REGULATION OF NETWORK POWER LOSSES IN NORWAY

Roar Amundsveen, senior adviser
Energy Market regulation
Norwegian Water Resources and Energy Directorate

Annual revenue caps for each DSOs/TSO

Costbase (40 %);

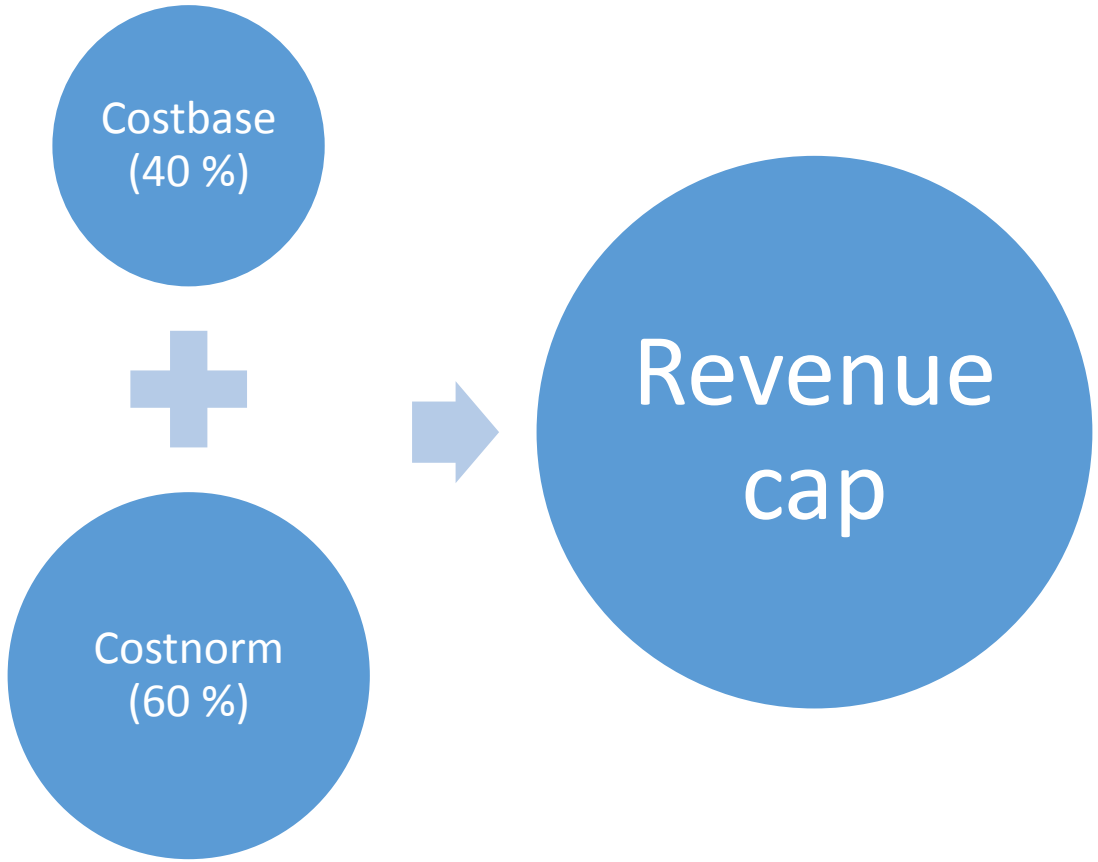
- DSOs own costs

Costnorm (60 %);

- Based on benchmarking comparable DSOs
- Decoupled from own costs
- Takes account of Z-factors

Regulatory rate of return:

