

Smart Building Hub

From building data to city action: enabling smarter and greener cities with detailed building data

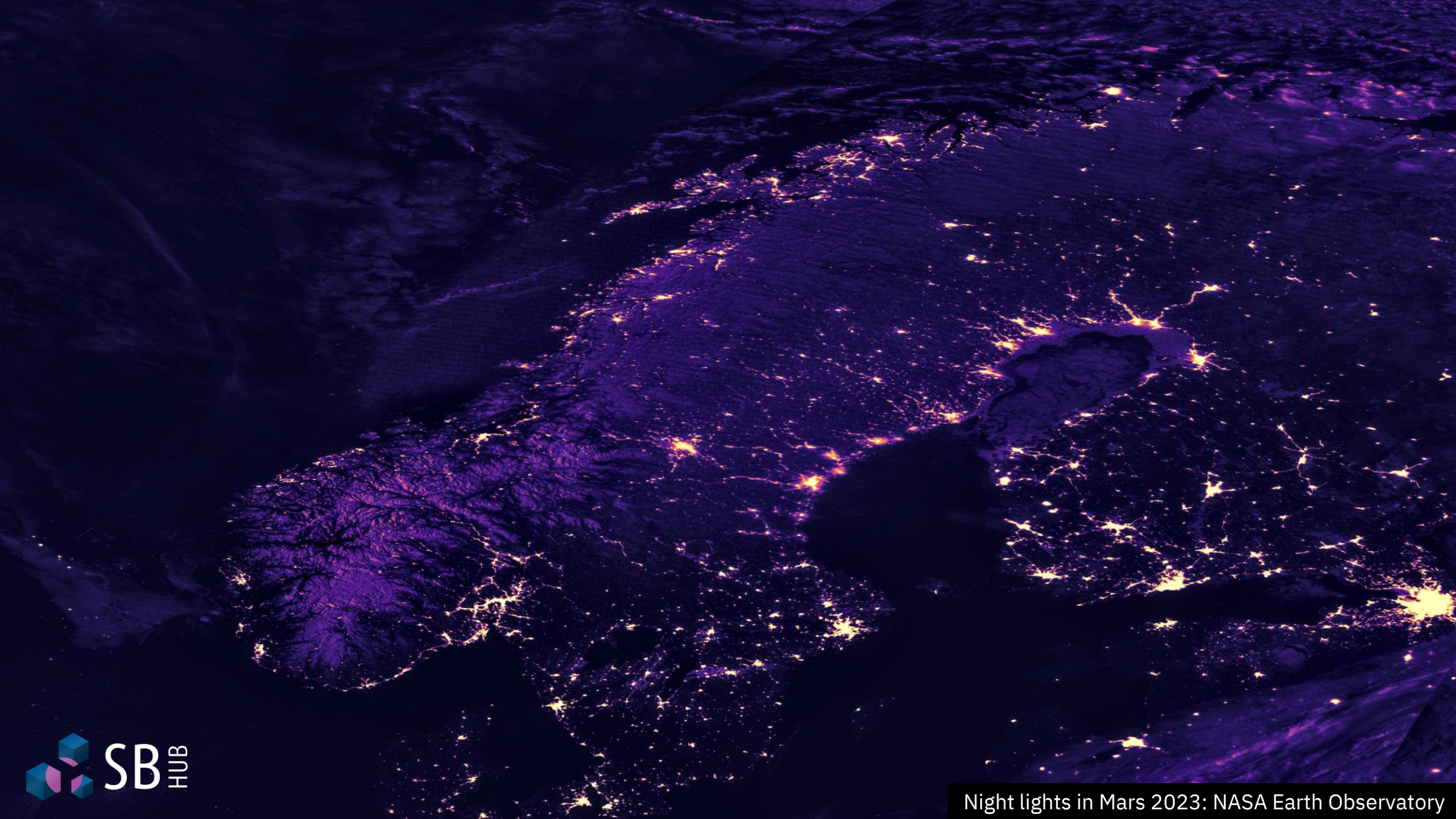
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The value of data for the society

- **Why is data so important?** We need data for digitalization.
- **EU taxonomy** – we lack accurate statistics on all energy carriers and building types.
- **The government has set a target of saving 10 TWh of energy** – we need better assessments of actual energy use to design more targeted measures.


