

Implementation of Direct PPAs in Vietnam

Vietnam Wind Power 2019

12 June 2019





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- Over 500 sector-dedicated analysts and consultants globally, including 75 specifically to power and renewables
- Located close to clients and industry contacts



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Wood Mackenzie Power & Renewables offices



Summary

- While corporate PPAs are growing rapidly globally, the market is still new
- Not a commodity (and may never be), and transaction costs are high
- RE100 firms are well known and tend to be large and creditworthy off-takers - as more, and smaller, corporates enter the market, developers, banks, etc. will need to get comfortable with shorter term PPAs, consortiums of off-takers, different risk profiles, etc.
- Wholesale markets are a key enabler, without them significant lack of transparency and hedging capabilities
- Corporate PPAs can be attractive to both off-taker and developers – if structured properly and each party can accept and/or manage the risk

Google signs 10 MW solar PPA in Taiwan

First of its kind

Gary Demasi, Google's Senior Director of Data Center Energy and Location Strategy, gives President Tsai Ing-Wen a tour of Google's Vietnam data center.

The PPA is a collaboration between Google, the government, and several Taiwanese energy companies including Diode Ventures, Taiyen Green Energy, J&V Energy, and New Green Power.



Source: Google



Why Corporate PPAs?

Reasons relatively straightforward, but how they are implemented potentially challenging

Offtakers

- Social and environmental commitment (e.g. RE100)
- Potential cost savings
- Hedging price risks

Developers

- Risk mitigation
- Support debt financing
- Larger overall market (instead of just retailers, utilities, etc.)



What are some of the challenges?

Issue	Comment
Viability of off-taker	Toyota, Google, Facebook, etc. all high quality off-takers – makes financing easier – these companies know this and use to get better terms.
Decrease in size of off-taker and PPA	Bundling 10 or 12 off-takers – even if same size can banks get comfortable?
Price expectations of buyers	Buyers see “record” auction results and want similar prices – many expect 20% discounts off spot.
Volume risk	“As generated” (with solar & wind intermittency) is very challenging these days.
Is a corporate PPA a commodity?	No, negotiations still complex with rapidly changing customer expectations and risk allocation splits between customer and provider.
No wholesale market	Even more difficult and transmission access often negotiated project-by-project – lack of transparency with few benchmarks/price markers.
Hedging in non-wholesale market	Difficult – may leave either utility of off-taker exposed (depending on arrangements with utility)

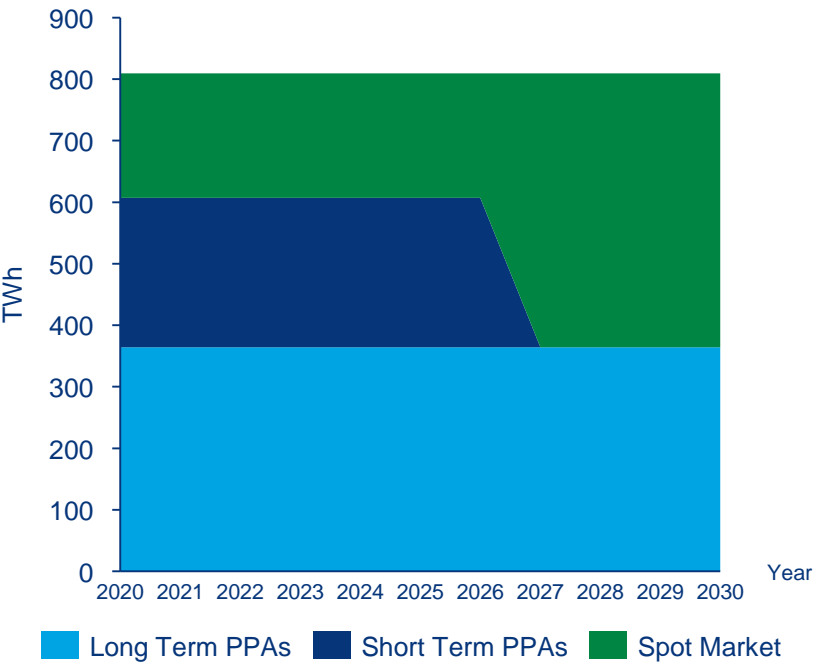
South Australia Wind Farm – Typical offtake structure

Common PPA offtake structure to balance between long term fixed revenues and potential opportunities

