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COLLEGE OF ENGINEERING

Energy Efficiency, Demand Response and the Smart Grid

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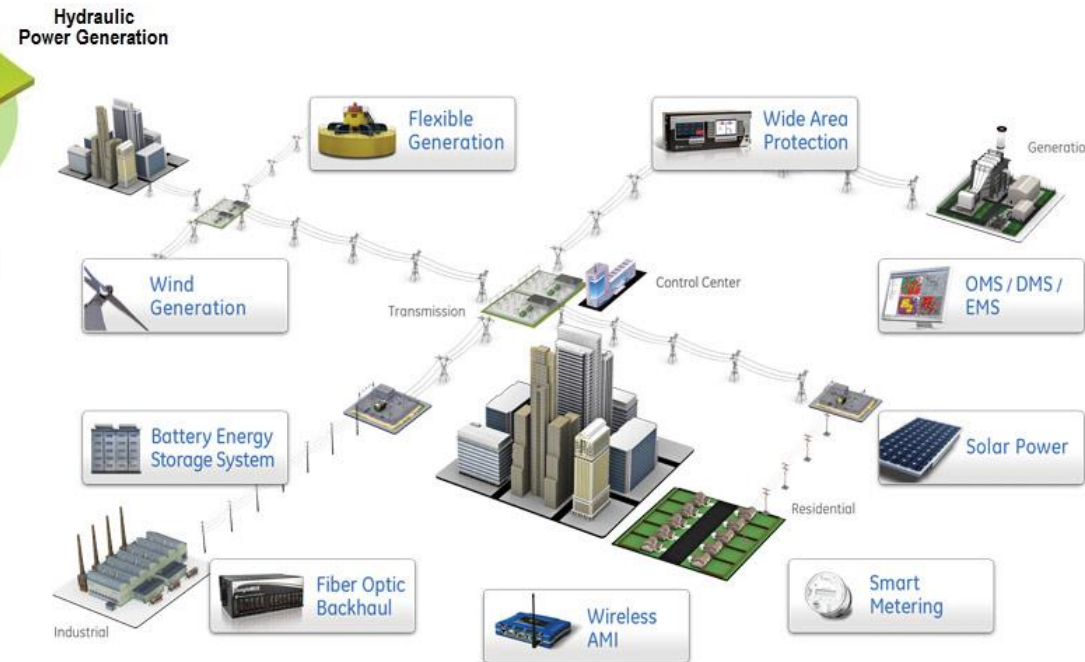
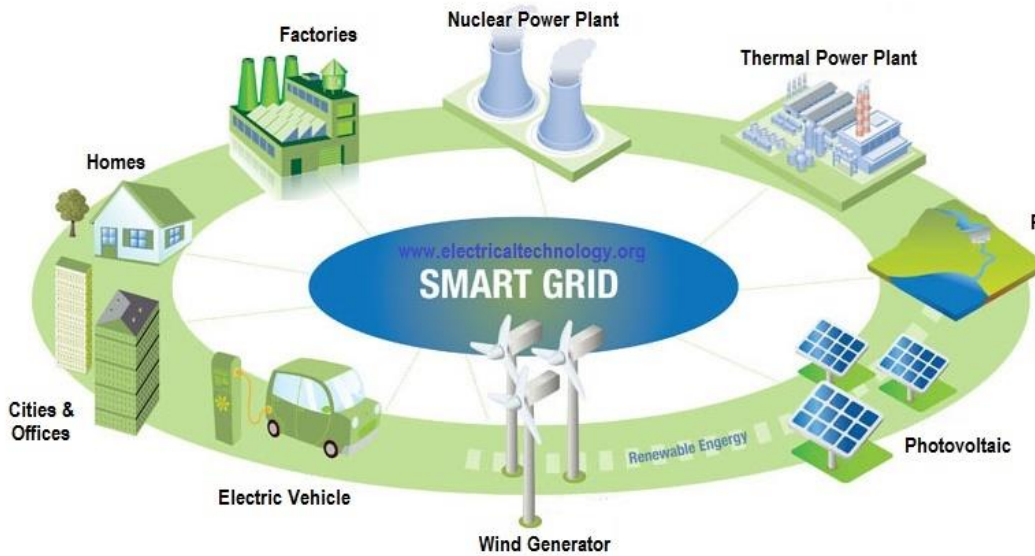


From the Program

- Case for Demand Side Management
- Smart Grid: What can we Expect?
- The Industrial Assessment Center Program
- Challenges for Higher Ed re: Energy and Energy Management



What is the “Smart Grid”

