

Solar Farm Cable Layout Problem

1 Topic

Solar farms consist of several layers of different components with fixed positions, where the components of the lowest layer (PV strings) need to be connected to the components of the highest layer (transformers) via components of intermediate layers. The Solar Farm Cable Layout problem (SoFaCLaP) deals with optimizing the cable layout of a solar farm using a graph-theoretical approach. Given the number and the capacity of each type of component, the objective is to minimize the total costs of the cables needed if a feasible solution exists. This problem can be divided into two parts: first, checking for feasibility while ignoring the given positions, and second, optimizing a feasible solution. For both parts, algorithms and some heuristics already exist.

2 Goal

This project aims to further develop existing algorithms for SoFaCLaP. Additionally, other variants of SoFaCLaP should be proposed and investigated as well. One potential variant involves introducing device costs in addition to the existing cable costs.

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