

# BISEPS | Empower carbon reduction in business

## Update on the digital meter and grid tariffing methodology in Flanders



Dissemination level:		
PU	Public	x
PP	Restricted to other programme participants	
CO	Restricted to members of the consortium	

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## Scope of this document

Grid and energy tariff methodology plays an important role in the BISEPS project. In light of the roll-out of the digital meter in Flanders, we take a look at the current and future state of grid tariffing in Flanders. While this mainly interests Flemish SME and households, some insights are also useful for large companies or other EU citizens.

# Update on the digital meter and grid tariffing methodology in Flanders

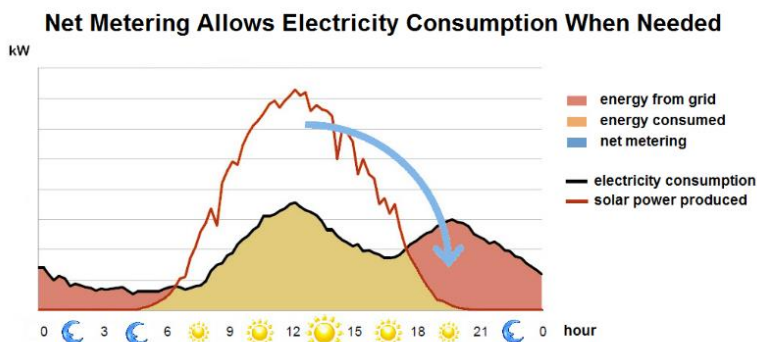
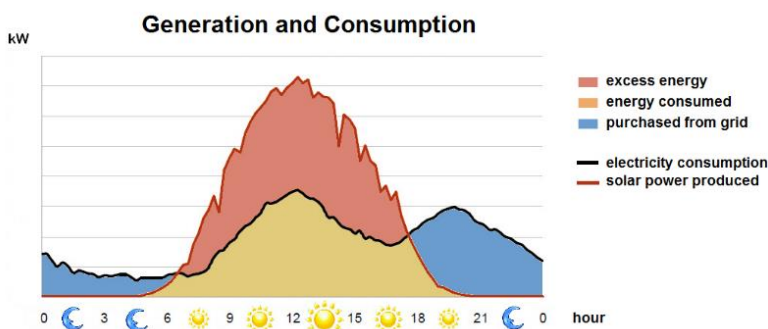
## The digital meter in Flanders

Starting 2019, the digital energy meter will gradually be rolled out in Flanders. This new meter replaces the aging conventional mechanical meter and is essential in the switch to a smart energy system. Meter replacement is mandatory. Around 2025, all mechanical meters should be replaced by their digital counterparts.



In the last months there has been some turmoil about the effects of the new digital meter on the profitability of existing photovoltaic (PV) installations. In this article we take a deeper look at the situation.

The current mechanical meter only has one energy measurement register or 'counter' (two if a day/night tariff is requested). When energy is consumed, the register increments. When energy is injected, e.g. by solar panels, the register decrements. Because the value of the register is only recorded once a year by the energy supply company, Flanders effectively has what is called a net metering regime. This means that overproduction of energy, e.g. during daytime and summer time, can compensate for energy consumption during the night or wintertime. This has been one of the primary drivers for investments in small scale PV installations in Flanders.



A net metering regime has the issue that owners of PV installations stop contributing to the grid financially while still using it intensely. To solve this issue a yearly fee, its size determined by the maximum power of the PV inverter, was levied on owners of PV installations. This is what came to be known as the 'prosumer tax'. This fee corresponds approximately to 73% of the grid tariffs the installation owner would pay if he or she didn't have a PV system, based on research conclusions of Ghent University that for a typical installation in

