PRESENTATION TO DELEGATES FROM NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS (NARUC) AND PUBLIC UTILITIES COMMISSION OF OHIO (PUCCO)

OVERVIEW OF RATE REGULATION
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PRESENTATION OUTLINE

- Review of Rate Setting Prior to creation of PURC
- PURC Rate Setting Process
- Rate Setting Guidelines (Key Concepts and Procedures)
  - Bulk Generation Tariff
  - Transmission Service Charge
  - Distribution Service Charge
  - Regulatory Procedures

RATE SETTING

(WHERE DID WE START FROM?)

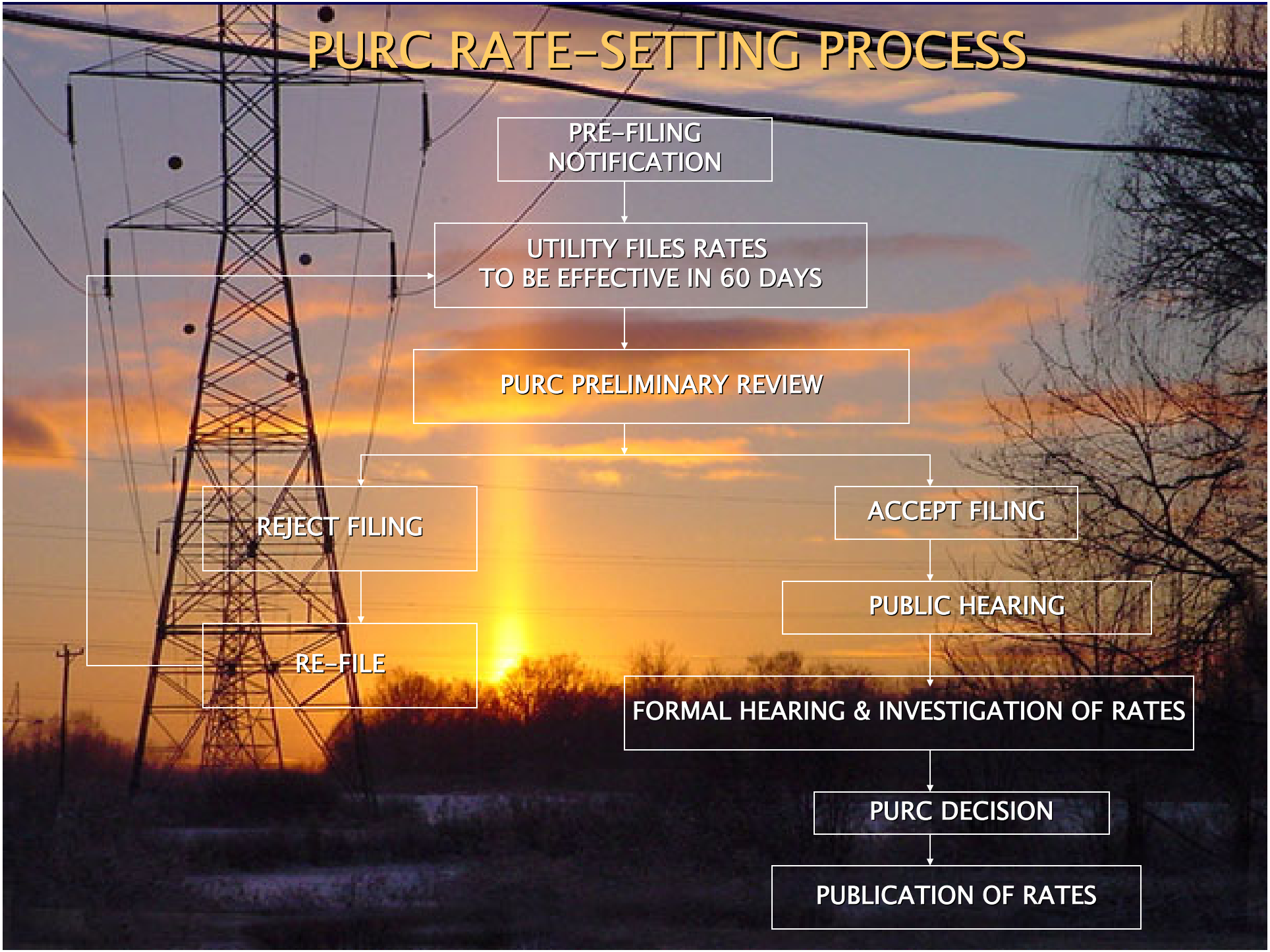
- Electricity Tariffs were proposed by the Utility Companies and approved by the Ministry of Mines and Energy
- Tariffs were very low (electricity was from hydro)
- Investment in utility operations through bilateral financing

RATE SETTING

(WHERE ARE WE NOW?)

