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New Zealand

Rural Electrification Regulatory Framework

Training to Energy Regulatory Commission

Day 18 – Review

Manila

28th April 2004

Day 18 - Objectives

- **At the end of this session we would expect you to:**
  - **recall the key points from the four weeks of training**
  - **be ready for the exam tomorrow**
- **the exam is intended to establish where we have been successful in conveying the new ideas required for regulatory change**
- **email me if you want the electronic files for the other Excel examples:**
  - **stephen.gale@castalia.fr**

Overall summary

- **EPIRA aims to reduce costs of electricity supply through private sector participation**
  - **NPPs competing to supply in SPUG areas with new PSAs**
  - **QTPs competing to supply in waived areas with new ESCs, and**
  - **IMCs in the management of struggling ECs**
- **the credit worthiness of most ECs needs to be improved**

ERC needs to approve tender outcomes

ERC needs to work with DOE and SPUG to identify long term plans for SATs and the corresponding subsidies from the M-UC

ERC needs to be prepared to fix or index the unbundled EC tariff

ERC needs to relax control over the cash needs re-investment allowance and consider a more realistic basis for this allowance

Attractions of competitive processes

- **even though supply attracting a missionary electrification subsidy amounts to only about 1% of total supply in the Philippines, a move to reliance on competitive tenders and away from rate hearings for private sector operators will be a break with ERC tradition**

- **the rationale is that the competitive process is the only reliable indicator of what is genuinely necessary to meet the EPIRA requirement that tariffs allow private parties to operate viably with a reasonable rate of return [43 (f)]**

- **a BNE benchmark is a best attempt at forecasting the rates required by private investors but actual attitudes to risk will not be known until some tenders have been held**

Subsidy arrangements for NPPs and QTPs

- **in SPUG areas, the tender amongst NPPs will identify the TCGR**

- **the winning NPP tender may be in the form**

  PhP 2/kWh indexed to inflation plus

  0.25 litres per kWh times a fuel cost indexed to some cost of diesel landed in the Philippines

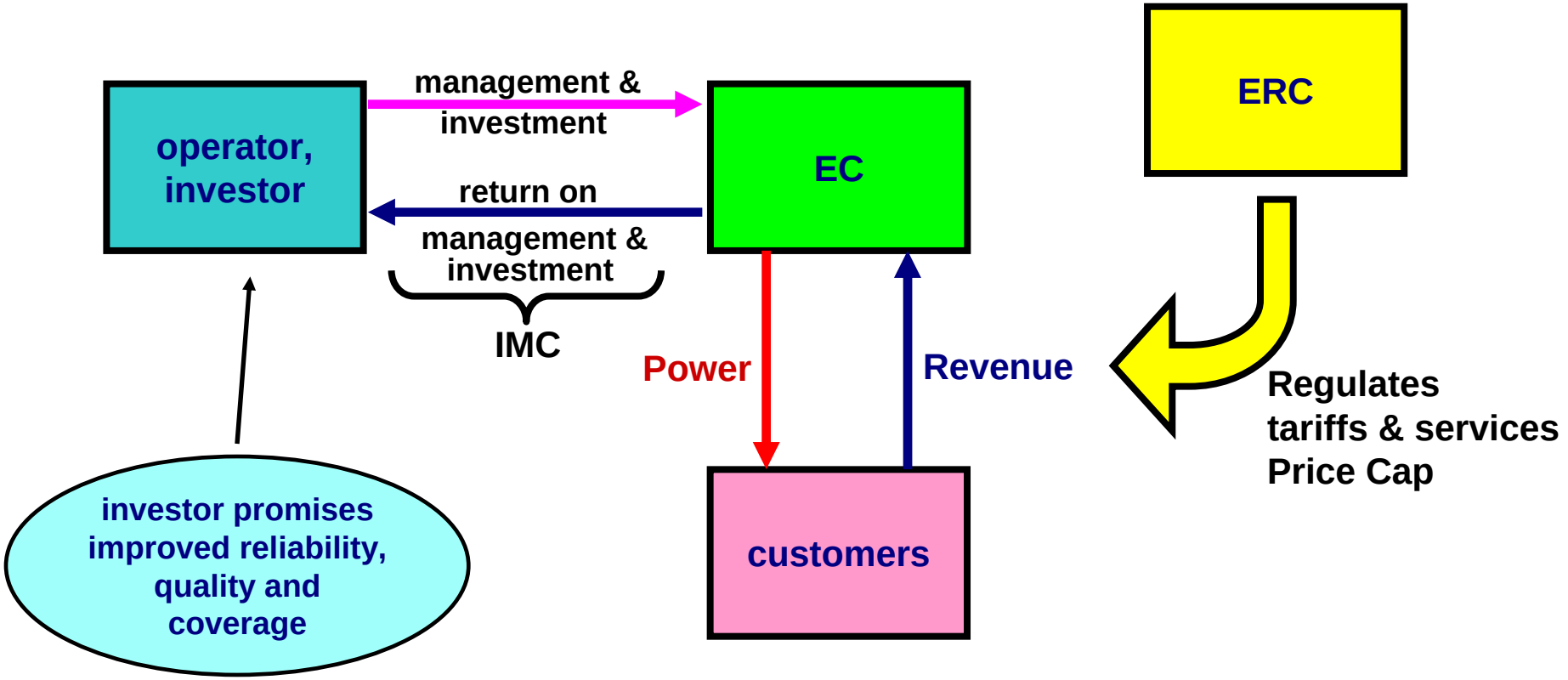
- **<u>while the TCGR is greater than the SAGR</u> determined by DOE and ERC ("unviable areas"), the ME-UC must be set so as to provide reliably for the payment of the difference to the NPP on behalf of the DU**

