



2026 | Large Microgeneration Overview

Acknowledgment of Traditional Land

FortisAlberta acknowledges that our operations and facilities occur on the traditional territories, meeting grounds, and travelling routes of the Indigenous Peoples of the Treaty territories and Métis Nation of Alberta. We make this acknowledgment as an act of reconciliation and gratitude to those whose territory we reside on or are visiting.

[FortisAlberta's Indigenous Commitment Statement](#)



FortisAlberta Facts

- We provide safe and reliable electricity to more than a half-million residential, commercial and industrial customer sites across central and southern Alberta
- We own and operate approximately 133,000 kilometres of power lines, more than 1.1 million power poles, representing approximately 60 per cent of Alberta's electric distribution network
- We deliver approximately 17,000 gigawatt hours of electricity annually, of that, 15 per cent is generated by renewable sources directly connected to our system
- We operate in more than 240 communities across the province, employing over 1,300 Albertans



Frequently Used Acronyms

Small Microgenerator (SMG) Nameplate Capacity 0-149kW

Large Microgenerator (LMG) Nameplate Capacity between 150kW to 4999 kW

AESO	Alberta Electric System Operator
CCE	Commissioning Conformance Evaluator
DFO	Distribution Facility Owner (FortisAlberta, FAI)
DG	Distributed Generation (Export Only)
GFO	Generation Facility Owner
ICAP	IEEE Conformity Assessment Program
IFC	Issued For Construction
IPSC	Interconnection Protection Settings & Commissioning
SLD	Single Line Diagram
TFO	Transmission Facility Owner (AltaLink, AML)



FortisAlberta Engineering

- **APS** Advanced Power Systems
- **DER Planning** Distributed Energy Resource Planning
- **P&C** Protection and Control
- **PQ** Power Quality
- **SCADA** Supervisory Control And Data Acquisition



Your FortisAlberta Team

» **Business Analyst**

The Business Analyst is your first and final stage of contact, they will ensure that you meet the criteria, Form A is completed, SLD is stamped, Quote is issued, AESO ID and that the inter-connection agreement is updated and executed.

» **Project Engineer**

The Project Engineer leads the technical and engineering components of the DER integration process. They are your primary point of contact for all technical matters, including engineering studies, design submissions, and review outcomes.

» **Stakeholder Relations Manager (SRM)**

The Stakeholder Relations Manager supports and coordinates your submission through the DER integration process and is your primary point of contact for all non-technical matters, including application, required documentation, and general process coordination. The SRM maintains overall visibility of the project and provides centralized coordination across internal teams to help ensure alignment and timely progression.

We work as a team to collaboratively to ensure your project is successful.





Entering the DER Queue

Detailed Level Study (DLS)

- ✓ Confirms system feasibility and confirmed available capacity at the proposed point of interconnection.
- ✓ Defines all interconnection requirements, including system upgrades, protection, & SCADA/monitoring.
- ✓ Reviews and approves the authenticated SLD and technical studies for DER-02 compliance.
- ✓ Reserves distribution capacity upon DLS issuance (30-day hold in the DLS Queue).
- ✓ Requires customer acceptance within 30 days or the **project is cancelled and capacity released**.

This is typically a good time to begin procuring your equipment, as we have verified the technical requirements and confirmed available capacity. That said, in some cases, once the required engineering studies are completed, additional equipment or design adjustments may be required.



