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**ABSTRACT:**

Evolutionary changes in the regulatory and operational climate of traditional electric utilities and the emergence of smaller generating systems such as micro turbines have opened new opportunities for on-site power generation by electricity users. In this context, distributed energy resources (DER), small power generators have emerged as a promising option to meet growing customers need for electric power with an emphasis on reliability and power quality. This paper proposes that the significant potential of smaller DER in order to meet customers’ needs. This can be best captured by organizing these resources into Micro grids.

A micro grid is a discrete energy system consisting of distributed energy sources( including demand management, storage, and generation) and loads capable of operating

in parallel with or independently with the main power grid. The primary purpose of the micro grid is to offer affordable, reliable

electric power for urban and rural communities and also to provide solutions

for industrial and commercial consumers. These are smaller versions of traditional power grids. Like traditional power grids they consists of power generation, distribution, voltage regulation and switch gears. They also integrate with renewable energy sources.

The sizes of micro grids are limited to few MVA. For larger loads it is desirable to interconnect many micro grids to form a larger micro grid network called **Powerparks.** The advantage of microgrid structure ensures greater stability and controllability for Powerparks.

MICRO GRIDS BENEFITS:

* Provides power quality and security for operators of grid.
* Cost competitive and efficient
* Enables smart grid technology integration
* Minimizes green house gas emission by maximizing clean local energy generation.
* Increased customer participation.
* Transmission losses are reduced.

TYPES OF MICRO GRIDS:

1. Institutional micro grids

2. Remote “off-grid” micro grids

3. Military based micro grids

4. Commercial and Industrial micro grids

COMPONENTS IN MICROGRIDS:

* Local generation
* Consumption
* Energy storage
* Point of common coupling