

# NEXT DAY/DAY AHEAD AND FUTURE HOUR STUDY

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06/07/2017

# FUTURE HOUR STUDY BACKGROUND

- 1996 Blackout – Case setup time
- West Coast Heat Wave On July 17-24, 2006 – Case setup time
- 2009 – BPA Technology Innovation Study automation project
  - Fast & Reliable network model
- 2011 Arizona-Southern California black
  - Next day study
- Future hours study tool
  - More complicated than next day study
    - Timing consuming to setup
    - Achieve convergence solution
- Tools help meet NERC Reliability Standards:
  - TOP-00-4
  - FAC-011-2,3
  - FAC-014-2

# WHAT IS THE CURRENT PROBLEM?

- At each forecasted time, the following needs adjustment:

- Load

- Area
- Zone
- Individual Loads
- Injection Groups

- Generation

- Zone
- Injection group
- Units
- Stations

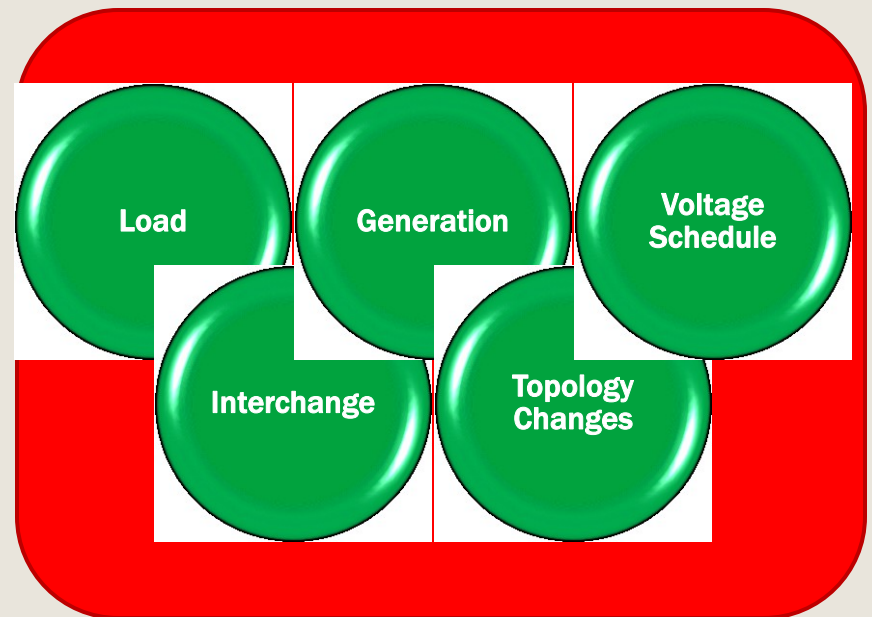
- Interchange

- Voltage schedule

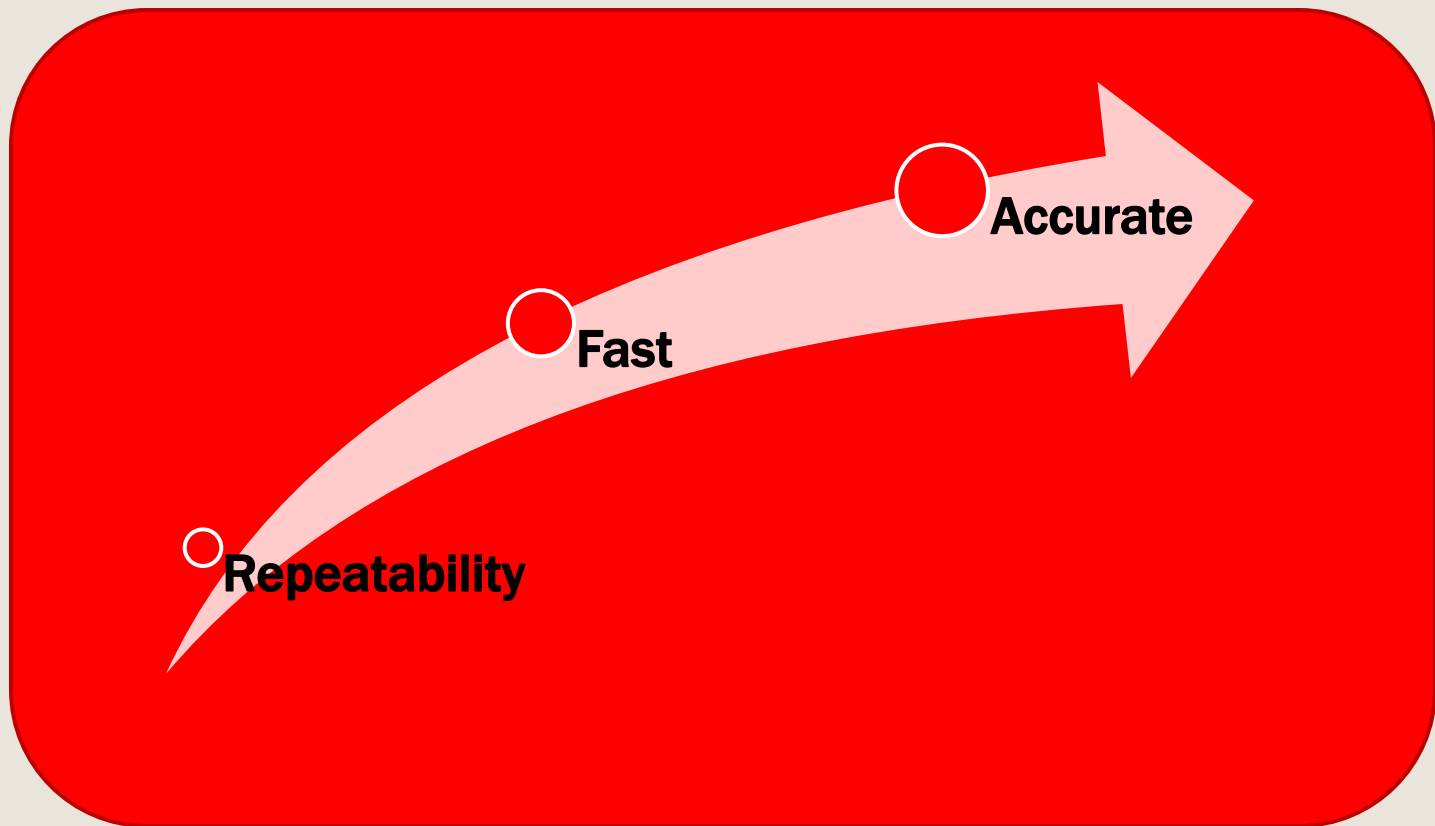
- Topology Changes

- So many data points to be modified

- Time consuming
- Error prone
- Not repeatable
- Solution may not converge



# WHY WE NEED A TOOL?



# PROCESS OVERVIEW

**State  
Estimator /  