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graph LR; A[Form A Intake] --> B[Capacity Check]; B --> C[DLS Assessment]; C --> D[110-Day Package]; D --> E[30-Day Package]; E --> F[Commissioning]; F --> G[Energization];
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Form A Intake

Capacity Check

DLS Assessment

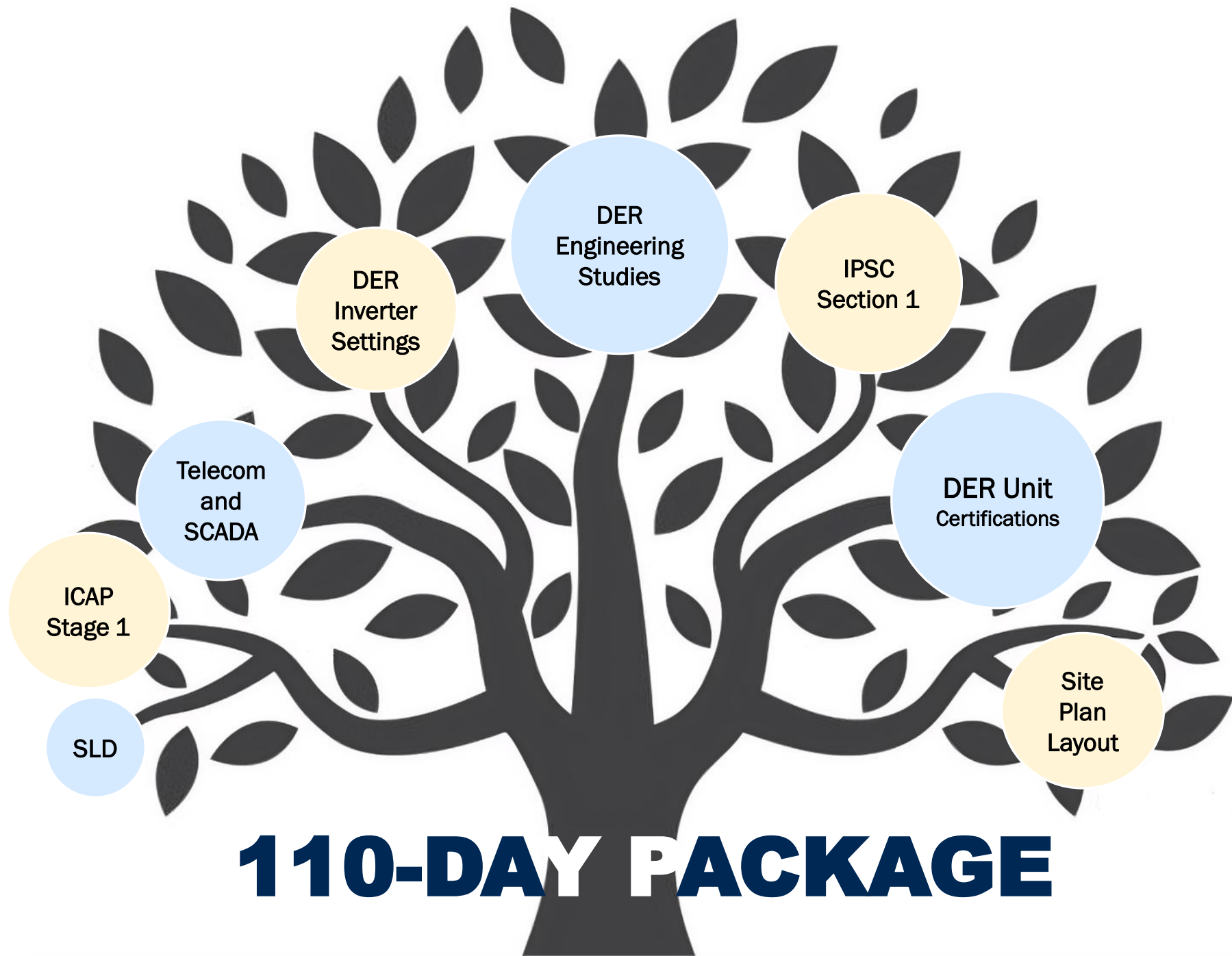
110-Day Package

30-Day Package

Commissioning

Energization

110-DAY PACKAGE



110-DAY PACKAGE

DER Engineering Studies

Short Circuit Study

- Required for all projects with a nameplate rating over 500kVA
- DER system shall not exceed 5kA / 8kA

