Pole Calculator Basic
Release version 1

To use the program review the examples called test1.py and test2.py along with the files configured for them as described in file layouts below. The test files were recreated examples from the technical bulletin from the North American Wood Pole Council titled “Wood Pole Design Considerations”.

The example called spantest.py is a calculator to show the maximum span for theoretical lines or general guidelines. It can be seen in the file that it launches a function called spanlaunch and does not do a full analysis.

File input specifications:
Filename: poledb.csv

StudyPoleTag	PoleTag	PoleNumber	PoleHeight	PoleClass	MapX	MapY	PoleSpecies	GraadeHeight
00001	00001	0	45	3	0	0	southernyellowpine	
00001	00002	1	40	4	0	-300	southernyellowpine	
00001	00003	2	40	4	0	200		
00002	00002	0	40	4	0	-300		
00002	00001	1	45	3	0	0		

The first three columns are basically a multi-level index. The study pole tag being level 0, each pole connected to the study pole including itself is level 1, and finally the pole number for each connected pole with 0 referring to the study pole.

This table can be as long as needed to accommodate all study poles.

Wood pole species available for calculation are alaskayellowcedar, douglasfir, jackpine, lodgepolepine, ponderosapine, redpine, redwood, sitkaspruce, southernyellowpine, westernfir, westernlarch, westernredcedar, westhemlock, and whitespruce.

Gradeheight can be provided or it will be calculated.

Filename: conddb.csv (commdb.csv follows a similar format but is merely for experiental currently)

StudyPoleTag	PoleTag	PoleNumber	Assembly	AssemblyHeight	ConductorType	ConductorName	Height
00001	00002	0	A1.1		AAAC	Ames	
00001	00002	1	A1.1		AAAC	Ames	
00001	00003	0	A1.1		AAAC	Ames	
00001	00003	1	A1.1		AAAC	Ames	
00002	00001	0	A5.2		AAAC	Ames	
00002	00001	1	A5.2		AAAC	Ames	

The first three columns of this file follow the layout of above, with the exception that the study pole itself has no entry.

The assembly should be entered to properly calculate heights, at this time only a selection of RUS 12.47/7.2kV constructions have been included.

If the assembly is not mounted at the point of the pole according to the RUS specifications, the distance should be listed here (negative value distance from top of pole).

If the exact height of the conductor is known then it can be filled in the Height column, otherwise the program will use the Assembly and AssemblyHeight fields.

Filename: guydb.csv

StudyPoleTag	PoleTag	PoleNumber	Assembly	GuyHeight	GuyType	GuyX	GuyY	GuyTension
00001	00001	0	E1.1		5			
00001	00001	1	E1.1		5			

The first three columns of this file follow the above layouts with the exception that only study poles are included.

Assembly types are to be implemented in a later release

GuyHeight should be the height of the guy attachment, this value is required, if it is not a positive number the guy will be skipped and left as nan.

GuyType is one of 6 calculation techniques:

1. Calculation based on distance form pole in GuyX and the angle from the east/west line looking down on the pole.
    a. Will default to a 1:2 calculated guy type if:
        i. GuyTension not a positive number
        ii. GuyX not a number
        iii. GuyY not between -2pi and 2pi
2. Calculation based on the mapping coordinates in GuyX and GuyY.
    a. Will default to a 1:2 calculated guy type if:
        i. GuyTension not a positive number
        ii. GuyX or GuyY not a number
3. Calculation of GuyTension, GuyX, and GuyY based on 1:1 guying.
4. Calculation of GuyTension, GuyX, and GuyY based on 1:1 guying.
5. Calculation of GuyTension, GuyX, and GuyY based on 1:1 guying.
6. Calculation based on the mapping coordinates in GuyX and GuyY for overhead guy.
    a. Will default to a 1:2 calculated guy type if:
        i. GuyX or GuyY not a number
    b. If GuyTension is not a positive number the GuyTension will be calculated based on total moments remaining on pole.