



**Reliability & Security  
Workshop**

**WECC**

**March 17–18, 2026  
San Diego, California**

# PRC-028/029/030

## Implementation Plans and “Specials”

**W. Curtis Crews**  
*Principal Engineer*

# Agenda

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- PRC-028 Compliance Extension Request
- PRC-029 Design and R4 Exemption
- Implementation Plan Graphics

# PRC-028 Implementation Plan Compliance Extension Request

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- [PRC-028 Implementation Plan](#)
- Inverter-based resources (IBR) in commercial operations (COD) **before** effective date of PRC-028-1 (**April 1, 2025**)
- Bulk Electric System (BES) IBRs and Non-BES IBRs
- Beyond Generator Owner's (GO) control
  - Procurement
  - Engineering
  - Installation
  - Commissioning
  - Inability to secure scheduled outages
  - Other “exceptional” circumstances

# Compliance Extension Request

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- Minimum content
  - IBR identification
  - Installation plan/timetable for disturbance monitoring equipment (DME)
  - Description of circumstances and how those are beyond GO's control
  - Other entity-deemed relevant information
- Likely an Align Event-driven Periodic Data Submittal (PDS) to Region
- Subject to requests for information (RFIs)
- Submitted as soon as circumstances identified “but no later than **three months prior to the compliance date**”
- If granted, implement installation plan per timetable
  - Updates if additional time required



# What does "design" mean to you?

# PRC-029 Design and R4 Exemption

- Requirements R1-R3 “shall ensure the design and operation” meets performance (ride-through exceptions, voltage, frequency)
- PRC-029 implementation plan bifurcated timeline for design and operation
  - Design — BES by 10/1/2026, Non-BES by 1/1/2027
  - Operation — “in accordance with” PRC-028-1 implementation plan
- What does design mean?
  - Measures say “dynamic simulations, studies, plant protection settings, and control settings design evaluation”
  - “a plan or drawing produced to show the look and function or workings of a building, garment, or other object before it is made”





**What does "in-service" mean to you?**

## R4 Exemptions

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- IBR “in-service” by effective date of PRC-029-1 (October 1, 2026)
- Hardware limitations that prevent IBR from meeting R1-R3 criteria (ride-through exceptions, voltage, frequency)
- Minimum content needed for “acceptance”
  - IBR identification (“name and facility number”)
  - What cannot be met and what is hardware capability (individual performance)
  - Hardware identification causing limitation
  - Technical documentation — need for physical replacement to meet “all” criteria and the limitation can not be remedied by software updates or setting changes
  - Information on plans to remedy the hardware limitation

## R4 Exemptions

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- Likely an Align Event-driven PDS Submittal to Region
- Subject to RFIs if incomplete
- Provided no later than 12 months after effective date (**October 1, 2026**) of PRC-029-1 (PC, TP, TOP, RC and Compliance Enforcement Authority (CEA))
- Additional information within 90 days if requested
- “Acceptance” by CEA
  - All information (see previous slide)
  - **Copy** of CEA acceptance to be provided to PC, TP, TOP, and RC
- When remedied – document and communicate change to PC, TP, TOP, and RC
  - Exemption no longer applies

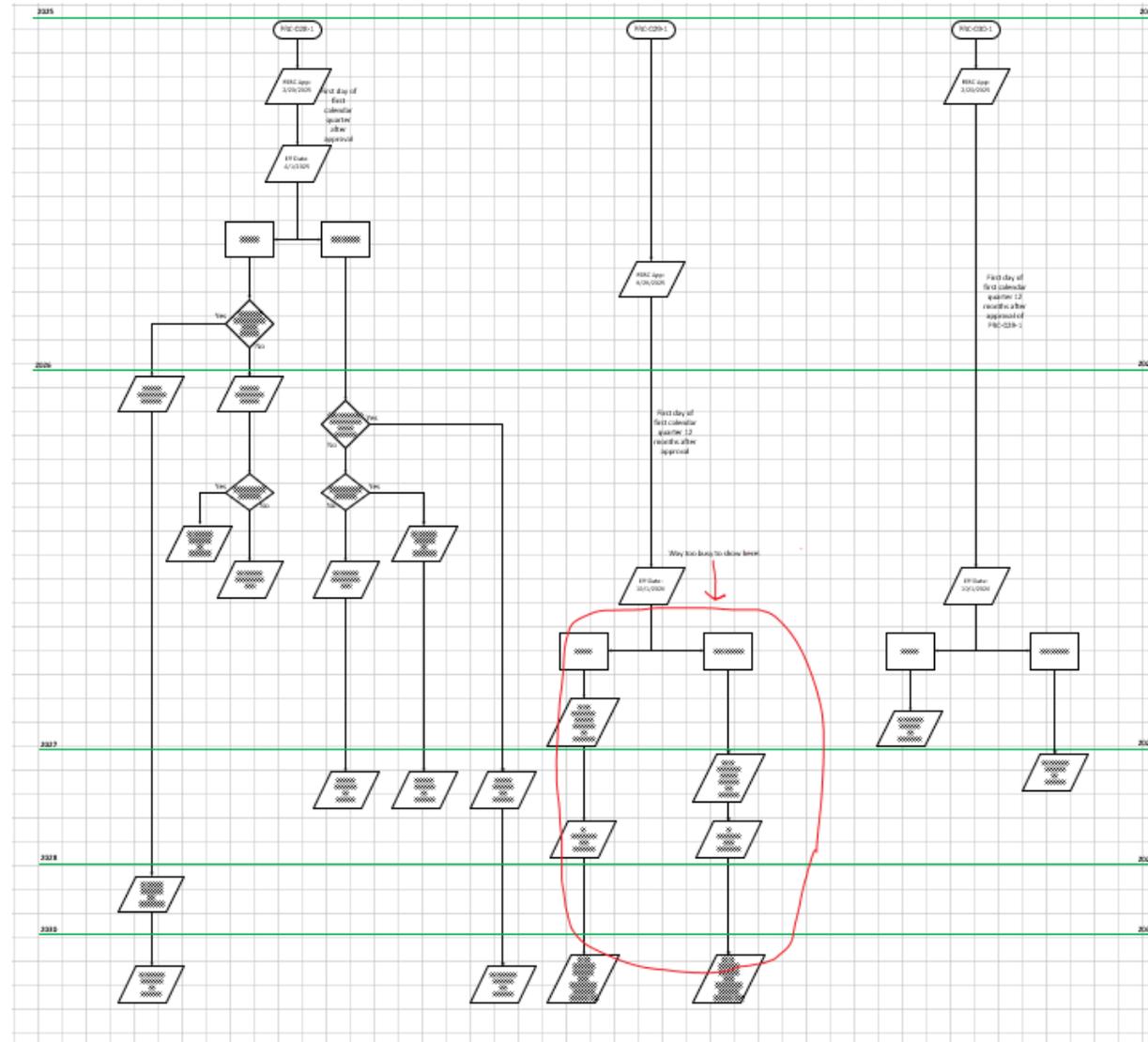
# PRC-028/029/030 Implementation Plans



# PRC-028/029/030 Implementation Plans

- **Meant** to blend seamlessly
- Heavily dependent upon type of IBR (BES or Non-BES), very specific dates, and each other
- Pictures are worth 1,000 words!





Any questions?



