



## **Contractual Framework and Commercial Concepts of PPAs in Pakistan Power Market**

EMP @ LUMS  
July 17-22, 2018

[www.cppa.gov.pk](http://www.cppa.gov.pk)



# Learning Outcomes

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1. Understanding the language, terminology and contents of the PPA
2. Understand the structure and key commercial provisions of the PPA
3. Discuss the financial and commercial risks of project company and its lenders
4. Review the structure of project finance and recovery of project of cost



# Contents

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1. Introduction
2. Contractual Framework of PPA
3. Salient features of the PPA
4. Mutual Rights and Obligations under PPA
5. Key Provisions of the PPAs
6. PPA Tariff Billing and Payment
7. Electricity Market Financial Framework
8. Electricity Market Risk Analysis



# Introduction

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- **Agreement**
  - A legally binding relationship between two or more persons/parties
  - **Legal framework:** Contract Act 1872, Sales of Goods Act 1930, English law
- **Power Purchase Agreement (PPA)**
  - A contract to buy/sell electricity generated by a power plant
  - Contains the the detailed terms & conditions, rights and obligation of the parties
- **Model PPAs**
  - PPA between CPPA and [Nishat Power Ltd.](#)
  - EPA between CPPA and [Quid-e-Azam Solar](#)



# Introduction

- **Objectives of the PPAs**
  - Participation of private sector
  - Responsibility of construction, development, financing and operating shifted to third-parties

- **Parties:**

**Purchaser**

- WAPDA
- CPPA of NTDC
- CPPA-G
- DISCOs
- BPCs

**Seller**

- IPP (1994 Power Policy)
- IPP (2002, 2006, 2008 Power Policy)
- IPP (Renewable, 2015 Power Policy)
- IPP, Suppliers
- IPP, Suppliers



# Contractual Framework of PPA

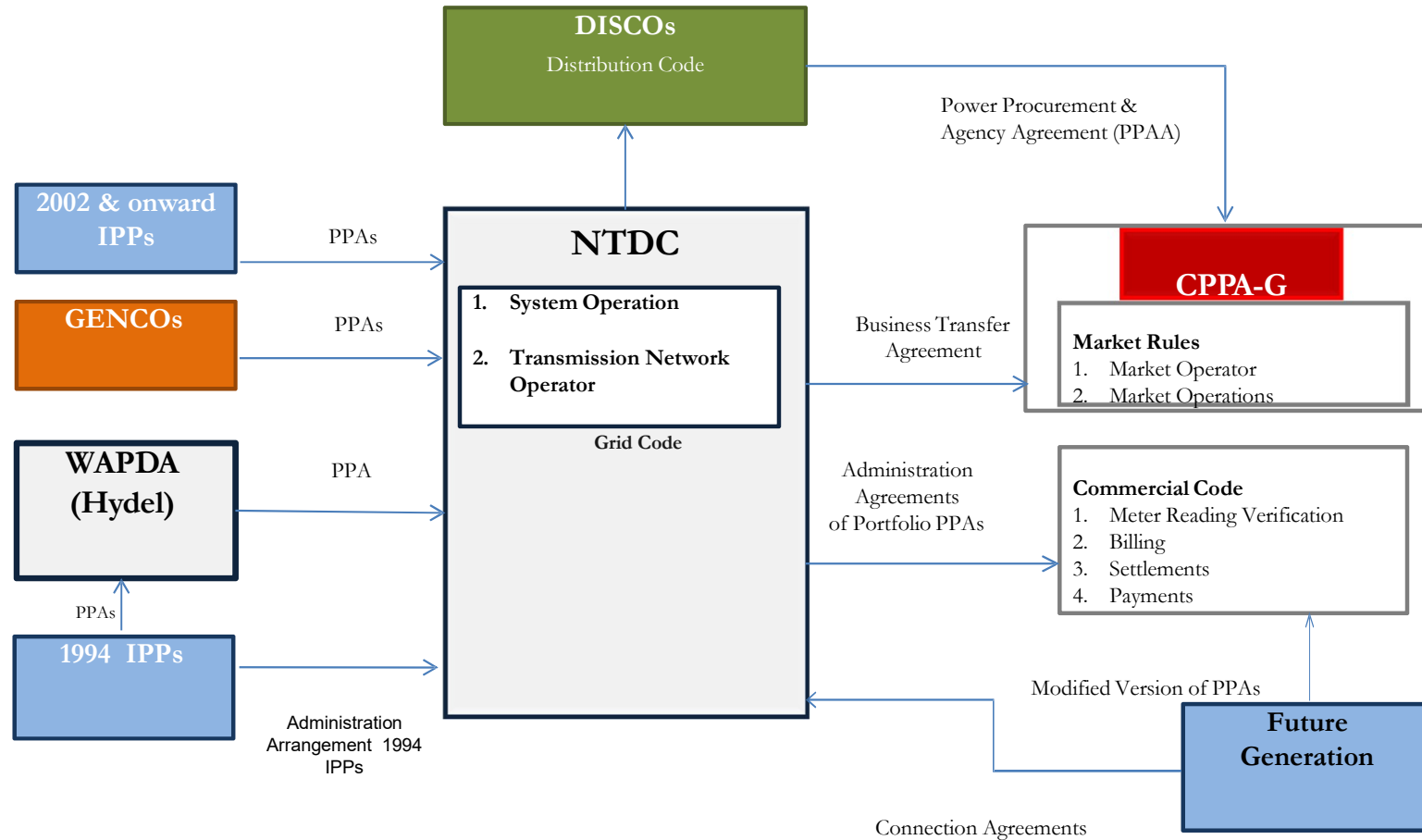


# Contractual Framework

- **Electricity Market and Contractual Framework of the PPAs**
  - Existing single buyer market
  - Role in competitive market
- **Professional Discipline**
  - Financial analysis and financial modeling
  - Risk management and insurance
  - Budgeting and project planning
  - Power planning
  - Power plant engineering, construction, operation & maintenance
  - Power transmission
  - Contract management
  - Negotiation skills
  - Contract law, Local and international judicial proceedings



