Interconnection Request IC-1198

Version: 1
Phase: Edit
Data submitted: 10/26/2023

General Information

1. Requestor Information

✔ a) Select a primary contact for this request
REDACT REDACT

Email Address: REDACT REDACT REDACT
Phone Number: REDACT REDACT

✔ b) IRS Form W-9

GPC Corp Data Sheet W9 Tax Permit.pdf

2. Interconnection Request Type

✔ a) The interconnection request is for

- ○ A proposed new generating facility
- ● An increase to the generating capacity (gross or net) of an existing generator or active interconnection request
- ○ An existing interconnection request whose data is not currently in SIMPL

✔ b) Facility generation type

- ○ Solar
- ○ Energy storage
- ● Solar with energy storage

⚠ c) Existing facility's interconnection request queue number
IC-735

Please double check on the prior interconnection queue number. IC-735 was withdrawn in April 2019. Will follow

✔ d) Facility name and company this request is incremental to
Robins Air Force Base Solar Facility / Georgia Power Company

✔ e) ✓ Has this interconnection signed a Generator Interconnection Agreement

✔ f) ☐ Do you intend to pursue a State Jurisdictional QFIA

3. Interconnection Requested Service

✔ a) ✓ Energy resource interconnection service

✔ b) ☐ Network resource interconnection service

4. Interconnection Service Amount

a) Maximum net export capability at POI (MW)
128

b) Megawatt capacity increase
0

5. PV Capability

a) Gross solar PV capability (MVA) (Auto populated)
149.6

6. Energy Storage Data

a) Charging strategy
- (●) AC
- ( ) DC

b) Gross energy storage capability (MVA) (Auto populated)
165

7. Milestone Dates

a) In-service date
06/15/2026

b) Initial synchronization date
07/01/2026

c) Commercial operation date
11/01/2026

Site Location

8. Generating Facility Location

a) Facility name
Robins Air Force Base Battery Facility
Address: 9363 McArrell Drive
City: Macon

b) State
Georgia

c) County
Houston County

d) USGS map of the plant site

Robins Map.pdf

9. Point of Interconnection Location

a) POI Latitude (Decimal Degrees)

32.681867

b) POI Longitude (Decimal Degrees)

-83.61675

c) Line name or substation (optional)

Robins Air Force #4 Station

10. Facility Description

a) Upload your single-line diagram

SoCo_Robins_Oneline Rev C - 20231006.pdf

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The Single Line Diagram must be stamped and signed by a Licensed Professional Engineer. Please remove the ground from the Main Power Transformer delta high-side. 690V bus bar is missing on one of the ESR Step-up transformer low-sides.

b) Describe the arrangement of this facility

The request is to add 128 MW / 512 MWh of BESS to the existing Robins Air Force Base solar facility. The BESS is planned to not increase the output of the solar facility but to add 128 MW of BESS capacity behind the existing IC-735 main power transformer and gen-tie line. The BESS portion is designed to deliver 128 MW at the POI [115kV] using REDACT REDACT REDACT inverters. Inverter output is scaled up from 690 kV to 34.5 kV using 55 [3 MVA] generator step-up transformers. Power is delivered at the POI by stepping up the output from 34.5 kV to 115 kV using the existing MPT's.

c) General description of equipment (optional)

Facility Data

11. Generator Interconnection Tie Line

a) Tie line voltage (kV)

115

b) Tie line rating at 95°F ambient (MVA)

170

c) Tie line length (miles)

0.091572

d) R1 (p.u.)
0.00010898

e) X1 (p.u.)
0.00045697

f) B1 (p.u.)
0.00008415

g) R0 (p.u.)
0.00050803

h) X0 (p.u.)
0.00164793

i) B0 (p.u.)
0.00004974

12. PV Main Transformer

a) Choose a main transformer type

- (●) Two-Winding Main Transformer
- ( ) Three-Winding Main Transformer

b) Number of main transformers
1

c) Rating at 65°F ambient (OA) (MVA)
87

d) Rating at 65°F ambient (FA1) (MVA)
116

e) Rating at 65°F ambient (FA2) (MVA)
145

f) Low side winding voltage base (kV)
34.5

g) High side winding voltage base (kV)
115.5

h) Low side winding BIL rating (kV)
200

i) High side winding BIL rating (kV)
450

j) Winding Connections Low
Wye grounded

k) Winding Connections High
Delta

l) Available taps percent (%)
2.5

m) Number of available taps
5

n) Transformer base for provided impedances (MVA)
87

o) Positive sequence impedance Z1 (%)
7.55

p) Positive sequence impedance Z1 (X/R)
38.716

q) Zero sequence impedance Z0 (%)
7.41

r) Zero sequence impedance Z0 (X/R)
21.7647

13. PV Collector System Equivalent Model

a) Collector system voltage (kV)
34.5

b) Collector system equivalent model rating at 95°F ambient (MVA)
150

c) R1 (p.u.) on 100 MVA and line kV base (positive sequence)
0.0018

d) X1 (p.u.) on 100 MVA and line kV base (positive sequence)
0.0021

e) B1 (p.u.) on 100 MVA and line kV base (positive sequence)
0.000000117

f) R0 (p.u.) on 100 MVA and line kV base (zero sequence)
0.0108

g) X0 (p.u.) on 100 MVA and line kV base (zero sequence)
0.0035

h) B0 (p.u.) on 100 MVA and line kV base (zero sequence)
0.000000117

14. PV Inverter Step-Up Transformer

a) ✓ Uncheck if not applicable to this IC

b) Choose a PV inverter step-up transformer type

- (●) Two-Winding Inverter Step-Up Transformer
- ( ) Three-Winding Inverter Step-Up Transformer