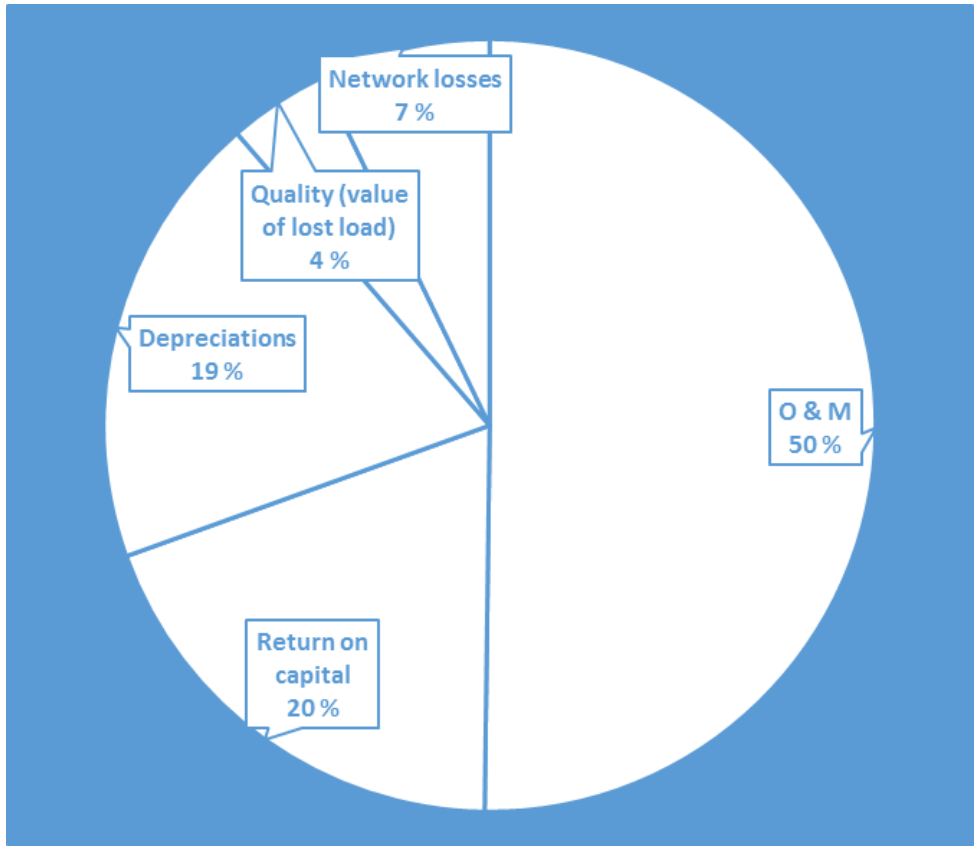
- The industry
- A DSO with average efficiency



Network losses one of several inputs in electricity distribution

Elements in the cost base/total cost:

- Operations and maintenance
- Depreciations
- Calculated return on capital
  - Asset base x wacc
- Quality (value of lost load)
- Network losses
  - Volume x reference price



