



Bureau of  
Energy Resources,  
United States  
Department of State



National  
Association of  
Regulatory  
Utility  
Commissioners

# **Workshop on Regional Electricity Trade and Market Development**

**Network System Operation  
Regulation – Retail Wheeling  
April 25, 2014**





# Definition

Wheeling can be defined as a use of transmission network by an independent party other than the owner or operator of the transmission grid.

Cost of wheeling is the cost of operating, and sometimes expanding, a transmission system (Long Run Incremental Cost - LRIC).



# Regulatory Issues

- ⊙ Unbundling of generation and transmission services and selecting pricing methodology;
- ⊙ Formulating an approach for the treatment of losses;
- ⊙ Rights and obligation of utilities;
- ⊙ Allocation of costs from temporary surplus capacity;
- ⊙ Assessing the risk of power congestion; and
- ⊙ Effect of retail wheeling on integrated resource planning.

*Sources: NRRI 1994 (USA); OUR Study 2012 (Jamaica).*



# Regulatory Instruments

- ⊙ The generation license;
- ⊙ The wheeling code;
- ⊙ Qualifying criteria;
- ⊙ The wheeling contract;
- ⊙ A top up and stand-by supply contract; and
- ⊙ An excess energy supply contract.



# Pricing Principles

- ⊙ Efficiency;
- ⊙ Cost recovery;
- ⊙ Transparency and predictability;
- ⊙ Fairness; and
- ⊙ Simplicity of administration.



# Cost Recovery

- ⊙ Capital costs of network plant and equipment;
- ⊙ O & M costs;
- ⊙ Network losses; and
- ⊙ Congestion.



# Methodologies

	Historic Cost Techniques	Forward Look Techniques
Degree of Complexity →	Postage Stamp	Short Run Marginal Cost
	Contract Path	Short Run Incremental Cost
	MW-km (Distance-based)	Long Run Marginal Cost
	MW-km (Load Flow-based)	Long Run Incremental Cost
	Nodal Pricing	

