USAID
FROM THE AMERICAN PEOPLE

National Association of Regulatory Utility Commissioners

Power Purchase Cost Pass Through

ERERA/ WAGPA REGULATORY WORKSHOP

June 2011, Abuja, NIGERIA

Prof. Jorry M. Mwenechanya June 2011

jorry@zamnet.zm

Why Pass is Pass Through Important

Poses risks to distributor and to customer.

To distributor:

- that the business will not be viable; could cause bankruptcy – example Brazil in 1990s?

To customer:

- inefficient procurement and increased costs;
- price instability, difficulties for households;
- disturbs planning, threatens profitability for large consumers

Pass-through cost in Supply Chain

Generation costs

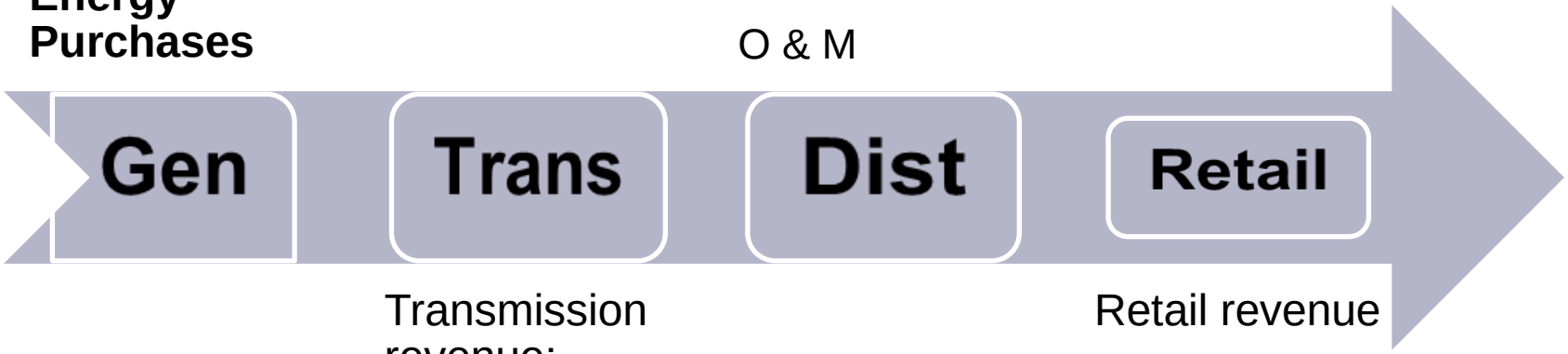
Energy Purchases

Distribution revenue;

Investment costs

Return on investments

O & M



Transmission revenue;

Return on assets;

O & M

Retail revenue

Total costs to include in tariffs

Objectives of Pass-through

Two major goals:

- Establish reasonable tariffs, give incentives for system expansion

Objectives often conflict:

- Provide incentives for efficient procurement;
- Convey the right price signals for efficient use of energy;
- Foster power system expansion;
- Dampen market volatility;
- Ease of implementation by the regulator
- Mitigation of failures caused by uncompetitive structures or markets

Efficiency

Efficient procurement

- This is the primary reason for any pass-through mechanism
- Power is purchased at minimum cost, the regulatory mechanism shares gains (or losses) with final customer;
- Usually economic purchasing embodied in distribution licences, but economic incentives necessary for implementation

Efficient use

- Stimulate among consumers appropriate response to wholesale market; but watch impact on price volatility

Expansion vs Market volatility

Foster system expansion

- Incentives for long-term PPAs will encourage investment in new capacity.
- Artificially low caps on pass-through could starve investment in new capacity;
- In the absence of retail competition, DISCOs may be the only off-takers to provide stimuli for capacity investments: true of markets in early stages of development

Dampen market volatility:

- Protect customers from exposure to volatility in wholesale market: forward contracts by DISCOs

