



U.S. Department of Energy
Energy Efficiency and Renewable Energy
Federal Energy Management Program

FEMP

Facility and Energy System Security

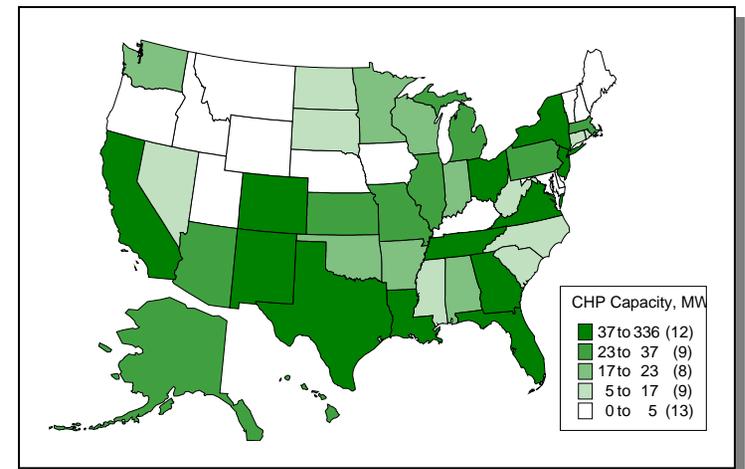
Mike MacDonald
DOE — Oak Ridge National Lab (ORNL)
ASHRAE Chapter Workshop
Protecting People and Buildings
New York, NY
April 26, 2005





Activities of Interest

- Extensive research on applications and technologies for distributed generation (DG)
- Energy security planning tools and aids are under development
- Assisted Army with several energy security plans
- Review of CBRN “incident” literature and resources, as well as “mitigation” recommendations





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FEMP Mission

Lead by Example. FEMP works to increase ***energy security*** and facility security for Government facilities in many ways, including:

- promoting energy efficiency and ***distributed energy***
- improving utility management decisions
- supporting facility and energy security initiatives and assessments



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ORNL provides primary Federal CHP deployment assistance

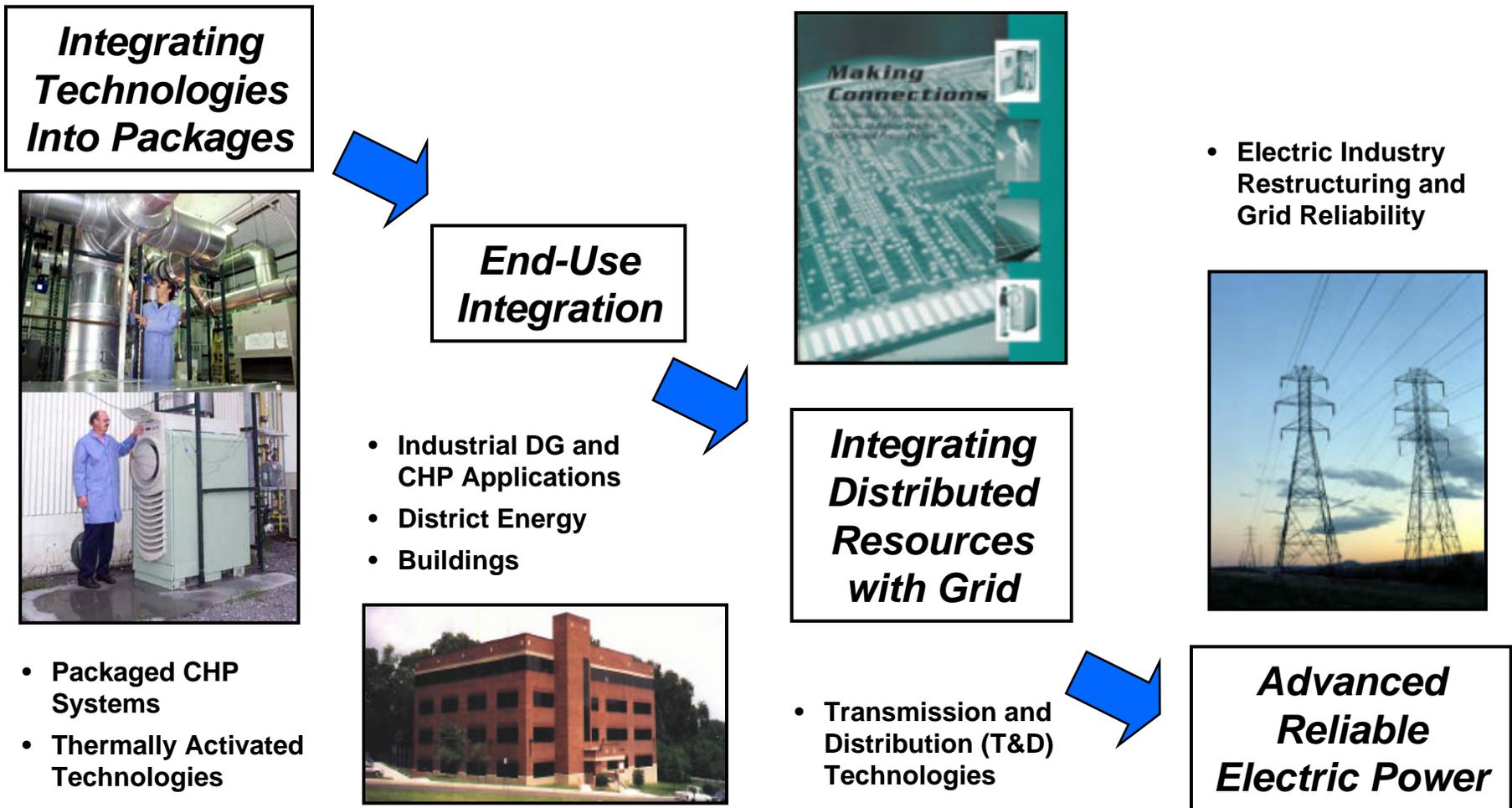
From East to West, DOE has provided significant technical assistance for CHP / DG projects at federal facilities from initial concept to final configuration





