



*The importance of PV self consumption
and its impacts for the PV implementation
on multi-family buildings in Sweden*

Charlotta Winkler, technical director at WSP Sweden, 2018-10-23

Presenting project findings from
work within a network for procurement
for energy-efficient multi-family buildings
&
industrial PhD studies

Representing

Swedish Energy Agency's network for procurement within energy-efficient multi-family buildings

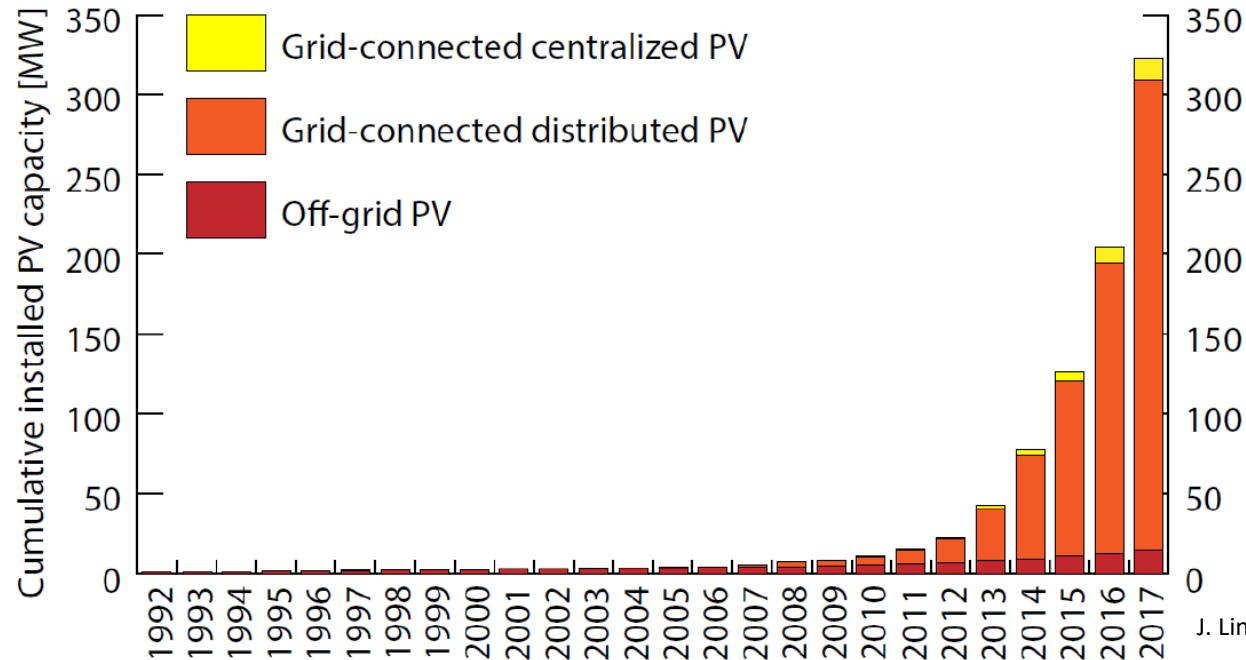
- Network of property owners
- Main focus **reduce energy dependency** in form of heat and electricity
- Through **introduction of energy-efficient systems and products** through combined procurement competence
- Via **demonstration projects** and more
- Coordination financed by the **Swedish Energy Agency**

Results from initial work within industrial PhD studies

- Stakeholders' view on bottlenecks for PV implementation applied to an innovation ecosystem

Swedish market

- From a demonstration and testing phase
- To a strong increase of initiatives with focus on business, communicating “green awareness” and the wish to contribute to the “energy change”
- Approaching a state of a mature market



J. Lindahl & Ch. Stoltz, IEA PVPS 2018

Financial, legal and administrative barriers

- Type of residence (house or apartment)
- Type ownership
- Fuse size in connecting point
- Way of PV measurement within a building
- Share of self consumed PV electricity

Impact

- Possibility to receive incentives, type of tax rate
- Profitability of investment

Impact of self consumption of PV electricity (+ electricity charging)