Other Considerations

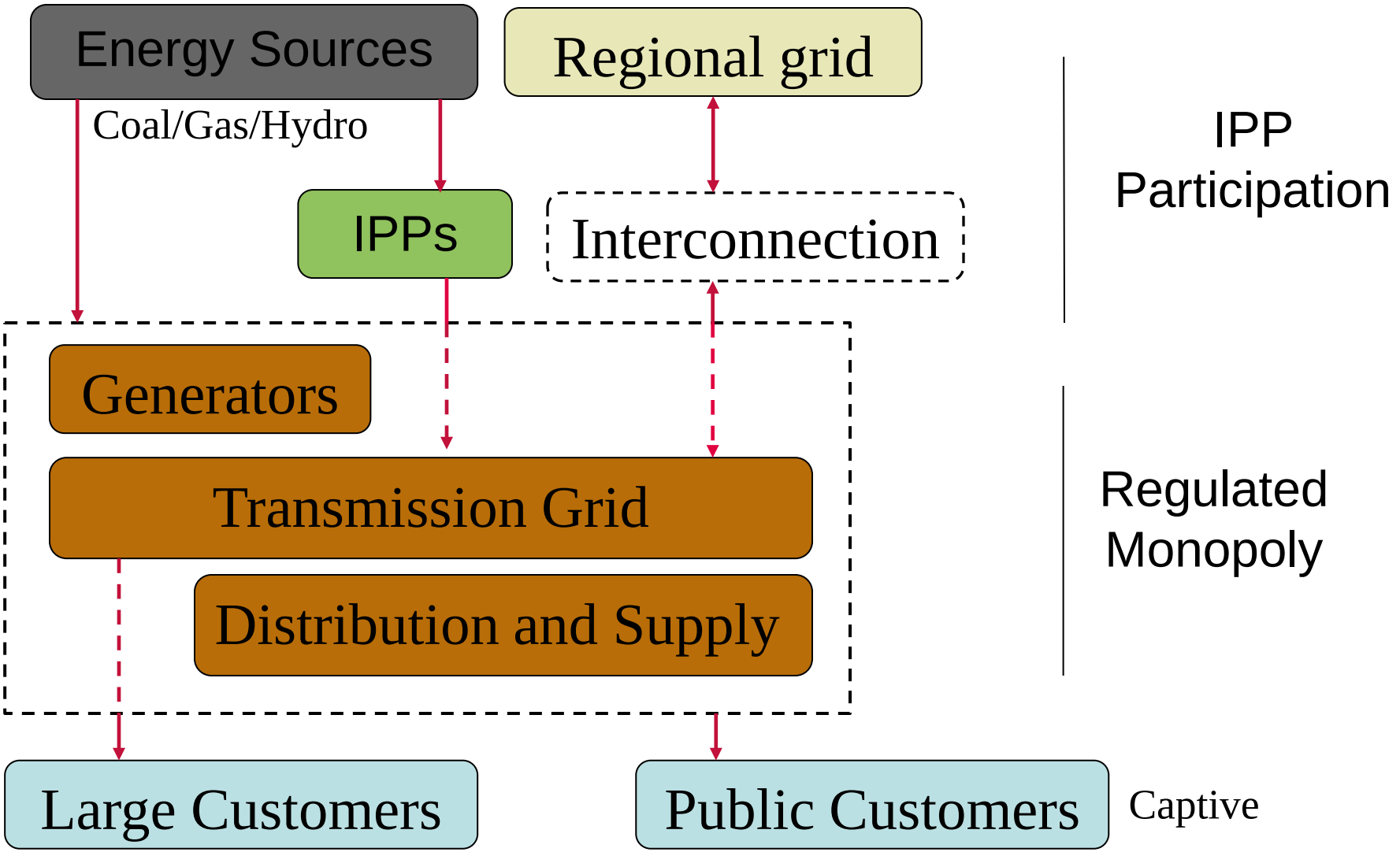
Mitigation of failures in market

- Prevent ‘sweetheart’ deals with affiliates or other players;

