Natalie Johnson

Natalie Johnson has over 20 years' experience in the energy industry and regulatory affairs, particularly in the renewable energy environment. Natalie's regulatory experience includes working with regulatory agencies such as NERC, FERC, and a variety of ISOs across North America, including ERCOT.

Natalie began her energy career as a consultant, contributing to ISO Market Procedures for the Ontario Independent Electricity Market Operator and the Korean Power Exchange in Seoul. She later held roles as a Market Policy Specialist and Senior Operations Analyst, working across a variety of North American ISO markets. For the past decade, she has focused on regulatory compliance in renewable energy, particularly wind, solar, and battery storage.

Natalie joined Enel Green Power in the fall of 2014 and led their NERC compliance program before moving into a Compliance Officer role in 2022, overseeing operational compliance for large renewable generation assets.

Natalie holds an undergraduate degree from McGill University and a graduate degree from the London School of Economics.

Enel Seasonal Preparedness Program

ERCOT Winter Weather Preparedness Workshop

October 16, 2025

Agenda

01

Key elements of Enel’s Seasonal Preparedness Program

02

Weather Critical Failure Points Checklist

03

Key Tips in Preparing for an Inspection

04

Continuous Improvement

Introductions

- Enel Seasonal Preparedness Program

Natalie Johnson
Head of EGP Compliance

Paul Landers
Substation Senior Electrical Control Specialist

Kenneth Peacock
BESS Service Manager

Adam Sotirakopoulos
Head of Ops & Maintenance Solar Zone 1

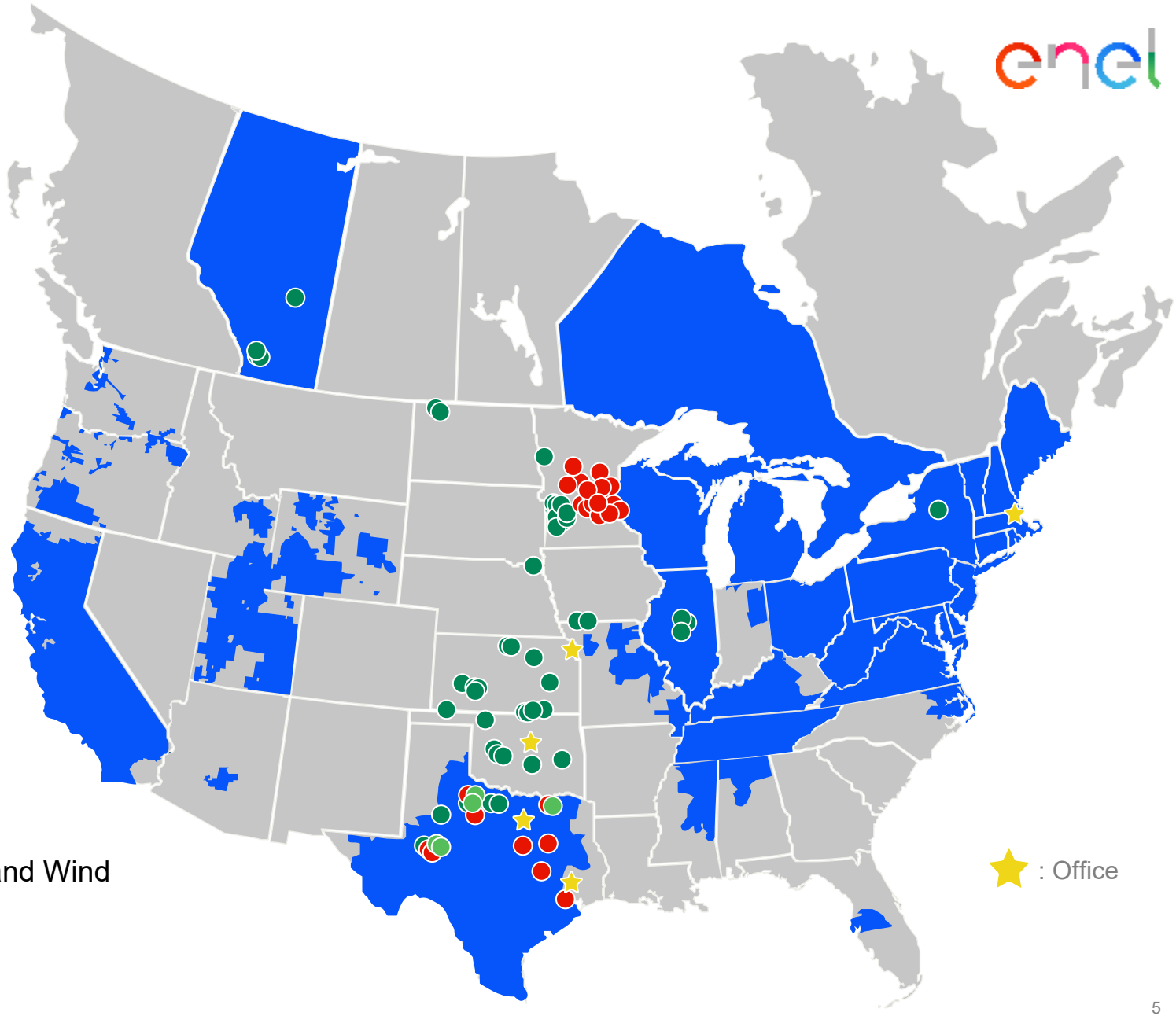
Our Presence in the U.S. and Canada

Demand Response
4.8 GW

Storage
1.4 GW

Solar
3.8 GW

Wind
7.5 GW



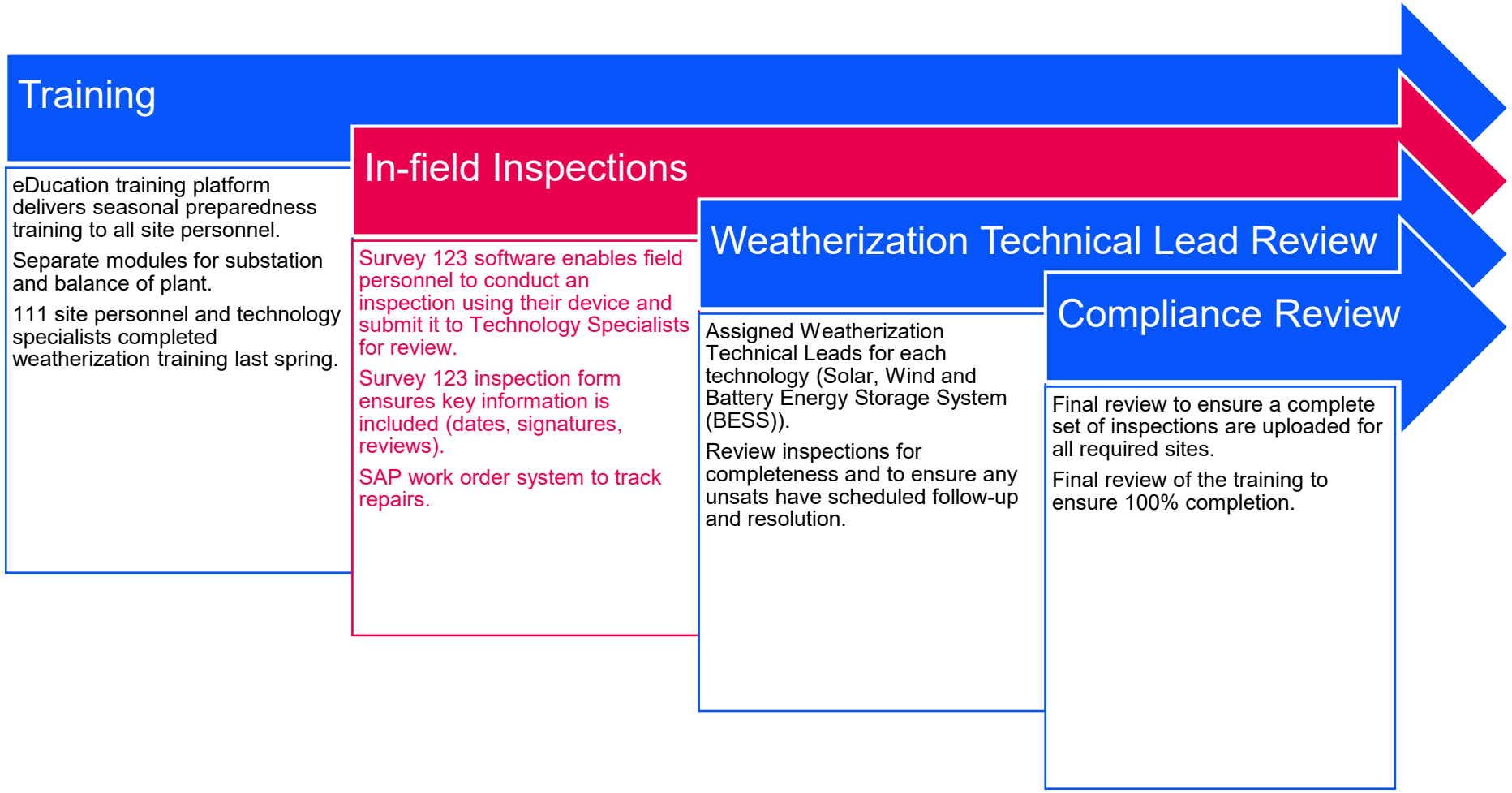
- Enel operates over 4,500 MWs of Solar, BESS and Wind within the ERCOT region specifically.