- **the NPP will be unambiguously entitled to earn their winning bid tariff**

- **in the case of waived areas, the winning QTP will be allowed to charge consumers the SAFT and will require a PhP subsidy per connection as the minigrid is developed (the "OBA" principle)**

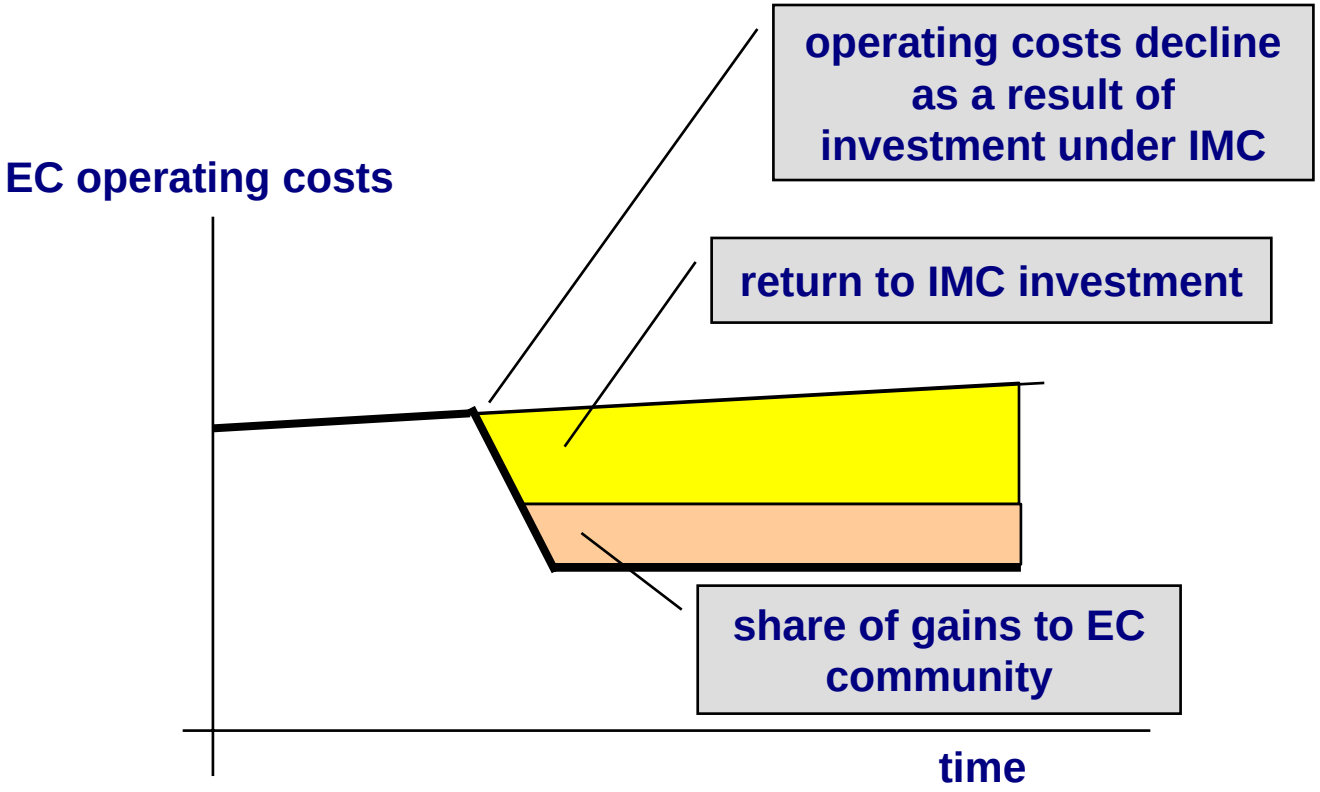
- **the required subsidy can be estimated from BNE calculations but will only really be established by the tender process**

