



## Risks Emerging from the Smart Grid and Smart Houses

**Frank Tierney**

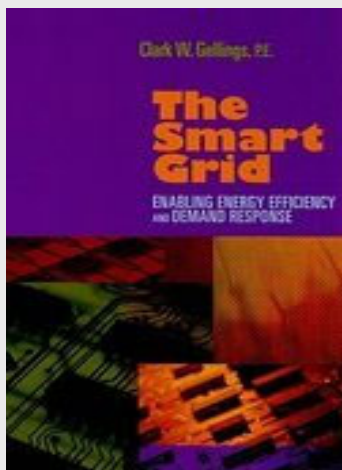
Vice President, Underwriting  
AEGIS Insurance Services, Inc.

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## The Smart Grid

Enabling Energy Efficiency and Demand Response  
Clark W. Gellings, P.E.



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# Risks Emerging from the Smart Grid and Smart Houses

**Clark Gellings**

Fellow

Electric Power Research Institute

## Many Definitions



IBM Smart Grid

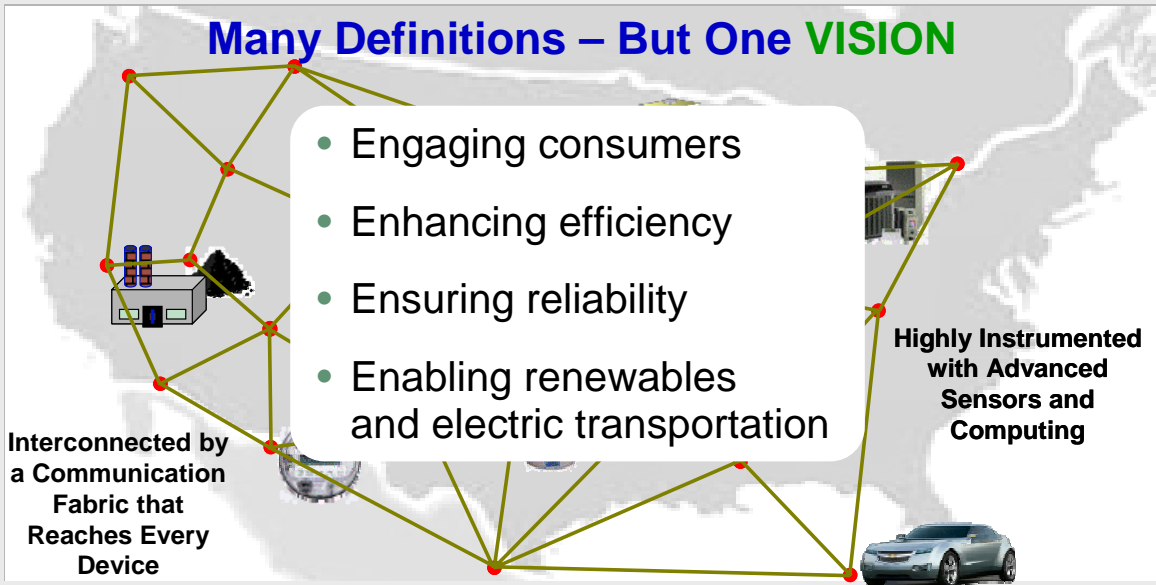


SMART GRID CITY™

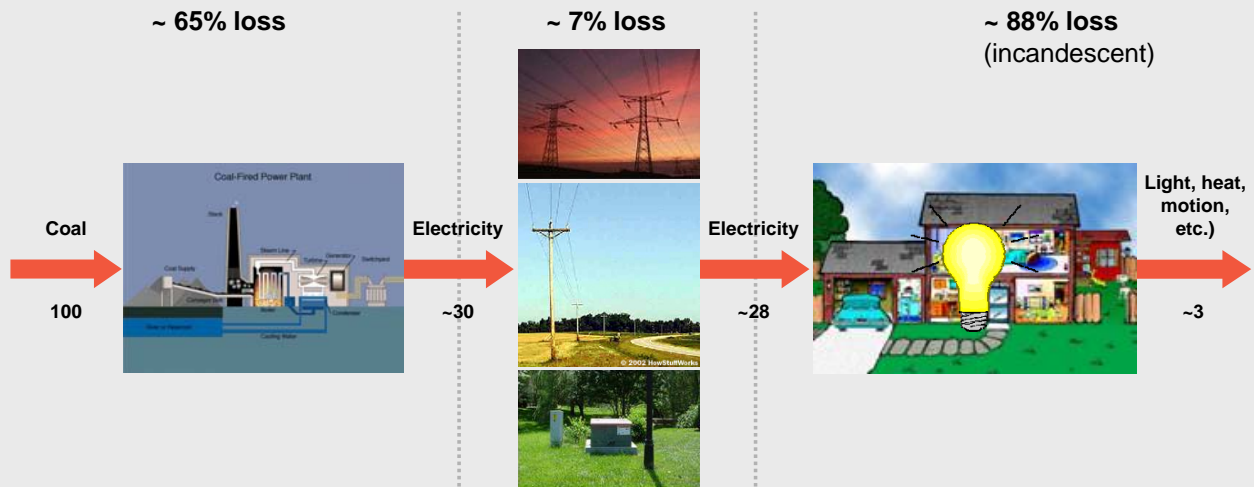


EUROPEAN TECHNOLOGY PLATFORM FOR THE ELECTRICITY NETWORKS OF THE FUTURE

# What Is the Smart Grid?

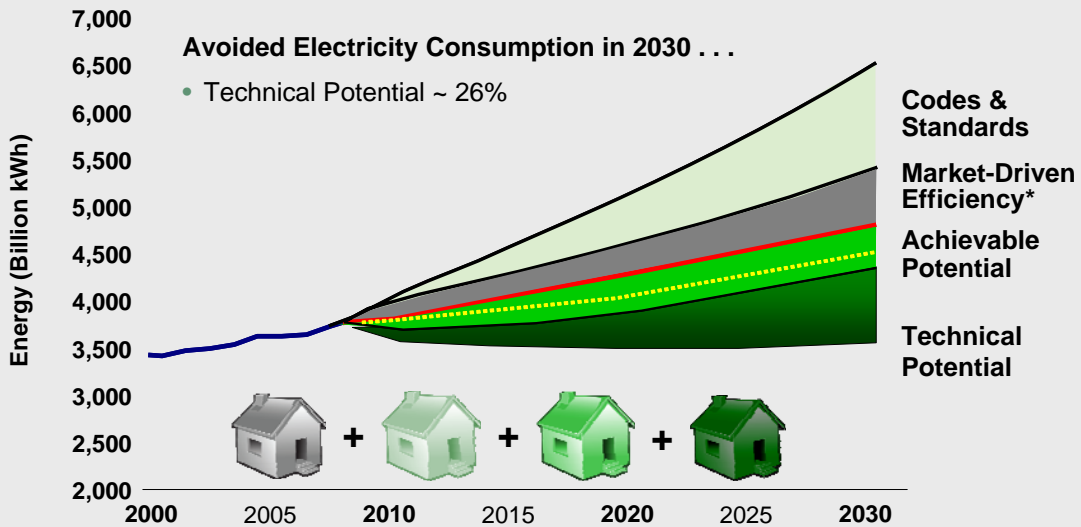


# Smart Grid Will Reduce Losses in the Value Chain



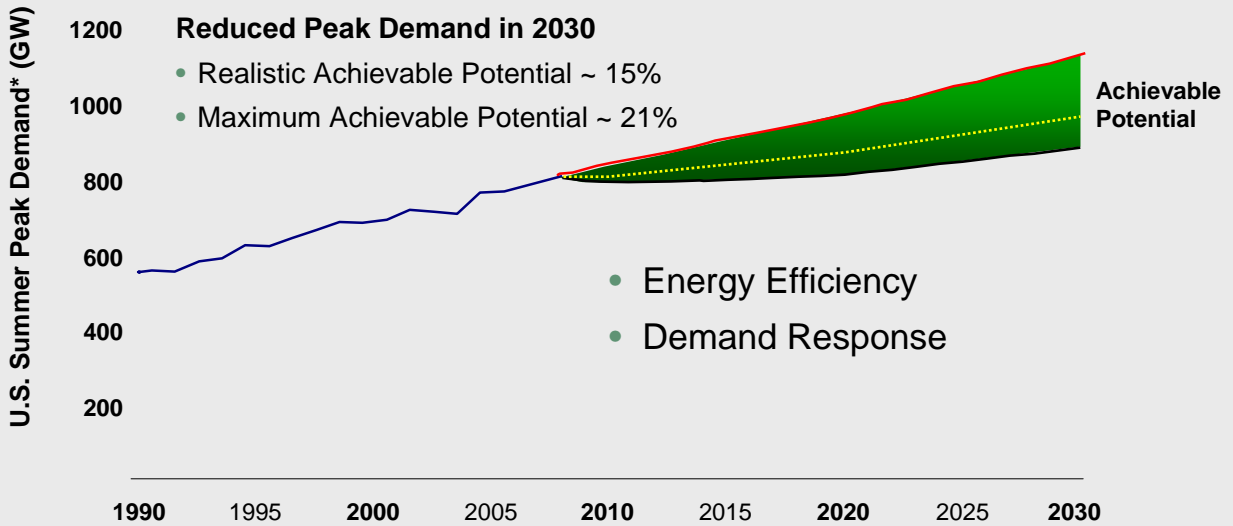
US: More than 210 billion kWh per year is lost in delivery of electricity from power plant to end-use devices