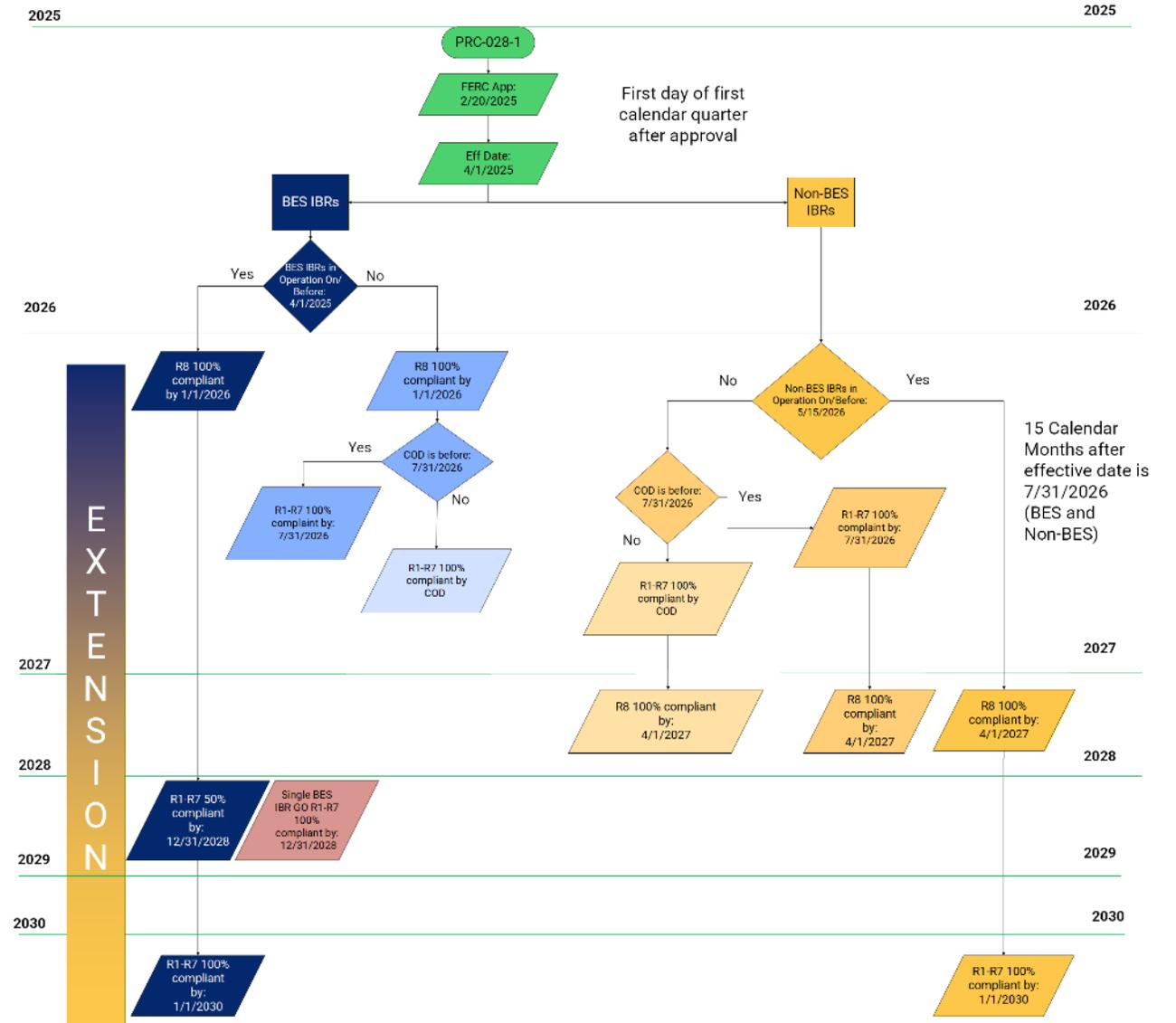
## PRC-028-1 Basics

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- Install disturbance monitoring equipment (DME)
  - Sequence of events (SER), fault recording (FR), and dynamic disturbance recording (DDR)
- Specified data (synchronized) to be recorded at specified rates
- Data provision expectations
- DME failure expectations

# PRC-028-1

- Effective date of PRC-028-1
- 15 Calendar Months after effective date
- Cat 2 registration date



