Dr. Na Li

POSTDOC IN SUSTAINABLE ENERGY TECHNOLOGIES SEEKING CHALLENGES IN THE ENERGY SECTOR

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Na has a strong background in sustainable energy techonologies and enegry economics. Hands-on experience in energy system modeling, optimization, energy market, tariff design, data analysis and visulization.

Work Experiences

Postdoc researcher 09.2022 - onwards

Intelligent Electrical Power Grids group, Delft University of Technology Delft, the Netherlands

Researcher 10.2021 - 03.2022

The Green Village, Delft University of Technology Delft, the Netherlands

Education

Ph.D. at Delft University of Technology 09.2017 - 02.2022

Energy & Industry, Faculty of Technology, Policy and Management Delft, The Netherlands

- *Thesis: Cost allocation in integrated community energy systems*

M.Sc. at Jilin University 09.2014 - 07.2017

College of Instrumentation & Electrical Engineering Changchun, China

- *Thesis: Research on Mini-SOSIE based on ternary pseudorandom coding technique*

B.Sc. at Jilin University 09.2010 - 07.2014

College of Instrumentation & Electrical Engineering Changchun, China

- *Thesis: Design of excitation signal generator for Mini-SOSIE based on pseudorandom coding technique*

Project Experiences

Flexibility activation mechanism designer, Go-e(Electrification in the built environment) 09.2022 - now

Intelligent Electrical Power Grids group, Delft University of Technology Delft, the Netherlands

- Proposed a **multi-level segmented tariff** as an incentive for activating **demand-side flexibility** provision
- Modeled an energy system with different assets to compute **hosting capacity** under uncertainties
- Tested different distribution network tariffs on **demand-side flexibility provision**
- Modeled scenarios of distributed energy resources penetration by using **Monte Carlo simulation**

Energy communities researcher, Social License to Automate in Energy Communities 11.2022 - now

Collaboration with the International Energy Agency UsersTCP (Technology Collaboration Programme)

- Analyzed the technical characteristics and opportunities provided by different forms of **energy communities**
- Reviewed existing **energy community initiatives** and analyzed their social license potential
- Conceptualized a framework for clustering energy typologies for **Social License to Automate**

Hydrogen system modeler, Design of a PV-battery-electrolyzer-fuel-cell energy system 10.2021 - 03.2022

The Green Village, Delft University of Technology Delft, the Netherlands

- Proposed a sizing approach for designing a self-sufficient **PV-battery-electrolyzer-fuel cell** energy system
- Designed **techno-economic** metrics for assessing the **performance** of hydrogen systems
- **Modeled** a PV-battery-electrolyzer-fuel cell energy system with **real-life data** from The Green Village
- **Developed** tailored schemes for cost allocation in the energy community at The Green Village

Energy market researcher, Cost allocation in integrated community energy systems 10.2018 - 09.2021

Faculty of Technology, Policy and Management, Delft University of Technology Delft, the Netherlands

- Designed tailor-made **cost allocation** methods for **local community energy markets**
- Modeled an **integrated community energy system** with renewable generation and storage
- Presented an **economic analysis** framework to assess the performance of various cost allocation methods
- Developed a **multi-criteria decision-making** framework to evaluate **social acceptance**

Tariff researcher, Segmented energy tariff design for flattening load demand profile 12.2019 - 03.2020

Faculty of Technology, Policy and Management, Delft University of Technology Delft, the Netherlands

- Designed a **segmented energy tariff** to flatten household load demand
- Proposed an energy storage control methodology to facilitate **flattening load demand**
- Modeled a household energy system with **battery storage**
- **Optimized energy storage size** under segmented energy tariff to save energy costs

Storage instead of coal: a quantitative model of the German electricity market showing the impact of phasing out Hard Coal and Lignite and the introduction of storage 12.2019 - 03.2020

Faculty of Technology, Policy and Management, Delft University of Technology Delft, the Netherlands

- Modeled the German **electricity market** based on supply and demand function
- Analyzed the impact of the introduction of solar and wind energy on the **electricity price** and **CO2 emissions**
- Presented the option of **energy storage** as a way to balance demand and supply of **renewable energy**

Solar system modeler, PV system model- A Tanzania village case study 04.2018 - 07.2018

Faculty of Electrical Engineering, Mathematics and Computer Science Delft, the Netherlands

- Designed an off-grid **PV power plant** with an **energy storage** system
- Modeled the **optimal orientation** of PV panels
- Presented the **technical and financial performance** of the designed PV-battery system

Publications

- Nanda Panda, **Na Li**, Simon Tindemans. Aggregate peak EV charging demand: the impacts of segmented network tariffs. 2024 IEEE Transportation Electrification Conference & Expo (submitted).
- **Na Li**, Anton Ishchenko, Simon Tindemans, Kenneth Bruninx. Evaluating the impact of new technology deployment on future congestion of LV distribution grids. Paris Session 2024 (Abstract accepted).
- **Na Li**, Kenneth Bruninx, Simon Tindemans. Residential demand-side flexibility provision under a multi-level segmented tariff. 2023 IEEE PES Innovative Smart Grid Technologies Europe (ISGT EUROPE), Grenoble, France, 2023, pp. 1-5.
- Bernadette Fina, Selin Yilmaz, Frederike Ettwein, **Na Li**, Andrea Werner. Potential of energy community initiatives towards a social license (to automate) (under review).