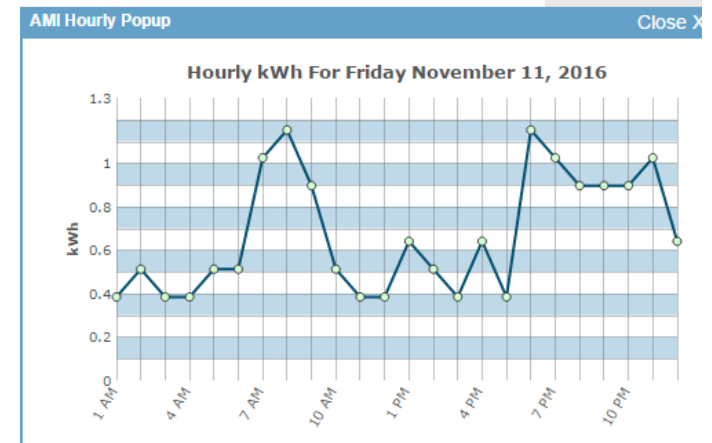


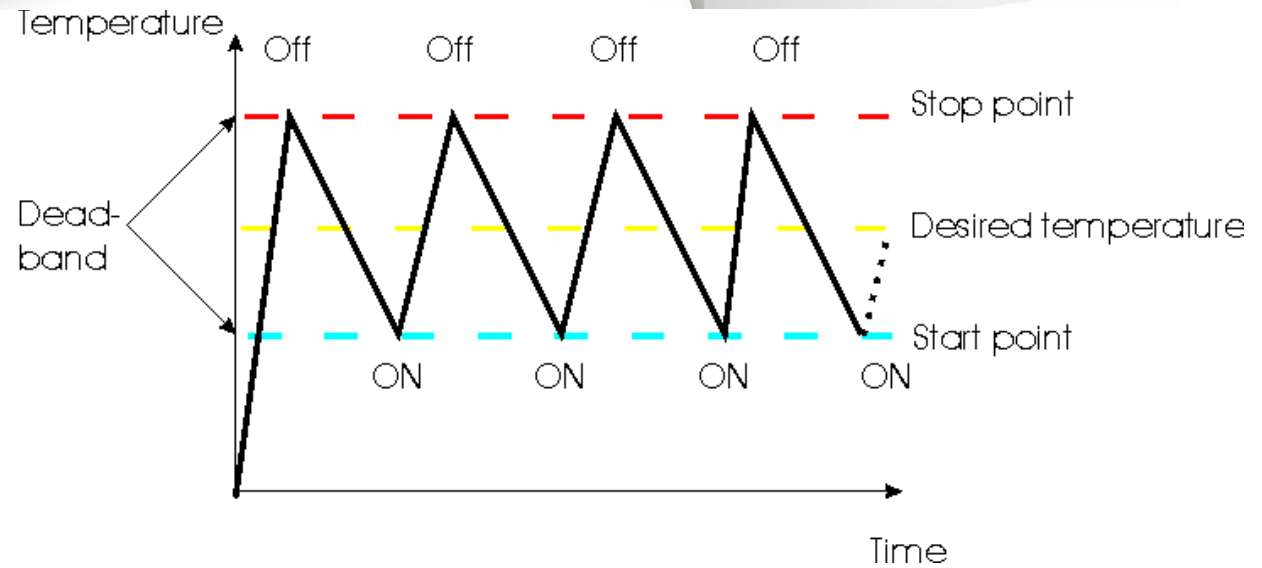
- Graphic Credits:
 - Electrical Technology
 - Purdue University; Energy Center



Some if it is already here

- Advanced Meter Initiative (so called Smart Meters)
 - Ease of reading
 - Interval (hourly) data
 - Opens up new billing regimes
- Peak shaving Demand Response
 - AC Cool Credit







Enter the “Prosumer”

- A utility customer who not only consumes energy but is also willing to alter consumption patterns to support the larger goals of balancing and stabilizing the grid.



Micro/Nano Grids: Grid Defection

- The combination of the Tesla Powerwall, cheap PV and growing opposition to residential net metering will be a compelling nexus.





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Industrial Assessment Centers 2017-2021

[HTTPS://IAC.UNIVERSITY](https://iac.university)



U.S. DEPARTMENT OF
ENERGY
Energy Efficiency &
Renewable Energy



Convergence: The French Fry Battery

- Frozen food warehouses at -5°F
 - Large “baseload” demand
- It appears that some variation is acceptable
- System work harder, drive temp lower at times of abundant/excess energy
- System “coasts”, let temperature rise during





Acknowledgements

- DOE Industrial Assessment Center Program
- Center for Advanced Energy Studies

