Project Description IDP

Improvement and maintenance of open-source energy system optimization software urbs

Motivation

Energy system models play a vital role in the scientific and political discussion about the future energy systems across the world. To facilitate informed decisions and increase transparency, open software is key. To this end, the open-source energy optimization framework urbs was developed at the Chair of Renewable and Sustainable Energy Systems (ENS). urbs is a linear program written in Python/Pyomo, which allows for sector-coupled, multi-nodal and intertemporal energy system sizing and operation optimization.

The continuing research at the chair as well as changes in the underlying software libraries necessitate a continuous addition of features and maintenance.

Task

There are three main tasks, which can part of the IDP: First, new methods derived from research and application of the framework have to be implemented. This includes working with a Git repository and branch management. Second, a continuous improvement of performance and software quality is required. Last, the code has to be maintained and changes in the underlying libraries have to be incorporated.
Requirements

– Interest in mathematical modeling of energy systems
– Knowledge or willingness to learn Python and Pyomo
– Knowledge or willingness to learn Git

Advisor

Chair of Renewable and Sustainable Energy Systems (Prof. Dr. rer. nat. T. Hamacher)
Lichtenbergstraße 4a, 85748 Garching
E-Mail leonhard.odersky@tum.de; soner.candas@tum.de; m.dorfner@tum.de