

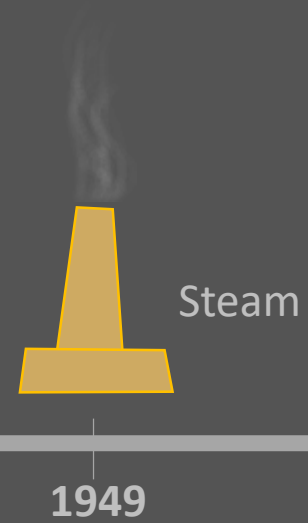
An aerial photograph of a construction site in Toronto. In the foreground, a large building is under construction, showing its steel framework and some completed upper floors. A tall construction crane stands next to it. To the left and right of the construction site are modern, multi-story residential buildings with brick and glass facades. In the background, the dense Toronto skyline is visible, including the CN Tower and various skyscrapers under a clear blue sky with some light clouds.

Modernization of a 70-year Old Toronto Community DE System

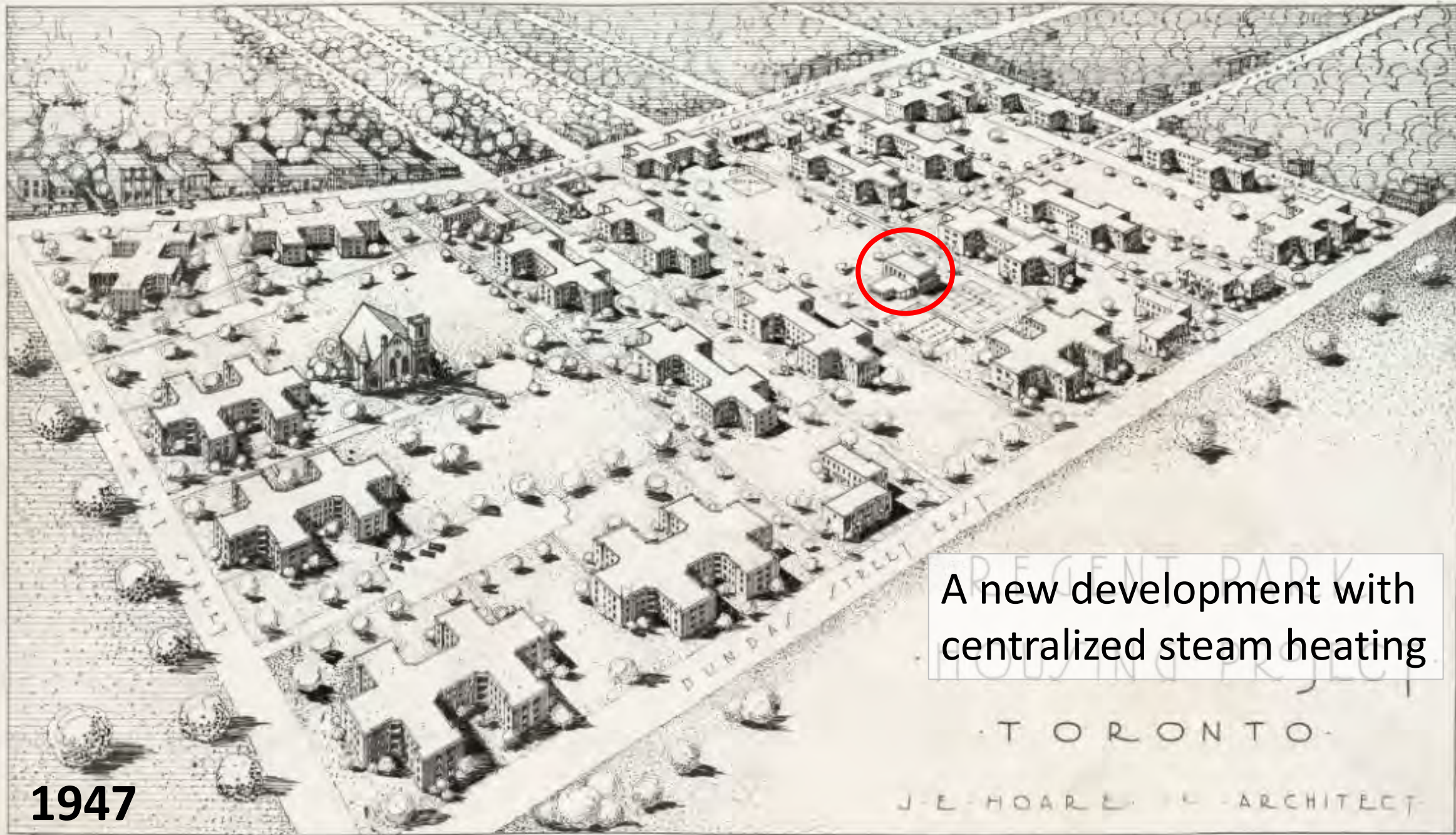
10 Year Growth



1934



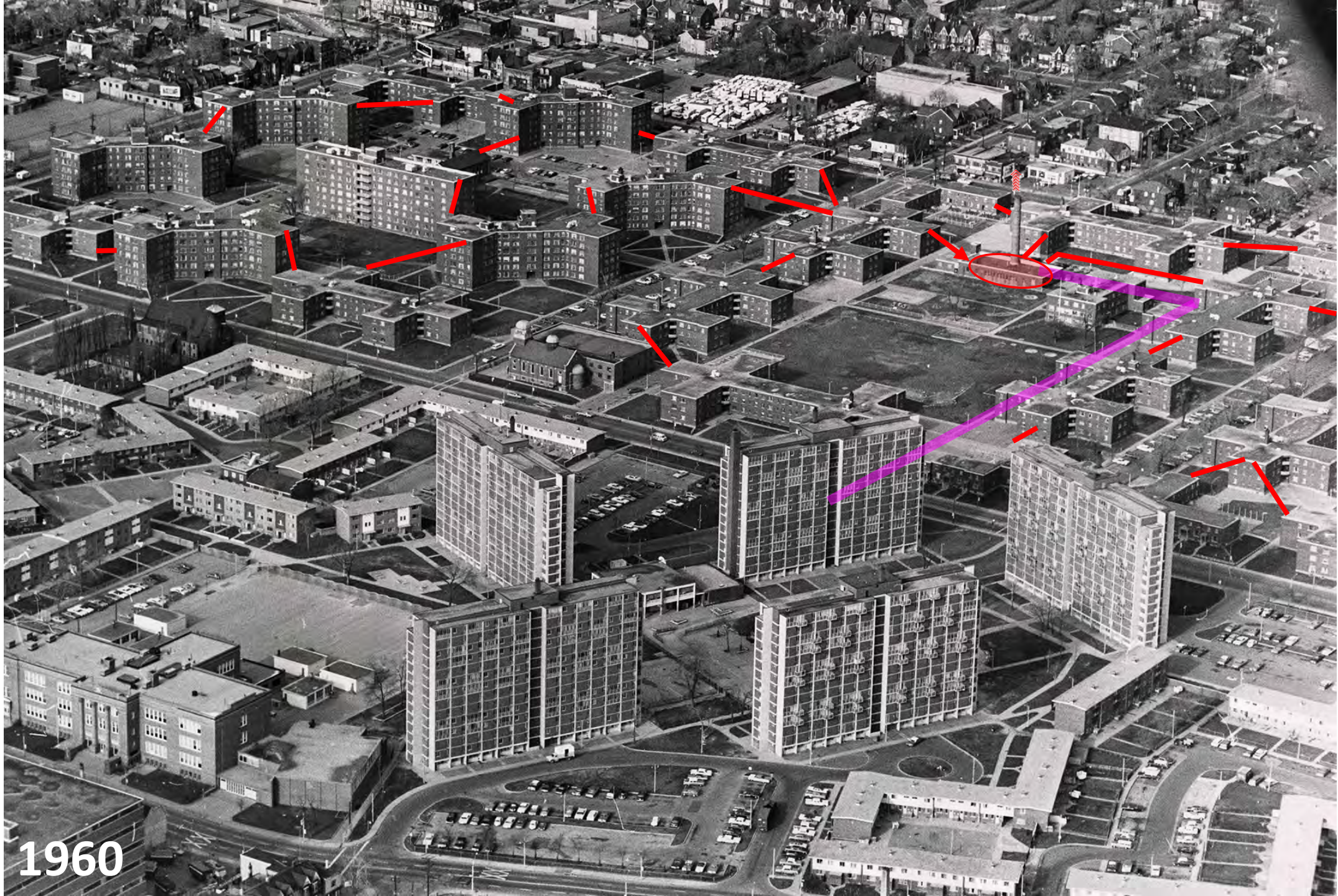
1949



1947



1956



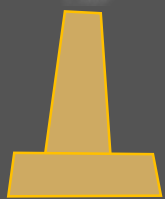
1960

The Central Steam plant

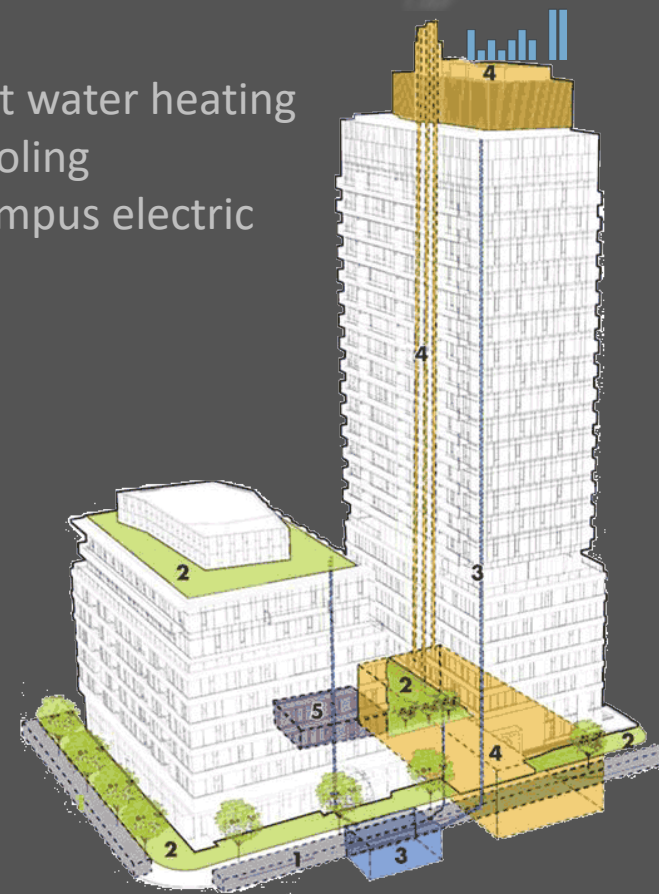




Steam boilers



1949

