



***POWER
GRID***

A subsidiary of Singapore Power

***PowerGrid Transmission
Pricing***

Principles

- PowerGrid UOS charges set based on the following principles
 - Charges must be cost reflective
 - Charges must encourage efficient use of the transmission network
 - Charges must be simple to understand and implement

Cost Classification

- **Customer Specific Costs**
 - Costs of reserving customer specific capacity
 - Costs which can not be shared with other customers
 - Cost Driver: Customer capacity requirement
 - Cost Recovery: Customer contracted capacity charge
- **System Costs**
 - Costs which can be shared amongst customers based on usage (kWh)
 - System built primarily to cater for peak usage
 - Cost Driver: Mainly peak usage
 - Cost Recovery: Mainly peak period charge

Main Tariff Structure Elements

- **Contracted Capacity Charge**
 - Contracted Capacity Charge recovers the cost of dedicating capacity to meet customers declared capacity requirements.
 - Once this capacity is made available, assets are sunk and therefore must be recovered through customer charge.
Monthly charge applied to customers contracted capacity at each intake supply point
 - New Supply, customers contracted capacity is fixed for 5 years. Upward revisions allowed, downward not allowed.
 - Existing supply, after the five year binding period, contracted capacity is set for periods of one year, subject to specified minimum.

Main Tariff Structure Elements (cont)



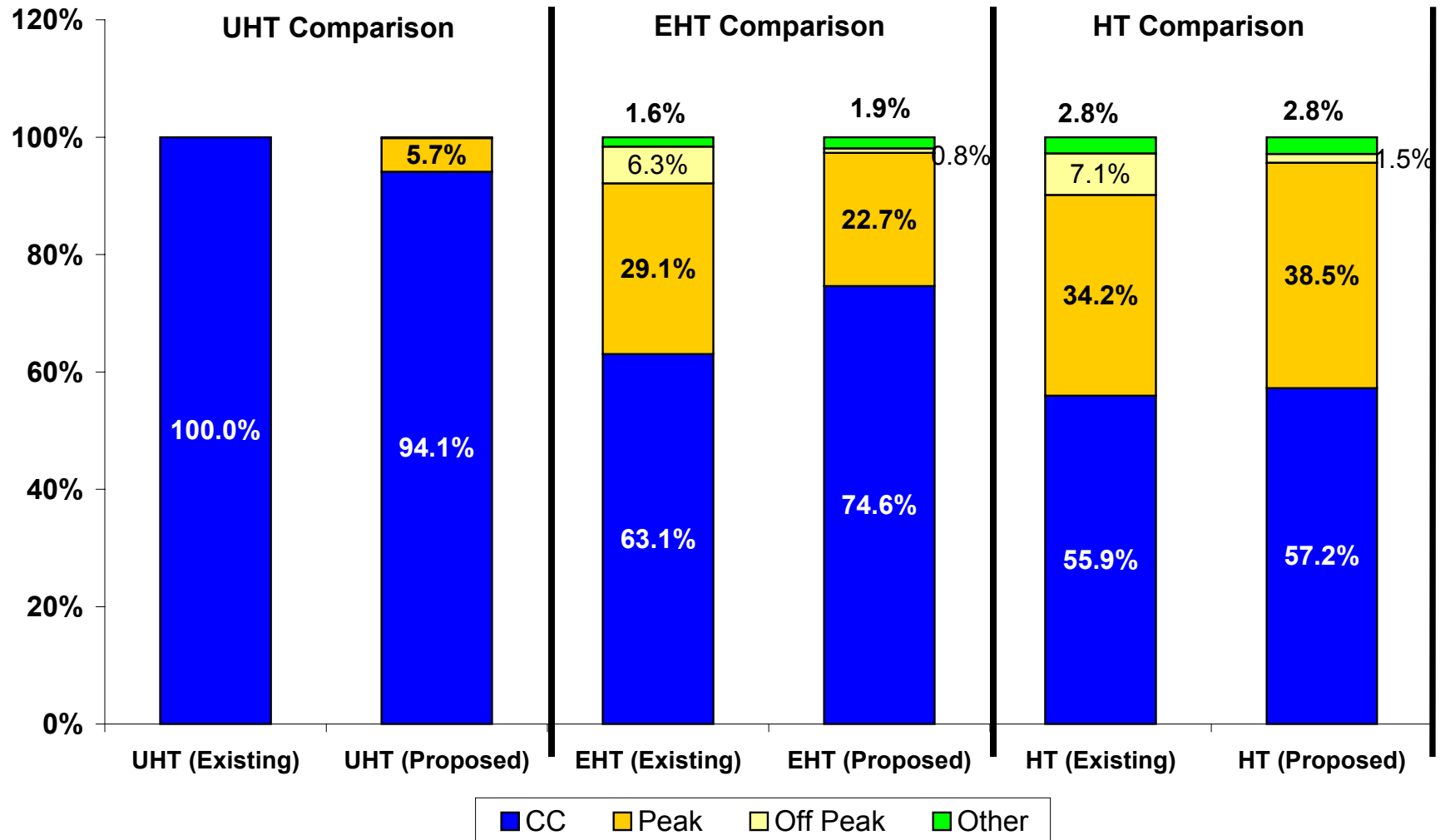
- **Peak Period Charge**
 - The peak period charge recovers most of the network cost which can be shared amongst customers.
 - Applies to energy supplied during the peak period, 7.00AM to 11.00PM

