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**ASSESSING BENEFITS FROM DEMAND RESPONSE (DR) PROGRAM
IN THE DIFFERENT CLIMATIC ZONES OF GEORGIA ON THE
EXAMPLE OF RESIDENTIAL PV INSTALLATIONS****Abstract:**

We continue the series of investigations toward the market uptake measures of renewable energy systems for achievement of balance between electricity supply and demand in the local electricity market of Georgia. At present the research objective is to assess the benefits of residential customers living in the different climatic zones of Georgia with varied average annual solar radiation and willing to participate in the Demand Response (DR) program so called net-metering (NEM) for the purpose to figure out in which climatic zones of Georgia is more reasonable to make investments in small-scale solar PV plants.

For achieving the research objective, the total benefits/costs of residential customers (with the average monthly electricity consumption between 101 kWh and 301kWh) living in four different climatic zones of Georgia (Tbilisi, Batumi, Telavi, and Mestia) and willing to invest in small-scale solar PV installations with the installed capacity of 3,465 kW and sell excess electricity (capacity) to the grid, is estimated. Besides, the capacity factors for Tbilisi, Batumi, Telavi, and Mestia were determined to illustrate how location affects the actual output of small-scale PV plants.

During the study the following research hypothesis has been tested: "Residential customers can benefit from retail-rate net energy metering if they choose to participate in this program but their benefits depend heavily on the location where PV installations are applied."

Our cost-benefit analyses revealed that solar is often a solution suitable for the geographical needs of remote communities with higher potential of solar radiation.

Keywords:

Demand Response (DR), small-scale solar PV plants, net energy metering (NEM), renewable energy resources, Distributed Energy Resources (DER), Energy Balance, energy efficiency (EE).

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