

# HOUSEHOLD LOAD DISAGGREGATION

## PROBLEM STATEMENT

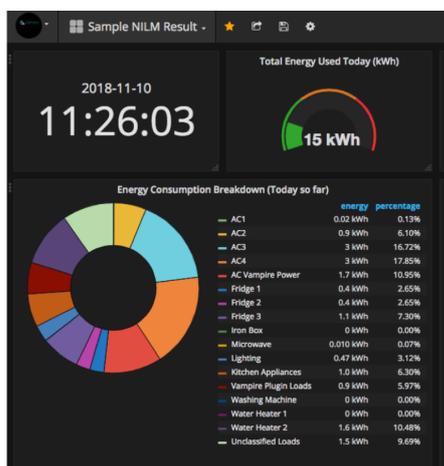
The typical homeowner does not know what contributes to his or her monthly energy bill, and is not able to take timely steps to save money. Two of the major barriers for home energy management are installation and scalability. Common solutions like smart plugs cannot cover certain high energy use appliances that are wired directly into the electricity panel (e.g., air conditioner, water heater). Furthermore, covering every socket in the home with a smart plug is not cost effective or realistic.

## CLIENT COMPANY OVERVIEW

- Electric utility company
- The objective is to provide appliance-level energy use information to customers
- Deployment in homes in Singapore

## SOLUTION IMPLEMENTED

AmpoHub devices were installed in public apartments, private condos, and landed homes to perform load disaggregation – a process where machine learning algorithms detect which appliances are present in the home without having to monitor them individually. With the load disaggregation application running on the AmpoHub, the homeowners can see how much of their energy cost comes from the air conditioning, refrigerators, water heaters and other key appliances. The AmpoHub's small size and built-in WiFi communication capability make it fast and easy to install the solution in new and existing homes.



*Dashboard depicting energy consumption by different appliances.*

# RESULTS

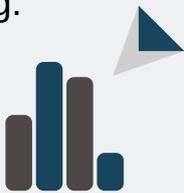


- 1 One homeowner discovered that the refrigerator was using significantly more energy than its energy label indicated.

- 2 Homeowners have a better understanding of the cost of operating their appliances.



- 3 The utility company obtained a rich customer data set to improve load forecasting and pricing.



## ABOUT AMPOTECH

Ampotech is a Singapore-based company specializing in the collection and analysis of electricity usage data from the built environment. Ampotech's products use non-invasive sensing technology to provide circuit-level energy usage data that can be attributed to specific spaces or equipment in a facility in real-time. Since launching in 2015, Ampotech's products and software have been used to identify energy conservation measures for commercial and light industrial facilities, and to perform remote asset monitoring for infrastructure savings via lighting control or retrofit.