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Forecasting Change in U.S. Residential Heating Market

Contributed by BSRIA Worldwide Market Intelligence

BRACKNELL, BERKSHIRE, U.K.—In terms of energy transition, a government’s ambitions for decarbonization and renewable energy targets do not always match market realities when it comes to the pace of change.

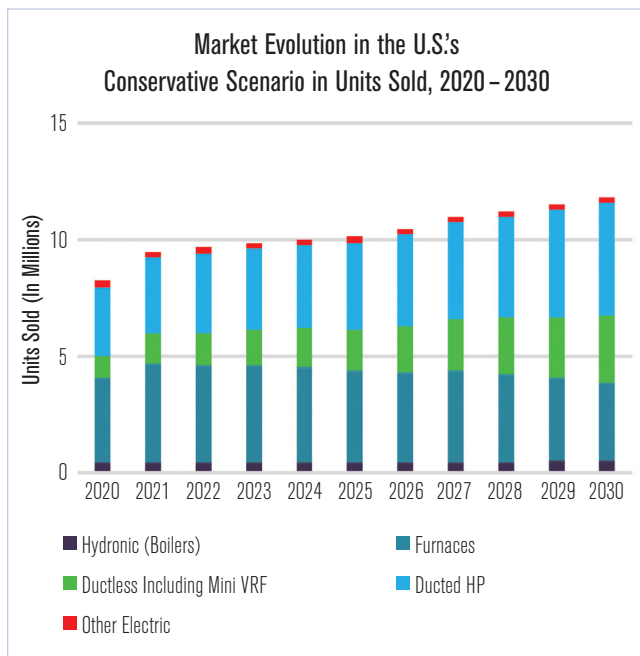
Hydronic heat pumps and boilers are two of the main heating technologies used globally. Both technologies have weathered the COVID-19 pandemic and are growing. Heat pumps were the only HVAC product in the U.S. that continued to grow in 2020, while the U.S. boiler market is recovering well from the COVID-19 pandemic. Beyond COVID recovery, the technologies’ growths indicate substantial consumer insecurity about the future, including uncertainty about energy prices and the banning of technologies such as gas and oil boilers, about which consumers and installers are familiar.

The emerging market of ductless splits includes technologies relatively new in the U.S., but the market is seeing a fast-growing uptick in use, due to their higher efficiency.

Forecasting Residential Heating Solutions

To analyze possible long-term views of residential heating solutions, BSRIA completed a study. First, BSRIA established the forecast using two opposing scenarios: a conservative scenario and a progressive scenario of how the heating market could transition to a more electrification-based methodology.

The conservative scenario assumes no government/state intervention or measures in correcting electricity versus gas prices, no robust incentives to promote transition to electricity and only moderate energy price increases within—or slightly above—the consumer price index to keep heating costs affordable. The progressive scenario assumes there will be an integrated policy of the federal and state government for electrification, a series of subsidies for market transition, a potential fossil fuel hike because of a combination of market dynamics and regulation and more.



Transparent and adjustable specific assumptions were also established, and their effect evaluated in terms of impact and confidence. These assumptions include policies, customers’ resistance to adoption, and reduction in price gap between conventional and renewable technologies.

BSRIA’s methodology is further based on establishing several variables that directly affect the market and are separated into predictors and disruptors. Predictors are quantitative independent variables—such as home improvement spent, construction activity or gas prices—with an historical statistically representative relationship with the market size of each examined technology. Disruptors are qualitative variables including political, economic, social, technological, legal and environmental (PESTLE) factors—including building regulations that favor electric heating—set to influence the market.

Preliminary Results

The analysis’ preliminary data points to a growth of the total heating market in the U.S. between 2020 and 2030

in both conservative and progressive scenarios. This is due to projected new construction, the acceleration of system replacement as well as because of increased use of secondary heating and dual-fuel systems. The main product migrations or substitutions are predicted to come from oil boilers to gas boilers and air-to-water heat pumps when looking at hydronic heating systems; from furnaces to ducted heat pumps in conventional

heating; and, to a lesser extent, from electric baseboards and conventional heating to ductless.

The largest expected growth is for hydronic heat pumps in terms of compound annual growth rate (CAGR). However, the market expansion starts with a low base and could be modest in volume. The ductless market sees the second-largest CAGR. This could be significant in unit terms but will have a limited erosion effect on other heating markets. ■

Industry Roundup

NYC Bans Natural Gas in New Buildings

NEW YORK CITY—The New York City Council has voted to ban the use of natural gas in new buildings, following in the footsteps of dozens of smaller U.S. cities. The law would apply to new buildings under seven stories high at the end of 2023 and those over seven stories in 2027. There are exceptions for new buildings used for certain activities, including manufacturing, hospitals, commercial kitchens and laundromats. *Source: Reuters*

Python Adds EnergyPlus Applications

GOLDEN, COLO.—For many years, EnergyPlus—the U.S. DOE's flagship open-source building energy modeling engine—has had an application programming interface that allowed users and outside software to interact with it during simulation, a feature called Energy Management System (EMS). Recently, the EMS feature was upgraded with support for Python scripting language. Python EMS allows EnergyPlus to integrate and exchange data with a large number of outside tools and libraries, including real-time data sources. The ability to integrate with live data sources enables “real-time” applications of energy simulation. *Source: NREL*

ORNL Keeping COVID-19 Vaccines Cold

OAK RIDGE, TENN.—Current transport methods for COVID-19 vaccines use dry ice to maintain desired temperatures. However, longer travel times—particularly to remote locations without supportive infrastructure—require extended refrigeration. Oak Ridge National Laboratory researchers collaborated with Carrier to create a testbed using a lightweight aluminum container equipped with a refrigeration system, vaccine pack-

ages and optimal cargo layout and storage rack design that kept temperatures consistent and uniform through the container. *Source: ORNL*

Quebec Oil Heating Ban Begins

QUEBEC CITY—As of Dec. 31, 2021, oil-powered heating is banned in all new construction projects across Quebec, Canada, as part of the province's push to reduce greenhouse gas emissions. Quebec is also making it illegal to replace existing oil furnaces with any sort of heating system powered by fossil fuels after Dec. 31, 2023. *Source: CBC*

U.S. GHG Emissions Rose in 2021

WASHINGTON, D.C.—U.S. greenhouse gas (GHG) emissions rose by 6.2% from 2020 levels last year as the use of coal-fired electricity jumped 17% and drivers returned to the roads after the first year of the coronavirus pandemic, according to Rhodium Group. The projected emissions increase shows the U.S. is now further off the target set by the Biden administration under the Paris climate agreement to slash emissions 50%–52% below 2005 levels by 2030. *Source: Reuters*

Coating Could Create Energy Savings

BERKELEY, CALIF.—Scientists have developed an all-season smart-roof coating that keeps homes warm during the winter and cool during the summer without consuming natural gas or electricity. “Our all-season roof coating automatically switches from keeping you cool to warm, depending on outdoor air temperature. This is energy-free, emission-free air conditioning and heating, all in one device,” said Lawrence Berkeley National Laboratory Scientist Junqiao Wu. *Source: Lawrence Berkeley National Laboratory* ■