



# **BUSINESS MODEL FOR FUTURE ELECTRICITY DISTRIBUTION NETWORKS**

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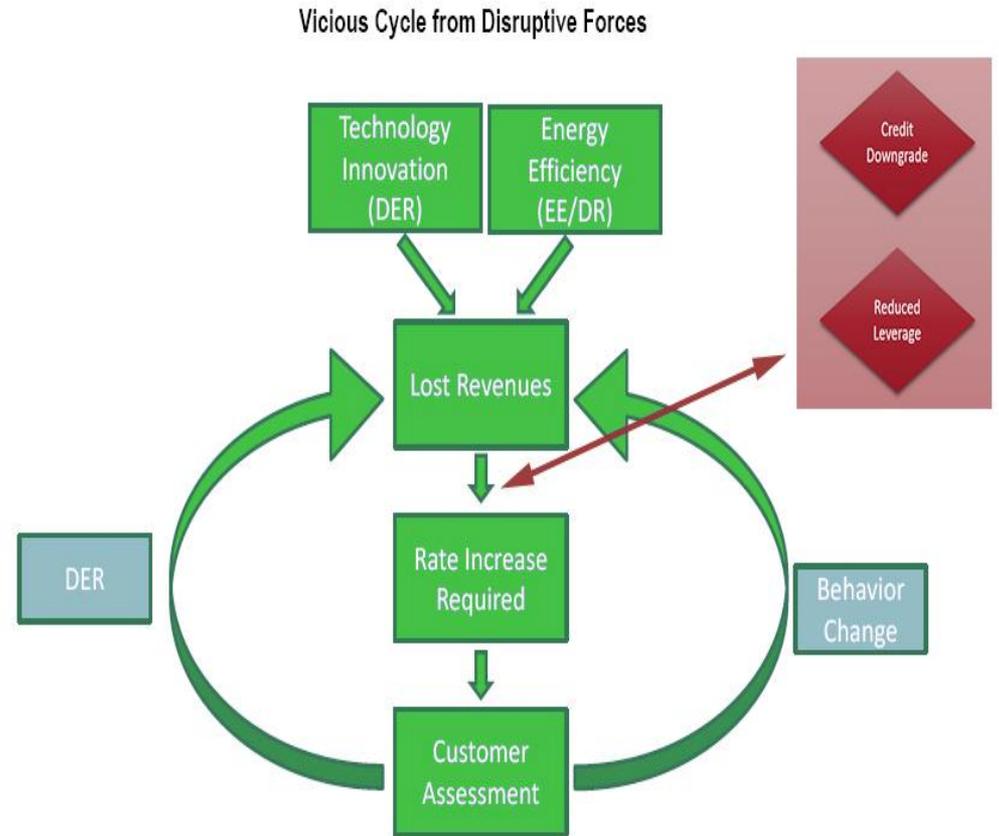


# Background: disruptive technologies

- **The operating environment of network utilities is changing:**
  - On-site generation, renewable energy uptake: solar PVs, wind.
  - Ambitious targets, supportive policies: feed-in tariff, net metering.
  - Also boosted by rising retail price mainly because of network charges.
  - At the same time: low or falling electricity demand mostly in mature economies.
  - Self-sufficient large consumers/ prosumers.
  - Energy efficiency.
  - Growing interest in microgrids, semi-independent communities.
  - Consumer engagement in managing/controlling their energy usage through programmable equipment.

# Changing the fundamentals

- Traditional business models are no longer applies to distribution networks.
- This is specifically the case if charges are based on volumetric tariff (e.g., Texas, Australia).
- Renewable integration in most places such as Australia has not reduced peak demand but rather average demand.
- Declining demand+rising cost because of peak load  $\implies$  rising in retail prices  $\implies$  more disruptive technologies  $\implies$  **Vicious cycle**



Source: [www.forbes.com](http://www.forbes.com)

# Expansion of business model

- To fend off the shrinking of their revenue, the network companies need to extend their business:
  - Tariff re-design
  - Energy service
  - Involvement in the business of renewable support
  - Reliability charge-Prosumers
  - Data supply
  - Aggregation
  - Market for network capacity/ Contract for deferral scheme (CDS)
  - Market for reactive power
- Lessons from similar industries which have been exposed to disruptive technologies can be insightful (e.g. Telecommunication).

# Regulatory challenges

- Business model needs to be compatible with the regulatory framework of companies.
- Involvement of distribution network companies in both regulated and competitive businesses can lead to:
  - Discrimination
  - Cross-subsidisation
  - Disruption to unbundling paradigm
- Incentives and alignment of benefits between renewable developer and DNO.
- New tariffs to recover the network costs might lengthen the payback period of solar PV installed by households.
- Distribution effect: Those people who do not have solar power and can not afford it subsidise more affluent prosumers.

# Conclusions

- The network utility companies face hard times because of massive renewable uptake as a result of low carbon policies.
- An extended business model is required to help them to adapt to the new environment and avert the shrinkage of their revenues.
- The extended business model should create integrated value added benefits through:
  - Data supply, renewable integration support, reliability supply, aggregation of small resources, market for reactive power and network capacity
- However, the regulatory challenges need to be dealt with.

**Thank you for your attention!**