



# Single Line Diagram (SLD) Guidance for Open Window Submittals

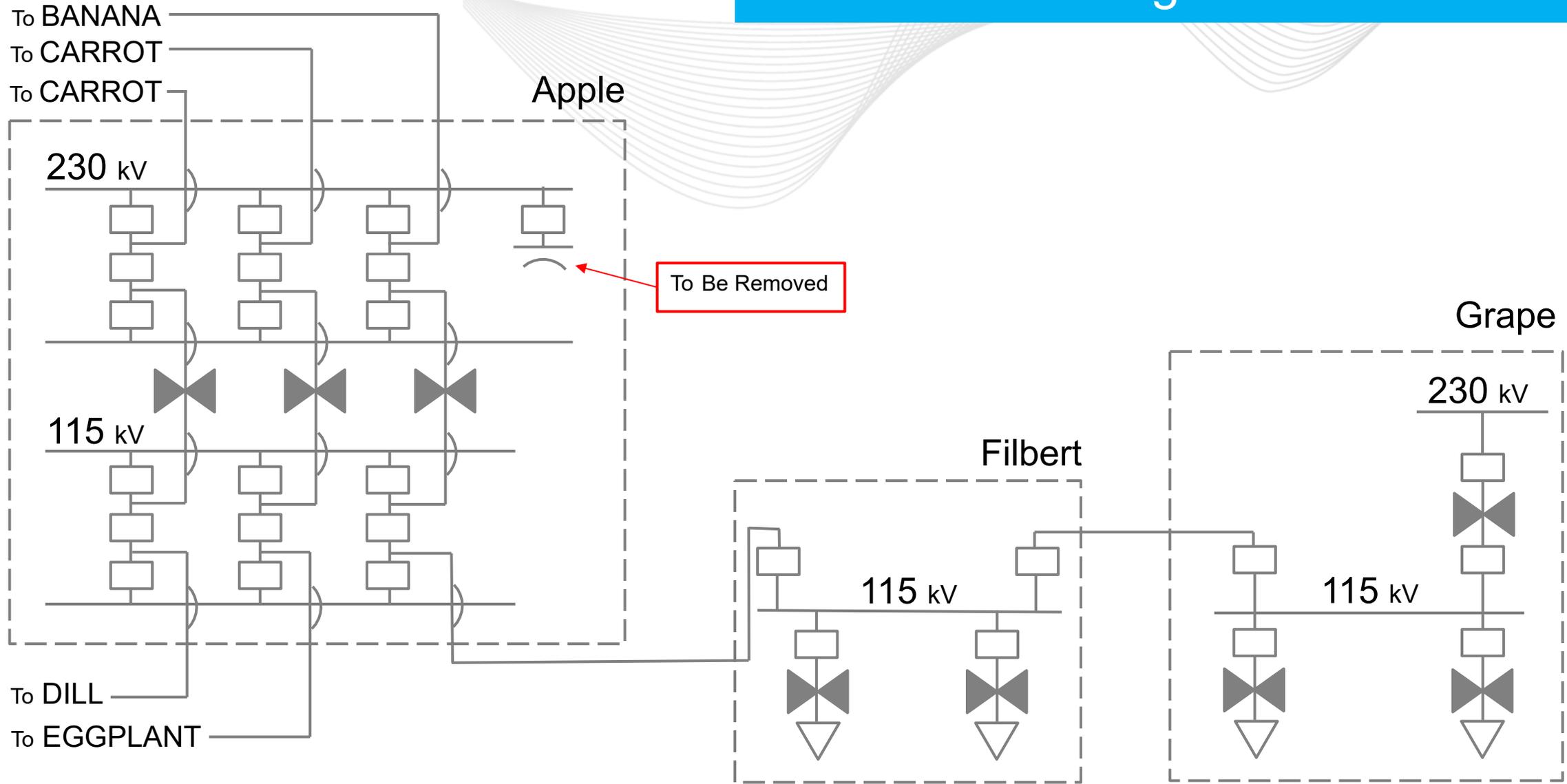
