Energies, vol.12, no.24, pp.4794-1-4794-19, December, 2019.

Financial impacts of net-metered distributed PV on a prototypical western utility´s shareholders and ratepayers

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Abstract-

Distributed solar photovoltaic (DPV) under net-energy metering with volumetric retail electricity pricing has raised concerns among utilities and regulators about adverse financial impacts for shareholders and ratepayers. Using a pro forma financial model, we estimate the financial impacts of different DPV deployment levels on a prototypical Western U.S. investor-owned utility under a varied set of operating conditions that would be expected to affect the value of DPV. Our results show that the financial impacts on shareholders and ratepayers increase as the level of DPV deployment increases, though the magnitude is small even at high DPV penetration levels. Even rather dramatic changes in DPV value result in modest changes to shareholder and ratepayer impacts, but the impacts on the former are greater than the latter (in percentage terms). The range of financial impacts are driven by differences in the amount of incremental capital investment that is deferred, as well as the amount of incremental distribution operating expenses that are incurred. While many of the impacts appear relatively small (on a percentage basis), they demonstrate how the magnitude of impacts depend critically on utility physical, financial, and operating characteristics.

Index Terms- distributed solar PV; financial analysis; net-energy metering; investor-owned utility; earnings; return on equity; retail rates; ratepayer bills

Citation:
Cappers, P.; Satchwell, A.; Gorman, W.; Reneses, J. "Financial impacts of net-metered distributed PV on a prototypical western utility´s shareholders and ratepayers", Energies, vol.12, no.24, pp.4794-1-4794-19, December, 2019.