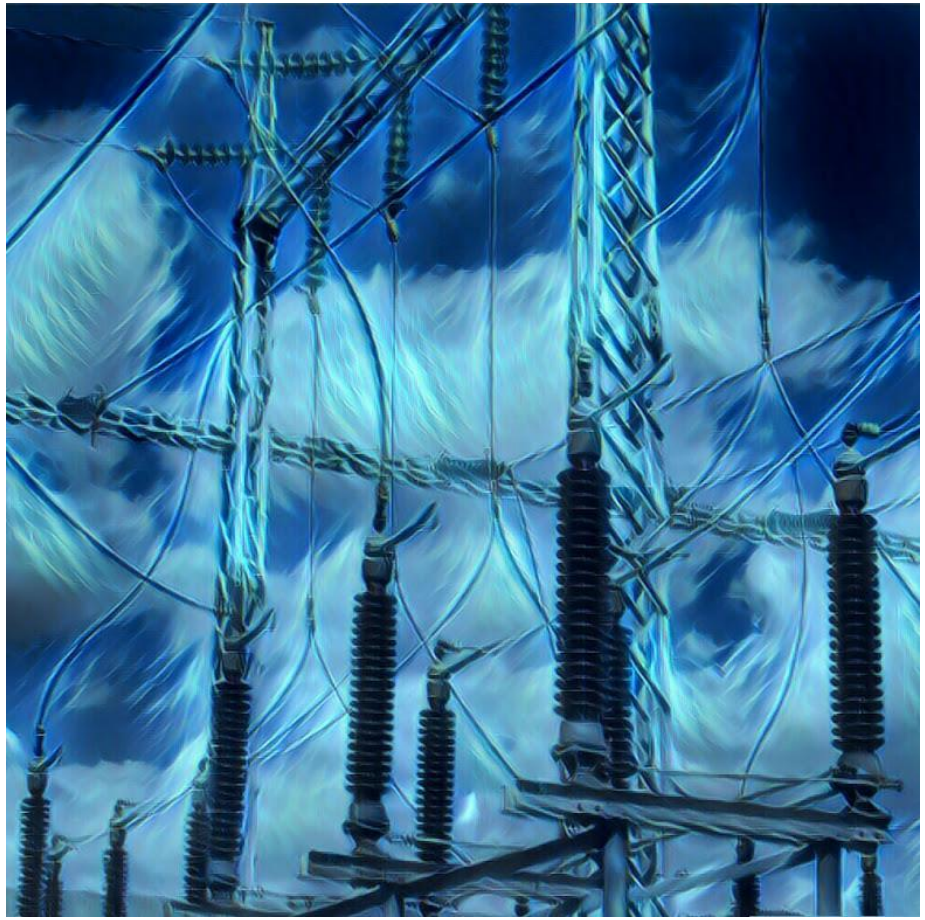
Network losses in costbase

Losses in MWh from year (t-2)

Reference price from year t

→ Two year lag in volume

→ No lag in price



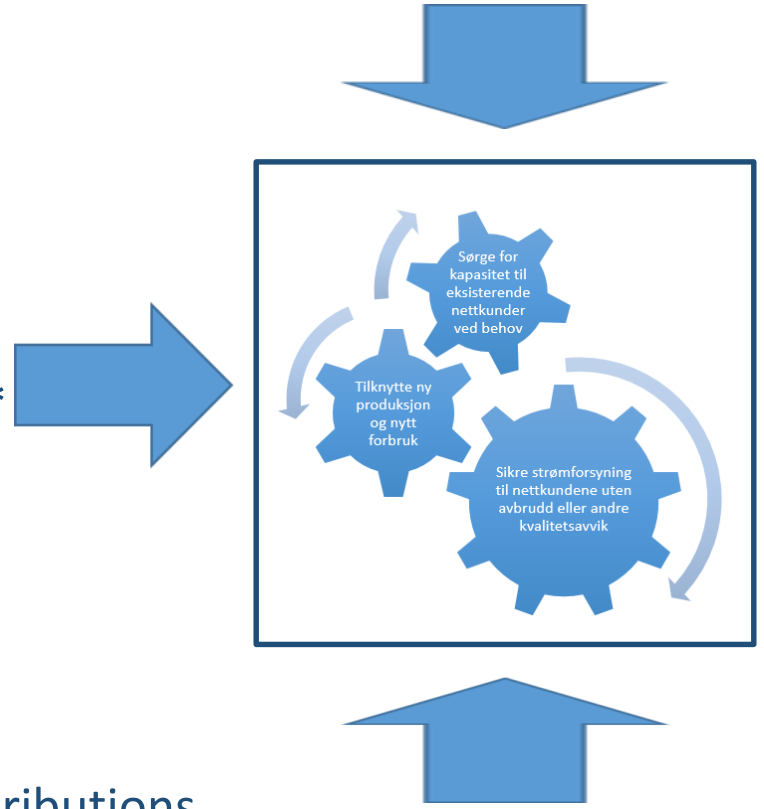
Local distribution – costnorm model

Inefficiency

Input

Total cost, sum of:

+ O & M
+ Depreciations*
+ Return on capital*
+ Network losses
+ Quality (KILE)



Output

Number of customers

Length of HV network (km)

