



# NERC Web Cast

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Monitor and Operate Within  
Interconnection Reliability  
Operating Limits

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North American Electric Reliability Council



# Requirements:

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201 - IROL Identification

202 - Monitor IROLs

203 - Conduct Analyses and Assessments

204 - Act to Prevent/Mitigate Exceeding IROLs

205 - Develop Data Spec - Collect Data

206 - Provide Data

207 - Develop Action Plan

208 - Follow RA Directives





# 201 - IROL Identification

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- List of facilities subject to IROLs
- List of IROLs (add  $T_v$ )
- Evidence lists are updated



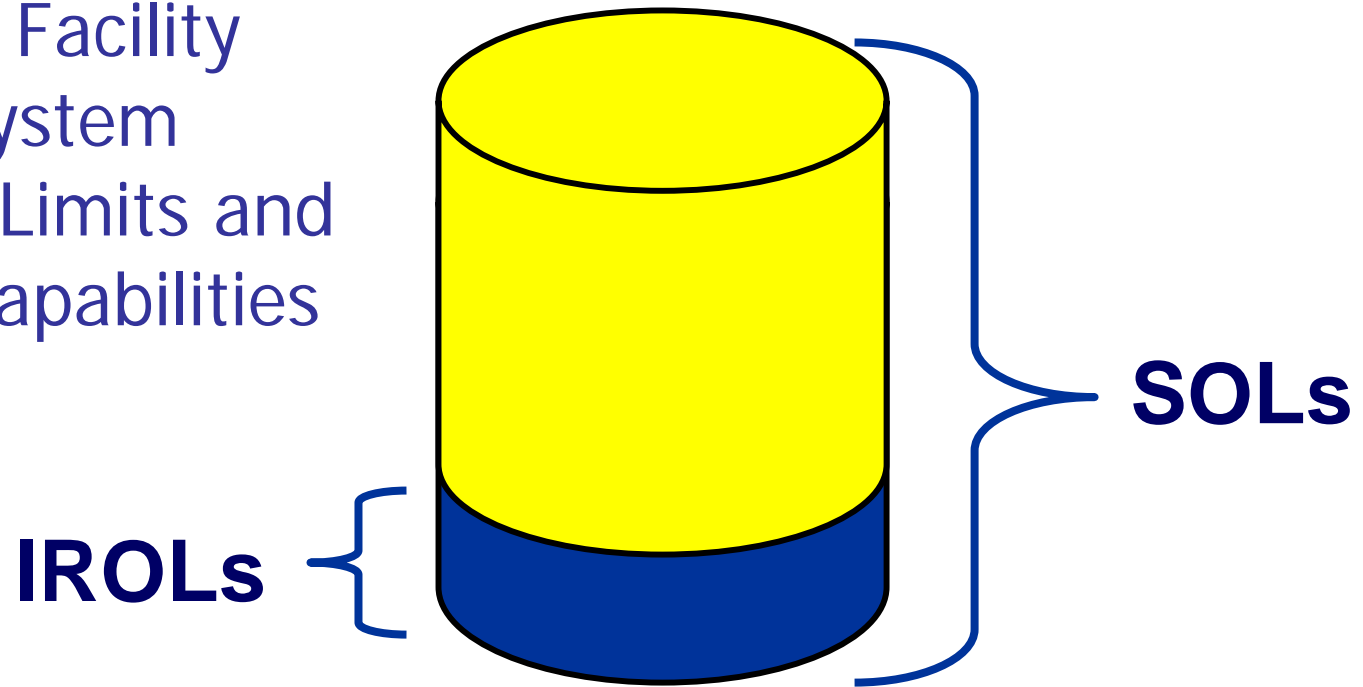
# Interconnection Reliability Operating Limit (IROL)

- System operating limit that, if exceeded, could lead to:
  - Instability
  - Uncontrolled separation
  - Cascading outages

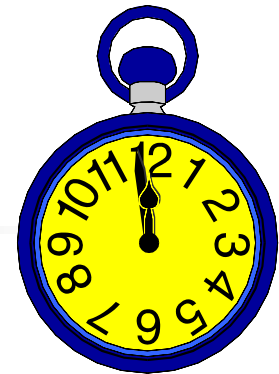


# SOLs and IROLs

- Developed following Determine Facility Ratings, System Operating Limits and Transfer Capabilities Standard