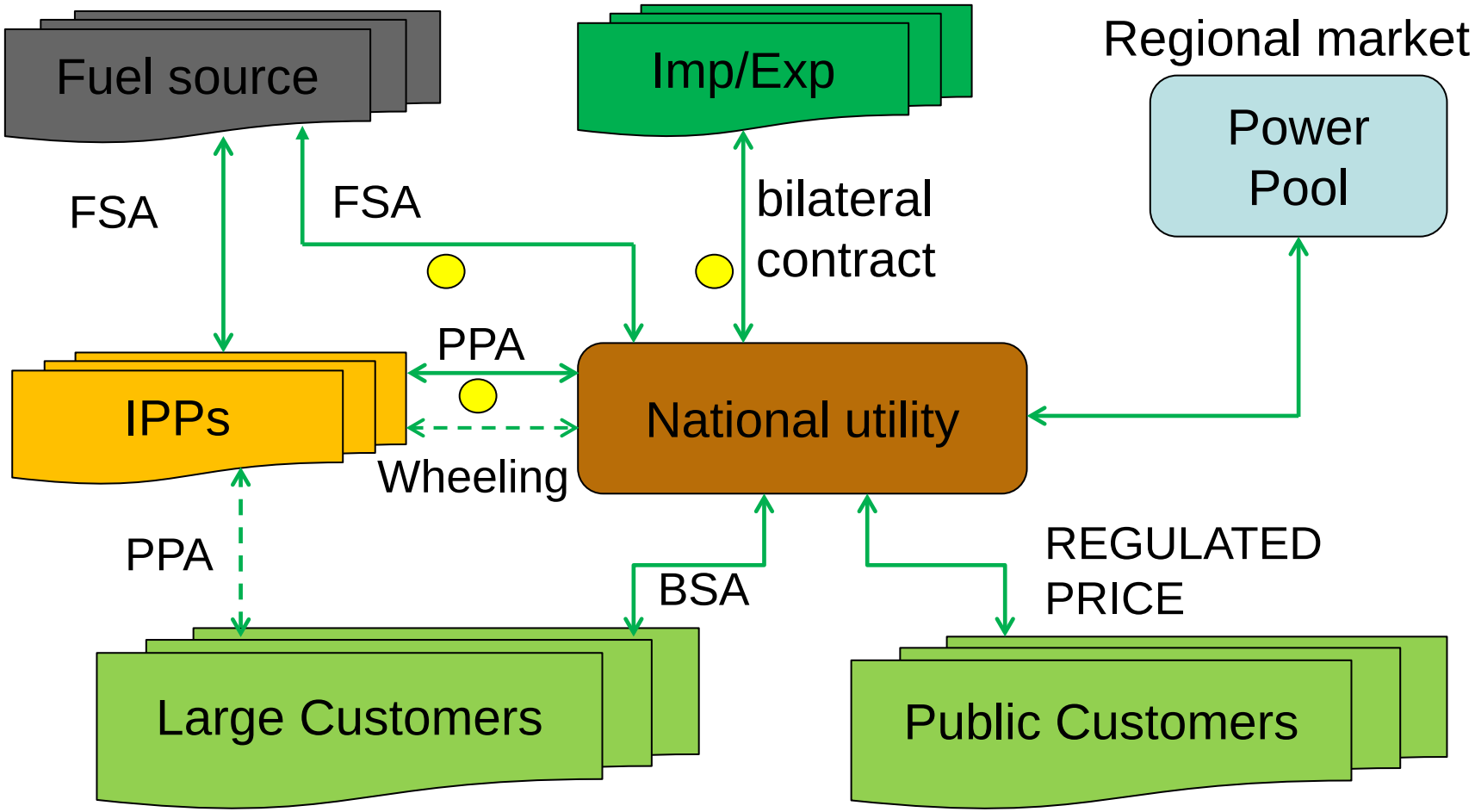
Ease of implementation

- Keep it simple
- Distinguish between purchases for captive and free markets
- Whatever the pass-through approach, regulatory intervention (monitoring, reviewing contracts, etc) is essential;