Google Earth (04.06.2024)


Residential Buildings in Norway
2024 - SSB
1 599 112
Google Earth (04.06.2024)



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Night lights in Mars 2023: NASA Earth Observatory



Residential	**1 599 112**
Holiday houses	**450 492**
Industrial	**117 167**
Agricultural and fishery	**492 469**
Offices and business	**38 876**
Education, research, entertainment	**49 352**
Transport and communications	**12 855**
Hotels and restaurants	**33 241**
Other (mostly garages)	**1 532 697**

4 326 261

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Norway Statistics: SSB 2024 – Night Lights in Mars 2023: NASA Earth Observatory










TEXAS
GRILL







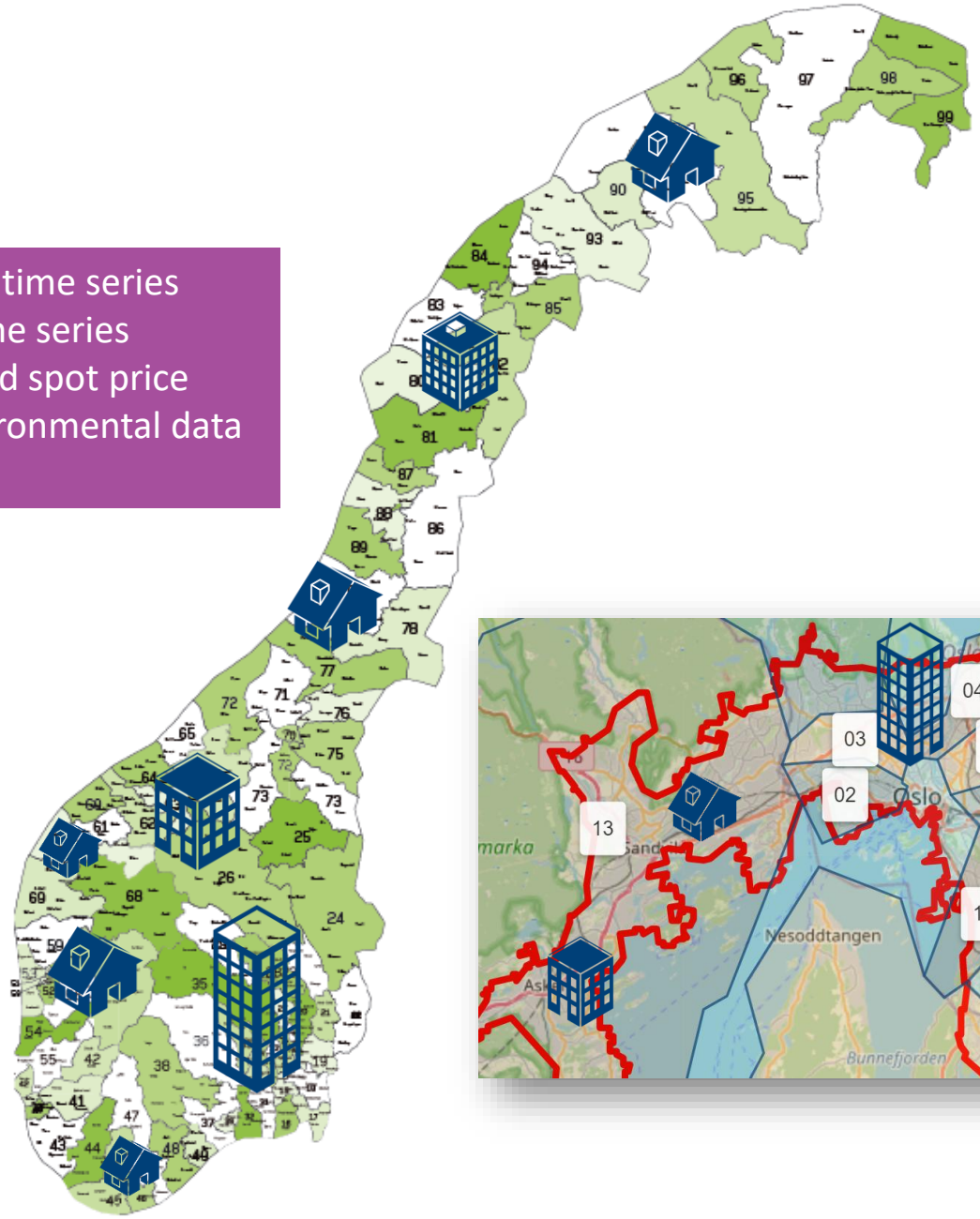


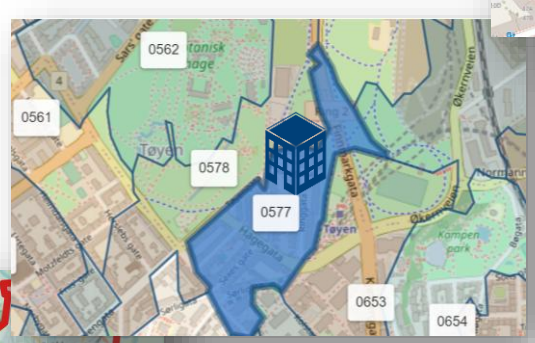




Smart Building Hub is an **e-infrastructure** that enables detailed **data from buildings** to become publicly available for **research and innovation**.

- Aggregated time series
- Detailed time series
- Weather and spot price
- Indoor environmental data
- Metadata





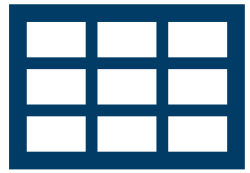


Users: academia, research and innovation, or industry





Users can extract quality-assured time series and the desired metadata.



Users develop solutions, algorithms, or insights based on the extracted data.



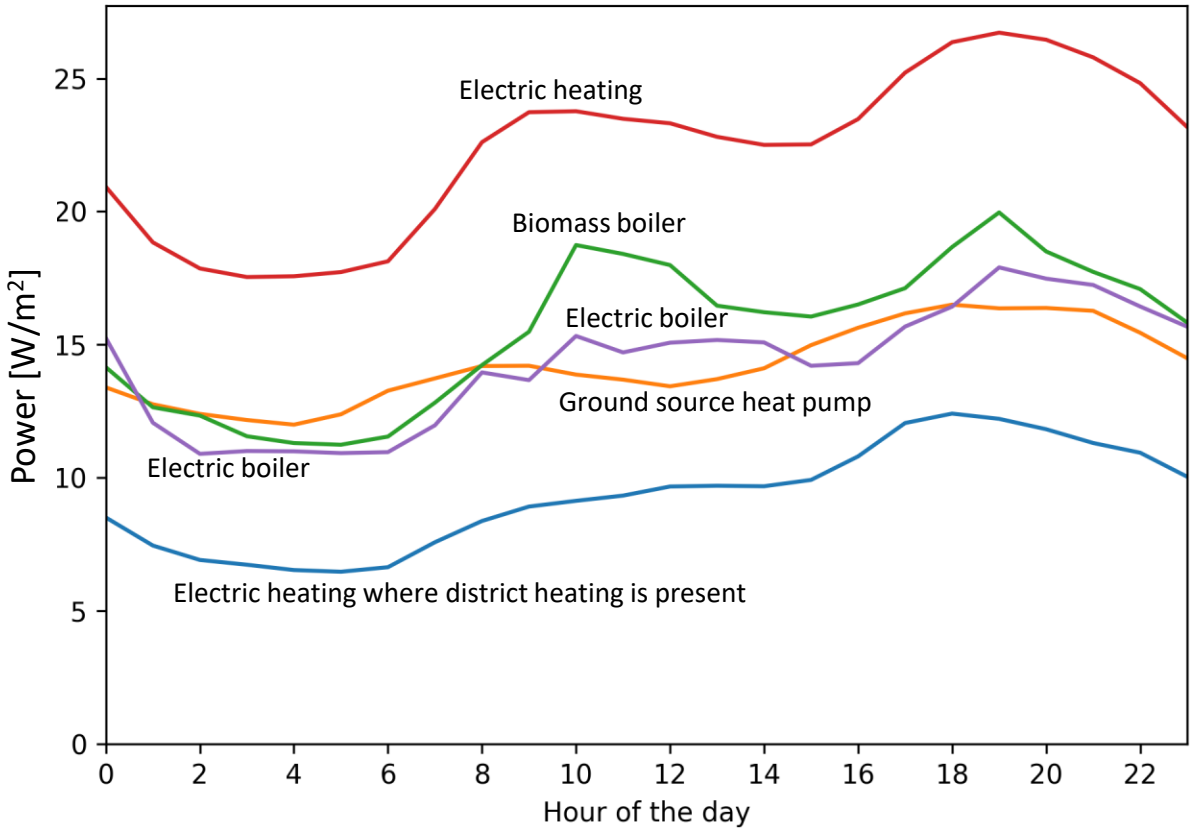
So what can all this data be used for?

