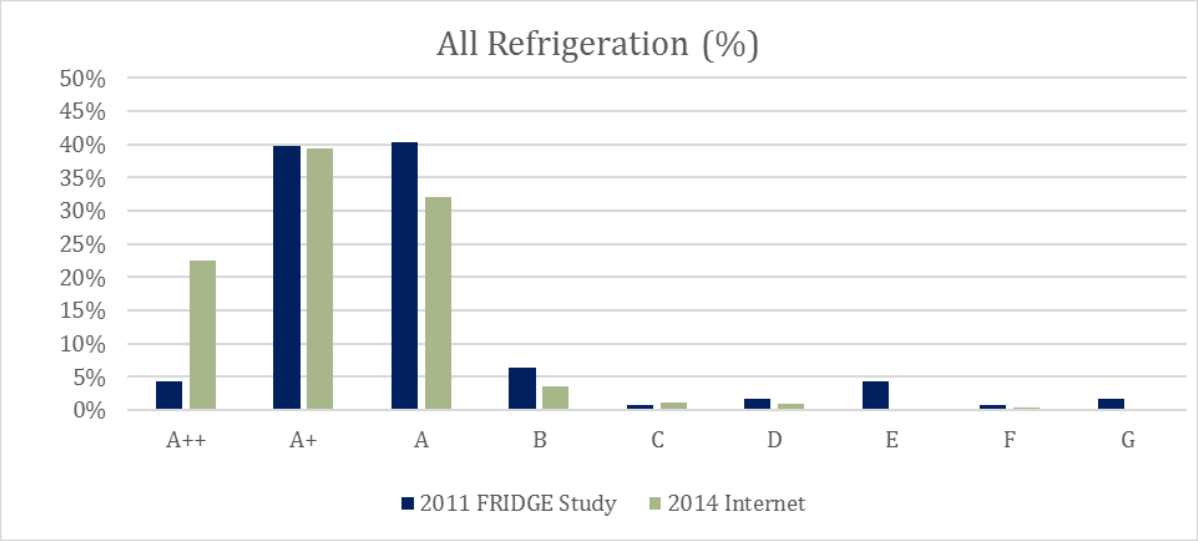
ENERGY SAVINGS ESTIMATES FROM DOE'S NEW STANDARD AND LABELING PROGRAM

The Department of Energy and the United Nations Development Program collaborated with Berkeley Lab, under the Super-efficient Equipment and Appliance Deployment (SEAD) initiative, to assess the energy savings impact and the multiple benefits of the newly implemented Standards and Labeling (S&L) program of South Africa. This summary gives a brief overview of the data collected, the methodology used to assess the energy savings impacts, and references for additional information.

Data collection

The FRIDGE study undertaken in 2011 was the first attempt to collect market data on the residential appliances that were selected for the country's mandatory S&L program. The data were sourced directly from the manufacturers and supplemented by industry reports including the Euromonitor *Consumer Appliances in South Africa* report for 2010 and other relevant statistics, studies and reports undertaken by organizations such as All Media Product Survey (AMPS) and Eskom. In 2014, this source of data was furthered by a study undertaken by Unlimited Energy and Enervee, which collected detailed product information from retail websites by using web-crawling techniques[1]. An example of the data collected on the energy performance distribution for refrigerators is available in the figure below.



During the analysis of the data, the consultants noted that for many of the appliance categories a shift toward higher efficiency classes had occurred. This indicated that appliance manufacturers had

[1] Web-crawling refer to automated software that collects public information on retail websites

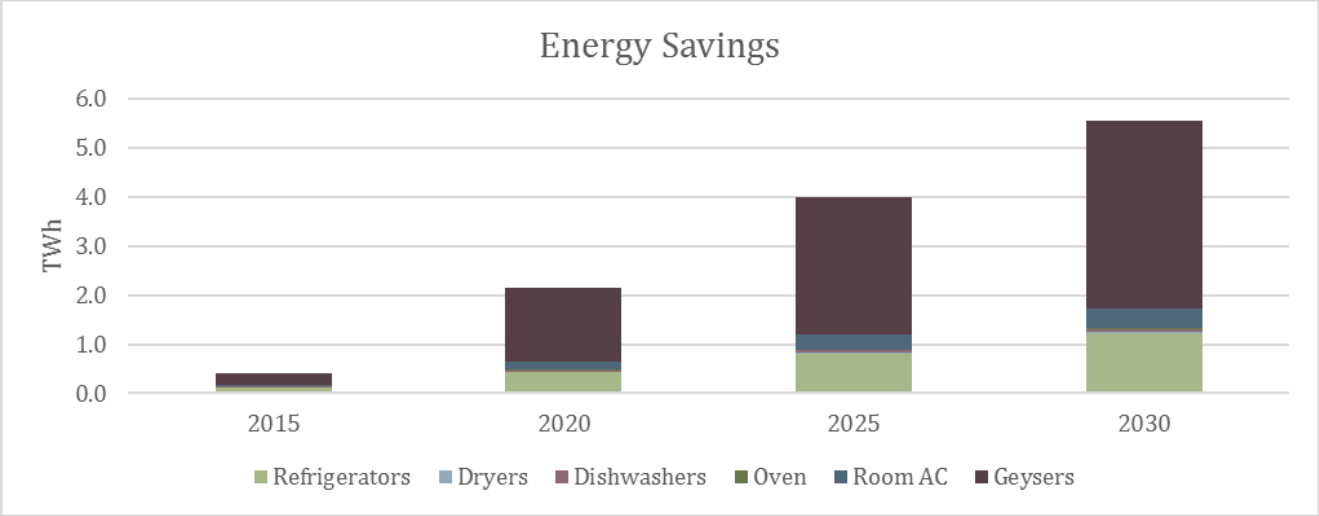
accepted that MEPS (Minimum Energy Efficiency Standards) would be implemented by the Government and had responded by upgrading or removing many models that were below the energy class levels published in the VC9008. Using 2014 as a baseline year would thus reflect lower electricity savings than is the case. Incorporating the 2011 findings ensures that all the electricity savings are attributed to the program.

Modeling Methods

The Bottom-Up Energy Analysis System (BUENAS) model developed by Berkeley Lab was used to calculate potential energy and GHG emission impacts through 2030 from the implementation of MEPS for the 10 appliances/equipment that are covered by the new regulation. BUENAS is a bottom–up stock accounting model that predicts energy consumption for each type of equipment according to engineering-based estimates of annual unit energy consumption (UEC), equipment stock, usage, intensity, and efficiency. BUENAS is a well-recognized, peer-reviewed model that has been used in many countries. A detailed report of the model is available in McNeil et al. (2012)[2]. The model was further customized to best represent South Africa conditions and government priorities.

Results

The set of MEPS which have been approved under the VC9008 are expected to achieve 2.15 TWh of savings by 2020 and 5.55 TWh by 2030, see graph below. Water heating (or geysers) is by far the largest source of electricity savings followed by refrigeration and air conditioning. The new regulation for geysers is a major step forward with the introduction of a B standard in a market originally dominated with technologies at D/C level. Energy savings from refrigerators and air conditioners are the next largest source of energy savings.



[2] McNeil, M., Letschert, V.E., de la Rue du Can, S., Ke, J., 2012. Bottom-Up Energy Analysis System –Methodology and Results. Lawrence Berkeley National Laboratory – LBNL 5722E https://ies.lbl.gov/publications/bottom-energy-analysis-system