IMCs: recall the concept – for the best of the unbankable ECs…



- **The remuneration of the IMC operator will consist of a portion of the surplus they create through an injection of capital and better management practices. As such, it must be protected from cuts in tariffs intended to eliminate such surpluses.**

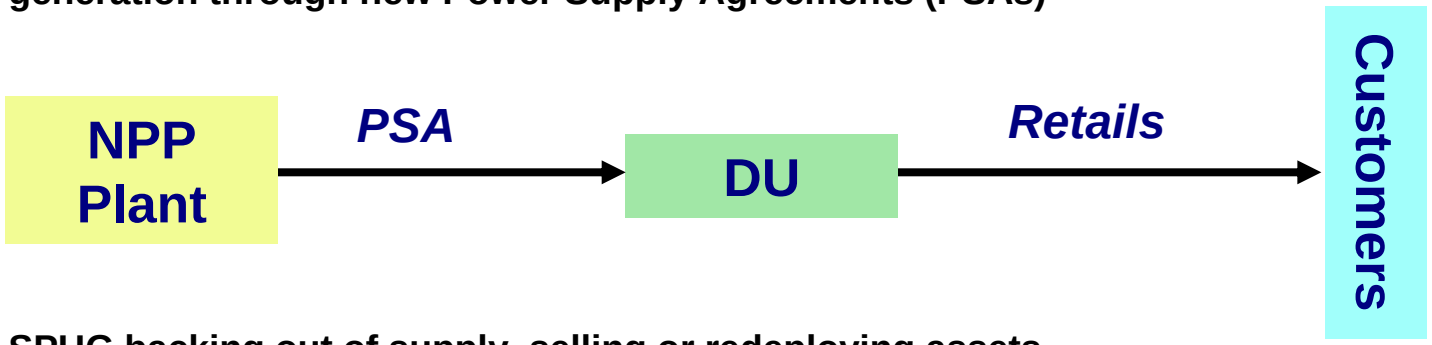
IMCs: sharing the benefits



Savings in operating costs need to be handled differently to cash needs model.
The investor will need to know soon how tariffs would be adjusted in a rate review.
We have recommended an idexing approach like that being developed for IOUs.

