



# Final Generator Interconnection Facility Study Report

for the

**[REDACTED] Project GI#525**

for

**[REDACTED]**

in

**Malheur County, Idaho**

**2/27/18**

# Final - FACILITY STUDY REPORT (FSR)

████████████████████  
**Project GI #525**

**2/27/18**

## 1. General Facility Description

████████████████████ (Seller) has stated that the proposed project will consist of 3MW solar generation facility in Malheur County, Idaho and connect to the 12.47kV system on Idaho Power Company (IPC)'s ██████████ substation. The total project output as studied is 3 MW.

Contact Information for Seller is as follows:

██████████  
██████████  
██████████  
██████████

A Standard Generator Interconnection Agreement (the “GIA”) under IPC’s Open Access Transmission Tariff (OATT) or Schedule 72 between Seller and IPC – Delivery (Transmission Owner) for the ██████████ Project, specifically Generator Interconnection Project #525, will be prepared for this project. The GIA will be a definitive agreement that contains terms and conditions that supersedes this FSR.

### 1.1 Interconnection Point

The Interconnection Facilities are located in IPC’s Western Region approximately █████ miles █████ of IPC’s █████ Substation on █████, in Township █████, Range █████ and Section █████ (████████████████████). The Point of Interconnection (POI) for the ██████████ Project will be to IPC’s █████ Substation’s █████ feeder and on the Seller’s side of disconnect switch X-# (Pole 4), a drawing identifying the POI is attached as Exhibit 1.

This POI is approximately █████ of the proposed Interconnection Point. Moving the POI is required to get the distribution circuit under and away from the existing transmission line on the west side of █████ Rd.

### 1.2 Point of Change of Ownership

The Point of Change of Ownership for the ██████████ Project will be the same as the Interconnection Point.

### 1.3 Seller’s Interconnection Facilities

The Seller’s Interconnection Facilities are located approximately █████ miles west of the ██████████ and longitude ██████████). The Seller will install inverters, disconnect switches,

transformers, appropriate grounding measures, and associated auxiliary equipment. Seller will build distribution line facilities to the Point of Change of Ownership.

The Seller's photovoltaic system will be constructed as follows:

1. The inverter system will comprise of [REDACTED] Inverters. The project will use [REDACTED] photovoltaic modules per inverter, for a total capacity of [REDACTED].
2. The application shows two inverter stations, each consisting of 25 inverters and a 1.5 MVA transformer with a 480 V grounded-wye to 12 kV delta rating. These transformers are undersized to support the plant MVA production requirements as well as the 12.47kV distribution system connection. The Seller will need to size the step-up transformers appropriately for the total plant MVA and the 12.47kV connection to IPC. In addition IPC will require the transformers to be grounded-wye/grounded-wye.
3. A plant controller will be used to control the inverter system and to implement smart inverter functionality for operating the project within a voltage range and power factor specified by IPC at the point of interconnection.

The above referenced inverters, or equivalent inverters that have the same specifications and functionality as stated above must be utilized. If a different inverter is utilized that has different specifications and functionality than that which was studied then additional study and/or equipment may be necessary.

## 1.4 Other Facilities Provided by Seller

### 1.4.1 Telecommunications

In addition to communication circuits that may be needed by the Seller, the Seller shall provide the following communication circuits for IPC's use. **It is the Seller's responsibility to provide the following communication circuits for IPC's use. These circuits can be long-lead items and typically require coordination with third party telecommunications providers. The project's in-service date cannot be granted prior to complete circuit acceptance and testing as referenced below.**

1. One POTS (Plain Old Telephone Service meeting the technical requirements of TR-NWT-000335:1993; NCI code 02LS2-2wire, loop start, 600 ohm) dial-up circuit for querying the revenue meter and protection relay at the generation interconnect site. The POTS line must be capable of supporting reliable sustained data communication at a minimum of 4800 bps with a modem using V.32bis modulation. If the minimum data rate is or becomes unattainable or unreliable, Seller will be responsible for the circuit repair.
2. One DDS (Digital Data Service meeting the technical requirements of TR-NWT-000341:1993; NCI code 04DU5.19, or 04DU5.56) data circuit, with a guaranteed minimum data rate of 19,200 bits per second, for SCADA between the generation interconnection site demarcation and IPC's EMS FEP, located at IPC's [REDACTED] [REDACTED] Transmission Station, [REDACTED]. No Seller equipment may be located at IPC FEP location. Please note that Frame Relay Service is not acceptable. If the minimum data rate is or becomes unattainable or unreliable, Seller will be responsible for the circuit repair.
3. One DDS (Digital Data Service meeting the technical requirements of TR-NWT-000341:1993; NCI code 04DU5.19, or 04DU5.56) data circuit, with a guaranteed

minimum data rate of 19,200 bits per second, for the required Phasor

Measurement Unit (PMU) between the generation interconnection site demarcation and IPC's PDC, located at IPC's [REDACTED] Transmission Station, [REDACTED]. No Seller equipment may be located at IPC PDC location. Please note that Frame Relay Service is not acceptable. If the minimum data rate is or becomes unattainable or unreliable, Seller will be responsible for the circuit repair.