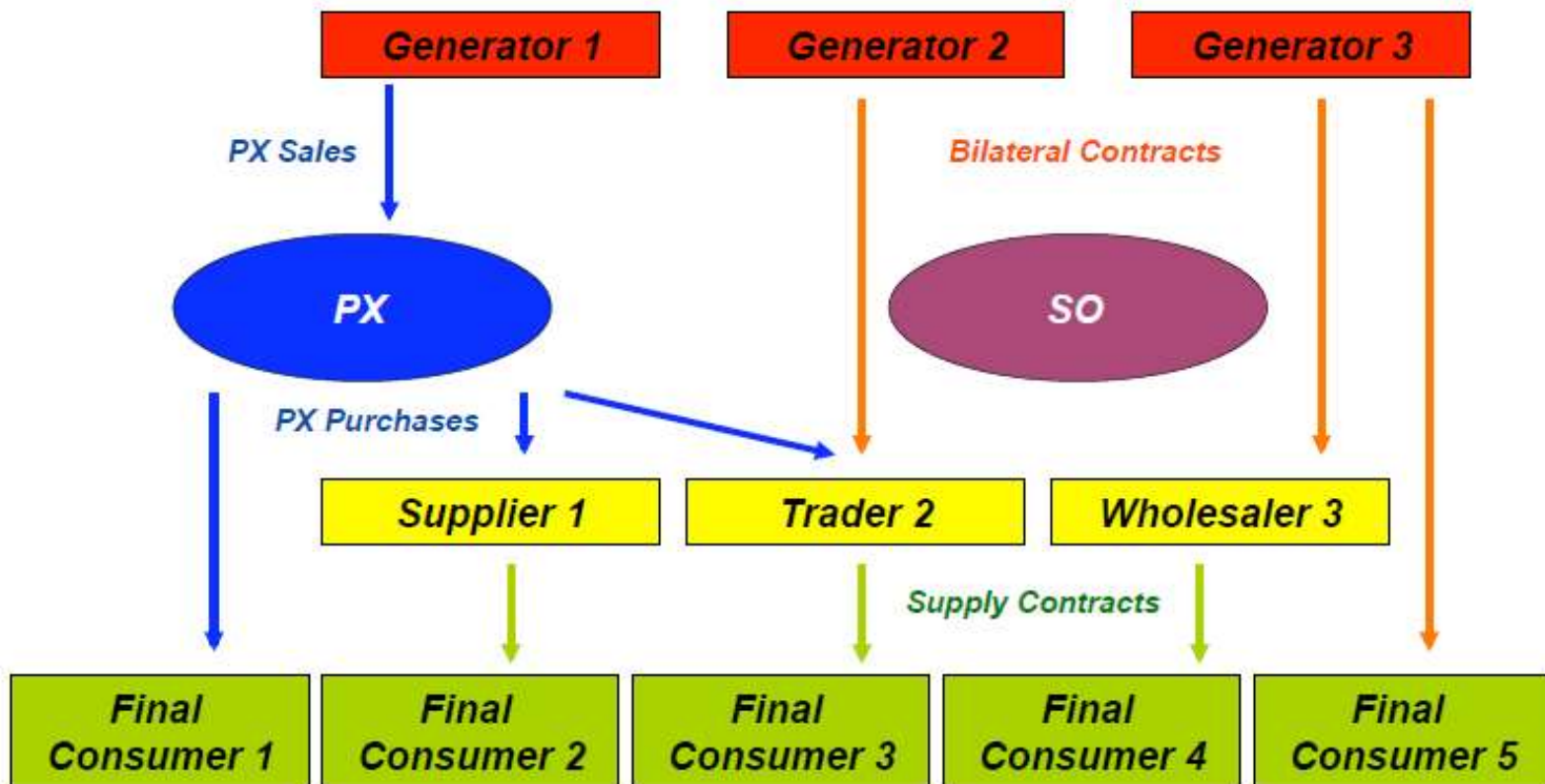
# Contractual Framework Cont...







# Commercial relationships in a typical market configuration





# Types of PPAs

- **Structure of the PPA varies according to**
  - the power policy (1994, 2002, 2006, 2008, 2015)
  - the generation technology
  - Tariff design (cost plus, upfront, competitive)
  - the guarantees, quantities (take or pay, take and pay)
  - the tariff structure (two-part, one-part)
  - BOOT, BOO