- Bernadette Fina, Selin Yilmaz, Frederike Ettwein, **Na Li**, Andrea Werner. Typologies of energy community initiatives and their social implications. 2023 International Association for Energy Economics.
- **Na Li**, Zofia Lukszo, John Schmitz. An approach for sizing a PV-battery-electrolyzer-fuel cell energy system: a case study at a field lab. Renewable & Sustainable Energy Reviews, 2023, 181, 113308.
- **Na Li**, Özge Okur. Economic analysis of energy communities: investment options and cost allocation. Applied Energy, 2023, 336, 120706.
- **Na Li**, Rudi Hakvoort, Zofia Lukszo. Cost allocation in integrated community energy systems - A review. Renewable & Sustainable Energy Reviews, 2021, 14, 111001.
- **Na Li**, Rudi Hakvoort, Zofia Lukszo. Cost allocation in integrated community energy systems - Performance assessment. Applied Energy, 2021. 307, 118155.
- **Na Li**, Rudi Hakvoort, Zofia Lukszo. Cost allocation in integrated community energy systems - Social analysis. Sustainability, 2021, 13(17), 9951.
- **Na Li**, Rudi Hakvoort, Zofia Lukszo (2020, October). Segmented energy tariff design for flattening load demand profile. In 2020 IEEE PES Innovative Smart Grid Technologies Europe (ISGT-Europe) (pp. 849-853). IEEE.

Peer review experience

Peer review from **Renewable & Sustainable Energy Reviews**, **Applied Energy**, **IEEE Transitions on Power Systems**, **Sustainable Energy, Grids and Networks**, **IET Generation Transmission & Distribution**, **Frontiers in Energy Research**, and **IEEE ISGT Europe 2023 conference**.

Conference & Workshop experiences

- Oral presentation at the IEEE PES Grid Edge Technologies, San Diego, the USA. April 2023. (The presentation was based on a nomination for a Ph.D. dissertation challenge competition award. (54 Ph.D researchers were selected among 150 participants))
- Poster presentation at the TU Delft Hydrogen Research & Innovation event, powered by TU Delft | H_2 Platform, Delft, the Netherlands. April 2023.
- Poster presentation at the 360° Poster Event of the PowerWeb Institute, Delft University of Technology, Delft, the Netherlands. October 2021.
- Oral presentation at the 2020 IEEE PES Innovative Smart Grid Technologies Europe, Delft University of Technology, Delft, the Netherlands. October 2020.
- Poster presentation at the 2019 PowerWeb Institute Conference - Inclusive Energy Transition. Delft University of Technology, Delft, the Netherlands. June 2019.
- Oral presentation at the 2016 SEG International Exposition and 86th Annual Meeting, Dallas, TX, the USA. October 2016.

Teaching and supervision experiences

- Assisted in lab teaching and exam grading in the master course “Energy System Optimization”, Faculty of Technology, Policy and Management, Delft University of Technology. (09.2019 - 12.2019)
- Led a research group consisting of 4 MSc students in doing a literature review in the master course, “CoSEM Research Challenges”. (04.2020 - 07.2020)
- Supervision of MSc project: Regine Wagenaar, *The financial decentralized energy systems on households, a case study: The Green Village*, Delft University of Technology (daily supervisor). (10.2021 - 07.2022)
- Supervision of SET MSc project: Charlie Linck, *A techno-economic calculation method for the implementation of an autonomous solar and storage system to electrify Vopak’s storage terminals*, Delft University of Technology (daily supervisor). (04.2022 - 10.2022)

- Supervision of SET MSc project: Jeroen Janssen, *An economic analysis towards the feasibility of renewable hydrogen supply chain: a case study between Northern Africa and European Union*, Delft University of Technology (daily supervisor). (09.2022 - 02.2023)
- Supervision of SET MSc project: Riccardo Maselli, *Multi-objective optimization for a grid-connected PV-battery-electrolyzer-fuel cell energy system: a case study at The Green Village*, Delft University of Technology (daily supervisor). (01.2023 - 09.2023)
- Supervision of SET MSc project: Gabriel Yousef, *Community Storage Integration: A sustainable approach to overcoming net metering phase-out challenges in the Netherlands' residential solar market*, Delft University of Technology (daily supervisor). (02.2023 - onwards)

Other activities

- International Photovoltaic Systems Summer School of Delft University of Technology, 2018
- Energy Community Summer School in Krakow, Poland, 2019

Skills

- **Language** **English** (IELTS), **Chinese** (native), **Dutch** (A2)
- **Optimization** LP, MILP, MINLP, Stochastic, Robust
- **Software** FPGA, Altium, LaTex, Github, C, Coredraw, MS Office & Visio
- **Coding** Julia,Python, &Matlab (data analysis & visualization)