- Value of the self consumed PV electricity
- Value of the bought electricity

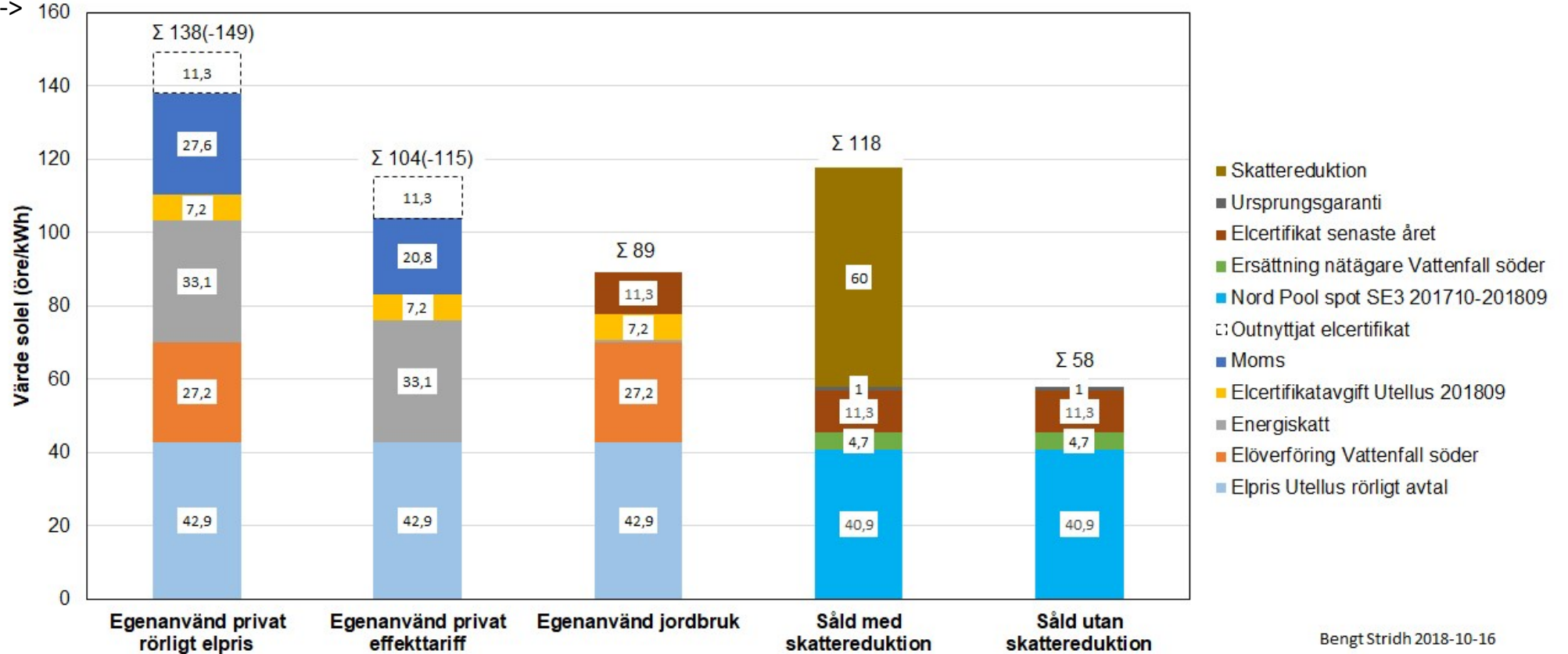
I.e. a building's electricity demand sets the dimension of the PV system in every single project

-> Sub optimization of implementation of PV in Sweden

Value of self consumed PV + charging

Price of bought electricity influenced by several compensation systems and different tax rates