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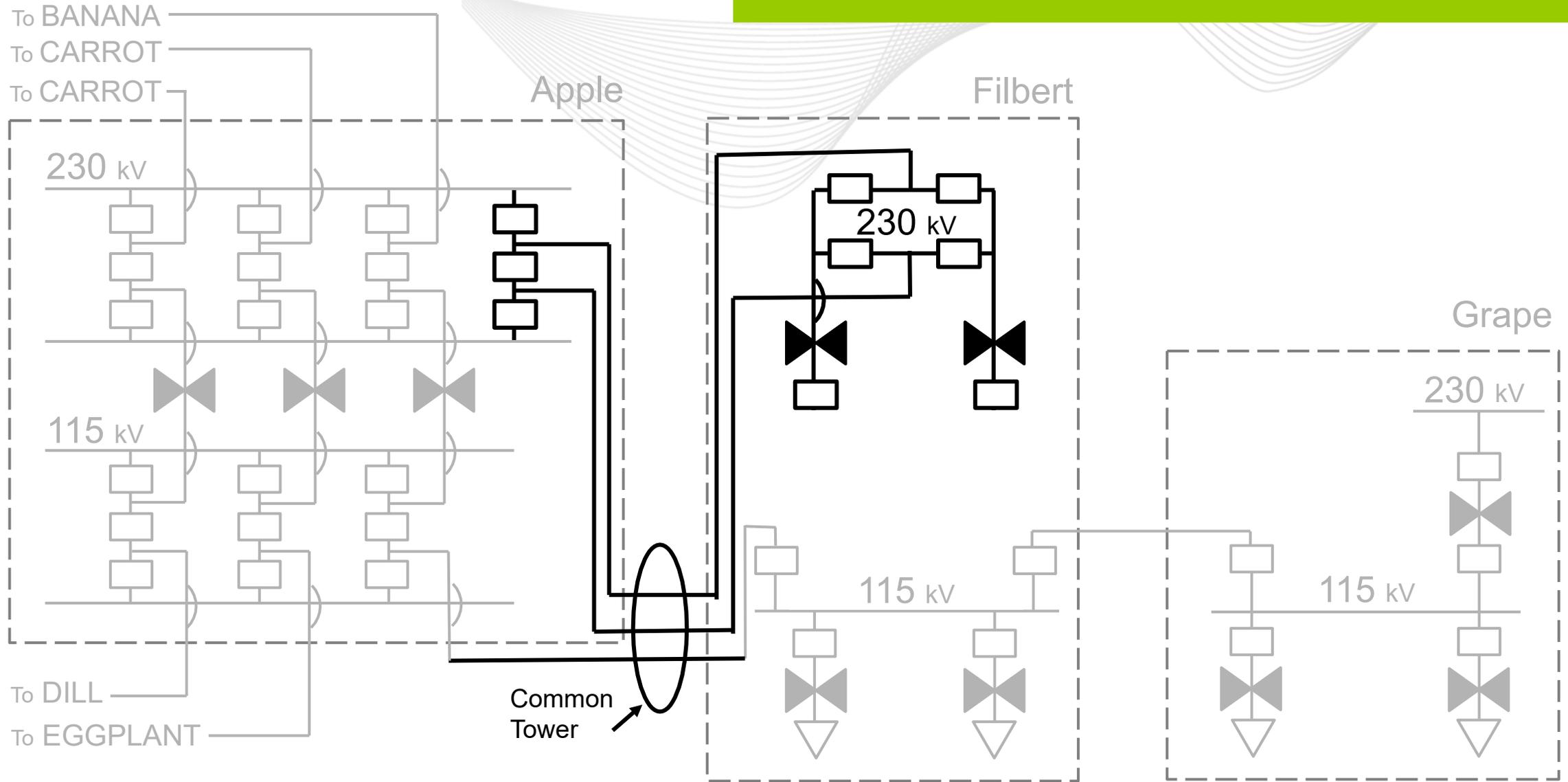
June 06, 2023