Number of substations

* Includes investment contributions

Z-factors

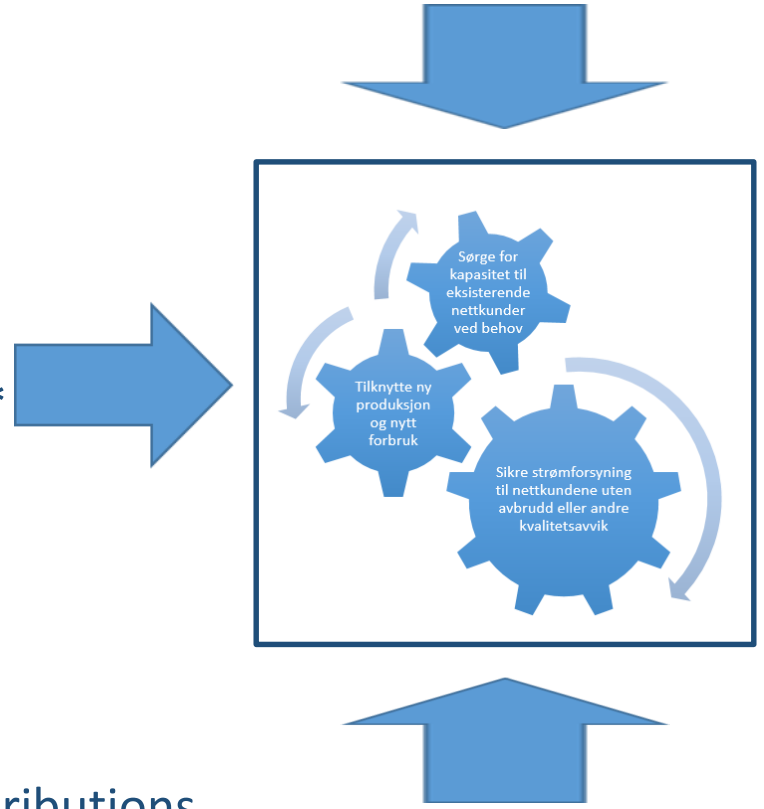
Regional distribution – costnorm model

Inefficiency

Input

Total cost, sum of:

+ O & M
+ Depreciations*
+ Return on capital*
+ Ne~~twork losses~~
+ Quality (KILE)



Output

Weighted value overhead lines

Weighted value ground cables

Weighted value sea cables

Weighted value stations

* Includes investment contributions

Z-factors

Incentives to reduce network losses?

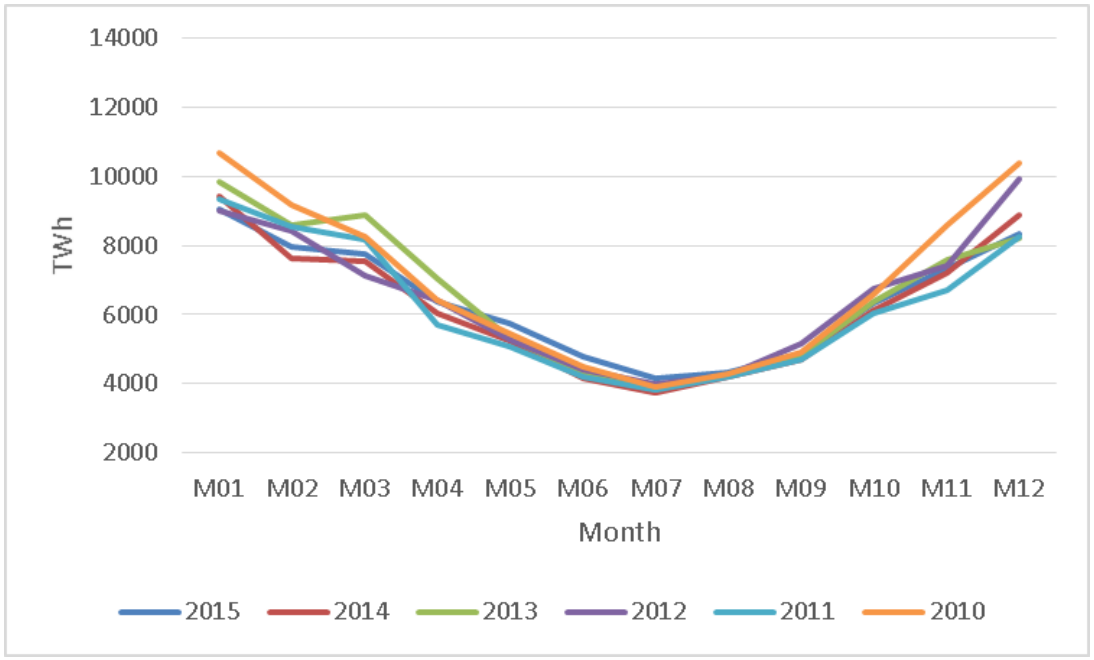
Local distribution (22 kV – 230 V)