Effective Grounding Study

- GEN/LOAD Ratio
- Relay Desensitization
- Transient Overvoltage
 - a. Load Rejection Overvoltage
 - b. Ground Fault Overvoltage

Rapid Voltage Change

- Ratings of Customer-Owned Transformers
- Transformer In-rush

Self-Excitation Study

- Required for induction generators under 4MVA where a DTT is not required

Your Detailed Level Study will indicate which studies your project will require

DER Unit Certifications

- All CSA / UL certification for generating equipment are required
- All generation units must demonstrate conformance to UL1741 SB
- Certificate of Compliance
- Anti-Islanding Datasheet
- Inverter Datasheets

110-Day Package

Site Layout and Access Plan

- Site Plan
- Site Access Plan (contact information, parking location for field crews, construction boundary, equipment, test location, access procedures, etc.)
- CAD files with actual geographical coordinates (typical point of reference is the quarter section boundary)
- Legal Land boundary must be clearly indicated in the file

110-Day Package

DER Inverter Settings

DER Inverter Setting Configuration Template is available in the FortisAlberta Library

	Parameter Label	Description
68.	PV_OLRT	Volt-Watt - Open loop response time
69.	OV2_TRIP_V	OV2 must trip over-voltage setting. Per unit value based on NP_AC_V_NOM.
70.	OV2_TRIP_T	OV2 must trip duration setting
71.	OV1_TRIP_V	OV1 must trip over-voltage setting. Per unit value based on NP_AC_V_NOM.
72.	OV1_TRIP_T	OV1 must trip duration setting
73.	UV1_TRIP_V	UV1 must trip under-voltage setting. Per unit value based on NP_AC_V_NOM.
74.	UV1_TRIP_T	UV1 must trip duration setting
75.	UV2_TRIP_V	UV2 must trip under-voltage setting. Per unit value based on NP_AC_V_NOM.
76.	UV2_TRIP_T	UV2 must trip duration setting
77.	OF2_TRIP_F	OF2 must trip over-frequency magnitude setting. Frequency values shall be reported to 3 decimal places.
78.	OF2_TRIP_T	OF2 must trip duration setting
79.	OF1_TRIP_F	OF1 must trip over-frequency magnitude setting. Frequency values shall be reported to 3 decimal places.
80.	OF1_TRIP_T	OF1 must trip duration setting

Single Line Diagram (SLD)

- Measurement Point
 - Point of Common Coupling (PCC)
 - Point of Connection (PoC)
- Disconnection Switch
- All Electrical Equipment
- Revenue Meter
- Protective Relays ANSI Elements
- Breaker Failure
- Authenticated by an APEGA Professional Engineer

Interconnection Protection Settings & Commissioning (IPSC)

IPSC is a required submission for DER projects that documents protection settings and commissioning results at the Point of Common Coupling (PCC).

Purpose

- » Confirms DER protection aligns with FortisAlberta requirements
- » Verifies protection performance before energization
- » Supports safe, coordinated operation of DER on the distribution system

IPSC moves protection requirements from:

Design → Testing → Final approval



IPSC Section 1

Purpose

Defines the **engineered protection design** for the DER at the Point of Common Coupling (PCC) and demonstrates compliance with FortisAlberta DER-02 requirements **before commissioning**.

What This Section Includes

- » Proposed relay and protection settings for the PCC breaker
- » Description of the protection scheme and equipment
- » Professional Engineer (APEGA) authentication, where required



ICAP Overview

There are 3 stages required to complete a full ICAP:

1. Pre Evaluation
2. On Site Protection Evaluation
3. Onsite Performance

These are preformed by a third party certified CCE.

