribution Licensees. In a sense, it is an aggregator or wholesale supplier of last resort who acts as a backstop supplier to Distribution Licensees. However, this does not imply that Distribution Licensees are obligated to make all bulk purchases from the Bulk Supply licensee. The EPSR Act gives all Distribution Licensees the legal right to buy directly from IPPs, if they so choose. EPSR Act, Section 62. However, it is our understanding that the Government may choose to create a Special Purpose Entity which, as one of its functions, may serve as a mandatory Bulk Supply Licensee for most or all distribution licensees. If this happens, the Special Purpose Entity would be the purchaser under PPAs or a standardized purchase document and the reseller of this power to distribution licensees under vesting contracts.

⁴ In the future, the Commission anticipates preparing parallel questionnaires for new, hydroelectric generating plants.

make changes in the general approach or specific details of our proposed regulatory process described below.

6. Commenters will have 60 days from the date of issuance of this NOPR to provide written comments. Comments may be submitted via e-mail to:

- i. info@nercng.org

or through four paper copies mailed to or submitted in person at the offices of the Commission to either of the following:

- ii. **Mr Alex Amakom**
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Central Business District
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To ensure a full and transparent dialogue on these important issues, the Commission intends to make public the written comments received on this NOPR on our website and at our offices in Abuja. This process will ensure that all participants (national and international), and the Nigerian general public will have a clear understanding of the positions and concerns expressed by all parties. In other words, our goal is to facilitate an open and public dialogue before making any final decisions. We will also consider the possibility of convening a public conference on the subject of this NOPR. Should any interested party have any questions about this NOPR, do contact the above personnel of the Commission on the address or number given above.

1.4 The Proposed Regulatory Review Process

7. We are proposing a two stage regulatory process for the review of generation licenses and associated PPAs. In the first stage, the application for a generation license will be reviewed according to NERC's

- standard review of such applications and the license issued if the application meets all of the requirements of our licensing regulations.⁵ This involves a review of the legal, technical and financial elements of the applicant and its proposed generation facility. . If the Commission issues a generation license, it means that the Commission has concluded that the applicant has demonstrated that it has the legal, financial and technical capacity to build and operate the proposed generating plants. However, the granting of the license does **not** imply that the Commission has given approval to the terms of any PPA that will be used to sell the power produced from this generation facility.
8. In the second stage, once the PPA has been fully negotiated (though not executed) between the Purchaser and the Seller, **the Seller will be required to submit the proposed PPA to the Commission and also complete the questionnaires and tables presented in Annexes 1,2, 4 and 5 to this NOPR.** The Seller will be required to vouch by means of a declaration for the accuracy of the information that it submits in the questionnaires and tables. Separately, the Purchaser will be formally required to vouch by means of a declaration to the affordability or non-affordability of the purchase (Annex 3). In addition, the Purchaser, will be required to state whether it agrees or disagrees with the answers provided by the Seller (Annex 7).
 9. In this second stage, the Commission will review the submitted documents to facilitate compliance with our legal obligation to ensure that the power is purchased economically, and will provide written comments to the Purchaser and Seller, and these comments will be publicly available. **We will not approve or disapprove of the PPA.** Instead, our review will be limited to providing comments and observations on the submitted PPA. The ultimate and binding control on the prices to consumers of electricity that result from the PPA will be exercised through our system of setting retail tariffs for end users. It is our intention to establish end user tariffs through a multi-year tariff setting system that is the subject of a separate NOPR.
 10. This two stage process has several advantages. First, it avoids the risk of delay to the process of reviewing an application for a generation license. Such delays are likely to occur if we required explicit approval or disapproval of the PPA as a prerequisite for the issuance of a generation license. Second, the PPA is likely to be more accurate and complete if it is reviewed some time after a license is issued. Third, by conducting the review before the PPA is signed, we will be able to give timely feedback to

⁵ The general application form for licenses can be found in Schedule 1 of *Application For Licenses, Generation, Transmission, Systems Operation, Distribution*, Regulation No: NERC-R—0106, February 14, 2006. On August 22, 2006, the Commission granted generation licenses to Ethiope Energy Limited (2,800 MW, Delta State), Supertek Limited (1,000 MW, Abia State), Farm Electric Supply Company Limited (150 MW, Ogun State) and ICS Power Limited (624 MW, Abia State) in August, 2006. The issuance of these licenses was conditional on the applicants providing the Commission with a number of documents listed in Annexure 1 of our orders.

both the Purchaser and Seller of power about price and non-price provisions in the PPA that could lead to outcomes that are too costly, too risky or both. The two parties will have the flexibility to decide how they will incorporate our comments into their PPA when they negotiate a final signed version of the PPA.⁶ However, they do so at their own risk. If the parties chose to ignore our comments and observations, they are more likely to run the risk of failing to satisfy the implicit annually adjusted cap on the power purchase costs that distribution entities will be allowed to pass through to their captive customers under our planned multi-year tariff setting system.

11. To ensure compliance with this two stage process, we will attach conditions to the licenses of entities that will be buying or selling power on behalf of captive customers (e.g., a Bulk Supplier, Generators and Distributors) requiring that these entities provide the Commission with the information needed to conduct our review of the PPA as presented in the questionnaires and tables in the annexes attached to this Notice.
12. To ensure that the review is both objective and informed, we will hire one or more experts to conduct a written evaluation of the answers given by the Purchaser and Seller. The Commission believes that this is necessary, especially during our initial years of operation, because PPAs are usually lengthy documents with complicated and subtle relationships among the many parts of the PPA. This will ensure that we have a comprehensive review of the PPA, not just a review that focuses on one or two elements of a PPA.
13. The cost of this evaluation will be borne by the Seller, or by the Purchaser, or shared by the two parties in whatever way they deem appropriate, and we shall require the Applicants to specify the payment arrangements in the application. The written expert evaluation will be made public. The experts will be drawn from a roster established by the Commission. The Commission, rather than the Applicants, will determine which expert will be used to evaluate the answers provided in the application. In addition, the terms of reference for experts' evaluations will be specified by the Commission. The Commission anticipates that the evaluation will take between 10 to 20 person-days depending on the complexity of the PPA. In selecting the roster of experts, we will give preference to individuals or firms who commit to training Nigerian citizens in the relevant evaluation techniques.
14. Overall, the Commission believes that this proposed regulatory process will produce four major benefits. The first benefit is that it will allow the Commission to fulfil its legal obligation to ensure that our regulatory actions are "fair and balanced" and that long term power purchases made on behalf of captive customers are economical. Second, it will provide a "checklist" of terms and provisions and risks that must be considered in

⁶ The Seller will also be required to file the final executed version of the PPA with the Commission. This final executed version will be a publicly available document.

developing PPAs. This should ensure better quality PPAs in the future and avoid unnecessary and costly disputes. Third, it will provide us with better information that can be used to develop projections of the generation costs that constitute a major component of future end use tariffs. Fourth, it will ensure that the general public will have better knowledge of the basis for our decisions and will have the opportunity to provide us with informed comments based on “facts” rather than “hearsay.”

1.5 Clarifications

15. The Commission places considerable importance in providing as much regulatory certainty as possible. Therefore, to avoid any misunderstandings as to the coverage and purpose of these questionnaires and tables, the Commission makes the following eight clarifications:

- a. *First*, the questionnaires and tables must be completed only for PPAs for which the Purchaser will be purchasing power that will resold either directly (e.g., a distribution company) or indirectly (e.g., a Bulk Reseller) to captive customers.⁷ We recognize that the PPAs for the sale of such power are ultimately contracts between two parties, whether they are affiliated or unaffiliated. As a general rule, the Commission believes that the two parties to a contract should have considerable discretion in writing the terms and conditions of the contract, subject to any general guidance that the Commission decides to give in the future (see paragraph 15c) and any overall caps on retail tariffs that may be established as part of a future multi-year tariff (MYT) setting system. However, as noted above, our fundamental regulatory concern is that such contracts can also have a major impact on the prices paid by consumers of electricity who are not direct parties to the contract. Therefore, the Commission believes that it has a clear regulatory responsibility to ensure that the terms and conditions of such contracts are fair and efficient in order to protect those Nigerian consumers who will ultimately pay for the electricity but who are not signatories to the PPA.

The Commission does **not** intend to review all PPAs. Two types of transactions involving PPAs will be exempted from the requirements proposed in this rulemaking. First the Commission will not review PPAs where the Purchaser is an “eligible” customer under Section 27 of the EPSR Act, since such customers will have alternative sources of supply and are therefore less vulnerable to the exercise of market power by a Seller. This might occur, for example, if a generator proposes to sell to an

⁷ We interpret Section 62 of the EPSR Act to require that all generation entities, except for those explicitly exempted by Section 62(b), must obtain a license. This requirement applies to privately owned generators, those owned by government enterprises or ones that are joint ventures between government enterprises and private companies.

industrial customer or a group of commercial customers that have alternative sources of supply.

We will also not require generators with a rated capacity of 100 MW or less to fill out the questionnaire and matrix related to risk allocation (Annexes 4 and 5). This decision is motivated by the fact that we do not wish to impose unnecessary regulatory burdens on smaller generators. However, we will still need to know the prices that these generators propose to charge if they are selling to entities who will be reselling to captive customers. Therefore, we will require that these smaller generators complete the questionnaire in Annex 1 that allows for the calculation of the average purchase price, as well as the table in Annex 2. The purchasers in these transactions will still have to complete Annex 3. We note that Section 71 of the EPR Act gives us the authority to vary our regulatory requirements by imposing appropriate terms and conditions depending on the type of entity that is being regulated.

- b. *Second*, we will interpret our legal obligation to ensure that a purchase is “economical” in three ways. First, the general characteristics of the proposed generation facility must be reasonable. Specifically, we must see evidence at a general level that the entity seeking the license is proposing an appropriate technology, an appropriate fuel and will locate the plant at a reasonable location. In addition, the Applicants’ proposal must be consistent with any formally enunciated energy policies of the Federal Government of Nigeria. Second, we must see evidence that the proposed combination of price and risk allocation in the PPA is both fair and efficient. Third, we must see evidence that the Purchaser will be able to afford to purchase the electricity with the revenues that it is likely to receive from its customers and, if available, government provided subsidies or guarantees. In particular, the Commission will require an assurance from the Purchaser that it will be able to afford its payment obligations under the PPA under existing or expected retail tariffs with the support of subsidies or guarantees (Annex 3).
- c. *Third*, in the future, the Commission intends to match its regulatory methods and standards of review with the process by which the power supply is acquired.⁸ In the future, if the Commission is satisfied that the PPA accompanying the generation license application is the outcome of a competitive process such as has been employed successfully in other countries, we will employ a “fast track” and more limited form of regulatory review⁹. This is based on the presumption that consumer interests can be best protected by effective competition and, where competition exists, regulation can and should be more “light-handed”.¹⁰ Therefore, after

⁸ As noted earlier, Section 71 of the EPR Act clearly gives NERC the authority to vary its regulatory methods

⁹ As of this date, the Commission is not aware of any instances where a PPA in Nigeria is the outcome of a competitive process.

completion of this proceeding, the Commission intends to follow it up by initiating a consultation that will focus on the necessary elements of open and competitive procurements for new generation capacity as well as possible elements of one or more model PPAs.

These two consultations are logically connected. In this first consultation, we are developing an application and reporting system that will allow us to gather information in a systematic way on the terms and conditions of PPAs negotiated under non-competitive procurement processes. In the second consultation, the Commission intends to build on this foundation by giving guidance on how to create procurements that are open and competitive as well as standard terms and conditions of PPAs that will be fair and efficient for sellers, purchasers and retail customers.¹¹ We believe that standardized PPAs may be especially beneficial for smaller IPPs.¹² The combination of these two initiatives should go a long way to ensuring that major power purchases made on behalf of captive customers are both “economical” and “transparent”.