- PJM typically receives many project proposals whenever a competitive window is open. The process of selecting a winning proposal includes PJM Transmission Planning modeling each project and subsequently performing reliability analysis.
- Single Line Diagrams are critical for communicating the proposal:
  - Validating the modeling (idv files) for accurate incorporation to the study case
    - Facilities to be Removed, Added, Modified
  - Validating changes to the Contingency Sets
    - Contingency Definitions to be Removed, Added, Modified
  - Understanding the sequencing of project phases
    - Existing System Topology - showing those facilities relevant to the proposed project
    - Post In-service Topology – resultant topology after each project phase

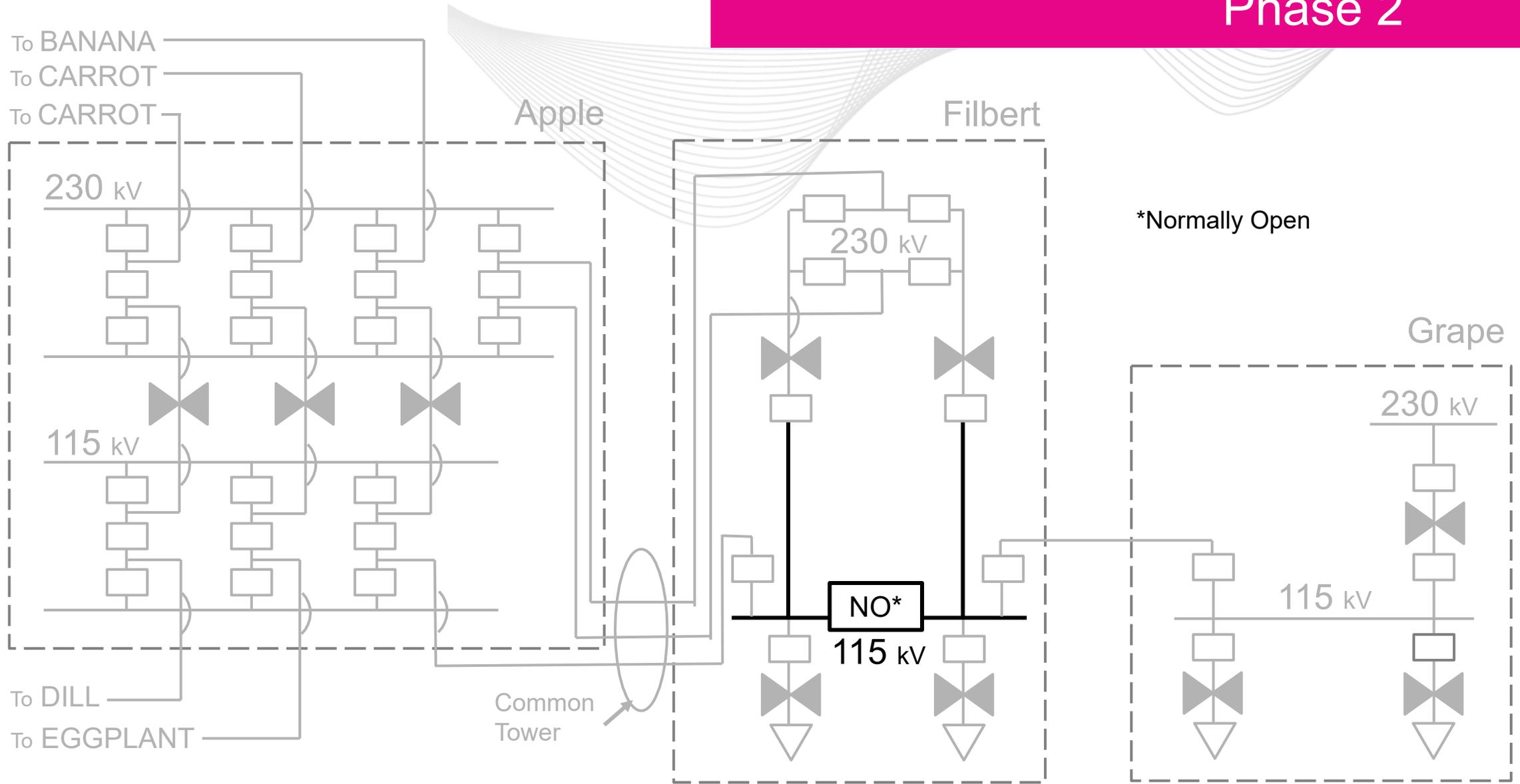
# Existing Conditions



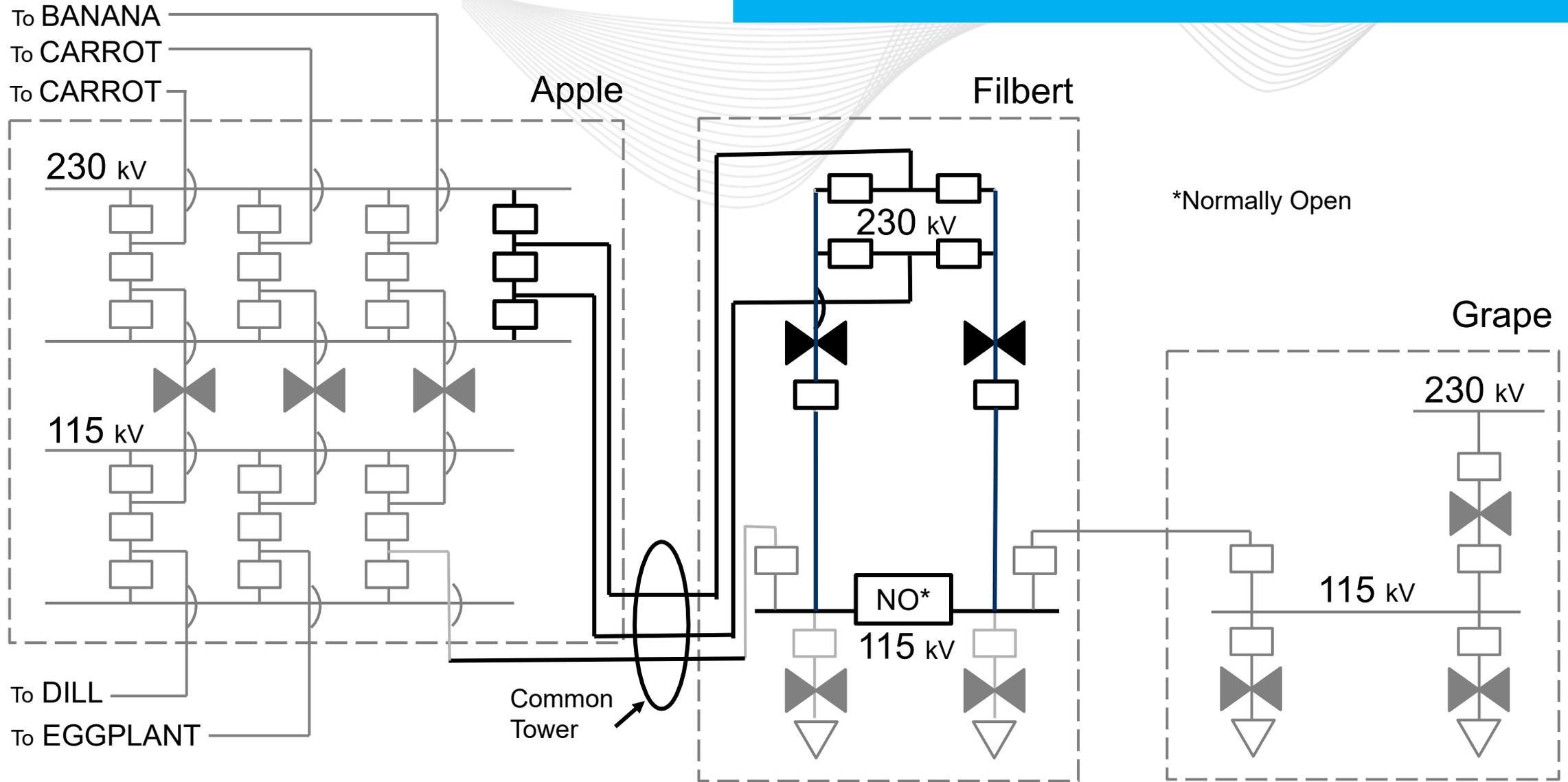
# Phase 1



# Phase 2



# Phase Final



- Proposing entities may use their own graphics on submitted SLDs
- For optimal communication and clarity:
  - SLD of Existing System
    - Only show facilities relevant to the project.
    - Identify facilities to be removed in the subsequent project phase. These facilities will be missing in subsequent SLD
  - SLD of Intermediate Project Phase
    - All facilities installed from a previous project phase should be represented the same as existing facilities (Normal Weight)
    - Ensure all facilities identified for removal from a previous project phase are missing
    - Identify all facilities added in the current project phase (Heavy Weight)
    - Identify facilities to be removed in the subsequent project phase.
