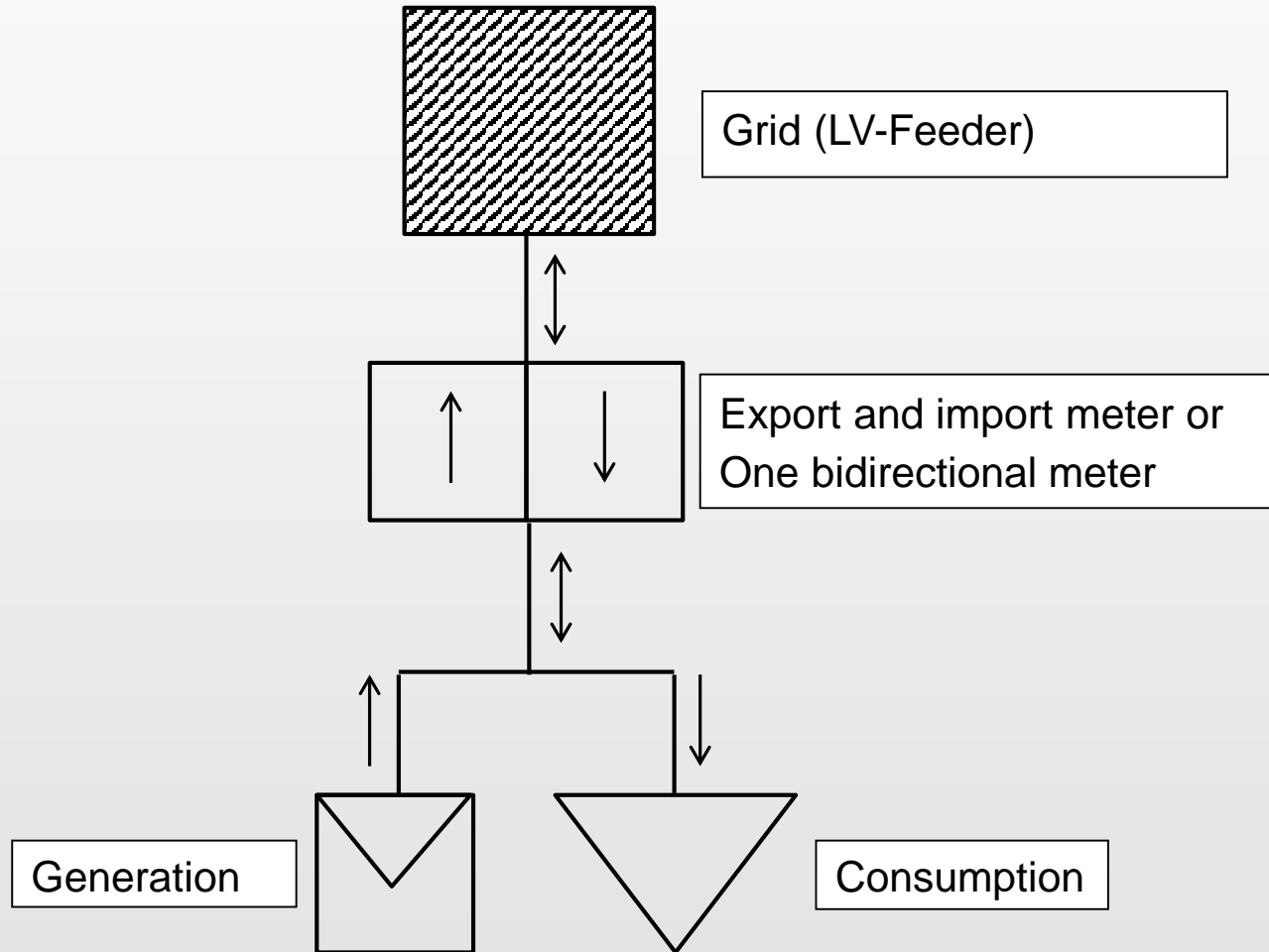


Net-metering concept for micro-scale generation in South Africa

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- Low administrative overhead so that also private customers can participate in it.
- High security of investments into rooftop PV.
- Export tariff that provides sufficient incentive to avoid illegal connection of rooftop PV-systems.
- Export tariff that is sufficiently low for not creating an additional burden to overall electricity costs.
- Tariff that provides an incentive for timely generation of electricity.
- Low overhead costs for additional equipment, such as meters etc.
- Fair coverage of costs of grid usage

- The tariff scheme is applicable to a local generator-load combination only (and not to a generator without load or to configuration where generator and load are installed remotely).
- A net-metering client is still considered to be a consumer and not a generator.
- A net-metering client can export and import electrical energy.
- Tariffs for export and import can either be the same (“classical net-metering”, e.g. USA) or different (example: Philippines, Germany).
- Over a billing cycle (e.g. one year) the remuneration of exported electricity is capped to the value of imported electricity (no net payment possible).



- Maximum size for applicability of net-metering: 100kVA and LV (could be increased to 1MVA later on)
- Fix import tariff and fix export tariff.
- Export tariff below import tariff.
- Net billing cycle: 1 year.
- Obligation of the grid operator to take the exported energy.
- Defined export tariff for a duration of at least 3 years.
- Costs for grid usage: Based on kWp (import or export).
- Technical rules for interconnection: No application of the Grid Code for Renewable Generation but introduction of a simple set of rules for the installation of net-metering systems based on NRS 097-2-3.

Fix import/export tariffs:

- Fix tariffs are simple to apply and don't require special metering equipment
- Return of investment can easily be predicted.
- Low administrative overhead

Export tariff below import tariff:

- Incentive for timely export of electricity (e.g. through storage, timely operation of heating systems etc.)
- Should not be too low because this would provide an incentive for illegal installation.
- Can be defined in-line with the usual purchase price of electricity of the distribution utility.

Net billing cycle of 1 year:

- Net billing cycle should at least be 1 year (across all seasons) for ensuring that electricity generated in summer will be fully remunerated (e.g. high summer production balanced off by lower production in winter)
- Net billing cycle >1 year will probably have implications with regard to tax declarations.

Guaranteed Export tariff for at least 3 years:

- Investment security (bankability)
- Should approximately be in-line with the pay-back period of the investment

Costs of grid usage should be on a kWp basis:

- Cost of grid usage must be moderate
- Import tariff (kWh) can be reduced correspondingly
- Too high Costs of grid usage would endanger economic viability of most rooftop PV projects.
- Grid usage on kWp basis creates an additional incentive for timely generation/consumption (in contrast to a fix service charge)

Technical Rules for Interconnection of Net-Metering Systems:

- One document focusing on safe installation, safe operation and avoidance of negative impact on power quality.
- No application of the rules and procedures described in the Grid Code for Renewable Generation, which would be too complex for net-metering systems

The proposed concept complies with the requirements:

- Low administrative overhead
- High security of investment (guaranteed export tariff over 3years)
- Sufficient incentive for avoiding illegal connections (Export tariff >0)
- Incentive for timely generation of electricity (or load shift): (Maximization of own consumption and grid usage on kWp basis)
- Low overhead costs (e.g. no “smart meter” required, clear technical interconnection standards)
- Fair coverage of costs of grid usage (on kWp basis)

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