## $T_v$ for each IROL



- Recognizes differences in operational strategies available to each RA
- Recognized differences in willingness to accept risk
- Supports flexibility in using market solutions
- May be zero





## 202 - Monitoring

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- IROs available for real-time use
- Real time data in format to compare against IROs
- Monitor real-time values and compare to IROs





## 203 – Analyses and Assessments

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- Identify operating situations or events that impact ability to operate without exceeding any identified IROLs
  - Conduct an Operational Planning Assessment at least once a day
  - Conduct a real-time assessment at least once every 30 minutes







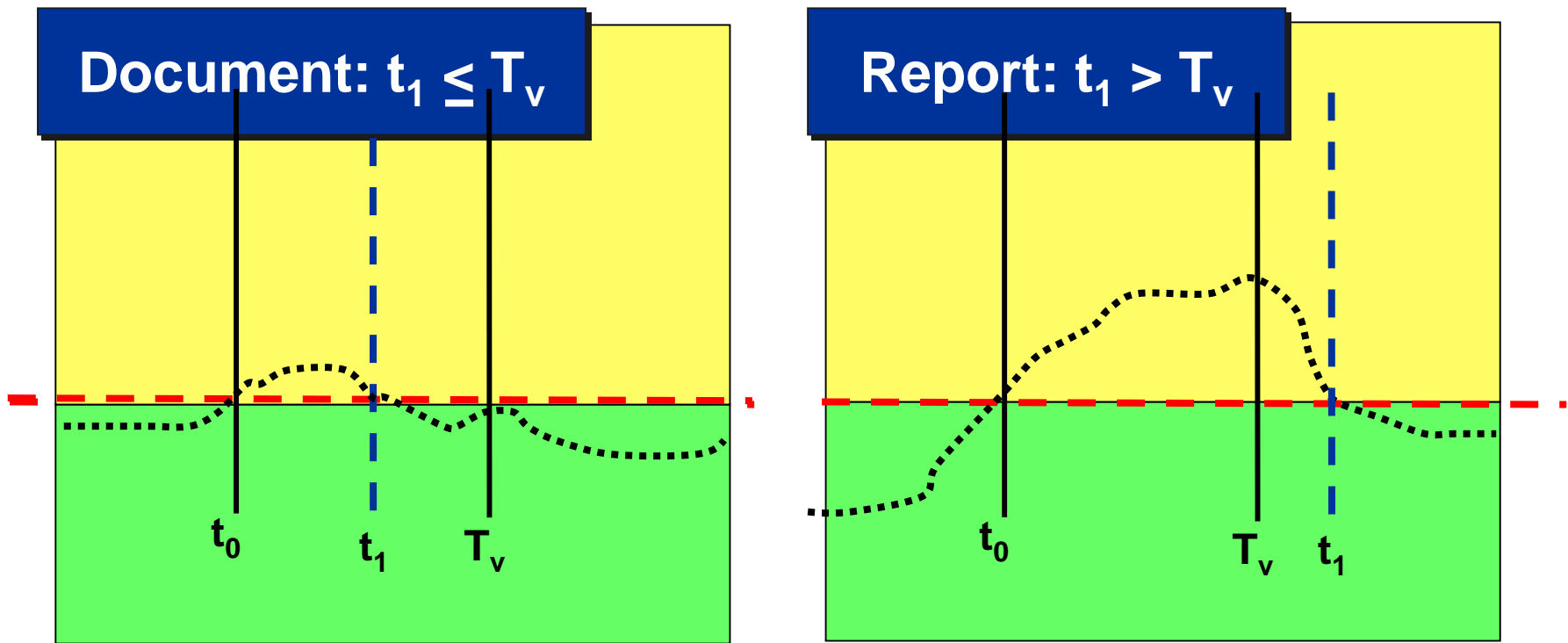
## 204 - Actions

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- Document actions taken and directives issued to mitigate any instance of exceeding an IROL
- Report events where IROLs exceeded for time greater than  $T_v$