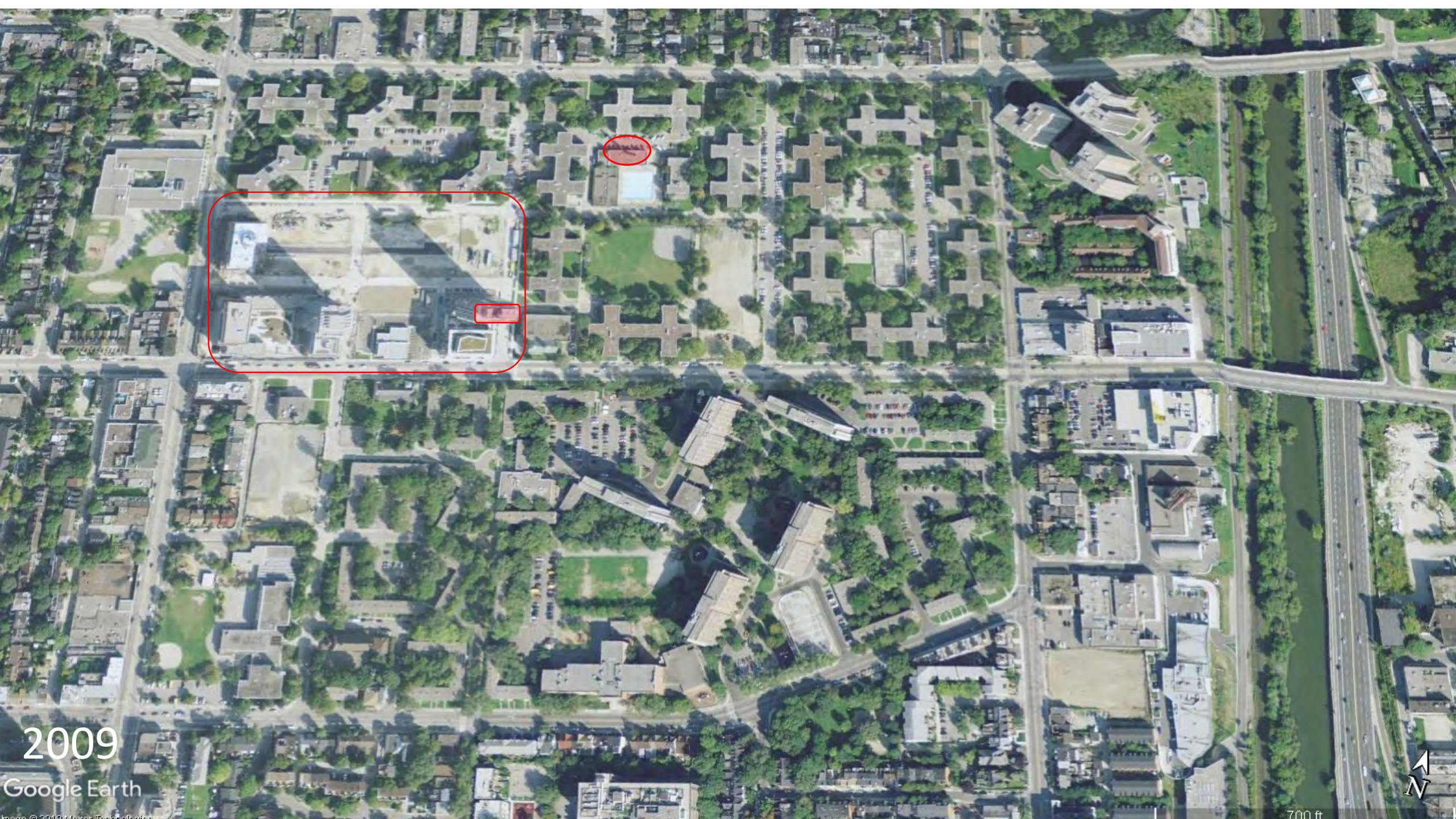


Hot water heating
Cooling
Campus electric

2009







2009

Google Earth

Image © 2019 Google Technology



700 ft



2009

Google Earth

Image © 2019 Maxar Technologies

300 ft









2015
Google Earth

Image © 2019 Maxar Technologies



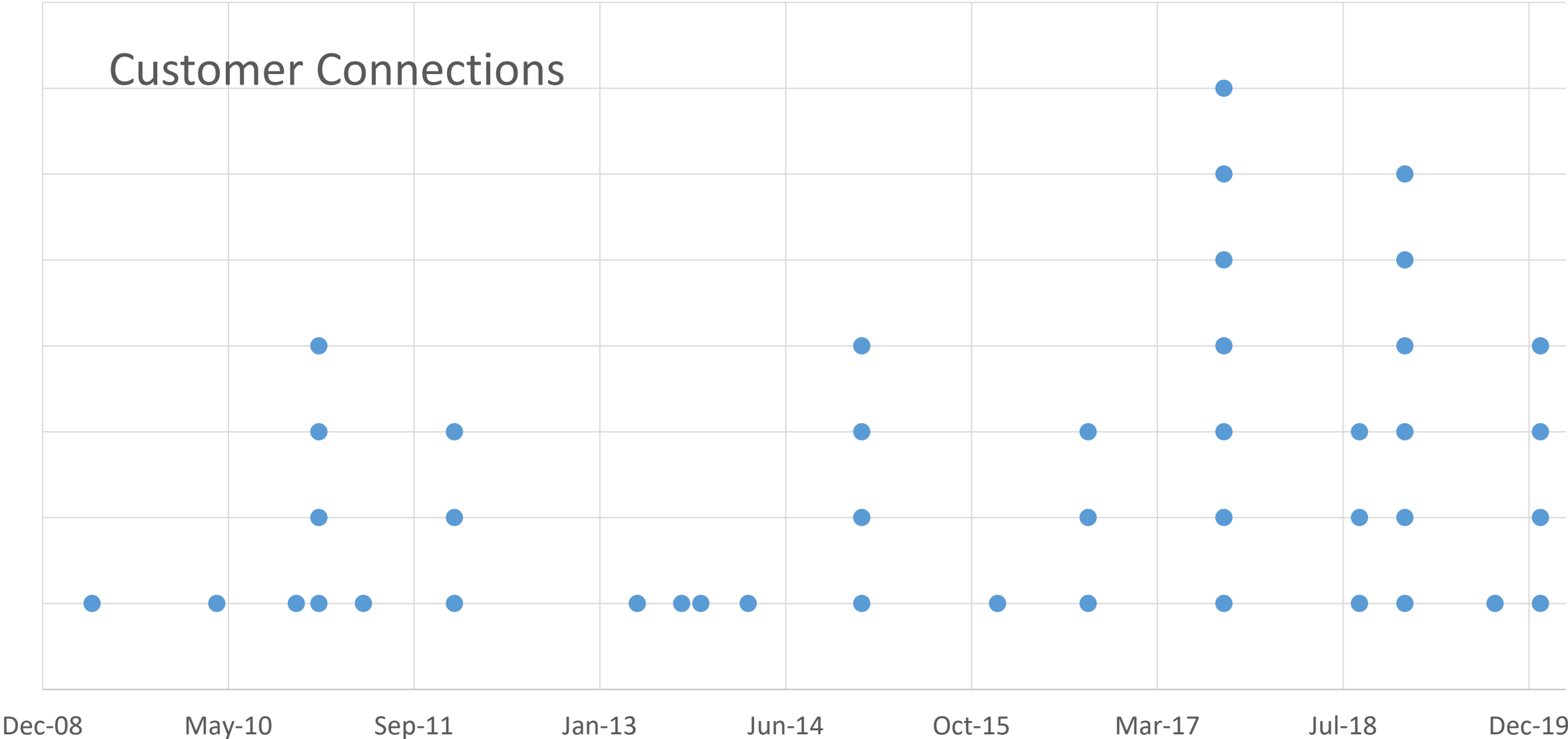
700 ft



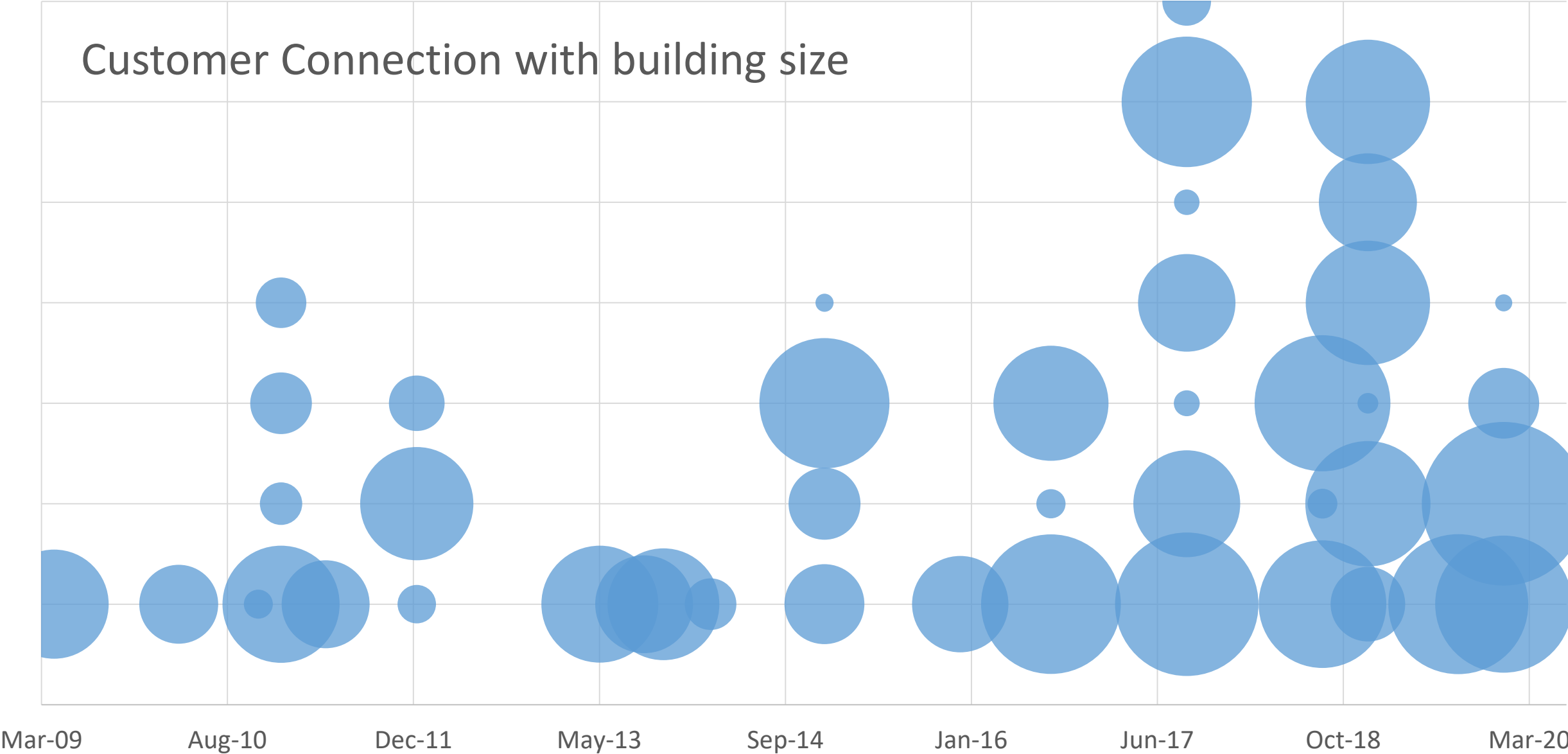




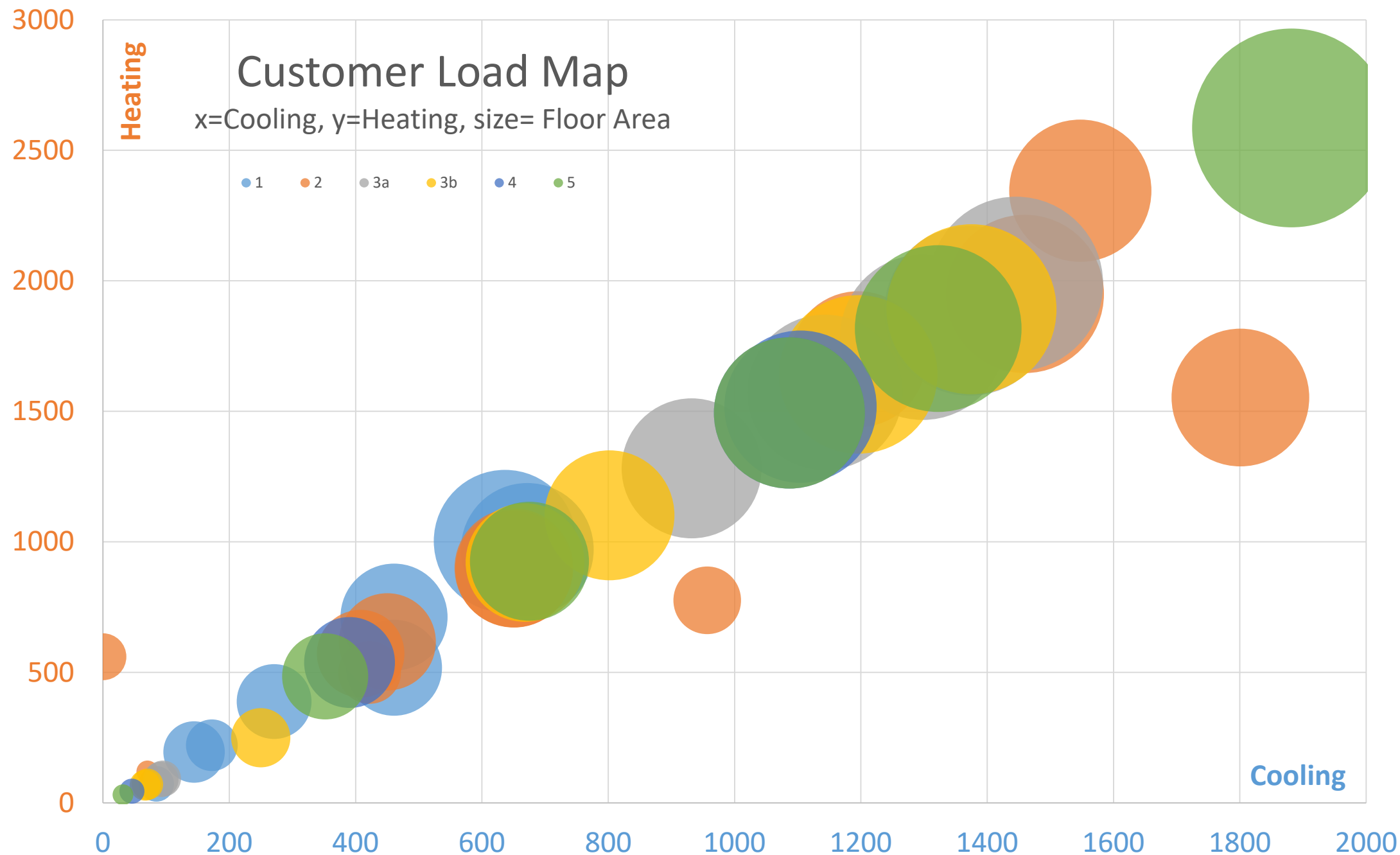
Collect development and construction info