- d. *Fourth*, the answers to these questionnaires and the PPAs on which these answers are based will be public documents. The Commission places considerable emphasis on the transparency of its regulatory processes. Such transparency is important given the large quantities of money involved in transactions under PPAs. Our previously issued regulations for the review of license applications require that the general public must be able to participate in such regulatory processes.¹³ Such participation will be ineffective (because it will be uninformed) unless the general public has access to the key documents that affect the prices that they will have to pay over the life of the PPA. In addition, the Commission strongly believes that the fundamental legitimacy of its new regulatory system requires that the general public must have confidence in the fairness and impartiality of both the process that it employs and the decisions that it renders. This confidence can be developed only when the general public

¹⁰ We note that this is an approach that has been adopted by regulatory entities in other countries. For example, in the United States, the national electricity regulator, the Federal Energy Regulatory Commission, offers “market based pricing” rather than “cost of service” pricing where there is evidence that the Seller had no market power and competed actively against other sellers.

¹¹ It is our intent to draw on the experiences of other regulatory commissions (e.g., CERC in India, NEPRA in Pakistan, FERC and various state commissions in the US) and developers in other countries that have encouraged independent power producers. In this first consultation, the Commission welcomes comments both on the specifics of the questionnaires, our proposed methods for evaluating the information provided as well as more general comments and recommendations on regulatory and procurement systems for IPPs and associated PPAs that will balance the interests and needs of sellers and purchasers.

¹² This does not imply that an IPP would have to adopt the standard IPP exactly as given. Instead, it would be a starting point and modifications would be allowed if they are highlighted and explained. We note that binding and non-binding model PPAs have been developed by government authorities in Pakistan and India.

¹³ See Sections 10 and 11, *Application For Licences, Generation, Transmission, System Operations, Distribution and Trading*, Regulation No: NERC-R-0106, February 14, 2006.

- understands the logic of the Commission's decisions and provides informed inputs to our decisions by having access to the necessary information. Purchasers and sellers will also benefit from the greater sustainability of their transactions over the long run when the Commission's approvals are given through open and transparent processes.
- e. *Fifth*, consistent with our emphasis on the importance of transparency, the Commission intends to use the information provided in these questionnaires and tables to create a reference database of PPA terms and conditions that the Commission will use as benchmarks in reviewing the terms and conditions in PPAs submitted in association with applications for generation licenses. The Commission will periodically update this database and make it publicly available. Since many of our fellow energy regulatory agencies in Africa and elsewhere appear to have similar legal obligations to review PPAs, we also intend to explore how this information can be shared with these agencies to achieve better information efficiencies than would be obtainable on a single country basis.¹⁴
 - f. *Sixth*, since PPAs contain terms and conditions relating to both price and performance, the Commission believes that a comprehensive comparison of PPAs must look at both the price and performance provisions. For example, a PPA may propose low initial prices for capacity and energy but if the performance provisions (e.g., target availability) in the PPA transfer most performance risks to the Purchaser, then the Purchaser may actually pay a lot more for power procured under the PPA than another PPA with higher initial prices but with more risk borne by the Seller. Therefore, the questionnaires and tables require that the Applicants provide information on both price and risk allocation between the Seller and the Purchaser. This information will allow us to provide informed comments and observations on the reasonableness of terms and conditions in PPAs as required by the EPRS Act. It will also improve the operation of power sales markets over time by ensuring that both sellers and purchasers are better informed. We do not believe that completion of these questionnaires and tables will impose an undue burden on Sellers because Sellers have to provide much of the same information to equity and debt investors in order for these investors to conduct a "due diligence" review prior to making their investment decisions.

¹⁴ In any decision to issue a license, the Ugandan electricity regulator must review "the costs of the project" (Section 38.1.e) and "the price or tariff offered" (Section 38.1.k) (The Electricity Act, 1999). In setting tariffs, the Public Utilities Regulatory Commission of Ghana is required to take account of the "the cost of production of the service" (Section 16) and whether the cost of production is "justified and reasonable." (PURC Act, 1997). In South Africa, the National Energy Regulator "may facilitate the conclusion of an agreement to buy and sell power between a generator and a purchaser of electricity." (Electricity Regulation Act, 2006, Section 46 (3) (b)). It is our understanding that a similar standard of review is under consideration in Tanzania.

- g. *Seventh*, the Commission recognizes that there is a trade-off between risk and price. If a licensee proposes to bear more risk than usual, it will generally incur an additional cost for bearing this risk and it will expect to be compensated for this cost. *The Commission also recognizes that the pattern of risk allocations that is feasible in Nigeria at this time may be quite different from patterns of risk allocation that are feasible and observed in more developed power sectors (e.g. power sectors where there is better quality of service, lower levels of technical and commercial losses, an average tariff that recovers costs, more extensive metering and sufficient generation capacity).* Therefore, we do not have a pre-conceived view that the prices and risk allocations observed in other countries with healthier power sectors can automatically be transferred to Nigeria. In addition, the Commission recognizes that one particular combination of price and risk may not be appropriate at all times and all circumstances (e.g., different fuels and technologies) in Nigeria.
- h. *Eighth*, the Commission encourages early submission of completed questionnaires and the accompanying PPA so that our review can be given in a timely manner. However, the Commission recognizes that one consequence of early submission of the PPA and other documents is that they may not be in final form. In all instances, the Commission's review will be contingent (i.e. conditional) on the filing of a final and legally binding version of the PPA with the Commission.

1.6 Requirements for a compliant application

- 16. The Commission requires that the answers to the questionnaires and tables must be complete, concise and written in "plain English." If the information provided in the questionnaires does not meet this standard, the Commission will view the application as being not compliant with these requirements and will not consider the application further. All other things being equal, Applicants are more likely to get a faster and positive evaluation from the Commission if they provide accurate, clear and complete answers.
- 17. The information provided in these questionnaires and tables about a PPA consists of both factual information (e.g., charges, plant specification) and subjective evaluations (e.g., assessments of how risks are allocated between the Purchaser and Seller). The Commission intends to appraise the answers in order to rate these risk assessments. It reserves the right to return a questionnaire or table to an Applicant where it finds evidence of inaccuracies and misrepresentations. The Commission also reserves the right to use its own assessment of a particular provision where it considers that the Applicant's assessment is not accurate.
- 18. The accuracy and completeness of information supplied in these questionnaires and tables in Annexes 1, 2, 4 and 5 to this Notice must be

vouched for by a designated officer of the companies that are filing the application for review.

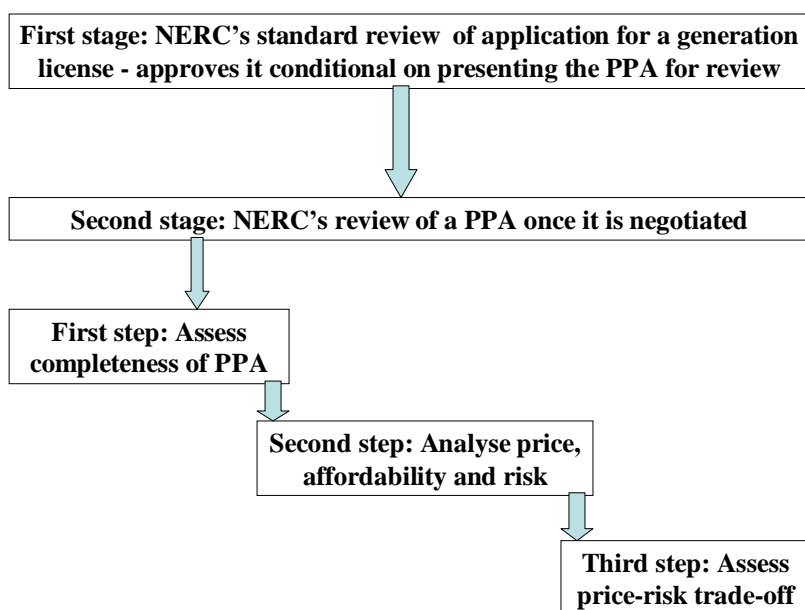
1.7 Approach to Assessment of PPAs

The Commission will adopt the following three-step approach for assessing the reasonableness of PPAs under the second stage of its review process:

- First - Assessment of a PPA's Completeness
- Second - Average Purchase Price Analysis, Affordability Analysis and Risk Assessment of the PPA
- Third - Price-Risk Trade-off Approach to Assessing PPAs

This process is depicted in Figure 1, overleaf.

Figure 1. Overview of the PPA Review Process



The first step in NERC's review of PPAs is designed to separate PPAs that are complete from those that are not. In this step, the Commission will determine whether the PPA satisfies certain minimum or "threshold" conditions that justify further regulatory review. If the PPA does not satisfy the minimum or "threshold" conditions, then the Commission cannot justify using its limited regulatory resources on further review of the PPA.

Under the second step in NERC's review, the Seller must provide the Commission with a completed copy of the questionnaires and tables shown in **Annexes 1, 2, 4 and 5** to this Notice. The Seller must vouch for its responses to these questionnaires and tables by attaching a declaration to them. The focus of these questionnaires and tables is to abstract basic information from the lengthy and complex documents that are typical of PPAs that is used to evaluate systematically the reasonableness of the price and non-price terms of PPAs. Specifically, the Seller's analysis of the average purchase price and risk allocation for its PPA provides a set of values for these key variables that is used in the third step - the review of the Price-Risk Trade-off. The Commission considers that the requirement to complete these questionnaires and tables should not be onerous because sellers should have this information readily available for themselves and for their lenders and shareholders in these investments. These questionnaires and tables also incorporate a considerable amount of standardisation to help the Commission to benchmark PPAs.

Annex 6 is a sample of a completed version of the risk assessment (Annex 5). This version is entirely illustrative. Nevertheless, the Commission welcomes comments on the reasonableness of the risk allocations and ratings shown in Annex 6.

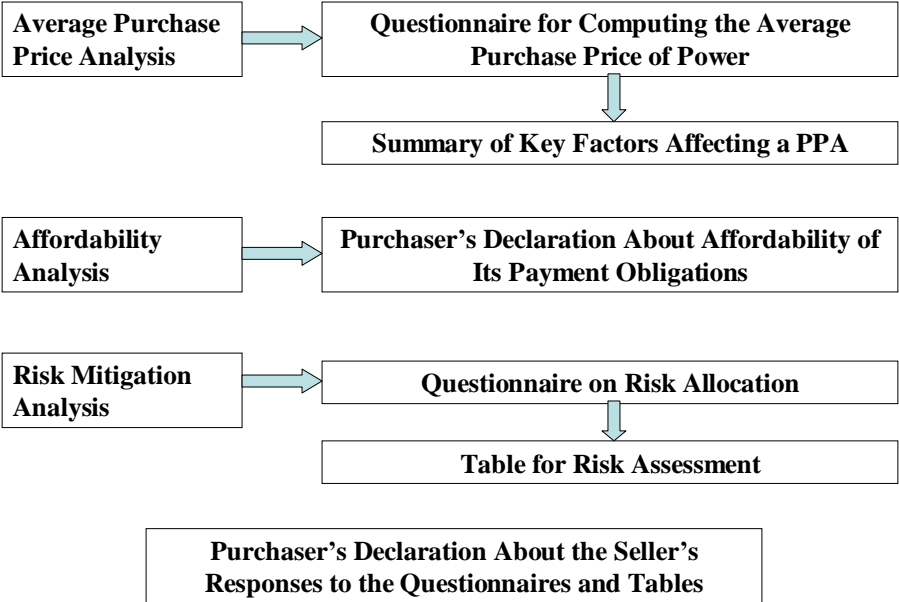
The Purchaser carries out the affordability analysis under this stage, for which it provides a declaration to the Commission. The Purchaser must complete and vouch for its responses to Annex 3 by attaching a declaration to it. The Purchaser must also complete Annex 7 about the extent to which it agrees or disagrees with the Seller's responses to the questionnaires and tables. The Purchaser should be able to provide this information from its due diligence on the PPA and related documentation.

