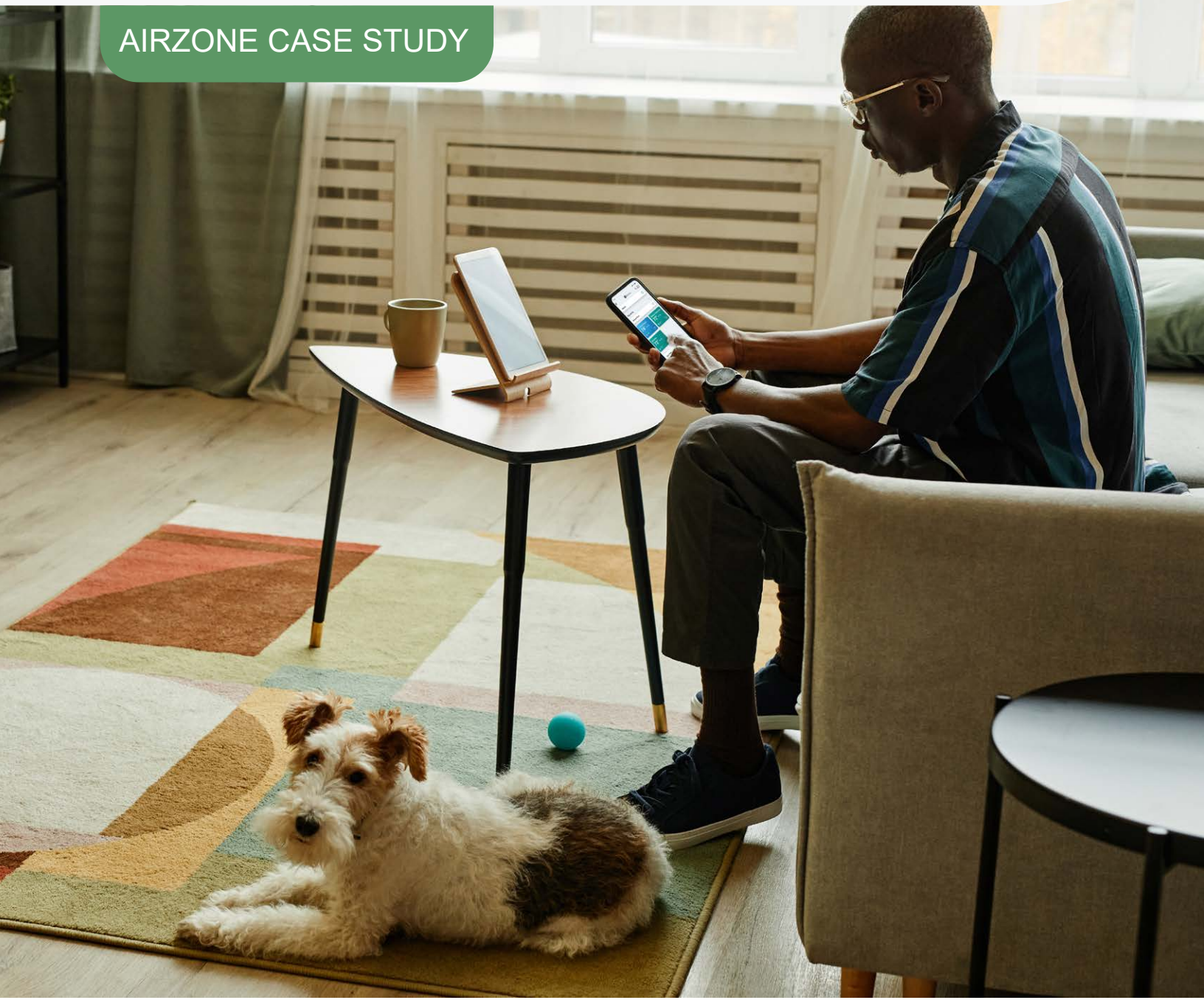




HVAC Control for User Comfort and Energy Efficiency in Inverter/VRF Applications

AIRZONE CASE STUDY




CLIMATE

CONTROL

PEOPLE





The aim of the information in this brochure is to demonstrate how the implementation of smart control systems in HVAC applications contributes effectively to the energy efficiency of a building.

The criteria used for comparison are the annual electricity consumption and the comfort level provided by each of the systems.

The Airzone zoned system is based on independently controlling the temperature of each of the zones as an alternative to the ducted DX inverter system based on the on/off control of a single zone.

It is very important to highlight the role of the communication gateway which achieves a high comfort level concurrently as it reduces the power consumption with a seamless communication between the control board of the zoning system and the AC unit.