The Seller shall provide all the required communications circuits between the Interconnection site and IPC's operations points (i.e. IPC FEP location, etc.) as specified by IPC.

**RELIABILITY AND DATA SECURITY:** The communication circuits shall be DC powered at the terminus locations and within any telecommunications provider's network, such that they will continue operation during a power outage for a minimum of 4 hours, and meet the specified reliability and bandwidth requirements. The Seller is responsible for supplying stable metered AC power during circuit testing and commissioning, and battery backed DC power during operation. The Seller may choose to coordinate with a third-party communications provider to provide the communications circuits and pay the provider's associated one time setup and periodic charges, deliver the circuits using their own infrastructure, or a combination thereof. Regardless of circuit transport implementation, in all cases the SCADA circuit must be transported using solely Layer 2 protocols (e.g. serial point-to-point data communication, no routable Layer 3 transport, such as Internet Protocol).

**CIRCUIT ACCEPTANCE AND TESTING:** The communication circuits shall be terminated in an approved demarcation box with the cable pairs punched down on a telecom block and labeled accordingly at a location approved by IPC. The communication circuits will need to be installed and tested by the Seller prior to IPC acceptance testing, and operational prior to the Seller being allowed to generate power into IPC's system. IPC will perform acceptance testing of DDS circuits with industry standard test patterns, namely: 2047, DDS1, DDS2, DDS3, DDS4, and DDS6, each tested to meet the performance of Qwest Techpub 77312, followed by end-to-end serial data BERT testing with a 2047 test pattern at 19.2kbps and require 15 consecutive minutes error free operation to pass. IPC will perform acceptance testing of modem serial data over the POTS line with BERT testing using a 2047 test pattern at 4800bps using V.32bis modem modulation will require 15 consecutive minutes of error free operation to pass. Circuits with demonstrated reliability issues during commissioning will be required to demonstrate 24 hours of reliable service by the Seller prior to final acceptance testing by IPC. Note that installation by a third-party communications provider may take several months and these services should be ordered well in advance to avoid delaying the project.

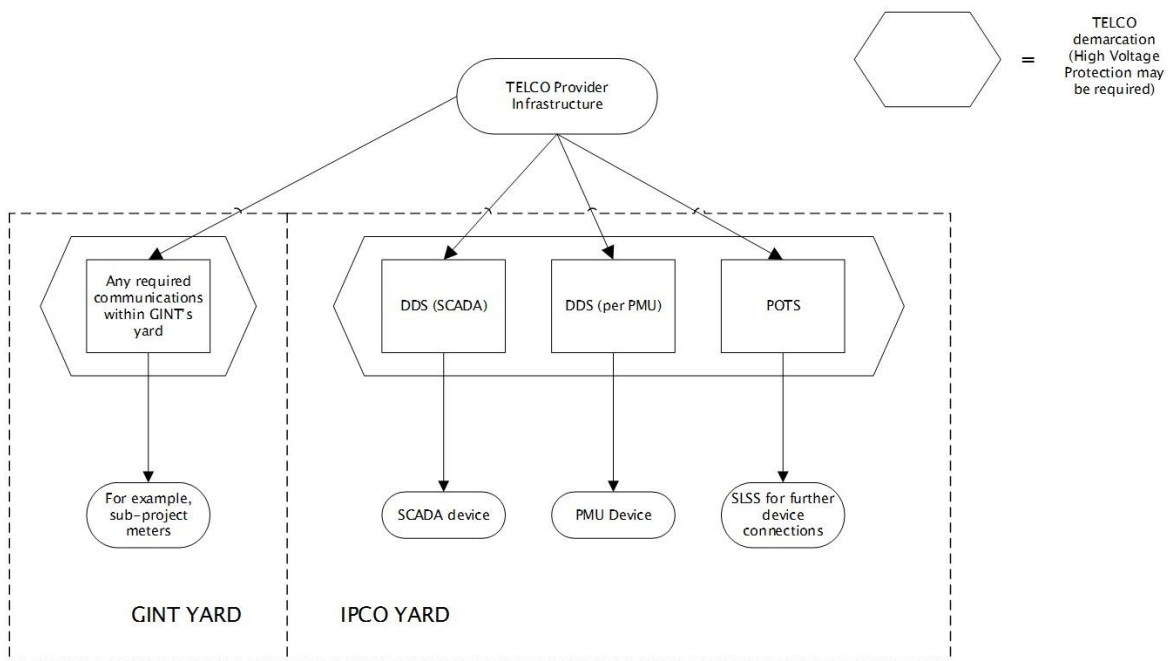
The Seller or their third party communications provider may need to install communications equipment (i.e. batteries, multiplexers, etc) near each terminus of the required communications circuits. If this equipment is required, the Seller shall be responsible to install this equipment in locations that are not owned or operated by IPC. If high voltage protection is required by the communications provider for the incoming copper cable, the high voltage protection assembly shall be engineered, supplied, and maintained by the Seller.

