Enervalis
Creating the internet of energy

Smartpower Suite

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Smart Microgrids, Local Energy Communities & NRGCoin

Nuhma
Het Limburgs klimaatbedrijf

elia
Powering a world in progress

ABB
Power and productivity for a better world™

LRM
Oxygen for growth

eit InnoEnergy
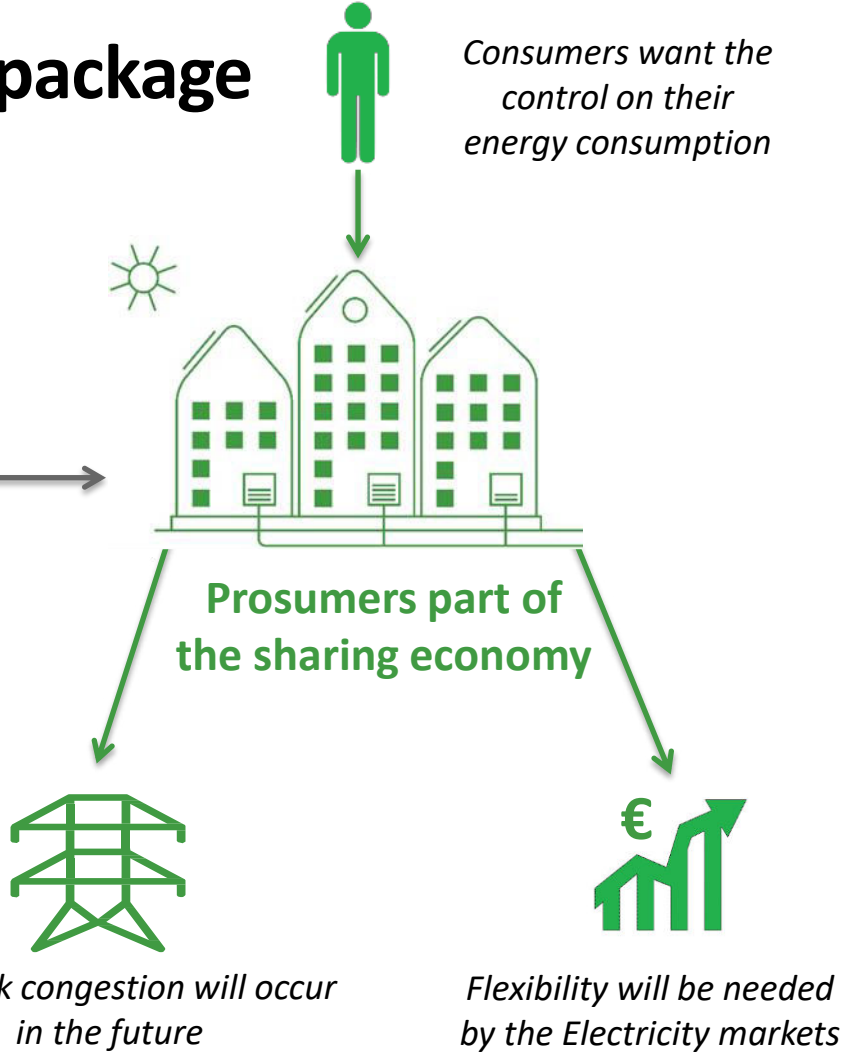Knowledge Innovation Community

Prepared for and aligned with the EU clean energy package

Consumers want the control on their energy consumption

Enervalis creates the evolution towards

Passive consumers
(incl HPs, EVs, Batteries, etc)

Smartpower Suite

1. Gather data
2. Forecast (AI)
3. Dispatch (AI)

Smart EV Charging

Smart Buildings

Smart Micro-Grids

Smart Settlement

Prosumers part of the sharing economy

Network congestion will occur in the future

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Flexibility will be needed by the Electricity markets

Enervalis enables a "100% green energy society" via a Software As a Service model