# Smart Grid Will Reduce Electricity Use



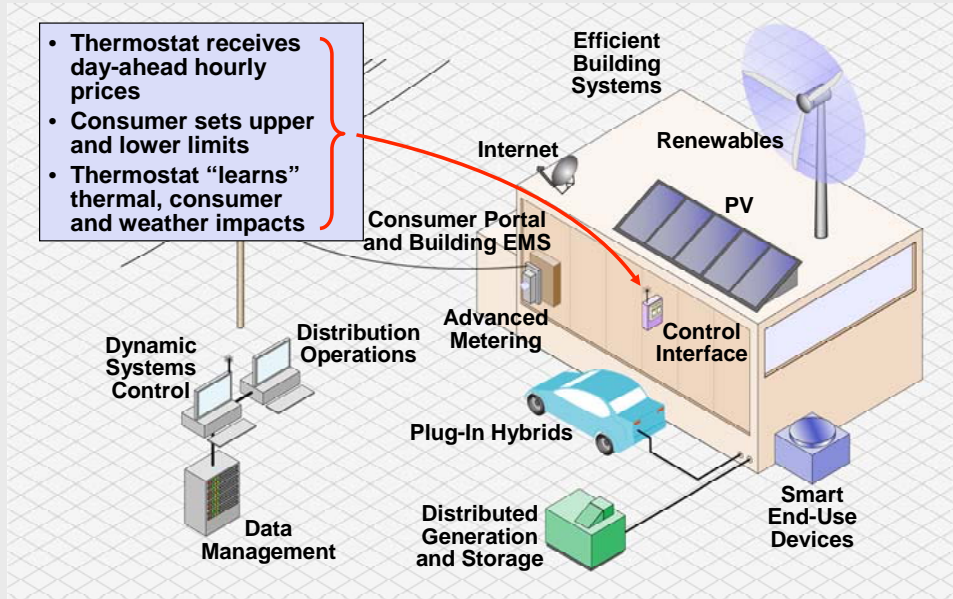
\* Includes embedded impact of EE programs implicit in AEO 2008