The DOE SPUG Circular - Overview

- **SPUG areas are now all open to "New Private Providers" (NPPs) taking over electricity generation through new Power Supply Agreements (PSAs)**



- **SPUG backing out of supply, selling or redeploying assets**
- **DUs to seek an NPP, selecting them through a competitive tender**
- **When DU doesn't voluntarily select NPP, SPUG will assign the PSA to an NPP**
- **DOE watching DU and NPP governance, and planning for "graduation"**
- **A DU can select an NPP by itself, use a transaction adviser, or SPUG will do it**
- **DOE will group DUs into "waves" for PSA privatizations and ensure progress**
- **subtransmission assets sold to DUs or at least O&M handed over**

SAT benchmarks and processes

- **benchmarks**
  - **neighboring tariffs or some multiple**
  - **cost of previous sources in new missionary areas**
  - **prices from informal suppliers**
  - **costs**
- **processes**
  - **DOE/SPUG submission**
  - **ERC consultation and hearings**
- **the basic maths**
  - **the P/kWh subsidies times the volumes of subsidised supply must equal the ME-UC times the over levy base of around 50 billion kWh**

Using a CRF to calculate a BNE tariff

- **A diesel engine generator of around 1 MW costs PhP 10,000/kW.**
- **Suppose the capital recovery factor is 23% for the required rate of return and assumed life, and**
- **the efficient annual fixed operating and maintenance costs are 2% of the capital cost.**
- **So the capital and O&M costs are equivalent to PhP 10,000 times 25% per year per kW**
- **i.e. PhP 2,500 per year per kW.**
- **The kW unit of capacity could produce 8760kWh per year if it could run continuously but lets suppose that it is planned to operate only about 7 hours pr day so that it will produce 2,500 kWh per year.**
- **At this level of operation, PhP 1/kWh is enough to recover the capital and make the required rate of return.**
- **What price for 14 hours per day of operation?**

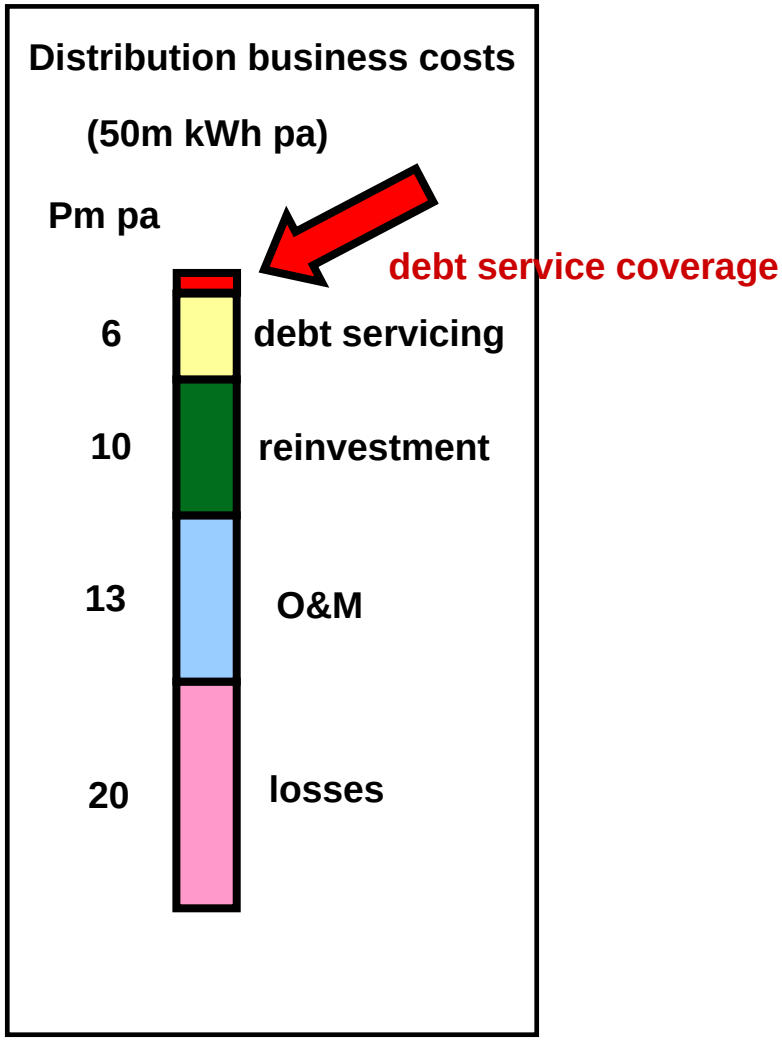
Traditional ECs: problems with the cash needs regulatory method