2025

PRC-028-1

FERC App:  
2/20/2025

Eff Date:  
4/1/2025

First day of first  
calendar quarter  
after approval

BES IBRs

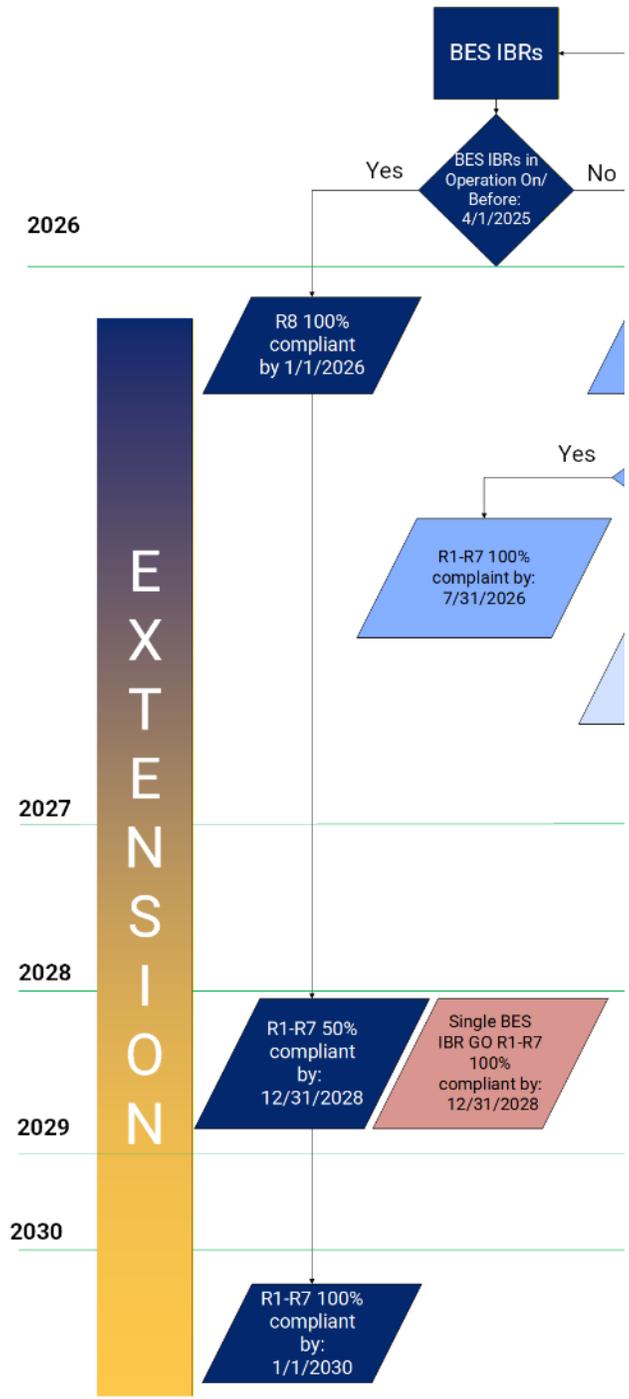
Non-BES  
IBRs

BES IBRs in  
Operation On/  
Before:  
4/1/2025

Yes

No

2026



2025

PRC-028-1

FERC App:  
2/20/2025

Eff Date:  
4/1/2025

BES IBRs

Yes

BES IBRs in  
Operation On/  
Before:  
4/1/2025

No

2026

R8 100%  
compliant  
by 1/1/2026

R8 100%  
compliant by  
1/1/2026

Yes

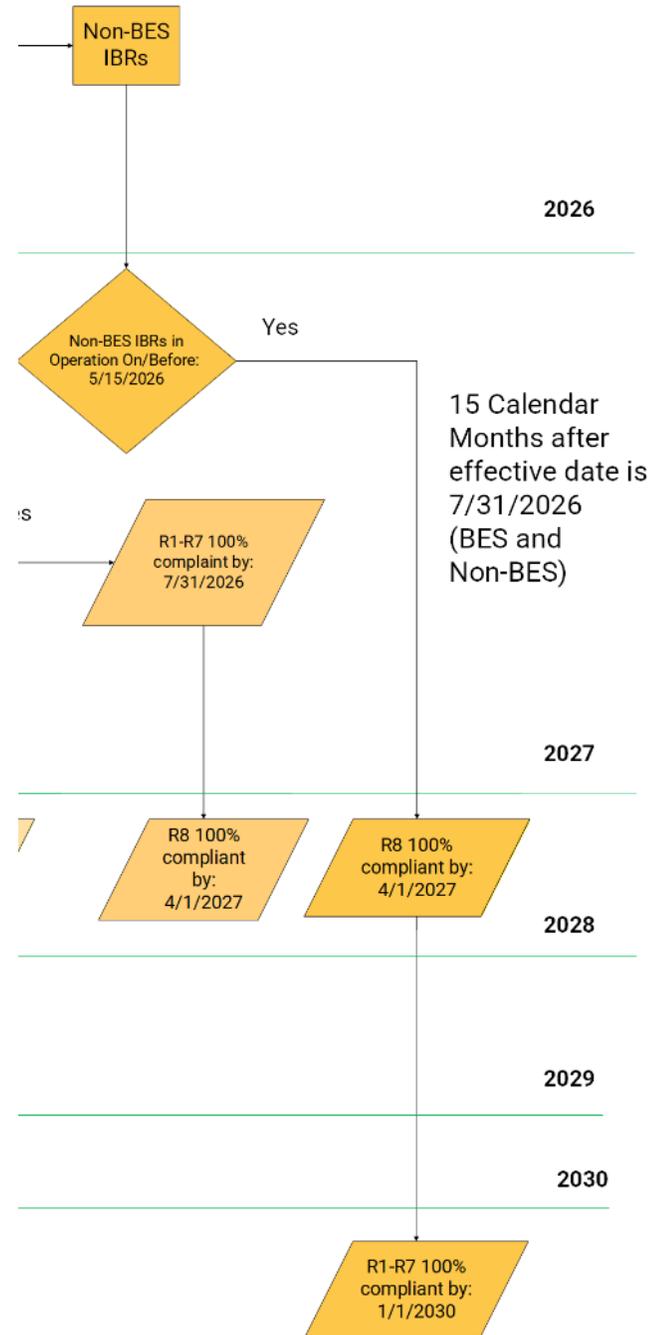
COD is before:  
7/31/2026