**OPERATIONAL RESPONSE:**

Seller's failure to maintain and/or restore and repair intermittent or non-operational telecommunications circuits may result in disconnection of Seller's generation facility/facilities until the circuits successfully complete Idaho Power's end-to-end testing.

The Seller is responsible for repairing any circuits and contacting any third-party telecom provider as needed. [Note: IPC cannot contact third party telecom providers on behalf of the Seller for circuit outages.] A third-party telecom provider is expected to have the ability to perform some level of remote circuit testing. If the Seller's third party telecom provider needs access to IPC facilities, they will contact IPC per contacts in GIA.

The leased services required by IPC are to be kept separate from any communication services required by the Seller. This includes the location where services are handed off from the telecom provider to IPC, also known as the TELCO demarcation. Under no circumstances will any service delivered to IPC's TELCO demarcation be extended beyond the IPC yard ground grid. If the Seller requires their own leased services, they must be provided through a separate TELCO demarcation, as noted below.



#### **1.4.2 Ground Fault Equipment**

The Seller will install transformer configurations that are Grounded-WYE to Grounded-WYE.

The Seller will limit the ground fault current to less than 20 amps as measured at the Interconnection Point.

#### **1.4.3 Generator Output Limit Control**

The Seller will install equipment to receive signals from IPC Grid Operations for Generation Output Limit Control (“GOLC”) - see Section 3 Operating Requirements and Appendix A. IPC’s recommended method of communication for GOLC is via fiber between the Interconnection Facility and the Project.

#### **1.4.4 Local Service**

The Seller is responsible to arrange for local service to their site, as necessary.

#### **1.4.5 Property**

The Seller, at its sole cost and expense, will provide to IPC documents and services as identified below relating to IPC’s land rights required for its interconnection facilities:

##### **1.4.5.1 Land Transaction Documents**

Land transaction documents (“Land Transaction Documents”) in a form approved by IPC that may include, but are not limited to, the following:

- Right of Entry Agreement;
- Interconnection Facility Easement;
- Access Easement;
- Easements for distribution service lines, major distribution power lines, and transmission power lines and related ancillary facilities as determined necessary by IPC at IPC’s sole discretion, to support the interconnection facility and Seller’s development;
- Crossing Agreements, as necessary; and
- Any other Project specific documents deemed necessary by IPC.

##### **1.4.5.2 Project Map/Site Plan**

A 90% complete informational map or site plan of the Project Property with locations of all easements to be released, new easements proposed for both Seller and IPC, existing IPC lines to be crossed by Seller’s facilities, Seller’s lease and easement areas (if any), access roads, and any other features or elements requested to be included by IPC to facilitate review and processing of the project documents.

##### **1.4.5.3 Surveyed Legal Descriptions and Maps**

Written legal description and map for each Land Transaction Document, stamped and signed by a licensed surveyor. Each legal description and map is to be submitted to and approved by IPC’s surveyor. See IPC survey requirements in Appendix B, attached hereto and made a part hereof.

##### **1.4.5.4 Title Insurance**

Title report and A.L.T.A. extended owners’ pro forma policy of title insurance for the amount of the value of the Interconnection Facility Easement and access easement areas. Seller shall provide proof and information to establish the value of the easement or property to be insured. IPC will review the title policy pro forma and will advise of

any necessary title mitigation measures to ensure clear and unencumbered title to the Interconnection Facility Easement and access easement areas. Title mitigation measures shall be performed by Seller at Seller's sole cost and expense. Title policy to include endorsements as required by IPC at Seller's sole cost and expense. Seller to provide an electronic copy of all exceptions to title insurance for IPC review. Seller to provide Idaho Power with a final A.L.T.A. extended owners' policy of title insurance.

#### **1.4.5.5 A.L.T.A. Survey**

An A.L.T.A. survey of the Project property with all existing IPC easement rights and facilities identified. The A.L.T.A. survey shall include and identify all proposed land transaction areas. Seller may provide IPC with a copy of Seller's A.L.T.A. survey or with an A.L.T.A. survey in IPC's name but the A.L.T.A. survey shall include the Interconnection Facility Easement Area, as well as all Land Transactions.

