



TO Connection PCLLRW UI Enhancements

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- TO Connection & PCLLRW Overview
- Upcoming Features
 - [Light/Dark Theme Alignment](#)
 - [TO Visibility for all Issued/Impactful TOs](#)
 - [Filter option for TOs under a single parent group](#)
- User Guide
- Release timeline

- PCLLRW is a sub-tool within the TO Connection tool suite.
- PCLLRW stands for Post-Contingency Local Load Relief Warning and is also a PJM Emergency Procedure. (See [M-13](#))
- The sub-tool serves in the coordination of post-contingency load shed plans, which are part of a shared Operating Plan between PJM and its member TOs, in the mitigation of thermal or voltage based constraints.
- As of 05.21.2021, PCLLRW was incorporated, along with Stability Viewer, within a TO Connection tool suite.

- The new features are meant to enhance the User Experience and Visualization within the tool.
 - PJM has reviewed these features with internal Training groups, and determined them to be value adds, but not a functional change within the tools.
 - No additional obligations or JTA impacts are anticipated from these enhancements.
- However, please reach out to PCLLRW.Admin@pjm.com and/or TrainingSupport@pjm.com with any questions/concerns.



Upcoming Features: Light/Dark Theme Alignment

Like other PJM tools, PCLLRW has Light and Dark Themes

Current SA Exceedances

Post Contingency Local Load Relief Warning Stability Viewer

Behind-the-Meter DER

Last SA Timestamp: 08/03/2021 18:12:25

YDFAX is available

Thermal Information												
Co	Branch ID	KV	Pre MVA	Post MVA	NL	LT	ST	LD	MVA (%)	HP	Contingency Title	Status
...	...	138	121	145	154	177	177	183	-31	82	1	...
...	...	138	92	164	161	211	211	218	-46	77	1	...
...	...	138	140	181	179	249	249	257	-87	72	1	...

(1 of 1) << >> 10

Special Thermal Information												
Co	Branch ID	KV	Pre MVA	Post MVA	NL	LT	ST	LD	MVA (%)	HP	Contingency Title	Status
No records found.												

(1 of 1) << >> 10

Low Voltage Information												
Co	Bus ID	Pre (KV)	Post (KV)	NL	EM	LD	Under (KV)	% of EM/LD	HP	Contingency Title	Status	
...	...	136.7	128.4	131.1	127.8	124.2	-1.4	101.1	1	...	...
...	...	135.3	128.6	131.1	127.0	124.2	-1.5	101.3	1	...	...
...	...	135.4	128.8	131.1	127.0	124.2	-1.8	101.4	1	...	...
...	...	135.3	129.1	131.1	127.0	124.2	-2.1	101.7	1	...	...
...	...	135.5	130.2	131.1	127.0	124.2	-3.2	102.5	1	...	...
...	...	138.3	130.5	131.1	127.0	124.2	-3.5	102.7	1	...	...
...	...	68.1	65.3	65.6	63.5	62.1	-1.8	102.8	1	...	Unacknowledged	
...	...	135.6	130.5	131.1	127.0	124.2	-3.5	102.8	1	...	...
...	...	68.1	66.4	67.5	63.5	62.1	-2.9	104.5	6	...	...

(1 of 1) << >> 10

Special Low Voltage Information

Current SA Exceedances

Post Contingency Local Load Relief Warning Stability Viewer

Behind-the-Meter DER

Last SA Timestamp: 08/03/2021 18:15:23

YDFAX is available

Thermal Information												
Co	Branch ID	KV	Pre MVA	Post MVA	NL	LT	ST	LD	MVA (%)	HP	Contingency Title	Status
...	...	138	121	145	154	177	177	183	-31	82	1	...
...	...	138	92	164	161	211	211	218	-46	77	1	...
...	...	138	140	181	179	249	249	257	-87	72	1	...

