

# SMART GRID



# SMART GRID TECHNOLOGY



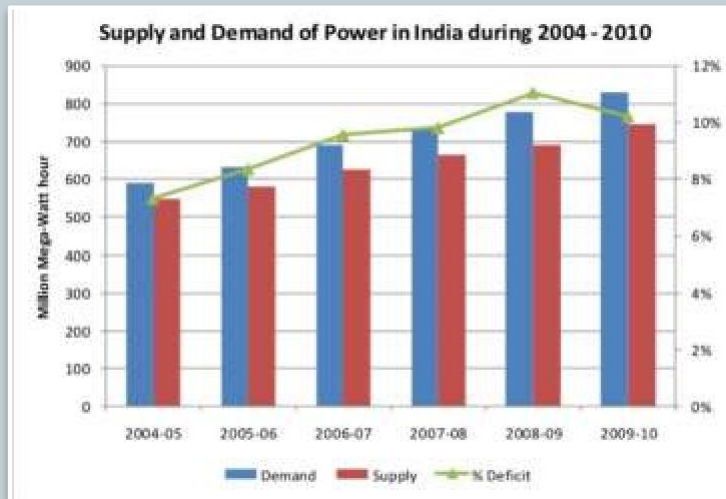
- **INTRODUCTION**
- **DEMAND AND CONSUMPTION**
- **WHAT IS SMART GRID??**
- **COMPARISON**
- **SMART GRID COMPONENTS**
- **WHY SMART GRID??**
- **OUR IDEA**
- **AGENDA**

# INTRODUCTI ON



- **ELECTRIC POWER AND POWER TRANSMISSION.**
- **PRESENT ONE-WAY ELECTRIC TRANSMISSION SYSTEM.**
- **A WAY TO DO MORE WITH LESS .**
- **MODERN UPDATED AND SMART TRANSMISSION SYSTEM.**

# INDIA'S ELECTRICITY NEEDS



DEMAND – **210000** Mega-Watt(appx.)

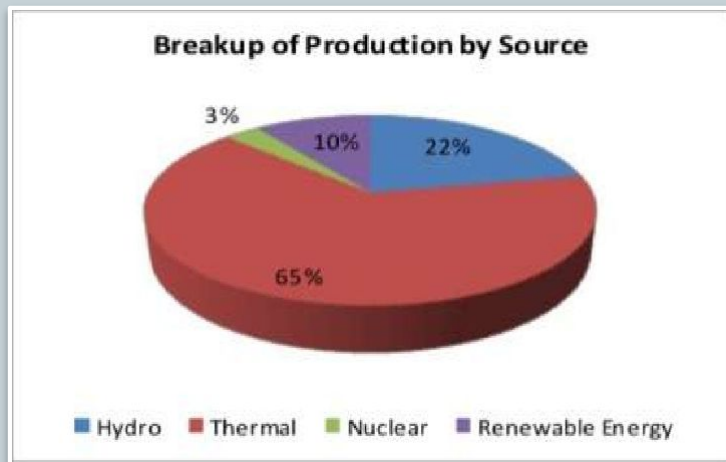
(Central Energy Authority(CEA)– Ministry of Power)

PRODUCTION – **182,200** Mega-Watt(MW)

INSTALLED CAPACITY – **225,133** Mega-Watt(MW)

(Central Energy Authority(CEA)– Ministry of Power)

DEFICIT – **10.2%**



# WHAT IS SMART GRID

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It is an electric grid that uses information and communication technology to gather data and act on information about the behaviour of suppliers and consumers in an automated fashion. Hence Smart Grid is a generic label for the application of computer, intelligence and networking abilities to the existing dumb electricity distribution systems.

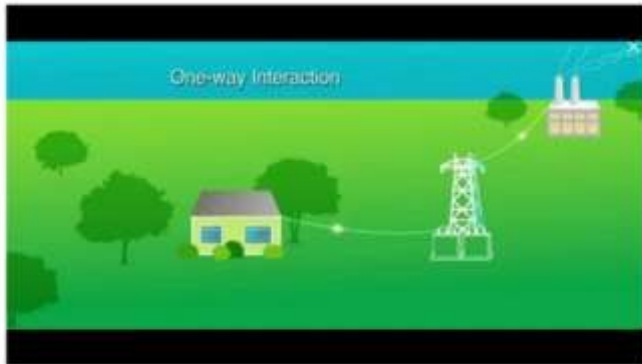
# COMPARIS

## ON



Existing Grid	Smart Grid
Electromechanical	Digital
One-way communication	Two-way communication
Centralized generation	Distributed generation
Few sensors	Sensors throughout
Manual monitoring	Self-monitoring
Manual restoration	Self-healing
Failures and blackouts	Adaptive and islanding
Limited control	Pervasive control
Few customer choices	Many customer choices

