

Security without Subsidy

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Sources of Security

- Reinforcing the supply system components to make them bullet-proof
- Enlarging the supply to provide redundancy
- Spreading supply over several sources
- Users who can do without

Bullet-proofing

- Making components reliable is basic good practice
- Further increases in reliability rapidly get expensive
- Failures can still happen

Redundancy

- Some redundancy essential – usually called reserve capacity
- High cost to provide
- Funding problem

Diversity

- Reduces, but does not eliminate, impact of contingencies
- Requires divergence from least cost option
- Suppressed by centralisation
- Promoted by open competition
- Frequently low cost

Discretionary Consumption

- Suppliers call it interruptible demand
- Consumer tolerates loss of service or switches to more expensive alternative
- Cost to consumer highly variable
- Consumer involvement may be:
 - forced (small consumers) or
 - induced by compensation (large consumers)

Discretionary Consumption - 2

- Applicability was restricted by technology and transaction cost
- Both are reducing drastically, greatly increasing potential
- Compulsion is not viable under competition, unless imposed by regulation
- Inducement is essential and can be either by discounted price or compensation payment
- Prolonged loss of service is unacceptable

Optimum

Clearly no single answer, all should be used:

- Component reliability needs to stay with owners
- Diversity can be provided through competition
- Interruptible load limited to short term issues
- Redundancy is expensive but essential

NZES on Security

Vision: **“To maintain high levels of security and reliability at competitive prices”**

- The competitive pricing appears to be for supply of security
- Later text suggests that it is actually intended as code for low electricity prices
- Former interpretation would be better

NZES Sources

Sources of security referred to:

- Energy efficiency
- Demand-side management
- Diversity
- Regulated backstop measures
- Proactive information supply

Comment

- Energy efficiency can contribute little
- DSM can include interruptability
- Diversity is described only as not to include lignite, coal or nuclear
- Regulation described only in terms of price
- No description of the proactive information

Actions taken

Primary actions actually taken are to provide subsidies:

- E3p gas supply
- Building Whirinaki
- Donations of carbon credits

Plus

- Pressure on generators from both regulator and ministers

Needed

- Badly need a competitive market mechanism
- Should provide either increased supply or reduced demand, when required
- Requires a need to buy and an incentive to sell

Reliability Contracts

- A conditional requirement to provide a supply (or negative demand) can be formulated as a physical “call option”

Seller is:

- Rewarded for selling the option
- Usually rewarded if and when option is exercised
- Heavily penalised if performance falls short when called upon

Buyer

Buyer is:

- Able to call up the option only under defined circumstances
- Pays the upfront and performance rewards
- Obtains the supply when most needed

Participants

- Sellers would be generators and demand aggregators
- Buyers would ideally be retailers and large consumers
- At least initially the buyer would need to be the system operator
- Location will continue to be an issue while transmission weak and prone to bottlenecks

Existing experience

- Capacity credit market implemented in PJM system has some elements
- PJM's Reliability Pricing gets closer
- New Zealand would need to substantially modify systems oriented to capacity adequacy toward energy adequacy