In summary, the Commission's review of a PPA will be carried out by means of the following annexes to this Notice:

- Annex 1: Questionnaire for Computing the Average Purchase Price of Power under a Power Purchase Agreement
- Annex 2: Summary of Key Factors Affecting a Power Purchase Agreement
- Annex 3: Purchaser's Declaration About Affordability of Its Payment Obligations Under a Power Purchase Agreement
- Annex 4: Questionnaire on Risk Allocation Under a Power Purchase Agreement
- Annex 5: Table for Risk Assessment of a Power Purchase Agreement
- Annex 6: Illustrative Risk Assessment of a Power Purchase Agreement
- Annex 7: Purchaser's Declaration About Seller's Responses to Questionnaires and Tables Under a Power Purchase Agreement

These annexes apply to the case of a new fossil-fuelled generation plant. The links between these annexes and the three-stage review process is depicted in Figure 2.

Figure 2. Links between the Review Process and the Questionnaires and Tables



2 Assessment of the Completeness of an Applicant’s PPA

Completeness of a PPA is the first step of the Commission’s assessment of the reasonableness of the PPA. As noted earlier, this assessment will be limited to PPAs where the Purchaser will be directly or indirectly (through Distribution Companies) reselling this power to captive customers and the Seller is selling the electricity from a plant with a rated capacity of 100 MW or greater. Once the Commission deems the PPA to have satisfied these minimum criteria, the Commission will then evaluate the PPA for price and the risk exposure to the Purchaser under the PPA.

A PPA should cover all critical subjects and not have omissions that might disrupt the operation of the PPA or cause avoidable costs for the Seller or Purchaser during the life of the agreement. The Commission may decide to suspend further analysis of a PPA that is not complete in this respect.

The Commission will create check lists for PPAs for fossil-fuelled and other power generation technologies to the standard “Check List for Completeness of Application and Attachments” published in the “Assessment of Licence Application”. An illustrative checklist – excluding standard legal provisions - for a typical PPA for a new fossil-fuelled power project is shown in Table 1 below.¹⁵

Table 1a. Typical main clauses/articles in a PPA for a new fossil-fuelled power plant

Definition of Contract Terms	Seller’s Responsibilities	Purchaser’s Responsibilities
Construction of the Power Plant	Compliance with Technical, Operational and Environmental Standards and Regulations	Compliance with the Grid Code
Compliance with Metering and Telecommunication Specifications	Control, Operation and Dispatch of the Power Plant and Maintenance Coordination	Interconnection with Transmission System
Supply of Fuel	Availability Commitments and Capacity Testing Procedure	Supply of and Payment for Electricity
Fees, Pricing and Billing	Time and Place of Payment	Compliance with Laws
Liability and Indemnification	Payment Guarantee (if any)	Contract Term
Insurance	Force Majeure	Taxes
Liquidated Damages	Suspension, Events of Default and Termination, and Buy-out	Assignment of Rights, Benefits and Obligations
Dispute Resolution	Law, Jurisdiction; Agents for Service	Representations and Warranties

Table 1b. Typical main schedules annexed to a PPA for a new fossil-fuelled power plant

¹⁵ The terminology used in Table 1 to describe these clauses, articles and schedules is not prescriptive since it varies among PPAs. The importance of these terms lies in the substantive content that they cover.

Consultation on PPAs to Captive Customers

Specifications for Electricity Guaranteed Completion Date	Plant Operating Parameters Compliance with Grid Code, Transmission Connection, Dispatch, Coordination and Scheduling, and Emergency Procedures	Milestone Schedule Description of Site
Delivery Point	Transmission Line Specifications	Electricity Delivery Procedures
Metering and Recording of Electricity, Collection and Validation Procedures	Calculation of Payment	Capacity and Performance Testing Procedures
Guarantor Support Provisions	Seller and Purchaser Insurance Requirements	Governmental Approvals

Notes to Tables 1a and 1b. Clauses/articles form the main part of the PPA. Schedules are attached to the PPA and contain detailed provisions relating to clauses/articles. Both clauses/articles and schedules are integral parts of the PPA, and the PPA is not complete without any of them.

3. Average Purchase Price Analysis

Analysis of the average price of purchased power under a PPA forms the first component of the second step of the Commission's assessment of the reasonableness of a long-term PPA.

3.1 Structure of power purchase price

The average price of power purchased under a PPA is estimated from the rates payable for a specified level of power purchased over the life of the PPA. These rates typically include the following components under a PPA for a fossil-fuelled generation plant that is financed, constructed and operated by an independent power developer (IPP):¹⁶

- Capacity Purchase Charge
- Energy Purchase Charge
- Supplemental Charges

The Capacity Purchase Charge consists of a periodic - usually monthly - payment that is typically tied to a declaration by the Seller that the plant has available production capacity at a level that is periodically verified according to a procedure specified in the PPA. This charge is usually defined to cover the Seller's cost for investment in developing and constructing the power plant, as well as the fixed operating costs such as insurance and fixed operating and maintenance costs for the plant.

The Energy Purchase Charge consists of a periodic payment for the amount of energy produced and purchased under the PPA during a specified period. It is usually defined to cover fuel costs and variable operation and maintenance costs.

The Supplemental Charge may cover plant start-up and ramp-up costs, the costs of providing Ancillary Services to the system operator such as reactive power, frequency response, black start and fast start, as well as miscellaneous costs.¹⁷

The schedule for the calculation of payments due under the PPA will typically give a base set of rates for Capacity Purchase Charge, Energy Purchase Charge and Supplemental Charges and various specified adjustment mechanisms. The rates charged will be heavily affected by the investment cost for the plant, the foreign exchange rate, the foreign inflation rate, the domestic inflation rate and the price of fuel consumed by the plant.

¹⁶ The Commission does not favour a price structure that is based on a single charge for all costs based on the amount of energy sold under the PPA, because payments under this structure do not reflect the actual costs involved in supplying power. Instead, it prefers separation of charges into components that reflect well the actual costs, such as the three shown here (capacity charge, energy charge, and supplemental charges).

¹⁷ The Commission encourages sellers to accept obligations to provide Ancillary Services, so as to improve the overall reliability of supply in the Nigerian power system.

The **average purchase price of power** purchased under the PPA is computed from these charges according to a basic general formula given in the attached box.

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General Formula for Calculating the Average Purchase Price under a PPA

The main components of the average purchase price (P_{AV} expressed in US\$/kWh) are:

- Capacity Purchase Charge (CP)
- Energy Purchase Charge (E)
- Supplemental Charges (S)

These components are expressed in US\$ per month (since a month is the usual billing period).¹

$$P_{AV} = (CP + E + S) / E_{ENERGY}$$

where E_{ENERGY} is the amount of net electrical energy supplied during the month that is metered at a delivery point specified in the PPA (expressed in kWh/month).

The Capacity Purchase Charge (CP) covers the costs of the following components:

- Investment for power plant and equipment, dedicated fuel supply link, and dedicated transmission link (CP_{INV})
- Operation & Maintenance - fixed portion (CP_{OF})
- Insurance (CP_{INSUR})
- General and Administration (CP_{GEN})

These unit costs are usually expressed in terms of US\$/kW/month. This charge is payable independently of the amount of energy supplied under the PPA.

$$CP = (CP_{INV} + CP_{OF} + CP_{INSUR} + CP_{GEN}) * C_{CAPACITY}$$

where $C_{CAPACITY}$ is the average available capacity provided during the month (expressed in kW).

The Energy Purchase Charge (E) covers the costs of the following components:

- Fuel (E_F)
- Operation & Maintenance - variable portion (E_{OV})

These unit costs are usually expressed in terms of US\$/kWh.

$$E = (E_F + E_{OV}) * E_{ENERGY}$$

Unless the fuel market that supplies the power plant is fully liberalized, the cost of fuel is usually indexed to the prevailing market price of this fuel or a benchmark fuel price, which passes through the fuel price risk to the Purchaser.

Supplemental Charges (S - usually expressed in US\$/month) cover charges such as plant start-up and ramp-up costs above a maximum number of such events per period specified in the PPA (in which case the monthly charge is the charge per event times the chargeable number of these events), as well as the costs of providing Ancillary Services and miscellaneous costs specified in the PPA.

Note 1: The selection of US\$ in this illustration as the currency for expressing costs does not preclude the adoption of the Naira in practice, where appropriate. An advantage of expressing the values in US\$ is that it will facilitate comparisons with PPAs in other countries.

There are various formulations that can be used to compute the values of the charges that make up this expression for the average purchase price of power. The Commission has selected simple formulations to facilitate its review process, even though these formulations may not capture secondary factors that could influence the level of charges under the PPA. The Commission expects, however, the Seller and Purchaser to consider all the relevant factors in their analysis.

Sellers will be required to provide the information needed to compute the average purchase price of power under the PPA by completing the questionnaire reproduced in **Annex 1**. They will also be required to complete a summary table shown **Annex 2**, based on their responses to the questionnaire in Annex 1. The purpose of Annex 2 is to provide a convenient summary of the key components of overall average purchase price of power and the factors that affect this average price. In the event that information given in Annex 2 is not consistent with information given in Annex 1, the Commission will use the information given in Annex 1 for its assessment.

3.2 Purchaser's price versus Seller's cost.

The average purchase price is calculated from the Purchaser's perspective under the PPA. It depends on the actual costs incurred by the Seller in developing, constructing, operating and financing the plant over the life of the plant ("lifecycle" cost).

The Capacity Purchase Charge spreads ("levelizes") over a period of years specified in the PPA the construction and other initial costs incurred by the Seller in developing the power facility. Usually for new generation facilities, this period is at least as long as the repayment period for the Seller's long-term debt used to finance these costs. Hence the formula for the average purchase price given in the box represents a levelized cost for power under the PPA for the Purchaser. In a PPA where the Capacity Purchase Charge is reduced after a period of years specified in the PPA, the average purchase price of power over the term of the PPA is a function of both levels of Capacity Purchase Charge.

Both the Seller and the Purchaser enter into long-term financial obligations under the PPA which expose them to financial risks.¹⁸ Whereas the cost of the Seller's risk exposure is normally reflected in the Seller's cost of capital that is recovered in the Capacity Purchase Charge,¹⁹ the cost of the Purchaser's risk exposure (for example: the unwillingness or inability of the Purchaser's customers to pay the Purchaser in full or promptly for power sold by the Purchaser to them) is not reflected in the rates for power supplied under PPA.

¹⁸ In the case of a new 500MW plant with combined-cycle gas turbines that burn natural gas, for example, the Seller can invest around \$400 million in the plant, and the Purchaser may enter into payment obligations of around \$130 million per year for Capacity, Energy and Supplementary Charges under the PPA when the plant is operated near to its capacity.

¹⁹ A basic justification for the long terms of PPAs is to reduce the Seller's cost of capital.

The Purchaser's risk exposure is therefore assessed separately in the Affordability Analysis and the Risk Assessment. These two key dimensions of any PPA – average price and risk exposure – are then combined in a way that trades off low price with high risk –and vice-versa – as a basis for comparing a number of PPAs that have various combinations of these variables. The underlying assumption is that a full and objective regulatory review requires an examination of both dimensions of the PPA and the trade-offs between them.

3.3 Benchmarking the average purchase price of power

The Commission will compare the average purchase price of power computed from rates given in a PPA with a benchmark of prices for other PPAs. This comparison will complement the risk assessment by indicating any unusual features of the payments to be made under the PPA. It will draw on the Commission's reference database of PPAs as well as other data sources.

Differences in subsidies received and taxes paid – in both their direct and indirect forms –for power projects can strongly influence the price of purchased power under a PPA. An important example in the case of a fossil-fuelled power plant is any subsidies and taxes on fuels used for generating power from the plant. The questionnaire on average purchase price (Annex 1) therefore asks for information about any subsidies received and taxes payable by the project company for the generating plant and that will be incorporated into the costs specified in the PPA. The Commission will adjust the costs for the main components of the average purchase price of power to take account of these subsidies and taxes, and compute an *adjusted average purchase price of power* from these adjusted rates. The Commission will use this cost when comparing average purchase prices of power under PPAs.