Early reform industry structure



Single – Buyer market structure



Elements of Early Reform Structure

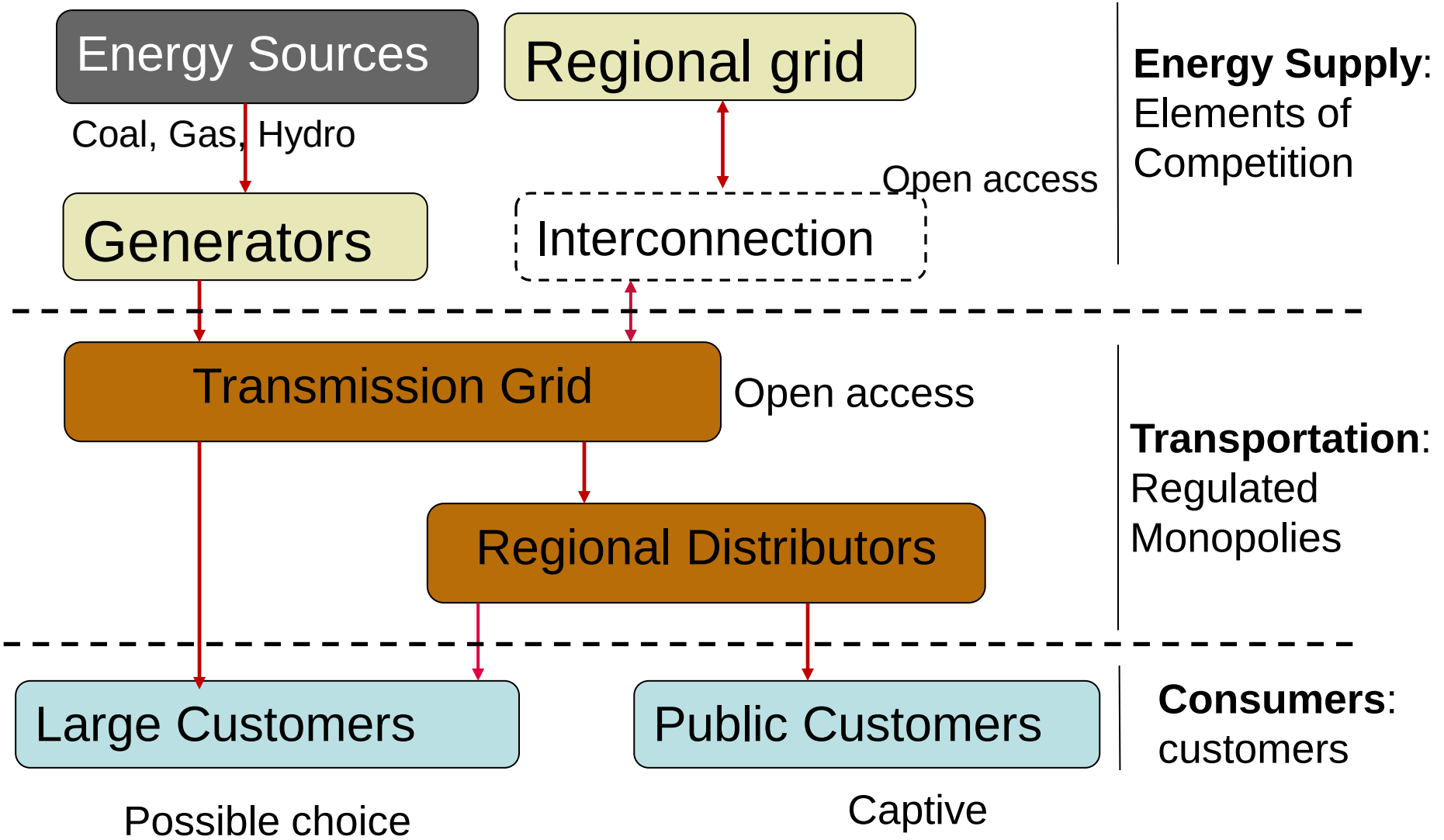
Regulatory challenges

- Lack of transparency of pass-through costs;
- Intensive information requirements
- No real competition in wholesale market – IPPs operate at margins

Contracts subject to review:

- FSA – Fuel Supply Agreement
- PPA – Power Purchase Agreement
- Bilateral Contracts – tend to be long-term : competition?
- BSA – Bulk Supply Agreements – long term, consider validity of assumptions