~ 0.16 EUR cent ->



Fjärås in Kungsbacka – an example

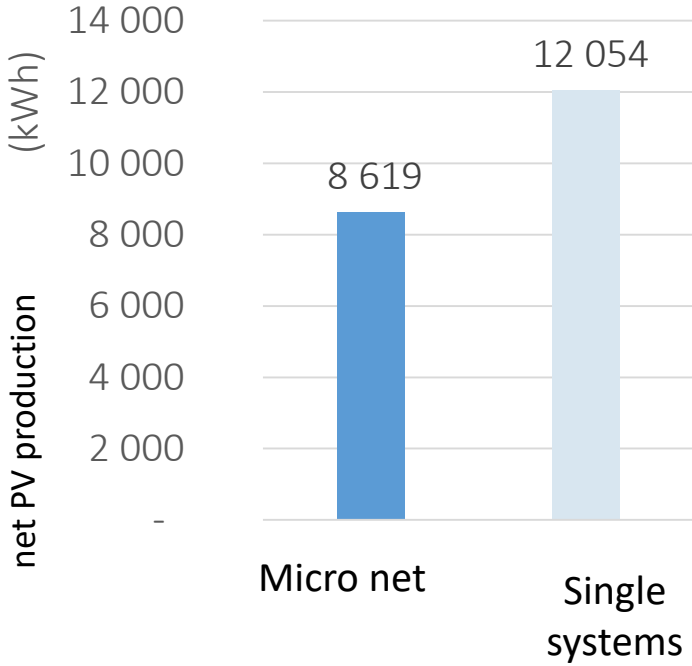
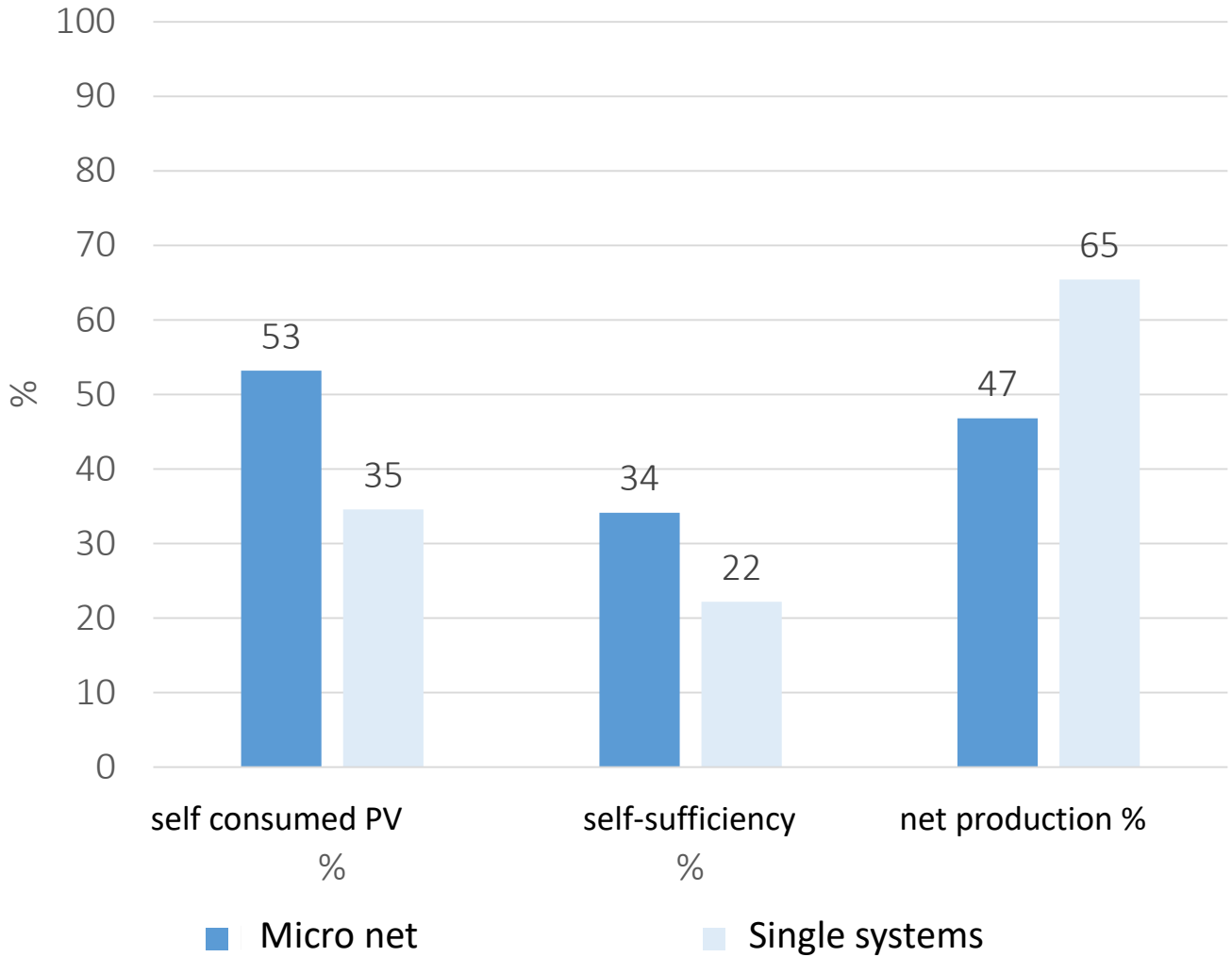
- Local heating system with a central heating for multi-family buildings in a residential area
 - > *standard for solar thermal heat*
- Distribution of produced PV electricity in the same way is entail to energy tax