Initial Offtake Structure



Electricity & LGC Volumes Representation



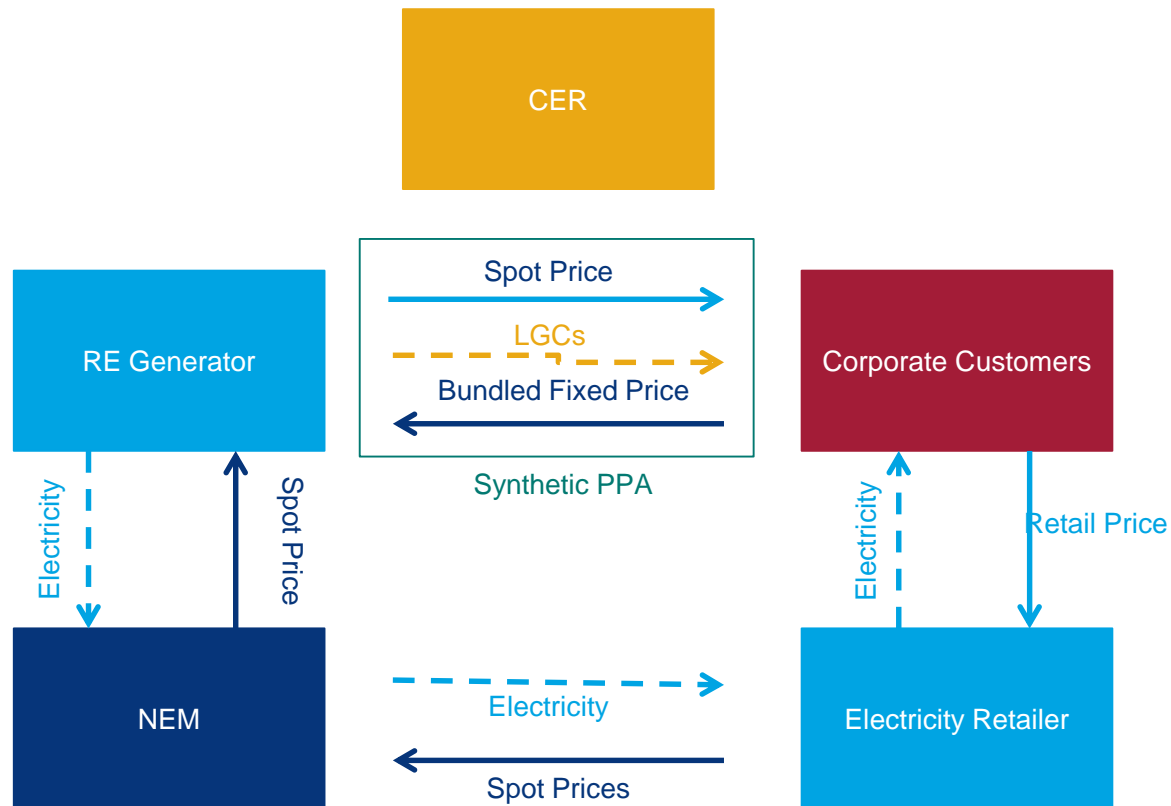
Project Details	
Location	South Australia
Capacity	XXX MW
Expected Capacity Factor	44%
PPA Details	
Composition	Standalone (REC seperated)
Offtaker	Multiple retailers
Tenure	Varied, <10 years
Bundled Price (Electricity + LGC)	N/A
Electricity Price	< A\$ XX / MWh
LGC Price	< A\$ XX / MWh



Corporate PPA - Synthetic PPAs – Australian example

One of many types of corporate PPAs

Synthetic PPA structure



- The RE generator enters into a “Synthetic” or a “Virtual” PPA contract with the corporate customer for a bundled electricity and LGC contract at an agreed strike price, on a Contract for Difference (CfD) basis.
- Corporate customers continue to buy electricity from the electricity retailer under a retail contract.
- The CfD basis allows any differences between the spot prices and the agreed strike price will be settled between the RE generator and the corporate customer.