- Energy system planning for neighbourhoods and cities
- Smart control of buildings and neighborhoods
- National statistics
- Use in national and international research projects

Energy system planning for neighbourhoods and cities

Access to reliable, high-accuracy data-driven load profile models from electricity and district heating is a prerequisite for robust energy system planning.

Aggregated typical load profiles for apartments, weekday



Measured data from the COFACTOR project: https://www.sintef.no/prosjekter/2021/cofactor/

Smart control of buildings and neighborhoods

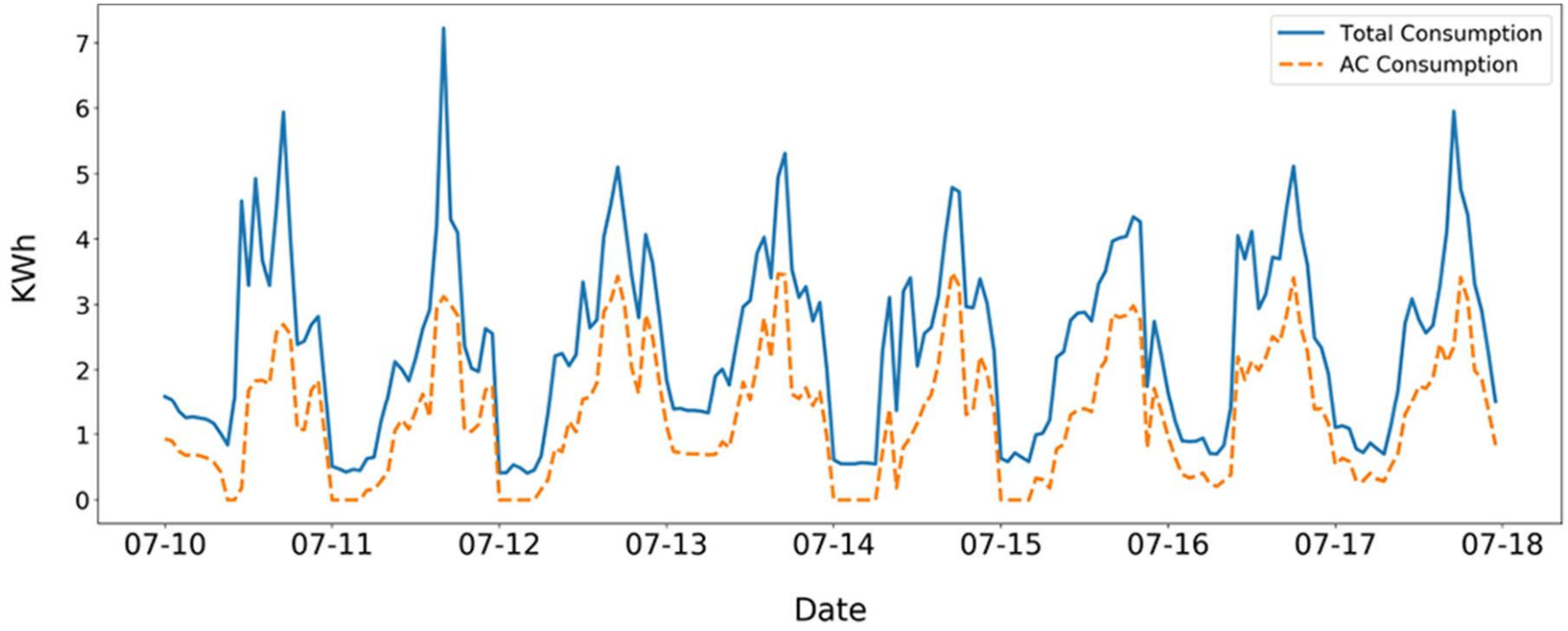
- Building models that can provide accurate predictions of both energy use and local energy production.
- Developing optimization models to operate neighborhoods in a “smart” way.