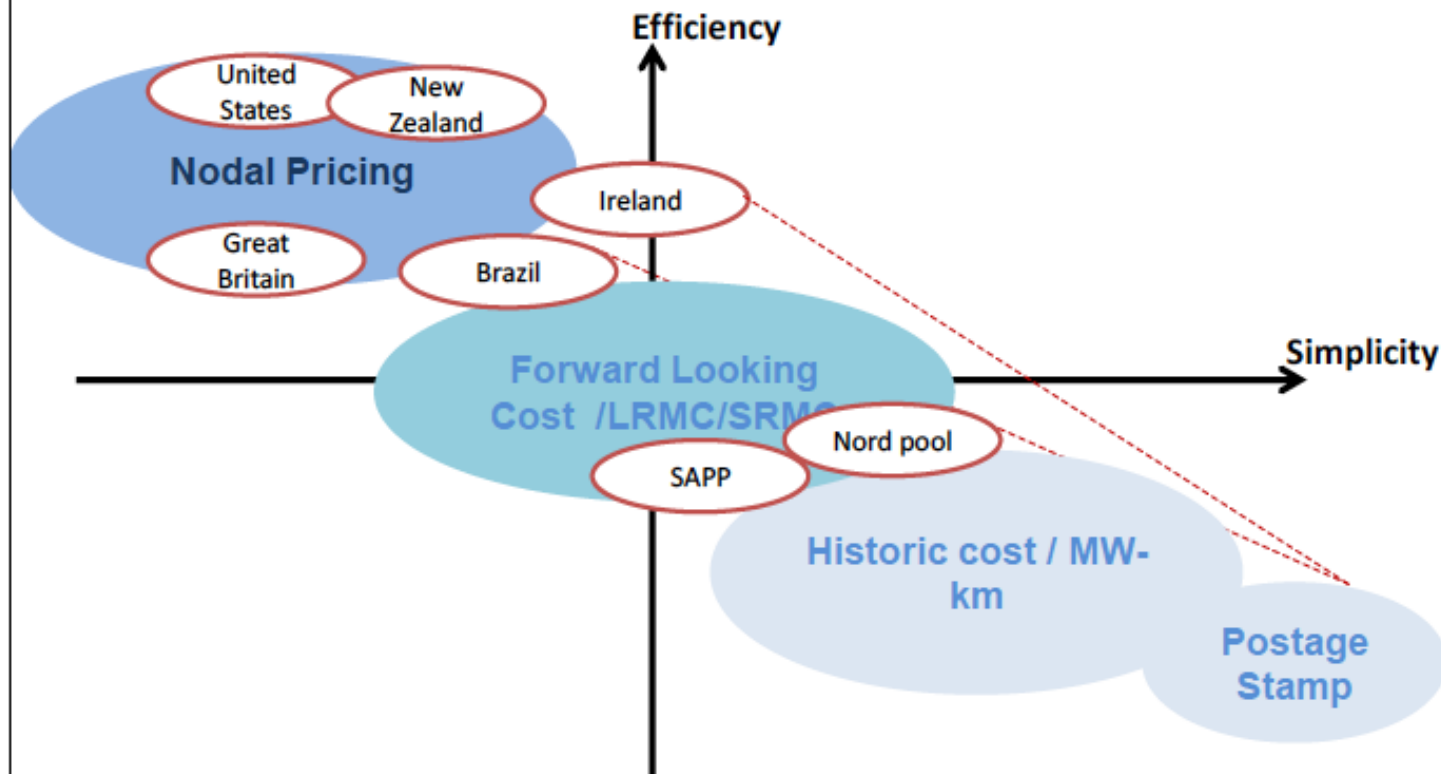


# Principles

- ⦿ Cost reflective;
- ⦿ Non-discriminatory;
- ⦿ Consistent with tariffs and price controls;
- ⦿ Guided by cost of service study; and
- ⦿ Efficient and simple.