3.4 Affordability of the PPA for the Purchaser

Affordability Analysis forms the second component in the second step of the Commission's assessment of the reasonableness of a long-term PPA.

The Commission recognizes that even if a PPA is fair and efficient for the parties to the agreement, the PPA *may still not be affordable* for the Purchaser (or to distributors or final consumers of electricity that bear the costs passed through by the Purchaser under the terms of the PPA). In other words, the PPA may create payment obligations that are simply not affordable for the Purchaser because the payments cannot be covered with revenues that the Purchaser will receive from its retail customers for power procured under the PPA. For the Commission to make a determination that a purchase is "economical", therefore, it must be able to examine the revenues that will be earned by the Purchaser and the possible impact of this purchase on regulated electricity tariffs.²⁰ And if the tariff increase

²⁰ This is a standard regulatory exercise that is routinely performed by electricity regulatory commissions around the world. For example, BC Hydro (Canada), in seeking approval of 38 PPAs that were selected

is not affordable to Nigerian consumers, the Nigerian government is likely to find itself paying for the shortfall under guarantee or securitization agreements. But in either case, Nigerian citizens will ultimately pay for the shortfall either as electricity consumers or as taxpayers.

This does *not* imply that the Commission will use its review of the PPA to conduct a full evaluation of the level and structure of the basis for the Purchaser's revenues. This will require a separate regulatory tariff review that the Commission intends to conduct in the context of its proceedings dealing with the setting of multi-year tariffs for distribution entities and the establishment of regulations for the pass-through of changes in generation costs to retail tariffs. Nevertheless, the Commission's regulatory review of a PPA would have little point if it had good reason to believe that the Purchaser cannot afford its payment obligations under the PPA due to the impact of this commitment on regulated tariffs.

The Commission recognizes the Seller will probably not have accurate information about the "affordability" of the PPA for the Purchaser.²¹ Such information is likely to be known only by the Purchaser. Therefore, the Commission will require that the Purchaser shall complete a separate questionnaire (**Annex 3**) that must be accompanied by a signed statement from an authorized representative of the Purchaser that provides answers to the following questions:

- a. Can you afford to make this proposed purchase under your existing tariff(s) to your own customers?
- b. If the answer is "no," what is your current estimated revenue shortfall without the addition of this PPA?
- c. If nothing else changes, by how much would your current expected revenue shortfall increase on a percentage and absolute basis as a result of the expected payments under the PPA?
- d. Estimate the required percentage increase in your average tariff(s) to eliminate any additional shortfall as a result of this PPA.

after a competitive tender, provided a "rate impact analysis" that estimated that the first year rate impact would be an increase of 8.1%. The British Columbia Utilities Commission decided not to use the BC Hydro assessment because it found flaws in the underlying assumptions. See British Columbia Utilities Commission, "Electricity Purchase Agreements-Reasons for Decision, Order NO. E-7-06, September 21, 2006. Available at <http://www.bcuc.com/RecentDecision.aspx>.

²¹ The affordability of the PPA for the Purchaser is nevertheless highly important for the Seller and its lenders, since it has a major influence of the cost of capital to the Seller for its investment in the generation plant. Where the lenders and investors are concerned about the adequacy of the Purchaser's tariffs, they will expect to receive a risk premium that raises the cost of capital for developing and constructing the power plant.

4 Risk Assessment

Risk assessment forms the third component in the second step of the Commission’s assessment of the reasonableness of a long-term PPA.

Risk assessment analyses the risk exposure to increases in costs for the parties under the PPA. The Commission’s analysis focuses on risk exposure from the Purchaser’s perspective. The Commission adopts the Purchaser’s perspective because of its legal mandate to protect the interests of captive electricity consumers whose demand is served with power procured by the Purchaser (EPSR Act, Section 71(2)(b)).

Since some purchasers may be totally or largely state-owned, the assessment also takes account of the risk implications for the Federal Government of Nigeria (Government) or any other level of government that owns a power enterprise that is purchasing electricity for captive customers under a PPA. For example, if the Government provides the Seller with a guarantee that the Purchaser will perform its payments obligations under the PPA, then the Government accepts the risk of being the “payer of last resort” if the Purchaser fails to do so. Any such guarantee may appear in the PPA or be recorded in a separate agreement between the Government and the Seller to the PPA. If one Seller has access to a Government payment guarantee and another Seller does not, the first Seller is likely to accept a lower capacity charge, all other things being equal, because the payment guarantee lowers its cost of the capital invested in the power generation facility. A similar advantage occurs when Government provides other forms of guarantee for the performance of state-owned or controlled parties to the PPA. Failure to take account of such a guarantee would distort comparisons across PPAs.²² Therefore, the Commission will require a description of any guarantee mechanism, regardless of whether it is recorded in the PPA or in another legal document, unless the Government of Nigeria formally requests the Commission not to make public the details of the guarantee.

Risk exposure is assessed by means of a two-part formula that is applied to each of a number of risk factors:

- One part is the relative weighting for each risk factor
- The other part is the rating of the Purchaser’s risk exposure to each risk factor.

The analysis of how different risks are allocated will be based on information contained in the PPA and other related documents. This information will be provided by the Seller through the Questionnaire on Risk Allocation shown in **Annex 4**. The Commission will also require the Seller to use this information to fill out the Risk Assessment table shown in **Annex 5** in order to derive a risk assessment of the PPA, which the Commission will then review. The Seller will

²² The reverse also applies, namely failure to take account of the absence of such a guarantee would distort the comparison of the PPA with benchmarks with guarantees.

be required to provide a signed statement from an authorized representative that vouches for the accuracy of the information given in their assessment.

4.1 Analysis of risk factors

The analysis of risk factors under the PPA shows which party to the PPA bears the risk exposure to increases in costs and how this party bears it for each factor. These risk factors fall into two groups:

- **Construction Period Risks.** Risks during the construction period for the PPA cover the following six principal risk factors in the case of a new fossil-fuelled power generation plant:
 - Increases in construction costs
 - Increases in financing costs
 - Delay in completion of the power plant
 - Delay in completion of associated facilities
 - Failure of plant to meet performance specifications at completion tests
 - Government actions
- **Operation Period Risks.** Risks during the operation period for the PPA cover the following thirteen principal risk factors in the case of a new fossil-fuelled power generation plant.
 - Constraints on plant operation
 - Increases in operating costs
 - Non-availability/non-convertibility of foreign exchange
 - Forced Outage/Derating or temporary shortfall in capacity
 - Deterioration in heat rate below the rate(s) specified in the PPA
 - Increased fuel costs and variable operation and maintenance costs
 - Prolonged outage of the plant due to major damage to equipment
 - Failure of Purchaser to perform its obligations under the PPA
 - Failure of the Seller to meet its obligations under the PPA that is caused by the plant operator
 - Environmental incidents caused by the Seller/Operator
 - Control over the Seller's rights to assignment of the PPA
 - Termination of the PPA in case of an event of default
 - Resolution of disputes between the Seller and the Purchaser

For a new fossil-fuelled power generation plant, the total risk exposure is allocated among these two groups of risks in the following proportions:

- Construction Period – 30%
- Operation Period – 70%

Each risk factor is assigned a relative weighting. These weightings are shown in the Questionnaire on Risk Allocation (Annex 4). The sum of the weightings for all risk factors for the Construction Period equals 30%, and the sum of the weightings for all risk factors for the Operation Period equals 70%. The highest weightings are given to risk factors associated with increases in operating costs

(15% relative weighting), forced outage/derating of the plant (14%), delay in construction completion (11%), and increase in construction costs and financing costs during construction (9%), which together account for about half of the total weighting for all risk factors.

The allocated proportions for the construction period and the operation period are based on an assessment of the relative exposures to risks of increases in costs to the Purchaser under the PPA.²³ The Purchaser is exposed both to the risk of increases in the average purchase price of power under the terms of the PPA such as indexation of cost components, and of external costs associated with these risks such as the cost of procuring power from alternative sources in the event of a prolonged outage of the plant.

These proportions would be considerably different for other generation technologies. In the case of a hydropower project, for example, most of the weighting would be associated with the risks of the construction period. Moreover, some of the risk factors for a hydropower scheme would differ from the risk factors for a fossil-fuelled power scheme. For example, risk exposure to hydrological uncertainty would replace risk exposure to fuel price uncertainty, and risk exposure to available energy would probably be higher for a hydropower plant than for a fossil-fuelled power plant. Other sources of renewable but intermittent energy, such as wind power, have similar risk exposure features to hydropower.

4.2 Assessment of risk exposure

The risk assessment rates the Purchaser's risk exposure based on the analysis of risk factors. It assesses the remedies and recourses permissible under the PPA for the main parties to the PPA for managing their risks.

- **Remedy.** A remedy is a legal means under the PPA for an aggrieved party to be compensated by another party, either by means of payment or conversely, by relief from an obligation to make a payment. For example, under specified events the Purchaser may be temporarily relieved from the obligation to make periodic payments to the Seller.
- **Recourse.** A recourse allows a party to take a course of action that avoids or mitigates the effects of a specific event without necessarily having the right to receive compensation from another party under the PPA. For example, the Purchaser may have the right to withdraw from a PPA if the Seller fails to meet certain major conditions, and instead to seek alternative sources of power.

This approach implies that the party that is best able to manage these risks should bear them and, where appropriate, be compensated for so doing. In this regard, the assessment takes account of industry norms for risk allocation,

²³ These proportions do not necessarily reflect the relative proportions of construction costs and operating costs in the life-cycle cost of a typical new fossil-fuelled power generation plant, as when the Seller carries the risk of increases in construction costs.

especially norms that protect investors in power generation facilities under long-term power purchase agreements.

As noted earlier, the Commission recognizes that the pattern of risk allocation that is feasible for Nigeria is likely to be different from the risk allocations observed in PPAs in countries with better existing economic and technical conditions in their power sectors (i.e., full cost recovery, full and accurate metering, sufficient generating capacity, low technical and commercial losses, full electrification). A “good” application is not an application where no risk is borne by the Purchaser and all risk is borne by the Seller. The Commission recognizes that there is also a cost to bearing risk. *The point of this review is not to try to transfer all risks from the Purchaser to the Seller, but instead to have each risk borne by the party that is in the best position to manage this risk.*

The assessment of the risk exposure is based on a scale 0 to 5, with 0 representing no risk exposure to the Purchaser and 5 representing full risk exposure for the Purchaser. The assessment should take account of any recourse and remedy available to the party exposed to a risk factor.

The weighted risk value for a particular risk factor is computed from the formula:

$$\text{Weighting} \times \text{Rating} / 5$$

The total weighted risk assessment for all the risk factors is the sum of the weighted risk assessments for individual risk factors. This total would be zero if all risk factors are rated 0 (i.e., Purchaser bears no risk, Seller bears all risk), and 100% if all risk factors receive a rating of 5 (i.e., Purchaser bears all risk, Seller has no risk). This computation is shown in Figure 3.

Figure 3. Methodology for Risk Assessment

Risk Factor	Risk Weighting	Risk Rating	Weighted Rating
Construction Period (6 risk factors)			
Risk factor 1	w ₁	r ₁	w ₁ *r ₁ /5
Risk factor 2	w ₂	r ₂	w ₂ *r ₂ /5
Risk factor 6	w ₆	r ₆	w ₆ *r ₆ /5
S-total Construction Period	30%		
Operation Period (13 risk factors)			
Risk factor 7	w ₇	r ₇	w ₇ *r ₇ /5
Risk factor 8	w ₈	r ₈	w ₈ *r ₈ /5
Risk factor 19	w ₁₉	r ₁₉	w ₁₉ *r ₁₉ /5
S-total Operation Period	70%		
Total for all risk factors	100%		Overall rating =Sum (w_x*r_x/5)

To assist Applicants, an illustrative benchmark risk assessment for a fossil-fuelled power plant developed under a PPA is given in **Annex 6**. The Commission believes that this assessment represents the lowest practicable overall risk exposure for a Purchaser under PPAs for fossil-fuelled generation plants financed, constructed and operated by foreign developers in developing countries. Under this illustrative risk assessment, the Purchaser bears about 20 percent of the overall risk exposure.