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Special Thermal Information												
Co	Branch ID	KV	Pre MVA	Post MVA	NL	LT	ST	LD	MVA (%)	HP	Contingency Title	Status
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Low Voltage Information												
Co	Bus ID	Pre (KV)	Post (KV)	NL	EM	LD	Under (KV)	% of EM/LD	HP	Contingency Title	Status	
...	...	136.7	128.4	131.1	127.8	124.2	-1.4	101.1	1	
...	...	135.3	128.6	131.1	127.0	124.2	-1.5	101.3	1	
...	...	135.4	128.8	131.1	127.0	124.2	-1.8	101.4	1	
...	...	135.3	129.1	131.1	127.0	124.2	-2.1	101.7	1	
...	...	135.5	130.2	131.1	127.0	124.2	-3.2	102.5	1	
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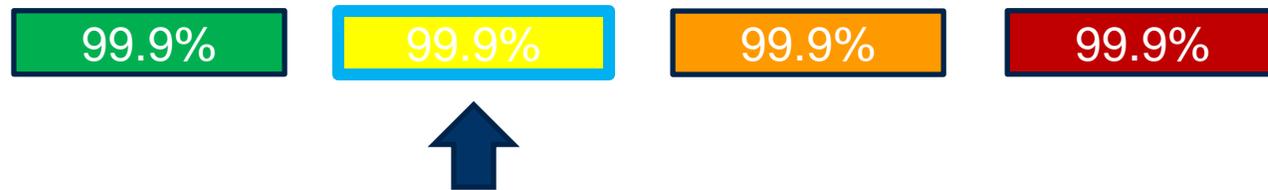
Special Low Voltage Information



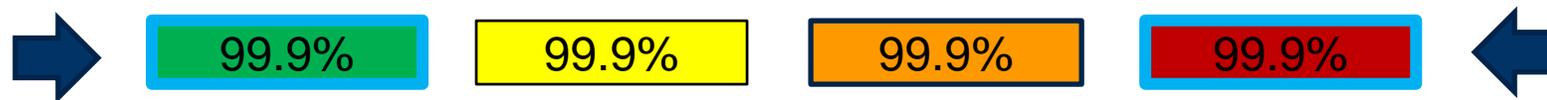
They diverge in how they convey issued PCLLRW events.

PJMs EMS Contingency Analysis package only leverages a Dark theme at present. (PCLLRW is aligned with that package's view.)

- Does not run into the issue of Light Text, on a Highlighted field



But, the existing text on a highlighted field, within PJM's EMS and PCLLRW Dark Theme can be problematic for those with color vision deficiency issues.





Upcoming Features: Light/Dark Theme Alignment

Similar problems with hyperlinks on a non-black or white field.

hyperlink

And, the practice in general of occluding data on dark field is not appropriate within the PJM Style Guide to avoid color vision deficiency issues and to better convey intent behind color selection.

Branch ID	kV	Pre	Post	NL	LT	ST	LD	Contingency Title	Status
Alpha-Bravo	100	222	999	400	500	500	900	Foxtrot Xfrmr	hyperlink
Bravo-Charlie	100	222	555	400	500	500	900	Foxtrot Xfrmr	hyperlink
Charlie-Delta	100	222	555	400	500	580	900	Foxtrot Xfrmr	hyperlink
Delta-Echo	100	222	333	400	500	500	900	Foxtrot Xfrmr	hyperlink

New approach ... Light Theme:

Branch ID	kV	Pre	Post	NL	LT	ST	LD	Contingency Title	Status
Alpha-Bravo	100	222	■ 999	400	500	500	■ 900	Foxtrot Xfrmr	hyperlink
Bravo-Charlie	100	222	■ 555	400	500	■ 500	900	Foxtrot Xfrmr	hyperlink
Charlie-Delta	100	222	■ 555	400	■ 500	580	900	Foxtrot Xfrmr	hyperlink
Delta-Echo	100	222	■ 333	■ 400	500	500	900	Foxtrot Xfrmr	hyperlink

- Convey severity directly and appropriately. (Similar approach with thermal & voltage tables)
 - Icon moves with overload severity.
 - Post-contingency value to associated limit which dictates the color.
- Continues color concept, while not blocking with data atop a colored field.