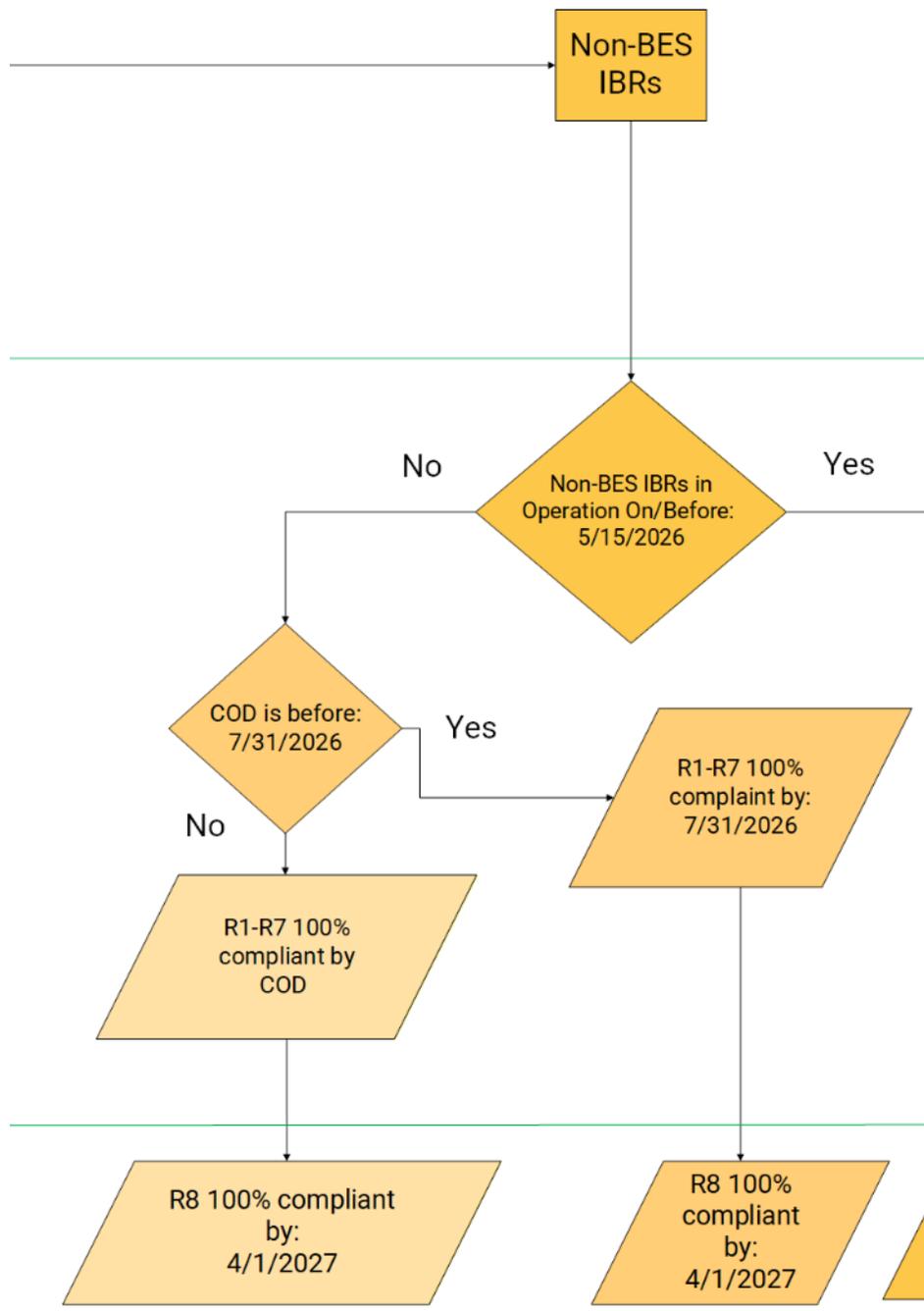
No

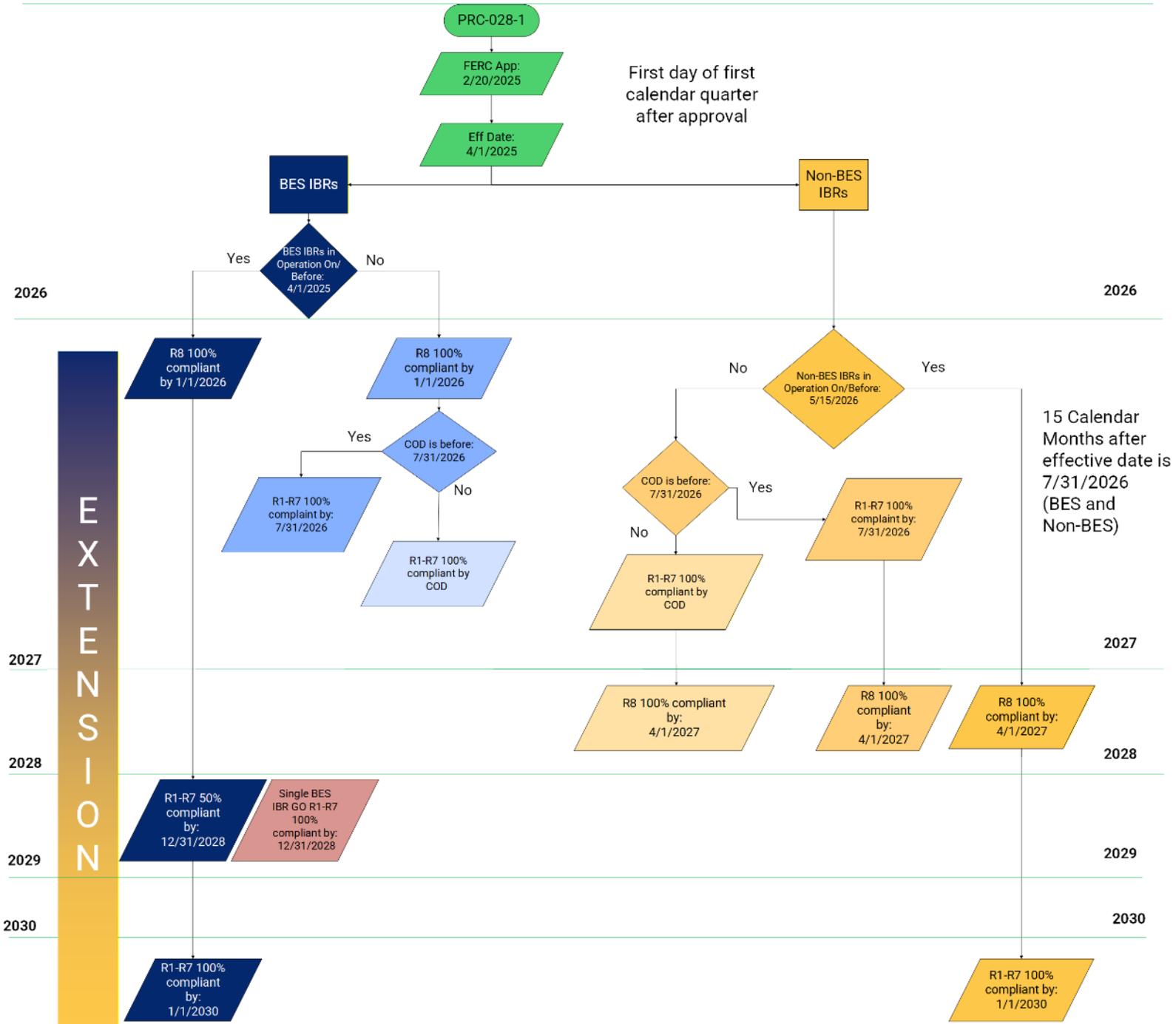
R1-R7 100%  
complaint by:  
7/31/2026

R1-R7 100%  
compliant by  
COD

E  
X  
T

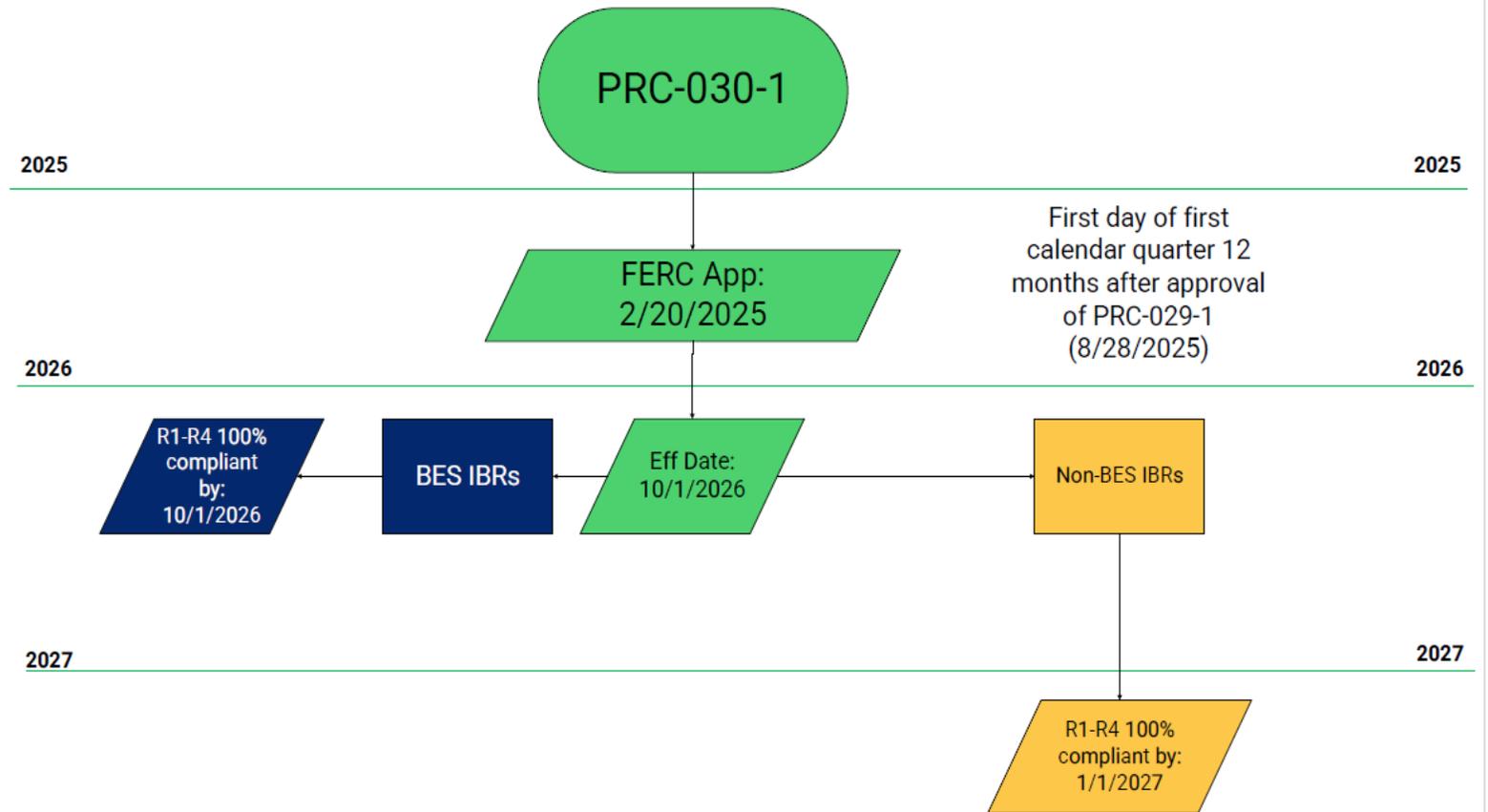






# PRC-030 Basics

- Process to identify event (loss of 20 MW or 10% within 4 sec)
- Analyze event or **by request** (within 90 calendar days)
- Develop and provide Corrective Action Plan (CAP) to RC/BA/TOP (within 60 calendar days of analysis)
- Implement CAP
  - If changes/complete, notify RC---Only!



