Paper 2 : On Security And Privacy In Smart Metering System

- Key Topics: Energy theft, theft detection methods, physical security implementations

Energy Theft

- Occurs when customer manipulate metering device physically or in case of smart meters, manipulates the power consumption data(pcd) sent to utility.

- In meters theft occurs in the following ways:
  - Mechanical tampering
  - Meter bypass
  - Hacking or alerting memory

Theft Detection

- Using PCD it is possible to determine the energy consumption of customer over a period of time. Using data analytics, or machine learning algorithms, suspicious patterns can be detected.

- Types:
    - Classification based : Train a classifier using suspicious and non-suspicious data samples.(fuzzy logic , etc can also be used.)
    - State based : Use devices like rfid tags and wireless sensors like camera etc.

Security Measures

- Housing Integrity: Using easily deformable screws/clips, have tampering seals that break easily.

- Lack of physical switches: Decreases interaction with meter

- Firmware and authorization : Regular Updates to hold integrety of device.

- Communication Encryption