    - Include graphic to facilitate validation of Contingency definitions (i.e. Common Tower, breaker diagrams, etc.)
  - SLD of Final Project Phase
    - Identify all facilities added for **all project phases** (Heavy Weight)



# Contingency Naming Convention

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- For each RTEP study year, six (6) contingency files are required. The common names of these six contingency files and the associated NERC TPL contingency definitions are shown in the table below:

PJM File Name	TPL-001-5 Contingencies
Single	P1 (All)
P_2-1	P2.1
Bus	P2.2
Line_FB	P2.3, P2.4 P4 (All)
P5	P5
Tower	P7(All)

## 1. Standard Format

- PJM has identified a specific naming standard convention to contingencies. This is necessary to be able to sort on contingencies that apply to certain seasons and assist in the consolidation of all contingency files into one (1) yearly set per contingency type.
- Below is an example of the standard format:

**“Company Name” \_ “TPL Number” - “Sub Number Remainder of Contingency Title” \_ “Sort” - “Seasonal Restricted”**

## 2. Seasonal Consideration and Sorting

- To maintain all different seasonal contingencies within a yearly contingency case, contingency titles will require a standard adder to providing sorting capability.

Command for Cont.	Command for Cont.
_SRT-A	_SORT-ALL
_SRT-S	_SORT-SUM
_SRT-W	_SORT-WIN
_SRT-L	_SORT-LL
_SRT-SL	_SORT-SUM & LL
_SRT-WL	_SORT-WIN & LL
_SRT-SW	_SORT-SUM & WIN

## 3. Contingency File Naming Convention

- Below are several examples of valid contingency names:
  - AP\_P1-1\_MP-138-513\_SRT-S
  - ATSI\_P1-2\_OEC-69-010\_SRT-A
