



**Flexibility in the power grid will speed up
the green transition and enable new
industry**



The flexibility market

Can you imagine applying to buy a car?

Can you imagine:
applying for a car because there is not enough lanes on the highway for you
to drive at max speed? - No traffic!
You have to wait to get your car until the road is added with an extra lane so
you can drive at full speed. **This is the situation in the power market.**

No "traffic" in the power market

When you turn on the light in you home you should always get power. If not
you can get refund from the Grid company. So if there is a chance for "traffic"
in the grid, the grid companies says:

*"Sorry, you have to wait until we have installed a new cable. It may take 5-10
years."*

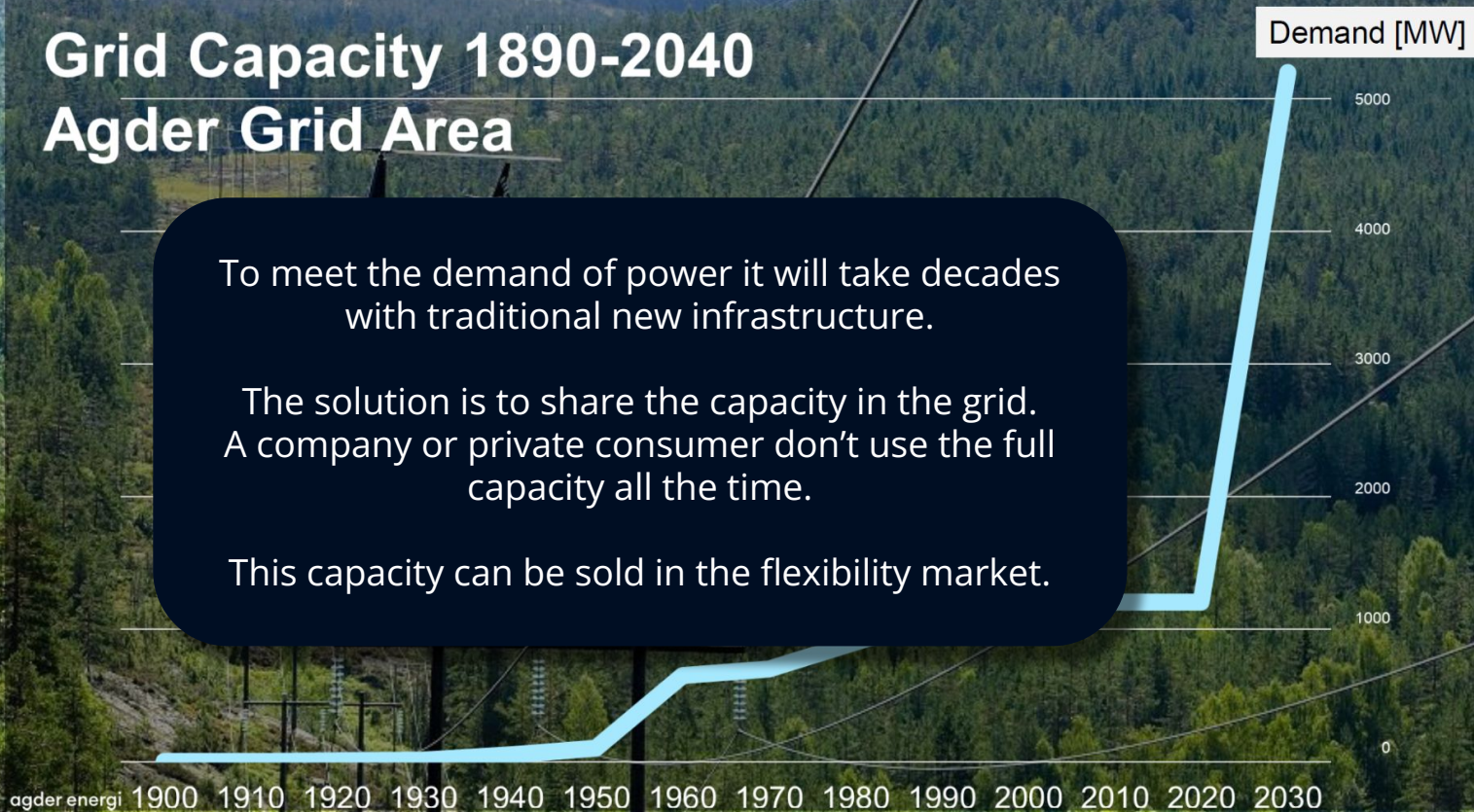
Grid Capacity 1890-2040

Agder Grid Area

To meet the demand of power it will take decades with traditional new infrastructure.