Data as of Q1 2025

Enel Seasonal Preparedness Program

- Key Elements of Enel's Program

- Critical Task: Conducting In-Field Inspections.
- Support Mechanisms: Established to ensure the effective and successful execution of in-field inspections.



Enel Seasonal Preparedness Program

- In-Field Inspection Schedule

- Application of PUCT §25.55 Rules

❖ §25.55(b)(11): Weather Critical Component……likely to lead to a trip, derate of more than five percent of the capacity represented in the resource's seasonal net maximum sustainable rating or of the transmission facility's rating, or failure to start.

❖ §25.55(c)(1): A generation entity must maintain these measures throughout the winter season and complete any ongoing or monthly requirements at the appropriate time.

❖ §25.55(c)(1)(A): Implement weather emergency preparation measures that could reasonably be expected to ensure the sustained operation of all cold weather critical components during winter weather conditions.

Technology	Seasonal Preparedness Inspection Schedule			
	Start of the Season (Summer/Winter)		During the Season	
	HV/MV Substation	Inverters/BESS Containers	HV/MV Substation	Inverters/BESS Containers
Wind	April/October	OEM Maintenance Schedule	Monthly	OEM Maintenance Schedule
Solar	April/October	April/October	Monthly	OEM Maintenance Schedule
BESS (note for hybrid sites the substation checks are done by the technology)	April/October	April/October	Monthly	Monthly

Enel Seasonal Preparedness Program

- Solar Substation Critical Failure Points Overview

Outdoor Gas-Insulated Circuit Breakers & Circuit Switchers (weather critical component >5% resource output)

- Heater functionality
- Animal/water intrusion
- Confirm insulating gas pressure is within operating range

Outdoor Vacuum-Insulated Circuit Breakers (weather critical components >5% resource output)

- Heater functionality
- Animal/water intrusion

Motor-Operated Disconnects (weather critical components >5% resource output)

- Heater functionality
- Animal/water intrusion

Main Power Transformers (weather critical component >5% resource output)