# Documenting & Reporting IROL Events



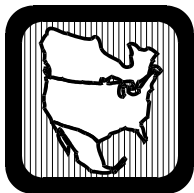
$t_0$  – Initiation of an IROL event

$T_v$  – IROL violation time

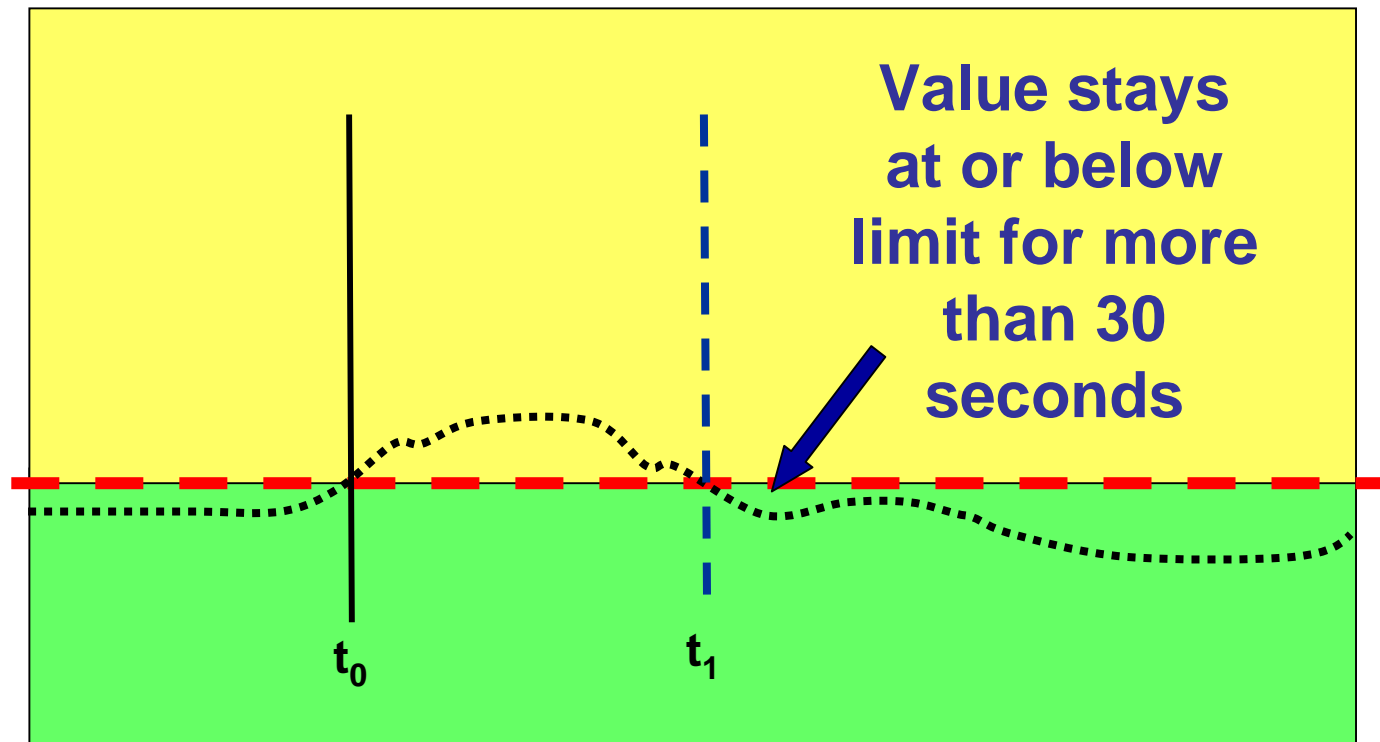
$t_1$  – End of IROL event

--- IROL

..... Real-time value



Measure the event duration from  $t_0$  to the point where the value hits the IROL and then remains at or below the IROL for at least 30 seconds