c) Number of PV inverter step-up transformers
34

d) Nameplate rating at 65°F ambient (MVA)
149.6

REDACT 11/18/2023 Ver.1
Meant to say each individual transformer, not inverter.

REDACT 11/18/2023 Ver.1
Nameplate of each individual inverter, not total plant capability.

e) Maximum rating (MVA) (optional)

f) Low side winding voltage base (kV)
0.66

g) High side winding voltage base (kV)
34.5

h) Low side winding BIL rating (kV)
30

i) High side winding BIL rating (kV)
150

j) Winding Connections Low
Wye

k) Winding Connections High
Delta

l) Available taps percent (%)
2.5

m) Number of available taps
5

n) Transformer base for provided impedances (MVA)
4.4

o) Positive sequence impedance Z1 (%)
7.34

p) Positive sequence impedance Z1 (X/R)
9.127

q) Zero sequence impedance Z0 (%)
6.606

r) Zero sequence impedance Z0 (X/R)
9.127

15. PV Inverter Data

a) Number of Inverters
34

b) Inverter maximum capability at 95°F/35°C or higher (kW)
4400

c) Inverter maximum capability at 95°F/35°C or higher (kVA)
4400

d) Describe inverter reactive capability at maximum power output (lead/lag)
0.8 Lead/Lag

e) Inverter short circuit ratio limit (Amps)
7700

f) Inverter Manufacturer and Model #
SMA, Sunny Central, 4400 UP-US

g) Provide the inverter specification sheet with reactive capability curve
220928_Technical Information SC UP(-US)_V3.2.pdf

h) Type of photovoltaic system
Robins Solar Facility is a 128MW facility containing both fixed-tilt and single-axis tracker panels.

16. PV Fixed Reactive Device

a) ✓ Uncheck if not applicable to this IC

b) Individual shunt reactive device type
Capacitor Bank

c) Number of individual shunt reactive device
2

d) Size of individual shunt reactive device (Mvar)
13

e) Operating voltage range high limit (p.u.)
1.1

f) Operating voltage range low limit (p.u.)
0.9

17. PV Dynamic Reactive Device

a) ☐ Uncheck if not applicable to this IC

18. ESR Main Transformer

a) ☐ Uncheck if not applicable to this IC

19. ESR Collector System Equivalent Model

a) ✓ Uncheck if not applicable to this IC

b) Collector system voltage (kV)
34.5

c) Collector system equivalent model rating at 95°F ambient (MVA)
225.87

d) R1 (p.u.) on 100 MVA and line kV base (positive sequence)
0.00015

e) X1 (p.u.) on 100 MVA and line kV base (positive sequence)
0.00019

f) B1 (p.u.) on 100 MVA and line kV base (positive sequence)
0.00101

g) R0 (p.u.) on 100 MVA and line kV base (zero sequence)
0.00039

h) X0 (p.u.) on 100 MVA and line kV base (zero sequence)
0.00016

i) B0 (p.u.) on 100 MVA and line kV base (zero sequence)
0.00034

20. ESR Inverter Step-Up Transformer

a) ✓ Uncheck if not applicable to this IC

b) Choose an ESR inverter step-up transformer type

- (●) Two-Winding Inverter Step-Up Transformer
- ( ) Three-Winding Inverter Step-Up Transformer

c) Number of ESR inverter step-up transformers
55

d) Nameplate rating at 65°F ambient (MVA)
3

e) Maximum rating (MVA) (optional)

f) Low side winding voltage base (kV)
0.69

g) High side winding voltage base (kV)
34.5

h) Low side winding BIL rating (kV)
30

i) High side winding BIL rating (kV)
200

j) Winding Connections Low
Wye

k) Winding Connections High
Delta

l) Available taps percent (%)
2.5

m) Number of available taps
5

n) Transformer base for provided impedances (MVA)
3

o) Positive sequence impedance Z1 (%)
7.15

p) Positive sequence impedance Z1 (X/R)
8.5

q) Zero sequence impedance Z0 (%)
7.15

r) Zero sequence impedance Z0 (X/R)
8.5

21. ESR Inverter Data

a) ✓ Uncheck if not applicable to this IC

b) Number of Inverters
REDACT

c) Inverter maximum capability at 95°F/35°C or higher (kW)
1500

d) Inverter maximum capability at 95°F/35°C or higher (kVA)
1500

e) Describe inverter reactive capability at maximum power output (lead/lag)
0.8

f) Inverter short circuit ratio limit (Amps)
4

g) Inverter Manufacturer and Model #
REDACT REDACT REDACT REDACT REDACT

h) Provide the inverter specification sheet with reactive capability curve
Harmonic data REDACT REDACT 60Hz.pdf

REDACT REDACT 11/28/2023 Ver.1
Please provide the inverter specification sheet with the reactive capability curve.