IEEE 1547-2018 is the governing technical standard for ICAP

Refer to DER-02D & DER-02E



ICAP Pre-Evaluation (Stage 1)

Stage 1 confirms that DER equipment is certified and conformant to IEEE 1547-2018

Why It's Important

- » Ensures DER equipment meets **mandatory interconnection performance requirements**
- » Establishes a consistent technical baseline across all DER projects
- » Critical for systems with **high DER penetration**, like FortisAlberta's network



Telecom & SCADA

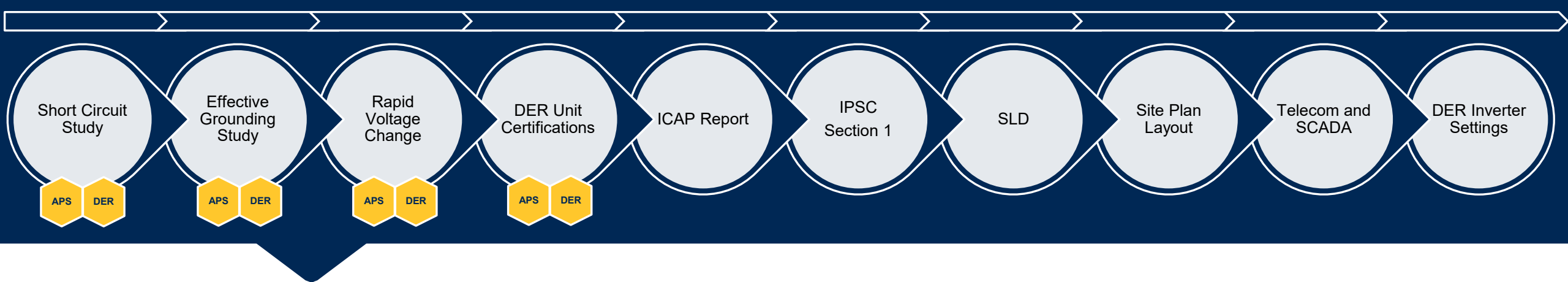
Telecommunications Assessment

- » Assessment report on TELUS cellular coverage
- » Used to determine FortisAlberta telecom requirements

SCADA Data Concentrator DNP Points

- » DNP Points list for data concentrator
- » Refer to **DER-02 Annex C**
- » Communications block diagram required as part of submission





110-DAY PACKAGE

Short Circuit Study

Required for sites 500kVA and greater
Refer DER-02A

Rapid Voltage Change (RVC)

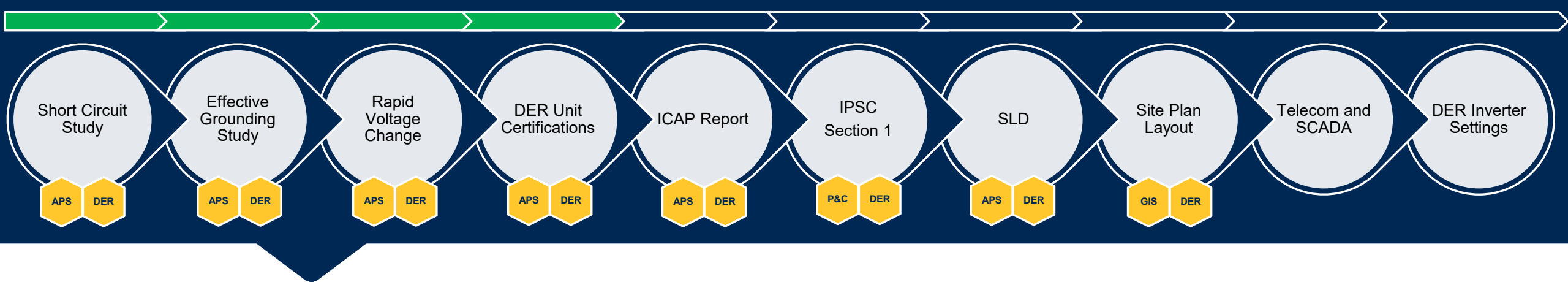
Transformer Size (Customer Owned)
Refer DER-02A

Effective Grounding Study (EGS)

GEN/LOAD Ratio Values
Transformer Configuration
Refer DER-02B

DER Unit Certifications

UL1741 SB Certificate of Compliance
Unintentional Islanding Datasheet
Manufacturer Derating Letters (if applicable)



