

Commercial Buildings and Demand Response Technology

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Potential

- Commercial buildings could become a substantial DR resource
 - Approx. 1/3 of electric consumption in the U.S. is for “commercial” uses (EIA 2006)
- Potentially controllable loads:
 - HVAC
 - Lighting
 - Elevators?
 - IT equipment?

Building Systems

- HVAC systems range from packaged units to sophisticated systems with central plants
 - Most large buildings have computerized HVAC control systems
- Centralized lighting control is not common yet

86013 FP-I 'Client' [dial 9] - Device 505010 (HFC-510P)
BACtalk File Select Options Edit Help

Fisher Plaza : HFC-510P OSA Temp 56.0 °F Tuesday, 6/18/2002 11:42:00AM

Previous

Dampers: 0 % open

DAT 82 °F

Unit Status Available

Lead Shed Status Allow Normal

Space Temperature 70.0 °F

Current Heating SP 70.0 °F

Current Cooling SP 73.0 °F

Space Temperature SP 72.0

Unit is currently in : Heating Mode

Manual Control Points

Setpoints and Limits

Occupied

Schedule : RUN

Occupied Mode

Unoccupied Mode

Override Mode

Override Hours 0.0

Cooling Status

Current Cooling Signal 0 %

Damper Command 0 % open

Damper Open Command Stop

Damper Close Command Stop

Heating Status

Current Heating Signal 19 %

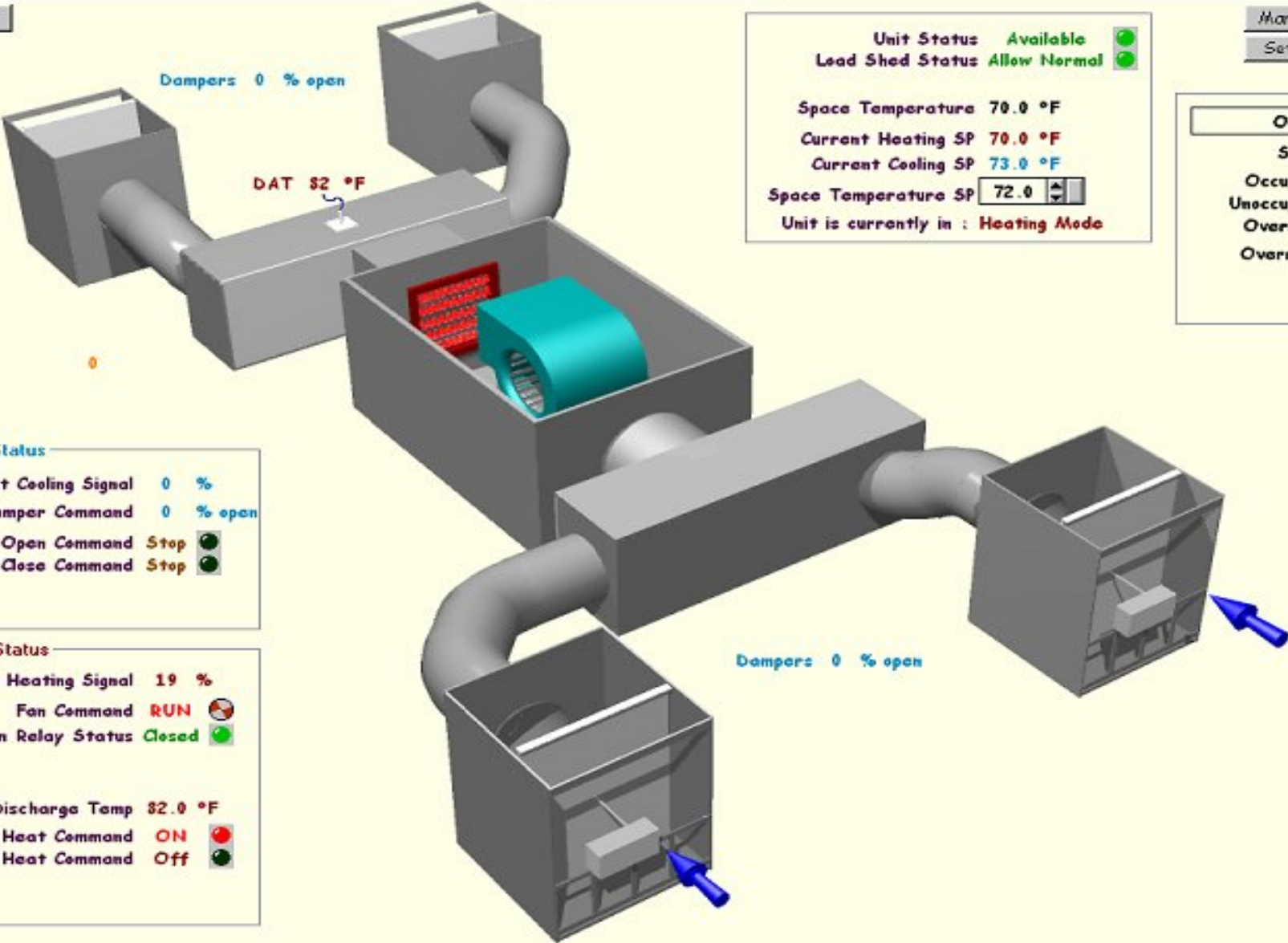
Fan Command RUN

Fan Relay Status Closed

Current Discharge Temp 82.0 °F

Stage 1 Heat Command ON

Stage 2 Heat Command Off



Demand Management Today

- Demand limiting software applications are available for some HVAC control systems
- Building-utility communication is utility specific
 - Relay-based interfaces are often used
 - Support for RTP programs typically requires customer-specific software development
- Direct control of loads by utilities is not practical for many commercial buildings