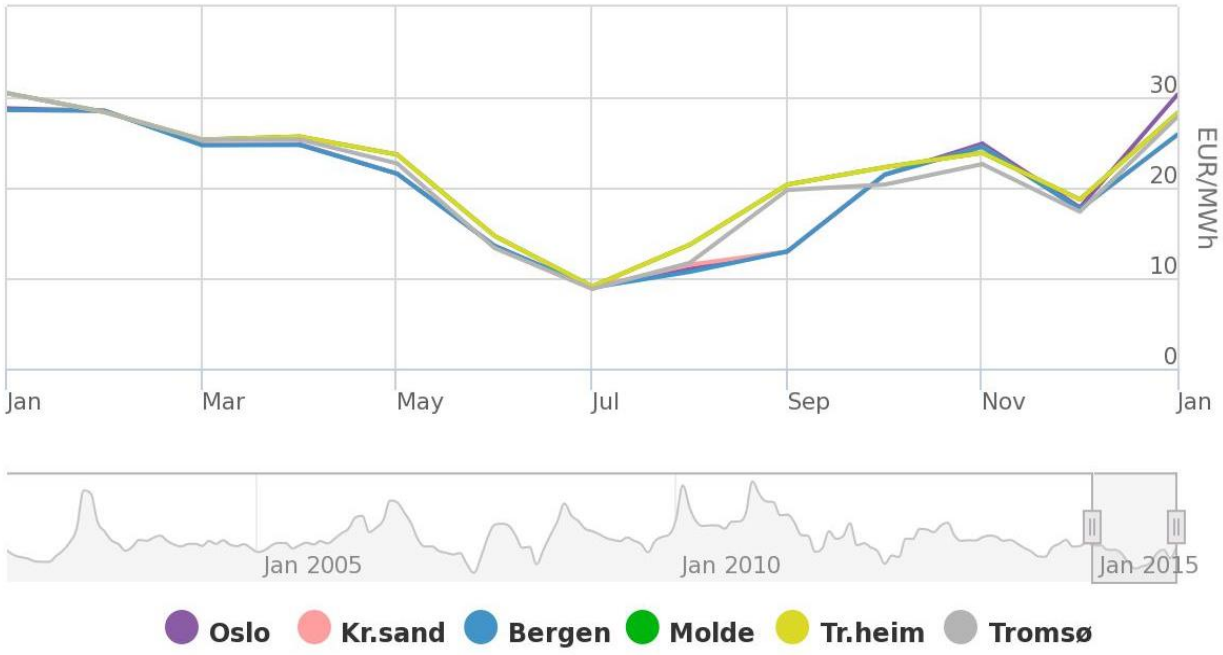
- Cost of network losses included in total cost
  - Regarded as a controllable cost
- Incentives to reduce total cost

Regional distribution (132 kV – 33 kV) and transmission (420 kV – 132 kV)

- Cost of network losses a pass-through cost
  - Non-controllable cost
- No incentive to reduce network losses

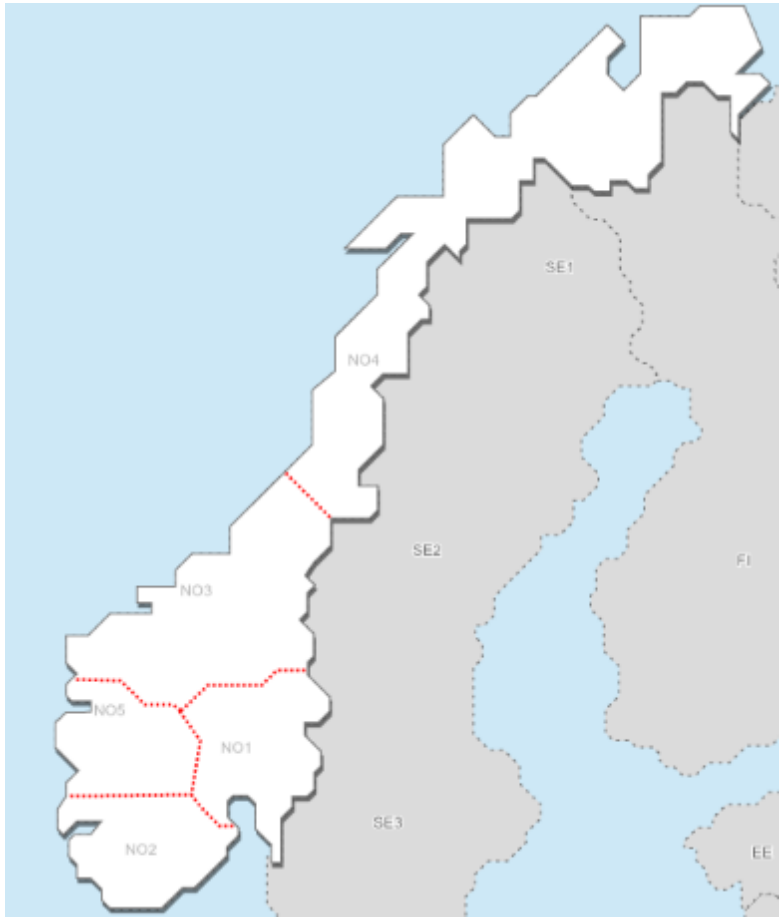
Volume weighted monthly elspot area prices