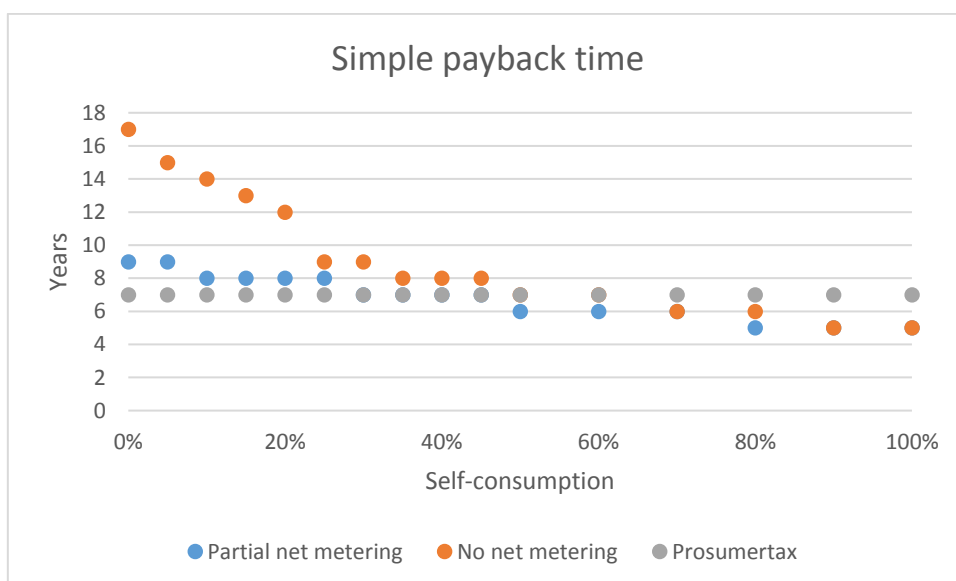
Flanders roughly 27% of the generated PV power is used instantaneously and the rest ‘stored’ on the grid for later use.

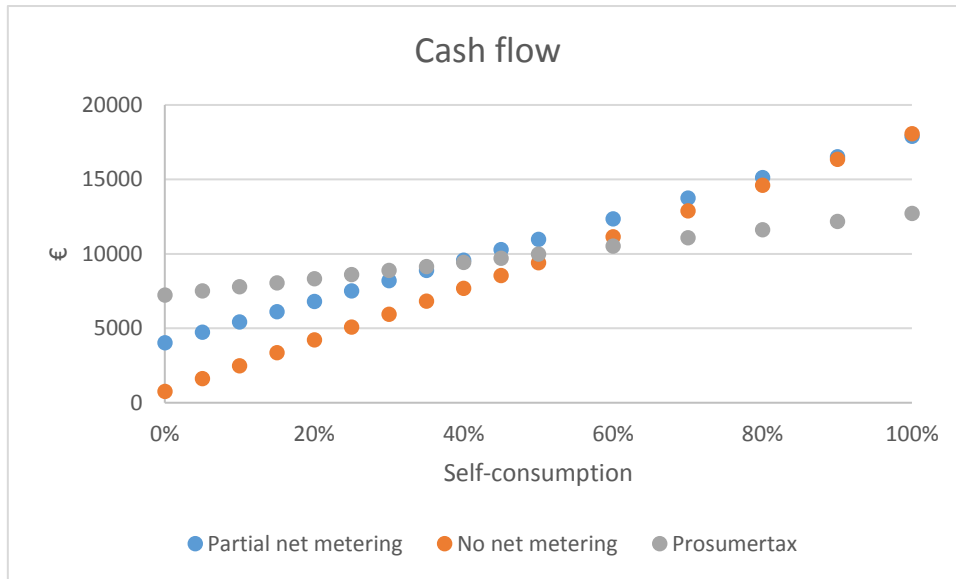
Instead of only one register, the new digital meter contains two: one for consumption of electrical energy and one for injection. This effectively ends the possibility of net metering. To preserve the economic returns on small scale PV investments, the Flemish government pledged to replace the prosumer tax with a system where owners of PV installations would still be allowed to use net metering except for the distribution grid tariffs. This means that the installation owner would pay grid tariffs on each kWh consumed from the grid, regardless if he compensates it on another time with injection of excess solar energy. All other costs would still be ‘netted’ at the end of each year. In terms of total costs to the owner of the PV system, this system would be identical to the prosumer tax. Even better, if he or she could increase the amount of self-consumption, the amount of levied tariffs would decrease. Owing to higher levels of self-consumption compared to household installations, typically around 50-60%, **SME’s would even see an improvement of one to two years** in payback time of their PV system.

### Different jurisdictions

As a result of the complex federal structure of Belgium, the Flemish government only realised after the publication that it could not guarantee the possibility of this new tariffing scheme. While distribution grid tariffs fall under the jurisdiction of the Flemish government, the other components of the total electricity bill are a federal matter. It is the Belgian government which decides on transportation grid tariffs, energy production and VAT. There had been no consultation between the two government bodies, leading to the implementation of the new tariff scheme to be void.