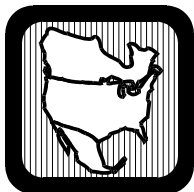
$t_0$  – Initiation of an IROL event

$T_v$  – IROL violation time

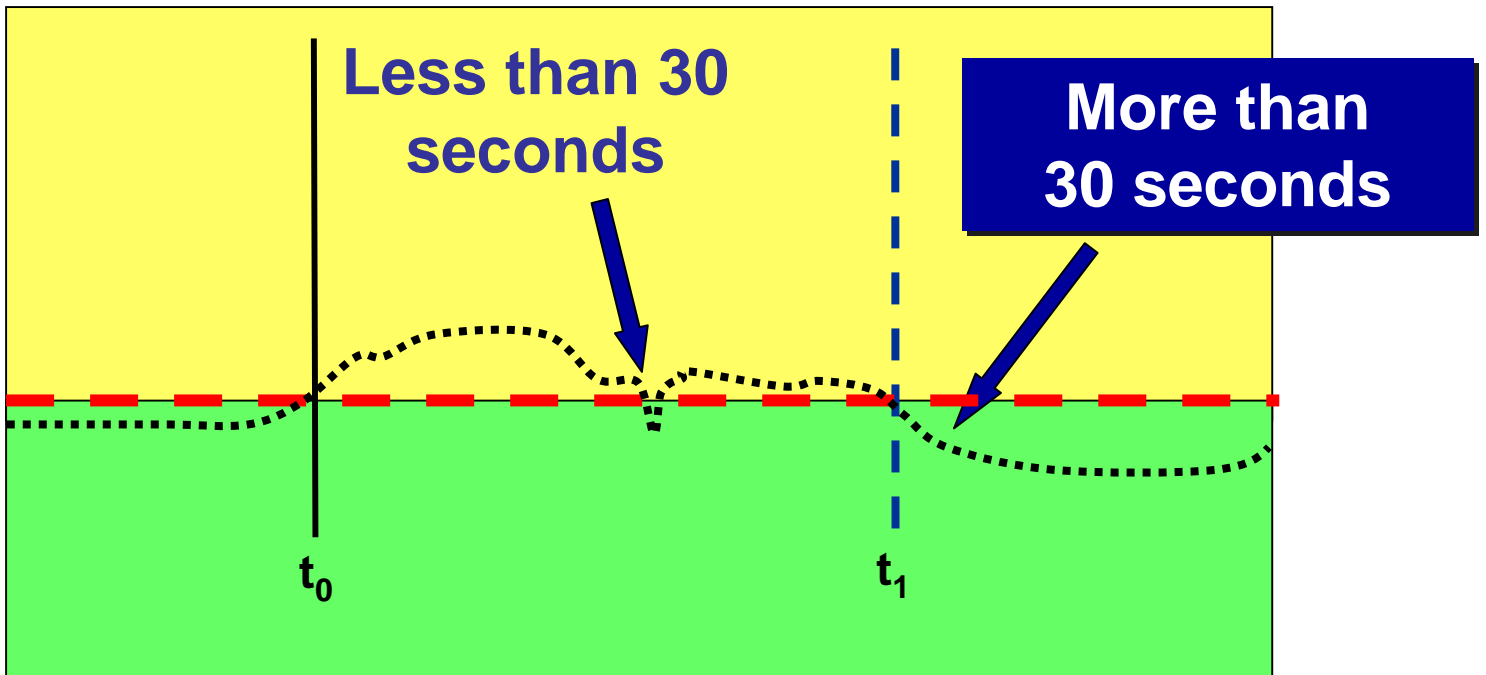
$t_1$  – End of IROL event

--- IROL

..... Real-time value

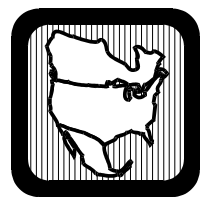


The end of the event ( $t_1$ ) occurs at the point where the value hits the IROL - providing the value remains at or below the IROL for at least 30 seconds.



$t_0$  – Initiation of an IROL event  
 $T_v$  – IROL violation time  
 $t_1$  – End of IROL event

--- IROL  
..... Real-time value





## 205 – Specify & Collect Data

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- Have a documented spec for data needed to build and maintain models for monitoring and assessing relative to IROs
- Have evidence spec was distributed to:
  - BAs
  - LSEs
  - RAs
  - GEN Own
  - GEN Ops
  - TOPs
  - TOWs





## 206 – Data Provision

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- Have evidence:
  - Data was provided, or
  - Commitment made to provide data





## 207 – Action Plan

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- Have an Action Plan for:
  - Preventing instances of exceeding IROs
  - Mitigating instances of exceeding IROs
  - Must coordinate with those who will be impacted if plan activated





## 208 – RA Directives

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- Follow RA's directives
  - Document directives & associated actions





# 3 Significant Differences From Current Policy 2 for System Operators

- OSL → IROL
- Violation after 30 minutes → Violation after  $T_v$
- Preliminary Disturbance Report to NERC Compliance & Region w/in 72 hrs → IROL Violation Report to Compliance Monitor w/in 5 business days
  - *(Note, IROL Violation Report duplicates some but not all of the Preliminary Disturbance Report – The OWL Implementation Plan indicates the Preliminary Disturbance Report should continue to be filed until displaced by the Monitor and Analyze Disturbance Events and Conditions Standard)*



