Local Capacity Technical Study Criteria Update – Straw Proposal

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Stakeholder Meeting

July 18, 2019

CAISO Policy Initiative Stakeholder Process

Agenda

- Introduction
- References of current standards
- Purpose of stakeholder initiative
- Proposed update of contingency category definitions
- Proposed update for Bulk Electric System (BES) voltage level definition
- Proposed full alignment of LCT criteria with mandatory criteria
- Open Discussion
- Initiative schedule
- Next Steps

Introduction

- Resource Adequacy (RA)
  - Ensure that capacity exists and is under contract in order for all load to be served by responsible Load Serving Entities (LSEs)
  - Generally, LSEs will demonstrate that they have secured adequate qualified capacity to serve their peak load including planning reserve (every month in the month ahead timeframe).
  - Generally, LSEs will demonstrate, in the year ahead timeframe that they have secured minimum 90% of the next summer's peak load needs including planning reserve.
  - All resources participating in the ISO markets under an RA contract will have an RA must-offer-obligation to the ISO.

Introduction (Cont.)

- ISO Tariff
  - ISO can determine minimum local resource requirements on LSEs in order to maintain reliability standards
  - If LSE procurement falls short of ISO's identified needs then ISO may engage in backstop procurement role to assure reliability standards are met in local areas

References of current standards:

NERC TPL-001-4:

https://www.nerc.com/_layouts/15/PrintStandard.aspx?standardnumber=TPL-001-4&title=Transmission%20System%20Planning%20Performance%20Requirements&jurisdiction=null

WECC TPL-001-WECC-CRT-3.1:

https://www.wecc.org/Reliability/TPL-001-WECC-CRT-3.1.pdf

ISO Planning Standards:

http://www.caiso.com/Documents/ISOPlanningStandards-September62018.pdf

Purpose of stakeholder initiative

- Update the Local Capacity Technical (LCT) study
  - Criteria as dictated by ISO Tariff section 40.3.1.1 and
  - Contingencies as identified in ISO Tariff section 40.3.1.2.
- Initially developed through the LCT Study Advisory Group (“LSAG”); an advisory group formed by the CAISO to assist the CAISO in its preparation for performing LCT Studies prior to the start of the Resource Adequacy program.
- LCT study criteria was established before North America Electric Reliability Corporation (NERC) required mandatory standards were formed and it represented a subset of the NERC voluntary standards available at the time.
- Currently the LCT criteria is not aligned with mandatory standards.

Update category definitions

- Currently, the NERC TPL-001-4 standard characterizes contingencies from P0 to P7 plus Extreme contingencies
- Old standards categorized them from A to D.
- ISO proposes to replace old reference with new reference and characterization to avoid confusion and more easily correlate the LCT study criteria to the current applicable standards.

Stakeholder feedback:

- General agreement regarding alignment of category definitions

Contingency Category Definitions

- A or P0 (N-0) normal system conditions; use normal ratings
- B or P1 (N-1) single or P3 (G-1) generator out followed by another P1 (N-1) contingency conditions; use emergency ratings
- C3 or P6 (N-1-1) double contingency conditions specifically a single – non-generator (B or P1) followed by manual readjustment and then another single contingency (B or P1); use emergency ratings
- C5 or P7 (N-2) common mode (same tower or right-of-way); use emergency ratings

Update Bulk Electric System (BES) voltage level definition

- NERC BES definition has changed.
- Current mandatory standards apply to BES only and includes:
  - Extra High Voltage (> 300 kV) and
  - High Voltage (generally > 100 kV and < 300 kV).
- Generally elements < 100 kV are not considered BES and they are planned solely under the jurisdiction of the ISO Planning standards, for categories P0, P1 and P3.
- ISO proposes to only use the same criteria for LCT as ISO Planning Standards for non-BES elements.

Stakeholder feedback:

- General agreement regarding adjusting performance requirements for non-BES elements to align with the ISO planning standards

Fully align LCT Criteria with mandatory standards

- ISO proposes to fully align the LCT criteria with mandatory standards.
- Provides greater transparency of all reliability needs to the Resource Adequacy program.
- Full criteria is already used in new transmission development and to retain old resources under Reliability Must Run contracts.

Stakeholder feedback:

- Majority of stakeholder feedback has shown strong preference for full alignment of LCT criteria with mandatory standards

Why fully alignment?

- Provides level playing field for build-up of transmission and/or new RA resources.
- Provides level playing field for build-up of new RA resources vs. old in need of retirement resources.
- Provides decision makers better tools to prepare for long-term overall system planning.
- The Reliability Must Run (RMR) need for an old resources asking for retirement/mothball is evaluated against entire mandatory criteria.
- Load shedding is a viable mitigation, where allowed by NERC standards. New or upgrades to Special Protection Schemes/Remedial Action Schemes (SPS/RAS) can be used and must comply with ISO Grid Planning standards.