# Smart Grid Will Reduce Peak Demand



\* Aggregation of regional summer peak demands; non-coincident

# Prices to Devices: Tomorrow's Smart Grid

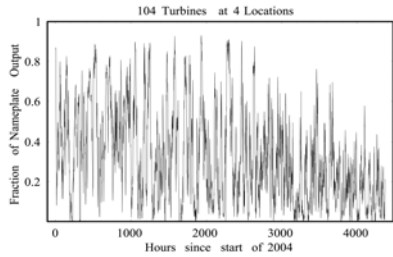


# Smart Grid Will Enable Electric Transportation

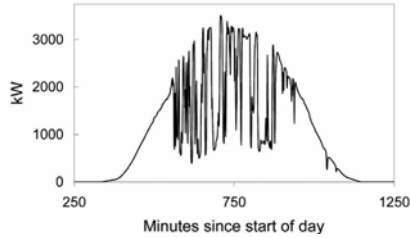


All major auto manufacturers are moving aggressively

# Smart Grid Will Enable Renewable Resources



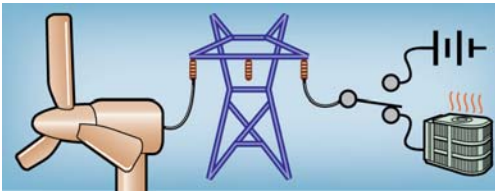
Wind Intermittency



Solar Intermittency