The solution is to share the capacity in the grid.
A company or private consumer don't use the full capacity all the time.

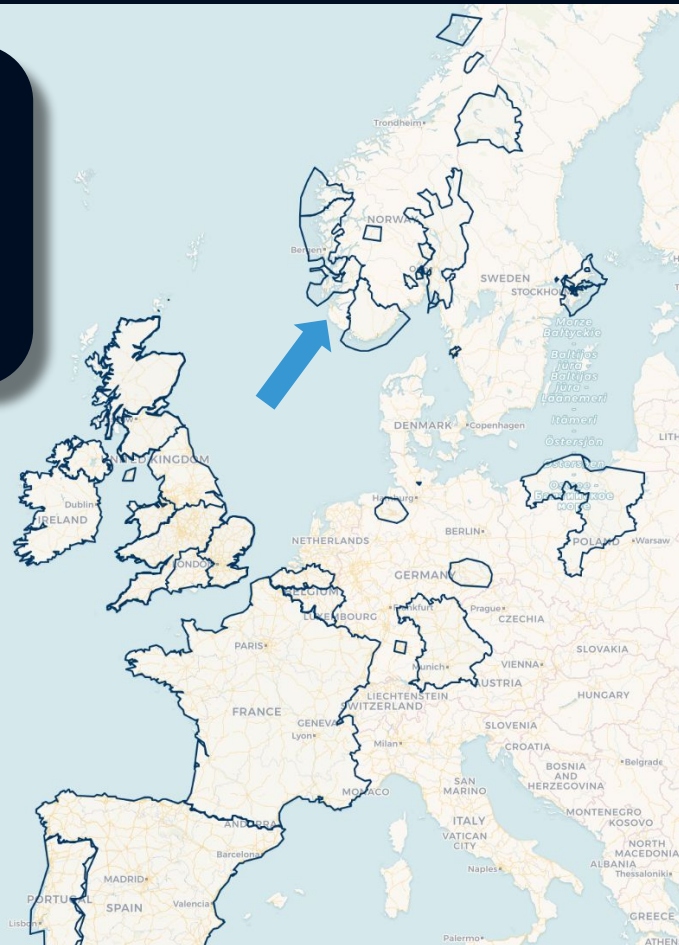
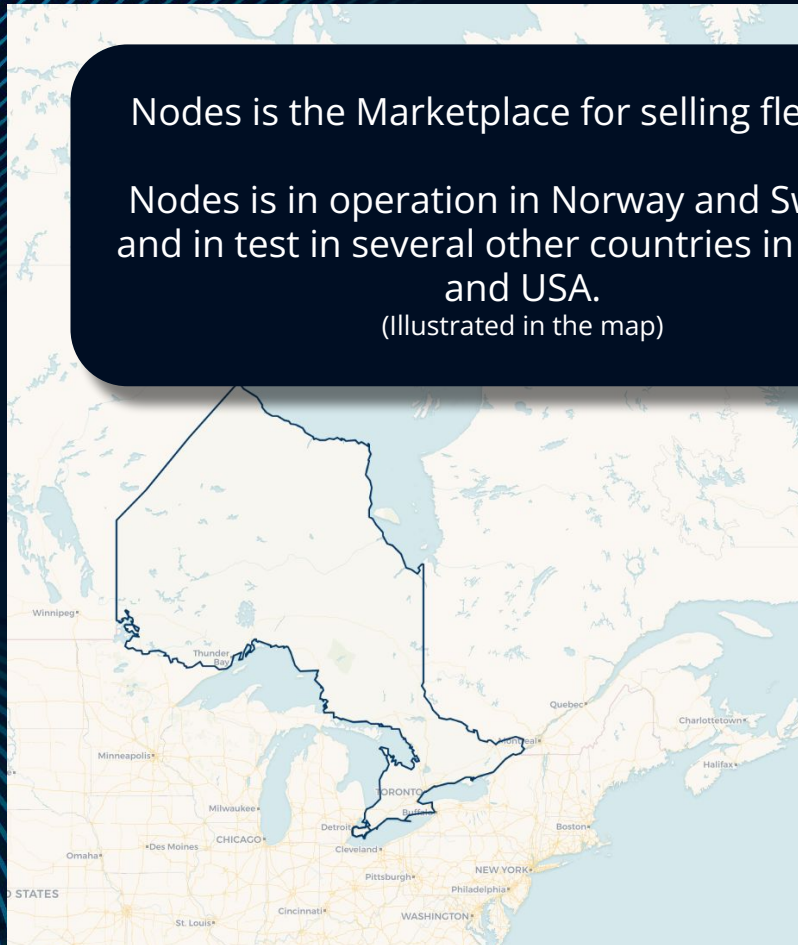
This capacity can be sold in the flexibility market.