Power Quality Data

24. PV Rapid Voltage Change (RVC) Induced by Main Transformer

a) Provide RVC mitigation strategy on main transformer energization

- ○ Main Transformer to be energized from the high side with a switching device that is equipped with pre-insertion resistors or point of wave control (required if valid main transformer energization data cannot be provided, or if deficiency is identified)
- ● Main Transformer Energization Data

Air core inductance (p.u.)
0.3

b) MVA base used for air core inductance referenced to the high side of transformer (MVA)
87

No-load test result

c) Rated voltage of winding at which current is determined (kV)
34.5

d) Current at 90% of rated voltage (A)
0.64

e) Current at 100% of rated voltage (A)
0.9

f) Current at 110% of rated voltage (A)
2.52

g) Losses at 90% of rated voltage (W)
29800

h) Losses at 100% of rated voltage (W)
38600

i) Losses at 110% of rated voltage (W)
54500

26. PV Harmonic Distortion of the plant at Point of Interconnection.

a) Total Harmonic Current Distortion (%)
2

b) Provide with this data form the individual harmonic currents through 50th harmonic, in % of fundamental current rating.
220928_Technical Information SC UP(-US)_V3.2.pdf

27. ESR Harmonic Distortion of the plant at Point of Interconnection.

a) Total Harmonic Current Distortion (%)
2

b) Provide with this data form the individual harmonic currents through 50th harmonic, in % of fundamental current rating.
Harmonic data REDACT REDACT 60Hz.pdf

Dynamics Data

28. PV Dynamic Modeling Data

a) Upload a generic dynamic model for the PV inverter

Robins_AFB.dyr

REDACT REDACT 11/28/2023 Ver.1
The voltage relay ride-through set points will need to be updated as the generating facility did not ride-through the voltage disturbances. Additionally, it was identified that the active current did not return to its pre-disturbance value. It was further observed that the PV dynamic modeling data does not include voltage and frequency relaying protection. Details communicated via email.

b) Upload a PSSE case model for the PV inverter (optional)

c) ☐ Provide user written models in addition to generic models?

29. PV Three-Phase Modeling Data

a) Provide with this form a three-phase model for the PV inverter, and any additional dynamic reactive control devices

- ○ Upload File
- ● Provide at Notice to Proceed

30. ESR Inverter Dynamic Modeling Data

a) Upload a generic dynamic model for the ESR inverter

SOCO_Robins_Surplus_Update_10_02_2023.dyr

REDACT REDACT 11/28/2023 Ver.1
The voltage relay ride-through set points will need to be updated as the generating facility did not ride-through the voltage disturbances. Additionally, it was identified that the active current did not return to its pre-disturbance value. It was further observed that the PV dynamic modeling data does not include voltage and frequency relaying protection. Details communicated via email.

b) Upload a PSSE case model associated with the PSSE dynamics data (optional)

c) ☐ Provide user written models in addition to generic models?

31. ESR Three-Phase Modeling Data

a) ✓ Uncheck if not applicable to this IC

b) Provide with this form a three-phase model for the ESR inverter, and any additional dynamic reactive control devices

- ○ Upload File
- ● Provide at Notice to Proceed

Short Circuit Data

32. PV Short Circuit Contribution of the Generating Facility

a) Maximum surge current /sub-transient current (reached within 0 -1 cycles) for a three-phase fault at the Point of Interconnection (p.u.)

1.34

b) Steady-state symmetrical short circuit current for a three-phase fault at the Point of Interconnection (p.u.)

1

c) Upload a short circuit model (Download the form attached in the help message)

ShortCircuitModelForm_SMA_SC-UP_k2.docx

33. ESR Short Circuit Contribution of the Generating Facility

a) Maximum surge current /sub-transient current (reached within 0 -1 cycles) for a three-phase fault at the Point of Interconnection (p.u.)

1.577

b) Steady-state symmetrical short circuit current for a three-phase fault at the Point of Interconnection (p.u.)

1.12

c) Upload a short circuit model (Download the form attached in the help message)

ShortCircuitModelForm.docx

Payment Information and Next Steps

34. Site Control

a) Site control options

- (●) Upload evidence of site control
- ( ) Pay the site control deposit

b) Upload the evidence of site control

Robins Site Control Document Contact.docx

35. Payment Information Links

- Generator Interconnection Deposit Form

36. What are the requirements of a valid Interconnection Request?

Per Section 3.4.1 of the Southern Company Standard Large & Small Generator Interconnection Procedures and Agreements, an Interconnection Customer must submit all of the following to initiate an Interconnection Request:

- A completed SIMPL application, which includes data validation by Southern Company
- A $10,000 deposit
- Demonstration of Site Control **OR** a posting of an additional deposit of $10,000