https://www.norskbyggebransje.no/vvs-nytt/billig-losning-halverte-energikostnadene

National statistics

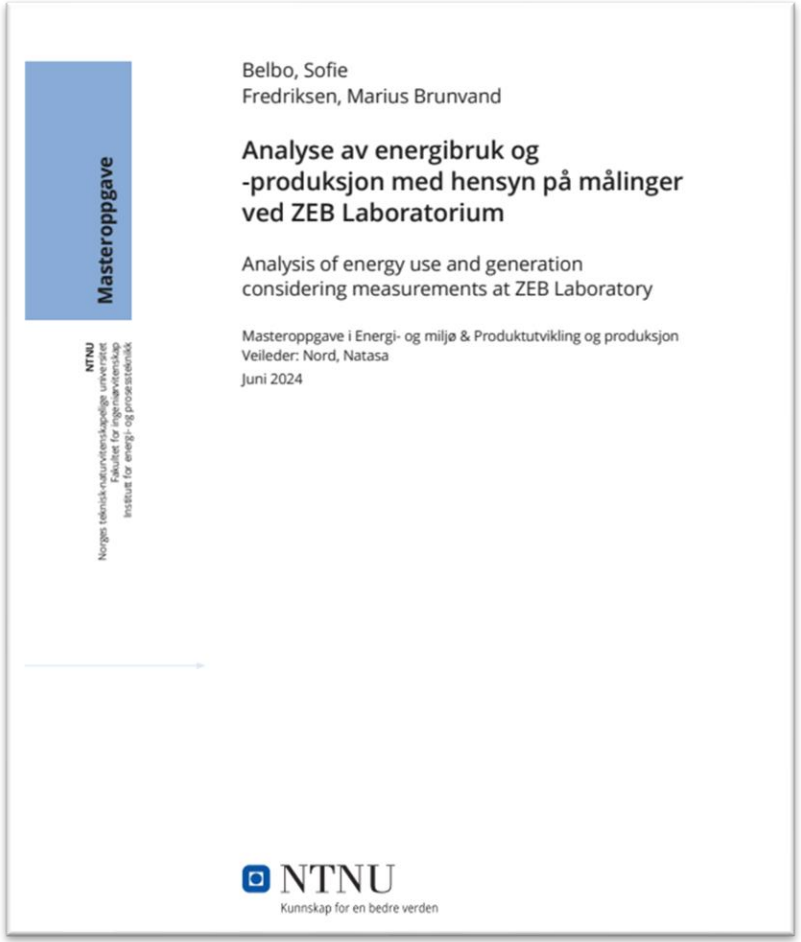
- Disaggregation of household electricity use
- Enhanced statistical representation of end-use energy use



Najafi et al., *Machine learning based disaggregation of air-conditioning loads using smart meter data*, https://doi.org/10.1049/iet-gtd.2020.0698

Use in national and international research projects

- Master's and/or PhD-projects
- Teaching and other teaching activities
- Interdisciplinary research projects, both nationally and internationally (e.g. EU projects)



https://nva.sikt.no/registration/0198e708ff54-f5d2fd4d-7e65-4828-a56a-76004206da46

Thank you for your attention



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