The communication gateway allows to control the following features of the AC unit:

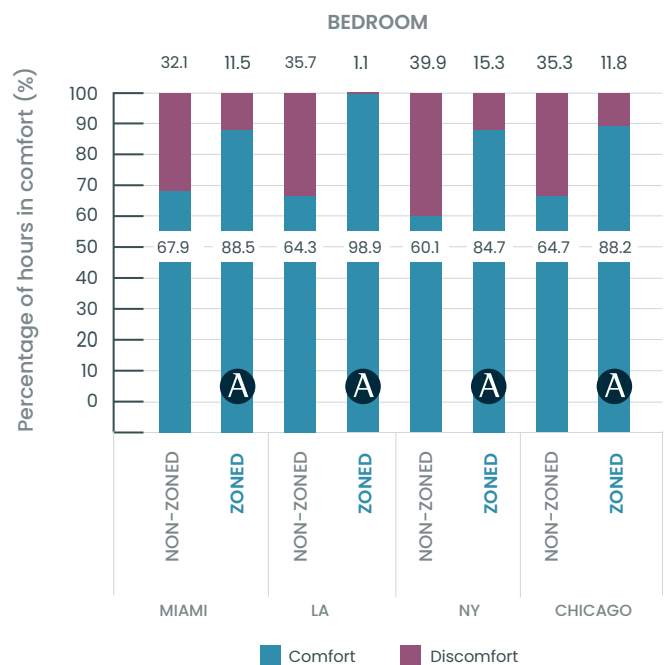
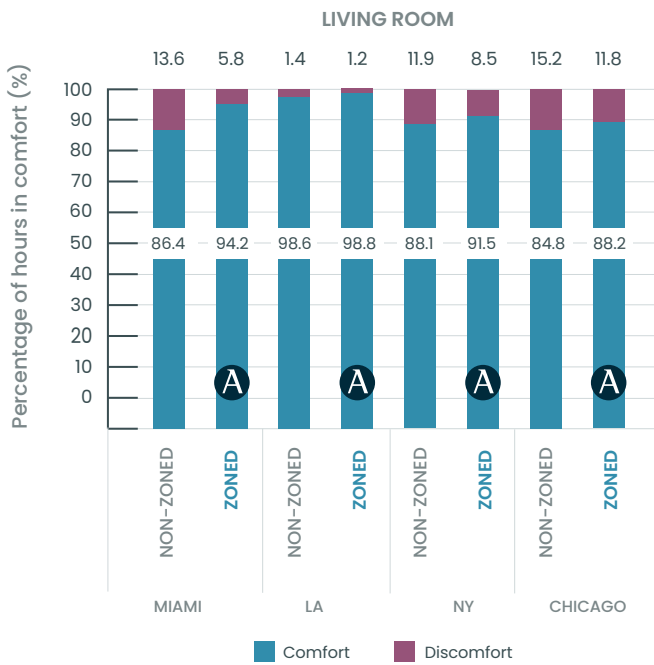
- > Operation mode.
- > Fan speed selection of the indoor unit.
- > Dynamic control of the set-point temperature of the Inverter indoor unit.

The Q-Adapt algorithm automatically selects the fan speed of the units with individual zone control depending on the number of zones calling for demand. Together with a dynamic control of the fan-speed, **there is no need to add a bypass damper or dump zones in the HVAC application.**

Thermal comfort comparison between a non-zoned and a zoned system

Airzone control solution works with updated and certified integration drivers and IoT features such as Home Automation, Alexa, Google Home and remote Wi-Fi control. With the local API, any 3rd

party integration is allowed into the system. These features are incorporated through the Webserver which is available in the Airzone system.



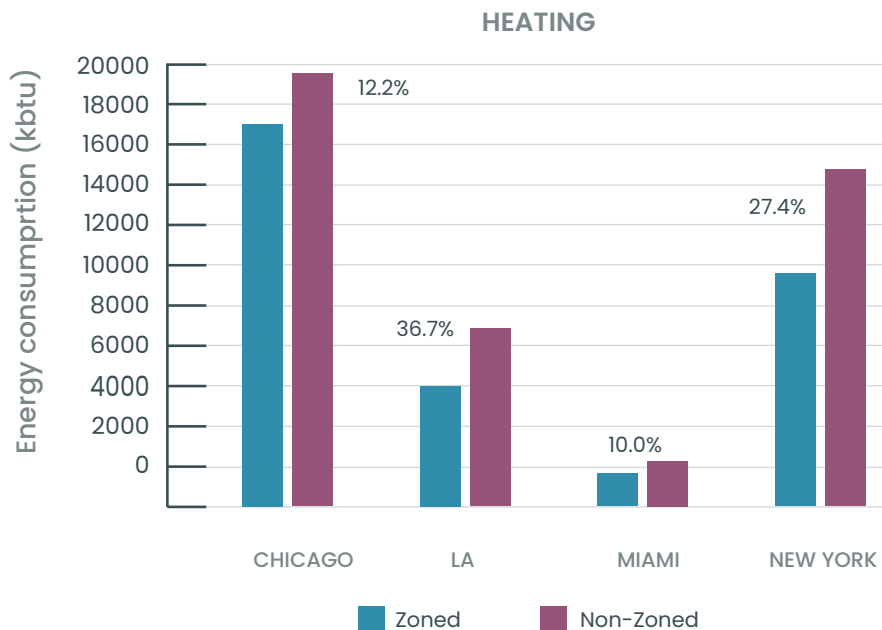
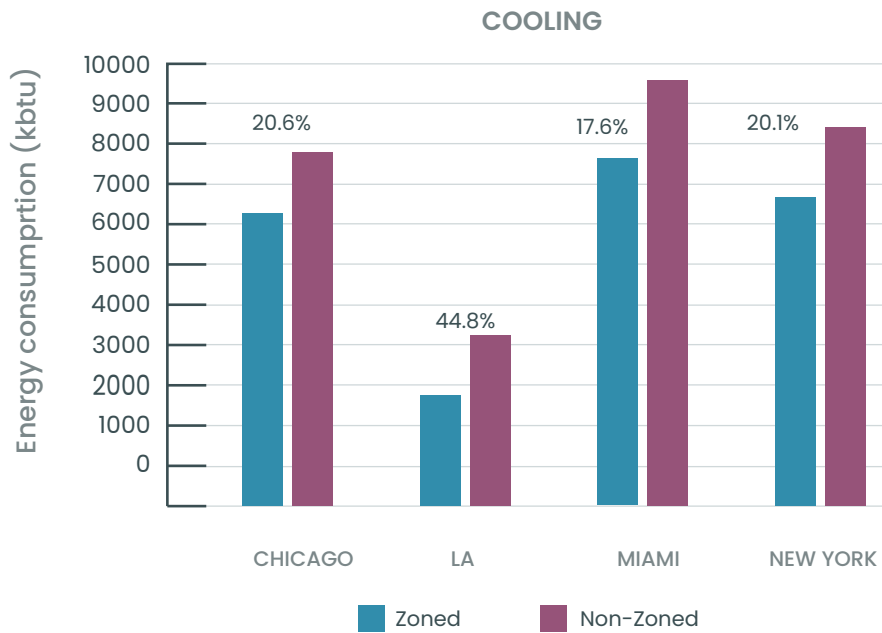
Thermal discomfort will be considered from values with PPD (Predicted Percentage of Dissatisfied Index) greater than 15%.