- Electricity rates are approved by PURC
- More expensive thermal generation in the electricity supply mix
- Government policy is to encourage more private-sector investment in utility operations

PURC RATE-SETTING PROCESS



RATE SETTING GUIDELINES

(NEW DISPENSATION?)

- Provides general framework for setting rates chargeable for electricity services in accordance with provisions in the PURC Act 538 (Sections 3, 16-22)

- Recognizes the separation of electricity supply business into Generation, Transmission Distribution and Sale

RATE SETTING GUIDELINES

(WHAT OBJECTIVES?)

- Ensure viability of Power Companies
- Protection of Consumers/Consumer Interest
- Promote Economic Development
- Least Cost Supply through Promoting Competition in Supply
- Building into Tariff Regulation Improvement in Performance and Quality of Service

TARIFF REVIEWS

(SINCE THE INCEPTION OF PURC)

- Electricity Tariffs were reviewed in February, 1998 and September 1998
- Between February 1998 and September 1998 Tariffs were raised by about 300%
- 4 Major Tariff adjustments were carried out between then and 2003 to reach efficient cost recovery levels
- Automatic Tariff Adjustment Formula developed in 2003 to correct movements in exogenous variables
- Increases have stabilised supply of electricity and increased revenue to utilities
- Growing inability of customers to pay electricity bills

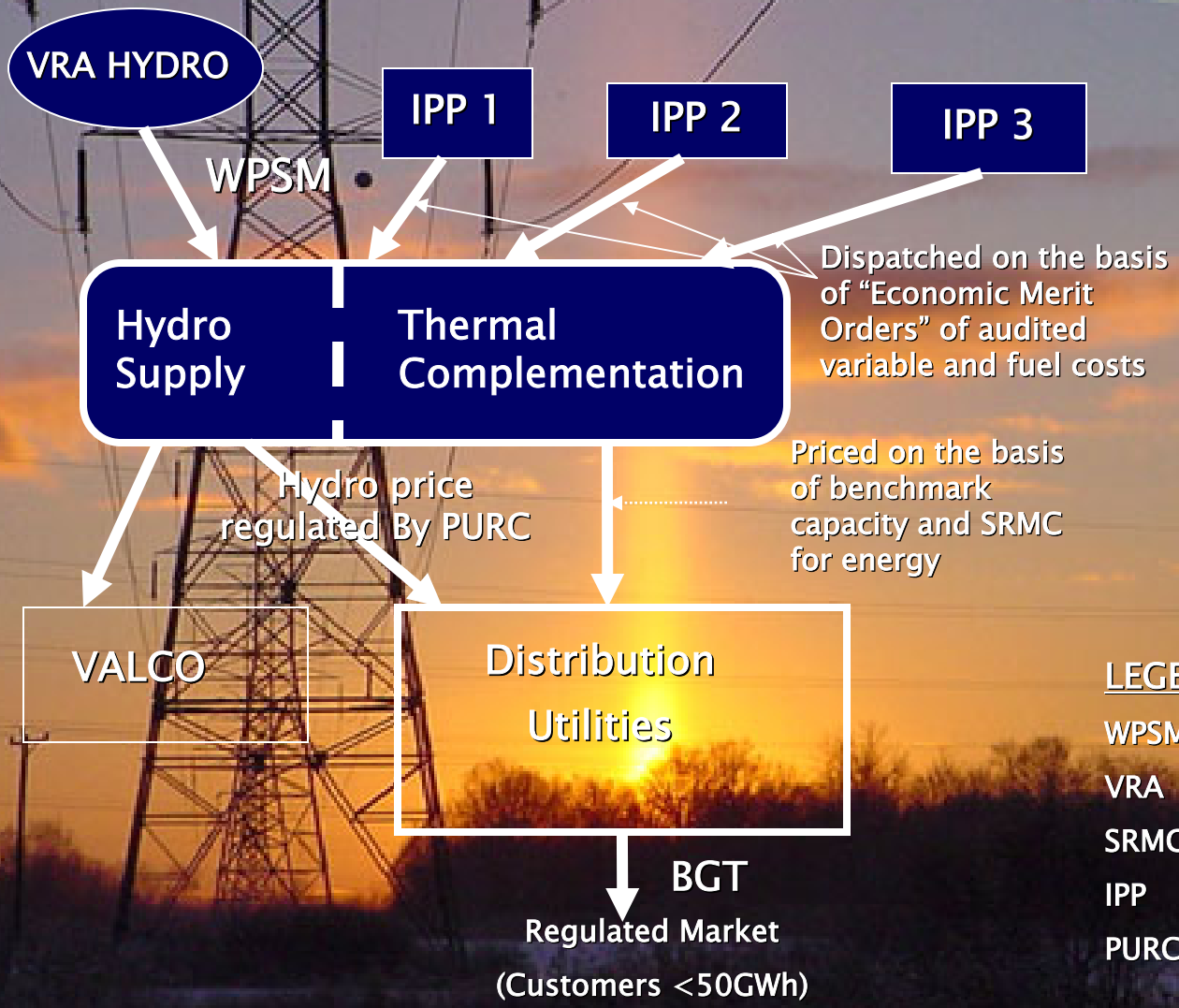
ELECTRICITY RATES TO END-USERS

(WHAT ARE THE COMPONENTS?)