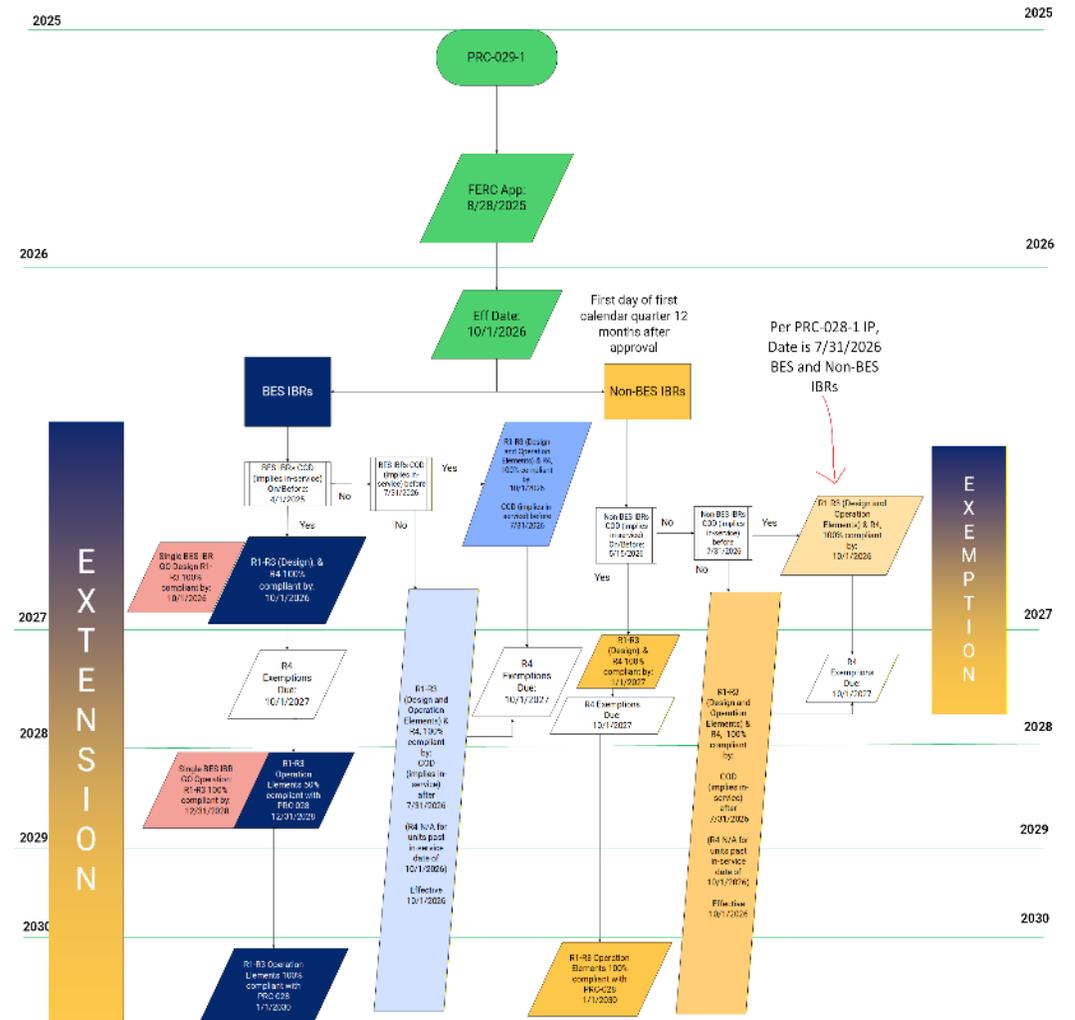
## PRC-029 Basics

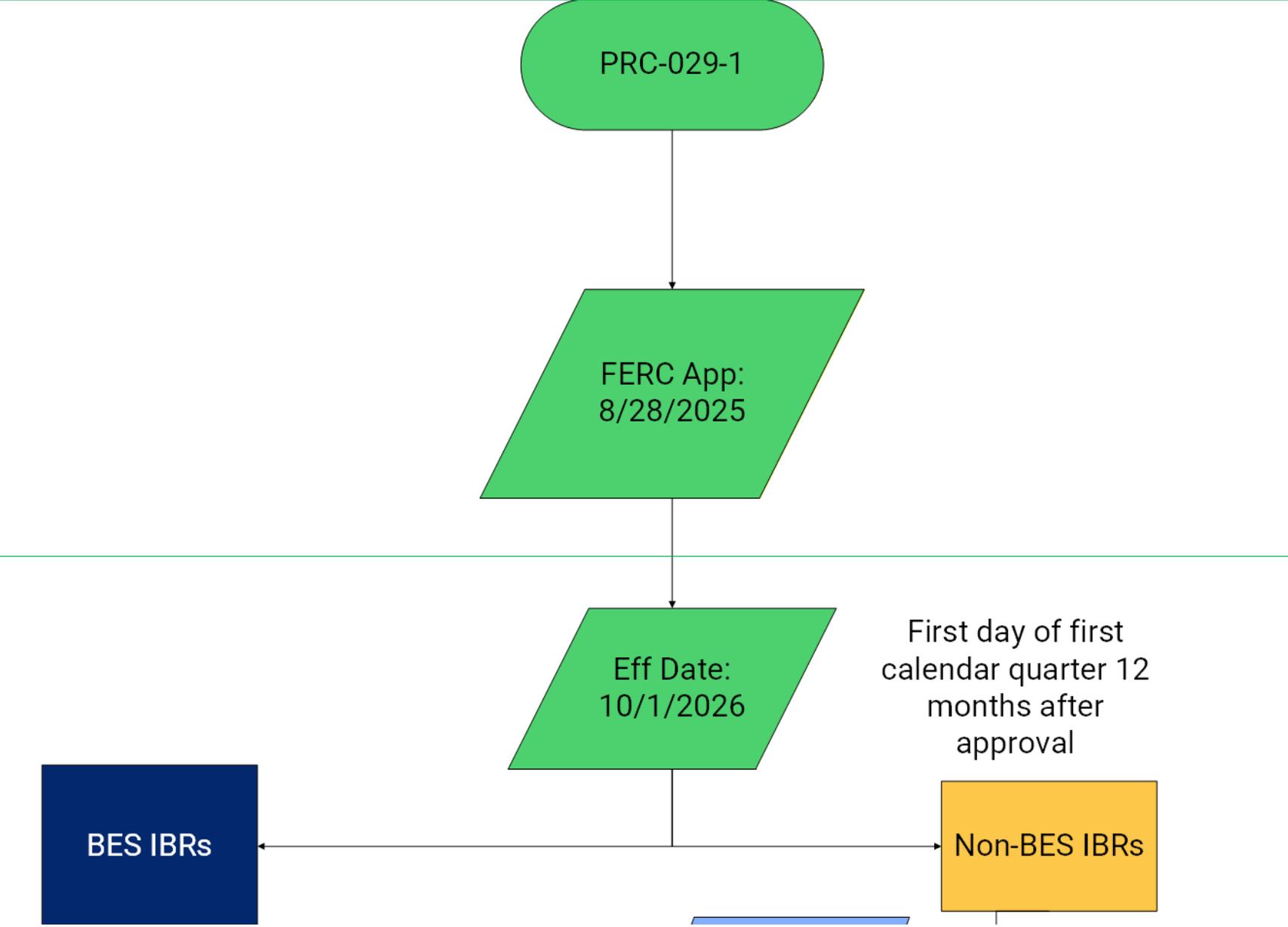
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- Design and operate (“D&O”) IBRs to meet or exceed Ride-through requirements with exceptions (e.g., clearing a fault)
- D&O IBRs to meet voltage performance
- D&O IBRs to meet frequency performance
- Hardware exemption allowed if hardware cannot meet Ride-through requirements
  - Limited to those IBRs “in-service” by 10/1/2026
  - Submittal required no later than 10/1/2027

