Differences Between ARPA-E Data and Original RTS-96 Data

# Buses

PQ and PV buses: depending on the hour, some units will be disabled according to unit commitment schedule. As a result, buses which register as PV in RTS-96 Table-01 will be PV buses instead.

# Generators

In each of the three areas, one generator from the 7th bus is moved to the 8th bus, making it a PV bus (when that generator is committed).

# Lines

Line AB1 becomes Line 115

All line limits are reduced to 80%. Without this modification, it is difficult to induce strain in the network.

# Data Formats

Original: [Washington Website](http://www.ee.washington.edu/research/pstca/rts/pg_tcarts.htm)

* From [original paper](http://ieeexplore.ieee.org.proxy.lib.umich.edu/xpl/articleDetails.jsp?tp=&arnumber=780914&queryText%3Dthe+ieee+reliability+test+system)
* No wind or storage
* 15 tables, MS Word or plain text format
* ARPA-E team moved generators between 7th and 8th nodes of each area to give each node at least one. Jenny believes this was done to obtain a different voltage profile. The bus types (PQ vs PV) must be altered to reflect this.

ARPA-E team: Input\_Data.xlsx

* Excel file with 16 sheets
  1. Line\_Data
  2. Line\_Map
  3. Generator\_Data
  4. Generator\_Map
  5. Generator\_Commitments
  6. Generator\_Outputs
  7. Load\_Active
  8. Load\_Reactive
  9. Wind\_Deterministic
  10. Wind\_Data
  11. Wind\_Curtailed
  12. Wind\_Map
  13. Storage\_Data
  14. Storage\_State
  15. Storage\_Charging
  16. LMPs

Jenny’s intermediate format: UWCase3\_Dec2013.xlsx

* Compatible with MATLAB import scripts “CaseData.m” and “NetworkData.m”
* Slightly different notation, and some data blocks transposed
* Does not have complete unit commitment data (Jenny only needs gen outputs)
* Jenny has tasked an undergrad with developing a script that can go straight from Input\_Data.xlsx to MATLAB variables for MATPOWER or other PF algorithms.

# Modifications to Jenny’s Network

Storage is a needless complication for instanton analysis at this stage, so the decrease in demand that would occur in the presence of storage is prevented. Generator commitment remains the same, so conventional generation must pick up slack.

# Procedure for Running MATPOWER on Jenny’s Network with Storage Excluded

Begin with one input file and two MATLAB scripts, all from Jenny:

* “UWCase3\_Dec2013.xlsx” contains all data in Jenny’s intermediate format
* “CaseData.m” extracts case-specific data: matrices for all generator outputs at every time interval, loads at each time interval, etc.
* “NetworkData.m” contains network data from the original tables on the Washington website: bus data, line data, etc.