- Bulk Generation Component (Power Purchased from Wholesale Power Supply Market through Contracts (BGC))
- Transmission Component (Transmission Service Charge (TSC))
- Distribution Component (Distribution Service Charge (DSC))

BULK GENERATION TARIFF (BGT)

(WHAT IS IT AND HOW IS IT REGULATED?)



- BGT is the generation component of the tariff at which distribution utilities sell electricity to customers in the regulated market
- BGT is calculated as the weighted average of the price of hydro generation and market price of thermal complementation

LEGEND

WPSM = Wholesome Power Supply Market

VRA = Volta River Authority

SRMC = Short Run Marginal Cost

IPP = Independent Power Producer

PURC = Public Utilities Regulatory Commission

VALCO = Volta Aluminum Company Ltd.

BULK GENERATION TARIFF (BGT)

(HOW IS HYDRO PRICED?)

- PURC has mandate to set prices of electricity generated from hydro power plants on the Volta River Basin
- "Cost of Service" regulation is applied to hydro pricing
- Tariffs are set to recover costs of operation, maintenance and a reasonable return on investments over the long-term
- Average price based on long-term average generation

BULK GENERATION TARIFF (BGT)

(HOW IS THERMAL PRICED?)

- Prices of Thermal Complementation is set based on "cost" competition of supply in the Wholesale Power Supply Market
- Capacity Charges reflect "Benchmark"
- Capacity Charge that corresponds to the Cost of a Single Cycle Gas Turbine at 85% Plant Factor (Approved by PURC)
- Wholesale Energy Costs reflect the SMRC of power required to meet the Ghana Load (Economic Merit Order Dispatch)

TRANSMISSION SERVICE CHARGE

(THE KEY ELEMENTS)

- TSC represents charges for wires services
- Total Annual Cost of the Transmission System include – (i) Annuity of Replacement Value of Transmission Assets
  - (ii) Annual O & M Costs
  - (iii) Standard losses
  - (iv) Costs of Ancillary Services

TRANSMISSION SERVICE CHARGE
(HOW IS IT REGULATED DURING TARIFF REVIEW PERIOD?)

- TSC=$\frac{\text{Annuity x (1+CCAF) + O\&M X (1+CPI-G)}}{\text{Transmission System Coincident Peak Demand (MW)}}$

Where:

- CCAF is Cost of Capital Adjustment Factor set by PURC
- CPI is Average Annual Inflation
- G is productivity Factor set by PURC

DISTRIBUTION SERVICE CHARGE (DSC)

(WHAT ARE THE KEY ELEMENTS?)

- Base DSC is set taking into account cost of service components
  - (i) Standard Capital Costs
  - (ii) Standard Annual O &M Cost and
  - (iii) Standard System losses
- A User fee charge to cover costs of other service i.e meter reading, billing etc.

DISTRIBUTION SERVICE CHARGE
(HOW IS IT REGULATED DURING TARIFF REVIEW PERIOD?)

- $$DSC = \frac{\text{Annuity} \times (1+CAF) + O\&M \times (1+CPI-G) + QSP}{\text{Distribution System Maximum Demand (MW)}}$$

Where:

- CAF is Capital Adjustment Factor
- CPI is Average Annual Inflation
- G is productivity Factor set by PURC
- QSP Quality of Service Penalties or Rewards

PRODUCTIVITY FACTOR (G)

(PERFORMANCE BENCHMARK FOR CALCULATING (G))

- Productivity Factor represents the regulatory requirement for the Distribution Utility to reduce Direct Operating Costs (e.g. labour costs, materials, transport etc)
- Performance Benchmarks used in determination of the Productivity Factor include the following:
  - Energy Sales/Employee
  - Number of Customers/Employee
  - Distribution losses
  - Operating Expenses/Employee

QUALITY OF SERVICE INCENTIVES

(WHAT ARE THEY?)

- Incentives (Rewards/Penalties) instituted to encourage the Distribution Companies to improve quality of service to customers
- Two major benchmarks are used as basis of QSI:
  1. Customer Satisfaction (CS)
  2. Supply Reliability Index (SRI)
- CS measures service issues such as meter reading, billing, response to complaints etc.
- SRI measures service interruptions (not caused by events outside control of both VRA and ECG)

QSI BENCHMARKS

PERFORMANCE INDICATOR	BENCHMARK	PENALTY/REWARD
CUSTOMER SATISFACTION (%)	92	US$X
RELIABILITY (MIN)	80	US$Y

PUBLIC UTILITIES REGULATORY
COMMISSION (PURC), GHANA
THANK YOU