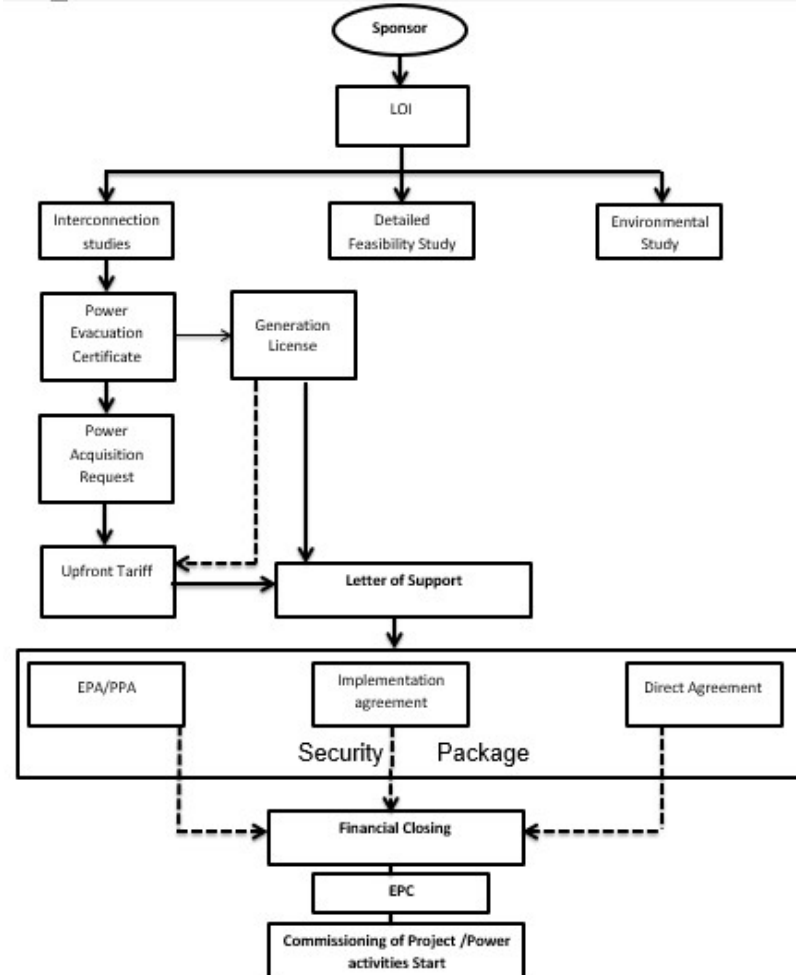
# PPA Development and Negotiation

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- Preparation of the Standard PPA
- GoP approvals of the standard PPA
- Room for negotiation
- Benefit of successful negotiations
- Bad negotiations
- Challenges for both parties
  - Behavior of machine
  - Economic uncertainties and its impacts upon negotiation



# Existing Flow for PPA





# Relevant Contracts

## Implementation Agreement (IA)

- Govt. of Pakistan
- Seller

## PPA Direct Agreement

- CPPA-G
- IPP
- Project lenders/Bankers

## Novation Agreement

- WAPDA/NTDC
- CPPA-G
- IPP



## Relevant Contracts Cont...

### Agency Agreement

- CPPA-G (Agent)
- DISCOs (Principal)

### Wheeling Agreement

- CPPA-G
- NTDC

### Transmission Service Agreement

- Purchaser
- Seller
- Transmission Network Operator



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# Salient Features of PPA



# Salient Features of the PPAs

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- **Objectives**  
To describe mutual rights and obligations of the seller and purchaser
- **Term**  
20-30 years depending upon the useful life of the plant
- **Complex Document**  
Multiple complexities
- **Multiple skill set**
  - Multiple skill set required to prepare, interpret and execute
  - Technical, Finance, Legal
- **Variability**  
Significant variation in structure, terms and conditions from other PPAs





## Salient Features of the PPAs Cont...

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- **Amendment**  
Can be amended through mutual consent of the parties
- **Assumptions**  
Set of assumptions upon which terms are built
- **Interpretation**  
Interpretation according to the prescribed legal framework
- **Disputes**  
Difference of practice and opinion results in disputes
- **Revenue and Cost**  
Predictable estimates of operational revenue and cost



## Salient Features of the PPAs Cont...

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- **Indexation mechanism**

Adjustment of price to incorporate inflation and rupee depreciation

- **Commitment**

Sell/Purchase/Payments

- **Risks**

Allocated according to GoP policy/incentive and strength of the party

### **Guarantees**

Mutual guarantees through LCs

- **Division**

Chapters, Schedules



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# Mutual Rights and Obligations



# Mutual Rights and Obligations

## Seller's Obligations

- To do the entire planning, obtain license, tariff and other regulatory, mandatory approvals
- Arrange funds both equity and debt and ensure repayment of debt, loans etc. as per their financing arrangements
- Construct, commission and operate the plant as per the contract
- Procure the fuel and keep inventory equal to one month usage at full load
- Keep the plant healthy and available 365/7/24
- Insure the plant as per the provisions of the PPA



## Mutual Rights and Obligations Cont...

### Seller's Obligations

- Generate electricity as per the dispatch instructions
- Not sell electricity to any one other than purchaser
- Conduct annual capacity test and other pre/post COD tests under supervision of the purchasers representatives
- To provide all necessary documents, record in support of its claims
- Pay liquidated damages for non-compliance of the dispatch instructions



## Mutual Rights and Obligations Cont...

### Seller's Rights

- To claim EPP, CPP and Supplementary invoices from the purchaser
- To get payments of its invoices within due dates
- To claim interest on delayed payments
- To operate plant as per prudent utility practices
- To declare and claim force majeure under the PPA
- Refer any disputed matter to the Dispute Resolution mechanism
- To avail schedule outage, maintenance outage, forced outage allowances
- Terminate the contract and claim damages



## Mutual Rights and Obligations Cont...

### Purchaser's Obligations

- Pay EPP, CPP invoices within due dates
- Pay any Supplementary charges incurred by the seller
- Pay interest on delayed payments
- To claim EPP, CPP and Supplementary invoices from the purchaser
- Give dispatch instruction keeping in view the prudent utility practices and complex technical limits
- Allow schedule outage, maintenance outage, forced outage allowances



## Mutual Rights and Obligations Cont...

### Purchaser's Rights

- Exclusive right to purchase entire electricity generated by the plant
- Withhold capacity payment if the plant is unavailable for 18 consecutive days.
- Enter the plant in operate it if the the sler fsils to do so in certain conditions
- Exclusive right to give dispatch instructions to maintain the grid stability





## Mutual Rights and Obligations Cont...

### Purchaser's Rights

- To impose L.Ds for failure to comply the declaration and provide electricity as per dispatch instructions
- To get the plant insured if the seller fails to do so and adjust insurance cost in CPP invoices
- Suspend the capacity payments if the plant fails to operate for 18 consecutive days
- Refer any disputed matter to the Dispute Resolution mechanism under the PPA
- Terminate the contract under certain conditions