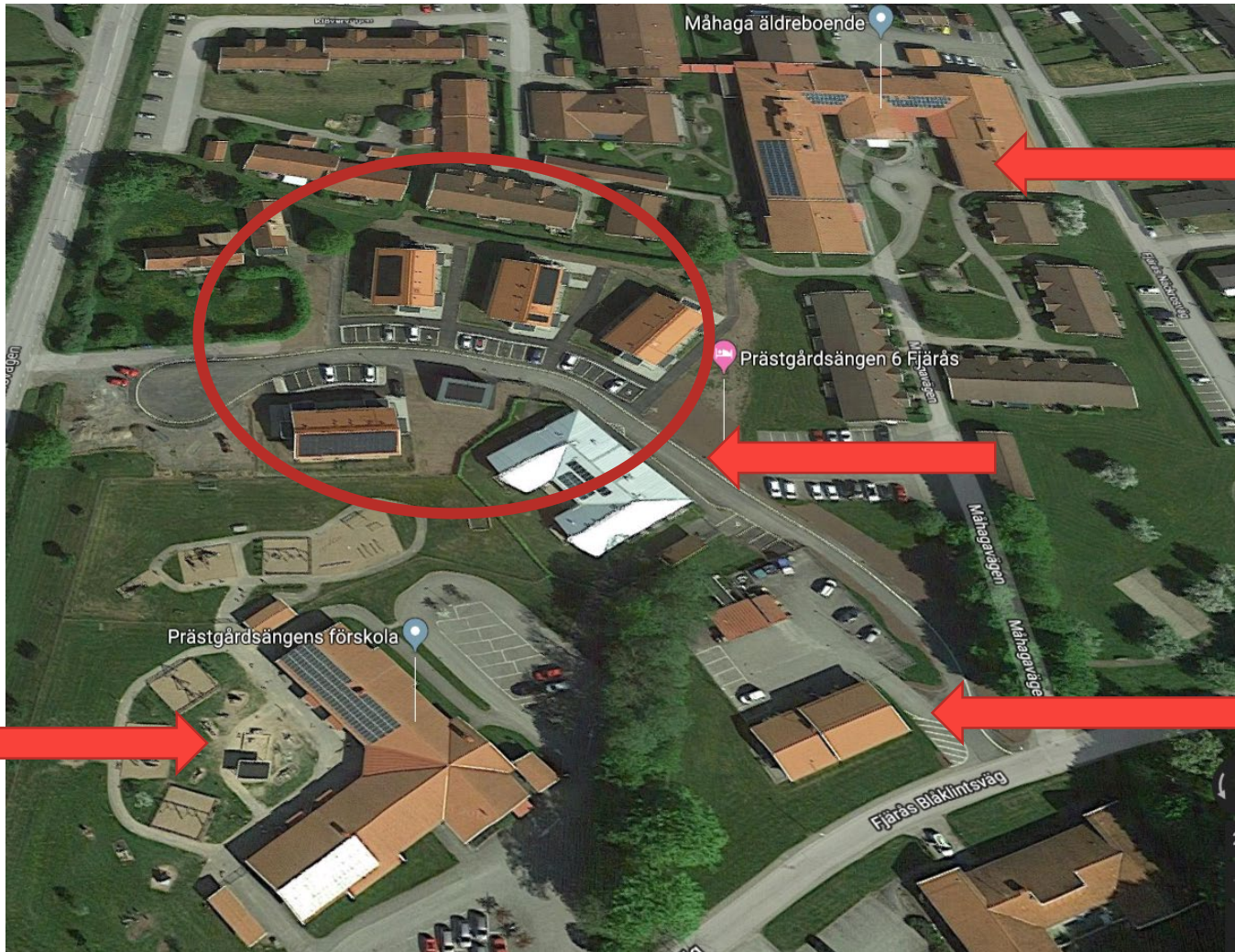
Four new built multi-family buildings



Own use PV electricity and net production