- **Off Peak Period Charge**
 - Applies to energy supplied during the off peak period, 11.00PM to 7.00AM
 - The off peak period charge recovers the balance of the network cost which can be shared amongst customers, which is not recovered through the peak charge

Secondary Tariff Structure Elements

- **Uncontracted Capacity Charge**
 - Pricing signal to encourage customers to declare accurate assessments of capacity requirements
 - Network is sized to meet customer requirement
 - Network can cater for adhoc (but not guaranteed) small capacity overruns
 - This charge is set at 150% of Contracted Capacity charge
 - Applied to customer demand above contracted capacity
- **Reactive Power Charge**
 - Pricing signal to customers to maintain a high power factor
 - Low power factor results in higher investment to meet the same demand

Proposed Tariff Structure



Proposed Tariff Structure

- **Key Changes**
 - Cost recovery primarily through Contracted Capacity and Peak Period charges
 - Significant reduction in cost recovery through Off Peak Period charges
- **Benefits**
 - Strong signal to encourage off peak consumption
 - Stronger signals for customers to declare accurate capacity requirements
 - Lower cost in the longer term, through better capacity planning and improved network utilisation

Key Messages

- Accurate assessment of Contracted Capacity must be made
 - Capacity drives investment
 - Initial 5 year period, customer pays on contracted capacity

- Must encourage Off Peak consumption
 - Strong pricing signal to encourage off peak consumption

UOS Rates

- Rates have been approved by EMA
- In summary,
 - Rates incorporate the revised tariff structure
 - On average UOS charges have reduced by approximately 2.5%
 - Different HT & EHT customers are impacted differently, depending on their load profile

Customers with Embedded Generation

- The existing backup scheme has been abolished
- Customers with embedded generation have two choices
 - Customers that require full backup
 - Contract capacity charges based on total load
 - PowerGrid will reserve this full capacity
 - Treated exactly the same as other customers
 - These customers pay the same contracted capacity, peak, off peak period and uncontracted capacity charges.

Customer with Embedded Generation (cont)

- Customers that require limited backup
 - Choose to reserve capacity that is less than total load requirement
 - PowerGrid will only built network to cater for reserved capacity
 - The customer pays the same charges as other customers for capacity utilisation up to 120% of declared capacity
 - Adverse system impact if capacity overrun greater than 20% of declared or reserved capacity
 - Customer to install & maintain load limiter to prevent capacity from exceeding 120% of reserved capacity
 - To ensure that this scheme works, a higher rate will apply to capacity greater than 120% of declared capacity
 - This rate is **5 times** the contracted capacity rate and is the **Uncontracted Standby Capacity Charge**.

Conclusion

- PowerGrid UoS charges and structure would achieve the following
 - Pricing is cost reflective
 - Revenue recovery reflects the fixed cost structure of PowerGrid and encourages off peak utilisation
 - Abolishment of backup charges. Consistent treatment of all customers
 - Majority of customers get a price discount
 - Price structure encourages good utilisation