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# Key provisions of PPA



# Key Provisions of the PPAs

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- **Definitions**
  - Rules of interpretation
  - Abbreviations
- **Effective date and term**
  - Effective date
  - Term of the PPA
  - Operating procedures
  - Appointment of operating committee
- **Sale and Purchase of Energy & Capacity**
  - Sale/ Purchase
  - Exclusive Rights



## Key Provisions of the PPAs Cont...

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- **Construction of the Complex**
  - Construction of the Complex
  - Reporting to Power Purchaser
  - Power Purchasers visits
- **Control and Operation of the Complex**
  - Operation and Maintenance of the Complex
  - Declaration, Dispatch, Delivery of Capacity and Energy
  - Schedule and Maintenance Outages
- **Interconnection**
  - Construction of interconnection facilities between plant and National Grid
  - Testing of interconnection facilities
  - Tripartite and then bifurcated Agreements



# Key Provisions of the PPAs Cont...

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- **Metering**
  - Installing, testing, sealing of energy meters
  - Reading meters
  - Telecommunication between seller/purchaser
- **Testing and capacity ratings**
  - Testing pre and post COD
  - Testing pre and post synchronization
  - Annual testing
  - Testing disputes



## Key Provisions of the PPAs Cont...

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- **Compensation, payment and billing**
  - CPP, EPP and Pass Through billing and payments
  - LD payments
  - Payment disputes
- **Insurance**
  - Maintenance of insurance
  - Insurance certification
  - Insurance reporting
- **Taxes**
  - Implication of taxes on seller
  - Taxes on purchaser
  - Impact of change in taxes



# Key Provisions of the PPAs Cont...

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- **Force Majeure**
  - Definition
  - Notice
  - Payment during force majeure
  - Compensation, termination
- **Termination of the Contract**
  - Purchaser/seller event of default which lead to termination
  - Notices to purchaser, seller, GoP, lenders
  - Obligations, remedies
- **Disputes**
  - Mutual resolution
  - Expert
  - Arbitration



# Key Provisions of the PPAs Cont...

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- **Miscellaneous**
  - Amendment of the agreement
  - Governing law
  - Succession
  - Assignment
- **Schedules**
  - Indexation mechanism
  - Complex description
  - Reporting formats
  - LC Formats
  - Complex technical limits



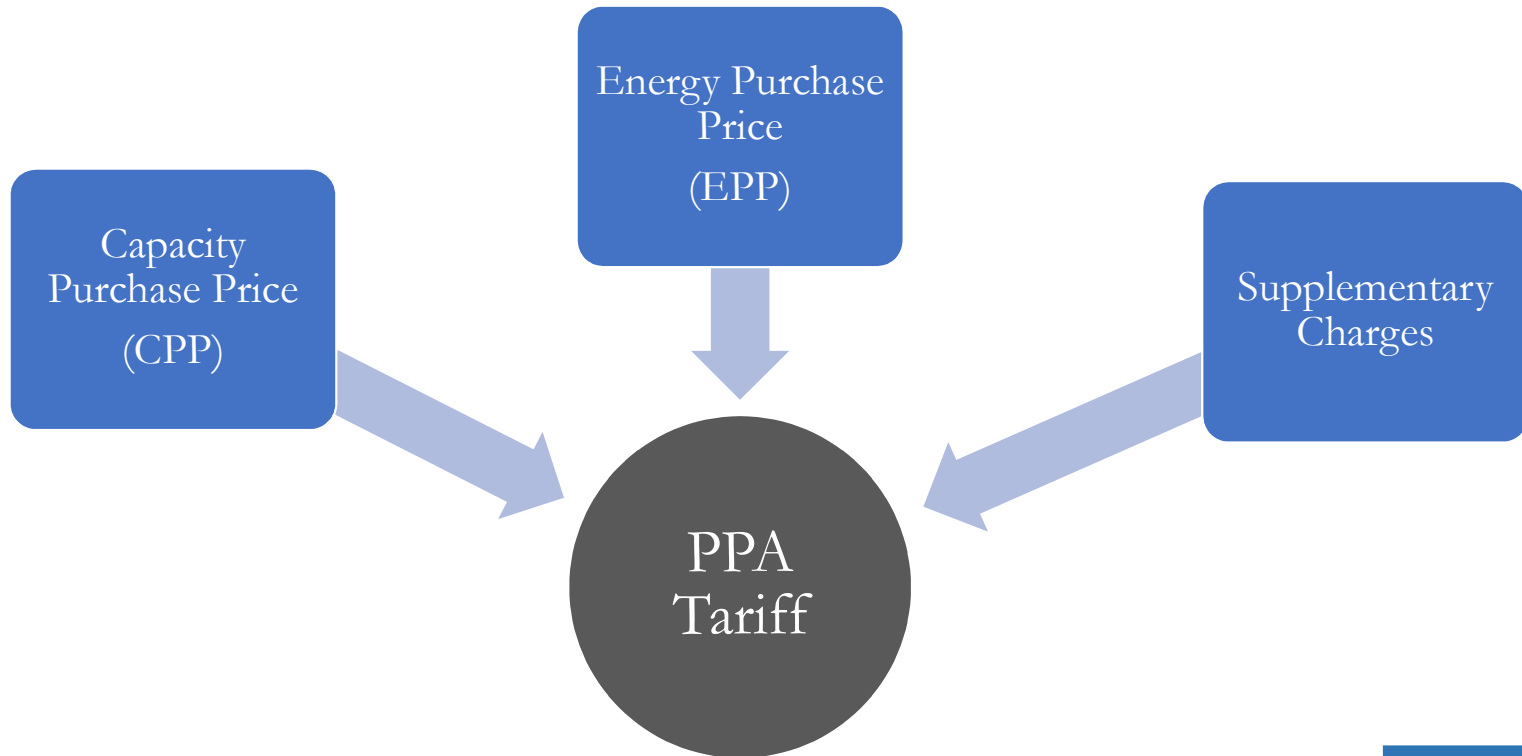


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# PPA Tariff Billing and Payment