If we compare the effect of the proposed Flemish partial net metering scheme to a worst case scenario of no net metering, the impact can be significant. The graphs show the simple payback time and cash flows for a small scale PV system (<10kW) in Flanders under the different tariffing regimes, with prosumer tax being the tariffing scheme currently in place.

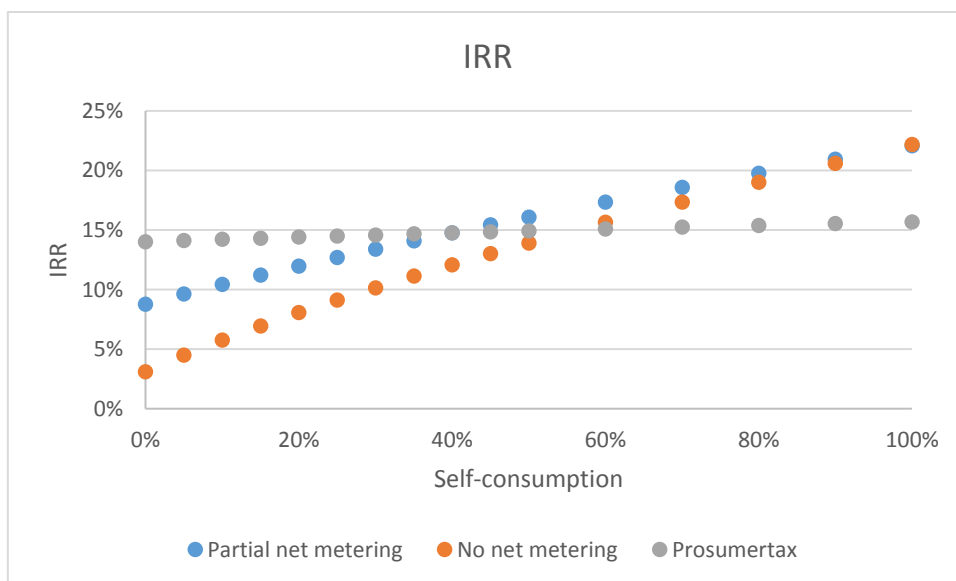




While under the current tariff scheme of prosumer tax the amount of self-consumption has little effect on profitability of the PV system, this changes under the schemes of partial or no net metering. It is clear that households will have to increase their amount of self-consumption from the **current 27% to 40-50%**, depending on the scheme.

Considering most SMEs have a self-consumption ratio of 50-60%, any of the possible tariffing schemes leads to roughly the same payback times and cashflows. The partial and no net metering schemes are even a little more interesting than the current situation with the prosumer tax, especially if the self-consumption can be increased further.

If we take a look at the Internal Rate of Return, we see that all schemes indeed converge around 55% self-consumption.