Compressed Air Energy Storage

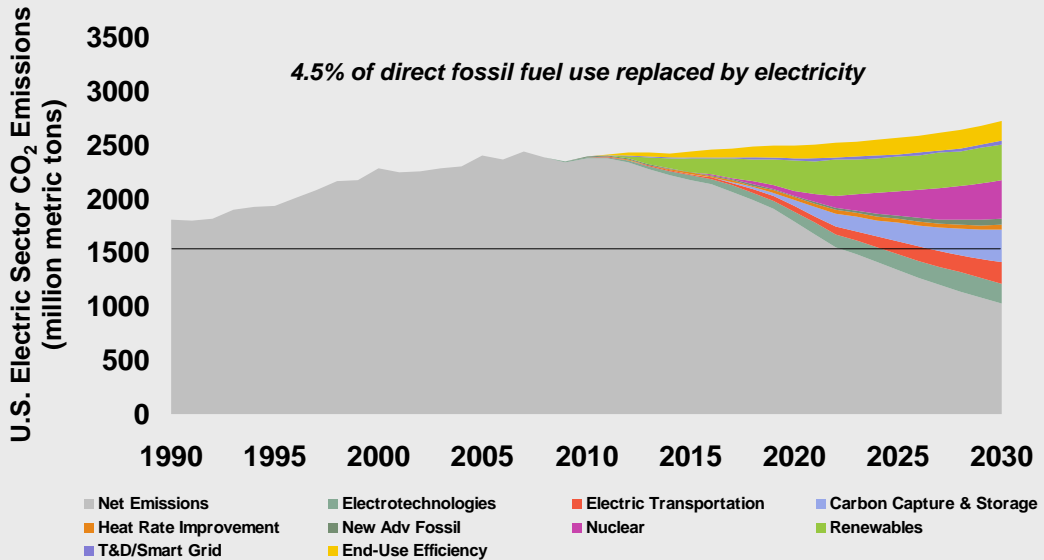


Fast-Reacting Demand Response



Batteries

# Smart Grid Will Expand Electrotechnologies



# Smart Grid Will Improve Reliability



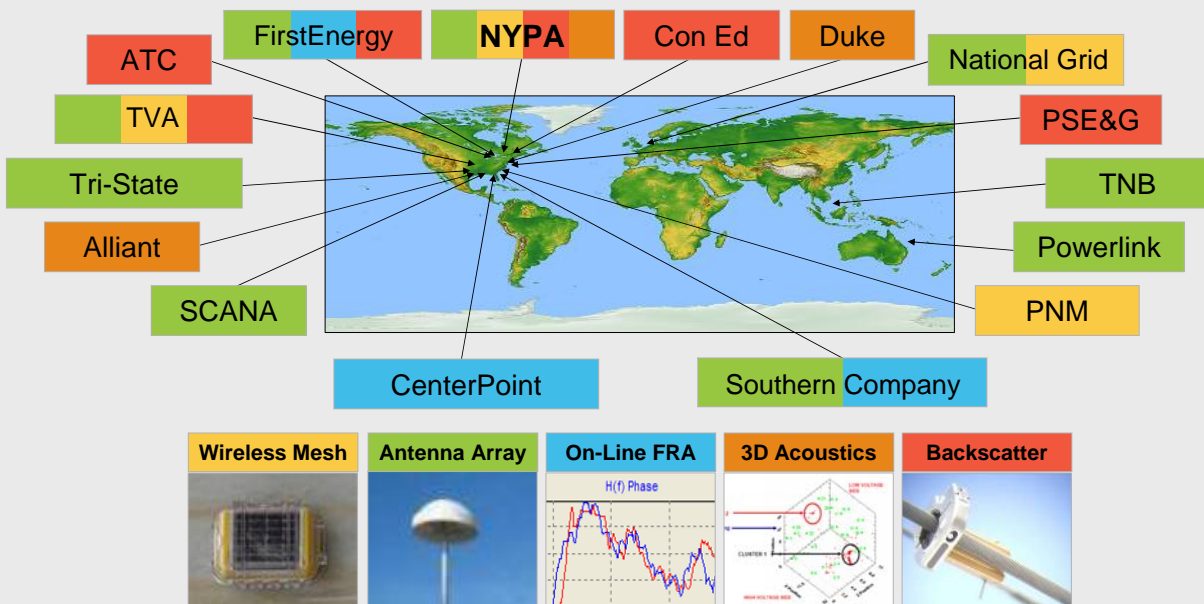
Cable replacement and upgrading



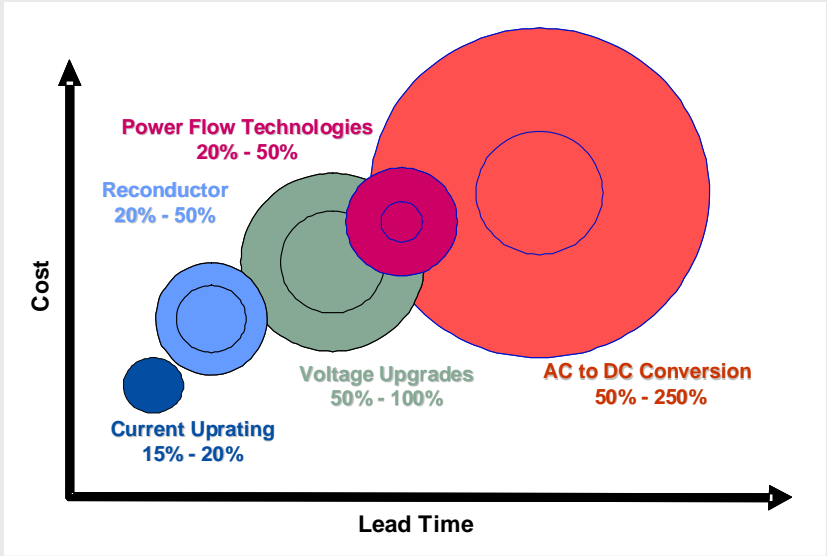
Fault anticipation

Copyright Washington Post

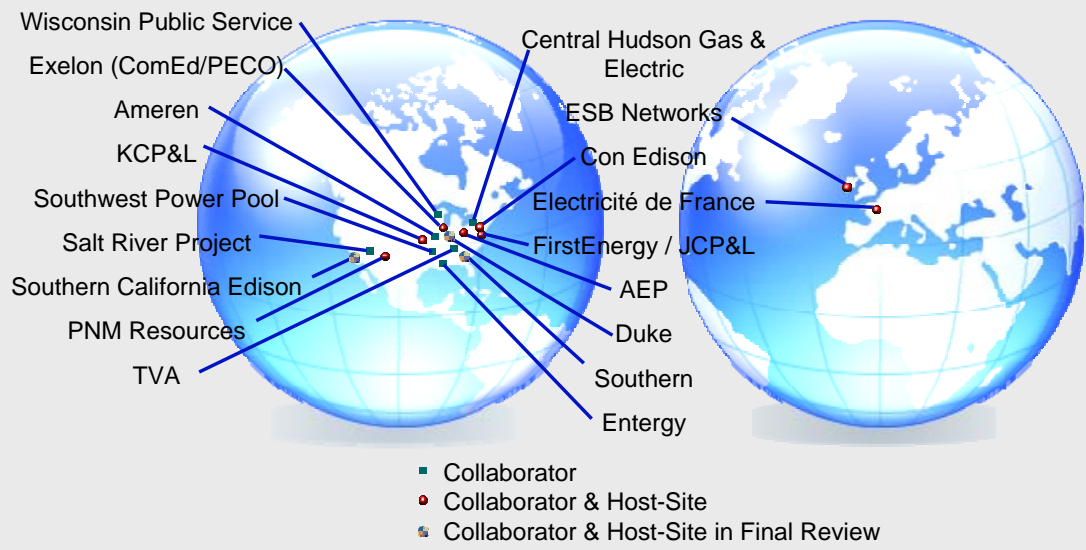
# Smart Grid: Automated Condition Assessment