# TWO-WAY INTERACTION SYSTEM





# SMART GRID COMPONENTS

- SMART METER
- PHASOR MEASUREMENT
- INFORMATION TRANSFER
- DISTRIBUTED GENERATION



capable of two-way  
communication

covered per tower

and Billing Software



# SMART METERS



- RECOGNIZES AND DETAILS ELECTRIC CONSUMPTION
- 
- RELAYS INFORMATION TO CENTRAL MONITORING STATIONS
- WILL REPLACE TRADITIONAL METERS
- POWER OUTRAGE NOTIFICATION AND POWER QUALITY MONITORING
- TIME OF DAY CHARGES.

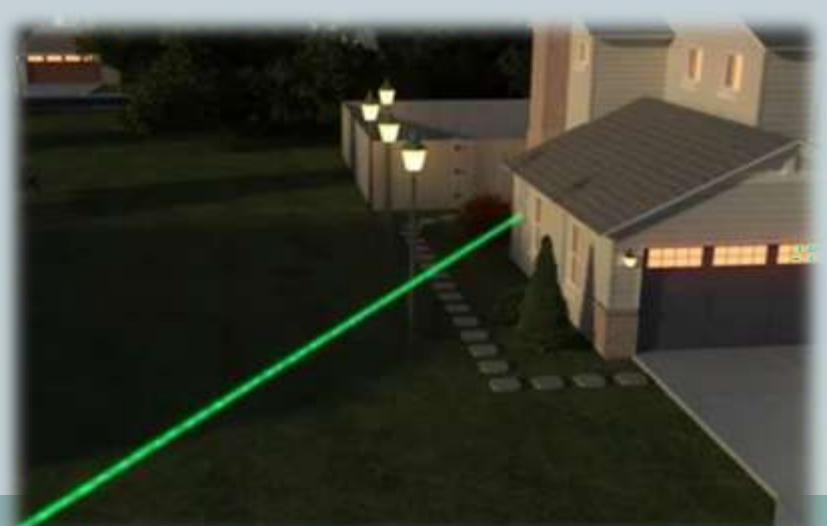
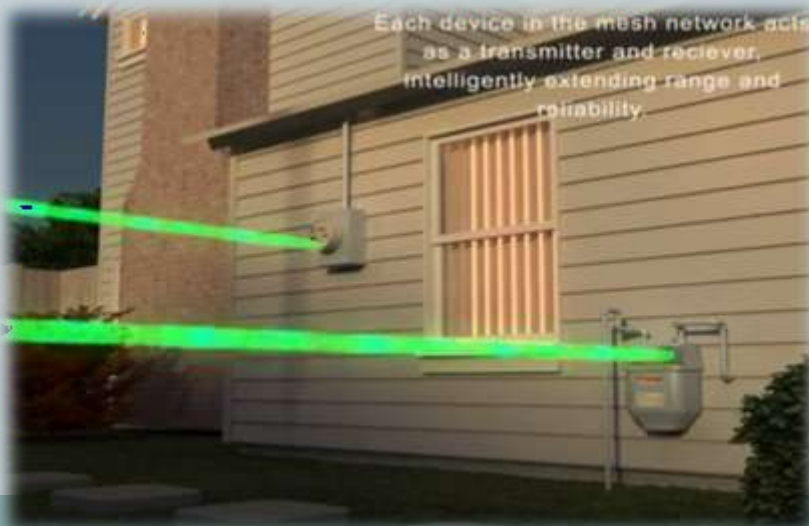
# WHY SMART GRID

??



- REDUCE CARBON FOOT-PRINTS
- IMPROVE DISTRIBUTION MANAGEMENT AND DECISION SUPPORT SOFTWARE
- SELF-HEALING
- AUTOMATED CONTROL FOR DISTRIBUTION
- SENSING AND MEASUREMENT TECHNOLOGIES
- INCREASED EFFICIENCY

# WORKING OF SMART GRID





# THE IDEA

# What Could Detailed And Specific Power Usage Information Reveal□ ??

- Do you have children?  
Do you leave them at home alone?
- What hours do you work?
- How frequently you wash your clothings ?
- Do you cook your meals in the microwave or on the stoves?
- Do you have ever thought of smart appliances?