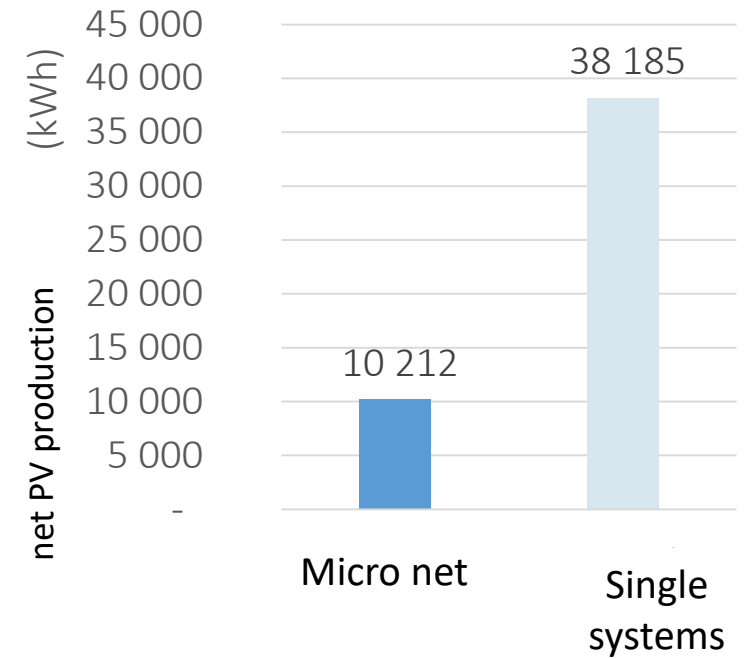
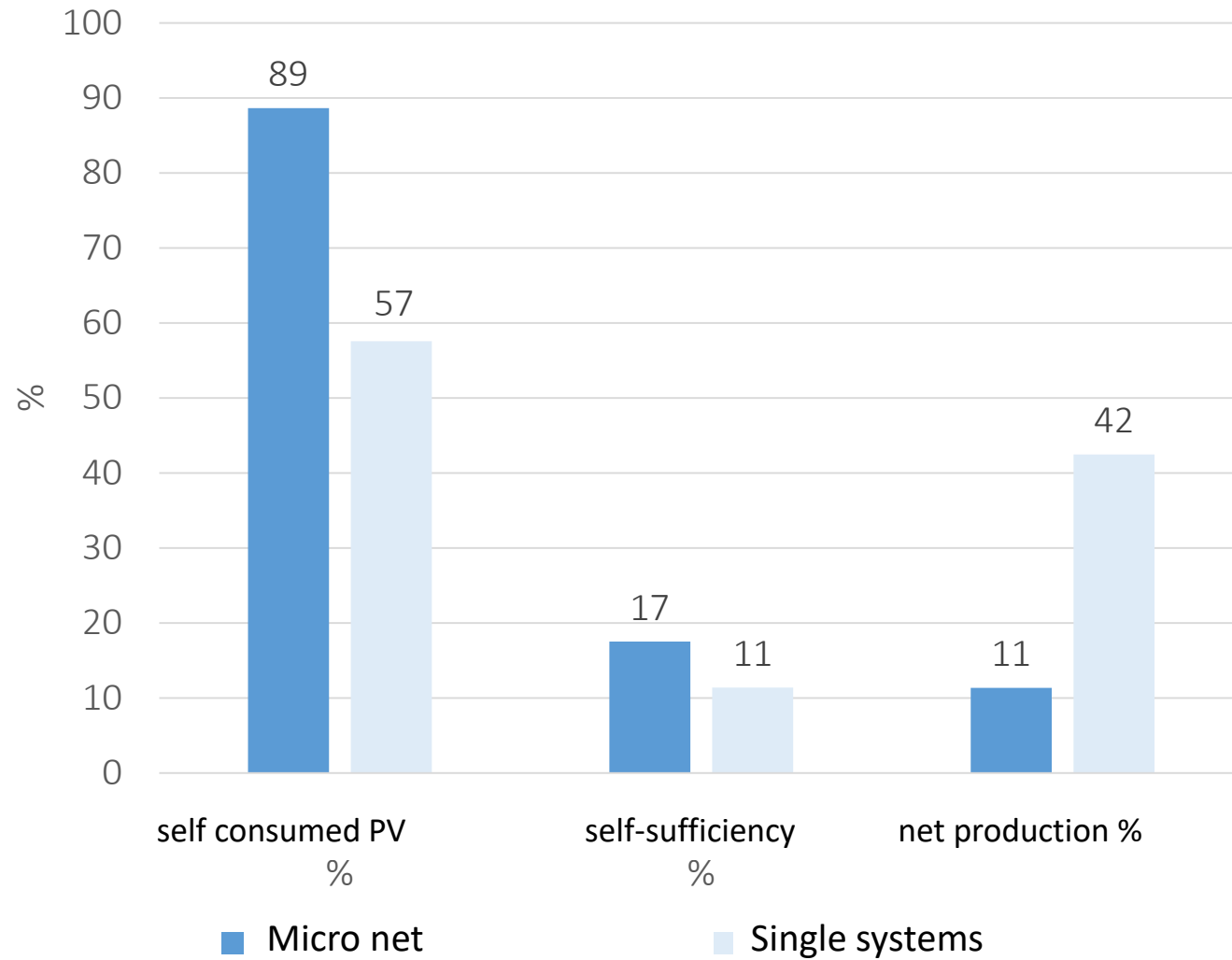
New buildings densifying an existing area