110-DAY PACKAGE

ICAP Stage 1

Required for sites 500kVA and greater
Requires CCE
Refer DER-02D & DER-02E

SLD

APEGA Authenticated
Refer DER-02

IPSC 1

Proposed Protection Settings
APEGA Authenticated

Site Access & Site Plan

PDF and .DWG files required



110-DAY PACKAGE

Telecom Assessment

FortisAlberta deliverable

DER Inverter Settings

Inverter Configuration Template

SCADA Data Concentrator DNP Points

DNP Points list for data concentrator
Refer DER-02



Form A Intake

Capacity Check

DLS Assessment

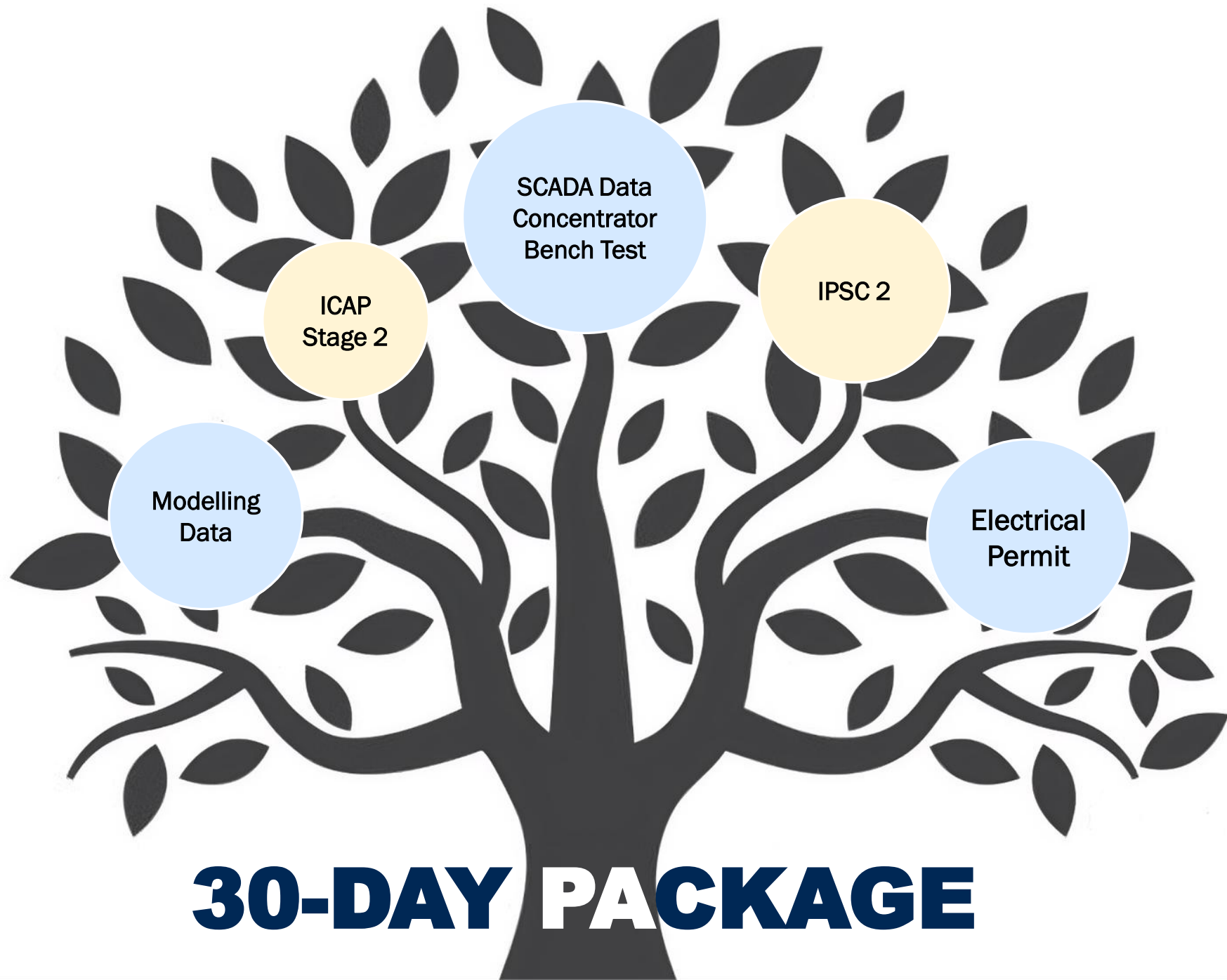
110-Day Package

30-Day Package

Commissioning

Energization

30-DAY PACKAGE



30-DAY PACKAGE

SCADA Data Concentrator Bench Test Report

- **SCADA is critical for monitoring DER status**, feeder loads, breaker positions, and alarms.
- **Bench testing ensures no miscommunication or data loss** that could compromise system operation
- **Reduces Field Risk**
 - Problems discovered during bench testing avoid costly field troubleshooting and delays

IPSC Section 2

Purpose:

Validates that the installed protection equipment performs as designed through commissioning and field testing.