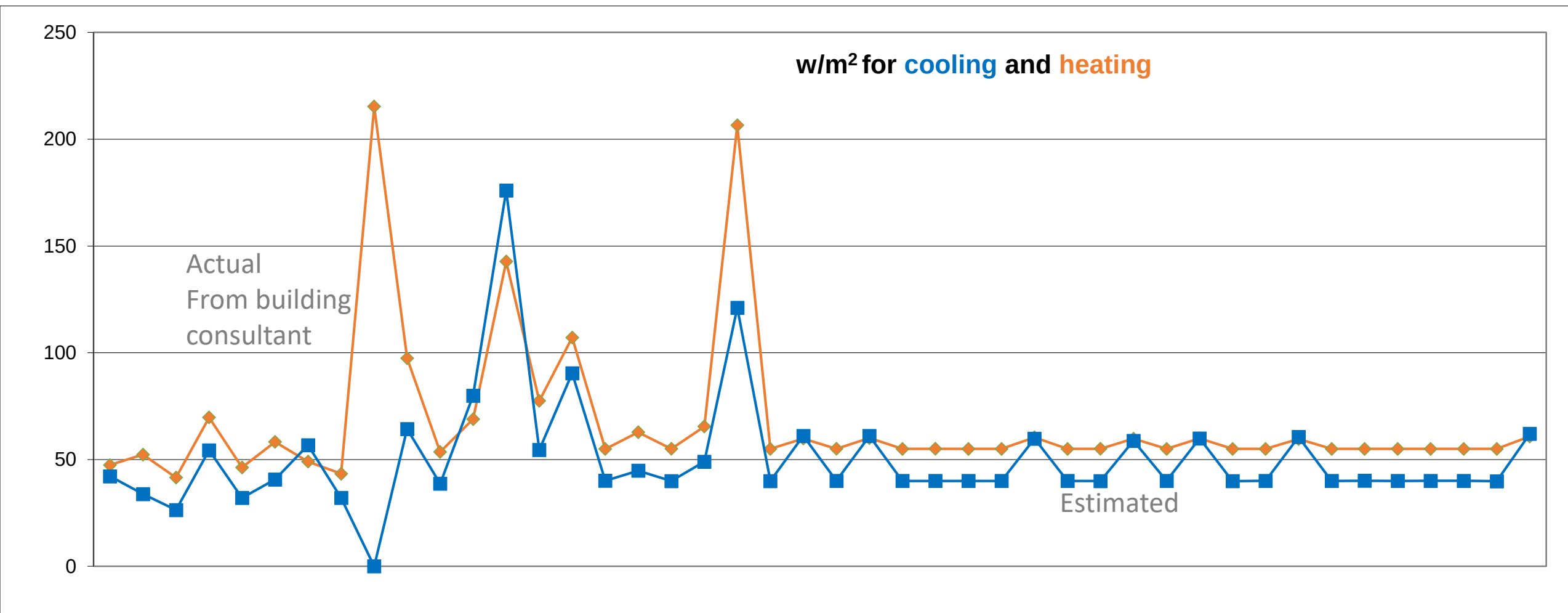
Compile development and construction info



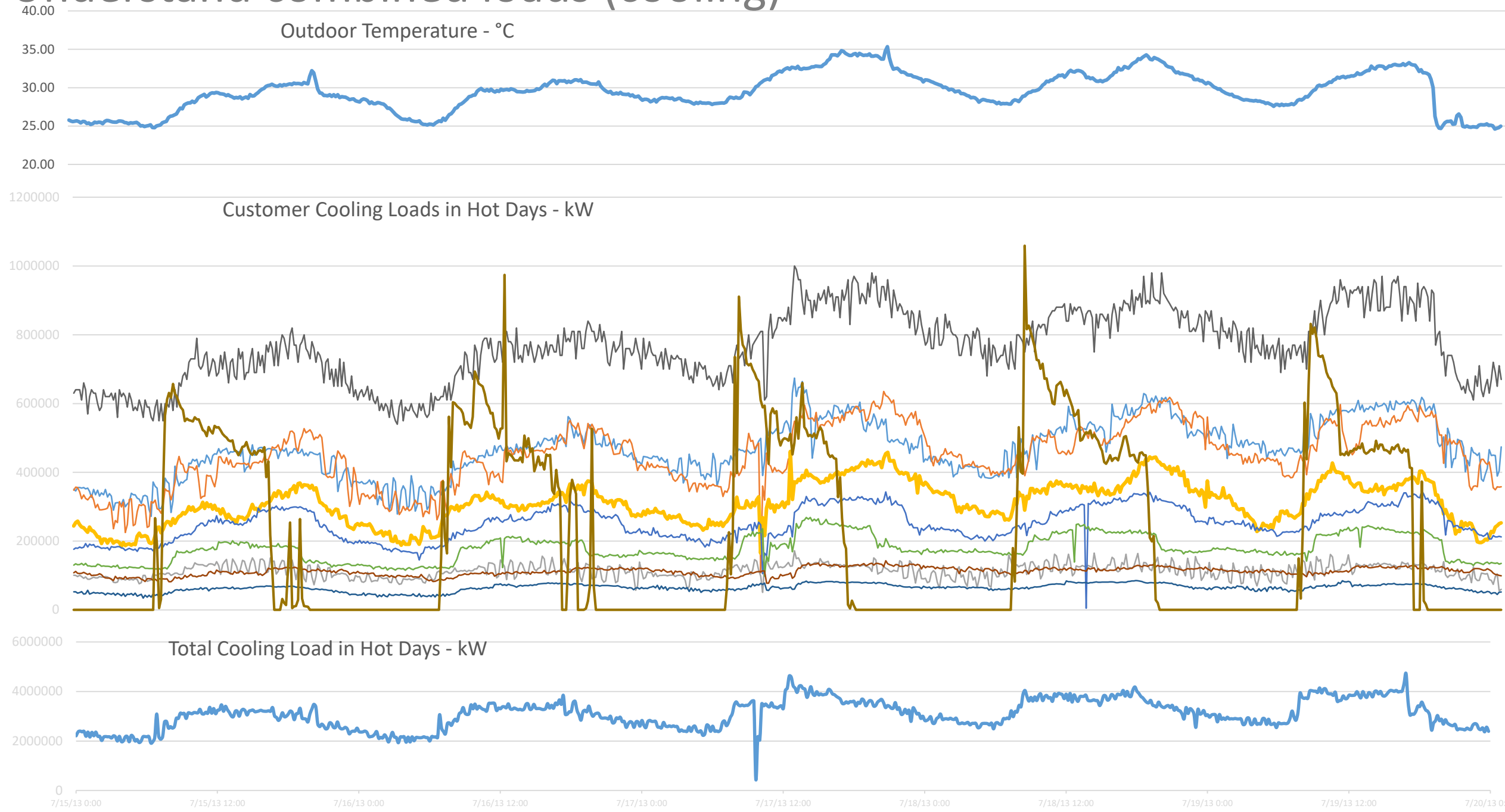
Compile development and construction info