5. The Price-Risk Trade-off Approach to Assessing PPAs

The assessment of price-risk trade-off forms the third step of the Commission's approach for assessing the reasonableness of a long-term PPA. It is carried out to satisfy the central regulatory goal of ensuring that a licensee will "purchase power and other resources in an economical and transparent manner." (EPSR Act - Section 71(2)(b)).

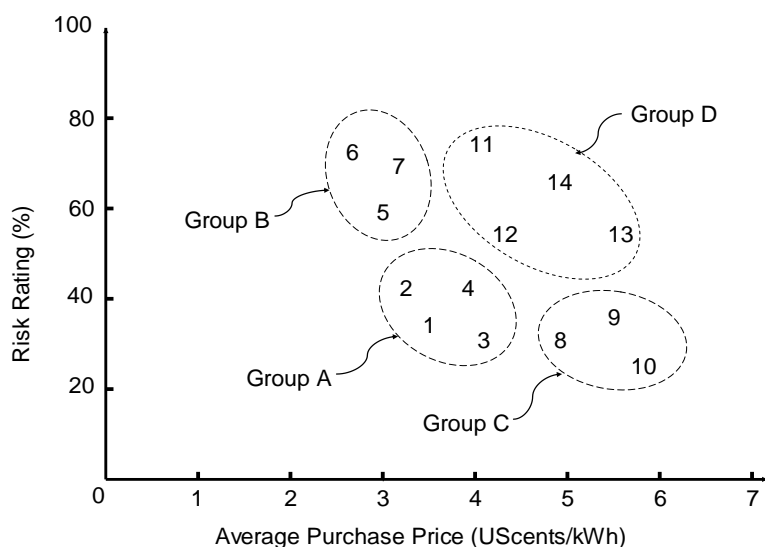
The Commission recognizes that a trade-off will usually occur between the average price of power purchased under a PPA and the amount of risk to which the Purchaser is exposed under this PPA. For well-developed PPAs, a lower purchase price will usually be associated with a higher risk exposure, and vice-versa. Analysis of this trade-off is important because greater risk exposure may cause the Purchaser actually to pay more over time than the average purchase price based on the initial rates for capacity and energy purchase charges that are given in the PPA.

The objective of this analysis is to identify the PPAs with the best combinations of purchase price and risk exposure. This approach provides an indication of the trade-off between risks to which the Purchaser is exposed under PPAs and the actual purchase price.

This approach is depicted in Figure 4. The horizontal axis represents the average purchase price computed according to the formula given in the box in section 3. The vertical axis represents the risk rating derived from the risk assessment described in section 4.²⁴

Figure 4. Price-Risk Trade-off Chart for PPAs

²⁴ The computed value for the average purchase price of power under a PPA is given at the end of Annex 1, and the risk rating for a PPA is given at the end of Annex 5.



Each number on the chart represents a PPA by its price level and risk rating

The Commission intends to classify PPAs into the following four categories under the price-risk trade-off approach:

- **Group A.** PPAs that offer a combination of relatively low average purchase price and relatively low risk exposure, shown inside Group A in Figure 1. These PPAs have the best trade-off for economical purchase of power, and therefore should be the first to be selected by the Purchaser.
- **Group B.** PPAs that offer a combination of relatively low average purchase price and relatively high risk exposure, shown inside Group B in Figure 1.
- **Group C.** PPAs that offer a combination of relatively high average purchase price and relatively low risk exposure, shown inside Group C in Figure 1.
- **Group D.** PPAs that offer a combination of relatively high average purchase price and relatively high risk exposure, shown inside Group D in Figure 1.

PPAs that fall into Groups B and C are candidates to supplement capacity procured under PPAs that fall into Group A. For PPAs that fall into Groups B and C, the Commission will advise the Sellers and Purchasers to take note of the Commission’s comments with a view to improving the risk assessments of PPAs in Group B and the purchase prices for PPAs in Group C.

For PPAs that fall into Group D, the Commission will strongly urge the Sellers and Purchasers to consider the concerns expressed by the Commission with a view to substantially improving the price-risk features of these PPAs.

When PPAs from Groups B and C are needed to supplement PPAs from Group A, they should be selected on a portfolio basis. This approach considers the combined average price of purchased power and the combined risk exposure for the Purchaser from all the selected PPAs. The objective is to select a group of

PPAs that together offer the best combination of price and risk exposure for the Purchaser.²⁵

At this stage, PPAs based on a variety of power generating technologies (diesel, gas turbine, hydropower, and other technologies for using renewable energy forms) can be brought together for evaluation on this common basis.

²⁵ This approach helps to manage the risk of future increases in the price of bulk power purchased to serve the loads of captive customers. It therefore improves the sustainability of regulatory approaches - such as multi-year tariff orders - for passing through the costs of purchasing bulk power to retail power tariffs.

Annex 1. Questionnaire for Computing the Average Purchase Price of Power under a Power Purchase Agreement for a New Fossil-fuelled Generation Plant

Seller: _____ Purchaser: _____
NERC's License Application Number: _____ Number of Pages: _____

General Instructions to this Questionnaire

- Note 1.** This computation is solely for the purpose of facilitating NERC's assessment of a PPA. It is not intended to form part of or be used for any commercial transaction by the parties to the PPA.
- Note 2.** All the questions should be answered in the shaded areas located at the end of each question. The values of the components of the Average Purchase Price of Power should be computed from these answers according to the formulas given herein, which are provided for information.
- Note 3.** Answers to this questionnaire about costs should include any subsidies from Nigerian sources, including the Federal Government of Nigeria, available to the project. The costs that are reported should include any taxes payable on plant, equipment, fuels and administration costs (including social charges on labour) and any holidays or waivers available on these payments.
- Note 4.** If the charges payable under the PPA are expressed in terms of Naira, responses to this questionnaire should be expressed in Naira, instead of in US\$, and NERC will use the Central Bank of Nigeria's prevailing free exchange rate at the time of its assessment for its computation of the Average Purchase Price of Power. In this case, responses should be supplemented with details of the indexation formulas applied to the charges.
- Note 5.** The questions about the components of the Capacity Purchase Charge, the Energy Purchase Charge and Supplemental Charges are intended to help NERC understand the basis or the actual value of these charges that are payable by the Purchaser under the PPA, as well as to enable NERC develop benchmark values. In the event that any of these computed benchmark values differ significantly from the actual charge that is payable, NERC may seek clarification of the responses from the Purchaser. NERC will take account of a significant difference that is not explained to its satisfaction in its risk assessment of the PPA. NERC will use the actual charges that are payable by the Purchaser in its computation of the Average Purchase Price.

General formula for computing the Average Purchase Price (P_{AV}):

$$P_{AV} = (CP + E + S)/E_{ENERGY}$$

where CP = Capacity Purchase Charge

E = Energy Purchase Charge

S = Supplemental Charges

E_{ENERGY} = Amount of energy purchased

The valuation of these variables is described below in this Questionnaire.

Q1: What type(s) of technology are employed for the plant and main equipment used to generate power in the facility? ___

Q2a: What is the nominal capacity of the facility under the expected ambient operating conditions, expressed in kW ($C_{NOMINAL}$)? ___

Q2b: What is the maximum declared available capacity of the facility under the expected ambient operating conditions, expressed in kW ($C_{CAPACITY}$)? ___

Note 6. The amount of capacity ($C_{CAPACITY}$) used for this computation is adjusted each month to reflect the declared available capacity resulting from tests and/or level of declared capacity availability of the plant during this period relative to a reference level or target availability defined in the PPA. This charge is payable independently of the amount of energy supplied under the PPA during the period.

Q3: What is the duration of the PPA, expressed in years (n)? ___

Capacity Purchase Charge

Q4: What is the Average Capacity Purchase Charge payable during the first full year of operation of the facility given in the PPA, expressed in US\$/kW/month (CP_{AV})? ___

Q5a: How does the Capacity Purchase Charge - excluding indexation of the values of the components of this charge - vary over time under the PPA? ___

Q5b: What is the “levelized” value for the Capacity Purchase Charge over the life of the PPA, excluding indexation of the values of the components of this charge (CP_{LEV})? ___

Note 7. This levelized value for the Capacity Purchase Charge (CP_{LEV}) should be computed from the following formula:

$$CP_{LEV} = \frac{\text{Sum of all Capacity Purchase Charges payable}}{N}$$

where N is the number of payments due under the PPA

- Q5c: Is the Capacity Purchase Charge linked to an index or indexes?**
- Q5d: If the Capacity Purchase Charge linked to an index or indexes, identify the index or indexes and give the indexation formula(s) here:**
- Q6a: What is the total investment by the Seller in developing the facility, expressed in US\$ (I)?**
- Q6b: Which of these categories are included in the Seller's total investment:**
- land acquisition and development?
 - supply and construction of power plant & associated equipment?
 - dedicated fuel supply link?
 - dedicated transmission link?
 - other ancillary infrastructure and facilities?
- Q6c: What is the investment per kW of nominal capacity (I/C_{NOMINAL})?**
- Q6d: Will the amount of investment to be recovered under the Capacity Charge be finalized at the time of signing the PPA?**
- Q6e: If the amount of this investment won't be finalized at the time of signing the PPA, describe any formula used to incorporate this amount in the value of the Capacity Purchase Charge:**

Note 8. The formula may link the value of CP to the ratio of the actual final investment cost to a reference investment cost. If this ratio is unity, then all the cost difference is borne by the Purchaser. If this ratio is less than unity, then the cost difference is divided between Seller and Purchaser.

- Q7a: What proportion of the total investment is financed by the Seller through long-term debt (D_p)?**
- Q7b: What is the average annual interest rate payable on this debt by the Seller, expressed in percent per year (D_i)?**
- Q7c: What proportion of the total investment is financed through equity by the Seller, expressed as a percentage of the total investment (E_p)?**
- Q7d: What is the pre-tax average return on equity sought for this investment, expressed in percent per year (E_i)?**
- Q7e: What is the Seller's weighted average cost of capital (i)?**

Note 9. The Seller's weighted average cost of capital (i), expressed in percent per year, should be computed from the following formula:

$$i = (D_p * D_i + E_p * E_i) / 100$$
 The sum $D_p + E_p$ should equal 100 percent.

Q8: What is the component of the Capacity Purchase Charge that covers the total investment in the facility, expressed in US\$/kW maximum declared capacity/month (CP_{INV})? _____

Note 10. This component is computed from the following formula:

$$CP_{INV} = I * \{i / [1 - 1 / (1+i)^n]\} / 12 / C_{CAPACITY}$$

where I is given in the response to Q6a

C_{CAPACITY} is given in the response to Q2b

Q9: What is the fixed operation and maintenance cost for the facility, expressed in US\$/kW maximum declared capacity/month (CP_{OF})? _____

Q10: What is the cost of all forms of insurance for the facility, expressed in US\$/kW maximum declared capacity /month (CP_{INSUR})? _____

Q11: What are the general and administration costs for the facility, expressed in US\$/kW maximum declared capacity /month (CP_{GEN})? _____

Q12: What other capacity related costs are recovered under the Capacity Purchase Charge, expressed in US\$/kW maximum declared capacity /month (CP_{OTHER})? _____

Q13a: What is the Capacity Purchase Charge component of the Average Purchase Price, expressed in US\$/kW maximum declared capacity/month, that is calculated from the following formula (CP_{CALC})? _____

Calculated Capacity Purchase Charge CP_{CALC} = (CP_{INV}+CP_{OF}+CP_{INSUR}+CP_{GEN}+CP_{OTHER})

Q13b: What is the percentage difference between the value of the levelized Average Capacity Purchase Charge (CP_{LEV}) of the PPA and the calculated Capacity Purchase Charge (CP_{CALC})? _____%

Note 11. This percentage difference should be calculated as follows:

$$[(CP_{LEV} - CP_{CALC}) / CP_{LEV}] * 100$$

The levelized value for the Capacity Purchase Charge (CP_{LEV}) is given in the response to Q5c. If no response is given to Q5c, the average first year value (CP_{AV}) given in the response to Q4 should be used instead.