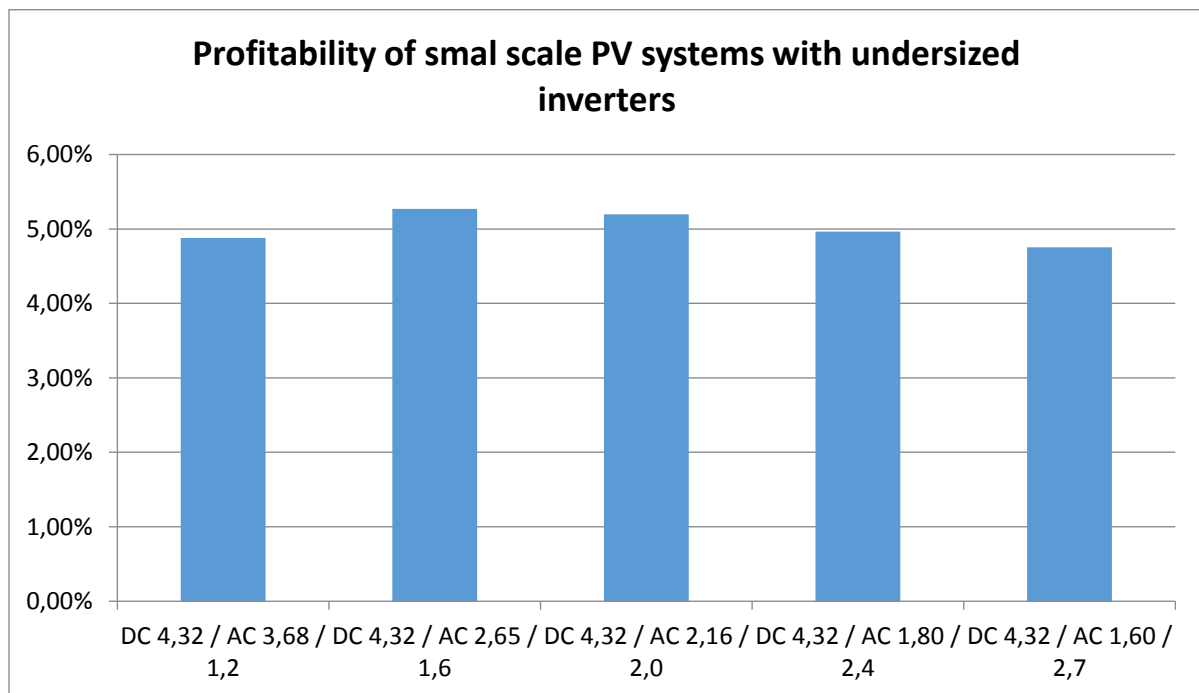


This confirms that for most SMEs, any change in tariffing scheme **should have a negligible impact**. The new tariffing schemes could however allow for additional savings if the SME can increase their self-consumption ratio.

## Alternative tariffing methods

At its roots, (partial) net metering is a form of subsidising renewable energy production. If no agreement between the different governments can be found, a feed-in tariff could be an alternative solution. In this scheme owners of PV installations do not enjoy the compensation of net metering but instead receive a guaranteed price for each kWh they inject into the grid. If the same profitability of the current prosumer tax scheme is to be continued, Flemish PV owners should have to receive around 18 eurocents per injected kWh. Considering the average wholesale electricity price is 6 eurocents per kWh, a subsidy of 12 eurocents would be required. This is comparable to Germany, where currently a feed-in tariff of 17 cents for solar installations is in effect.

UGhent researchers also proposed the Flemish government to keep the current system of net metering with prosumer tax in effect for all currently connected PV installations up to an operational lifetime of 15 years. This has the benefit of being straightforward and easy to implement: summing both the consumption and injection register of the digital meter is only an administrative measure. This suggestion has however been turned down by the VREG, the Flemish energy regulator, who sees the 'cheating' on the prosumer tax by undersized PV inverters as a growing problem. By significantly undersizing the maximum power of a PV inverter in relation to the power of the connected solar panels, the owner of the system pays significantly less prosumer tax while only losing a little yearly energy yield. This is caused by the fact that at latitudes such as in Flanders and further north, the maximum power of the solar panels is only reached a small amount of hours per year. Only for a few hours or days in spring and summer will the smaller PV inverter limit the power output of the solar panel array. Most PV inverters are able to withstand multiple times their maximum power output in PV panel array size safely. As long as the maximum input voltage is not exceeded, the inverter will just lower the internal efficiency of the solar panels to limit the total power output.



The above graph shows the effect of different undersizings of the inverter on total financial profitability of a small scale PV system (<10kW) after 20 years. Even at very high undersizing, the loss effect is almost negligible. This means that installation owners can circumvent the prosumertax and avoid contributing to the use of the distribution grid, which the VREG wants to avoid.

## Current status of the digital meter in Flanders and Belgium

Currently, the roll-out of the digital meter in Flanders will still start **January 2019**. Production of the units has started and the distribution system operator will receive the first shipments in late 2018. Contrary to previous plans however, the meters will only be installed on new grid connections, where older meters have to be replaced and as budget meters for socially vulnerable households. The installation at owners of PV systems has been deferred until there is clarity about the new tariffing scheme. There is no indication yet on when this will happen, and how the resulting tariff methodology will look like.

Flanders, as a region with locally high concentrations of PV power, is the only region in Belgium to mandatory roll-out digital meters. The Brussels metropolitan region is taking a wait-and-see approach, only replacing worn out electromechanical meters with digital ‘smart grid ready’ meters but not planning any change in tariff methodology. Brussels metropolitan region does not have the issue of integrating large concentrations of solar power into its electrical grid, although the impact of electric vehicles is expected to be challenging as well.

Although their minister of Energy has declared the digital meter as ‘the only way forward’, there are currently no plans for the roll-out of digital meters in the Walloon region of Belgium, not even as replacements for the mechanical ones.

For large businesses connected to the medium voltage grid and/or having PV systems larger than 10kWp, the roll-out of the digital meter has no effect. These businesses already have a digital meter in place and are exempt from the net metering regime.

## Acknowledgements

*Net metering image by Delphi234 - File:Balance-neto.jpg, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=26541369>*