Plan Overview

A Data Management Plan created using DMPonline

Title: Enabling Phased Urban Residential Development under Electricity Grid Congestion

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Template: TU Delft Data Management Plan template (2025)

Project abstract:

This research investigates how flexibility measures such as battery storage, demand response, and local energy generation can support phased residential development in urban areas affected by electricity grid congestion. The study focuses on the Binckhorst redevelopment area in The Hague, where planned housing expansion is constrained by limited distribution grid capacity. A techno-institutional approach is applied, combining energy system modelling using the Linny-R optimisation framework with qualitative analysis of governance and regulatory conditions based on stakeholder interviews and document analysis. The model evaluates how different flexibility portfolios interact with phased housing development and planned grid reinforcement over time. The research aims to identify flexibility strategies that can alleviate congestion and enable additional housing development while accounting for technical constraints and institutional feasibility.

ID: 198538

Start date: 02-02-2026

End date: 17-07-2026

Last modified: 06-03-2026

Enabling Phased Urban Residential Development under Electricity Grid Congestion

0. Administrative questions

1. Provide the name of the data management support staff consulted during the preparation of this plan and the date of consultation. Please also mention if you consulted any other support staff.

Nicolas Dintzner, Data Steward at the Faculty of Technology Policy and Management, has reviewed this DMP on 05-03-2026.

2. Is TU Delft the lead institution for this project?

- Yes, leading the collaboration – please provide details of the type of collaboration and the involved parties below

In this project TU Delft is the lead institution, and Fakton B.V. is a partner organization, providing practical input and access and practical knowledge.

I. Data/code description and collection or re-use

3. Provide a general description of the types of data/code you will be working with, including any re-used data/code.

Type of data/code	**File format(s)**	**How will data/code be collected/generated?** *For re-used data/code: what are the sources and terms of use?*	**Purpose of processing**	**Storage location**	**Who will have access to the data/code?**
Recordings of interviews	.mp3	The interviews will be conducted in person or via video call, recorded through tu Delft MS teams in .mp3 format with participants' consent	To gain insights on electricity system capacities, collaboration possibilities and model parameters	TU Delft Onedrive	Me and the TU Delft supervisors
Transcription of interviews	.docx	Transcribed interviews	For structuring findings, defining model parameters and for quotes in my report	TU Delft Onedrive	Me and the TU Delft supervisors

Household yearly electricity usage	.csv	Open data from Stedin dowloaded online	Model input to analyse the current use profiles of houses	TU Delft Onedrive	Me and the TU Delft supervisors
Energy system model files	.lnr	Developed by me in Linny-R using demand data, grid capacity assumptions, parameters acquired from interviews and scenario parameters derived from public reports and case study documentation.	To simulate electricity system behaviour and evaluate flexibility portfolios under grid congestion.	TU Delft Onedrive	Me and the TU Delft supervisors + supervisor from Fakton
Model input and output datasets	.csv, .xlsx	Generated as outputs from Linny-R simulations and scenario runs.	To analyse congestion levels, peak loads, and development feasibility under different flexibility portfolios.	TU Delft Onedrive	Me and the TU Delft supervisors
Grid capacity and infrastructure data (public reports)	.pdf, .xlsx, .csv	Collected from publicly available reports by Municipality of The Hague, grid operators, and regulatory organisations.	Model parameterisation and case study contextualisation.	TU Delft Onedrive	Me and the TU Delft supervisors
Personally Identifiable Information (PII) of participants: name, email	.docx	Contact information for participants taking part in survey, received from participant sign-ups.	For administrative purposes: obtaining consent and communicating with participants.	TU Delft Onedrive	Me and the TU Delft supervisors
Informed consent forms	PDF	Informed consent forms signed digitally.	To obtain and document informed consent.	TU Delft Onedrive	Me and the TU Delft supervisors
Interview coding and qualitative analysis files	.docx, .xlsx	Created by the researcher during qualitative analysis and coding of interview transcripts.	To identify governance conditions, constraints, and modelling parameters.	TU Delft OneDrive	Me and the TU Delft supervisors

II. Storage and backup during the research process

4. How much data/code storage will you require during the project lifetime?

- < 250 GB

5. Where will the data/code be stored and backed-up during the project lifetime? (Select all that apply.)

- TU Delft OneDrive

III. Data/code documentation

6. What documentation will accompany data/code? (Select all that apply.)

- Software – Usage documentation (README file, docstrings, and in-line comments)
- Data – Methodology of data collection

IV. Legal and ethical requirements, code of conducts

7. Does your research involve human subjects or third-party datasets collected from human participants?

If you are working with a human subject(s), you will need to obtain the HREC approval for your research project.

- Yes – please provide details in the additional information box below

I intend to apply for ethical approval from the Human Research Ethics Committee, but have not yet done so.