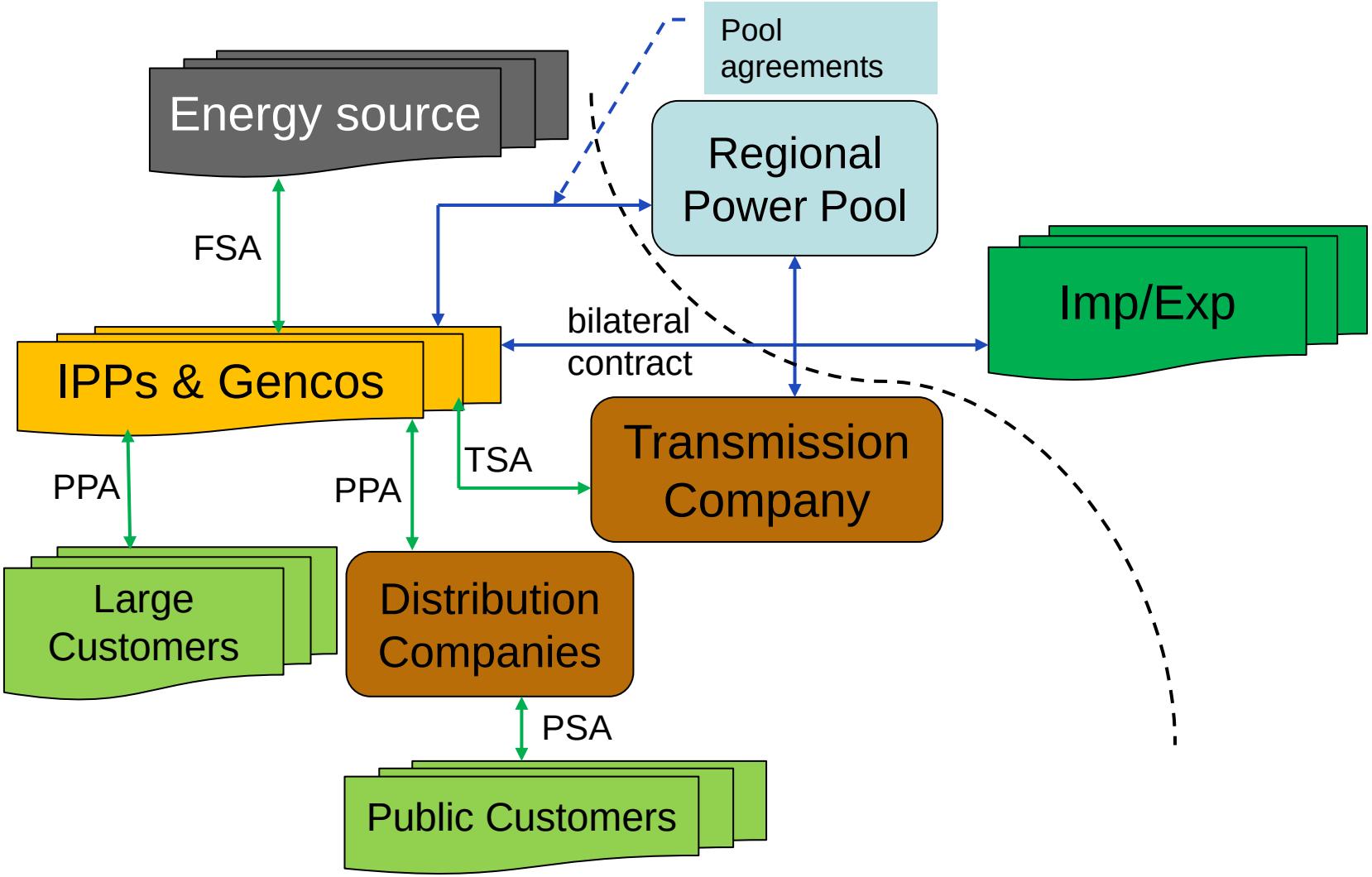
Market – based Industry Structure: Energy Flow



USAID
FROM THE AMERICAN PEOPLE

National Association of Regulatory Utility Commissioners

Typical Market Structure



Liberalizing Market

Wholesale competition in national and regional markets

Possibility of ‘sweetheart deals’ with affiliates or other players

Immature market may prevent full use of financial instruments (forward buying)

Pass-through Methodologies

- Full Pass-though:
- Review of contracts: (may be *ante* or *post*)
- Administrative benchmarks:
- Mandated competitive procurement

Full Pass-through

Regulator determines that utility/distributor has no influence on;

- Volumes
- Prices
- Risk Allocation
- Choice in power procurement

Some examples:

- Generators compelled to sell to a single entity and the single buyer sells to all distribution entities
- Both discos and customers are captive customers

Full Pass-through

Pass-through regulatory lag: concerns about triggering inflation:

Early Latin American practice

- Lag mandated by law
- Allowed only once a year
- Distributors experienced financial stress due to loss of real value

More recently

- Creation of tracking accounts
- More frequent tariff reviews to account for losses.
- But distributors still exposed to cash flow shortfalls and high adjustments when tariff is reviewed.

