1. There are some transmission lines which consist of expansion (new route) and renovation (on existing line). The length is (somehow) available for both, but the connection between renovation and refining is a punk (mostly). How to combine them or else?
   1. 50HzT-007,
2. There are TL which constructed inside of a substation, using same name for start and end as well as the short length of line.
   1. 50HzT-003, 50HzT- P413, AMP-P154,
3. What about the transmission lines which has small length such as
   1. 50HzT-035 (Netzanschluss PSW (Pumpspeicherwerk) Leutenberg)

24 July 2023 updates

Just for information

The remaining row has been checked and modified.

The required columns from PgAdmin4 were added to the working table, and some available data has been updated in.

It has been found that there are some transmission lines which the name in PDF text is different than what has been wrote in the map, considering that the map shows the name of substation, for these rows the name of substation is taken from pdf map.

A total review has been done, and below rows rechecked and modified.

57 the location name modified, still some issue existing with row number 58 and 59.

129 and 130, the location name modified according to the map.

134 the location name modified.

141-143 the location name modified, and unnecessary rows deleted.

P119 modified according to the pdf map.

P170 modified according to the pdf map.

Below points need clarification and maybe discussion:

The below row needs to be rechecked 153 and 154, the end and start of TL are not shown in the map in pdf and are different in the text?

Project P450 has a point connection in map which didn’t mention in pdf text, this could increase the line, and due to existing of this point the connection between two point is not straight.

The P161 needs to be checked, there is point connection between start and end in the map

About the green highlighted rows number 79&80, which located between P33 and P46, I can’t find such line between these two code in pdf?

The green highlighted row, 129-139, is there any relation between them to combine?

Clarification about row 109 which highlighted orange?

# Update 26July2023

## Progress

1. Searching for substation name which was not available for PgAdmin4 in pdf, internet and google map
2. BBPIG -13 three points mentioned to divide the project which is not necessary the main substation names are from Pulgar – Vieselbach
3. Parchim has only one substation, we could remove Sud from Parchim
4. Realizing to remove “/” from the the substation name.
5. Updating the python codes (MV, HV, TS)
6. In total 20 substation name in start and 26 in endpoint is exist which is only showing the point.
7. Total Start point 244, 156 name of substation are found, 20 names are punk, therefore 68 substation name is unknown
8. Total end points 244, 140 name of substations are available, 26 names are punkt, therefore 78 substation name is not found

## Tasks that might be useful for further step

1. Renaming “NEP\_tables\_V2 - first table26July2023” to a permanent name and adding correct name of substation in Deutsch language. And not using this file for python process. This file will be used to store the data which is surely correct.
2. Considering that substation names extracted for all the table from HV, TB, and MV, starting from first row of table, all result of substation name need to be checked manually to
   1. Firstly, find out if the extraction of substation names are correct or not, for instance in row 15 of test file (26July) the length calculated between two substation 663 km which is wrong and need to be rechecked with pdf and internet.
   2. Secondly, the substation name which couldn’t be found in PgAdmin4 tables, needs to be checked again with pdf file first and then internet. For example, check the “BBPIG -13” in pdf file map, in table it shown 3 transmission line but in map it is only two substation and other are just section of project which create to divide the project work to three sections. These kind of issue might still exist in our table and pdf
3. QGIS could help to find the substation names as well. For example name of substation mentioned Weida (Abschnitt Ost) by matching the pdf map location with qgis map location, screen shots are attached to the whatsapp, it is clear that the name of substation is only Weida and not Weida ost

Update 26.07.23

progress:

* Adjusting the python code for MV and HV, that we can give manual input without getting overwritten.
* Checking the lenth from pdf with calculated length (in TableV2-26Jul\_test) for filtering out what matches has to be checked manually (marked orange in new Inputfile) , but probably there are few more cause of missing from many subtation data
* Renaming “NEP\_tables\_V2 - first table26July2023 to “NEP\_tables\_Input\_July2023 “ as an general Input file, we can put there information about substation, that we found manually. THIS FILE SHOULDN’T BE OVERWRITTEN
* bus\_ids and coordinates of international substation are already integrated into Input file

TO DOS:

* I will continue tomorrow with searching manually in pgadmin and qgis for missing substation data
* we have to discuss about the Length type column again, I think for some NOVA\_types we have to change from “bestand” to “ausbau” like for NOVA-TYP: Parallelneubau
* filling up the table with other

# Update for 30 July 2023

## NOTE:

As we use CSV file, the highlight will be removed after closing the file.