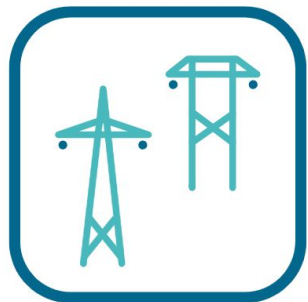
Nodes is the Marketplace for selling flexibility

Nodes is in operation in Norway and Sweden,
and in test in several other countries in Europe
and USA.

(Illustrated in the map)



The Nodes flexibility market



Grid company

When the forecast is saying there will be to much "traffic" in the grid, the Grid company can ask someone to turn off power

BUY flex



**FLEX
MARKET**

SELL flex



Prosumer

The consumer of power can sell the hours where they can reduce consumption and get paid by the Grid company



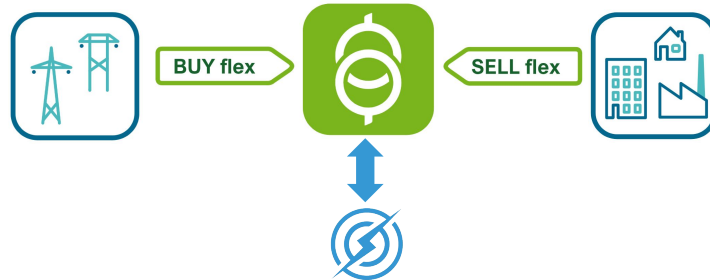
Baseline

See the full market design:
<https://nodesmarket.com/market-design/>

The baseline is a key enabler for trust in the flexibility market

The parties in the flexibility market need to know they are getting what they are buying and selling.

A correct baseline is the guarantee for this!



Baseline Energy AS has been assigned the position to deliver a high quality independent baseline to the Nodes market

Let's give you an example of the impact of a the baseline

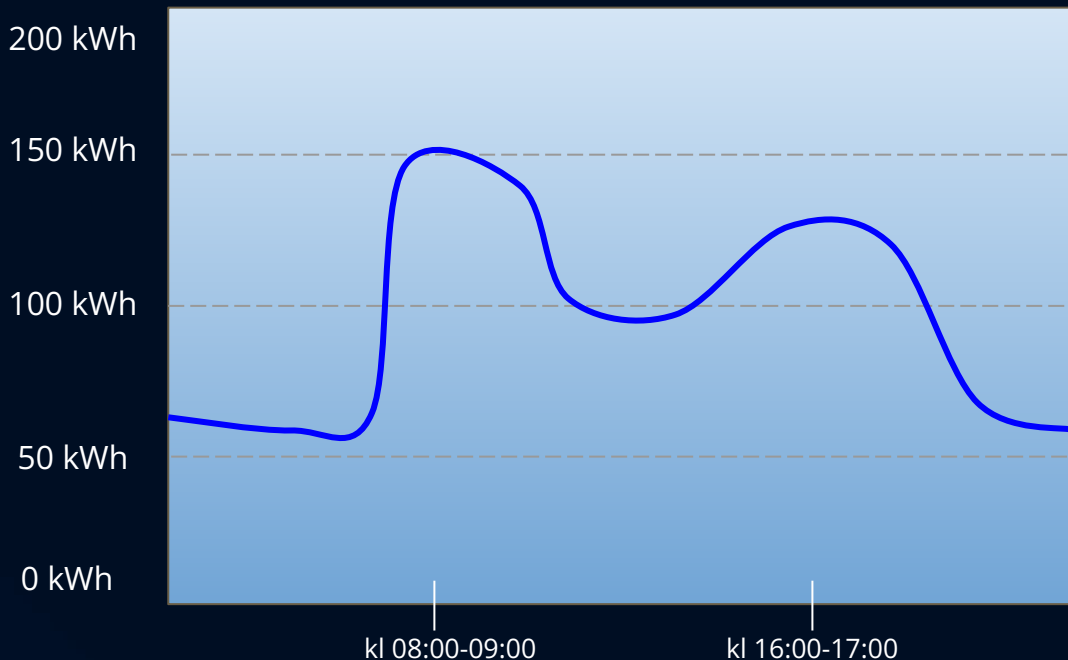
A baseline tells the normal consumption

The power consumption will change due to outside weather conditions and activities/production in the building.

When you sell flexibility you should decrease or increase from your baseline.

The baseline and the amount of flexibility is defined by the seller.

The blue line is the normal consumption for a business on a specific day. The baseline for the day.