# Current NERC Non-compliance Sanctions (BOT Approved)

- Letter A – to VP - copy to Region & data contact
- Letter B – to CEO & copy to VP & Region & data contact
- Letter C – to CEO & Bd Chair & copy to NERC President, Regulatory Authorities, VP, Region & data contact
- Flat fine – \$1k - \$10k
- \$/MW – variable depending on severity of infraction



# Compliance Sanctions Used in this Standard

- Letters and flat fines for all measures except exceeding an IROL for time greater than  $T_v$
- \$/MW for exceeding IROL –
  - Level four - Greater of the fixed dollar sanctions listed in the matrix, or the # of MW above the IROL x \$ value for the # of times noncompliant



# Letter and Flat Fine Sanctions for 1<sup>st</sup> Yr:

	1 <sup>st</sup> Violation	2 <sup>nd</sup> Violation	3 <sup>rd</sup> Violation	4 <sup>th</sup> Violation
Level 1	Letter A	Letter A	Letter B \$1k	Letter B \$2k
Level 2	Letter A	Letter B \$1k	Letter B \$2k	Letter B \$4k
Level 3	Letter B \$1k	Letter B \$2k	Letter B \$4k	Letter B \$6k
Level 4	Letter B \$ 2k	Letter B \$4k	Letter B \$6k	Letter B \$10k

# \$/MW Sanction for Exceeding an IROL for Time Greater Than $T_v$

- Greater of the fixed dollar sanctions listed in the matrix, or the # of MW above the IROL x the \$ value for # of times non-compliant

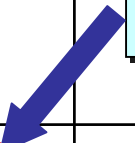
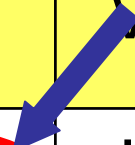
	1 <sup>st</sup> Violation	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup> Violation
Level 1	Letter A	<p>1<sup>st</sup> violation - exceeds the IROL by 10 MW – the sanction is Letter B (to the CEO) <b>and</b> a fine of 10 MW x \$2k = \$20 k</p>		
Level 2	Letter A			
Level 3	Letter B \$1k	\$1K Letter B \$2k	Letter B \$4k	Letter B \$6k
Level 4	Letter B \$2k	Letter B \$4k	Letter B \$6k	Letter B \$10k

# Letter & Flat Fine Sanctions for 1<sup>st</sup> Yr:

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Level 4	Letter B \$2k	Letter B \$4k	Letter B \$6k	Letter B \$10k

Followed RA's directives but didn't document properly

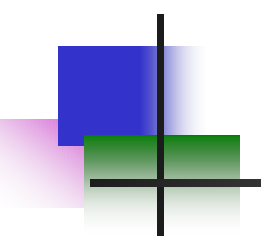
Didn't follow the RA's directives



# Requirements & Responsible Entities

	RA	BA	IA	TOP	T Own	GEN Own	GEN Op	LSE
IROL Identification	X							
Monitoring	X							
Analyses & Assessments	X							
Actions	X							
Data Specification & Collection	X							
Data Provision	X	X		X	X	X	X	X
Action Plan	X							
RA Directives		X	X	X				





# Implement 3 Months Following BOT Adoption – Compliance Not Implemented Until After Requirement 604 Implemented

<b>Requirement:</b>	<b>Compliance Date:</b>
201 - IROL Identification	6 months after Requirement 604
202 – Monitoring	6 months after Requirement 604
203 - Analyses and Assessments	6 months after Requirement 604
204 - Actions	6 months after Requirement 604
205 – Data Spec & Collection	9 months after Requirement 604
206 – Data Provision	12 months after Requirement 604
207 – Action Plan	6 months after Requirement 604
208 – RA Directives	9 months after Requirement 604







# Operating Policy Retirements:

## Operating Policy 2:

- Standard A.1 (just last 2 bullets)
- Standard A.1.2
- Standard A.2
- Standard A.2.1
- Requirement A.1
- Requirement A.1.1
- Requirement A.1.2
- Requirement B.5

## Operating Policy 5:

- Requirement 5.C.1
- Requirement 5.C.2

## Operating Policy 4:

- Requirement A.1
- Requirement B.3
- Requirement B.3.1
- Requirement B.4
- Requirement B.4.1

## Operating Policy 9:

- Requirement A.1
- Requirement A.1.1
- Requirement A.1.2





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# Questions?