The python code was already modified and checked to prevent any overwriting and it is working correct.

## Progress

AMP-P310 divided to 5 points from 3 points according to the pdf map

Below point manually found from google map and added to the table

Niederrhein (Punkt Meppen) changed to Meppen Google: 7.211702 52.730448

Garrel

Punkt Cappeln West 8.017258 52.791597

Regel- zonengrenze TTG/AMP 7.911058 52.693343

"UW" Mehringen (Grafschaft Hoya) 9.145970 52.832135

"UW" Heide West 9.052015 54.161528

zu neue 380-kV-Anlage 6.967172 51.490748

KlixbÃ¼ll SÃ¼d (Klixbüll/Süd) 8.869150 54.795167

Bundesgrenze DK 8.910507 54.903755

Schwandorf = Umspannwerk Büchelkühn 12.081967 49.297147

Punkt Rittershausen 10.013017 49.611797

Bundesgrenze AT 13.060147 48.272481

Punkt Matzenhof 13.013943 48.290369

Punkt Adlkofen 12.260740 48.546736

Kreis Segeberg 9.985091 53.742518

Lübeck West (google name Pohnsdorf Umspannwerk – Stockelsdorf) 10.640401 53.919855

Punkt Tschirn (Landes- grenze BY / TH) 11.478551 50.432455

Mannheim (G380) 8.545514 49.439807

Leitung Preilack – Neuenhagen used etrago bus

Punkt Lemförde 8.37266130421446 52.47441724607989 used etrago bus

Punkt Wettringen 7.3512625985165405 52.22420146066771 used etrago bus

Gütersloh changed to Blankenhagen (probably same location)

Punkt Fellerhöfe 6.5881942 51.2842253 used etrago bus

Punkt Hüls-West 6.4866761 51.3771562 used etrago bus

Punkt Ochsenkopf 7.6024747 51.3461062 used etrago bus

AMP-022 divided into 4 line according to pdf map

Merzen 7.867899 52.476150 future substation, new point

Gellep 6.6758761 51.3239503 used etrago bus

Punkt Birkenhof used etrago bus

AMP-P41 divided according tom pdf map

Punkt Metternich 7.483180198854174 50.39080766358059 used etrago bus

Farbwerke Höchst-Süd 8.537219075722877 50.078085067548315 found not named mv substation

AMP52 divided acccording to pdf map

DC2 devied according to pdf map

Punkt Wullenstetten used etratgo bus

Punkt Niederwangen used etrago bus

Punkt Rittershausen used etrago bus

Mast 115A used etrago bus

Emden/Ost chnaged name to Emden-Borssum

Klein Rogahn changed to görries(probably same location)

Region Hamm used not named substation

Hallendorf/Gleidingen changed to salzgitter-hallendorf ; there will be new replacing subtation in future

Kreuzung M24b/ TTG-006 used etrago bus

Punkt Neuravensburg used etrago bus

Suchraum Stadt Rottenburg/Gemeinde Neufahrn used etrago bus

St. Peter used etrago bus

Mehringen used etrago bus

Schraplau/Obhausen used etrago bus

Punkt Roxheim used etrago bus

Kreis Konstanz will build in future used not named mv subst

Punkt Blatzheim used etrago bus

Sanitz/dettmanndorf used etrago bus at sanitz

Pasewalk Nord deleted becauso subst pasewalk is really close

P223 Klein Rhogan will build in future deletd because subst görries is really close

lehrte/lahe will build in future changed to lerte

Punkt Biesdorf Süd USED ETRAGO BUS

Linderhausen will bild in future used etrgao bus

Aach used etrago bus

Punkt bofferdange used etrago bus

emscherbruch used etrago bus+

Punkt Fraulautern used etrago bus

Eschborn changed to Westerbach (nearby)

Berlin / Südost changed to schönefeld Nord

Mahlow used etrago bus

Python code edited to calculate the length from the coordinate, because some of the coordinate manually added in to the table.