The consumer sell flexibility

The consumer will sell flexibility to the grid company between 08:00 and 09:00

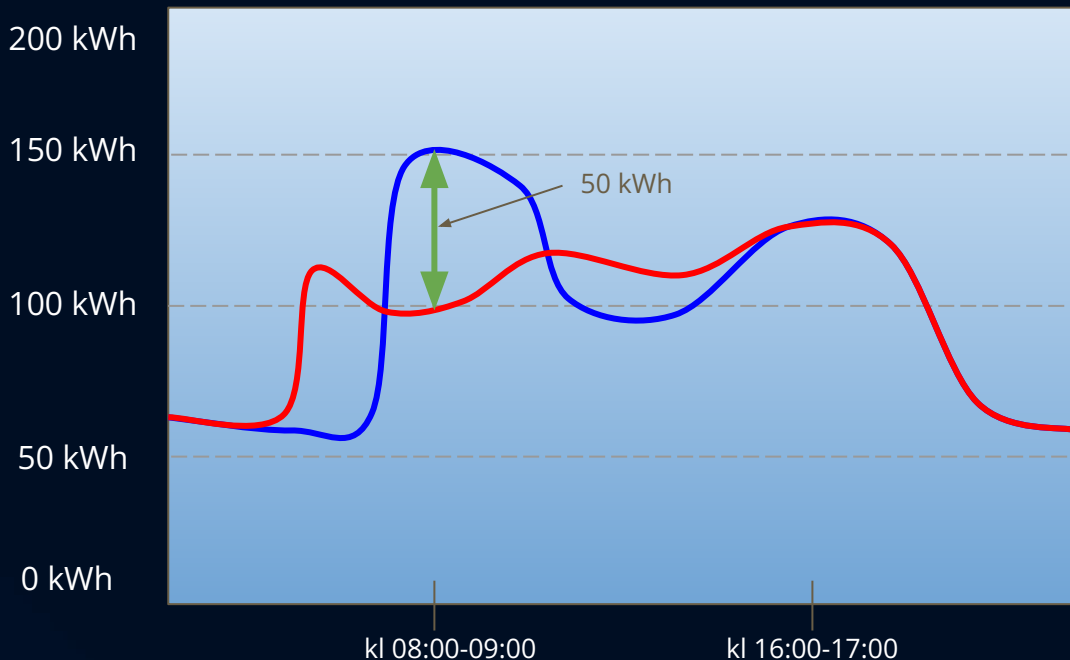
The amount of flexibility sold is 50 kW, and the max consumption should be 100 kWh between 08:00 and 09:00.

The delivery of the max power is controlled by the grid company. They check that the max consumption is 100 kWh between 08:00 and 09:00

The blue line: the baseline

The red line: agreed consumption if flexibility is sold between 08:00 and 09:00.

The green arrow: The amount of flexibility sold



An overestimated baseline

Since the baseline is set by the seller, we have a “the goat and the oat sack” situation.

The seller can increase the baseline to 160 kWh, and say they are selling 60 Kwh instead of 50 kWh.

The settlement will be wrong:

Case A: baseline = 150 kWh
 Sold 50 kWh* NOK 100 = NOK 5000,-

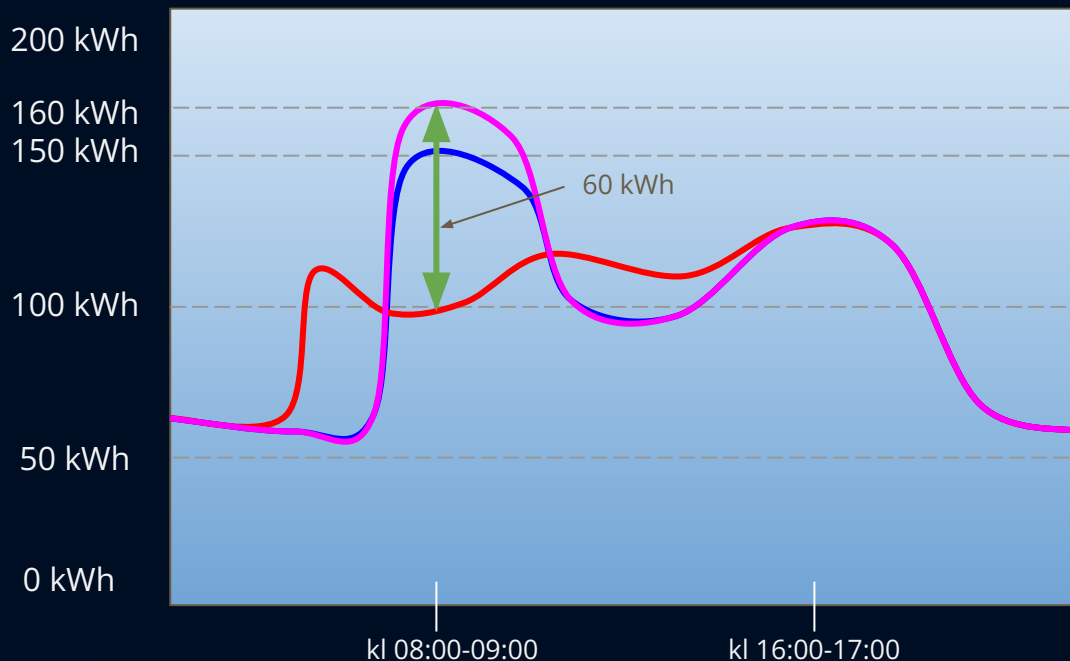
Case B: baseline = 160 kWh
 Sold 60 kWh* NOK 100 = NOK 6000,-