# PPA Tariff





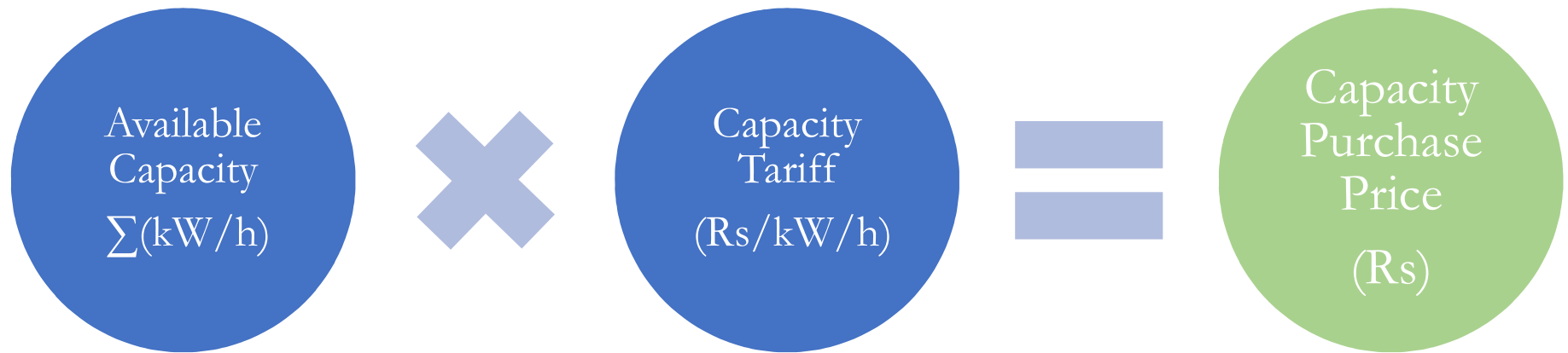
# Capacity invoices- billing and payments

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- The **Capacity Purchase Price (CPP)** is a fixed payment that is paid each period for each kilowatt of available (not dispatched) capacity. It includes fixed charges involved in the construction, operation, and maintenance of the power plant, including charges for following Components of Capacity [tariff](#)
  - ROE
  - Finance Cost
  - Fixed O&M
  - Working Capital Cost
  - Insurance

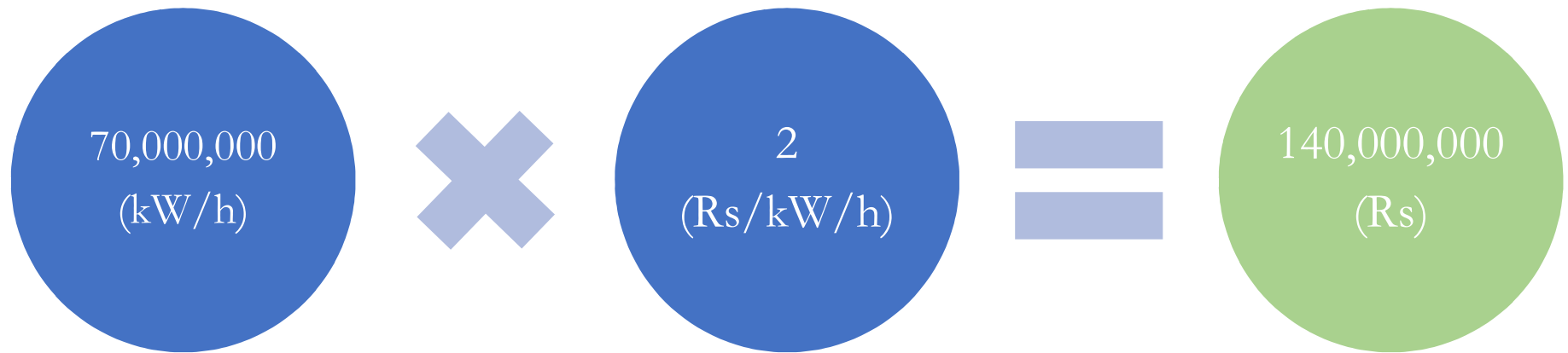


# Capacity invoices- billing and payments





# Capacity invoices- billing and payments





# Capacity invoices- billing and payments

- **Monthly Capacity (June-18)**
  - Kilowatts hours which a plant can generate during a month
  - $100 \text{ (MW)} \times 720 \text{ (Hrs)} \times 1000 = 72,000,000 \text{ (kWh)}$
- **Advance CPP invoice (June-18)**
  - $72,000,000 \text{ (kWh)} \times 2 \text{ (Rs/kWh/h)} = \text{Rs } 144,000,000$
  - $144,000,000 \times 70\% = \text{Rs } 100,800,000$
  - Invoice date = on or after 1<sup>st</sup> day of June-18
- **Final CPP Invoice (June-18)**
  - $70,000,000 \text{ (kWh)} \times 2 \text{ (Rs/kWh/h)} = \text{Rs } 140,000,000$
  - Less: advance already billed =  $\text{Rs } 100,800,000$
  - Final Invoice =  $\text{Rs } 39,200,000$
  - Invoice date = on or after 1<sup>st</sup> day of July-18