  - AEP\_P1-2\_#5522\_SRT-L
  - CE\_P4\_207-38-L4606N\_SRT-A
  - DVP\_P7-1\_LN 46-74\_SRT-SW
  - ME\_P2-2\_ME-115-022T\_SRT-W

## 4. Contingency File Naming Convention

- PJM requires consistent naming of the .con files to assist when compiling the various contingency files from the different members together. Below is the standard for naming contingency files.

- **RTEP-SSSS\_YYYY\_CCCC\_TTTT\_RR**

- Legend for the format above where:

- ⌚ S = RTEP Series Year
- ⌚ Y = Case Year
- ⌚ C = Company
- ⌚ T = Type (Tower, Single, Line\_FB, Bus, P\_2-1, P5)
- ⌚ R = Revision (Start at Revision 0)



# Contingency Change & Idev File Submissions

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June 06, 2023

- Currently, PJM receives contingency changes in multiple formats:
  - Text file, excel, word
  - Deletions, additions, modifications
  - All in one file vs. separate files
- PJM is looking to standardize the submission of contingency changes to minimize confusion and any potential errors:
  1. Submit contingency changes using the provided “Contingency Change Submission” template
  2. Follow the contingency naming convention as described in previous section
  3. Use unique contingency names (i.e. no duplicate contingencies)
  4. Use ‘delete’ and ‘add’ methodology in template to represent contingency modifications

- New Contingencies

Delete	Add
N/A	CONTINGENCY 'PJM_P1-2_BUS1_BUS2_SRT-A' DISCONNECT BRANCH FROM BUS #####1 TO BUS #####2 CKT 1 /* BUS 1 138 TO BUS 2 138 END

- Deleted Contingencies

Delete	Add
CONTINGENCY 'PJM_P1-2_BUS1_BUS2_SRT-A' DISCONNECT BRANCH FROM BUS #####1 TO BUS #####2 CKT 1 /* BUS 1 138 TO BUS 2 138 END	N/A

