CLEAResult[®]

Integrated Controls

David Parker, NEHVAC Program

June 18, 2019

2019 Mass Save/National Grid RI Program IC Objective:

Reduce Green House Gas (GHG) emissions by using (ASHPs) for 1st stage heat to provide Comfort and Economy

Dual Fuel Thermostat: IC for Central Heat Pump (CHP) and Furnace or Air Handler

Must have Balance Point outdoor temperature sensor/sensing

Integrated Control Package:

IC for MSHPs and Boilers or Furnaces, OEM documentation

May require use of a Dual Fuel thermostat from QPL

Must Displace Entire Condenser Capacity

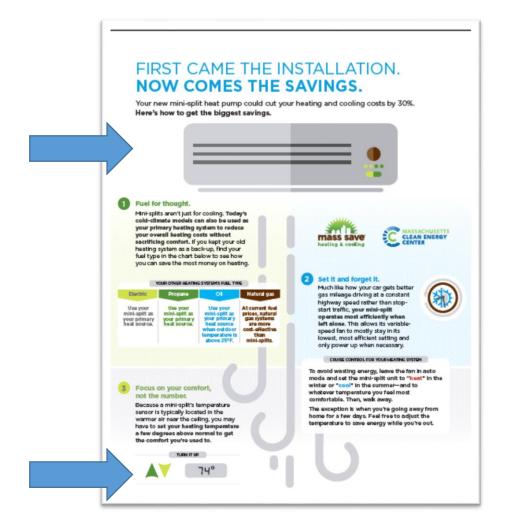
Multiple Strategies

Balance Point Changeover (Daikin, Fujitsu, Panasonic) DROOP (LG with wired/wifi control, Mitsubishi with Kumo Station) Lead/Lag (Haier using IFTTT as hub) 24 Volt Thermostat Adapter & D/F Thermostat (Carrier, Fujitsu, LG, Mitsubishi, Samsung)

CLEAResult[®]

Integrated Controls:

Combine Occupant Zone Temperature Sensing with First Stage/Second Stage Changeover to Central Heating for Economy, Comfort, and Green House Gas Reductions



CLEAResult[®]

© CLEAResult. All rights reserved. 3

ENERGY | Energy Efficiency & Renewable Energy

Long-Term Monitoring of Mini-Split Ductless Heat Pumps in the Northeast

K. Ueno and H. Loomis Building Science Corporation

November 2014

One homeowner complained of temperature unevenness; when the data were examined, it was clear that they operated their MSHP in an "on-off" manner, rather than using a fixed set point. This resulted in wide swings in interior temperature (between 60°F and 70°F+). The electricity use showed many hours with the MSHP running at maximum capacity, followed by periods with the unit shut off. When operated in this manner, the MSHP is heating at its least efficient (maximum output) state. Electricity consumption was a high consumption outlier; when compared with simulations, it was the worst-performing house (heating use 57% higher) than simulation).

CLEAResult[®]

© CLEAResult. All rights reserved. 4

Contact Us

Mass Save and Rhode Island Heating & Cooling Programs c/o CLEAResult 50 Washington Street Westborough, MA 01581

HVAC Hotline: 844-615-8315 Email: <u>hvac@clearesult.com</u>

 Program Manager:
 Sharon Carlino
 sharon.carlino@clearesult.com

 Account Manager:
 David Parker
 David Parker

 david.parker@clearesult.com
 Sr. Account Manager:
 Charles McCracken

 Sr. Account Manager:
 Charles McCracken
 charles.mccracken@clearesult.com

CLEAResult[®]

© CLEAResult. All rights reserved. 5