# Capacity invoices- billing and payments

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- **Declared Available Capacity (70,000,000)**
  - Hourly Capacity is measured in terms of declaration by the generator
  - Declaration is made 16 hours before the start of a day
  - Declaration is made in respect of all 24 hours of that day
  - With certain conditions, the Declaration can be revised upwards or downwards within 4 hours before the start of that hour



# Capacity invoices- billing and payments

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- **Dispatch**
  - Declaration is confirmed by Dispatch by the System Operator (NPCC)
  - Dispatch instructions are given 7 hours prior to the beginning of the day and
  - Dispatch instructions can be revised at a Notice of 5 to 30 minutes
  - Inability to generate as per the Declaration/Dispatch instructions
    - Results in deduction in capacity as well as
    - Imposition of L.Ds





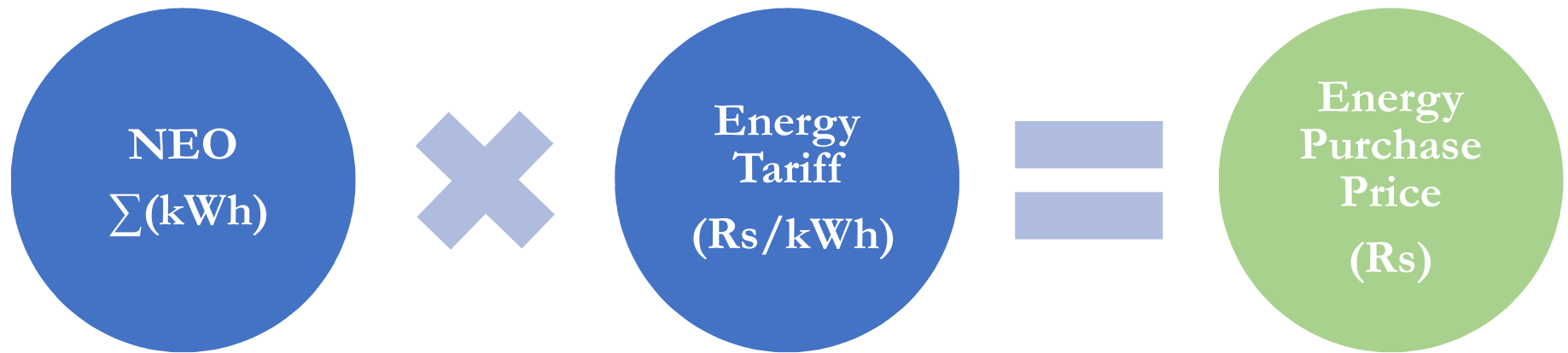
# Energy invoices- billing and payments

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- The **Energy Purchase Price (EPP)** is paid each month for each kilowatt hour of energy dispatched and delivered during that month. It includes following Components of [tariff](#)
  - Fuel Cost Component (FCC)
  - VO&M
- **Metering**
  - Electricity generated and delivered to the national grid (NEO) is measured through Joint meter reading taken at the end of each month

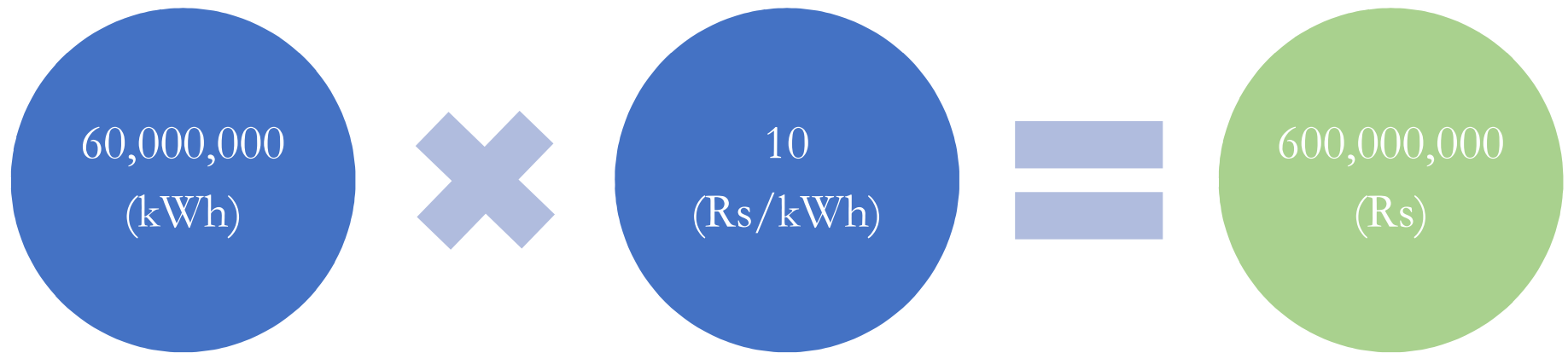


# Energy invoices- billing and payments





# Energy invoices- billing and payments





# Energy invoices- billing and payments

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- Monthly Energy payment (June-18)
  - Energy Payment = NEO (kWh) X EPP tariff  
= 60,000,000 X 10  
= Rs 600,000,000
  - Invoice date = 1<sup>st</sup> of July 2018



