Self-consumption and Net-metering schemes in Europe

International PV Associations Meeting

Munich, 13 June 2012
NET METERING

- Netting of PV production in excess and additional electricity demand **OVER A LONG PERIOD** (month/year)
- (Meter is turning backwards)
- Simple billing/calculation arrangement
- Incentive = savings
SELF-CONSUMPTION

- Self-consuming PV production is natural:
  - It corresponds to the PV production that a « prosumer » consume in REAL TIME

- Two types of policy incentives:
  - Direct: Self-consumption premium
  - Indirect: limit to fed-in electricity (Market integration model, Germany)
Residential « Prosumer »: Consumption vs Production

- Consumption
- Production
- Self-consumption
- Excess fed to the grid

- Residential « Prosumer »
- Production vs Consumption
- Self-consumption
- Excess fed into the grid
Overview of net-metering and self-consumption schemes in Europe

**DK:** Net-metering < 6 kWp

**NL:** Net-metering < 50 kWp

**BE:** Net-metering < 10 kVA

**UK:** Self-consumption (implicit) < 5 MWp

**ES:**
- Self-consumption < 100 kW
- Net-metering (under discussion) < 100 kW

**DE:**
- Self-consumption premium < 500 kWp until mid 2012
- Market integration Model (mid 2012)

**IT:**
- Net-Metering (SSP) /
- Self-consumption premium (end 2012)
2 case studies - common assumptions

- Residential household
- Yearly consumption: 3,500 kWh
- PV yearly production: 3,300 kWh per year.
- 30% of production instantaneously self-consumed

### One Year Electricity Flows Balance (kWh)

<table>
<thead>
<tr>
<th></th>
<th>Production</th>
<th>Withdrawal</th>
<th>Net Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inst. Self-consumed</td>
<td>1,000</td>
<td>0</td>
<td>-1,000</td>
</tr>
<tr>
<td>Injected to grid</td>
<td>2,300</td>
<td>0</td>
<td>-300</td>
</tr>
<tr>
<td>Net-metered</td>
<td>0</td>
<td>3,000</td>
<td>300</td>
</tr>
<tr>
<td>Purchased</td>
<td>0</td>
<td>-3,000</td>
<td>3,000</td>
</tr>
<tr>
<td>Total balance</td>
<td>3,000</td>
<td>0</td>
<td>300</td>
</tr>
</tbody>
</table>
Netherlands - case study (2012)

Yearly cash flows balance [€/year]

- € 605 without net-metering
- € 44 with net-metering

Savings 0.23 €/kWh
Electricity bill costs 0.23 €/kWh
Feed-in Tariff 0.05 €/kWh
Total balance

Residential electricity price breakdown

- 16% VAT
- 11% Taxes and concessions
- 29% Grid tariffs
- 44% Electricity generation and sales price

NOTES
2. Electricity Prices: EU Energy Portal (http://www.energy.eu/) - November 2011
Germany: Self-consumption premium (2011-2)

**Yearly cash flows balance [€/year]**

- Savings 0.28 €/kWh
- Electricity bill costs 0.28 €/kWh
- VAT payments 0.19
- FiT 0.24 €/kWh
- S.C. Premium >30% 0.12 €/kWh
- S.C. Premium ≤30% 0.08 €/kWh

**Residential electricity price breakdown**

- VAT: 16%
- Taxes and concessions: 30%
- Grid tariffs: 31%
- Electricity generation and sales price: 23%

**NOTES**

1. Source: BSW, dena, EPIA.
2. Electricity Prices: EU Energy Portal (http://www.energy.eu/) - November 2011
Profitability with self-consumption & net-metering vs conventional electricity

€cts/kWh

- Sale of PV electricity
- LCOE of PV
- Fixed taxes
- Variables taxes
- Fixed grid costs
- Variable grid costs
- Gross electricity

Standard Consumer
Self-Consumption
Net-Metering
Self-consumption vs net-metering – different points of views

Prosumers

Electricity suppliers

Governments

Electricity Market/ producers

Grid operators
Self-consumption vs net-metering – different points of views

Prosumers

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Conclusions

These schemes are alternative enablers to market development where there is consumption:

- **Net-metering**: to kick-off / restart a market
- **Self-consumption**: as transition with reduced /post FiT

Risks (opportunities) exist with certain actors:

- **Governments**: reduced incomes (taxes) / reduced support scheme costs
- **Grid Operators**: reduced incomes (grid fees) / reduced burden on grid (self-co)
- **Electricity producers**: reduced incomes (reduced volumes)
Going forward

- IEA-PVPS Task 1
- Questionnaire to non European markets
- Workshop in EU PVSEC, Frankfurt

“Assigning a fair price to photovoltaic electricity”

Day: Thursday, 27th September, 2012
Time: 8:30 – 12:00
Site: To be decided
Access: Open to all registered participants of the 27th EU PVSEC