- Retirement home
- Preschool
- Special housing
- Expedition

Several PV systems
Different demand
profiles (in time)

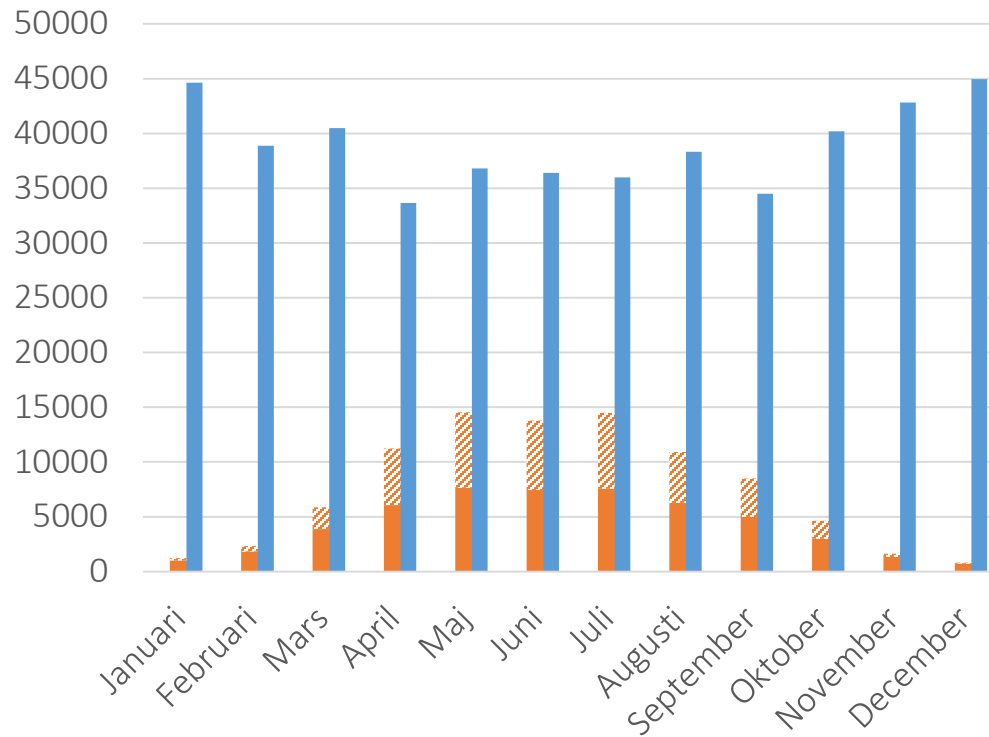
Own use PV electricity and net production