Smart Grid challenges

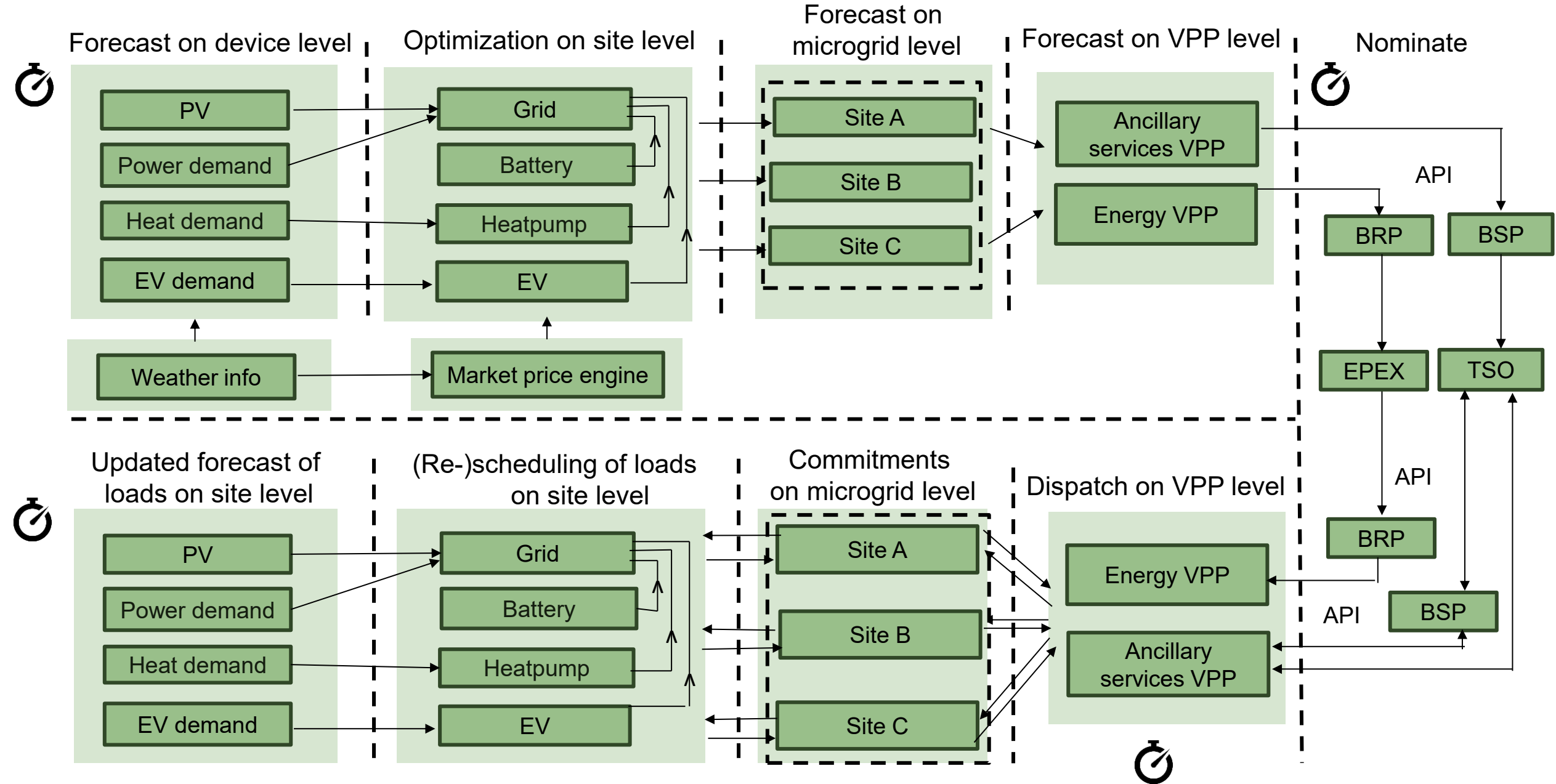Traditional support policies for renewables are **inadequate**.

We need better support for renewables!

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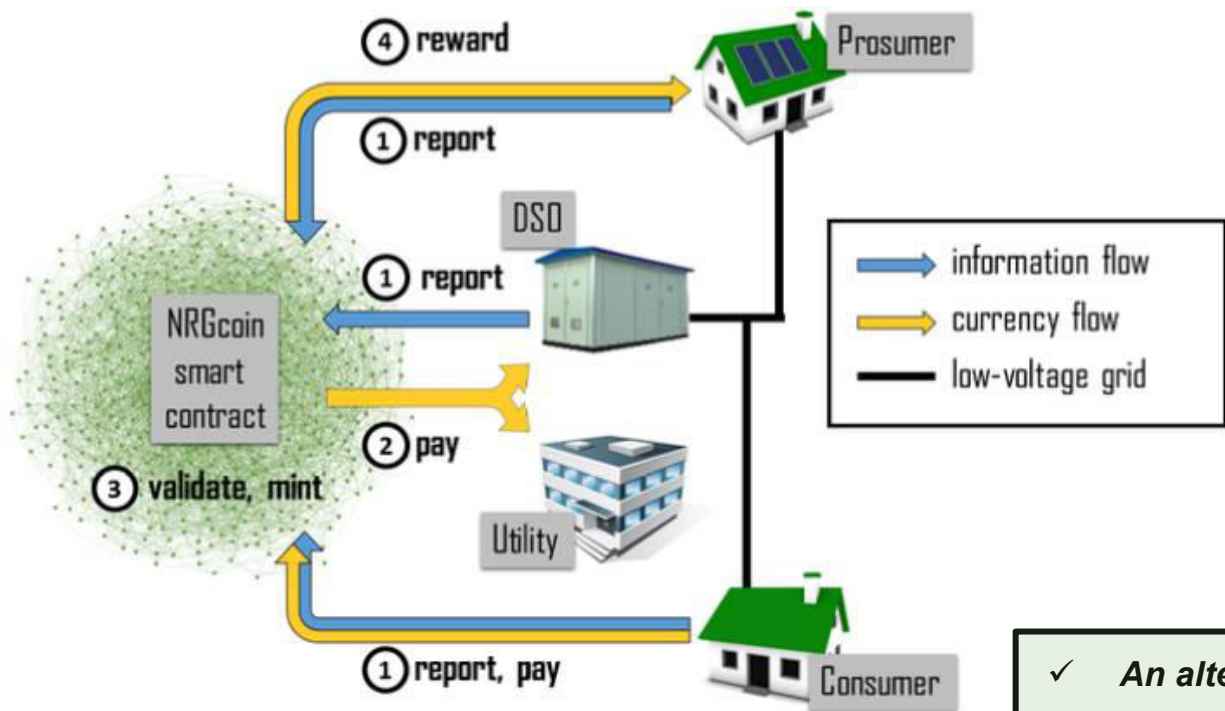Grid infrastructure **not designed** for decentralized generation.