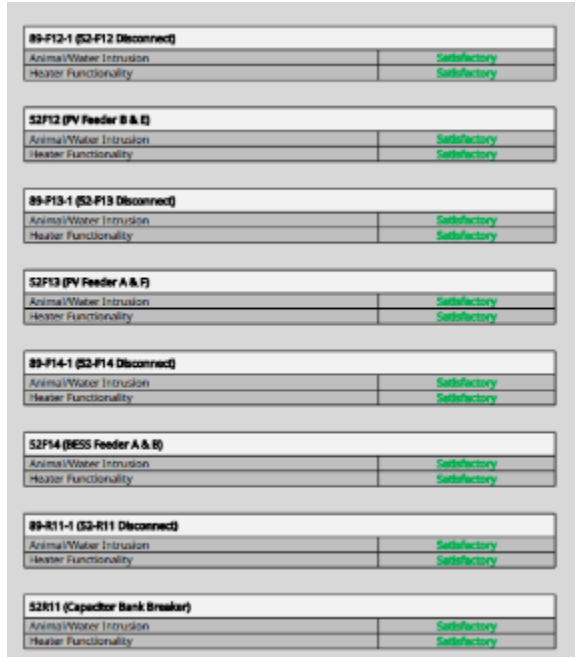
- Main control cabinet animal/water intrusion
- Control cabinet heater functionality
- Cooling fans
- Tap changer control cabinet animal/water intrusion
- Tap changer cabinet heater functionality
- Breather desiccant, Insulating oil level, Hydran meter

Transformer High Voltage Breaker (weather critical component >5% resource output)

- Heater functionality
- Animal/water intrusion
- SF6 Pressure

Control & SCADA Building (weather critical component >5% resource output)

- Ensure door seals are intact and functional.
- Verify HVAC systems operate correctly.
- Confirm annual professional inspection/maintenance per manufacturer or industry standards
- Fan set to “Auto” year-round.



Enel Seasonal Preparedness Program

- Solar Substation Critical Failure Points Overview

CTs, VTs, CVTs, CCVTs

- Inspect heating elements (if present) in termination cabinets per manufacturer's instructions.
- Verify oil levels are within acceptable range.

MV/HV Feeder Breakers

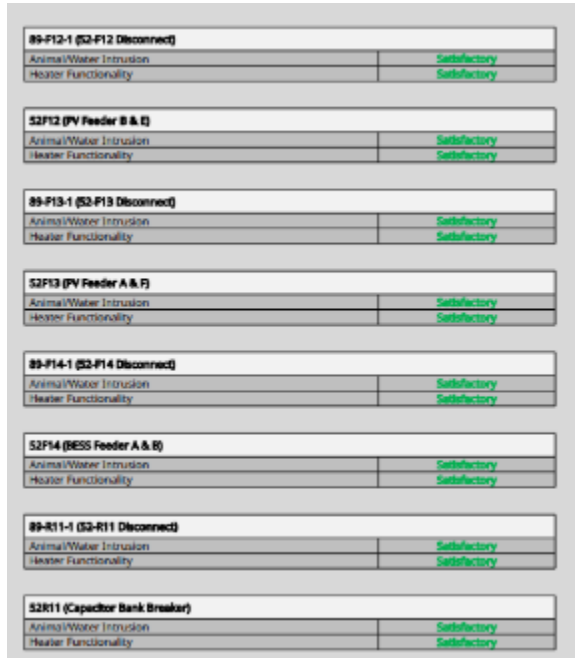
- Heater functionality
- Animal/water intrusion

Cap Banks (Breakers, Enclosure)

- Heater functionality
- Animal/water intrusion

Technical Supplies

- Maintain cold-weather supplies (e.g., SF6 gas).
- If SF6 switchgear is serviceable, ensure fill kit with correct fittings is available for qualified personnel.



- In addition to weather critical components that could cause a trip or derate of more than 5% of capacity, some items included on our list could prevent a return to service.
- Part of continuous improvement efforts is to align our list more with ERCOT's recommendations.

Enel Seasonal Preparedness Program

- BESS Seasonal Preparedness Overview

BESS Container: Battery and Control Container

- Conduit sealing, Door seals
- Air filters
- Conduit piping and insulation
- Condensation trays
- Cooling fans
- No standing water

BESS Container: Battery Temperature Control System

- Conduit sealing, Air filters, Door seals
- Thermostat functionality, Conduit piping insulation
- Condensation port is free
- Heater clean and functional
- Pipes and hoses no cracks or signs of damage
- Glycol levels (ratio of glycol to water)