Review of Contracts

Regulator takes a position on reasonableness of power contract: price, risk allocation and other terms

May approve full pass though or prohibit some

Review may be *ex ante* or *ex post*

Ex ante:

- contract is reviewed to ensure that it complies with regulatory and other statutory guidelines
- Full pass-through provided contract is not amended without regulatory approval

Ex post

- Takes place after contract signing:
- Could be linked to corruption or incompetence

Administrative Benchmarks

- Regulator defines a reasonable cost of power purchases by estimating investment and operating costs.
- Costs used to establish benchmark for pass-through costs
- System tends to be cumbersome to the regulator
- Assumptions about economic and operating assumptions can be controversial
- Can choke investment in capacity expansion: Brazil had to abandon the system in 2003/2004 partly for that reason

Mandated Competitive Procurement

Regulator requires discos to buy some or all of energy requirements through competitive process.

Buyers may be integrated utilities or separate distributors;

Sellers are independent producers (or marketers)

Seller and buyer must be electrically connected directly or indirectly through a transmission path

Challenges:

- Few competing generators in the market
- Insufficient capacity on the transmission system
- Inappropriate pass through methodologies create uncertainties for investment in new plant: no competition

Industry evolution and pass-through methods

No Competition:

- Ex ante review of contracts
- Integrated distributor subject to possible "prudence" review of self-generation costs and power purchases.

Limited competition "for" the market: i.e. One dominant supplier and some form of competition in generation

- Mandated competitive procurement for new supplies – physical or financial contracts
- Feasibility of financial contracts in market should be considered

Industry Evolution and pass-through methods

Some wholesale competition "in the market": assumes wholesale competition and existence of financial markets:

- Review of contract and spot market purchases (ex ante) – captive public customers: care not to discourage investment in generation
- Could also apply mandated competitive procurement