#### **1.4.5.6 Phase I Environmental Analysis**

A Phase I environmental analysis ("Phase I EA") of Seller's Project property (whether fee-owned, leased, or on an easement premises) for IPC review. The Phase I EA shall provide a map indicating the location of the IPC Interconnection Facilities in relation to any identified areas of concern. Seller shall provide IPC with a copy of Seller's Phase I EA but which shall include and reference the Interconnection Facility Easement Area.

#### **1.4.5.7 Land Use Authorizations/Permits**

The Seller shall secure all necessary local jurisdiction, state, and/or federal land use authorizations and permits for the IPC Interconnection Facilities, access road, new transmission and distribution lines, buildings, and all facilities in support of Seller's Project, as required by local, state or federal entities. A copy of each authorization pertaining to IPC facilities shall be provided to IPC.

#### **1.4.5.8 Land Division** N/A

Seller is advised that IPC review and approval of the Land Transaction Documents may require six (6) to nine (9) months. Seller is advised to provide all required Land Transaction Documents at earliest possible time. Refer to Appendix C for a quick reference guide to Idaho Power Corporate Real Estate Easement Parcel requirements. Upon IPC approval of all Land Transaction Documents, IPC will supply to the Seller final form documents for signature by the land owner of record. The Seller shall return original signed and recorded Land Transaction Documents to IPC. All recording and mailing fees shall be paid by Seller. IPC shall provide to Seller electronic copies of all fully executed and recorded Land Transaction documents.

#### **1.4.6 Site Work**

The Seller will acquire the property for the interconnection site and provide a year-round access path. Seller shall coordinate with IPC to incorporate into the Seller's project site plan and easements (1.4.5), enough area for a vehicle to safely access the interconnection site for maintenance.



#### **1.4.7 Monitoring Information**

If the Seller requires the ability to monitor information related to the IPC recloser in the generator interconnection package they are required to supply their own communications circuit to the control box.

#### **1.4.8 Meteorological Data**

In order to integrate the solar energy into the IPC system and operate IPC's solar forecasting tool, the Seller must provide solar irradiation and weather data from the Facility's physical location to IPC via real time telemetry in a form acceptable to IPC. The associated cost for obtaining this data is the Seller's responsibility.

The data must be provided at 10 second intervals and consist of:

1. Global Horizontal Irradiance
2. Plane of Array Irradiance
3. Ambient Temperature
4. Wind Speed and Wind Direction
5. Relative Humidity

The installed instruments must equal or exceed the specifications of the following instruments:

*Temperature and Relative Humidity:* R.M Young Relative Humidity and Temperature Probe Sensors Model 41382

*Wind:* R.M Young Wind Monitor Model 05103

*Pryanometer:* Apogee Instruments Model SP-230

#### **1.4.9 Generator Technical Information & Drawings**

Seller shall provide draft design prints during FSR development containing technical information, like impedances, and equipment brand and models. After construction, the Seller shall submit to IPC all the as-built information, including prints with the latest approved technical information and commissioning test results.

### **1.5 IPC Company's Interconnection Facilities**

IPC will install a standard generation interconnection package that will connect to distribution feeder [REDACTED]. If the Seller is going underground to the Point of Interconnection, IPC will include a pole riser for the Seller to install cables to interconnect to the IPC system. If the Seller is going overhead to the Point of Interconnection, it will be at a tension not to exceed the design tension specified by IPC.

To meet NERC's MOD-11 and 13-WECC-CRT-1, R1.2 requirements, IPC will install equipment to collect and transmit Phasor Measurement Unit (PMU) data to IPC. The communication circuits required for this data transmission are described above (section 1.4.1). The data can be made available to the Seller on request.

The minimum acceptable PMU message rate is 30 samples per second. The minimum set of PMU measurement channels recorded at the POI is shown below. Additional or

substitute channels may be required<sup>1</sup> on a per case basis depending on the interconnection configuration and facility design details.

- Frequency
- Frequency Delta (dF/dt)
- A-B-C Phase Voltage Magnitude
- A-B-C Phase Voltage Angle
- Positive Sequence Voltage Magnitude
- Positive Sequence Voltage Angle
- A-B-C Phase Current Magnitude
- A-B-C Phase Current Angle
- Positive Sequence Current Magnitude
- Positive Sequence Current Angle

The new interconnection package will include four distribution poles to mount a local service transformer, solid blade disconnects, primary metering package, recloser, relays, RTU, fuses and riser necessary for the package. The interconnection will be controlled by a SEL-421 line protection relay and a GE iBox RTU. The relay and RTU will be located in a pole mounted enclosure and will also contain a test switch (TS4), SLSS, dialup modem, DDS CSU/DSU, isolation interface, power supply, DC converter, control switch and surge protector.

