Smart Grid

Developing A Sustainable Energy Future

Ryan Laruwe
Public Utilities Engineer
Michigan Public Service Commission
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Current Electric Grid

Our current electric system operates as a one way broadcast of electricity from predominately coal burning power plants. Operators estimate demand on a day ahead basis and dispatch power plants to match supply with the estimated customer demand.
Current Electric Grid
Current Grid Customers
Smart Grid
Smart Grid

Smart Grid generally refers to the process of integrating communications technology and advanced hardware into the existing electrical power grid to improve reliability, power quality and overall efficiency. This process will provide each component of the grid the ability to "talk" and "listen" in order to improve electricity delivery from the utility companies to end consumers.
Smart Grid

- Smart Homes
- Smart Customers
- PEV’s
- Dynamic Rates
- Renewable Energy
How energy rates can change throughout the day

Dynamic Rates

MICHIGAN PUBLIC SERVICE COMMISSION
• Educated
• Engaged
• Smart Appliance's
  • Water Heater
  • Refrigerator
  • Washer Dryer
Smart Home

- Renewable Energy
  - Fuel Cells
  - Solar Panels
  - Energy Storage
Plug In Electric Vehicles
• Public Act 295
  • 10% Renewable by 2015
Intermittent Energy Resources

• An **intermittent energy source** is any source of energy that is not continuously available due to some factor outside direct control.
Transmission by Voltage

765 kV to 800 kV

345 kV to 500 kV
Environment

• Cross State Air Pollution Rule (CSAPR)

• Mercury and Air Toxics Standards (MATS)

• \( \text{CO}_2 \) Emission Standards
How a Smart Grid Helps
Smart Grid Deployments In MI

Detroit Edison

- $84 Million DOE Grant
- ~800,000 Smart Meter Installations in Southeast Michigan
Smart Grid Deployments In MI

Consumers Energy

- ~50,000 Smart Meter Installations in Muskegon Area by end of 2012
Pilot Programs
Questions?

www.michigan.gov/mpsc