The blue line: The correct baseline

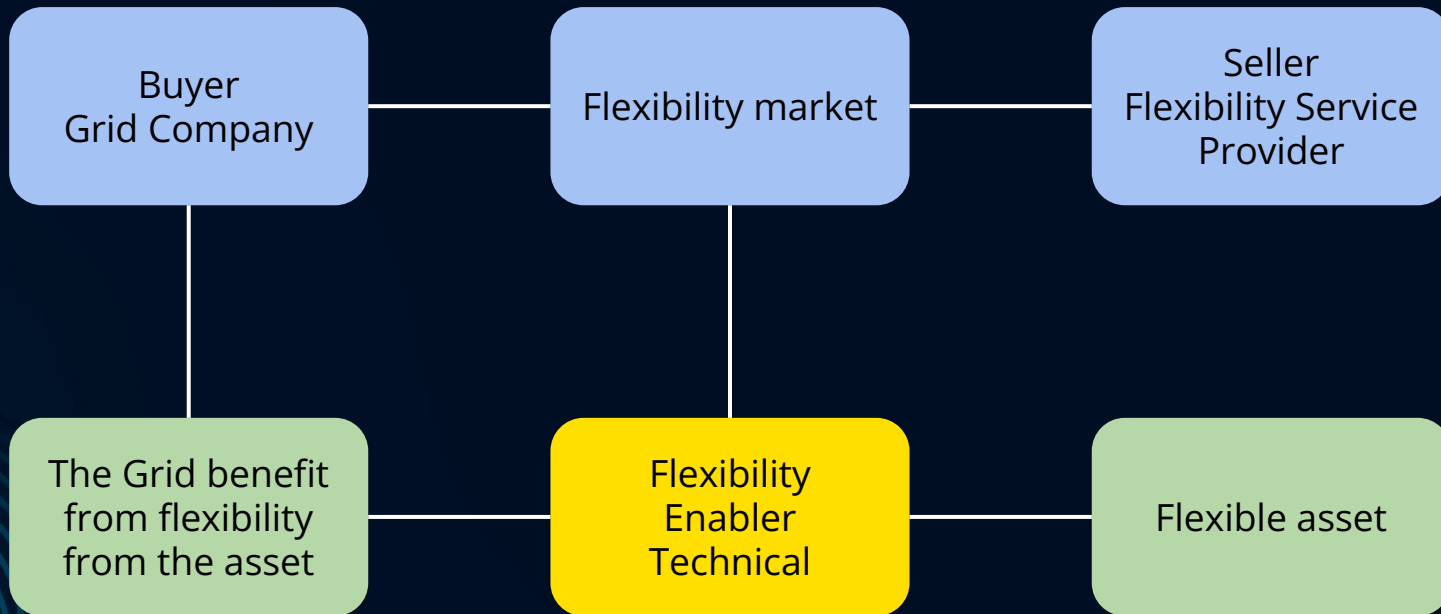
The pink line: An overestimated baseline to get more paid for the flex sold

The red line: Observed consumption if flexibility is sold between 08:00 and 09:00.

The green arrow: The amount of flexibility sold



We is a Flexibility enabler



As a student in Baseline Energy you will

Energy

- Be involved in enabling more use of power over existing power grid
 - Make it possible for new green initiatives to be realized
 - reduce the constraints in the power grid
- Learn about the impact renewables has on the grid.
- Build network in the flexibility industry
- Learn a lot about details in the power industry
 - The other market actors as power suppliers, power sale companies, etc.

Business development

- Get insight in how to run a small business
 - business strategy
 - Business models
 - Sales and marketing activities
 - Economy and finance
- Work independently and also in teams
- Flexible working environments



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