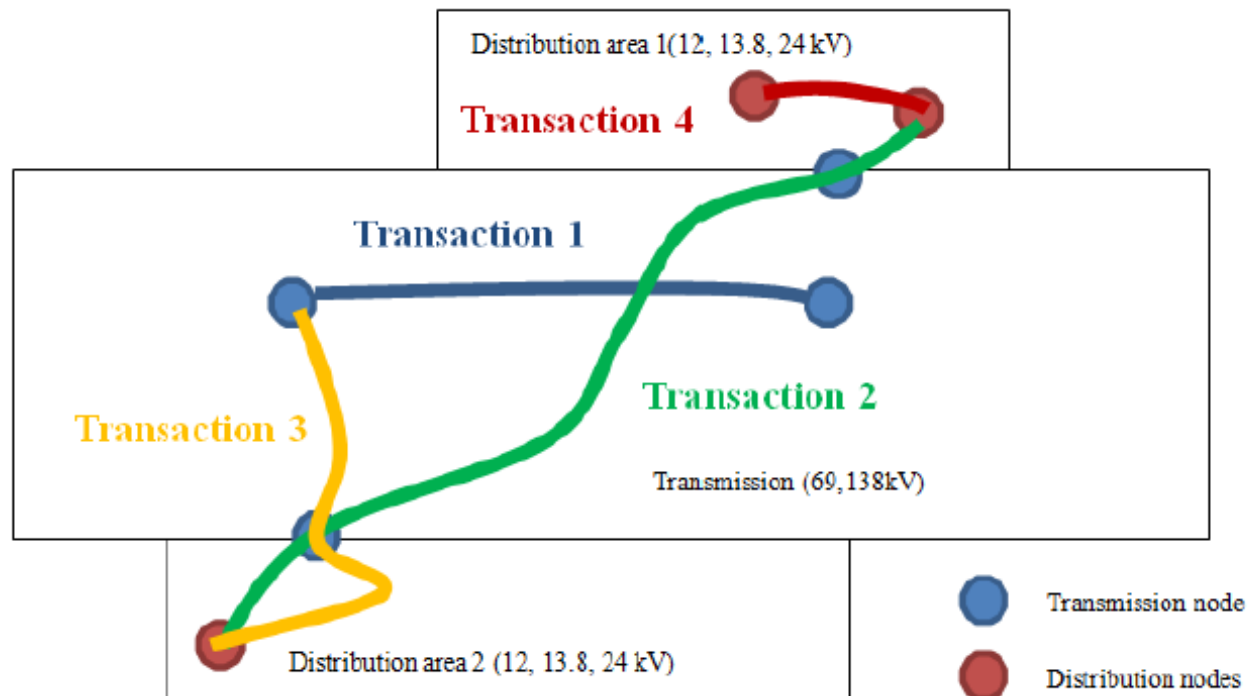


## Transmission pricing methodology: Trade off between Efficiency and Simplicity



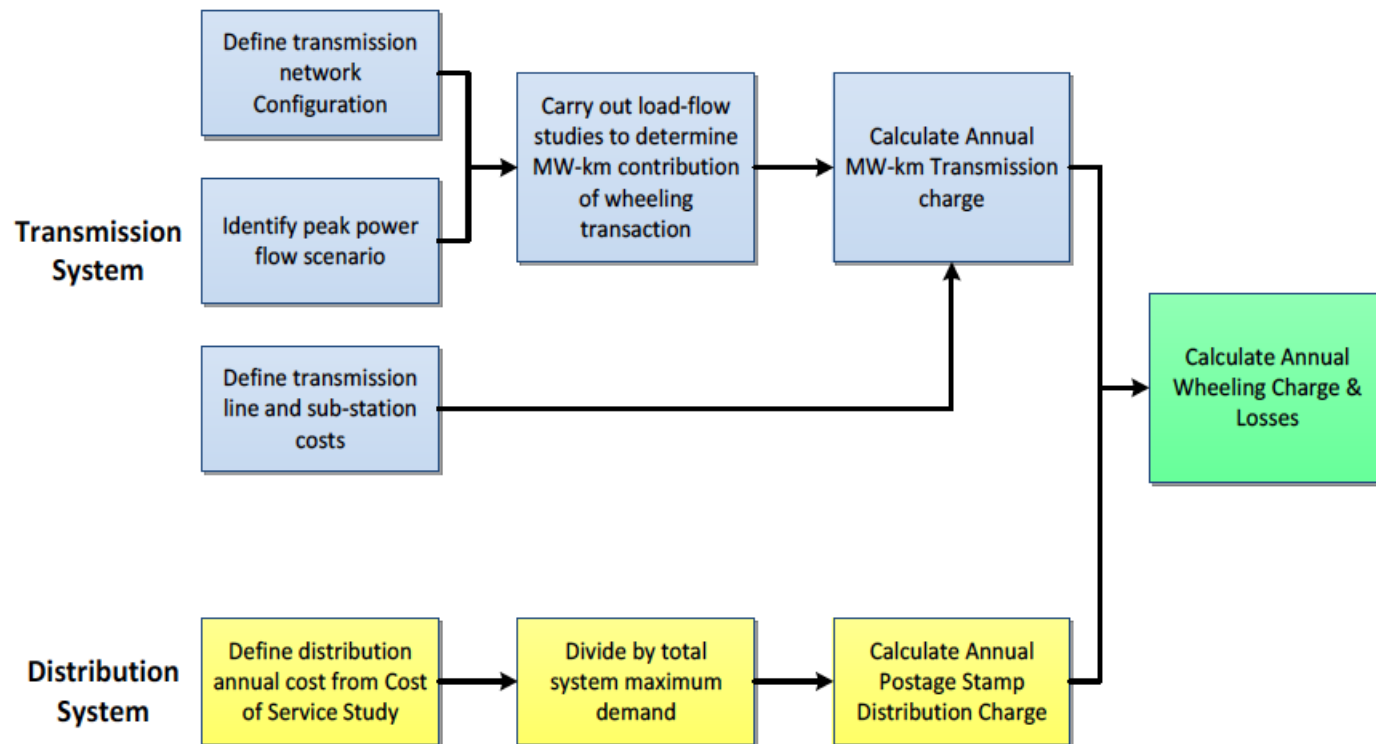
*Indicative Only*

# Transaction Configuration



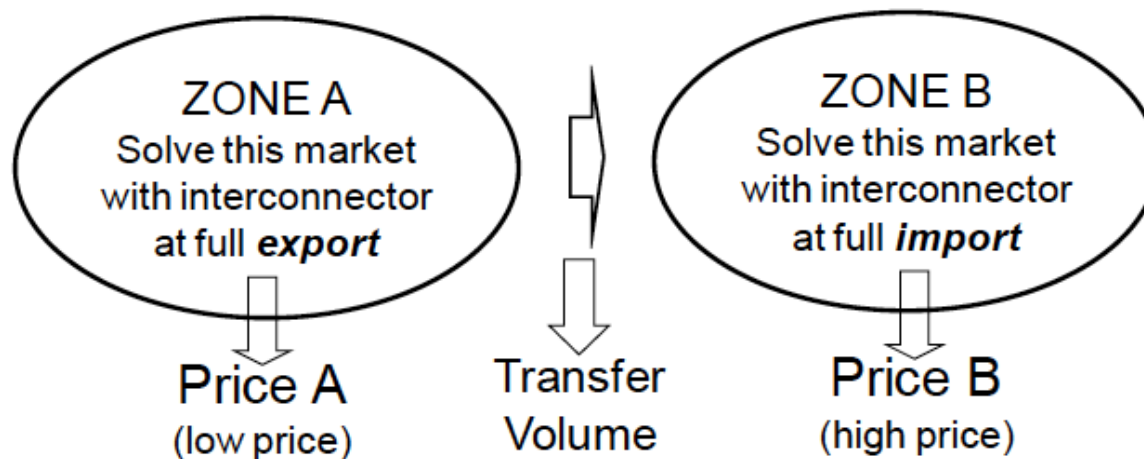
Source: Office of Utilities Regulation: Electricity Wheeling Methodologies – Consultation Document, December 2012

# Determination of Wheeling Charges



Source: Office of Utilities Regulation: Electricity Wheeling Methodologies – Consultation Document, December 2012

# Congestion Management



$$\text{Congestion Price} = (\text{Price B} - \text{Price A})$$

$$\text{Congestion Rent} = \text{Congestion Price} * \text{Transfer Volume}$$



# Thank you!

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