Understand and verify customer building design loads

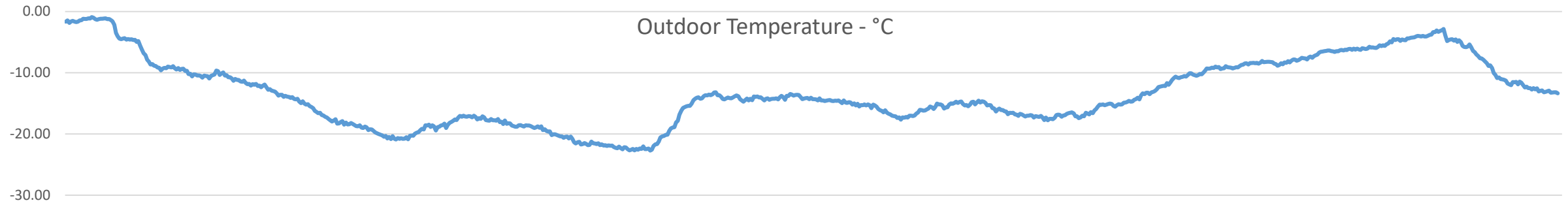


Understand combined loads (cooling)

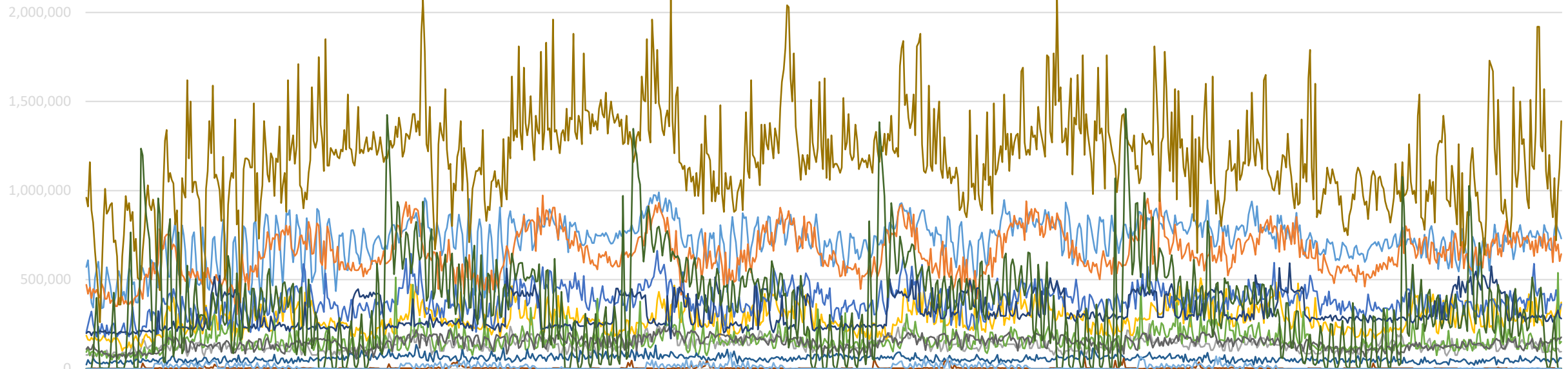


Understand combined loads (heating)