What This Section Includes:

- Actual measured protection settings from installed equipment
- Confirmation that protection devices were tested recently and successfully
- Identification of any deviations from proposed settings

ICAP - On Site Protection Evaluation (Stage 2)

Stage 2 verifies that certified DER equipment is configured correctly to meet FortisAlberta's interconnection requirements and system operating conditions.

- » **Why It's Important**
- » Certified equipment must still be configured correctly in the field
- » Prevents system issues caused by incorrect settings
- » Ensures consistent DER behavior on a system with high DER penetration



Electrical Permit

- ✓ Final Electrical Permit
- ✓ Inspection Report signed by the Safety Codes Officer (SCO)

Site Witnessing cannot proceed without both the Electrical Permit and Inspection Report

30-Day Package

Modelling Data

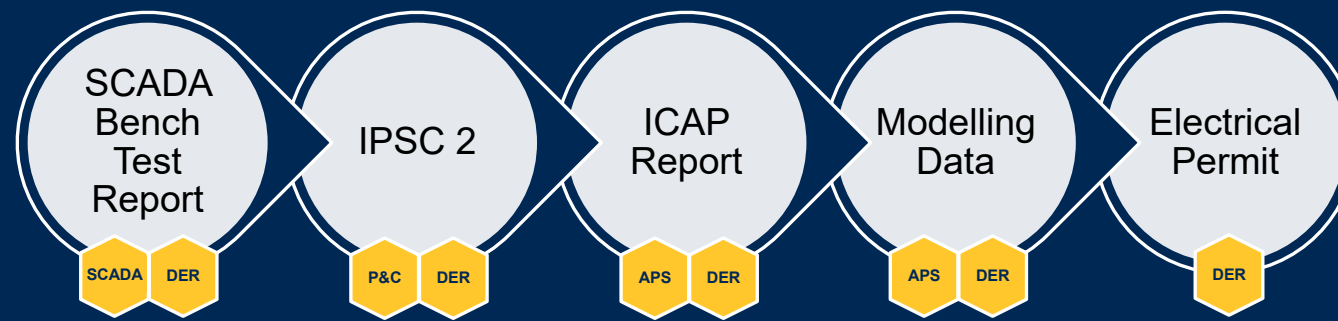
Inverter-Based Generation

- Manufacturer PSCAD Inverter Models
- Manufacturer EMTP-RV

Machine-Based Generation

- Detailed modelling data(e.g., transient reactance, time constants, etc.)