Progress started from row 50 up to row number 91, all substation/punkt coordinate has been extracted and added to the tables “NEP\_tables\_Input\_July2023” and “NEP\_tables\_V2 - first table26July2023 – test”

Lesson learned.

* Checking each row and when no similar correct name found for the start and end substation, Searching an important part of substation name in HV, MV, switch station, and replacing the correct name. it is required to be sure that the found substation name is what we are searching for. also, for rechecking the correctness, the extracted coordinate added in google map and the location compered to the pdf map. For example “Stade West” which after searching precisely it found that the name in PgAdmin4 is ”Stade-West”, or Emden Ost which in pgAdmin4 it is   
  Emden-Borssum.
* If the substation name is not available in any tables from PgAdmin4, name searched in google map, and it tried to find the substation through searching in google, then if substation was available the location matched with pdf map, and the coordinate extracted from google map and added to our excel sheet. For example, Heide West, which its name in google map is UW Heide West and the location is same as pdf. Therefore, the name "UW" Heide West is used in our table.
* If the location of substation couldn’t be recognized in google, or it the point is for a “punkt” then the location found in google manually by compering to the pdf map, the picked location tried to has perfect match with the visual location in pdf map, and the coordinate extracted for the point and added to our table. For example “Mehringen (Grafschaft Hoya)“ which found to be "UW" Mehringen (Grafschaft Hoya).

Progress comments 01.08.23

* DC1a we probably don’t need it, same as DC1, just s-nom increase
* Worked up to line 146, i pushed just the updated Input file
* You can see progress in the list, you started above
* i changed additionally some names, so that code will find a match
* Just for reminding: we shoul have a look at bentwisch in the end, if code find HGÜ subst or normal subst

Progress 6.08

* noticed that there is problem with calculating length of google coordinates (e.g line 86 Input file) ,

didn’t solved yet

* finished Input\_file, All lines have coordinates, but not all have bus\_id (ask clara if bus\_id is required)
* writing new python script for filling out missing paramaters of table: values\_NEP\_lines.py
* assumed many parameters accordin to existing line\_table or claras instruction:
  + cables = f'A {3}' (ASSUMPTION)
  + um\_parallel'= f'A {1} (ASSUMPTION)
  + \_nom\_extendable = True
  + s\_nom\_min'= 's\_nom']
  + s\_nom\_max =.inf
  + v\_ang\_min'= -inf
  + v\_ang\_max'= nf
  + terrain\_factor'= 1
  + s\_nom=1790 (wherewe don’t have information about capacity
* calculated x and r with values from parameters.py
* cost calculation is still missing because I didn’t understand how they do it in parameters.py (they give a value for a specific line type, but result is not right with this)
* noticed that length calculation result in format as “HV 20” (e.g.) cause problem for calculation with length, we should leave it out when we don’t need it anymore

# Progress Update 08 August 2023

Rectifying x and r calculation method which was wrong.

There are some different between build\_year and “anvisierte Inbetriebnahme”, which one is correct

How to do cost calculation, the estimated cost calculated for the existing line and the result is not same as existing lines cost?

Is bus\_id required for each point?

To find the s\_nom capacity of the lines, for which there is not information due to only upgrading of the voltage, it is required to identify the existing line for new line and coping its s\_nom data considering the upgraded voltage to new lines. But how to distinguish similar existing lines? The bus0 and bus1 is a way but it is not working to find all required lines.

Use “Annualize capital cost” and the discount percentage of 0.05 percent to calculate the cost of transmission line. In exiting line the cost calculated per year not in total 40 years