

Excess heat cm

The excess heat cm computes the costs of transmission lines, heat exchangers and pumps needed to deliver excess heat from industrial sites to district heating networks. The flow calculations are based on hourly load profiles.

Download

https://github.com/dav22297/Excess_heat_standalone

Inputs

In the “data” directory

- Files:
 - Excess heat sites
 - Industrial_Database.csv
 - required fields: ("geom", "Subsector", "Excess_Heat_100-200C", "Excess_Heat_200-500C", "Excess_Heat_500C", "Country")
 - “geom” only in 4326 (WGS84)
 - “Subsector” of this list ("Iron and steel", "Refineries", "Chemical industry", "Cement", "Glass", "Non-metallic mineral products", "Paper and printing", "Non-ferrous metals", "Other non-classified")
 - Heat sinks. Either a shp file with the district heating areas or discrete entry points of already existing networks
 - district_heating_shp.shp
 - Same format as output of dh_potential cm
 - entry_points.csv
 - required fields (“Lon”, “Lat”, “Annual heat demand”, “id”)
 - “id” should be a positive number, if two entry points have the same id they are considered connected together by already existing dh networks
- Parameters:
 - Search radius in km
 - Investment Period in years
 - Threshold value for transmission lines in ct/kWh/a
 - Nuts2 ID of region

Usage

- Modify "Industrial_Database.csv", "district_heating_shp.shp" and "entry_points.csv" to your needs
- Locate the “run_cm.py” script

- Modify the variables "search_radius", "investment_period", "transmission_line_threshold" and "nuts2_id" in the "run_cm.py" to your needs
- Run the script

Results

In the "results" directory

- results.csv
- "results" directory with shp file showing the transmission line layout

Dependencies

If you use windows you can download a working python interpreter from here:

<https://www.dropbox.com/s/yzenqrju33qkigg/WPy-3661.zip?dl=0>

If you decide to use your own Python interpreter, you will need following packages:

- scipy
- pandas
- igraph
- pyomo
- numpy
- fiona
- shapely
- geopy
- pyproj

Method

Details about the method used by the calculation can be found here:

<https://github.com/HotMaps/hotmaps/wiki/wiki/CM-Excess-heat-potential>

Known issues

Large problem sets (large number of sources and sinks can cause long runtimes and a memory leak in a module causes large use of memory.

Contact

In case of any questions, problems or feature requests please contact:

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