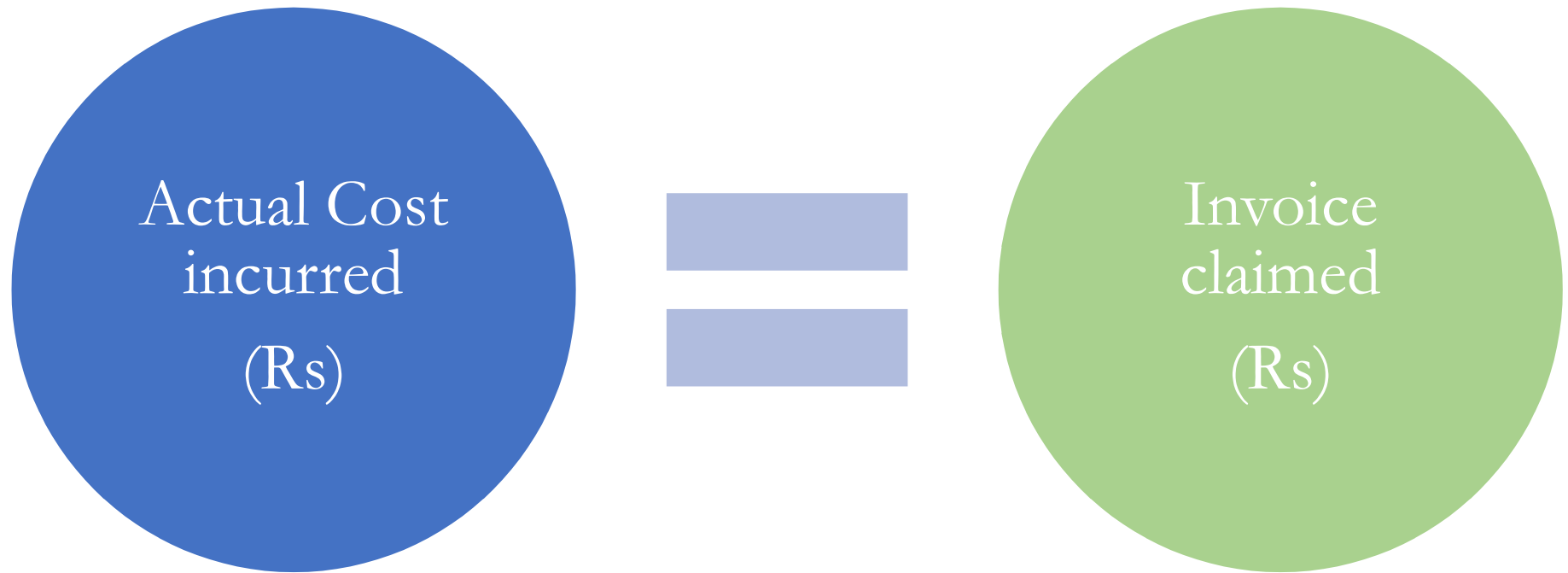
# Pass Through/Supplementary Invoices and Payments

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- **Supplementary Invoices**
  - Any cost, charges or taxes incurred by the Company pursuant to the laws of Pakistan which under the PPA are reimbursed on actual basis
- **Examples**
  - WPPF
  - WWF
  - Withholding tax on dividend
- **Requirement**
  - Original payment evidence



# Pass Through invoices- billing and payments





# Adjustment in Invoices

- **Minimum Generation Benchmark and LDS**
  - Benchmark = Total capacity – outage allowances
  - Seller LDS
  - Purchaser LDS
- **Power Curtailment and Compensation**
  - Purchaser's exclusive right to decide level of dispatch
  - Curtailment Compensation-Thermal projects
- **Temperature Correction**
  - Variation in the plant output due to site temperature at various hours in a day
  - Hourly Temperature correction factor
  - Applied on hourly CPP invoice as given in PPA schedule



## Adjustment in Invoices Cont...

- **Output Degradation**
  - Deterioration in performance due to plant depreciation over time
  - Annual Output Degradation factor
  - Applied on CPP invoices of the entire year as given in PPA Schedule
- **Heat Rate Correction due to Part Load Operation**
  - Variation in output due to total load (Combined Cycle Thermal Machines)
  - Hourly Part Load correction factor
  - Applied on hourly EPP invoice, as per rate given in PPA Schedule
- **Fuel Calorific Value**
  - Variation in output due to quality (calorific value) of fuel
  - Revision in Fuel Cost Component (FCC) approved by NEPRA
  - Part of EPP Invoice





# Disputes Resolution

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- **Disputes**
  - A difference of whatsoever nature that arises between the parties pursuant to their mutual rights and obligations under the PPA
  - History of disputes
- **Reasons of disputes**
  - Grey areas in contracts
  - Difference in contractual provisions
- **Jurisdiction of local courts**
  - Civil litigation
  - Constitutional remedies



## Disputes Resolution Cont...

- **Dispute Resolution process**
  - **Mutual resolution:** the parties to attempt to settle such dispute in the first instance by mutual discussions within a specified period
  - **Expert Mediation:** if the parties fail to resolve the dispute mutually, they nominate an expert/mediator with mutual consultation and consent
  - **Arbitration:** if parties refuse to accept expert mediation, any/both parties can proceed to Arbitration, under International Chamber of Commerce Rules . The ICC Court of Arbitration London/Singapore is final seat of dispute settlement.
- **Jurisdiction of Local Courts**
  - Growing trend of local civil litigation



# Force Majeure Event

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- **Definition**

Event or circumstances beyond the control of a Party that materially and adversely affect the contractual obligation to deliver or receive energy from the Complex

- **Examples**

War, terrorism, strike, nationwide shortage of fuel etc.