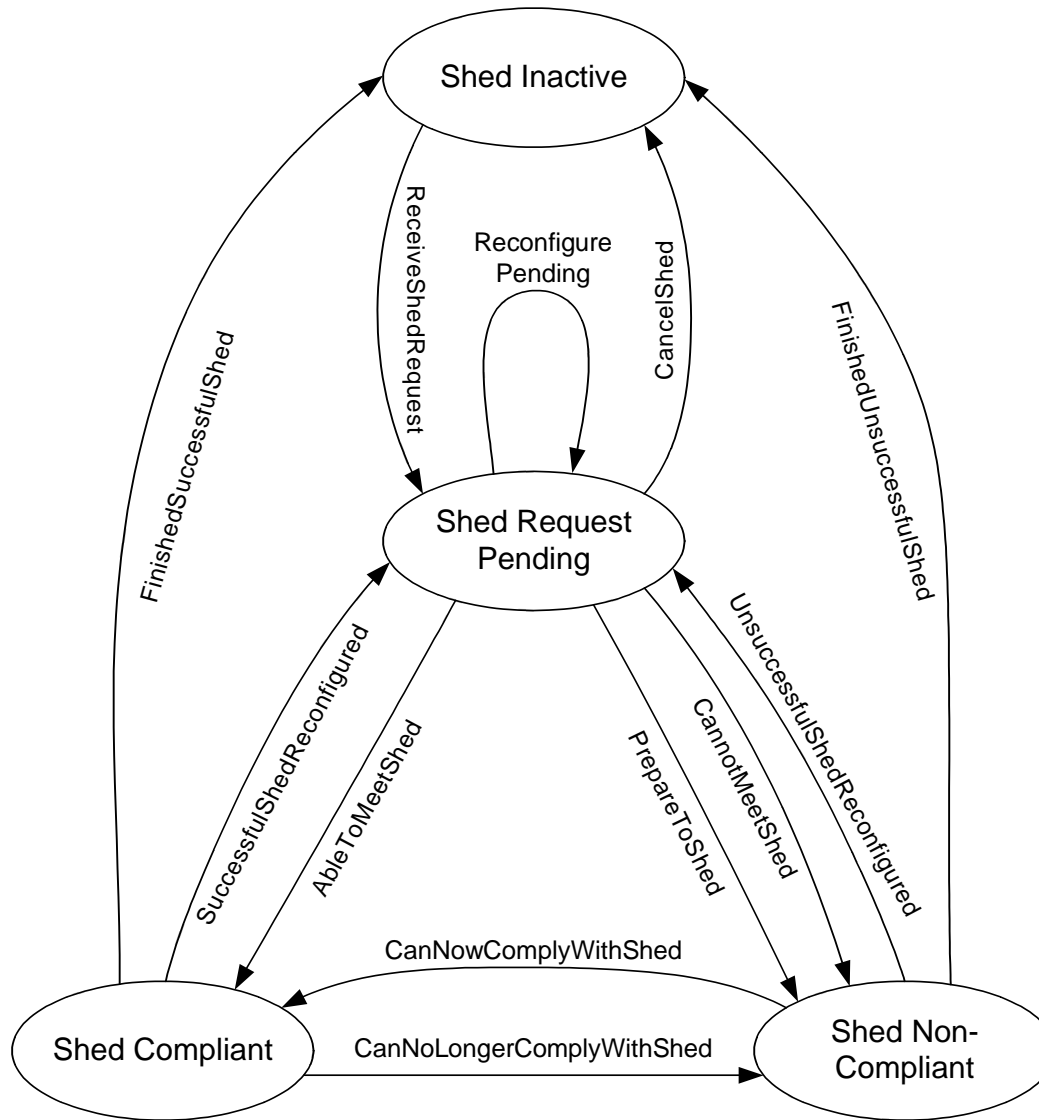
Enterprise DR – a future scenario

- Time-varying electricity prices
 - From both the distribution utility and the commodity supplier?
 - Results in load shaping at the enterprise and/or building level
- DR used to improve both regional and local grid reliability

What is needed?

- “DR-ready” building controls and control sequences
 - To reduce the cost of DR implementation
- Nationwide utility-building communication standards for DR
- Stability of DR initiatives

BACnet's Load Control Object



From ANSI/ASHRAE Addendum e to ANSI/ASHRAE Standard 135-2004