Concrete barriers may be necessary to protect this equipment from local area traffic.

At Seller’s request, a 2” conduit may be installed alongside the underground primary to facilitate information exchange to the seller about the recloser. (The Seller is responsible for providing and installing the appropriate cable.)

## 2. Estimated Milestones

These milestones will begin, and the construction schedule referenced below will only be valid, upon receipt of funding from Seller or its authorized third party no later than the date set forth below for such payment. IPC will not commit any resources toward project construction that have not been funded by Seller. Additionally, failure by Seller to make the required payments as set forth in this Study by the date(s) specified below may result in the loss of milestone dates and construction schedules set forth below. In the event that the Seller is unable to meet dates as outlined below, Seller may request an extension of the Operation Date of up to three (3) years. Seller’s request will be evaluated by IPC to ensure Seller’s request does not negatively impact other projects in IPC’s Generator Interconnection Queue. Such extension will be allowed only if IPC determines, in its sole discretion, that the extension will not negatively impact other projects in IPC’s Generator Interconnection Queue. Estimated milestones, which will be updated and revised for inclusion in the GIA in light of subsequent developments and conditions, are as follows:

Estimated Date	Responsible Party	Estimated Milestones
10/1/18	Seller	IPC receives Notice to Proceed and construction funding or arrangements

<sup>1</sup> Consult with System Planning to determine acceptability.

		<i>acceptable to IPC are made with IPC's Credit Department</i>
6 months after construction funds received	<i>IPC</i>	<i>IPC Engineering and Design Complete</i>
6 months after construction funds received	<i>IPC</i>	<i>IPC Long Lead Material Procured/Received</i>
6 months after construction funds received	<i>Seller</i>	<i>Easements and permits procured for IPC site, construction will not begin until easements and permits are in place.</i>
		<i>Detailed in Appendix C attached.</i>
6 months prior to IPC Commissioning	<i>IPC</i>	<i>New generation must be modeled and submitted to EIM a minimum of 6 months prior to coming online, failure to submit by given lead time will results in project delay.</i>
11 months after construction funds received	<i>IPC</i>	<i>IPC Construction Complete</i>
11 months after construction funds received	<i>Seller</i>	<i>Telecommunication circuits identified in Section 1.4.1 are operational and provided to the IPC site</i>
12 months after construction funds received	<i>IPC</i>	<i>IPC Commissioning Complete, commissioning will not take place until Telecommunication circuits are operational</i>
5 days after switching request made to IPC Dispatch	<i>Seller</i>	<i>Switch at the Point of Interconnection can be closed</i>
TBD	<i>IPC</i>	<i>Notification from IPC's Energy Contracting Coordinator confirming First Energy of Non-Firm Output</i>
TBD	<i>Seller</i>	<i>Seller testing begins</i>
TBD	<i>IPC</i>	<i>Notification from IPC's Energy Contracting Coordinator confirming Operation Date (pending all requirements are met) of Firm Network Resource Output</i>

IPC does not warrant or guarantee the foregoing estimated milestone dates, which are estimates only. These milestone dates assume, among other things, that materials can be timely procured, labor resources are available, and that outages to the existing transmission system are available to be scheduled. Additionally, there are several matters, such as permitting issues and the performance of subcontractors that are outside the control of IPC that could delay the estimated Operation Date. For purposes of example only, federal, state, or local permitting, land division approval, identification of Interconnection Facilities location, access to proposed Interconnection Facilities location for survey and geotechnical investigation, coordination of design and construction with the Seller, failure of IPC's vendors to timely perform services or deliver goods, and delays in payment from Seller, may result in delays of any estimated milestone and

the Operation Date of the project. To the extent any of the foregoing are outside of the reasonable control of IPC, they shall be deemed Force Majeure events.

### 3. Operating Requirements

The project is required to comply with the applicable Voltage and Current Distortion Limits found in IEEE Standard 519-1992 *IEEE Recommended Practices and requirements for harmonic Control in Electrical Power Systems* or any subsequent standards as they may be updated from time to time. Voltage fluctuation at startup and during operation must be limited to less than 5% as measured at the Point of Interconnection.

██████████ Project will be subject to reductions directed by IPC Grid Operations during transmission system contingencies and other reliability events. When these conditions occur, the Project will be subject to Generator Output Limit Control (“GOLC”) and will have equipment capable of receiving an analog setpoint via DNP 3.0 from IPC for GOLC. Generator Output Limit Control will be accomplished with a setpoint and discrete output control from IPC to the Project indicating maximum output allowed. For more detail see Appendix A.