Energy Charge

Q14: What is the level of the energy charge payable at the expected date of commercial operation given in the PPA, expressed in US\$/kWh (E_{AV})? _____

Note 12. If this energy charge is not explicitly stated in the PPA, state “Not explicitly stated”.

If fuel is to be provided for the plant at no cost to the Seller, state “No fuel charge payable”. Provide details of the fuel supply arrangements in the response to Q14 of the Questionnaire on Risk Allocation.

- Q15a:** Is the fuel charge linked to an index or indexes?
- Q15b:** If so, identify the index or indexes and give the indexation formula(s) here:
- Q16:** What type of fuel (natural gas, liquid fuels, or coal) will be used principally for generating power in the plant?
- Q17:** What is the average calorific value of this fuel, expressed in joules per unit of fuel - cubic meter for natural gas, litre for liquid fuels, tonne for coal (Fcal)?
- Q18:** What is the average energy conversion efficiency (“heat rate”) of the power plant that the Seller has committed to in the first full year of operation with the principal fuel - taking into account any difference in quality from normal standards - for the planned operating mode of the plant under the PPA in the expected ambient operating conditions, expressed in joules consumed per kWh produced from the generating plant (Fconv)?
- Q19:** What is the unit cost of the fuel in the first full year of operation to be used for generating power in the facility, expressed in US\$/unit of fuel - cubic meter for natural gas, litre for liquid fuels, tonne for coal (Fcost)?
- Q20:** What proportion of energy produced by the generating plant is consumed in the facility, expressed as a percentage of energy produced (Paux)?
- Q21:** What is the estimated fuel cost component of the Energy Purchase Charge, expressed in US\$/kWh sent out from the facility (E_F)?

Note 13. The estimated fuel cost component (E_F) of the Energy Purchase Charge, is calculated as follows:
 Fuel cost E_F = [Fcost *(Fconv/Fcal)]/[100- Paux]/100

- Q22:** What is the variable operation and maintenance cost for the facility, expressed in US\$/kWh sent out from the facility (E_{ov})?
- Q23a:** What is the average amount of energy expected to be sent out from the facility, averaged over a year to allow for planned maintenance periods and unplanned outages, expressed as kWh per month (E_{ENERGY})?
- Q23b:** What is the expected average monthly capacity utilization of the plant based on the expected amount of sent-out energy?

Note 14. The expected average monthly load factor should be calculated from the following formula:
Expected Amount of Energy Produced Monthly (E_{ENERGY})
 Expected Declared Available Capacity (C_{CAPACITY})*720
 The value for E_{ENERGY} is given in the response to Q 23a.
 The value for C_{CAPACITY} is given in the response to Q 2b.
 For the purposes of computing the Average Purchase Price in the

case of a fossil-fuelled power plant that is to operate in base load mode, E_{ENERGY} will be computed on the assumption that the plant will operate at the equivalent of its declared available capacity for 70 percent of the payment period (equivalent to 534 hours in a month of 720 hours), even if the plant is expected to operate for longer.

$$E_{ENERGY} = C_{CAPACITY} * 534 \text{ kWh/month}$$

Q24: What – if any - is the Purchaser’s minimum monthly payment for energy under the PPA (allowing for planned maintenance) under a “take-or-pay” provision, expressed as US\$ per month (Pmin)? ___

Note 15. This minimum payment for energy – if applicable – will be used for computing the Average Energy Purchase Charge (E_{AV}) component of the Average Purchase Price (P_{AV}) under Q29, if the Purchaser is committed under the PPA to pay for an amount of energy that is greater than 70 percent capacity utilization during each payment period according to the response to Q23b. Also in this event, the amount of energy (E_{ENERGY}) used in the formula for the Average Purchase Price will be set at the equivalent of 70 percent monthly capacity utilisation.

Q25: What is the estimated Average Energy Purchase Charge payable from the date of commercial operation, expressed in terms of US\$/kWh (E_{CALC})? ___

Note 16. The Energy Charge component (E_{CALC}) of the Average Purchase Price, expressed in US\$/month, is calculated as follows:

$E_{CALC} = (E_F + E_{OV}) * E_{ENERGY}$ if this amount is greater Pmin
 Otherwise, if applicable: $E_{CALC} = P_{min}$
 E_F is given in the response to Q21
 E_{OV} is given in the response to Q22

Q26: W charge

Note 17. This percentage difference should be calculated as follows:
 $[E_{AV} - E_{CALC}] / E_{AV} * 100$
 E_{AV} is given in the response to Q14
 E_{CALC} is given in the response to Q25

Supplier

Q27: What supplemental charges are payable by the Purchaser for normal operation of the plant under the PPA, showing each charge separately with any applicable indexes, and expressed in US\$/month (S)? _____

Q28: What is the average supplemental charge payable by the Purchaser, expressed in US\$/kW maximum declared availability/month (S_{AV})?

Note 18. The average supplemental charge (S_{AV}) should be calculated from the following formula:

$$S_{AV} = S / C_{CAPACITY}$$

Average Purchase Price of Power

Q29: What is the Average Purchase Price of Power under the PPA from the following formula, expressed in US\$/kWh (P_{AV})? _____

$$P_{AV} = (C_{PLEV} + S_{AV}) * C_{CAPACITY} / E_{ENERGY} + E_{AV}$$

Note 19. C_{PLEV} is given in the response to Q5c

S_{AV} is given in the response to Q28

$C_{CAPACITY}$ is given in the response to Q2b

E_{ENERGY} is given in the response to Q23a

E_{AV} is given in the response to Q14

Where a value for C_{PLEV} is not available from the PPA, use instead the value for C_{PAV} given in the response to Q4.

Where a value for E_{AV} is either zero because fuel is supplied at no charge or is not available from the PPA, use instead the value for E_{CALC} given in the response to Q25.

**Gener
Q30:**

Seller's Declaration: _____

Date of Declaration: _____

Annex 2. Summary of Key Factors Affecting a Power Purchase Agreement for a New Fossil-fuelled Generation Plant

Seller: _____ **Purchaser:** _____
NERC's License Application Number: _____

Factor	Reference in the Av. Pur. Price Questionnaire	Unit	Value
Duration of the PPA	Q3	years	
Capacity Purchase Charge:			
Types of technology employed	Q1	n.a.	
Nominal capacity of the facility	Q2a	kW	
Total investment in the facility	Q6a	US\$	
Investment per unit of nominal capacity	Q6b	US/kW	
Levelized Capacity Purchase Charge	Q5c	US\$/kW/month	
Proportion of the total investment as equity	Q7c	%	
Weighted average cost of capital	Q7e	%/year	
Energy Purchase Charge:			
Fuel charge payable	Q14	US\$/kWh	
Type of fuel used for generating power	Q16	fuel	
Energy conversion efficiency of the power plant	Q18	joules/kWh	
Unit cost of the fuel	Q19	US\$/unit of fuel	
Average monthly load factor of the plant	Q23b	%	
Minimum monthly payment for energy, if any	Q24	US\$/month	
Average Energy Purchase Charge	Q25	US\$/kWh	
Supplemental Charges:			
Supplemental charges payable	Q28	US\$/kW/month	
Average Purchase Price of Power	Q29	US/kWh	
General			
Exchange rate - Naira per US\$	Q30	Naira/US\$	

a/ Questionnaire for Computing the Average Purchase Price of Power under a PPA

Seller's Declaration: _____

Date of Declaration: _____

**Annex 3. Purchaser's Declaration About Affordability
of Its Payment Obligations Under a Power Purchase
Agreement for a New Fossil-fuelled Generation Plant**

Seller: _____ **Purchaser:** _____
NERC's License Application Number: _____

Q1: Can you afford to make this proposed purchase under your existing tariff(s) to your own customers? _____

Q2: If the answer is "no," what is your current estimated revenue shortfall without the addition of this PPA? _____

Q3: If nothing else changes, by how much would your current revenue shortfall increase on a percentage and absolute basis as a result of the expected payments under the PPA? _____

Q4: Estimate the required percentage increase in your average tariff(s) to eliminate any additional shortfall as a result of this PPA. _____

Purchaser's Declaration: _____

Date of Declaration: _____

Annex 4. Questionnaire on Risk Allocation Under a Power Purchase Agreement for a New Fossil-fuelled Generation Plant

Seller: [REDACTED]
NERC's License Application Number: [REDACTED]
Number of Pages: [REDACTED]

Purchaser: [REDACTED]

Question	PPA clause (see Note)	Response
Risks under the Power Purchase Agreement during the construction period		
1 Increases in construction costs		
Q1a. Will the plant be constructed under a turnkey fixed-price contract or a cost-plus contract? Describe the contract form if neither of these two forms is used.		
Q1b. Who bears any construction cost overruns that fall within the control of the construction consortium?		
Q1c. What security in terms of Letters of Credit and retention bonds are to be posted by the construction consortium(s) (or equivalent contractor) as a percentage of the contract price(s)?		
Q1d. Does the Seller or Purchaser pay for power consumed during plant construction?		
Q1e. What provisions are being made – including stand-by financing - for meeting construction cost overruns that fall outside the control of the construction consortium in the following events: Insured event; Insured Force Majeure; Seller variation orders; Ground conditions; Changes of law?		

Question	PPA clause (see Note)	Response
Q1f. Does the Seller or Purchaser pay for the fuel consumed during plant commissioning?		
2. Increases in financing costs		
Q2a. What financial resources does the Seller have in hand or on call to cover the estimated construction cost?		
Q2b. What are the timing and terms of financing arranged for the project?		
Q2c. What are the security requirements [assets, assignment of license/concession, direct agreements with Purchaser/EPC contractor/O&M operator, pledge of shares, retention accounts, assignment of insurance, etc.] by the lenders for the power plant?		
Q2d. Are there any liens – or possibility of any liens - on power plant assets or the assets of the company that is developing the power plant (other than liens of lenders for the power plant)?		
Q2e. What stand-by financing will be available to the Seller to cover increases in costs arising from increases in interest rates until the Seller receives additional revenues under the PPA for covering these increases?		
Q2f. What stand-by financing will be available to the Seller to cover increases in costs arising from changes in exchange rates until the Seller receives additional revenues under the PPA for covering these increases?		
Construction completion delay 3. Completion of power plant		
Q3a. What land use rights over the duration of the PPA for the site on which the plant is to be located has the Seller secured, and what rights have yet to be secured?		

Question	PPA clause (see Note)	Response
Q3b. Which necessary licenses, permits and approvals have been obtained to date, and which ones have not been obtained to date?		
Q3c. Under what terms can the Purchaser and Fuel Supplier withdraw from the PPA and Fuel Supply Agreement (FSA), respectively, if the Seller does not complete the construction financing package by a date specified in the PPA or FSA?		
Q3d. Under what terms can the Purchaser and Fuel Supplier withdraw from the PPA and FSA, respectively, if the Seller's plant does not enter into service by a date specified in the PPA or FSA?		
Q3e. What daily penalties would be payable by the construction consortium for a delay in completion beyond the contracted Date of Entry into Service under the PPA that is within the control of the construction consortium?		
Q3f. What is the daily rate of compensation payable by the Seller to the Purchaser for a delay in completion beyond the contracted Date of Entry into Service under the PPA that is beyond the control of the construction consortium?		
4. Completion of associated facilities		
Q4a. Does the Seller have a signed connection agreement with the power transmission operator?		
Q4b. Who is responsible for getting the power plant connected to the power transmission network (Seller or transmission operator)?		
Q4c. Who pays for any works required to connect the power plant to the power transmission network, including any extension to the transmission network (Seller, transmission operator, Purchaser or a third party)?		
Q4d. Who pays for any cost overruns or delays in commissioning the power plant caused by delays in connecting the power plant to the transmission network?		