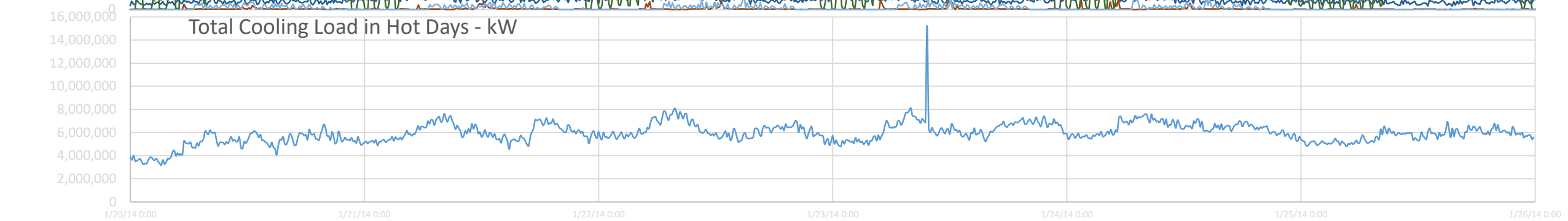
Outdoor Temperature - °C



Customer Heating Load in Cold Days - kW

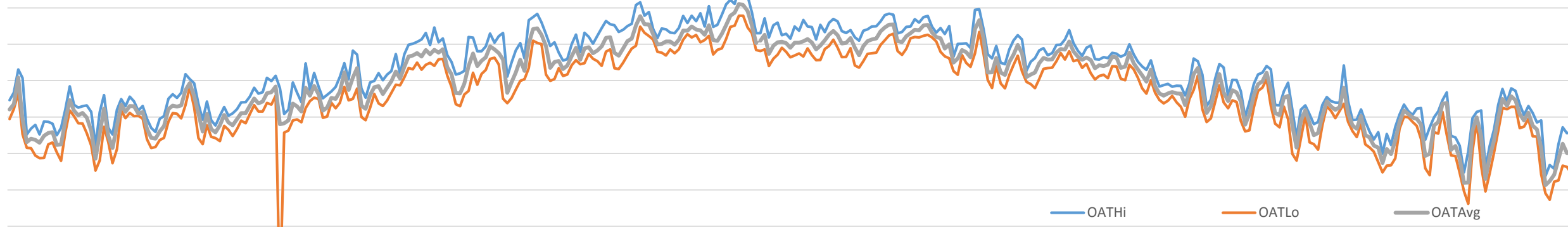


Total Cooling Load in Hot Days - kW

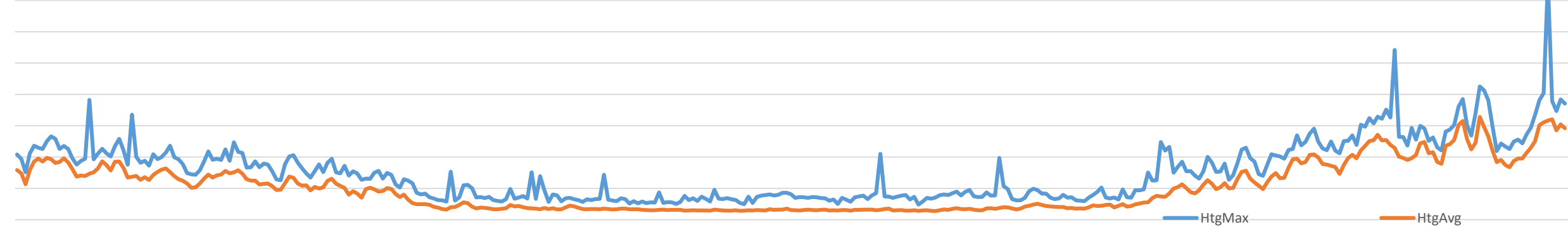


Understand seasonal combined loads

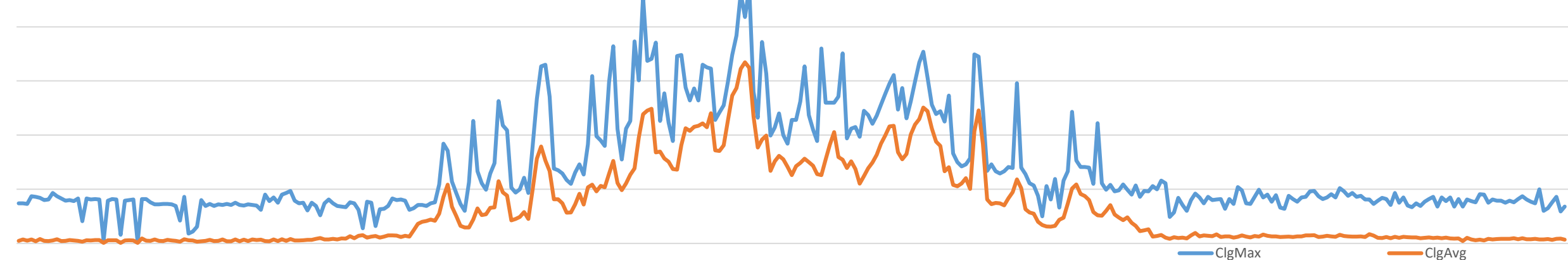