**Low Voltage Ride Through:** The Project must be capable of riding through faults on adjacent section of the power system without tripping due to low voltage. It has been determined, through study, that the Project must be capable of remaining interconnected for any single phase voltage as low as 0.7 PU for 30 cycles, and for all three phase voltages as low as 0.8 PU for 30 cycles.

**Frequency Response Requirements:** Generator must be capable of providing Fast Frequency Response for both positive and negative frequency deviations from 60Hz ( +/- 0.036 Hz) for Bulk Electric System disturbances. The required frequency response will be linear for a deviation of 0 to +/- 0.1 Hz, a response of 0% to 3% of generator capacity, with a maximum required response of 3% of generator’s full capacity for as long as the generator is able to provide support or the frequency deviation is reduced to within stated limits, whichever occurs first. Provided that Generator meets the above Fast Frequency Response requirements, Company shall not curtail Seller when such curtailments are caused by a need to comply with applicable Frequency Responsive reliability standards.

Seller will be able to modify power plant facilities on the Seller side of the Interconnection Point with no impact upon the operation of the transmission or distribution system whenever the generation facilities are electrically isolated from the system via the X-# (Pole 4) switch and a terminal clearance is issued by IPC’s Grid Operator.

### 4. Reactive Power

██████████ Project shall be capable of injecting reactive power (over-excited) and absorbing reactive power (under-excited) equal to 1.45 MVAR at all active power output between 20% and 100% of the nameplate active power rating of 3 MW.

IPC will determine the reactive power required to be supplied by IPC to the Seller, based upon information provided by the Seller. IPC will specify the equipment required on IPC’s system to meet the Facility’s reactive power requirements. These specifications will include but not be limited to equipment specifications, equipment location, IPC-provided equipment, Seller provided equipment, and all costs associated with the equipment, design and installation of IPC-provided equipment. The equipment specifications and requirements will become an integral part of the GIA. IPC-owned equipment will be maintained by IPC, with total cost of purchase, installation, operation, and

maintenance, including administrative cost to be reimbursed to IPC by the Seller. Payment of these costs will be in accordance with Schedule 72 and the total reactive power cost will be included in the calculation of the Monthly Operation and Maintenance Charges specified in Schedule 72.

## 5. Upgrades

### 5.1 Upgrades to the Distribution System

IPC will rebuild approximately [REDACTED] miles of the existing [REDACTED] distribution feeder from the POI south to the intersection of [REDACTED] and [REDACTED]. to upgrade the wire from [REDACTED] ACSR to [REDACTED] AAC.

IPC will replace existing Recloser [REDACTED] with an electronic recloser and install a single phase PT on the Seller’s side of the recloser for deadline check.

IPC will extend [REDACTED] underground approximately [REDACTED] to the west of the proposed POI toward the Seller’s distribution line. This is to get the distribution circuit under and away from the existing transmission line on the west side of [REDACTED].

### 5.2 Upgrades to Substations

IPC will install a single phase PT at the [REDACTED] Substation for deadline check on feeder [REDACTED]. Also at [REDACTED] Substation, IPC will install Beckwith M2001D load tap changer controllers on the [REDACTED] transformer. IPC will upgrade the [REDACTED] Substation [REDACTED] AMI transformer.

## 6. Estimated Costs

The following good faith estimates are provided in 2018 dollars and are based on a number of assumptions and conditions. IPC does not warrant or guarantee the estimated costs in the table below, which are estimates only and are subject to change. Seller will be responsible for all actual costs incurred in connection with the work to be performed by IPC and its agents, under the terms and subject to the conditions included in any GIA executed by IPC and Seller.

The estimated cost below is required to be paid in full prior to IPC commencing project or other arrangements acceptable to IPC are made with IPC’s Credit Department.

### Estimated Cost:

Description	Ownership	Cost Estimate
<b>Interconnection Facilities:</b>		
4 Pole Interconnection Facility	IPC	\$180,000
<b>TOTAL</b>		<b>\$180,000</b>
<b>Upgrades to Distribution:</b>		
Feeder reconductor and Recloser replacement	IPC	\$525,000
[REDACTED] extention to POI		\$25,000
<b>TOTAL</b>		<b>\$550,000</b>
<b>Upgrades to Substation:</b>		

PT, █████ Controller and AMI transformer	IPC	<u>\$65,000</u>
<b>TOTAL</b>		<b>\$65,000</b>
<b>GRAND TOTAL</b>	<b>\$795,000</b>	

### Note Regarding Transmission Service:

This FSR is a Network Resource Interconnection Facility Study. This FSR identifies the facilities necessary to integrate the Generating Facility into IPC’s network to serve load within IPC’s balancing area. Network Resource Interconnection Service in and of itself does not convey any right to deliver electricity to any specific seller or Point of Delivery.