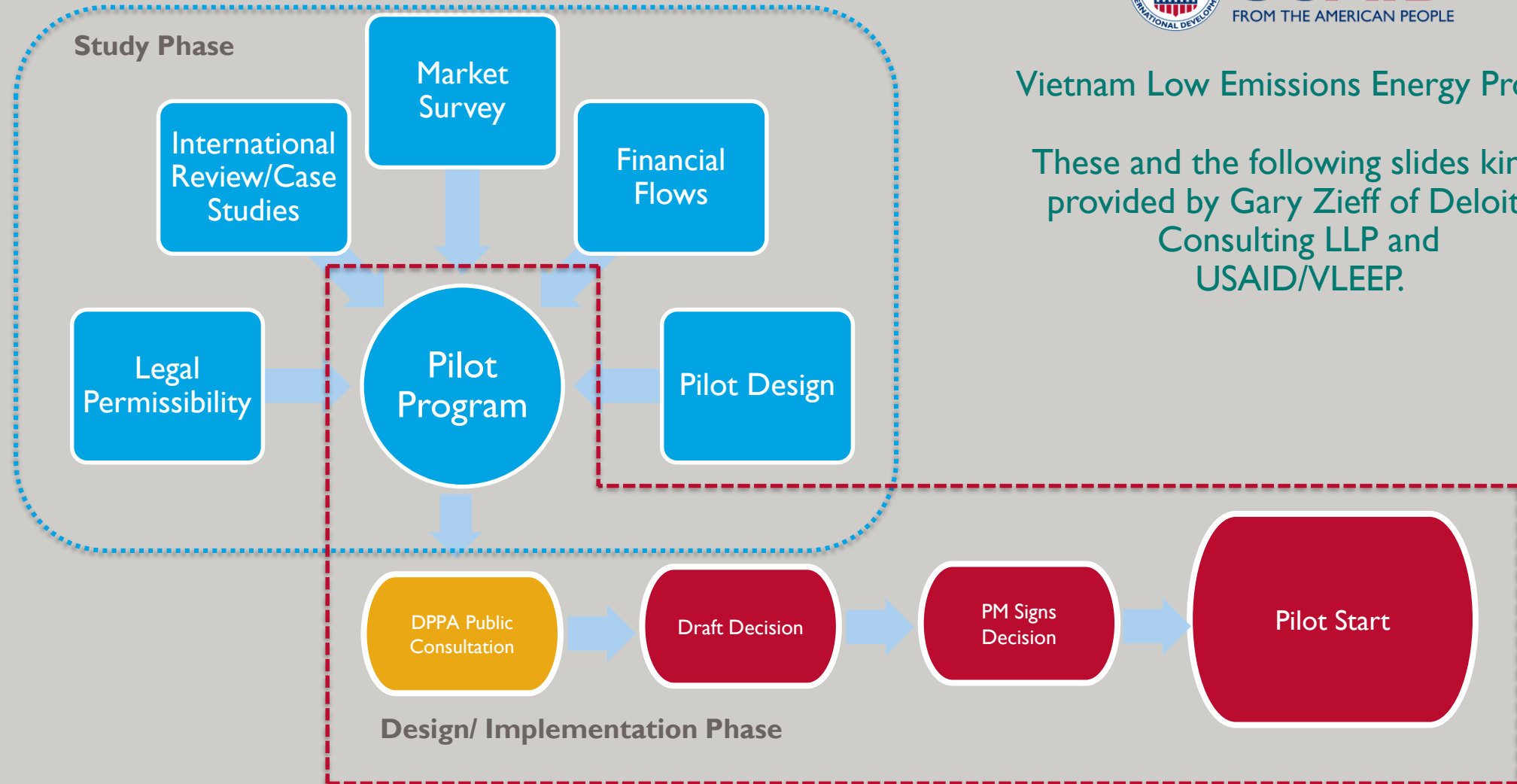
V-LEEP – ERAV Collaboration on a DPPA policy



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FROM THE AMERICAN PEOPLE

Vietnam Low Emissions Energy Program

These and the following slides kindly
provided by Gary Zieff of Deloitte
Consulting LLP and
USAID/VLEEP.





Developing a DPPA mechanism in Vietnam

OBJECTIVE

Enable large electricity consumers to contract with renewable power project developers, providing them with a pathway for meeting their renewable energy goals

GOALS

1. Public Consultation in June 2019
2. Supporting regulations and policy to enhance greater VN energy market.
3. Launch the DPPA pilot program in late-2019

ACTIVITIES AND MILESTONES

The current program design is the result of a two-year collaborative process between USAID/V-LEEP and MOIT/ERAV.