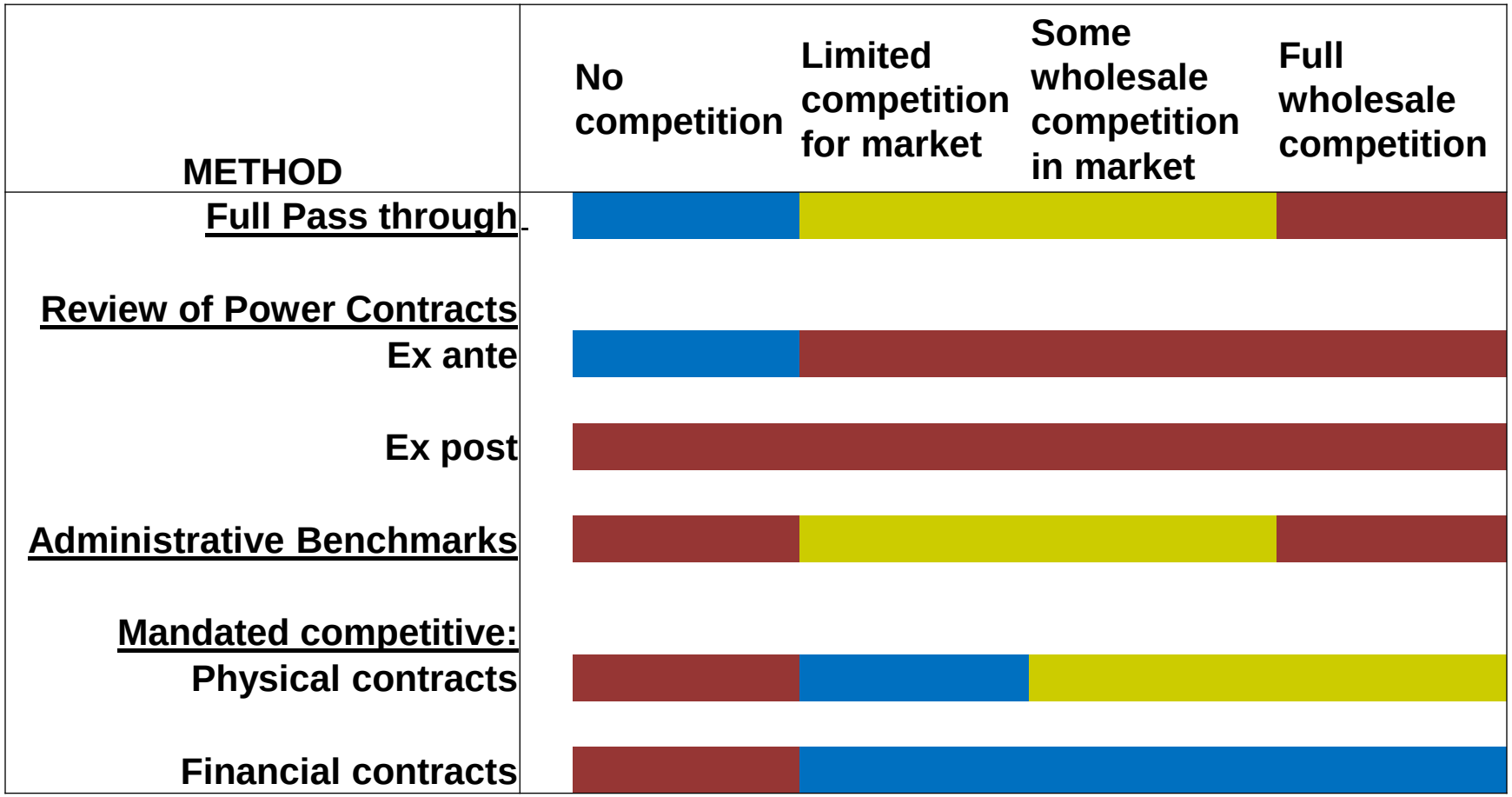
Full wholesale competition: whole sale energy traded on a competitive, freely negotiated basis

- Mandated competitive procurement with financial contracts
- If regulator defines procurement process and approves contracts, full pass through called for

USAID
FROM THE AMERICAN PEOPLE

National Association of Regulatory Utility Commissioners

MARKET REFORM PATH AND PASS-THROUGH METHODS



Summary

Method must be selected to suit stage of market development and industry structure

Pass through methods must satisfy multiple goals, some conflicting;

Main objectives are:

- Efficiency in procurement
- Fostering power sector expansion
- Minimizing market volatility
- Conveying right price signals to consumers
- Ease of implementation by the regulator

The presentation excludes retail competition and benchmarking

USAID
FROM THE AMERICAN PEOPLE

National Association of Regulatory Utility Commissioners

calibrating incentives and Penalties – An example of PBR

jorry@zamnet.zm

Example

Principle: Gains and losses from procurements should be shared among shareholders and customers

- Creates incentives for efficient procurement; but
- Recognises factors beyond DISCO's control

Pass through amount = $\alpha P + (1- \alpha)P_b$

- α is a number between 0 and 1;
- It assigns different weights to actual price paid, P, and against the benchmark price P_b .
- When **α is high**, more weight to the actual price,
- When **α is low**, more weight to the benchmark price

Illustration

Assume benchmark price of $60/MWh and α = 0.8

- If the DISCO procures energy at $54/MWh, it will be permitted to pass through:
  0.8*54 + 0.2*60 = **$55.2**
- The DISCO retains a *benefit* of [55.2 – 54.0] = **$1.2/MWh**
- If, instead the DISCO procures energy at $66/MWh, then it would pass through :
  - 0.8*66 + 0.2*66 = $64.8, and it would *bear a cost* of **$1.2/MWh**

Changes in α will affect

- Incentives for effective procurement
- Incentives for discos to contract and hedge themselves against spot volatility
- Incentives (or penalties) for self-dealing transactions

end