### Note Regarding GIA:

This Facility Study Report (FSR) is a study and preliminary evaluation only and does not constitute, or form the basis of, a definitive agreement related to the matters described in this FSR. Unless and until a GIA is executed by IPC and Seller, no party will have any legal rights or obligations, express or implied, related to the subject matter of this FSR.

# Appendix A

## Generation Interconnection Control Requirements

### A.1 Generator Output Limit Control (GOLC)

**A.1.1** IPC requires Interconnected Power Producers to accept GOLC signals from our EMS.

**A.1.2** The GOLC signals will consist of four points shared between the IPC EMS (via the IPC RTU) and the Seller's Generator Controller. The IPC RTU will be the master and the Seller's Generation Controller will be the slave.

**A.1.2.1** GOLC Setpoint: An analog output that contains the MW value the Seller should curtail to, should a GOLC request be made via the GOLC On/Off discrete output Control point.

**A.1.2.1.1** An Analog Input feedback point must be updated (to reflect the GOLC setpoint value) by the Seller Controller upon the Controller's receipt of the GOLC setpoint change, with no intentional delay.

**A.1.2.2** GOLC On/Off: A discrete output (DO) control point with pulsing Trip/Close controls. Following a "GOLC On" control (DNP Control Code "Close/Pulse On"), the Seller Controller will run power output back to the MW value specified in the GOLC Setpoint. Following a "GOLC Off" control (DNP Control Code "Trip/Pulse On"), the Seller is free to run to maximum possible output.

**A.1.2.2.1** A Discrete Input (DI) feedback point must be updated (to reflect the last GOLC DO Control Code received) by the Seller Controller upon the Controller's receipt of the GOLC DO control, with no intentional delay. The feedback DI should latch to an OFF state following the receipt of a "GOLC OFF" control and it should latch to an ON state following the receipt of an "GOLC ON" control.

**A.1.3** If a GOLC control is issued, it is expected to see MW reductions start within 1 minute and plant output to be below the GOLC Setpoint value within 10 minutes.

### A.2 Generation Interconnection Data Points Requirements

#### Digital Inputs to IPCo (DNP Obj. 01, Var. 2)

Index	Description	State (0/1)	Comments:
0	GOLC Off/On (Control Feedback)	Off/On	Feedback provided by Seller
1	FREQUENCY RESPONSE Off/On (Control Feedback) (If applicable)	Off/On	Feedback provided by Seller
2	52A Seller MAIN BREAKER (if present)	Open/Closed	Sourced at substation
3	52A Seller Capacitor Breaker (if present)	Open/Closed	Sourced at substation

#### Digital Outputs to Seller (DNP Obj. 12, Var. 1)

Index	Description	Comments:
0	GOLC Off/On	Control issued by IPC
1	FREQUENCY RESPONSE Off/On (if applicable)	Control issued by IPC

**Analog Inputs to IPCo (DNP Obj. 30, Var. 2)**

Index	Description	Raw High	Raw Low	EU High	EU Low	EU Units	Comments:
0	GOLC Setpoint Value Received (Feedback)	32767	-32768	TBD	TBD	MW	Provided by Seller
1	SPARE						
2	Maximum Park Generating Capacity	32767	-32768	TBD	TBD	MW	Provided by Seller
3	Ambient Temperature	32767	-32768	327.67	-327.68	Deg C	Provided by Seller
4	Wind Direction	32767	-32768	3276.7	-3276.8	Deg from N	Provided by Seller
5	Wind Speed	32767	-32768	327.67	-327.68	M/S	Provided by Seller
6	Relative Humidity	32767	32768	TBD	TBD	%	Provided by Seller
7	Global Horizontal Irradiance	32767	32768	TBD	TBD	W/M^2	Provided by Seller
8	Plane of Array	32767	32768	TBD	TBD	W/M^2	Provided by Seller
9	SPARE						
10	VOLT1_MIN (Feedback)	32767	-32768	327.67	-327.68	PU	Provided by Seller
11	VOLT2_LOW (Feedback)	32767	-32768	327.67	-327.68	PU	Provided by Seller
12	VOLT3_HIGH (Feedback)	32767	-32768	327.67	-327.68	PU	Provided by Seller
13	VOLT4_MAX (Feedback)	32767	-32768	327.67	-327.68	PU	Provided by Seller
14	VAR1_LEAD (Feedback)	32767	-32768	327.67	-327.68	% AVAIL	Provided by Seller
15	VAR2_ZERO2 (Feedback)	32767	-32768	327.67	-327.68	% AVAIL	Provided by Seller
16	VAR3_ZERO3 (Feedback)	32767	-32768	327.67	-327.68	% AVAIL	Provided by Seller
17	VAR4_LAG (Feedback)	32767	-32768	327.67	-327.68	% AVAIL	Provided by Seller