Pilot Program Objectives

Test the DPPA mechanism in a controlled manner prior to acceptance and rollout

Develop the capability of power sector agencies to deliver the functionality required to implement the DPPA mechanism

Identify and correct any deficiencies of design prior to committing time, energy or resources to a full-scale DPPA program.

Confirm the market demand and willingness to pay of large energy consumers in Vietnam

Build credibility for a DPPA mechanism that is aligned with the overall development of the VWEM but which also provides the pathway to zero-emissions electricity that many Corporate consumers desire



SUMMARY OF DPPA Options Considered

Incorporating feedback from previous meetings, two new options were developed to capture a greater range of possible DPPA models, including a net metering option (Option B), and a spot price model (Option D).

**Previous
Version**

Sleeved Model

Synthetic Model

**Updated
Version**

Option A

- Sleeved DPPA Model
- Consumer and RE GENCO enter in to DPPA Agreement
- GENCO sells to EVN at VCGN spot market price
- EVN sells power to PC at Bulk Tariff Price
- PC charges Consumer Retail Tariff + DPPA Charge

Option B

- Sleeved DPPA Model similar to Option A
- Key difference in Consumer ability to purchase 100% of RE from GENCO

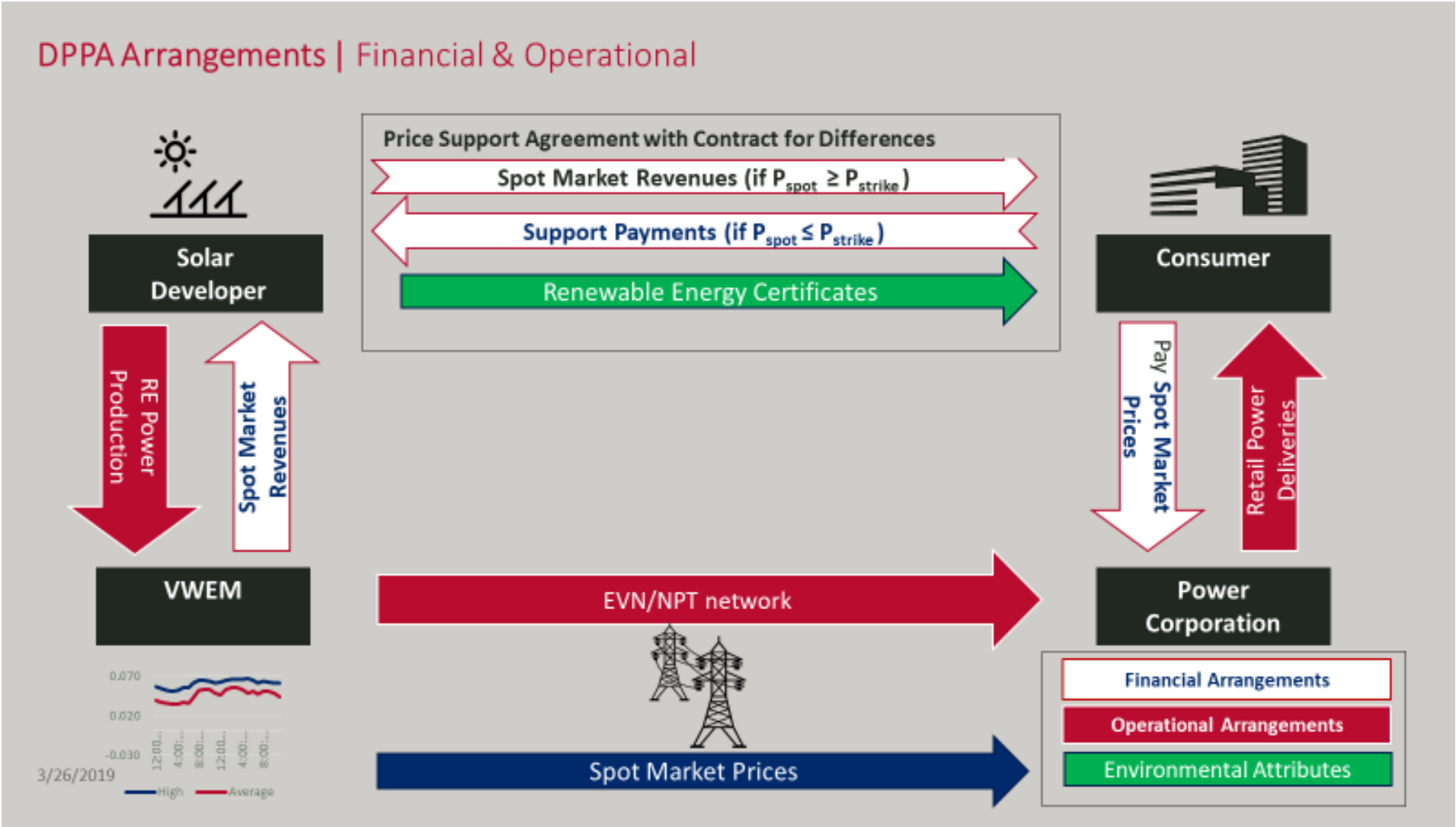
Option C

- Synthetic DPPA model where Consumer and GENCO enter in to CfD VCGM price swap
- GENCO sells power to EVN at VCGM spot price
- VCGM sells at bulk power tariff and PC sells to Consumer at Retail Tariff

Option D

- Synthetic DPPA model where Consumer and GENCO enter in to CfD VCGM price swap
- GENCO sells power to EVN at VCGM spot price
- VCGM sells bulk power at spot price
- PC charges Consumer at spot price and DPPA fee

DPPA Mechanism Adopted for Vietnam





Agreements and Transactions

Instrument	Parties	Changes/Modifications
DPPA Agreement	RE GENCO & DPPA Consumer	<ul style="list-style-type: none"> • DPPA terms sheet to reviewed by ERAV • Access to metered power delivery data needed to register the environmental attributes of RE • Ability to redirect from one counter party to another • Strike Price and delivered amount of power
Wholesale Market Participation agreement	RE GENCO & EVN/EPTC	<ul style="list-style-type: none"> • Add: Priority dispatch guarantee • Tenure to match DPPA, with flexibility to continue • Add: Access to settlement data to record Environmental Attributes • Provide DPPA Consumer with access to metered data on RE GENCO power delivery