Difference between mandatory standards vs. LCT criteria

Contingency Component(s)	Mandatory Reliability Standards	Existing Local Capacity Criteria	Proposed Local Capacity Criteria
P0 – No Contingencies	X	X	X
P1 – Single Contingency			
1. Generator (G-1)	X	X[1]	X[1]
2. Transmission Circuit (L-1)	X	X[1]	X[1]
3. Transformer (T-1)	X	X[1,2]	X[1]
4. Shunt Device	X		X
5. Single Pole (dc) Line	X	X[1]	X[1]
P2 – Single contingency			
1. Opening a line section w/o a fault	X		X
2. Bus Section fault	X		X
3. Internal Breaker fault (non-Bus-tie Breaker)	X		X
4. Internal Breaker fault (Bus-tie Breaker)	X		X
P3 – Multiple Contingency – G-1 + system adjustment and:			
1. Generator (G-1)	X	X	X
2. Transmission Circuit (L-1)	X	X	X
3. Transformer (T-1)	X	X[2]	X
4. Shunt Device	X		X
5. Single Pole (dc) Line	X	X	X

Difference between mandatory standards vs. LCT criteria

Contingency Component(s)	Mandatory Reliability Standards	Existing Local Capacity Criteria	Proposed Local Capacity Criteria
P4 – Multiple Contingency - Fault plus stuck breaker			
1. Generator (G-1)	X		X
2. Transmission Circuit (L-1)	X		X
3. Transformer (T-1)	X		X
4. Shunt Device	X		X
5. Bus section	X		X
6. Bus-tie breaker	X		X
P5 – Multiple Contingency – Relay failure (delayed clearing)			
1. Generator (G-1)	X		X
2. Transmission Circuit (L-1)	X		X
3. Transformer (T-1)	X		X
4. Shunt Device	X		X
5. Bus section	X		X
P6 – Multiple Contingency – P1.2-P1.5 system adjustment and:			
1. Transmission Circuit (L-1)	X	x	X
2. Transformer (T-1)	X	x	X
3. Shunt Device	X		X
4. Bus section	X		X

Difference between mandatory standards vs. LCT criteria

Contingency Component(s)	Mandatory Reliability Standards	Existing Local Capacity Criteria	Proposed Local Capacity Criteria
P7 – Multiple Contingency - Fault plus stuck breaker			
1. Two circuits on common structure (L-2)	X	X	X
2. Bipolar DC line	X	X	X
Extreme event – loss of two or more elements			
Two generators (Common Mode) G-2	X[4]	X	X[4]
Any P1.1-P1.3 & P1.5 system readjusted (Common Mode) L-2	X[4]	X[3]	X[5]
All other extreme combinations.	X[4]		X[4]

1 System must be able to readjust to a safe operating zone in order to be able to support the loss of the next contingency.

2 A thermal or voltage criterion violation resulting from a transformer outage may not be cause for a local area reliability requirement if the violation is considered marginal (e.g. acceptable loss of facility life or low voltage), otherwise, such a violation will necessitate creation of a requirement.

3 Evaluate for risks and consequence, per NERC standards. No voltage collapse or dynamic instability allowed.

4 Evaluate for risks and consequence, per NERC standards.

5 For voltage collapse or dynamic instability situations mitigation is required "if there is a risk of cascading" beyond a relatively small predetermined area directly affected by the outage.

Exception

- The current LCT criteria requires mitigating all N-1 followed by L-2 contingencies that could cause voltage collapse or dynamic instability, whereas mandatory standards only require that this “extreme event” be studies and considered, based on the planners’ assessment of risk and consequences.
- ISO proposes to modify the existing LCR criteria requirement for the N-1 followed by L-2 contingencies to only require mitigation “if there is a risk of cascading” beyond a relatively small predetermined area directly affected by the outage.

Open discussion

2019 Initiative Schedule

- Post issue paper – May 23
- Stakeholder call - May 30
- Issue paper comments deadline - June 13
- Post straw proposal – July 11
- Stakeholder meeting - July 18
- Straw proposal comments deadline - Aug. 1
- Revised Straw – Only if necessary (would change dates below)
- Post draft final proposal – Aug. 22
- Stakeholder call - Aug. 29
- Draft final proposal comments deadline - Sept. 12
- Board of Governors Meeting – Nov. 13-14, 2019
- FERC filling after Board approval – Exact date TBD

Next Steps

- Stakeholder comments due by end of day August 1, 2019
  - Email comments to regionaltransmission@caiso.com
  - Stakeholder comments are to be submitted within two weeks after stakeholder meetings
  - ISO will post comments and responses on website

Thank you for your participation.