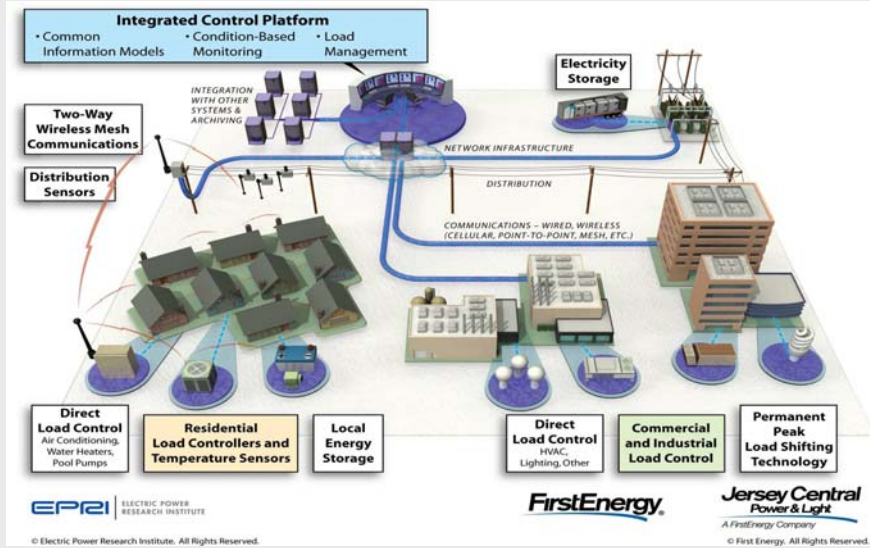
# Smart Grid Will Increase Power Flow



# Smart Grid Demonstration - 18 Collaborators



# FirstEnergy / Jersey Central Power & Light Integrated Distributed Energy Resources (IDER)



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**EPRI** | ELECTRIC POWER  
RESEARCH INSTITUTE

Together...Shaping the Future of Electricity

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## Risks Emerging from the Smart Grid and Smart Houses

**Robert Moussaid**

Director, Risk and Insurance  
Energy Future Holdings Corp.

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### Smart Grid: The Perils of Implementation

- Energy Future Holdings' experience
  - Oncor Electric Delivery – Smart Meters: the case of reputation risk
  - TXU Energy – iThermostat: fire hazard
- Potential new risks
- Impact on insurance market / failure to supply
- Final comments

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# Smart Grid: The Perils of Implementation

**The Dallas Morning News:** *March 6, 2010*

- Some shocked by high electric bills blame Oncor's 'smart meters'

**Network Infrastructure/AMI:** *March 16, 2010*

- Oncor Reacts to Smart Meter Anger
- ONCOR FACES CUSTOMER BACKLASH OVER SMART METERS AND SKYROCKETING ELECTRIC BILLS

**Network Infrastructure/AMI:** *March 31, 2010*

- Oncor Sued for Fraud Over Smart Meters
- FLEECED! BAMBOOZLED! PLAINTIFFS CLAIM "SMART METERS AIN'T SO SMART."



# Smart Grid: The Perils of Implementation

- One million meters installed (projected 3.4 million by 2012)
- Public resistance
  - Cost is initial concern
  - Meters misread at installation caused inflated bills
  - Poor understanding of technology
- Inadequate communication / education strategy
- Legal action alleging fraud, etc...

# Smart Grid: The Perils of Implementation

## Recall Alert

U.S. Consumer Product Safety Commission

Office of Information and Public Affairs Washington, DC 20207 June 17, 2010

Alert #10-743 Converge Recalls Communication Module Inside TXU Energy Thermostats  
Due to **Risk of Fire Hazard**



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# Smart Grid: The Perils of Implementation

## Risk Assessment

- Units used to control electric usage through interactive web portal
- Units manufactured, installed and managed by third parties
- 10,000 units installed
- 3,800 defective units recalled due to excessive heating / fire hazard
- No reported property damage or personal injury

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## Smart Grid: The Perils of Implementation

### Risk Mitigation

- Contractual risk transfer to program manager including recall costs
- Limited insurance coverage
- Significant vicarious liability remains
- Effective communication campaign to minimize PR impact

## Smart Grid: Risks Emerging

- Cyber hacking can lead to
  - Widespread outages / failure to supply
  - Meter tampering
- Unknown risks: everything is possible

## Smart Grid: Risks Emerging

- How will the insurance market and AEGIS treat these new risks?
  - Some may already be covered, albeit unintentionally
  - How about the unknown unknowns?
- The only certainty is that new / unforeseen risks will emerge from implementing Smart Grid technologies. Risk managers must be in front early enough to mitigate risk and vicarious liability by way of contractual risk transfer.