



# Data Centers and Energy Use

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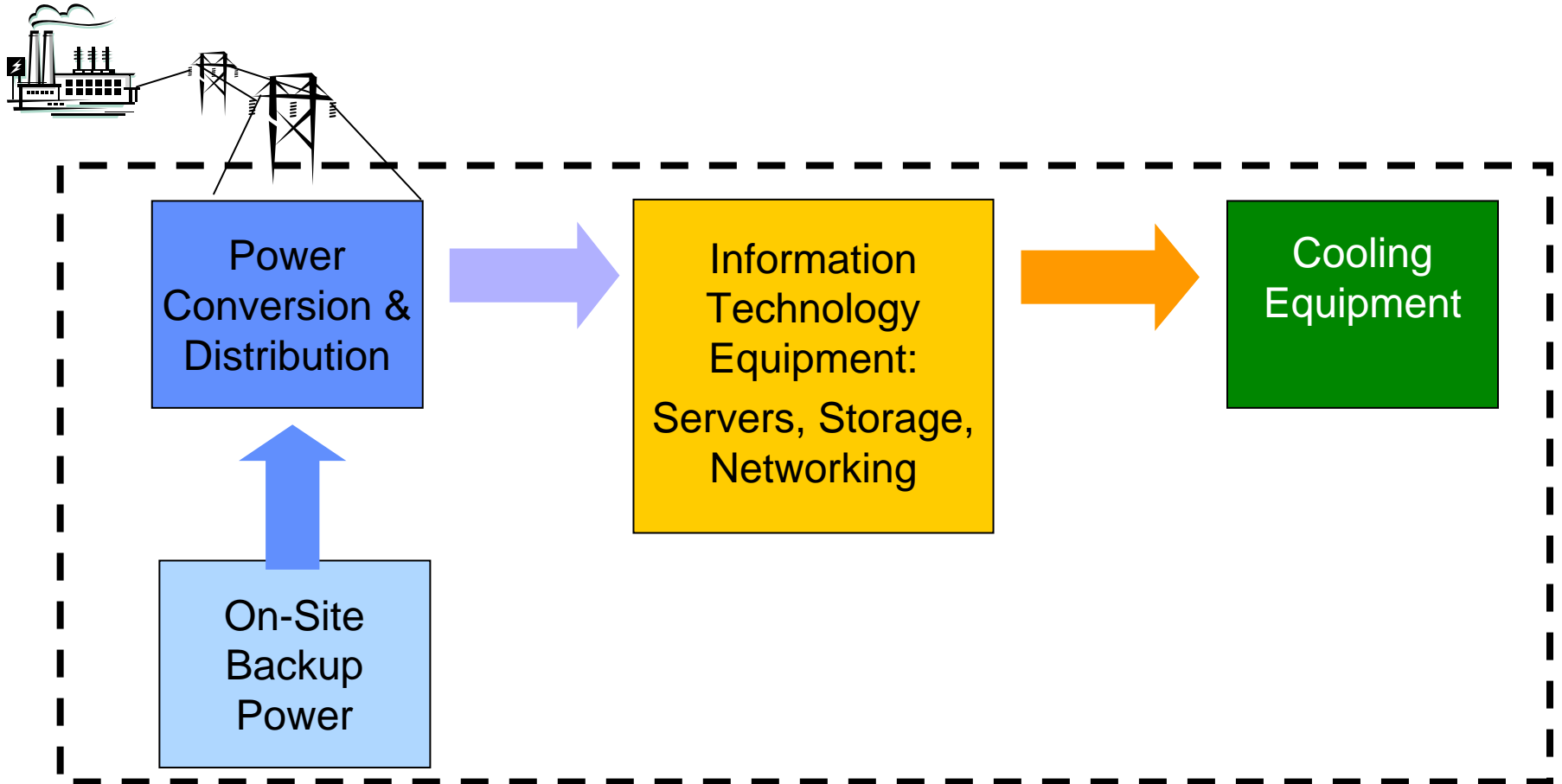
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# Why All the Interest in Data Centers?



- Critical national and global infrastructure
  - Surging demand for data processing and storage
- Rising energy intensity leads to higher cost of delivering information services
  - Power and cooling limits in existing facilities
  - Driving data center building boom
  - Cost of electricity and supporting infrastructure now surpasses capital cost of IT equipment
- Potential impact on regional power grids
- EPA recently reported to Congress on policy options to address data center energy use

# Major Data Center Energy Users



- Typical stand alone facility ~ 1MW, can be > 20 MW
- IT equipment is ~30-50% of total load; cooling is most of remainder

# Leverage Data Centers to Affect Organization-wide Energy Use



- Direct energy use in data centers
  - IT equipment & associated infrastructure
  - 20-50% efficiency improvement possible
- Other IT equipment networked to data centers
  - Desktop PCs, primarily
  - Centralized computing can offer efficiencies (e.g., thin clients)
- Non-IT business processes
  - Data center-based IT can make business processes more efficient
  - Routing and scheduling, process and building controls, etc.

# Comparison of Projected Electricity Use

## All Scenarios 2007 - 2011