OAT



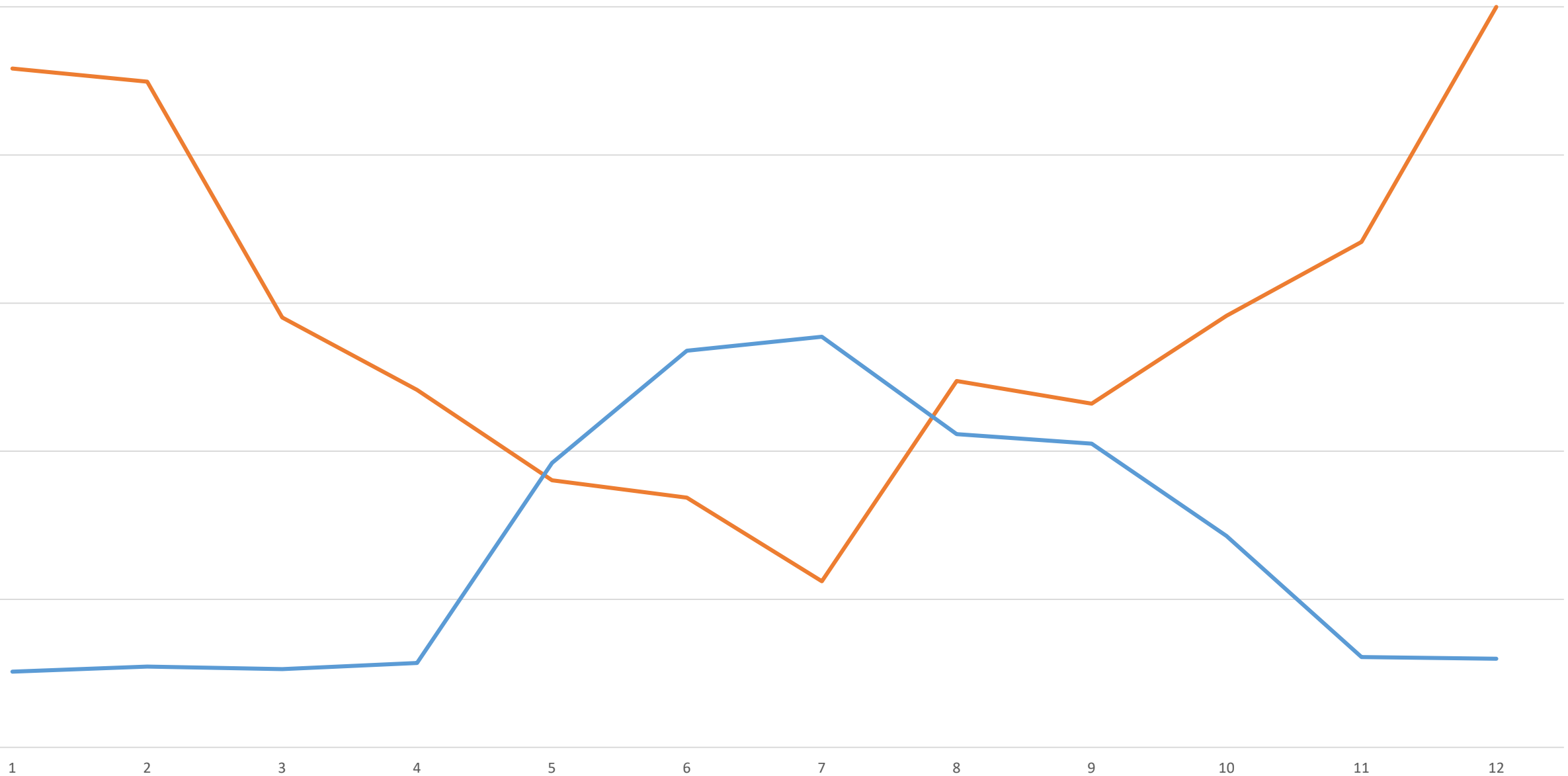
Heating Load



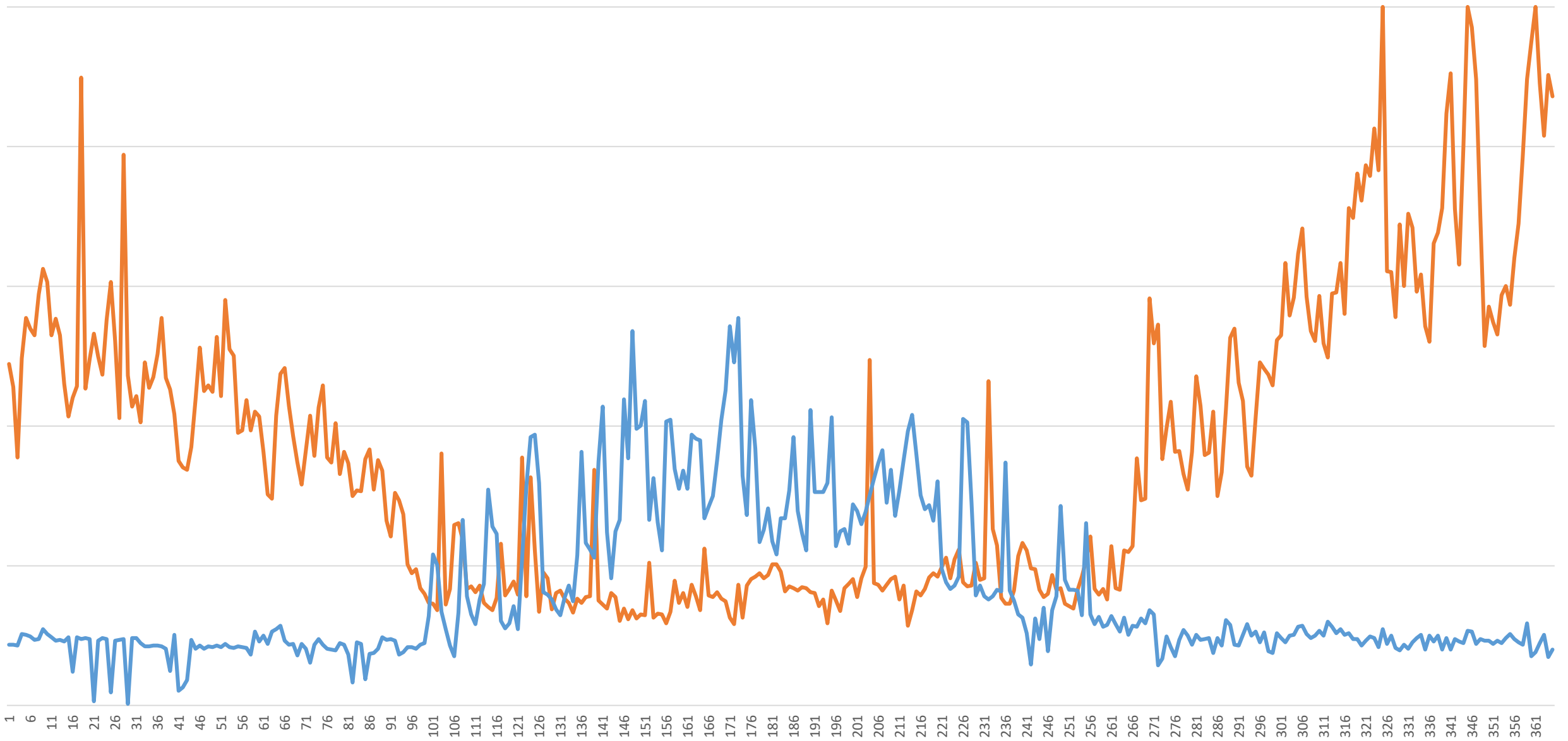
Cooling Load



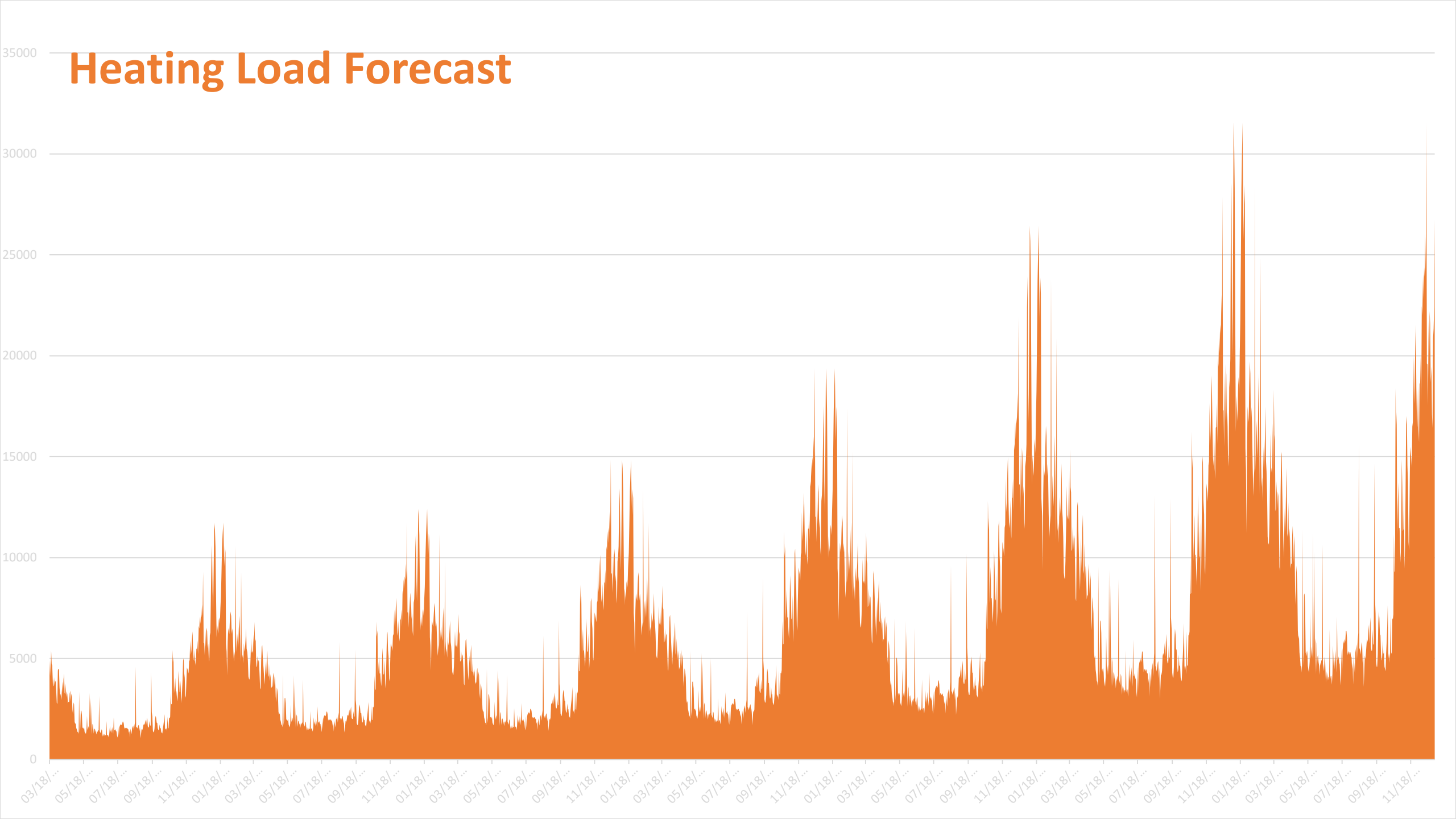
12-Month Annual load profile (Heating and Cooling)



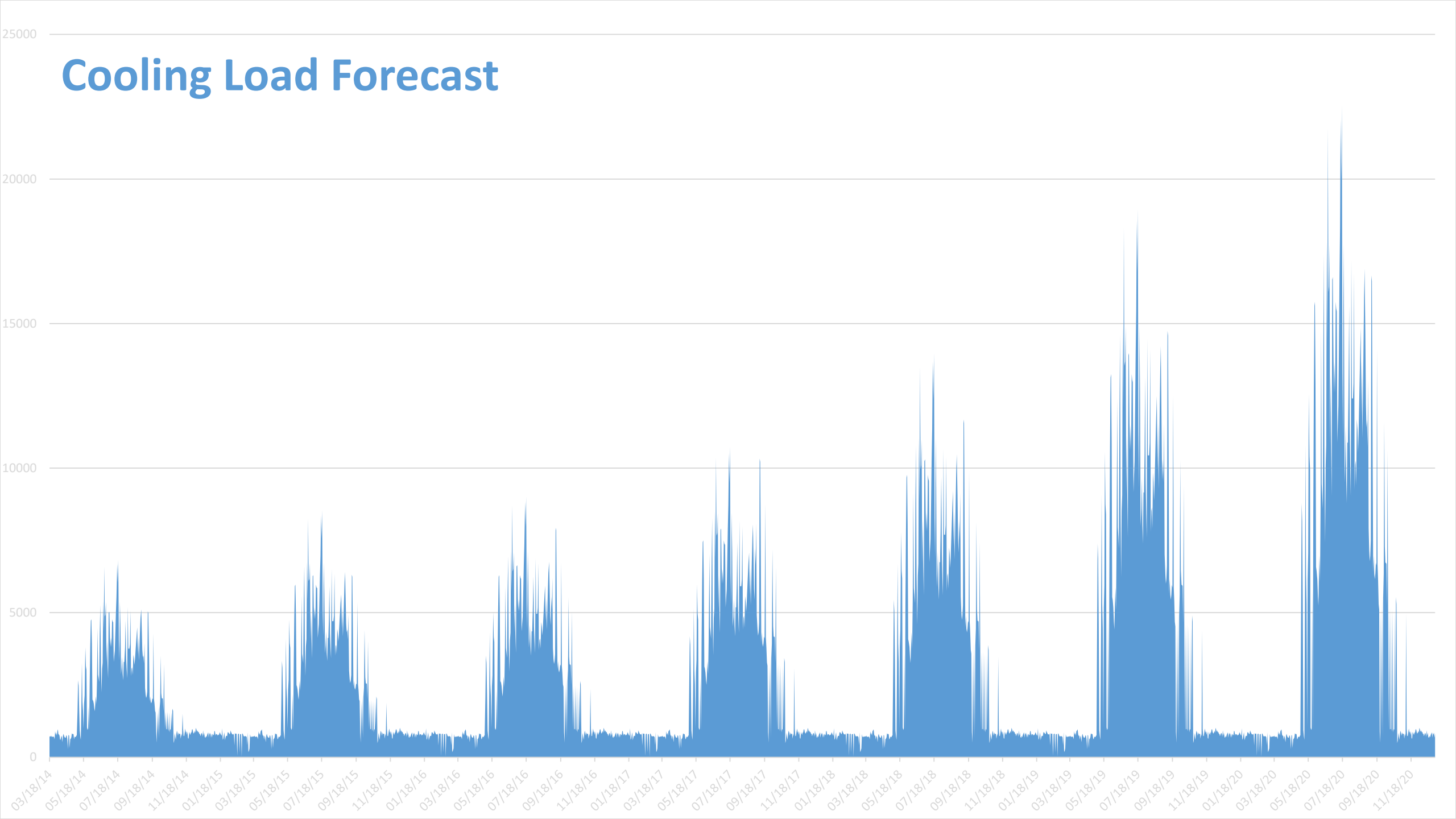
365-Day Annual load profile (Heating and Cooling)