# POWER MANAGEMENT APP





# SELF-HEALING

Cables



Overhead lines



Busbars



Bushings, plugs

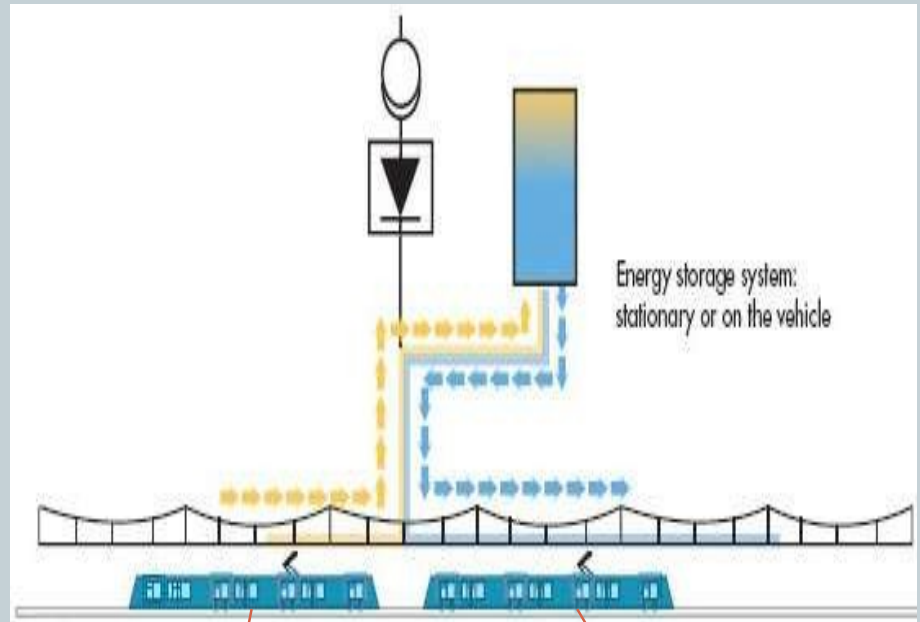
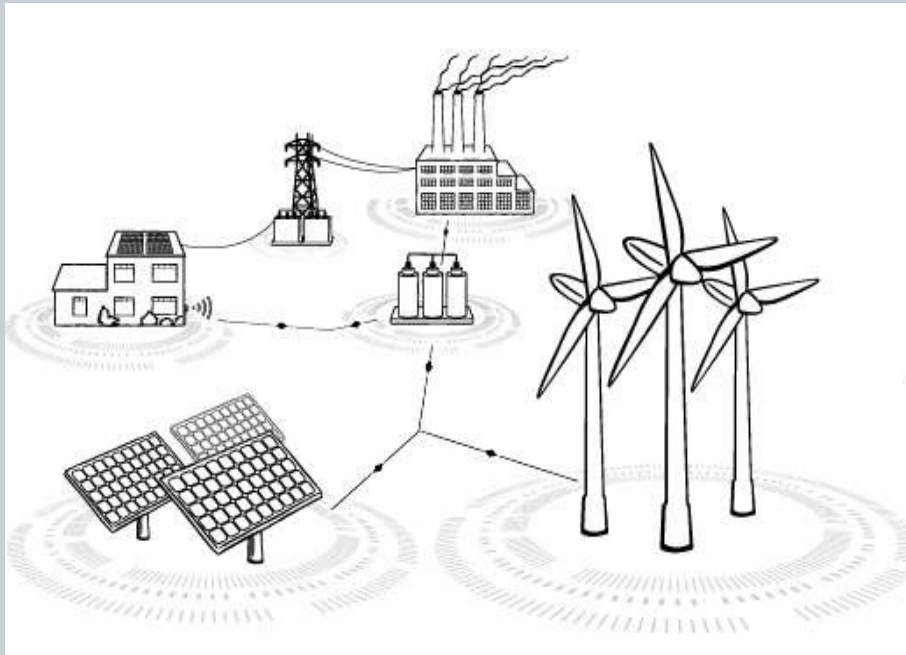


Transformers





# Feeding Renewable and Regenerative Power back to the Grid.



**BRAKING**  
(Regenerative  
power stored)

**ACCELERATING**  
(stored energy is  
delivered)

# AGEND

A



- SMART GRID IMPROVES EXISTING ELECTRICAL INFRASTRUCTURE
  - RELIABILITY, EFFICIENCY, ECONOMICALLY, ENVIRONMENTALLY
  - DISTRIBUTED GENERATION
  - SMART METERS
  
- DEVELOPMENT OF NEW TECHNOLOGIES AND MARKETS.
  - HOUSEHOLD MANAGEMENT
  - POWER MANAGEMENT APP
  - REGENERATIVE POWER
  - POWER ACCOUNT

