

# Hydropower optimization

Model comparison

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# Model comparison

- So far not developed an idea that we believe can get founding on both sides.
- Discussion for today

# Types of Norwegian funding for collaboration

- IPN 50 % industry 50% from the Norwegian Research Council
- KPN 75-80 % from the Norwegian Research Council
  
- Funding from HydroCen
  - Initial work needed to develop a new project idea
  
- International partners is almost a requirement for applications to the Research Council.

# R&D Projects started this summer

- IPN: System consequences of new environmental constraints for hydro operation
  - Many hydropower concessions are up for revision
  - Consequences for operation, prices, balancing, flood control.
  - Apply prototype models for the analysis
- IPN: Flow based market clearing in the NordPool area
  - Necessary information to the utilities for planning purposes.
- IPN : Reduced calculation time for a prototype stochastic a hydrothermal market model.
  - Spatial decomposition using Lagrange decomposition and a new layer of parallel processing

# Ideas/proposed for for this years R&D applications

- Approximations methods for hydro.
  - Use machine learning techniques to aggregate/reduce hydro complexity in hydro-thermal market models (production costing models)
  - Competence building

# New applications

- Some industry deadlines for this years applications already passed
- New ideas not realistic before 2021
  - Ideas must be sent to industry early spring.
- Ongoing important discussion with the industry about among others open source code or not for new projects.