

Stability Limits

MIC

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IMM



Monitoring Analytics

Stability Limits

- **Stability limits are required when the output of one or multiple units must stay below a certain level to maintain voltage stability.**
- **This is a reliability issue that is not solved by the economic dispatch problem using thermal constraints.**



Problems with Surrogate Constraints

- **Surrogate constraints are not modelled consistently in the day-ahead and real-time markets.**
- **In the real-time market, surrogate constraints only bind when the state estimator resource output is exactly equal to the constraint limit.**
 - **Resource output fluctuates**
 - **Constraint may not bind**
 - **Constraint easily violates**
- **Modelling differences are easily identifiable to market participants.**
- **Virtuals can take advantage of these differences.**

Problems with Derates

- **PJM requests outages submitted by generator when no physical problems exist.**
- **Not meeting must offer requirements**
- **Not meeting maximum emergency requirements**



Proposed Capacity Constraints

- **Capacity constraints are the best option**
 - **Limits the maximum dispatch output of one of multiple units**
 - **Consistent in day-ahead and real-time models**
 - **Allows for an economic dispatch of multiple units**



Monitoring Analytics, LLC

2621 Van Buren Avenue

Suite 160

Eagleville, PA

19403

(610) 271-8050

MA@monitoringanalytics.com

www.MonitoringAnalytics.com