Question	PPA clause (see Note)	Response
Q4e. Does the Seller have a signed agreement for fuel supply?		
Q4f. Who is in charge of building the connection (such as a natural gas pipeline or rail or road connection to a coal port or diesel storage facility) from the power plant to fuel supply facilities?		
Q4g. Who is responsible for funding the fuel pipeline or other connection facility supplying the power station (Seller, Purchaser, fuel provider or a third party)?		
Q4h. Who pays for any cost overruns or delays in commissioning the power plant caused by delays in building the fuel connection to the power plant?		
Q4i. Who pays for any cost overruns or delays in commissioning the power plant caused by delays in building or installing other associated facilities to the power plant such as roads, water supply and discharge, and telecoms?		
5. Insured Force Majeure		
Q5a. What is the definition of Force Majeure affecting the Seller (distinguish between construction and operation periods)?		
Q5b. What is the definition of Force Majeure affecting the Purchaser?		
Q5c. What – if any – is the definition of Force Majeure affecting third parties to the PPA such as fuel supplier and plant operator?		
Q5d. What insurance - such as Business Interruption Insurance - will the Seller carry to cover costs arising from delay to construction completion because of Force Majeure events?		
6. Capacity shortfall		

Question	PPA clause (see Note)	Response
Q6a. What penalties, including liquidated damages, are payable by the construction consortium in the event that the plant fails to meet the specified capacity availability at completion tests?		
Q6b. What insurance is available to cover the Seller's costs or revenue forgone under the PPA to supplement penalties payable by the construction consortium in the event described in Q6a?		
7. Heat rate shortfall		
Q7. What penalties, including liquidated damages, are payable by the construction consortium in the event that the plant fails to meet the specified heat rate standards at completion tests?		
8. Government actions		
Q8a. What provisions are included in the PPA (or the Implementation Agreement, if there is one) to take account of changes in tax, law, customs, and regulations that do not fall under Force Majeure as defined in the PPA?		
Q8b. Under what conditions and terms of compensation is the Seller entitled to terminate its obligations under the PPA in the event that Government either expropriates the plant or withdraws consents or interferes in other ways that cause severe prejudice to the Seller's financial performance under the PPA?		
Risks under the Power Purchase Agreement during the operation period		
9. Plant operating mode		
Q9a. What are the plant operating constraints or any other constraints in the PPA that will affect the dispatch and scheduling of maintenance of the generation plant within the dispatch and scheduling principles and procedures established in the Grid Code?		

Question	PPA clause (see Note)	Response
Q9b. What technical capability will the plant have to provide operational reserve and other ancillary services?		
Q9c. What ancillary services will be paid for under the PPA, and will they be paid under separate charges or as part of other charges ?		
Q9d. What incentives are provided in the PPA for faster plant ramp-up and ramp-down time profiles, and conversely penalties for slower times?		
Q9e. What technical support arrangements will be provided by the manufacturers of the main plant components (such as turbines)?		
Q9f. What are the available warranties from the equipment supplier and O&M contractor?		
Q9g. What are the Seller's insurance policies for operations (quality, quantity, efficiency and reliability)?		
Q9h. How is the Purchaser's obligation to pay the Capacity Purchase Charge adjusted in the event of transmission constraints affecting the dispatch of the Seller's plant?		
Q9i. How will be Purchaser be compensated for reduced delivery of power in the event of a prolonged transmission constraint?		
10. Increases in Operating Costs		
Q10a. How are increases in operating costs arising from changes in government regulations allocated between the Seller and the Purchaser?		
Q10b. How are increases in operating costs arising from the actions or inactions of the Purchaser allocated between the Seller and the Purchaser?		
Q10c. How are increases in operating costs arising from the actions or inactions of the Seller and/or power plant operator allocated between the Seller and the Purchaser?		

Question	PPA clause (see Note)	Response
Q10d. What recourse is available to the Purchaser under the PPA to limit increases in payments for insurance, O&M – both fixed and variable - and other categories of charges?		
Q10e. What provisions under the PPA, if any, does either the Seller or the Purchaser have for compensation for financial losses incurred because of errors in meter readings of the plant output?		
11. Forex non-availability/non-convertibility		
Q11. What recourse would the Seller have in the event of non-availability or non-convertibility of foreign exchange due to the Seller for purposes defined in the PPA or other agreement?		
12. Forced outage/derating or temporary shortfall in capacity availability		
Q12a. Does the Purchaser have the right under the PPA to call for an availability test?		
Q12b. If the Purchaser has the right to call for an availability test, how many times a year can the Purchaser call for this test?		
Q12c. How much advance notice must the Purchaser give to the Seller for this test?		
Q12d. If the plant fails an availability test, how long will the Seller have to restore the plant to its declared available capacity before a default situation arises?		
Q12e. What compensation - if any - is payable by the Seller to the Purchaser when the Seller is at fault for forced outage/derating or temporary shortfall in capacity below the declared available capacity between availability tests?		
Q12f. What proportion of the Capacity Purchase Charge is payable when the Purchaser is at fault for forced outage/derating or temporary shortfall in capacity below the declared available capacity between availability tests?		

Question	PPA clause (see Note)	Response
Q12g. If the Seller fails to deliver the electrical output in full from the plant that is requested by the Purchaser or system operator within the declared available capacity of the plant, what remedies are available to the Purchaser from the Seller under the PPA?		
Q12h. What proportion of the Capacity Purchase Charge is payable by the Purchaser to the Seller under a Force Majeure event specified in the PPA?		
13. Deterioration in heat rate below specified rate(s)		
Q13. What adjustment – if any – would be made to the Energy Purchase Charge for deterioration in the plant’s heat rate below rate(s) specified in the PPA for which the Seller is at fault?		
14. Increased fuel costs (not arising from deterioration in heat rate) and variable O&M costs		
Q14a. Is the Seller responsible for procuring fuel for the power plant?		
Q14b. If the Seller is not responsible for procuring fuel for the power plant, who is responsible for procuring this fuel and paying for it?		
Q14c. How are increases in the Seller’s fuel costs (not arising from deterioration in heat rate) reflected in the payment for power by the Purchaser under the PPA?		
Q14d. If there is a FSA, do the FSA obligations mirror the PPA obligations in terms of start date, PPA indexation formula, liquidated damages triggers (delay of plant commissioning date, plant availability), Force Majeure, etc.		
Q14e. What, if any, is the take-or-pay obligation for the FSA?		

Question	PPA clause (see Note)	Response
Q14f. What are the requirements for fuel-buyer security and fuel-seller guarantees in the FSA? (Evidence of the terms of the FSA, such as a copy of an FSA signed by the Seller, should be provided to the Commission with this completed questionnaire)		
Q14g. Does the Seller or the Purchaser bear the consequential costs of lost power output due to a shortage of fuel for the plant – including delay in delivery - or fuel supplied below the specified quality?		
Q14h. Under what conditions specified in the PPA is the Seller permitted to use an alternative fuel to the main fuel specified in the PPA for generating power?		
Q14i. If this type of fuel switching is permitted under the PPA, provide the following details about the permitted alternative fuel: type of fuel; average calorific value of this fuel (in BTUs per unit of fuel); average heat rate of the power plant when using this fuel (in joules per kWh); any change to the fuel charge; and any change to indexation of the fuel charge.		
15. Prolonged outage from major damage to equipment		
Q15a. What insurance cover must the Seller provide before the commencement of commercial operation of the plant for the costs of physical reinstatement of damaged plant and equipment and for business interruption?		
Q15b. For how long – if at all - is the Purchaser committed to paying the Capacity Purchase Charge while plant capacity is unavailable arising from major damage to equipment?		
16. Failure of Purchaser to perform its obligations under the PPA		
Q16a. What compensation is payable by the Purchaser to the Seller in the event that the Purchaser fails to fulfil its obligations to take power or make payments under the PPA?		

Question	PPA clause (see Note)	Response
Q16b. What guarantees and/or credit support will the Seller receive from or through the Purchaser in case of payment default by the Purchaser?		
Q16c. Has the Seller received a Government guarantee if the Purchaser is state owned or otherwise credit support from the Purchaser's owner? If so, describe the nature of this support.		
17. Failure of the Seller to meet its obligations under the PPA that is caused by the plant operator		
Q17. Where the Seller retains the services of a plant operator under an Operation and Maintenance Agreement, what indemnity is payable by the operator to the Seller under the PPA in the event that the plant operator breaches the terms of this agreement?		
18. Environmental incidents caused by the Seller/Operator		
Q18a. Who bears responsibility under the PPA for payment of penalties imposed for breach of environmental regulations at the plant?		
Q18b. Who bears responsibility under the PPA for meeting the costs of complying with changes to environmental regulations?		
Q18c. What provisions are in the PPA for indemnifying the Purchaser against any liabilities that it may face arising from the transportation and handling of hazardous waste (as defined in law) by the Seller or its contractor during commissioning, operation and decommissioning of the plant?		
19. Assignment, Termination, Choice of Law and Dispute Resolution		
Q19a. Is consent required from the Purchaser and/or the project lenders for the assignment of the PPA or change in operation or control of the plant by the Seller?		

Question	PPA clause (see Note)	Response
Q19b. How much time must elapse after the effectiveness of the PPA before an amendment can be made to the PPA?		
Q19c. What - if any - specific provisions are contained in the PPA for renegotiation of the PPA in the event that bulk power prices in the Nigerian power market fall well below the average total payment for power per kWh of energy taken by the Purchaser under the PPA?		
Q19d. What - if any - are the buy-out terms of the PPA in the case of an Event of Default by the Seller or in the case of an Event of Default by the Purchaser? Does the buy-out price cover outstanding debt + minimum Return on Equity?		
Q19e. What law will apply to the PPA and the FSA – for example New York Law, English Law or Nigerian Law?		
Q19f. What are the provisions – including but not limited to cure periods - for dispute resolution under the PPA?		
General		
Q20. Are there any particular factors about the project and the PPA and associated agreements that will or may cause higher costs and which the Seller wishes to bring to the attention of the Commission?		

Note: The relevant clause references in the Power Purchase Agreement, Fuel Supply Agreement and any related documents for each response should be noted in this column. In the case of responses that do not have such references, the abbreviation “n.a.” should be inserted instead.