BESS Container: Fire suppression

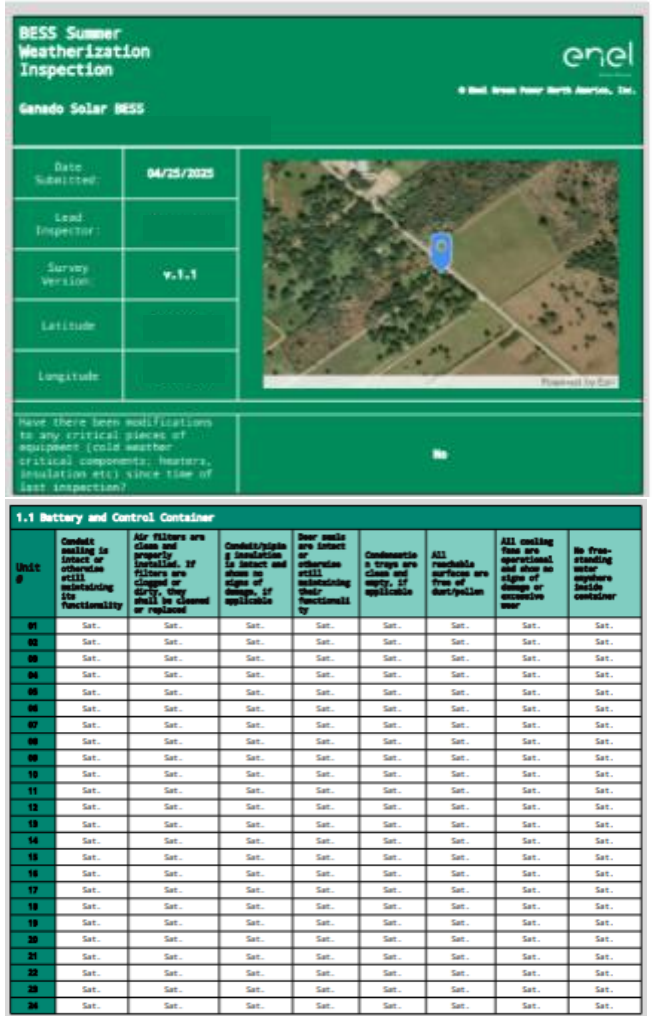
- Ensure water does not freeze
- Ensure tanks are properly filled
- Verify valves and pumps are operational

Inverter

- Conduit sealing
- Door seals
- Air filters
- Inverter fans are operating correctly
- Liquid cooled hydraulic circuit functional
- Heating elements are functional

Inverter: Transformers

- Door seals


BESS Summer Weatherization Inspection

enel

Ganado Solar BESS

Date Submitted:	04/25/2025
Lead Inspector:	
Survey Version:	v.1.1
Latitude	
Longitude	

Have there been modifications to any critical pieces of equipment (cold weather critical components: heaters, insulation etc) since time of last inspection?

No

1.1 Battery and Control Container

Unit #	Conduit sealing is intact or otherwise still maintaining its functionality	Air filters are clean and properly installed. If filters are clogged or dirty, they shall be cleaned or replaced	Conduit/piping & insulation is intact and shows no signs of damage, if applicable	Door seals are intact or otherwise still maintaining their functionality	Condensate trays are clean and empty, if applicable	All reachable surfaces are free of dust/pollen	All cooling fans are operational and show no signs of damage or excessive wear	No free-standing water anywhere inside container
01	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
02	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
03	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
04	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
05	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
06	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
07	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
08	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
09	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
10	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
11	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
12	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
13	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
14	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
15	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
16	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
17	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
18	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
19	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
20	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
21	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
22	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
23	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
24	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.

Enel Seasonal Preparedness Program

- BESS Seasonal Preparedness Overview

Inverter: Auxiliary Transformer

- Door seals
- Pressure, temperature and oil level gauges are functional and within specifications.