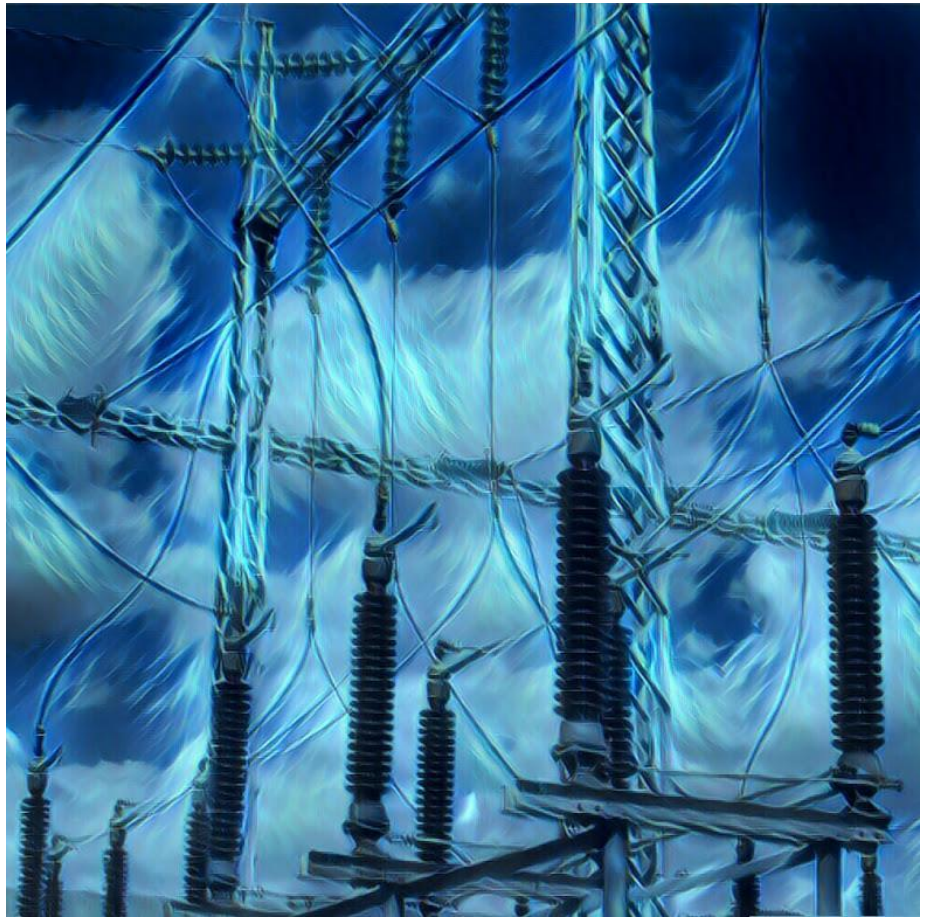
A reference price for each elspot area

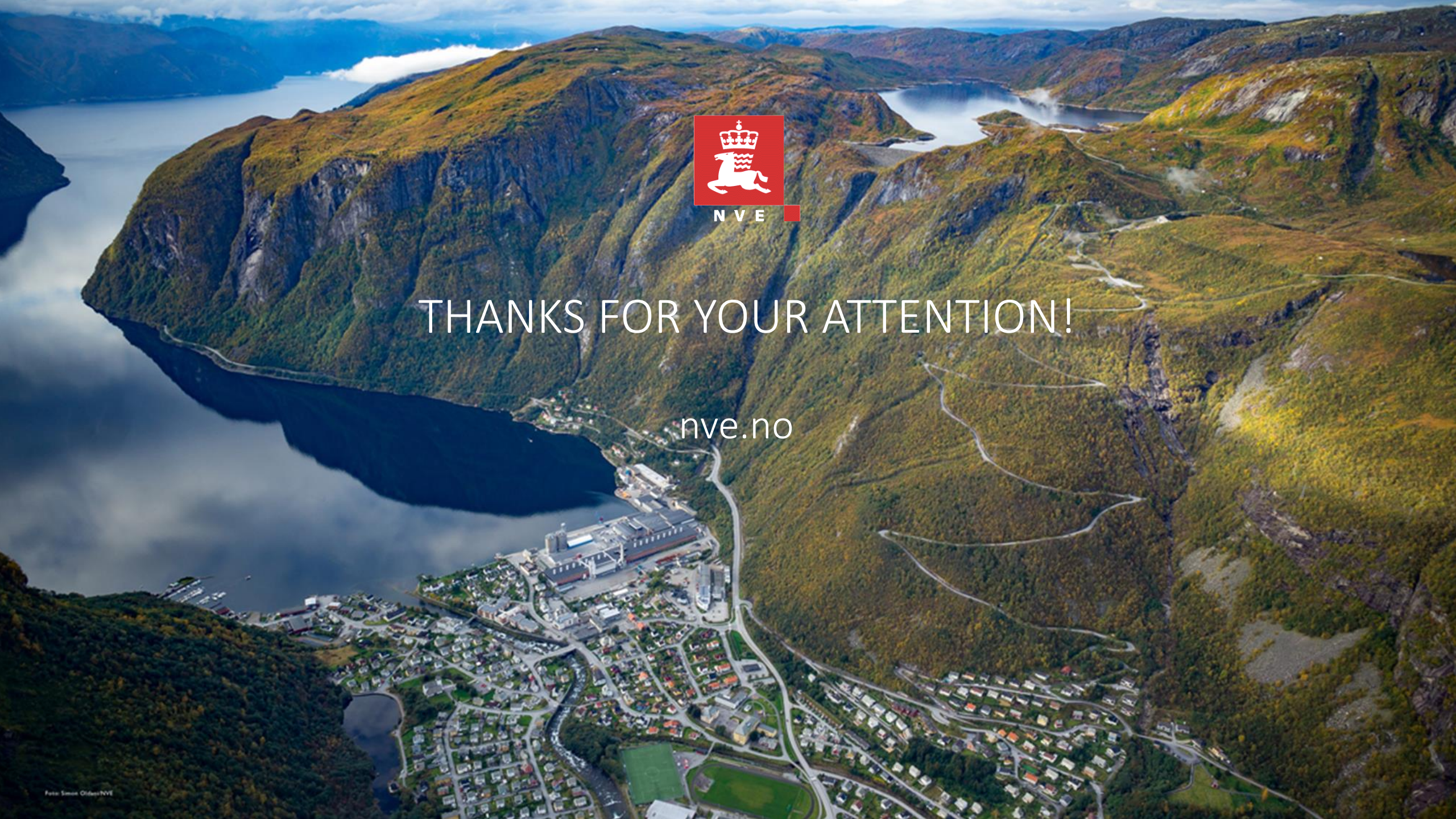
- Volume weight
  - General supply, which excludes
    - Power-intensive industry
    - Oil & gas industry
- A mark-up on the yearly reference price
  - 11 NOK / MWh (1.18 Euro)
    - Covers trading costs
    - Different load profiles



Summary

- Controllable cost in local distribution
  - Incentive to reduce total cost
- Pass-through cost in regional distribution and transmission
- Reference price for each elspot area
  - Not based on real cost of losses
  - Possible to make a profit




NVE
THANKS FOR YOUR ATTENTION!
nve.no