New approach ... Dark Theme:

Branch ID	kV	Pre	Post	NL	LT	ST	LD	Contingency Title	Status
Alpha-Bravo	100	222	■ 999	400	500	500	■ 900	Foxtrot Xfrmr	hyperlink
Bravo-Charlie	100	222	■ 555	400	500	■ 500	900	Foxtrot Xfrmr	hyperlink
Charlie-Delta	100	222	■ 555	400	■ 500	580	900	Foxtrot Xfrmr	hyperlink
Delta-Echo	100	222	■ 333	■ 400	500	500	900	Foxtrot Xfrmr	hyperlink

- Convey severity directly and appropriately. (Similar approach with thermal & voltage tables)
 - Icon moves with overload severity.
 - Post-contingency value to associated limit which dictates the color.
- Consistent with Light theme approach.

PCLLRW constraints have always been visible to the “owning” company for the given Branch/Bus. (i.e. the monitored element owner in a given mon/con pair.)

- This was expanded a few years ago to address a gap for tie lines so both owners had visibility, not just END A.

View being further expanded to include:

- ✓ **Any TO issued a PCLLRW** for a given mon/con pair.
 - Presently done outside the tool via email engagement.
- ✓ **Any TO with load at potential risk.** (i.e., Load Dfax above a threshold.)
 - Giving the TO visibility to the potential overload concern for a neighbors equipment.

Branch ID	kV	Pre	Post	NL	LT	ST	LD	Contingency Title	Status
Alpha-Bravo	100	222	■ 999	400	500	500	■ 900	Foxtrot Xfrmr	hyperlink

- If *Dake Power* is the TO for the Alpha – Bravo line, internal to *Dake Power*. (i.e. Not a tie line.)
- And, *Taylor Electric* is the neighboring TO with load impact to the Alpha-Bravo line for the loss of the Foxtrot Xfrmr constraint.

With the TO Visibility features:

- ❑ *Dake Power* sees the constraint anytime it is trending in PJM’s EMS.
- ✓ *Taylor Electric* will see the constraint if a PJM Load Distribution Factor is derived AND *Taylor Electric* has load which is impactful.
- ✓ Regardless, *Taylor Electric* will see the constraint if issued by PJM Dispatchers.

Impactful Load Dfax is built as a single variable within the tool.

- Can vary from 0.000 to 1.000. (i.e., No impact up to 100% impact. Actual value is *tbd*, but intent is to be substantive.)
- Intended for proactivity.
 - Increase awareness ahead of issuing a PCLLRW to the TO.
- No behavioral change from any TO required.
 - As today, TO has the option to discuss with PJM, to expand awareness as needed and outside of PCLLRW process should the mon/con be visible within their own CA tools.

A few companies share responsibilities across multiple Account Manager Org IDs.

- Multiple TOs in a parent company, with a single PCLLRW combined view.
- ✓ For these companies new feature will allow a dropdown selection to **limit their view**, temporarily ... in that session only, **to a given TO view**.
 - On login, the user will see all TOs associated with their parent company.
 - User can optionally filter their view, by only their available TOs.

In coordination with the Release Schedule for the PCLLRW enhancements, will **update the PCLLRW sections of the TO Connection User Guide** to fully flesh out PCLLRW features similarly to that of TO Connection's *Stability Viewer* section.

Host Site Link

- ❖ <https://www.pjm.com/markets-and-operations/etools/to-connection>

Direct Link

- ❖ <https://www.pjm.com/-/media/etools/to-connection/to-connection-user-guide.ashx>

- Anticipated in Training & Production environments in late Q3 to early Q4 of 2021.
- Further communication around these changes/timeline via the PJM SOS-T & PJM Tech Change Forum.

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**TO Connection PCLLRW UI
Enhancements**



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