Own use PV electricity and overproduction

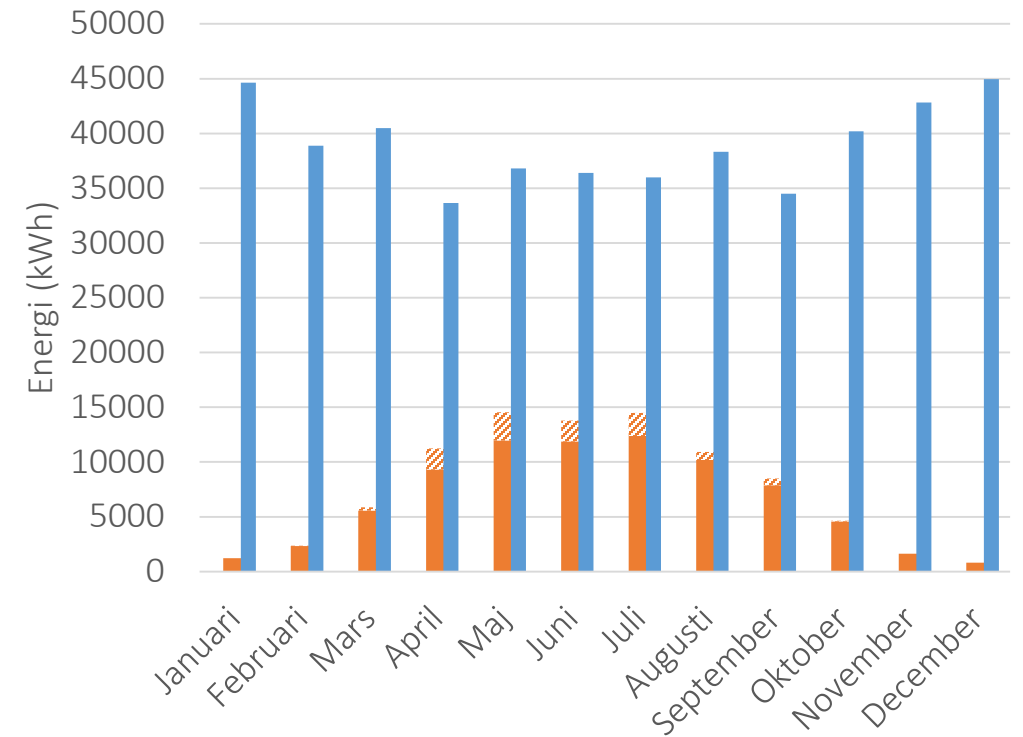
Single systems

43 % PV net production



Micro net

11 % PV net production



Self consumed PV PV net production Electricity demand

Self consumed PV PV net production Electricity demand

Study from key stakeholders' perspective to identify main bottlenecks

Clients (property owners)

1. Current tax rates (financial policies)
2. Sharing PV electricity (legal policies)
3. Technical development
-
- 10.

Of all 10 bottlenecks is 1) Hardest to manage

Almost all bottlenecks related to profitability

Suppliers

1. Lack of stable subsidies
2. Lack of knowledge
3. Profitability
- ...
- 10.

Of all 10 bottlenecks is

1) hardest to manage
and 2) easiest to manage

Suppliers find government has an overall responsibility to educate and mobilize actors

Shows for Sweden that

- the price is right for PV
- stakeholders are ready for PV
 - need of increased knowledge
- there is a need of change and simplification within
 - Regulations and policies
 - Administration
 - Behavioral aspects

...in order for PV to contribute to 100 % RES

Thanks for listening!

charlotta.winkler@wsp.com

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