

California Energy Commission

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Docket No. 12-EBP-1: AB 758 Comments

2. Make Smart Meters more useful; enable the Zero-Effort Diagnostic (“ZED”)

Situation

It is widely recognized that a diagnostic (aka “audit” or “assessment”) is the cornerstone of persuading the owner/operator of a utility system to take demand reduction actions - especially those requiring any sort of spending/investment. Without a compelling case, which should rightfully be based on a diagnostic, being made for action it is almost certain that the owner/operator will continue with the status quo.

Problem

Generally, in both residential and commercial settings, there are two principal barriers limiting the wide-spread use of utility system diagnostics. First, any sort of cost to the owner/operator for a diagnostic results in a significantly diminished willingness to undertake one - no matter how favorable the promised benefits. Second, the process, including the administration and time consumption needed on the part of the owner/operator, also represents a significant deterrence and leads to significantly diminished interest in conducting a diagnostic.

Game-Changer

Both barriers may be overcome with a Zero-Effort Diagnostic (“ZED”) – a diagnostic of a structure’s utility systems that doesn’t require significant labor. A ZED is possible with the use of Disaggregation Technology. This software technology simply takes time-series consumption information - most applicably electricity consumption information - and uses

highly tuned algorithms to disaggregate that overall consumption profile into the consumption of each device that comprise the overall profile. For example, in layman's terms, the overall consumption profile of electricity usage of a home over the course of a 24-hour period, indeed over the course of all 4 seasons in a year, can be broken down by a computer program into the consumption profiles of the various devices in that home, such as refrigerators, air-conditioners, etc.

Simply put, this analysis conducts a highly accurate diagnosis (aka “audit” or “assessment”) with virtually no marginal cost or professional deployment time.

However, to do this for the most substantive 15 or so electrical devices in the typical residential structure, today's disaggregation software requires electricity readings at a minimum of 1 minute intervals. Currently, smart meters are being read on an hourly basis, though this can be improved to 15 minute intervals with little effort (the principal inhibitor being the potential over-load of data collection channels). While most smart meters being installed today are capable of measuring at 1 minute intervals, some amount of reprogramming may be necessary to properly exploit the asset, and additional data collection channels will need to be added.

Policy Implications/Opportunities

Given the substantive impact ZEDs would have on engaging consumers and motivating them to take action, policy makers should place requirements on utility service providers to adjust their systems to extract the full potential of their smart meter assets. By requiring the performance of smart meters to be increased to a readings minimum of 1 minute intervals, the utilities will have the ability to readily conduct insightful diagnostics and build compelling cases for consumer action with little marginal expense.

Naturally, several privacy and data ownership issues are raised by such capabilities, though these are likely to be resolvable with opt-in mechanisms, existing data-safeguard measures and a variety of business arrangements.

PlanetEcosystems has studied this technology with leaders in the field, and would be very happy to review it with the CEC and bring the key experts to the table. The technology is proven and ready; policy and stakeholder (utility) commitment is needed next.