Heating Load Forecast



Cooling Load Forecast



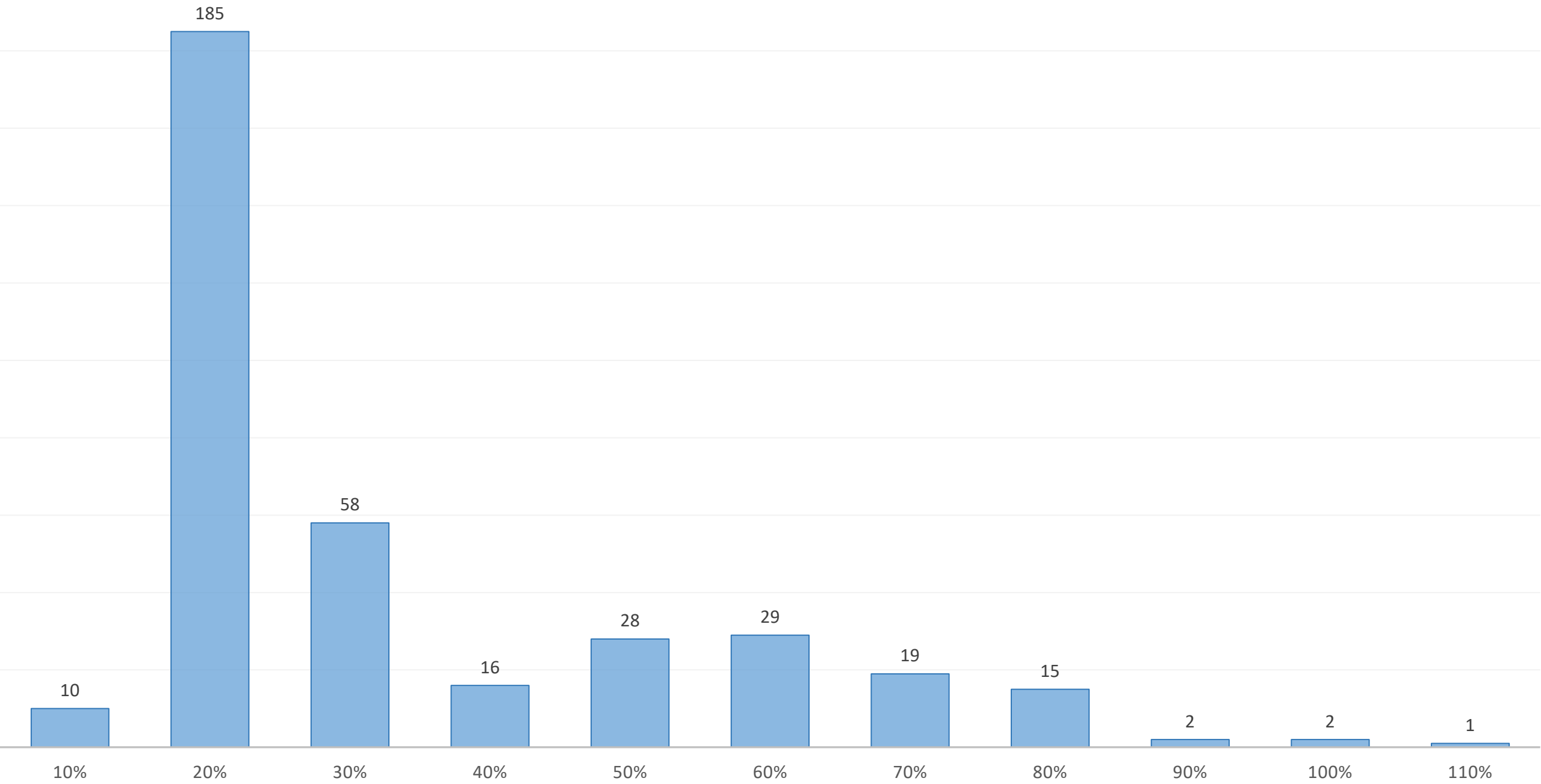
Load profiling

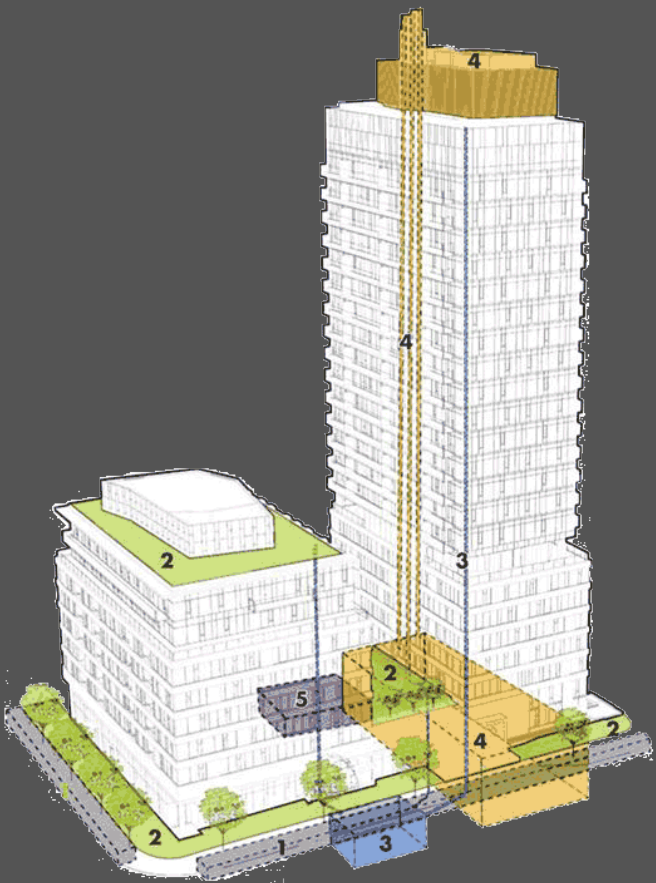
to assist equipment selection

Heating load profile

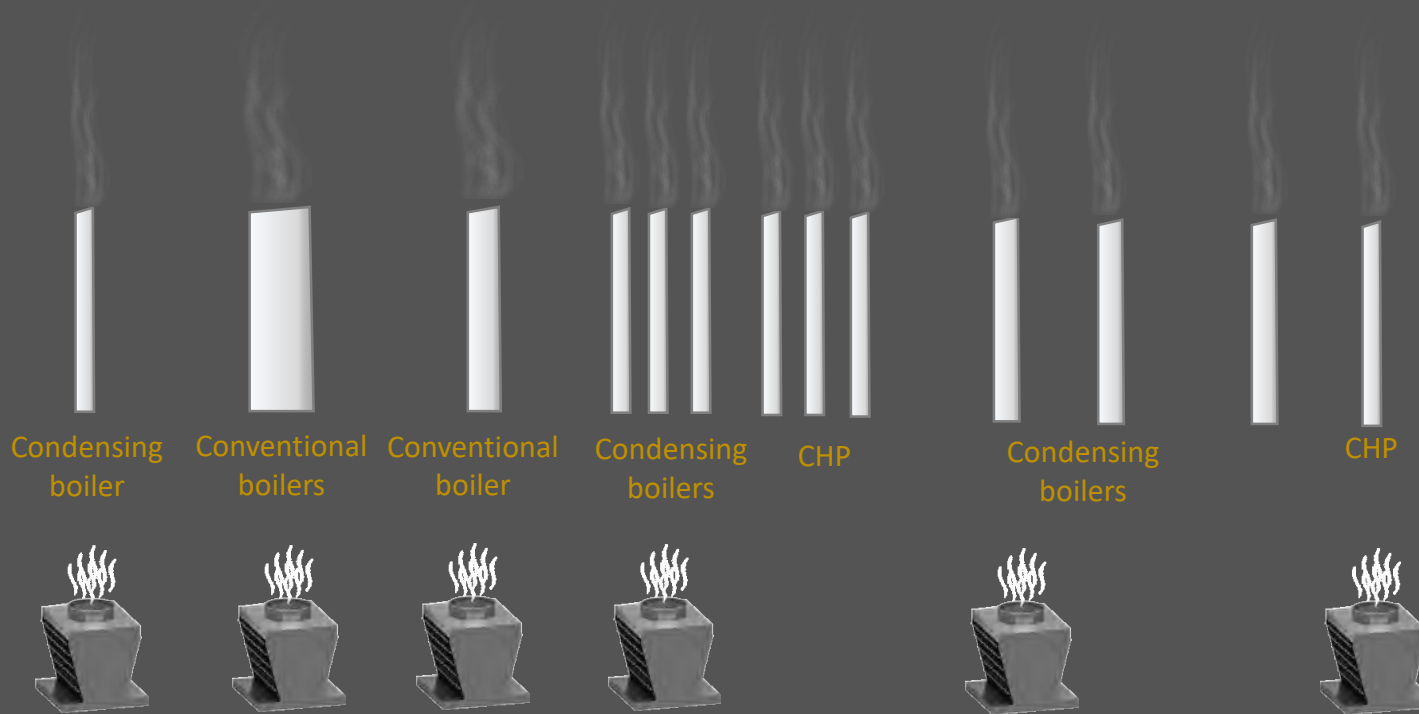


Cooling load profile





2009



Hot water heating

CHP heat recovery
Condensing boilers
Conventional boilers

Cooling

Chillers

Campus electric

CHP Power generation

2019

2029