- **Implications**

Extend milestone or deadlines



# Economic Dispatch

- **Economic Dispatch**
  - Most efficient/lowest cost plants are given priority in dispatch
- **Merit Order**
  - Prepared on the basis of expected variable cost/kWh
  - Prepared jointly by CPPA and NTDC
  - Variable cost = FCC and VO&M
  - Must run plants are given mandatory dispatch without regard to merit order
  - Fixed cost/Capacity payments are not considered in merit order calculations



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# Electricity Market Financial Framework



# Project Cost and Financing

## Project Cost

- Land acquisition
- EPC
- Engineering supervision
- Legal fee
- Financial fee
- Duties and taxes
- Insurance during construction
- Interest during construction
- Sinosure fee

## Project Financing

- Debt \*
- Equity\*\*



# Project Financing and Generation Tariff

- **CPP Tariff is designed to ensure the**
  1. Recovery of project financing
    - Repayment of debt\*
    - Return on equity\*\*
  2. Return of investment in working capital
  3. Recovery of insurance cost
  4. Recovery of fixed O&M cost
- **EPP Tariff is designed to ensure the reimbursement of operating cost**
  1. Fuel cost
  2. Operation & maintenance cost



# Settlement with IPPs

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- Invoice receipt
- Invoice processing and approval
- Demand of funds
- FIFO method and payment priority
- Daily disbursement to IPPs
- Invoice due dates
  - All IPPs invoices are due for payments within [30] days of receipt
- Delayed payments Invoice
  - Delayed payment interest is invoiced and paid for every day of delay.
  - Interest rate KIBOR + [4.5]% per annum





# Settlement with DISCOs

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- **Billing to DISCOs**
  - Agency function of CPPA-G
  - Basket price and concept of transfer pricing
  - Fuel price adjustment
- **Settlement with DISCOs**
- **Non-recovery of cost of electricity and circular debt**
  - Volume
  - Causes
  - Implications and
  - Remedies



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# Electricity Market Risk Analysis



# Project Risk Analysis and Allocation





# Project Risk Analysis and Allocation

Risk	Explanation	Allocation
Completion risk	<ul style="list-style-type: none"><li>• Delay in construction</li></ul>	<ul style="list-style-type: none"><li>• Project company</li><li>• EPC contractor</li></ul>
Cost overrun risk	<ul style="list-style-type: none"><li>• Cost escalation during design and construction phase</li></ul>	<ul style="list-style-type: none"><li>• Project company</li><li>• EPC contractor</li></ul>
Design risk	<ul style="list-style-type: none"><li>• Design may not meet the specification and performance standards</li></ul>	<ul style="list-style-type: none"><li>• Project company</li><li>• Equipment manufacturer</li><li>• EPC contractor</li></ul>



## Project Risk Analysis and Allocation Cont...

Risk	Explanation	Allocation
Construction risk	<ul style="list-style-type: none"><li>Loss associated with physical construction</li></ul>	<ul style="list-style-type: none"><li>Project company</li><li>EPC contractor</li><li>Purchaser</li></ul>
Operation and Maintenance	<ul style="list-style-type: none"><li>To operate the plant according to best utility practices</li></ul>	<ul style="list-style-type: none"><li>Producer</li></ul>
Volume risk	<ul style="list-style-type: none"><li>Inefficiency of the plant</li><li>Risk that the plant is not able to generate required volume of electricity</li></ul>	<ul style="list-style-type: none"><li>Seller</li></ul>



## Project Risk Analysis and Allocation Cont...

Risk	Explanation	Allocation
Grid Failure Risk	<ul style="list-style-type: none"><li>• Risk that the purchaser is unable to evacuate the power</li></ul>	<ul style="list-style-type: none"><li>• Purchaser</li><li>• Sellers risk is mitigated through committed capacity payments</li><li>• In renewables</li></ul>
Pricing risk	<ul style="list-style-type: none"><li>• Risk of change in sale price</li><li>• Generator ability to meet the O&amp;M cost as well as equity and debt payments</li></ul>	<ul style="list-style-type: none"><li>• Purchaser through upfront tariff</li><li>• Pass through charges</li></ul>



# Project Risk Analysis and Allocation Cont...

Risk	Explanation	Allocation
<b>Interest rate risk</b>	<ul style="list-style-type: none"> <li>• Possibility of variation in market rate of interest payment on debts</li> </ul>	<ul style="list-style-type: none"> <li>• Purchaser through indexation</li> </ul>
<b>Debt repayment</b>	<ul style="list-style-type: none"> <li>• Insufficiency of cash to repay debt or interest</li> </ul>	<ul style="list-style-type: none"> <li>• Purchaser through committed CPP payments</li> </ul>
<b>Exchange rate risk</b>	<ul style="list-style-type: none"> <li>• Possibility of local rupee depreciation</li> </ul>	Purchaser through indexation
<b>Inflation risk</b>	<ul style="list-style-type: none"> <li>• Impact of local inflation upon sellers cost</li> </ul>	Purchaser through indexation
<b>Change in law</b>	<ul style="list-style-type: none"> <li>• Impact of change upon the seller</li> </ul>	<ul style="list-style-type: none"> <li>• Purchaser</li> </ul>



## Project Risk Analysis and Allocation Cont...

Risk	Explanation	Allocation
<b>Change in tax rates</b>	<ul style="list-style-type: none"> <li>• Possibility of change in income and other tax rates</li> </ul>	<ul style="list-style-type: none"> <li>• Purchaser</li> </ul>
<b>Force majeure</b>	<ul style="list-style-type: none"> <li>• Impact of any unforeseen/ unavoidable political and/or economic conditions</li> </ul>	<ul style="list-style-type: none"> <li>• Covered</li> </ul>
<b>Demand risk</b>	<ul style="list-style-type: none"> <li>• Risk that nation-wide demand of electricity changes</li> </ul>	<ul style="list-style-type: none"> <li>• Purchaser</li> </ul>
<b>Resource risk</b>	<ul style="list-style-type: none"> <li>• Non availability of natural resources</li> <li>• Water, gas, oil</li> </ul>	<ul style="list-style-type: none"> <li>• Seller</li> </ul>
<b>Purchasers default risk</b>	<ul style="list-style-type: none"> <li>• Purchasers inability to pay cost of electricity</li> </ul>	<ul style="list-style-type: none"> <li>• GoP through sovereign guarantee</li> </ul>





# Power Purchaser Risk Analysis

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- Unutilized Commissioned Capacity Risk
  - Demand forecasting error
  - Load shedding
  - Capacity trap
- Take or pay tariff regime
- Technology obsolescence



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# Thank You