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Detection of False-Reading in Smart Grid Net-Metering System

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Abstract: *Malicious consumers may hack their smart meters (SMs) in the smart grid to report fake readings in order to make unlawful financial profits. Since the reported readings are used for energy management, the utility suffers significant financial losses as a result, and grid performance may suffer as a result. The net metering system, in which one SM is used to report the difference between the power consumed and the power generated, is the subject of this research, which is the first study to look into the issue. First, we process real power consumption and generation information to create a benign dataset for the net-metering system. The data was then examined, and time correlations between the net meter readings and correlations between the measurements and pertinent information from reliable sources, such as temperature, were discovered. Based on the data analysis, we suggest a single-pole double-throw detector to detect erroneous readings. In addition to data from reliable sources, our detector is trained on net meter readings from every customer in order to improve its performance by discovering correlations between them. We also create a relationship between the customer and the grid. Since the only billing system available nowadays is online, this project includes an app that may be used to solve a variety of problems, including electrical outages. Overall, with this, we improve customer and grid communication and simplify their lives.*

Keywords: Security, net metering, and smart grid

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