30-Day Package



30-DAY PACKAGE

SCADA Bench Test Report

Data Concentrator Bench Test Report

ICAP Stage 2

Verification of non-compliant items captured during ICAP stage 1

Electrical Permit

Inspection Report signed by **SCO**
Final Electrical Permit
Site Witnessing cannot proceed without both items listed above

IPSC 2

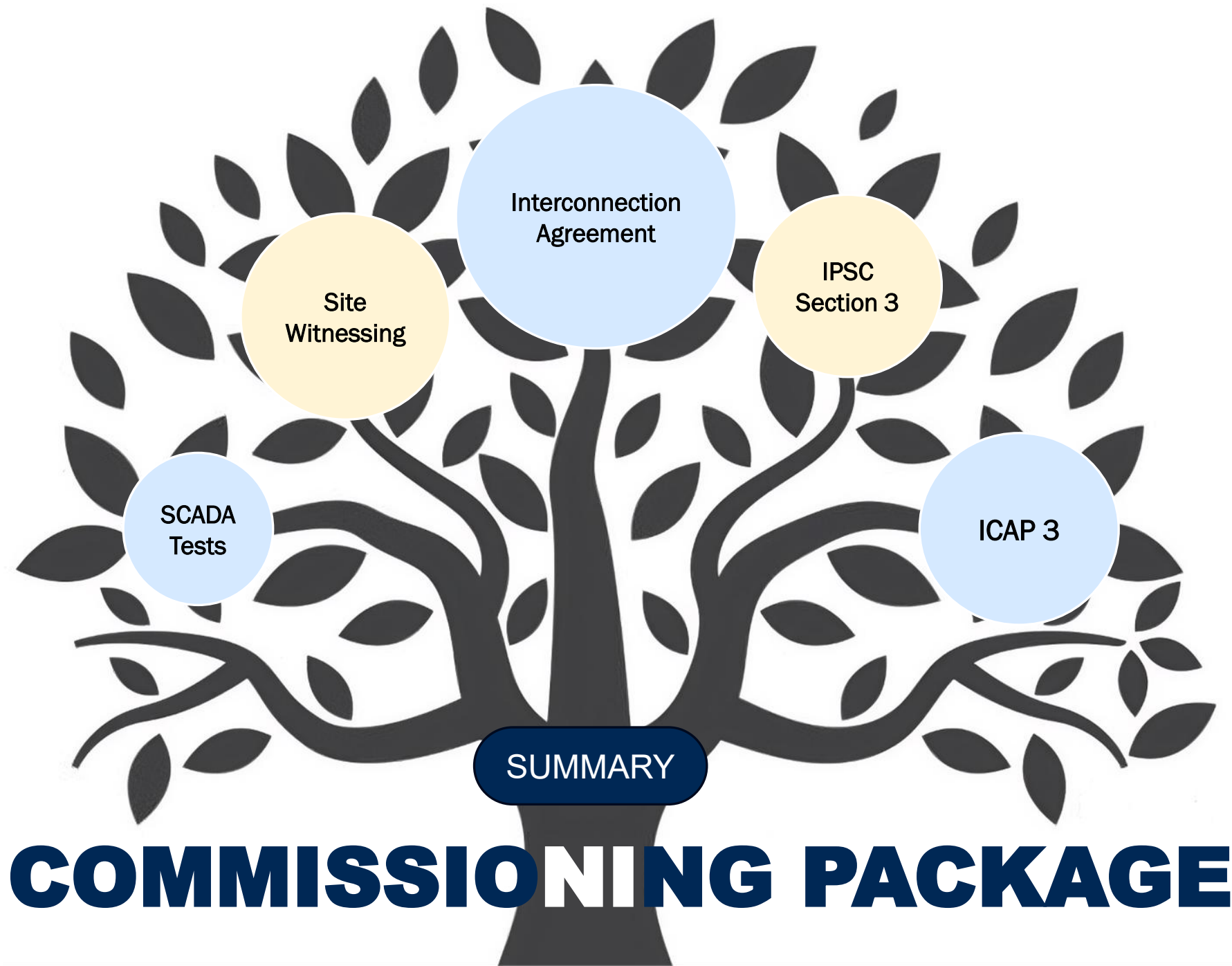
Actual measured protection settings from installed equipment