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ORNL is DOE's lead lab for CHP R&D and tech transfer / deployment





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Energy Security

Various policies, guidelines, mandates for Feds:

- **GSA Federal Guidelines for emergency plans and procedures for utility services (2003)**
- **Defense Policy Memorandum (DEPPM) 92-1 on energy security policy**
- **Homeland Security Presidential Directives 7 & 8: preparedness performance measures and asset inventories (Dec/03)**
- **FEMA Preparedness Circular and prior Executive Orders—COOP: Assure continuity of essential operations in event of emergency (2001)**
- **Executive Orders on Critical Infrastructure Protection and Emergency Preparedness Responsibilities (# 12656)**

Bottom Line:

- ***Installations* required to ensure energy is available for all critical mission operations**



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FEMP Energy Security Goals

Assist agencies to:

- Identify mission-critical functions
- Develop plans for ensuring reliable power for those missions, while avoiding common vulnerabilities
- Verify effectiveness of energy emergency preparedness plans
- Identify best value technologies and configurations when remedial actions are required

DG/CHP Efforts:

- ✓ Make proven and advanced technology more easily accessible to federal agency sites who want to lead by example with DG/CHP
- ✓ Access private industry project development expertise, financing, etc
- ✓ Enhance energy security & reliability
- ✓ Replace old equipment and reduce costs



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Pressure Increasing on Federal Entities

- Homeland Security directives, and “guidance” from many sources, continue to grow
- Defense began increasing enforcement of Policy Memo 92-1 (1992) last year, that requires energy security plans
- Army also stepped up requirements related to integration of energy security planning for installations and overall
- Funding continues to lag
- Expertise is difficult to define, let alone obtain
- Local government and special-focus-interest groups also participate in adding to the mix of activities, coordination challenges, and planning considerations





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Energy Security Aids

- Energy security plan development tools (templates, checklists, etc.) are being developed
- Assistance to Army bases identified some initial best practices for completing energy security plans
- Best Practices report for energy security assessments nearing publication
- Energy security modeling project in progress for Army to assist in determination of electric generation remediation
- Energy emergency planning checklist completed
- BUT each entity faces unique issues . . .
- AND guidance down to nuts-and-bolts is not there much



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Sustainability and Security Do Have Links

- Energy security is a subset of physical security, and there are win-win-win approaches that increase efficiency and sustainability while also increasing energy, and sometimes physical, security
- ASHRAE seminar in Orlando mentioned new air filtration and sensing developments
- BUT development of ideas still needed

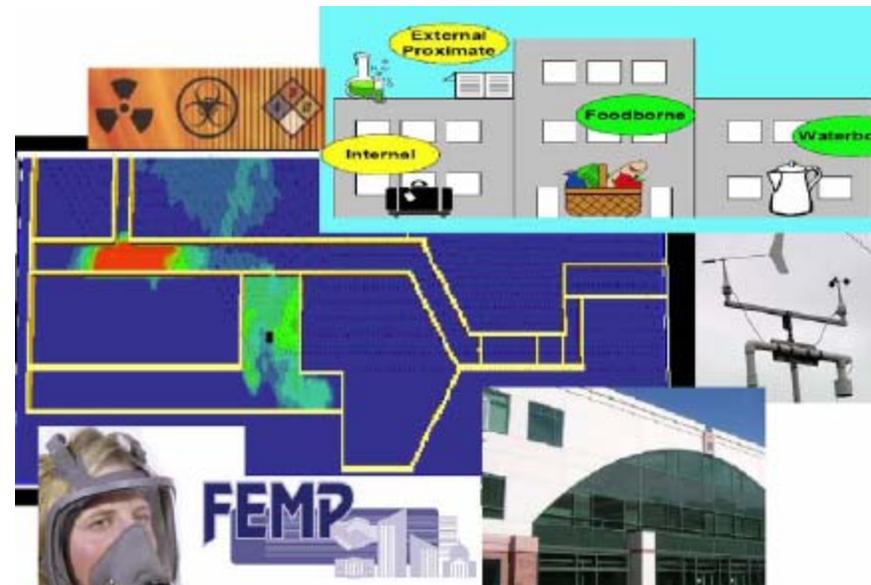


CBRN Incidents and HVAC

- Recent (Feb) report provides a lot of info related to CBRN incidents and HVAC, including web resources
- Much more is available than mentioned in this report, but it's a start
- FEMA asset-based risk assessment efforts are still missing the crucial issues related to HVAC

ORNL/TM-2004/260

Mitigation of CBRN Incidents for HVAC Systems in Federal Facilities





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Basic Issues

- How will anyone know of an incident?
- Interior vs exterior release of agents
- HVAC or not to HVAC?
- Wind direction / elevators
- When to evacuate and when to SIP
- Tenant vs building approaches
- For nuclear detonation: air or ground burst?



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Technologies

- Hardware, software, and people-ware
- DHSARPA, DARPA, DOD, USPS ...
- RABIS, BAND, ARFCAM, LACIS, PHILIS
- Lots in the works, but for now KISS:
 - Wind sensors?
 - Envelope leakage assessment?
 - HVAC configuration and filtration situation
 - Gas masks for “proctors?”



In the End, the Tradeoffs are Huge

- Risk assessment methods still need work
- Very few will have \$\$ to do comprehensive work
- How to maximize the “people” resources, including how to prepare people to “save themselves”