Seasonal  
Case &  
Forecast  
Data**

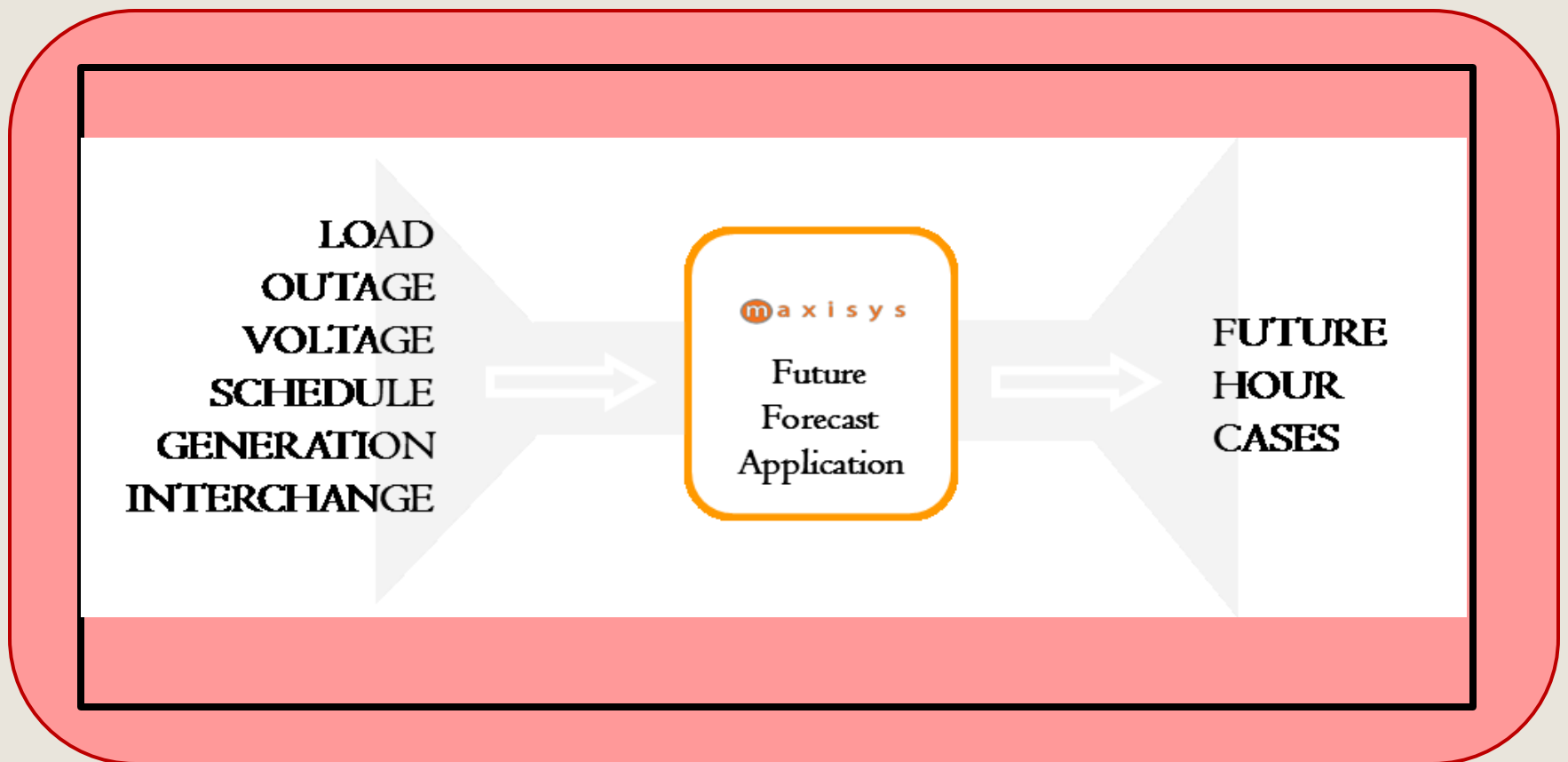
**Base Cases  
(Future  
Time)**

**Planned  
Outage  
Cases**

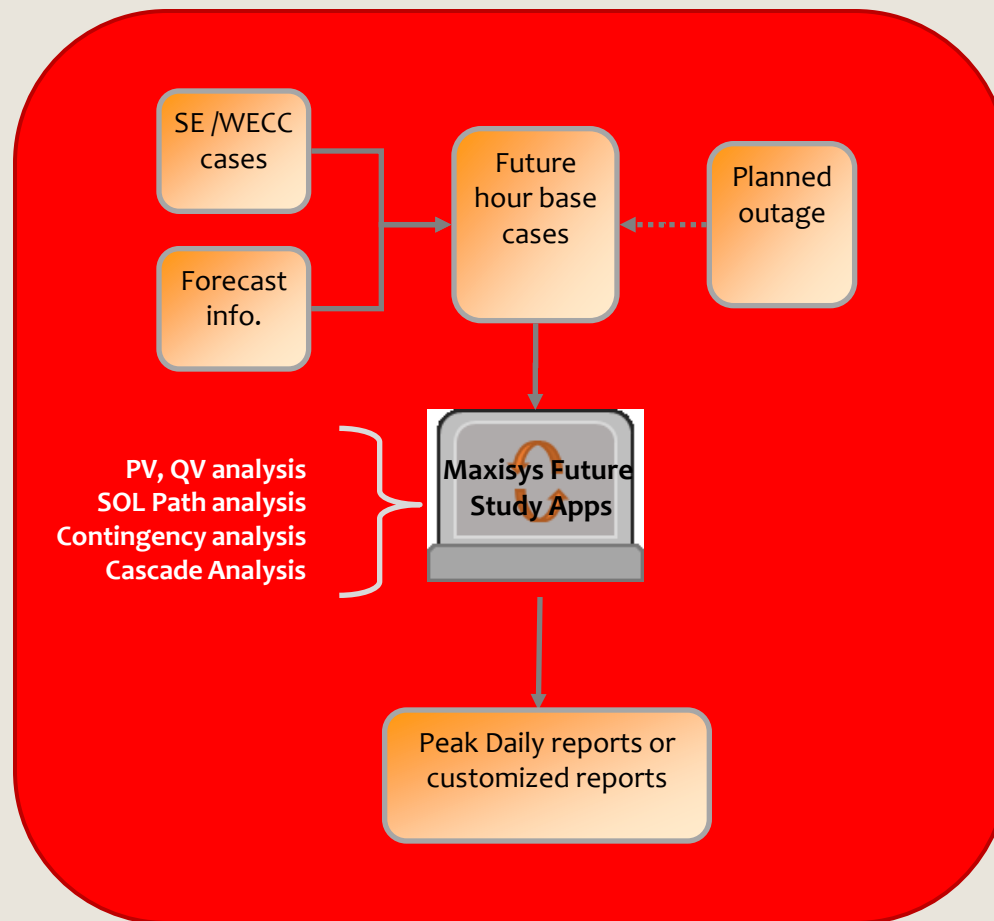
**Study  
Applications**

**Visualization  
& Reporting**

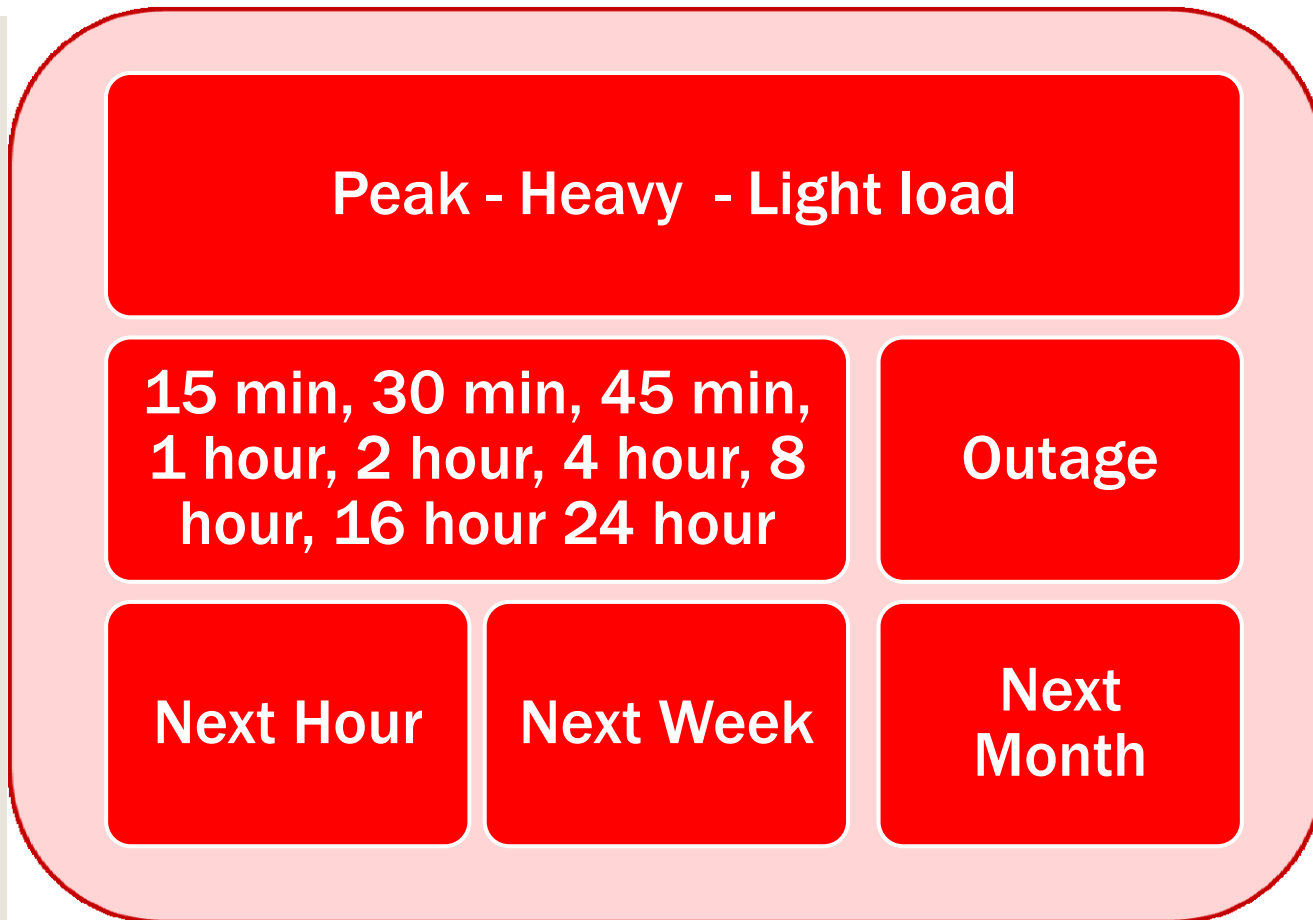
# WHAT THE FORECAST BASE CASE CREATION TOOL DOES?



