

The Future of DSM in a Competitive Electricity Market

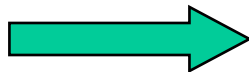
Security

Linda Hull
EA Technology

Security vs Reliability?

Auckland:

In early 1998 a series of failures occurred in the underground cables providing electricity to the central business district (CBD) of Auckland. As a consequence much of the CBD of Auckland was blacked-out for a significant period.



Reliability issue

California:

The crisis began emerging in June 2000.

Complete 'disjoint' between wholesale market price and the retail price.

Result - insufficient generation to meet demand



Security issue

- **Can the Demand Side improve security of energy supply?**
 - **Finland: 330 MW**
 - **Norway: 220 MW**
 - **Sweden: 130 MW**
 - **Spain: 1,750 MW**
 - **UK: 480 MW**
- **Creates two-sided markets**
 - **helps to constrain market power**

Competitive Electricity Markets

Prior to Liberalisation:

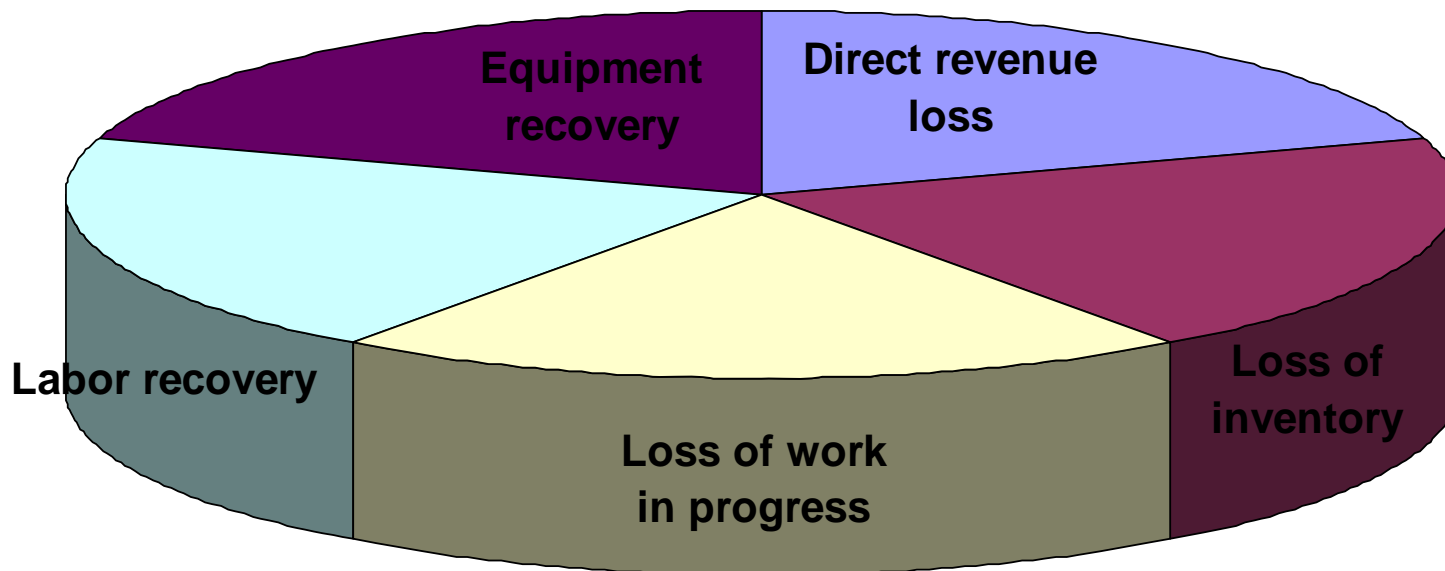
- Fixed energy rates
 - Customers ‘isolated’ from real-time price of electricity
- Engineering led approach
- Cost-plus pricing
- Prescribed power quality

Liberalised Market Characterised by:

- Real-time pricing for electricity
 - Innovative pricing
- Removal of subsidies
- Disaggregation of responsibilities
- ‘User pays’ power quality

The Cost of Power Problems

“ Outages cost facilities an average of \$4,000 to \$11,000 each, although many end users suffer much greater losses. For example, one semiconductor manufacturer reports that a single five-second outage could cost the company \$12 million in lost production alone - the equivalent of its entire annual electricity bill.” - E-Source, May 1999



Demand Management

In early to mid 1990's:

many programs closed to new customers or eliminated

Reasons:

- belief in availability of adequate capacity**
- lack of incentives**
 - regulatory**
 - pricing**

And Now?

Demand management now growing in importance

- NYISO**
- NE-ISO**
- PJM**
- California**

Reasons:

- response to real and perceived shortages of capacity**

Integrated Resource Planning

- Identifying the best electricity supplies for the best price
 - worth vs cost
- Look at both generation and demand side resources
 - renewables
- US - FERC
- Europe - directive rejected by member countries

The Issues?

- **How to value demand side response?**
 - **avoided network losses**
 - **deferred investment**
 - **avoided generation costs**
 - **environmental costs**
 - **retail costs**
- **How to involve all consumers**
 - **focus has been on large consumers**
- **Customer retention**
 - **the need for intermediaries / aggregators**
- **Impact of embedded generation**
- **Security market?**