- Modified Contingencies – 1:1 Replacements

Delete	Add
CONTINGENCY 'PJM_P1-2_BUS1_BUS2_SRT-A' DISCONNECT BRANCH FROM BUS #####1 TO BUS #####2 CKT 1 /* BUS 1 138 TO BUS 2 138 END	CONTINGENCY 'PJM_P1-2_BUS1_BUS3_SRT-A' DISCONNECT BRANCH FROM BUS #####1 TO BUS #####3 CKT 1 /* BUS 1 138 TO BUS 3 138 END

- Modified Contingencies – 1:2 (or more) Replacements → Merge the “Delete” cells

Delete	Add
CONTINGENCY 'PJM_P1-2_BUS1_BUS2_SRT-A' DISCONNECT BRANCH FROM BUS #####1 TO BUS #####2 CKT 1 /* BUS 1 138 TO BUS 2 138 END	CONTINGENCY 'PJM_P1-2_BUS1_BUS3_SRT-A' DISCONNECT BRANCH FROM BUS #####1 TO BUS #####3 CKT 1 /* BUS 1 138 TO BUS 3 138 END
CONTINGENCY 'PJM_P1-2_BUS3_BUS2_SRT-A' DISCONNECT BRANCH FROM BUS #####3 TO BUS #####2 CKT 1 /* BUS 3 138 TO BUS 2 138 END	CONTINGENCY 'PJM_P1-2_BUS3_BUS2_SRT-A' DISCONNECT BRANCH FROM BUS #####3 TO BUS #####2 CKT 1 /* BUS 3 138 TO BUS 2 138 END

- Modified Contingencies – 2 (or more):1 Replacements → Merge the “Add” cells

Delete	Add
CONTINGENCY 'PJM_P1-2_BUS1_BUS3_SRT-A' DISCONNECT BRANCH FROM BUS #####1 TO BUS #####3 CKT 1 /* BUS 1 138 TO BUS 3 138 END	CONTINGENCY 'PJM_P1-2_BUS1_BUS2_SRT-A' DISCONNECT BRANCH FROM BUS #####1 TO BUS #####2 CKT 1 /* BUS 1 138 TO BUS 2 138 END
CONTINGENCY 'PJM_P1-2_BUS3_BUS2_SRT-A' DISCONNECT BRANCH FROM BUS #####3 TO BUS #####2 CKT 1 /* BUS 3 138 TO BUS 2 138 END	CONTINGENCY 'PJM_P1-2_BUS3_BUS2_SRT-A' DISCONNECT BRANCH FROM BUS #####3 TO BUS #####2 CKT 1 /* BUS 3 138 TO BUS 2 138 END

- PJM is looking to standardize the submission of idev files to minimize confusion and any potential errors:
  1. Add comments inside the idev file to clearly show/explain the changes being made
  2. Include only commands that change the model (i.e. no BAT\_GEXMBUS, BAT\_FDNS, etc.)
  3. In the first line of the idev, add the following:
    - a) Idev creations date
    - b) RTEP case year
  4. Include the applicable season that the idev is applicable to in the file name (WIN, SUM, LL, or All)

Applicable season in file name

Include creation date

Include RTEP year

```
#####1-#####2 Rating Correction_SUM.idv
1 /*Generated on FRI, MAY 26 2023 12:54, PSS(R)E release 34.07.00 for 2028 RTEP
2 BAT_GEXMBUS,#####1
3 /*Rate A and B correction for Bus1-Bus2 (#####1-#####2) 138 kV
4 BAT_BRANCH_CHNG_3,#####1,#####2,'1',,,,,,,,,,,,,,,,,,,,,, 500.0, 500.0,,,,,,,,,,,,;
5 BAT_FDNS,1,0,1,1,1,0,0,0
```

Only commands that change the model, with comments explaining the change

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**PROTECT THE  
POWER GRID  
THINK BEFORE  
YOU CLICK!**



Be alert to  
malicious  
phishing emails.

**Report suspicious email activity to PJM.**  
(610) 666-2244 / [it\\_ops\\_ctr\\_shift@pjm.com](mailto:it_ops_ctr_shift@pjm.com)