# FUTURE HOUR STUDY AUTOMATION TOOL



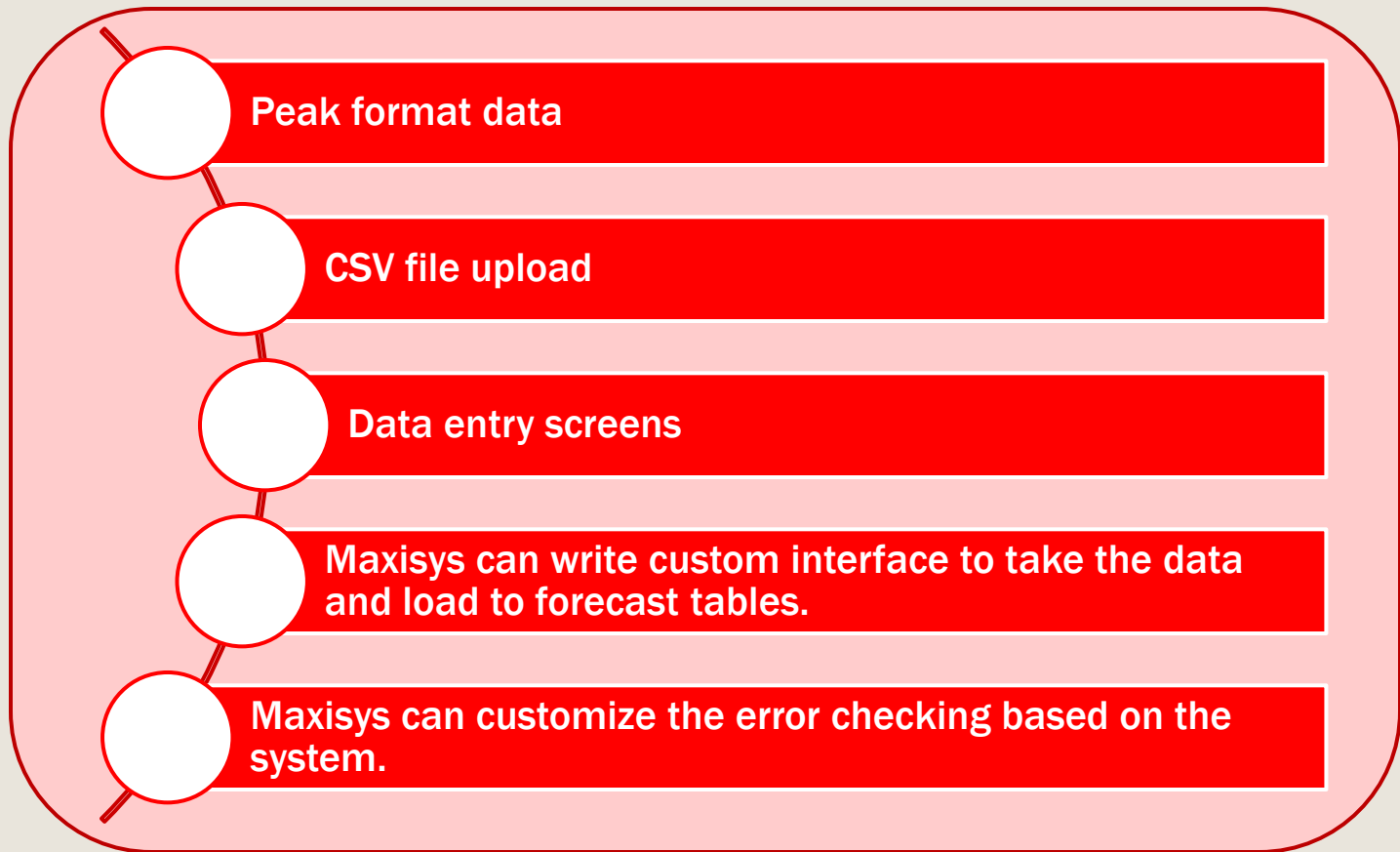
# CASES GENERATED BY TSA TOOL



Flexibility to generate different cases

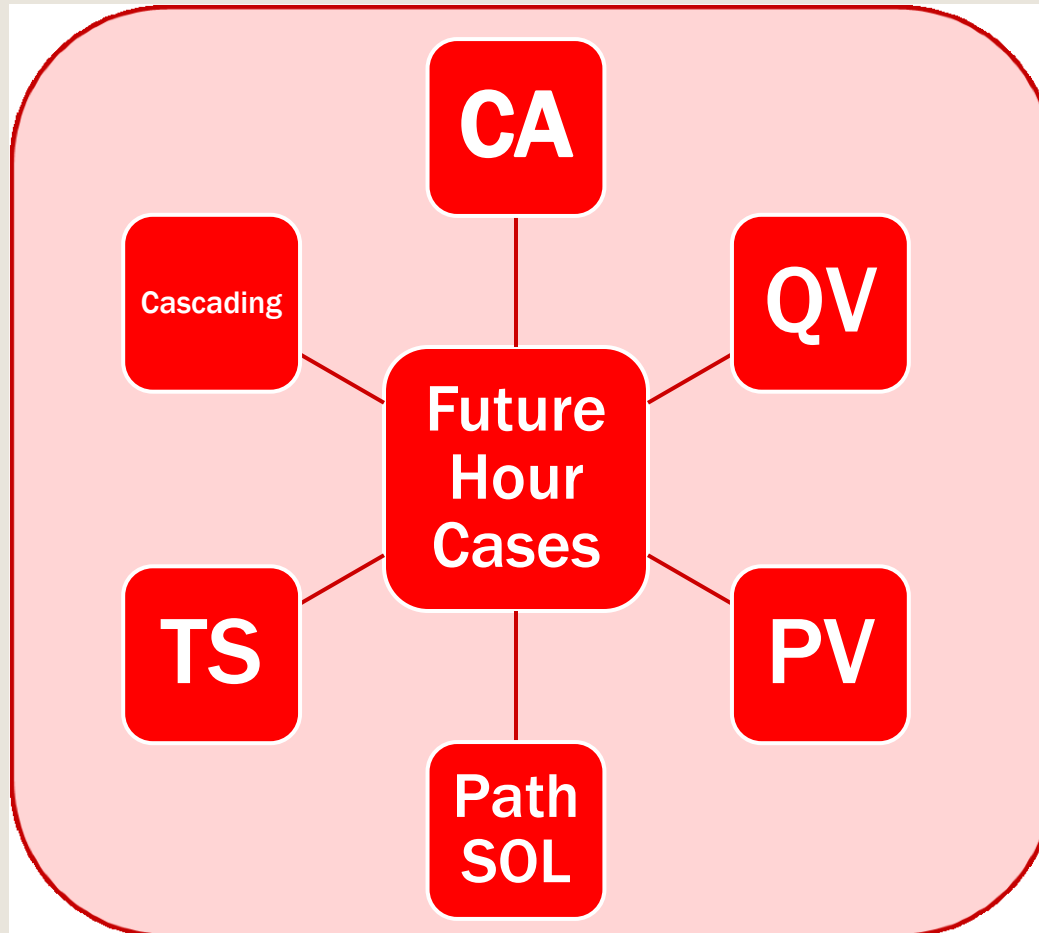


# HOW THIS TOOL CAN WORK WITH OTHER TYPE OF DATA?



# STUDY APPLICATIONS

# STUDY TOOLS



Run on Multiple cases and generate summarize results

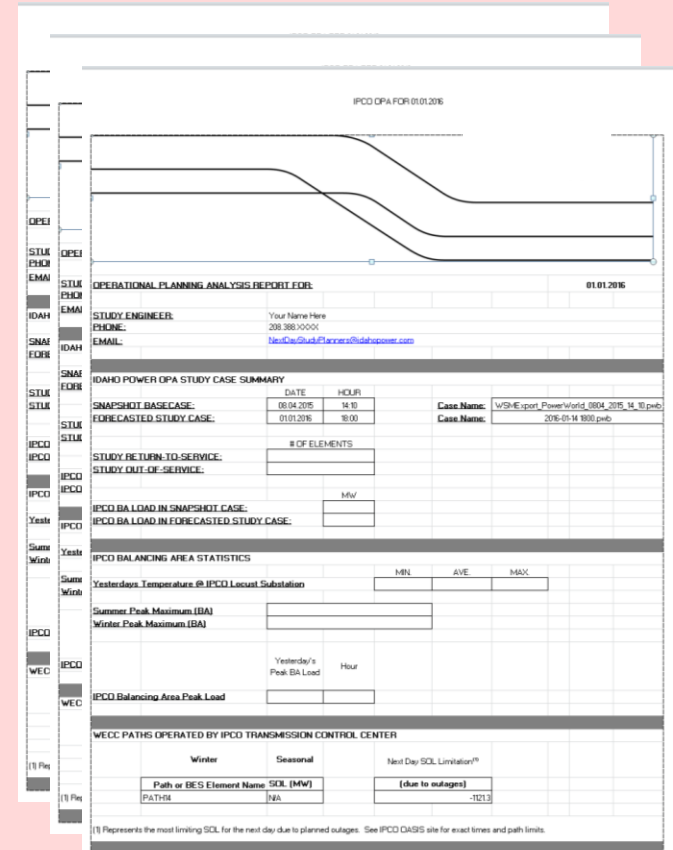
# STUDY APPLICATIONS

- Can analyze multiple cases and summarize the results
- One does not have to run one base case at a time
- Save time for study engineers
- Easy to identify problems
- Repeatable process

# REPORT

# REPORT

- Generate report automatically
- from
  - Base case
  - Forecasted case
  - Contingency analysis
  - Path SOL Results
- Avoid manual entries
- Saves time
- Repeatable



# SUMMARY

- Most powerful platform for future hour studies compared to any tools available in the market
- Easy to use, repeatable, fast and accurate
- Uses proven Powerworld powerflow
- Can take different types of forecast
  - Load – Area, zone, injection group and individual loads
  - Gen – units, substation, injection group
  - Outages – Switches or lines
  - Voltage schedule
  - Net interchange schedule
- Automatically report can be generated
- Can customize application, interface and report generation based on your system needs.

**Demo or Further info:**

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