Seller’s Declaration: _____

Date of Declaration: _____

Annex 5. Table for Risk Assessment of a Power Purchase Agreement for a New Fossil-fuelled Generation Plant

Seller: _____ **Purchaser:** _____
NERC's License Application Number: _____

Risk factor	Cause	Reference ^a in the Risk Alloc. Questionnaire	Risk Bearer and Remedy/Recourse		Risk Rating (see Note 1)		
			Seller	Purchaser	W	R	WR
Risks under the PPA during the Construction Period							
Increases in construction costs	Within Construction Consortium control	1a, 1b, 1c, 1d, 1e			3%		
	Outside Construction Consortium Control:						
	Insured event, Insured Force Majeure, Seller variation orders, ground conditions, changes of law	1f			3%		
	Increases in financing costs arising from a rise in interest rates and/or change in exchange rates	2			3%		
Delay in completion of power plant beyond the contracted Date of Entry into Service under the PPA	Licences, permits and approvals; construction financing; plant commissioning	3a, 3b, 3c, 3d			3%		
	Unanticipated difficulties both within and beyond the control of the constructor	3e, 3f			3%		

Risk factor	Cause	Reference ^a in the Risk Alloc. Questionnaire	Risk Bearer and Remedy/Recourse		Risk Rating (see Note 1)		
			Seller	Purchaser	W	R	WR
	Completion of connections to power transmission and fuel supply systems and other infrastructure	4			3%		
	Insured Force Majeure	5			2%		
Plant fails to meet specified performance at completion tests	Capacity shortfall	6			3%		
	Heat rate shortfalls	7			3%		
Government actions	Changes in tax, law, customs and regulations not covered by Force Majeure	8a			2%		
	Expropriation, withdrawn consents, interference causing severe prejudice	8b			2%		
Sub-total Construction Period					30%		
Risks under the PPA during the Operation Period							
The plant cannot be operated as envisaged under the PPA	Plant operation is limited by generation technology or transmission constraint	9			5%		

Risk factor	Cause	Reference ^a in the Risk Alloc. Questionnaire	Risk Bearer and Remedy/Recourse		Risk Rating (see Note 1)		
			Seller	Purchaser	W	R	WR
Increases in operating costs	As a result of changes in government regulations	10a			5%		
	Arising from the Purchaser's actions	10b			5%		
	Arising from the Seller's actions	10c, 10d, 10e			5%		
Forex non-availability/non-convertibility	Government default	11			5%		
Forced Outage/Derating or temporary shortfall in capacity availability	Seller's fault. Weak procedure to verify capacity availability	12a, 12b, 12c, 12d, 12e			6%		
	Purchaser's fault	12f, 12g			4%		
	Force Majeure event	12h			4%		
Deterioration in heat rate below specified rate(s)	Seller's fault	13			5%		
Increased fuel costs (not due to deterioration in heat rate) and variable O&M costs	Increase in price of fuel, interruption in fuel supply, maintenance needs	14			7%		

Risk factor	Cause	Reference ^a in the Risk Alloc. Questionnaire	Risk Bearer and Remedy/Recourse		Risk Rating (see Note 1)		
			Seller	Purchaser	W	R	WR
Prolonged outage from major damage to equipment	Insured event	15			5%		
Failure of Purchaser to perform obligations under the PPA	Due to factors such as insufficient demand for the output of the plant in the power markets served by the Purchaser	16			3%		
Failure of the Seller to meet obligations under the PPA that is caused by the plant operator	Operator breaches Operations and Maintenance Agreement	17			3%		
Environmental incidents caused by the Seller/Operator	Operator breaches Operations and Maintenance Agreement	18			3%		
Assignment, Termination, Choice of Law and Dispute Resolution	Seller and Purchaser have serious disputes about PPA terms	19			5%		
a/ Questionnaire on Risk Allocation for Entities that Propose to Sell Power under Power Purchase Agreements to Purchasers with Captive Customers from New Fossil-Fuelled Generating Plants Note 1: W - Weighting, with total weighting = 100%. R - Rating on a scale 0 to 5 (0 is zero risk exposure for Purchaser/Government). WR - Weighted Rating (%) = W*R/5. Note 2: This table does not substitute for a full risk analysis of agreements entered into by the Purchaser with the IPP that the Purchaser should undertake as part of its technical, financial and legal due diligence.			Sub-total Operation Period		70%		
			Total Risk Rating		100%		

Seller's Declaration:

Date of Declaration:

Annex 6. Illustrative Risk Assessment of a Power Purchase Agreement for a New Fossil-fuelled Generation Plant

Risk factor	Cause	Reference ^a in the Risk Alloc. Questionnaire	Risk Bearer and Remedy/Recourse		Risk Rating (see Note 1)		
			Seller	Purchaser	W	R	WR
Risks under the PPA during the Construction Period							
Increases in construction costs	Within Construction Consortium control	1a, 1b, 1c, 1d, 1e	Included in Fixed Price Lump Sum Contract		3%	0	0.0%
	Outside Construction Consortium Control:						
	Insured event, Insured Force Majeure, Seller's variation orders, ground conditions, changes of law	1d, 1e, 1f	Use proceeds of business interruption insurance. Draw on stand-by finance if policy exhausted.		3%	0	0.0%
	Increases in financing costs arising from a rise in interest rates and/or change in exchange rates	2	Draw on stand-by finance until purchase price adjusted	Indexed adjustment to purchase price	3%	3	1.8%
Delay in completion of power plant beyond the contracted Date of Entry into Service under the PPA	Licences, permits and approvals; construction financing; plant commissioning	3a, 3b, 3c, 3d	Seller has all licences, permits and approvals in hand by financial closure		3%	0	0.0%
	Unanticipated difficulties both within and beyond the control of the constructor	3e, 3f	Draw on stand-by finance		3%	0	0.0%
	Completion of connections to power transmission and fuel supply systems and other infrastructure	4	Penalties payable by construction consortium to the Seller cover debt interest and fixed operating costs	Seller compensates the Purchaser at a daily rate that covers the Purchaser's avoided cost of power	3%	0	0.0%

Risk factor	Cause	Reference ^a in the Risk Alloc. Questionnaire	Risk Bearer and Remedy/Recourse		Risk Rating (see Note 1)		
			Seller	Purchaser	W	R	WR
	Insured Force Majeure	5	Use proceeds of business interruption insurance policy plus stand-by finance		2%	0	0.0%
Plant fails to meet specified performance at completion tests	Capacity shortfall	6	Penalties payable by construction consortium, supplemented by insurance		3%	0	0.0%
	Heat rate shortfalls	7	Penalties from construction consortium. Seller bears any further costs.		3%	0	0.0%
Government actions	Changes in tax, law, customs and regulations not covered by Force Majeure	8a	Adjustment to purchase price (if stand-by finance drawn during construction period)	Indexed adjustment to purchase price	2%	3	1.2%
	Expropriation, withdrawn consents, interference causing severe prejudice	8b	Seller entitled to terminate as Government default with "reasonable" compensation		2%	0	0.0%
Sub-total Construction Period					30%		3.0%
Risks under the PPA during the Operation Period							
The plant cannot be operated as envisaged in the PPA	Plant operation is limited by generation technology or transmission constraint	9	Purchase price terms penalize Seller for technology choice, but give incentive to upgrade plant despatch	Purchaser pays at least the minimum Capacity Purchase Charge under transmission constraints	5%	0	0.0%
Increases in operating costs	As a result of changes in government regulations	10a		Indexed adjustment to purchase price	5%	3	3.0%
	Arising from the Purchaser's actions	10b		No adjustment to purchase price	5%	0	0.0%

Risk factor	Cause	Reference ^a in the Risk Alloc. Questionnaire	Risk Bearer and Remedy/Recourse		Risk Rating (see Note 1)		
			Seller	Purchaser	W	R	WR
	Arising from the Seller's actions	10c	No adjustment to purchase price		5%	0	0.0%
Forex non-availability/non-convertibility	Government default	11	Seller can terminate with compensation for debt repayment, loss of earnings and termination costs		5%	4	4.0%
Forced Outage/Derating or temporary shortfall in capacity availability	Seller's fault. Weak procedure to verify capacity availability	12a, 12b, 12c, 12d, 12e	Penalties payable by Seller to Purchaser	Purchaser has some control over timing and testing of plant inspections	6%	0	0.0%
	Purchaser's fault	12f, 12g	Seller can terminate with compensation for debt repayment, loss of earnings and termination costs	Capacity Purchase Charge payable	4%	3	2.4%
	Force Majeure event	12h		Capacity Purchase Charge is payable under narrowly defined Force Majeure events	4%	3	2.4%
Deterioration in heat rate below specified rate(s)	Seller's fault	13	No adjustment to purchase price		5%	0	0.0%
Increased fuel costs (not due to deterioration in heat rate) and variable O&M costs	Increase in price of fuel, interruption in fuel supply, maintenance needs	14		Indexed adjustment to purchase price	7%	3	4.2%
Prolonged outage from major damage to equipment	Insured event	15	Use insurance proceeds for the costs of physical reinstatement of damaged plant and equipment and business interruption (+ stand-by finance)	Payment of Capacity Purchase Charge is suspended while plant capacity is unavailable	5%	0	0.0%

Risk factor	Cause	Reference ^a in the Risk Alloc. Questionnaire	Risk Bearer and Remedy/Recourse		Risk Rating (see Note 1)		
			Seller	Purchaser	W	R	WR
Failure of Purchaser to perform its obligations under PPA	Due to factors such as insufficient demand for the output of the plant in the power markets served by the Purchaser	16	Seller can terminate with compensation for debt repayment, loss of earnings and termination costs	Purchaser compensates Seller according to the terms of the PPA	3%	3	1.8%
Failure of the to meet obligations under the PPA that is caused by the plant operator	Operator breaches Operations and Maintenance Agreement	17	Indemnity from the Operator supplemented by Seller's equity		3%	0	0.0%
Environmental incidents caused by the Seller/Operator	Operator breaches Operations and Maintenance Agreement	18	Indemnity from the Operator supplemented by Seller's equity		3%	0	0.0%
Assignment, Termination, Choice of Law and Dispute Resolution	Seller and Purchaser have serious disputes about PPA terms	19	Go to dispute resolution under PPA. Renegotiate terms if dispute resolution fails or not sought by Seller and Purchaser	Go to dispute resolution under PPA. Renegotiate terms if dispute resolution fails or not sought by Seller and Purchaser	5%	0	0.0%
a/ Questionnaire on Risk Allocation for Entities that Propose to Sell Power under Power Purchase Agreements to Purchasers with Captive Customers from New Fossil-Fuelled Generating Plants Note 1: W - Weighting, with total weighting = 100%. R - Rating on a scale 0 to 5 (0 is zero risk exposure for Purchaser/Government). WR - Weighted Rating = W*R/5. Note 2: This table does not substitute for a full risk analysis of agreements entered into by the Purchaser with the IPP that the Purchaser should undertake as part of its technical, financial and legal due diligence.			Sub-total Operation Period		70%		17.8%
			Total Risk Rating		<u>100%</u>		<u>20.8%</u>

Annex 7. Purchaser's Declaration About Seller's Responses to Questionnaires and Tables Under a Power Purchase Agreement for a New Fossil-fuelled Generation Plant

Seller: _____ **Purchaser:**

NERC's License Application Number: _____

Questionnaire for Computing the Average Purchase Price of Power under a Power Purchase Agreement for a New Fossil-Fuelled Generating Plant (Annex 1)

Q1: Have you seen the Seller's responses to this Questionnaire? _____

Q2: Are you in general agreement or disagreement with these responses? _____

Q3: Please state the particular responses with which you disagree, and why. _____

Q4: Are you adding your own set of responses to this Questionnaire? _____

Summary of Key Factors Affecting a Power Purchase Agreement for a New Fossil-Fuelled Generating Plant (Annex 2)

Q1: Have you seen the Seller's responses to this Summary? _____

Q2: Are you in general agreement or disagreement with these responses? _____

Q3: Please state the particular responses with which you disagree, and why. _____

Q4: Are you adding your own set of responses to this Summary? _____

Questionnaire on Risk Allocation Under a Power Purchase Agreement for a New Fossil-Fuelled Generating Plant (Annex 4)

Q1: Have you seen the Seller's responses to this Questionnaire? _____

Q2: Are you in general agreement or disagreement with these responses? _____

Q3: Please state the particular responses with which you disagree, and why. _____

Q4: Are you adding your own set of responses to this Questionnaire? _____

Table for Risk Assessment of a Power Purchase Agreement for a New Fossil-Fuelled Generating Plant (Annex 5)

Q1: Have you seen the Seller's responses to this Table? _____

Q2: Are you in general agreement or disagreement with these responses? _____

Q3: Please state the particular responses with which you disagree, and why. _____

Q4: Are you adding your own set of responses to this Table? _____

Purchaser's Declaration: _____

Date of Declaration: _____