DPPA Market Buyer Tariff or Special Contract	DPPA Consumer & PC (or EVN & PC)	<ul style="list-style-type: none"> • Spot market access allowed • Rendering retail Invoice based on spot market prices • Half-hourly meter data required • Set the DPPA charge and how the DPPA charge revenue is allocated
Interconnection Agreement	EVN - RE GENCO	<ul style="list-style-type: none"> • Add: Restrictions on curtailment
Meter Data Services Agreement	EVN/NLDC & RE GENCO	<ul style="list-style-type: none"> • Provides access to RE GENCO metered power delivery data through NLDC's internet portal - for both RE GENCO and DPPA Consumer



Operational Requirements

Agency	Operational Responsibilities	
	DPPA Consumer	RE GENCO
PCs	<ul style="list-style-type: none"> • Develop a mechanism whereby DPPA Consumers can purchase power from the VWEM • Develop a method for invoicing DPPA Consumers as Market Buyers • Meter DPPA Consumers on a half-hourly basis for invoicing of DPPA Consumers as Market Buyers • Collect the DPPA Charge levied on DPPA Consumers and pass along revenue to EVN/EPTC and EVN/NLDC 	
EVN/EPTC	<ul style="list-style-type: none"> • Support PCs to develop a mechanism allowing DPPA Consumers to access the spot market for their retail power requirements, and be invoiced as a Market Buyer 	Develop a Wholesale Market Agreement incorporating terms (priority dispatch, curtailment limitations, ownership of environmental attributes) –needed for the DPPA program
EVN/NLDC	<ul style="list-style-type: none"> • Facilitate real-time access to hourly spot market price data 	<ul style="list-style-type: none"> • Provide priority dispatch for RE GENCOs • Provide RE GENCO metered power deliveries to DPPA Consumer and 3rd party registries



Design Attributes

Bankable

DPPA-related wholesale agreements & special contracts must meet international standards including termination, arbitration and settlement. Agreements must have a tenure equal to the agreement between Consumer and RE GENCO – preferably 10 years or longer

Reliable

RE GENCOs must be afforded priority dispatch – preferably included in their wholesale market agreement

Verified

A verifiable registry program must be developed for DPPA Consumers to have confidence in the program and enable customers to meet compliance criteria

Flexible

RE GENCOs must be allowed to enter into multiple DPPAs with multiple DPPA Consumers; DPPA Consumers must be allowed to combine loads and form consortia

Transparent

DPPA Charges should be stable over time and set in a transparent manner



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