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# Grid regulation with heterogeneous prosumers

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## Résumé

The objective of this paper is to study the integration to the energy grid of heterogeneous prosumers. We consider a setting where both the metering technology and tariffs have an influence on the decision of consumers to invest in photovoltaic panels to become prosumers and on the cost recovery of the grid operations. We show that a net metering system, where prosumers import and export energy from/to the grid at the same price, leads to too much PV investments compared to the first best. In addition, with this technology, we find that consumers are attracted into prosumption independently from their self-consumption profile, i.e. the extent with which their energy consumption correlates with their production. When a net purchasing system is in place, where prosumers import and export energy from/to the grid at different prices, consumers with a relatively high self-consumption profile are more likely to invest in PV installations, which is desirable from the energy system viewpoint as they exchange less with the grid. Even when the regulator is not informed about the self-consumption rate of prosumers, net purchasing is able to reach the first best outcome.

**Mots-Clés:** Decentralized production unit, grid regulation, solar panel, grid tariff

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