Modelling Data

Inverter-Based Generation (PSCAD and EMTP RV models)
Machine-Based Generation (modelling data)



Commissioning Package



SCADA & Site Witnessing

» SCADA Live Point to Point Testing

- » Live point to point testing between field installation and FortisAlberta SCADA department
- » Identified deficiencies must be remedied prior to FortisAlberta acceptance

» Site Witnessing

- » Site witness testing performed by FortisAlberta field staff and optionally, DER Project Engineer
 - » **This may take 2 days and may require your site to have standby generator**



IPSC Section 3

» Purpose

Provides final confirmation that all interconnection protection requirements are met and supports approval for DER energization.

» What This Section Includes

- » Final, verified protection performance results
- » Confirmation of all required protection functions at the PCC
- » Documentation of any final adjustments made during commissioning
- » Evidence that protection coordination and performance meet FortisAlberta standards



ICAP - On-Site Performance (Stage 3)

Stage 3 confirms that the installed DER behaves as expected on-site

Why It's Important

- » Final assurance of DER performance before full operation
- » Reduces operational risk on a **high-DER distribution system**
- » Confirms that field installation did not alter certified behavior

What Is Verified

- » On-site commissioning checks of IEEE 1547-2018 functions
- » Verification of DER response to abnormal voltage and frequency conditions
- » Confirmation that operational behavior matches ICAP-certified performance
- » Alignment with FortisAlberta commissioning requirements



Who is your Operator In Charge (OIC)?

Interconnection Agreement

Interconnection Agreement (IA) is a contract between FortisAlberta and the GFO

GFO has to sign-off the IA and provide the Operator-In-Charge (OIC) information

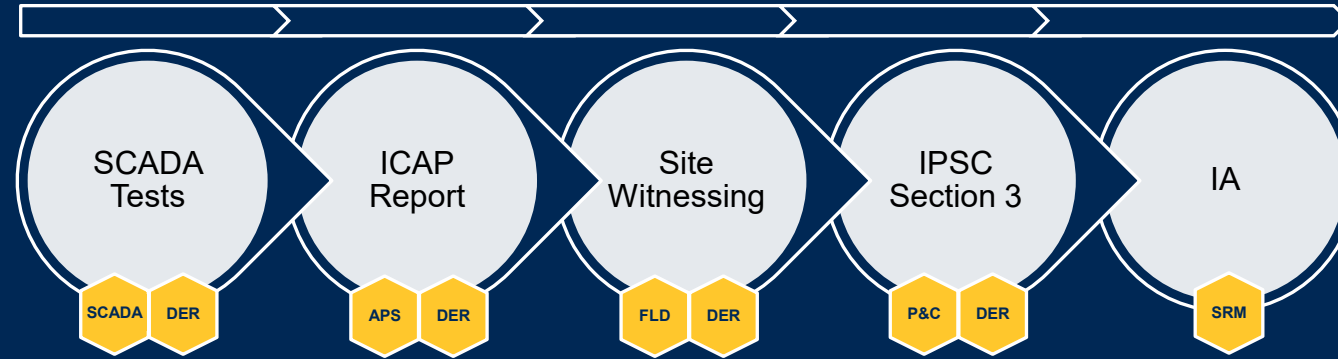
OIC to send to the Generation team

Generation@fortisalberta.com

Operator-In-Charge

- ✓ Responsible for the day-to-day operations
- ✓ Primary point of contact for the FortisAlberta Control Centre (FCC)
- ✓ OIC must always be available for FCC to contact.

Failure to contact OIC, FortisAlberta reserves the right to disconnect the full site



COMMISSIONING PACKAGE

SCADA Tests

SCADA Point to Point Test
SCADA Enter Service Test

Site Witnessing

Onsite verification of IPSC Section 2

Interconnection Agreement

Execution of agreement with updated documentation

ICAP Stage 3

Verification of protection and performance with generating units online

IPSC Section 3

Actual measured protection settings from installed equipment with generating units online.



Energization