In this study it has been demonstrated that, **when compared to a non-zoned system, the percentage of hours in which the zones are in thermal comfort is much higher in a zoned system.** In contrast, the non-zoned system causes overheating and overcooling in the rooms where there is no thermostat.



Energy savings of a zoned control system

In cooling mode there are **important savings in Miami and New York**, from 17% to 20%, and in heating mode, from 12.2% to 27.4% in Chicago and New York.



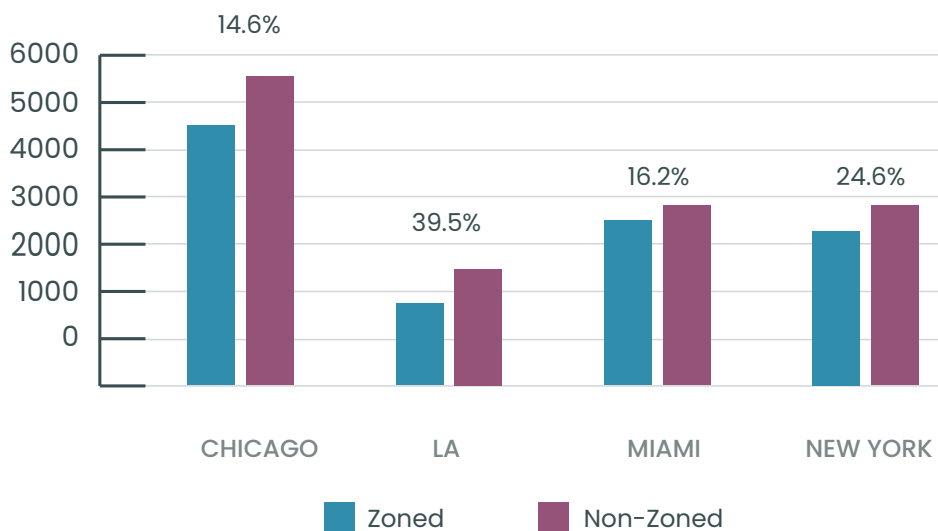
Reduction of CO₂ emissions in a zoned control system

As the amount of CO₂ emissions reduction is proportional to the energy consumption savings, **the environmental impact of the Airzone control system in this study is 2,450 lbs of CO₂ that was not released to the atmosphere.**

To access the full information in the study referenced in this brochure, **please visit the link below.**

airzonecontrol.com/na/en/support/downloads/

ENVIROMENTAL IMPACT



According to the **Arbor Day Foundation**, in one year a mature tree will absorb more than 48 pounds of carbon dioxide from the atmosphere. Therefore, **the Airzone control system is equivalent to the carbon dioxide-absorbing capabilities of 51 mature trees.**

This study is an adaptation for the USA residential sector of the paper titled: **“Impact of Zoning Heating and Air Conditioning Control System in Users Comfort and Energy Efficiency in Residential Buildings”** published in the scientific journal Energy Conversion and Management, indexed in the Journal Citation Report as the first quartile with an impact factor of 11.53.





Airzone North America Corporation
1800 SW 1 ST Ave. Suite #203 Miami, FL 33129

airzonecontrol.com
azna-staff@airzonecontrol.com

