

Demand Response – A New way of Electricity Demand Management at the Grid Level

Demand Response is one method to manage electricity demand – it allows consumers to reduce or shift their power usage in exchange for payments during times of peak demand or forced outages of power generation plants. Demand Response helps to stabilize the electricity grid during such abnormal events. Adopting Demand Response reduces the need for new power plants to be constructed, thus complementing the capability of existing conventional generation sources and contributes to a greener environment.

When electricity demand in the grid increases, there are two ways to meet this demand: (1) increase the generation, or, (2) reduce the demand. In the case of the former, it means ramping up the generation capacity, thereby increasing fuel consumption and increased carbon emissions. The alternative and most cost effective, environmentally friendly way is to scientifically reduce the electricity consumption to meet such short term demand increases.

Demand Response, popularly referred to as DR, helps to reduce the stress on the grid during high power demand or power shortage at a fraction of the cost required to use the backup power from the backup generators. Demand response is widely used in the US, UK, and Australia to address system stability.

DR in the Singapore context is very critical as it addresses few major imperatives: (1) clean environment, (2) optimum land mass utilization, (3) reduction in import of gas and (4) lower electricity prices and national benefit. In addition, DR in its full form of implementation will lead to baseline energy efficiency that has significant long term economic benefits. DR would be a significant product in NEMS in the primary energy market where demand-supply matching of power takes place.

Within NEMS, there is also an entity known as the Reserve Market. In the Reserve Market, a type of demand response known as Interruptible Load (IL) is used. The IL provides a relief to the power grid for momentary imbalances in the supply.

The existing IL scheme in the National Electricity Market of Singapore enables consumers to be paid in return for having a portion of their electricity supply on standby for temporary interruption. Thus, energy consumers volunteer to not use their power at a certain time period, and allow their power to be taken and used as backup power. In exchange, they get a monthly payment regardless of whether their power is actually activated as backup. Having this access to backup power not only reduces the need for backup generators and frees up land used for power generators – it also helps transfer extra energy to places where it is needed more urgently, thus optimising our power usage and reducing power wastage.

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There are two companies licensed by Energy Market Authority to operate in this space. Diamond Energy & CPvT are SEAS members that are actively working with the association to raise the awareness about this unique tool available to large electricity consumers to save the environment as well as generate revenue at the same time. For more information on demand response & interruptible load please visit their websites:

<http://www.cpvtenergy.com/>

<http://diamond-energy.com.sg/>

Demand response has been established in Singapore and has a lot of potential. With increasing industry and government interest in smart grid solutions, as well as industry support from associations like SEAS, the use of demand technology is set to grow further and have more applications in the market.

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