Inverter: Gas Insulated Switchgear

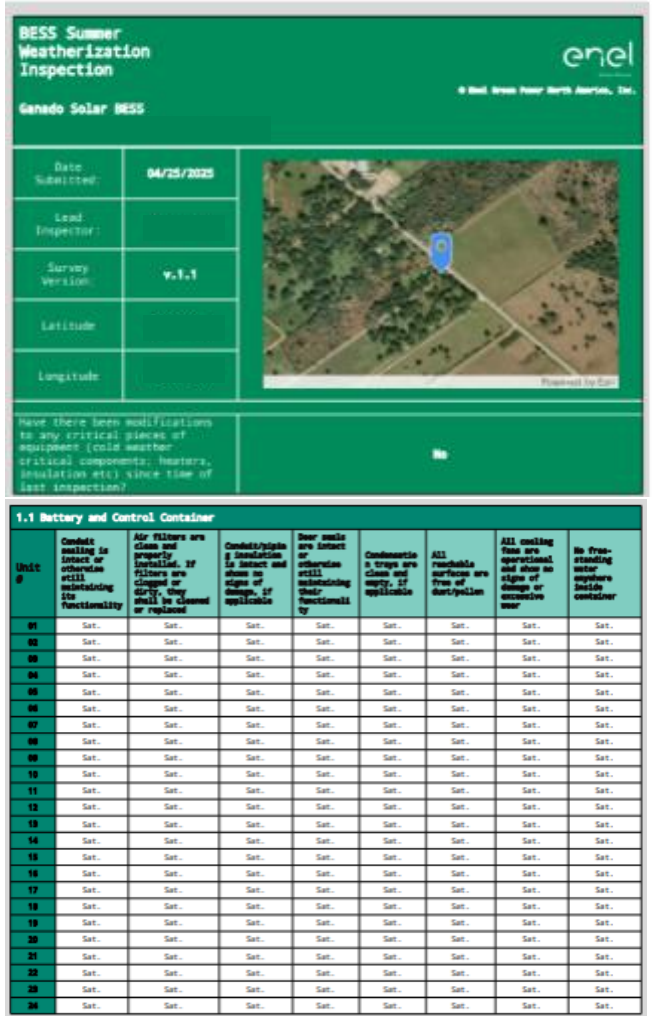
- Pressure verified to be in proper range
- ATS operation shall be verified

Sectionalizing, Control, Communication & Circuit Breaker Cabinets

- Conduit sealing
- Door seals
- No standing water

Backup Power

- Standard maintenance is performed per manufacturer recommendations
- Fuel tank shall be full.



BESS Summer Weatherization Inspection

enel

Ganado Solar BESS

Date Submitted:	04/25/2025
Lead Inspector:	
Survey Version:	v.1.1
Latitude	
Longitude	

Have there been modifications to any critical pieces of equipment (cold weather critical components: heaters, insulation etc) since time of last inspection?

No

1.1 Battery and Control Container

Unit #	Conduit sealing is intact or otherwise still maintaining its functionality	Air filters are clean and properly installed. If filters are clogged or dirty, they shall be cleaned or replaced	Conduit/pipin g insulation is intact and shows no signs of damage, if applicable	Door seals are intact or otherwise still maintaining their functionali ty	Condensate trays are clean and empty, if applicable	All reachable surfaces are free of dust/pollen	All cooling fans are operational and show no signs of damage or excessive wear	No free-standing water anywhere inside container
01	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
02	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
03	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
04	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
05	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
06	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
07	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
08	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
09	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
10	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
11	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
12	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
13	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
14	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
15	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
16	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
17	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
18	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
19	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
20	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
21	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
22	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
23	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.
24	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.

Enel Seasonal Preparedness Program

- Preparing for the Declaration and Inspections

Enel Supporting Package

- Executive Summary mapping compliance activities to each applicable PUCT §25.55 rules.
- Seasonal preparedness training completion rosters.
- Pre-season inspection checklists (critical failure points).

Inspection Preparations

- Review and keep Executive Summary accessible to address PUCT §25.55 questions.
- Do not forget the staffing plans!
- In our experience, ERCOT inspectors have been very respectful and place strong emphasis on industry collaboration to ensure reliability during extreme weather events.

Enel Seasonal Preparedness Program

- Continuous Improvement

Transition From Paper to Electronic Format for Inspections

- Enables more control of content.
- Ensures consistency across different field personnel.
- Update to larger handhelds in response to feedback from field staff.

Review of Weather Critical Components:

- Better alignment with ERCOT guidance.

Questions?