- **no provision for debt service coverage as required by commercial lenders – at least while there is close ERC supervision of the re-investment allowance**
- **adequacy of the re-investment allowance**
  - **objective – to maintain the condition and value of the network**
  - **so how do we gauge what is adequate?**
  - **what's the best way? An asset management plan.**
- **loss caps**
  - **effectiveness**
  - **effect on lenders**
- **test year costs have no provision for upgrading and growth**

Recommendations

- **achievable soon: explicitly relinquish control over a portion of the re-investment allowance to provide debt service coverage**
  - **analogous to the 1% REFC rule change**
  - **this should open the door to REFC lending**
- **longer term: recast the calculation of the re-investment allowance as "1/20th of replacement cost" less debt repayments**
  - **equivalent to IOU depreciation (less debt repayments)**
- **exposing inefficiency**
  - **reporting: distribution tariff variations between ECs, justifiable differences, partial indicators, and expert assessments**

How would relaxing control secure debt service coverage ratios?



How would using "depreciation" secure debt service coverage ratios?

- **example**
  - **EC with replacement cost of P3b, and depreciated asset value of P2b.**
  - **depreciation over 30 yrs provides for P100m pa.**
  - **Debt nearly zero now, but suppose it had risen to P1b with repayment over 20 years (P50m pa). This comes out of the depreciation allowance.**
  - **Interest at 12% is P120m pa provided for in the tariff**
  - **The allowed operating surplus is P220m pa and the debt service is P170m pa, a debt service coverage of 29% and a TIER of more than 1.8**

We know that just constraining revenue doesn't necessarily help

EC example

				inflation	0%		
	replacement cost	P3 billion					
	asset value	P2 billion		so total purchases are	452m kWh pa		
	O&M	P160m pa					
	sales	380m kWh pa	wholesale cost =	P3.2/kWh	so cost is	P1216m pa	
→	losses	16%	72m kWh pa			P232m pa	
	debt	P0.0 billion	repaid over	20	years	P0m pa	
	interest	12%				P0m pa	
	allowed losses	14%	63m kWh pa	P203m pa			

gross costs		"allowed" revenue		RPI - X
electricity for sale	P1216m pa	electricity for sale	P1216m pa	0%
losses	P232m pa	allowed losses	P232m pa	
O&M	P160m pa	O&M	P160m pa	
repayments	P0m pa	repayments	P0m pa	
interest	P0m pa	interest	P0m pa	
Total	P1608m pa	reinvestment	P80m pa	
reinvestment allowance 5%	P80m pa	Total	P1688m pa	

so base rate = P1688m pa / (452m kWh pa - 63m kWh pa (= 389m kWh pa)) = P4.3/kWh

actual revenue =	380m kWh pa	times	P4.3/kWh	=	P1649m pa	margin on sales
			electricity for sale		P1216m pa	P201m pa
average asset life	30 years		cost of losses		P232m pa	
reinvestment need?	P100m pa		repayments		P0m pa	
			interest		P0m pa	
reinvestment allowance	P80m pa	←	O&M		P160m pa	
replacement debt	P0m pa		reinvestment		P80m pa	
			net		-P39m pa	←
debt service	P0m pa					
required coverage	P0m pa					

Forward looking rate setting

- **Replace test year method with a forward looking approach. ECs should be required to file financial projections for a 3 to 5 year period. One possible sequence is as follows:**

  1. **Service standards are set in Distribution Code,**
  2. **ECs make capital investment projections to meet service targets,**
  3. **ECs hire independent appraiser to re-value assets,**
  4. **ECs make demand and efficiency gain projections,**
  5. **ECs identify realistic sources of financing that can used to draw an initial financing plan,**
  6. **ECs prepare financial projections, and apply modified cash needs approach to determine rate base for every year,**
  7. **ECs rate base petition to ERC,**
  8. **ERC reviews, consults, accepts or declines petition,**
  9. **EC presents regular performance reports to ERC,**
  10. **At the end of initial regulatory period, the new rate base is calculated.**