# PRC-029

- Performance-Based Elements (all applicable IBRs—“operation”)
- Entities shall not be required to comply with the portion of Requirements R1, R2, and R3 relating to the operation of IBRs to meet the requirements until the entity has established the required disturbance monitoring equipment capabilities for those IBRs in accordance with the implementation plan for Reliability Standard PRC-028-1.





PRC-029-1

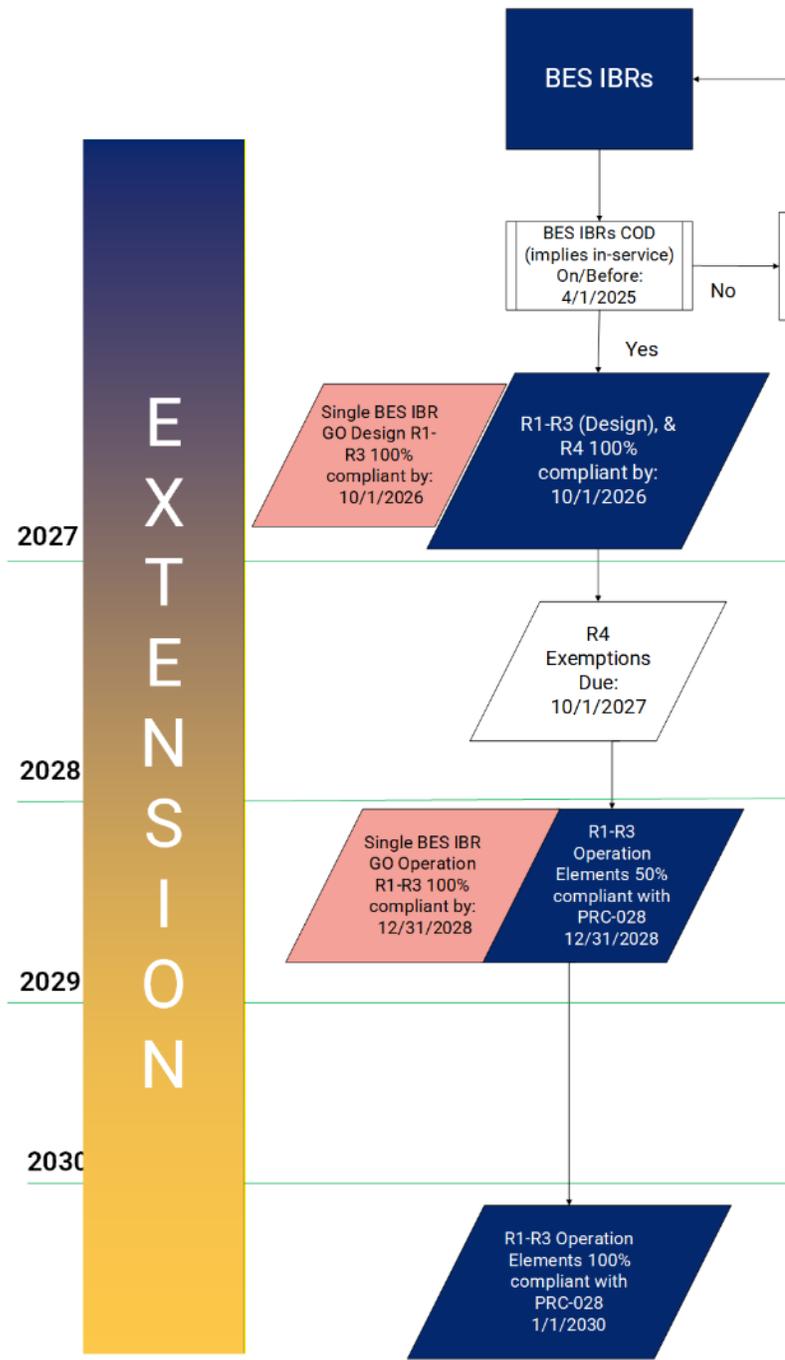
FERC App:  
8/28/2025

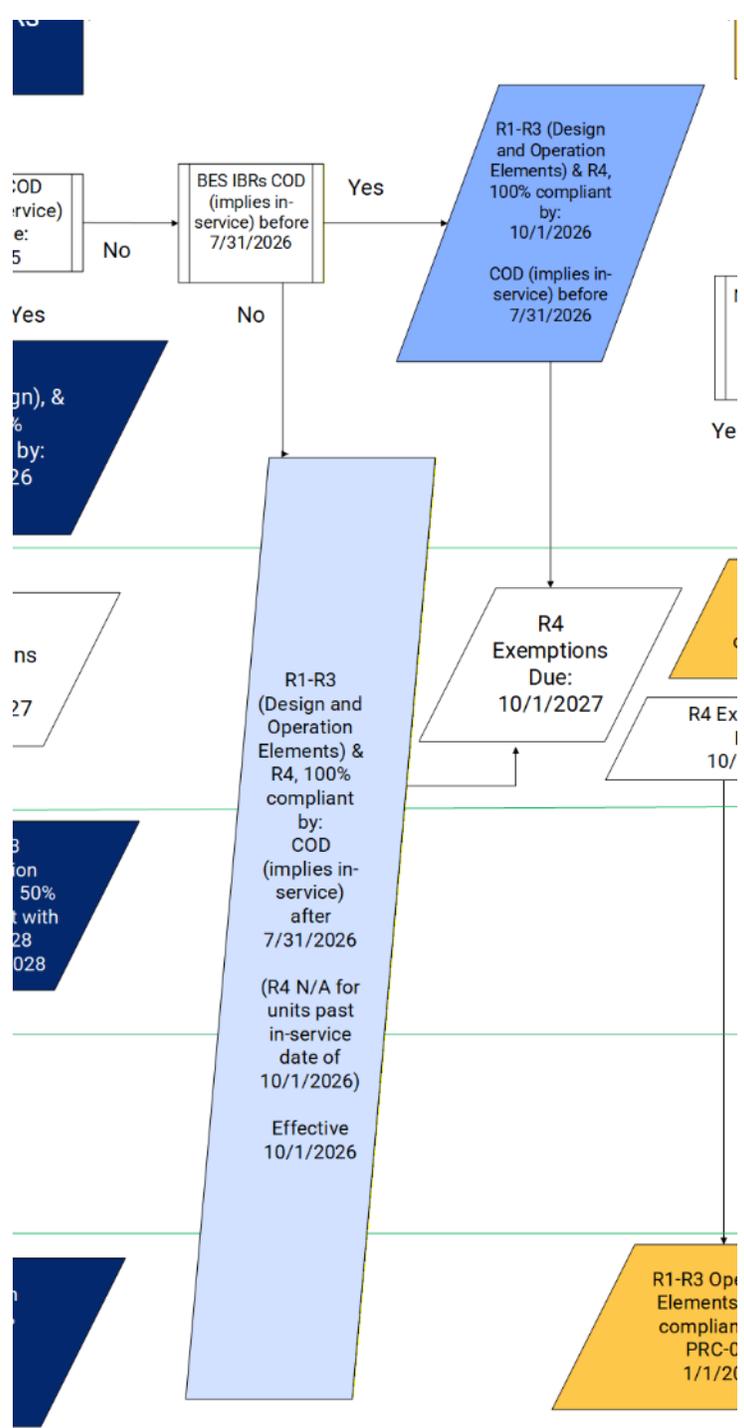
Eff Date:  
10/1/2026

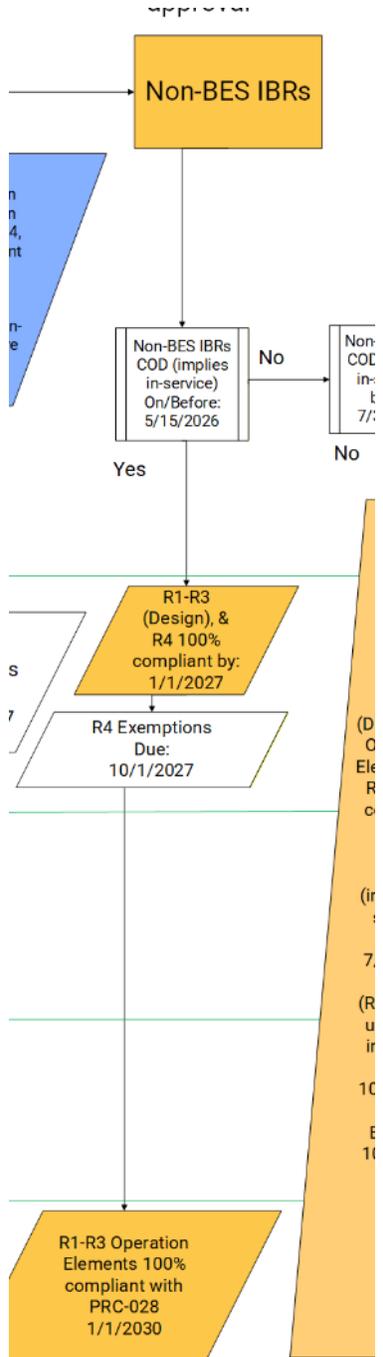
BES IBRs

Non-BES IBRs

First day of first  
calendar quarter 12  
months after  
approval

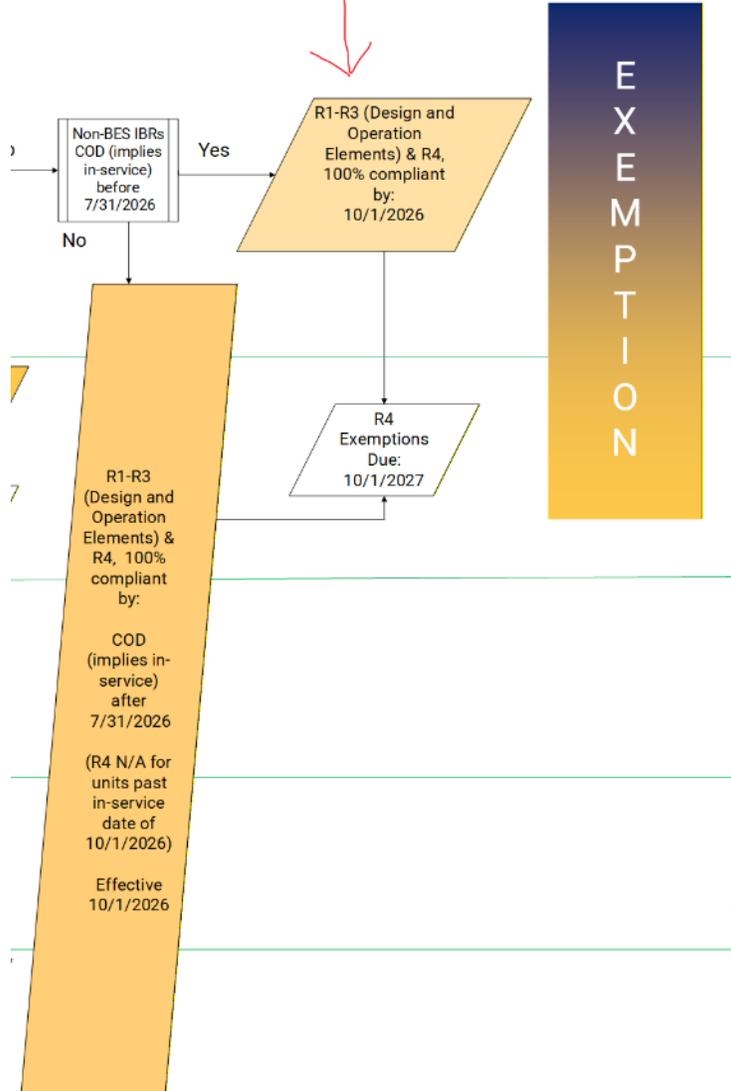






Per PRC-028-1 IP,  
Date is 7/31/2026  
BES and Non-BES  
IBRs

Rs



7

2

1

PRC-029-1

FERC App:  
8/28/2025

2026

2026

Eff Date:  
10/1/2026

First day of first  
calendar quarter 12  
months after  
approval

Per PRC-028-1 IP,  
Date is 7/31/2026  
BES and Non-BES  
IBRs

BES IBRs

Non-BES IBRs

BES IBRs COD  
(implies in-service)  
On/Before:  
4/1/2025

BES IBRs COD  
(implies in-service)  
before  
7/31/2026

R1-R3 (Design and  
Operation  
Elements) & R4,  
100% compliant  
by:  
10/1/2026  
COD (implies in-  
service) before  
7/31/2026

Non-BES IBRs  
COD (implies  
in-service)  
On/Before:  
5/15/2026

Non-BES IBRs  
COD (implies  
in-service)  
before  
7/31/2026

R1-R3 (Design and  
Operation  
Elements) & R4,  
100% compliant  
by:  
10/1/2026