Incentivize local green consumption!

=

Renewables will raise electricity **costs** and cause grid **instability**.

A bottom-up approach is required!

Advanced microgrid control: a bottom-up approach

Enervalis

Smart Micro-Grids

Forecast on device level

- PV
- Power demand
- Heat demand
- EV demand
- Weather info

Optimization on site level

- Grid
- Battery
- Heatpump
- EV
- Market price engine

Forecast on microgrid level

- Site A
- Site B
- Site C

Forecast on VPP level

- Ancillary services VPP
- Energy VPP

Nominate

- BRP
- BSP
- EPEX
- TSO

API

Updated forecast of loads on site level

- PV
- Power demand
- Heat demand
- EV demand

(Re-)scheduling of loads on site level

- Grid
- Battery
- Heatpump
- EV

Commitments on microgrid level

- Site A
- Site B
- Site C

Dispatch on VPP level

- Energy VPP
- Ancillary services VPP

- BRP
- BSP

API

API

NRGcoin

a Blockchain-based support policy for renewable energy fit for Local Energy Communities

- ✓ *An alternative immutable support policy that not only benefits the prosumer*
- ✓ *Is scalable to multiple levels in the grid hierarchy*
- ✓ *Payments and minting executed on the EWF tobalaba network*
- ✓ *Fully GDPR compliant as measurements are processed off-chain*
- ✓ *Can be embedded in the existing national markets*
- ✓ *Lower system costs by improving utilization of the current grid*
- ✓ *Increases commitment to the energy transition on community level*

RFI Development and integration 'Market Service app' for local energy markets

Stedin and Energy21 designed the Layered Energy System (LES) based on the USEF framework. LES is a community-based market model that offers solutions to a variety of existing and future problems resulting from the energy transition. The next step in development of the Layered Energy System is doing a proof of concept in a real life local market setting. The project is looking for technology partners.

Proof of concept in real life local market setting

Together with technology partners ABB and Enervalis, Stedin has found a location (Hoogdalem) in its grid area where a group of households are willing to participate in the first pilot project. Advanced technology, such as Heat pumps, Batteries, PV, internet-connected appliances (e.g. Laundry machines), is present in these houses enabling a full test of all functions of the Layered Energy System.
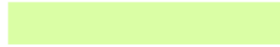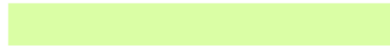
The project is looking for a partner who is capable of developing, and integrating the necessary 'Market Service app' on the Energy Web Foundation Blockchain. The market-service app has 3 goals:

- ❯ It matches local demand and supply of energy (through bids) in a market program (load profile)
- ❯ It brings together national and local need of flexibility (through flex offers and orders)
- ❯ It is able to process the effect of ordered flex into the market program (load profile)

The application will be a proof of concept and must be compatible with the blockchain of the Energy Web Foundation Tobalaba test network.

ENERGY BIDS FOR 19/10/2018

*2nd part of the tender was also granted
To Enervalis and now live in our portal*

*No subsidies were needed
as available technology!*

Time	Wh	c€/kWh
00:00:00	239	0
00:15:00	105	0
00:30:00	50	0
00:45:00	54	0
01:00:00	-455	0
01:15:00	57	0
01:30:00	59	0
01:45:00	63	0
02:00:00	-325	0
02:15:00	75	0
02:30:00	70	0
02:45:00	70	0
03:00:00	71	0
03:15:00	71	0
03:30:00	71	0
03:45:00	143	0
04:00:00	189	0
04:15:00	151	0