

# PACE+PACE Cloud



HVACR Smart Grid Suite—Works Standalone or with Any Building System

The proven, industry-leading, OEM-compliant PACE+PACE Cloud suite adds efficiency to existing HVACR units by optimizing compressor/fan and burner/fan responses to thermostatic input, “pacing” the equipment’s consumption of electricity, natural gas, fuel oil or propane. . .reducing energy consumption up to 20%+ with maintained performance, and IoT connectivity with any BAS

## Features

- **10%-20%+ HVACR Energy Savings**—provides rapid project payback
- **One Module, Multiple Solutions**—patented, Android-powered suite may be used on a wide range of HVACR equipment, including heating, refrigeration, and air conditioning
- **UL Listed/Canadian UL Listed—Standard 12 Year Warranty**
- Connects with **any** BAS, wired or wireless, via ZigBee and 4G LTE connectivity and Cloud API interface

## Specifications

- Breakthrough, industry-leading performance and economics—typically 1-3 year paybacks across US, rebate eligible
- Patented and proprietary software reduces electrical and fossil fuel energy consumption and cost—**typically 10%-20%+**
- Savings from your **existing equipment, complements existing controls**
- **Extraordinary credentialing**—proven in “gold standard” utility and DOE-funded, IPMVP-compliant testing, over 70 studies
- **Cooling applications** from residential to large commercial (3-100 Tons)
- **Heating applications** from residential to large boilers (80K BTU/hr and larger)
- **Refrigeration applications** from light commercial (walk-ins) to refrigerated warehouses
- **Short cycle protection, starts per hour protection & staggered start** for multi-unit installations
- Simple universal control circuitry, with installation by *any HVACR technician*
- Rapid deployment and “best in class” benefit-to-cost, no maintenance required
- **Requires no additional sensors**—however, accepts a wide range of optional IoT sensors for enhanced performance and/or extreme environmental conditions
- Fail safe operation—reverts to original thermostat control
- Close to 20,000 installations, huge range of building types and climate zones
- ENERGY STAR Partner—perfect for FEMP programs



## Applications

- **Package & split-system air-conditioning/heating units**
- **Heat pumps (air-, ground-, water-source)**
- **Chiller units (non-centrifugal, < 100 Tons)**
- **Electric resistance heating/preheating units**
- **Boilers & furnaces (natural gas, fuel oil)**
- **Hot water heaters (electric, natural gas, propane)**
- **Walk-in coolers & freezers**
- **Refrigeration racks (medium/low temperature)**
- **Refrigerated display cases**
- **Refrigerated warehouses**
- **Selected process heating & cooling equipment**



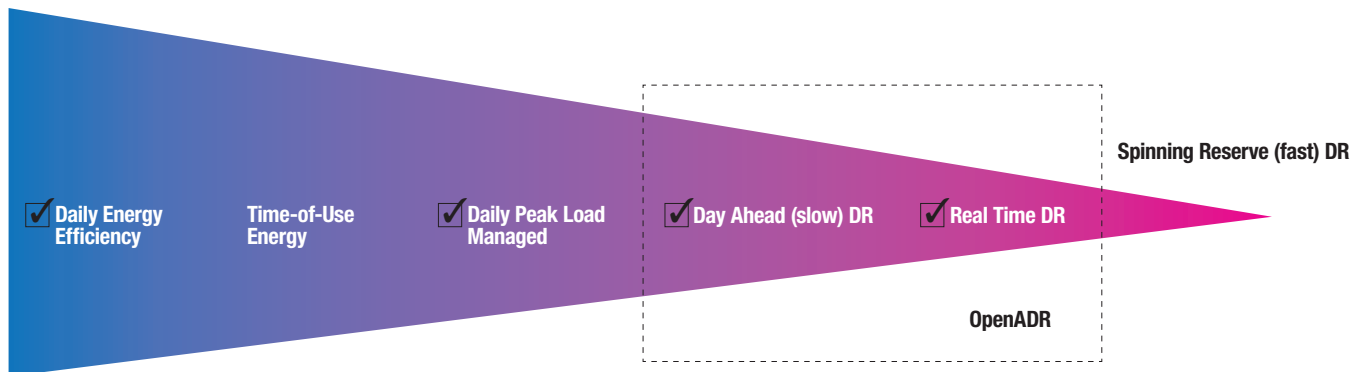
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## Low-Cost “Triple Win” for 90%+ of Commercial HVAC

