Distributed Generation Vs Centralized Generation

Components of Distributed Generation

Solar Photovoltaic Wind Turbines Systems 與 **Combined Heat** and Power Fuel Cells Systems **€** Small-Scale

Hydroelectric

Plants

Components of Centralized Generation



Hydroelectric Dams

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Characteristics of Centralized Power Generation

Characteristics of Distributed Generation Systems

Small Scale

DG systems are smaller

compared to centralized

plants

Large Scale Centralized plants have high generating capacity Grid Dependence





Remote Location

Plants are located away from populated areas

Modular Design

DG systems are designed for easy expansion





Proximity to Load

DG systems are located near the loads they serve



Lower per-unit production costs due to scale

Reliance on a robust

transmission grid

Electricity is transmitted over long distances



DG systems facilitate renewable energy sources



Grid Interconnection

DG systems can connect to the grid for energy exchange

Centralized Power Generation

Distributed Generation

Pros

Economies of scale

Reliable power supply

Advanced technology

Cons

Transmission losses

Environmental impact

Outage vulnerability

Limited flexibility

High upfront costs

Pros

Reduced Losses

Improved Reliability

Environmental Benefits

Increased Resilience

Demand Response

Deferral of Upgrades

Cons

High Initial Costs

Complex Integration

Regulatory Challenges

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