

TESS MANUAL V1.0

Put the executable file (**tess.exe**), source code(**tess.cpp**, written in Borland C++, Version 5.02) and input file (**tessinput.txt**) into the same folder. Just click the executable, and select the case you want to run from the menu. When the selected case is finished the menu appears on the screen again, and you can make a new selection. The output is written into text files. Each case has different hourly and daily output files as below;

- 0. Benchmark Case: Administered Price Regulation Case
 - Output file for hourly values: **aprhourly.txt**
 - Output file for daily total values: **aprdaily.txt**
- 1. Free Consumer Case;
 - Output file for hourly values: **fcchourly.txt**
 - Output file for daily total values: **fccdaily.txt**
- 2. Distributional Monopoly Case
 - Output file for hourly values: **dmchourly.txt**
 - Output file for daily total values: **dmcdaily.txt**

When each case is run, its output files are written into the same folder you put source code, executable and input text file. You can select a case by just typing its number as shown above (“0” for benchmark case, “1” for free consumer case and “2” for distributional monopoly case). Note that it may take a few minutes to run the first two cases, and up to half an hour to run the distributional monopoly case.

The structure of input file

The input text file has three parts: 1. Systemwide inputs 2. Bus level inputs 3. Line level Inputs

1. Systemwide inputs:

Number of busses and *number of lines*. In our case, 30 and 44

2. Bus level inputs (30 blocks in our input file)

Bus Type: “1” for Demand Bus
 “2” for Generation Bus
 “3” for Both Demand and Generation Bus

Number of Generators Located (If *Bus Type=2 or 3*)

Regional Status “0” for PRD regions
 “1” for Non-PRD regions

Approximated Fixed Demands (If *Bus Type=“1” or “3”*) for 24 hours

Demand Parameters (If Bus Type="1" or "3")

α_j fixed parameter (not used in our model and program)

β_j for 24 hours

δ_j for 24 hours

Demand minimum set to "0" for every demand for each hour

Demand Maximum set to "7000" for every demand at each hour

contract status indicates whether the demand has any predetermined contract ("1") or not ("0"), we assume that there is no contracted demand in the system, therefore "0" for every demand for each hour

Number of connections

[Number of connections couples] Connected to Bus No. Connected via Line No.

[Number of Generators Located generators]

Generator Parameters (If Bus Type=2 or 3)

a_i (set to zero for all generators)

b_i (constant for the whole day)

c_i (constant for the whole day)

Generator Maximum

contract status indicates whether the generator has any predetermined contract ("1") or not ("0"), we assume that there is no contracted generation in the system, therefore "0" for every demand for each hour

3. Line level parameters (44 lines in our case)

Line_Maximum Line-susceptance Line-resistance

TESS Turkish Electricity System, Simulated Network Map