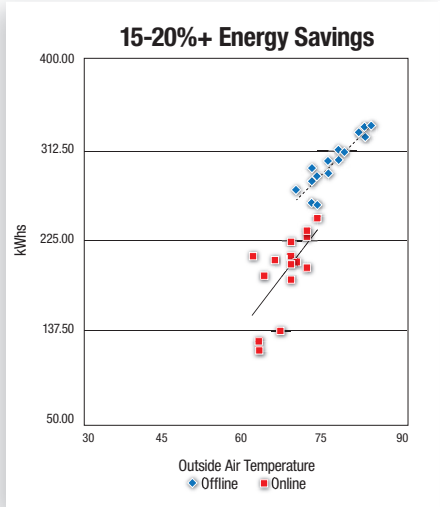
Graphic below from DOE-Lawrence Berkeley National Laboratory, on electric grid needs—PACE+PACE Cloud provides all of 24/7/365 efficiency+demand reduction+OpenADR Demand Response (DR)



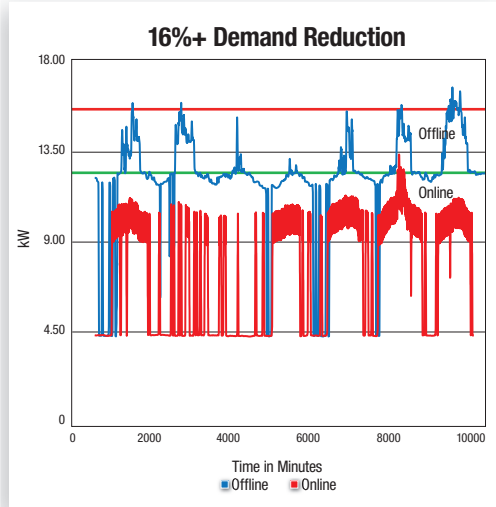
Source: LBNL-DRRC

## Case Study: Global Telecommunications Company

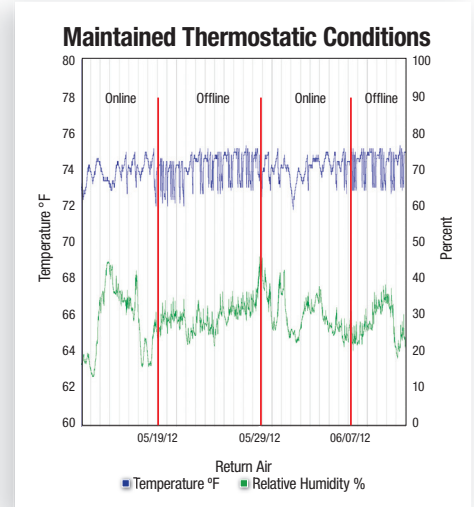
Fast installation by telecom company’s regular maintenance technicians



Submetering showed kWh savings of 15%-20%+ with excellent maintained setpoints—even during a hot summer, in Southeastern U.S.



HVAC kW demand reduction of 16%+ Paybacks of 1-2 years before any utility incentives



As shown, temperatures and relative humidities in space were essentially unchanged

## Unparalleled Credentialing

A 10-month “gold standard” independent engineering submetered study under California Energy Commission, and funded by San Diego Gas & Electric, showed 18% kWh reductions for PACE-equipped HVAC units, with extremely well-maintained temperature setpoints—even under an existing BAS