8. Will you work with personal data? (This is information about an identified or identifiable natural person, either for research or project administration purposes.)

- Yes

This research involves personal data in the form of participant names, contact details, and interview recordings collected for the purpose of conducting expert interviews. These data will be used solely for research purposes and interview coordination. Participants will provide informed consent prior to participation. Personal data will be stored securely on TU Delft OneDrive with access restricted to the researcher and supervisor. Interview data will be anonymised in the thesis

9. Will you work with any other types of confidential or classified data or code as listed below? (Select all that apply and provide additional details below.)

If you are not sure which option to select, ask your Faculty Data Steward for advice.

- No, I will not work with any other types of confidential or classified data/code

10. How will ownership of the data and intellectual property rights to the data be managed?

For projects involving commercially-sensitive research or research involving third parties, seek advice of your Faculty Contract Manager when answering this question.

The intellectual property rights are framed by a graduation agreement between Delft University of Technology, myself and Fakton.

11. Which personal data or data from human participants do you work with? (Select all that apply.)

- Audio recordings
- Proof of consent (such as signed consent materials which contain name and signature)
- Job title and/or employer
- Telephone number, email addresses and/or other addresses as contact details for administrative purposes
- Names as contact details for administrative purposes

12. Please list the categories of data subjects and their geographical location.

Employees from Stedin, Gemeente Den Haag, Fakton and developers that are active in the laakhaven region in The Hague

13. Will you be receiving personal data from or transferring personal data to third parties (groups of individuals or organisations)?

- No

16. What are the legal grounds for personal data processing?

- Informed consent

17. Please describe the informed consent procedure you will follow below.

The researcher will inform the potential participants about the goals and procedures of the research project. The researcher will also inform them about the personal data that are being processed and for what purpose. This information will be provided to the potential participants by emailing a digital copy of the information sheet and consent form before the interview. All participants will be asked for their consent for taking part in the study and for data processing by signing a digital informed consent form before the start of the interview.

18. Where will you store the physical/digital signed consent forms or other types of proof of consent (such as recording of verbal consent)?

TU Delft One Drive

19. Does the processing of the personal data result in a high risk to the data subjects? (Select all that apply.)

If the processing of the personal data results in a high risk to the data subjects, it is required to perform a Data Protection Impact Assessment (DPIA). In order to determine if there is a high risk for the data subjects, please check if any of the options below that are applicable to the processing of the personal data in your research project.

If any category applies, please provide additional information in the box below. Likewise, if you collect other type of potentially sensitive data, or if you have any additional comments, include these in the box below.

If one or more options listed below apply, your project might need a DPIA. Please get in touch with the Privacy team (privacy-tud@tudelft.nl) to get advice as to whether DPIA is necessary.

- None of the above apply

23. What will happen with the personal data used in the research after the end of the research project?

- Anonymised or aggregated data will be shared with others

24. For how long will personal research data (including pseudonymised data) be stored?

- Personal data will be deleted at the end of the research project

25. How will your study participants be asked for their consent for data sharing?

- In the informed consent form: participants are informed that their personal data will be anonymised and that the anonymised dataset is shared publicly

V. Data sharing and long term preservation

27. Apart from personal data mentioned in question 23, will any other data be publicly shared?

Please provide a list of data/code you are going to share under 'Additional Information'.

- All other non-personal data/code underlying published articles/reports/theses
- interview questions
- Liny-R model
  - input data if copyright allows, otherwise toy example
  - output data if copyright allows

29. How will you share research data/code, including those mentioned in question 23?
Select all that apply and provide additional details below.

- All anonymised or aggregated data, and/or all other non-personal data/code will be uploaded to 4TU.ResearchData with public access
- I am a Bachelor's/Master's student at TU Delft and I will share the data/code in the body and/or appendices of my thesis/report in the TU Delft Repository

Model will be uploaded to the 4TU research data and the interview questions will be in the thesis (appendix)

30. How much of your data/code will be shared in a research data repository?

- < 100 GB

31. When will the data/code be shared?

- At the end of the research project

32. Under what licence(s) will the data/code be released?

- MIT Licence
- Other – please explain below

Thesis report; so copyright
model will be released under the MIT license

VI. Data management responsibilities and resources

33. If you leave TU Delft (or are unavailable), who is going to be responsible for the data/code resulting from this project?

My supervisors (Dr. Pieter Bots, Toyah Rodhouse)

34. What resources (for example financial and time) will be dedicated to data management and ensuring that data will be FAIR (Findable, Accessible, Interoperable, Re-usable)?

4TU.ResearchData is able to archive 1TB of data/code per researcher per year free of charge for all TU Delft researchers. We do not expect to exceed this and therefore there are no additional costs of long term preservation.

35. Which faculty do you belong to?

- Faculty of Technology, Policy and Management (TPM)