EXTENSION

EXEMPTION

2027

2027

2028

2028

2029

2029

2030

2030

Single BES IBR  
GO Design R1-  
R3 100%  
compliant by:  
10/1/2026

R1-R3 (Design), &  
R4 100%  
compliant by:  
10/1/2026

R4  
Exemptions  
Due:  
10/1/2027

Single BES IBR  
GO Operation  
R1-R3 100%  
compliant by:  
12/31/2028

R1-R3  
Operation  
Elements 50%  
compliant with  
PRC-028  
12/31/2028

R1-R3 Operation  
Elements 100%  
compliant with  
PRC-028  
1/1/2030

R1-R3  
(Design and  
Operation  
Elements) &  
R4, 100%  
compliant  
by:  
COD  
(implies in-  
service)  
after  
7/31/2026  
  
(R4 N/A for  
units past  
in-service  
date of  
10/1/2026)  
Effective  
10/1/2026

R4  
Exemptions  
Due:  
10/1/2027

R1-R3  
(Design), &  
R4 100%  
compliant by:  
1/1/2027

R4 Exemptions  
Due:  
10/1/2027

R1-R3 Operation  
Elements 100%  
compliant with  
PRC-028  
1/1/2030

R1-R3  
(Design and  
Operation  
Elements) &  
R4, 100%  
compliant  
by:  
COD  
(implies in-  
service)  
after  
7/31/2026  
  
(R4 N/A for  
units past  
in-service  
date of  
10/1/2026)  
Effective  
10/1/2026

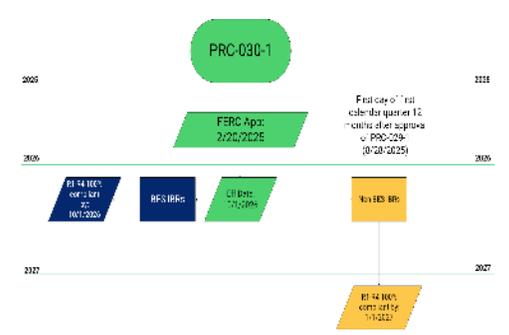
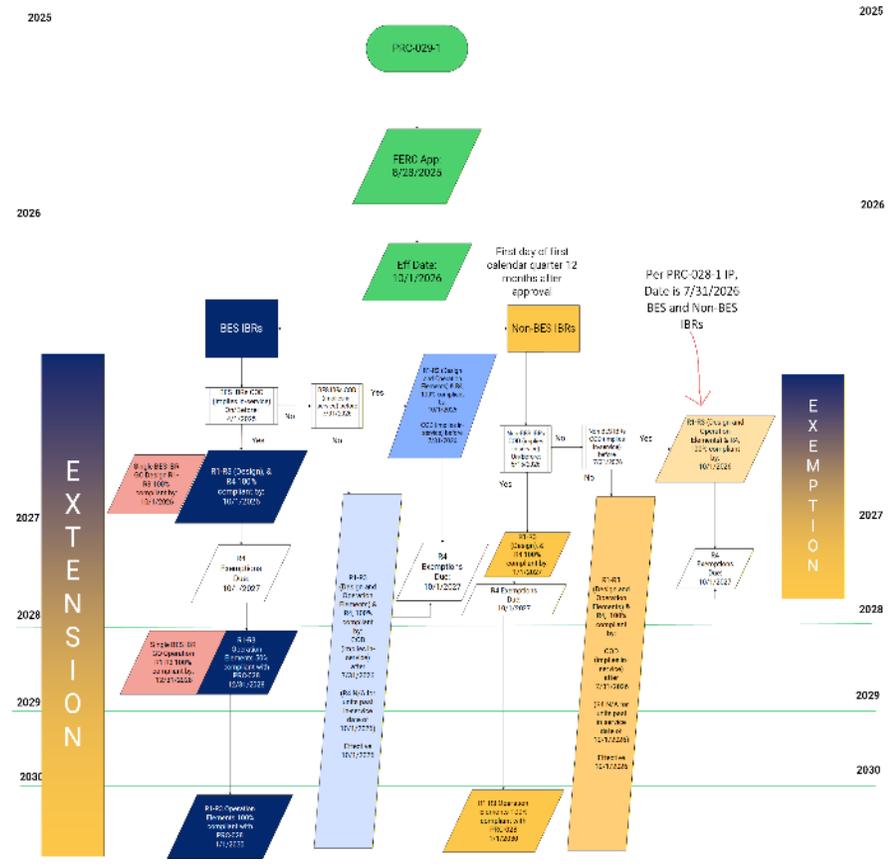
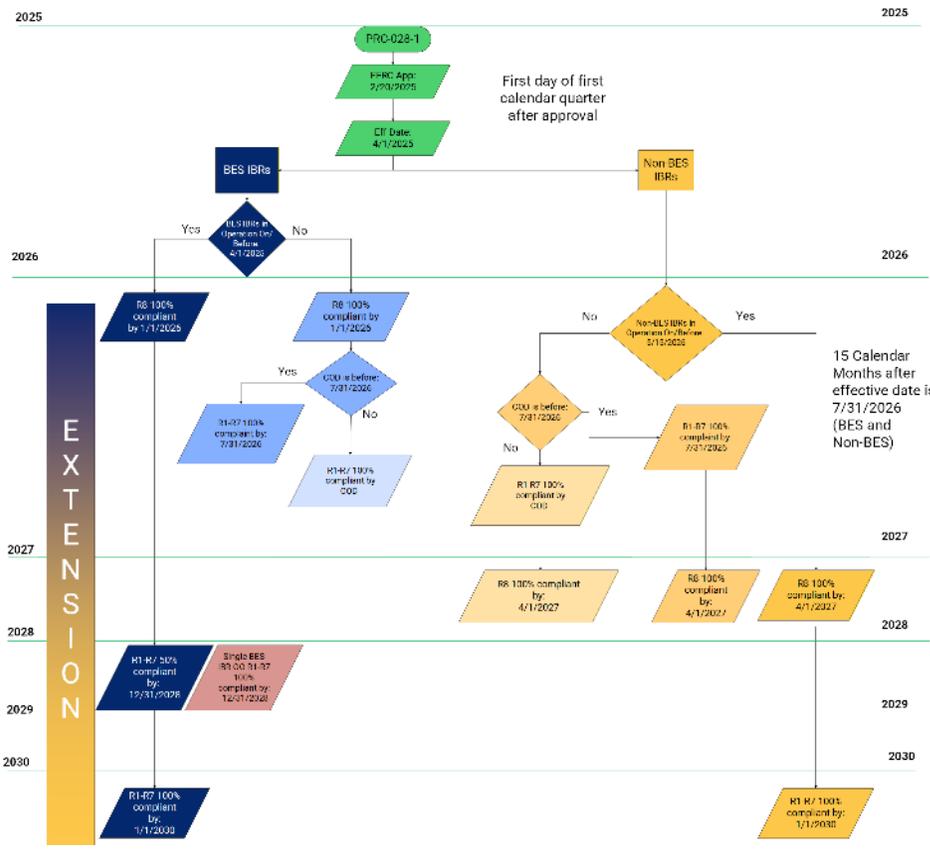
R4  
Exemptions  
Due:  
10/1/2027



28

29

30





# Questions



**ENGAGE WITH WECC**





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