**Analog Outputs to Seller (DNP Obj. 41, Var. 2)**

Index	Description	Raw High	Raw Low	EU High	EU Low	EU Units	Comments:
0	GOLC Setpoint	32767	-32768	TBD	TBD	MW	Control issued by IPC
1	SPARE						
2	VOLT1_MIN (Feedback)	32767	-32768	327.67	327.68	PU	Provided by Seller
3	VOLT2_LOW (Feedback)	32767	-32768	327.67	327.68	PU	Provided by Seller



4	VOLT3_HIGH (Feedback)	32767	-32768	327.67	327.68	-	PU	Provided by Seller
5	VOLT4_MAX (Feedback)	32767	-32768	327.67	327.68	-	PU	Provided by Seller
6	VAR1_LEAD (Feedback)	32767	-32768	327.67	327.68	-	% AVAIL	Provided by Seller
7	VAR2_ZERO2 (Feedback)	32767	-32768	327.67	327.68	-	% AVAIL	Provided by Seller
8	VAR3_ZERO3 (Feedback)	32767	-32768	327.67	327.68	-	% AVAIL	Provided by Seller
9	VAR4_LAG (Feedback)	32767	-32768	327.67	327.68	-	% AVAIL	Provided by Seller

# Appendix B

## IPC Survey Requirements

- Is the Grantor's Deed Instrument No. noted in the Exhibit 'A' Legal Description or Exhibit 'B' Survey Map?
- Are the Section, Township, Range, and County information clearly stated on the Exhibits?
- Is the Basis of Bearings between found monuments called out and noted on the Exhibits?
- Are the Point of Commencement, Point of Beginning and or Point of Terminus shown on the Exhibits?
- Do all lines have a bearing and distance associated with them on the Exhibits?
- All lines need bounding calls to Grantor's ownership lines, Rights-of-Way, etc in Exhibit A.
- Are the Subdivision names, lot & block, and streets labeled on the ExhibitB?
- Are any existing Utility Easements adjoining this Easement called out and shown on the Exhibits?
- Is the map scale noted and is there a North arrow shown on the Exhibit B?
- On a strip easement is the width given and does it call to form a closed figure in the Exhibit A?
- Does the Parcel description close?
- Are the reference surveys of record or CP&Fs used to prepare the easement called out and shown on the Exhibits?
- A Professional Land Surveyor or Engineer in responsible charge must stamp, sign and date the exhibits for submission.
- A copy of the current Deed of Record for the Grantor is needed for submission.

# Appendix C

## **Idaho Power Company Corporate Real Estate Department Requirements of Developers for Interconnection Facility/Substation Land for Development of Idaho Power Company Interconnection Facilities**

### **Facility Easement**

An easement may be secured if Idaho Power will not have a purpose or need to use the property beyond the current development. An example would be a solar farm development that requires a new Idaho Power interconnect substation that will not be used by Idaho Power in the future if the solar farm operation is discontinued.

Corporate Real Estate process will require the following steps and/or documents.

### **Process time frame: 6 mos. to 1 year depending on project specifics**

1. **Right of Entry Agreement**. A Right-of-Entry Agreement will allow Idaho Power to conduct necessary due diligence studies and review of the property and substation lands to determine feasibility for development. This document is required to be signed by the underlying property owner prior to Idaho Power entry onto the owner's lands for testing, surveying, etc. and will allow the preliminary stages of project development to commence pending completion of the transfer of substation lands to Idaho Power.
2. **Purchase and Sale Agreement – Substation Easement – Access Easement – Power Line Easements**. Idaho Power requires the following easements from the underlying property owner for our interconnection facilities: (1) Interconnection Facility easement, (2) access easement (for access to the Interconnection Facility) and (3) transmission and distribution line easements. Corporate Real Estate will enter into a purchase and sale agreement with the underlying property owner to provide for the grant of the easements to Idaho Power.
3. **Title Commitment**. Idaho Power requires that Developer ensure the Interconnection Facility, access, and power line easement lands are free from any encumbrances to title. To meet this requirement, a Title Commitment with A.L.T.A. extended coverage owner's policy in Idaho Power's name is required. All exceptions to title insurance need to be provided with the Title Commitment for Idaho Power review. Upon receipt, Corporate Real Estate will review all exceptions and will advise of any necessary follow-up actions. Importantly, Idaho Power requires a form of ownership that is free and clear from all encumbrances.
4. **Survey**. An A.L.T.A. survey for the Interconnection Facility, access and power line easements is required. The A.L.T.A. survey will be reviewed by Idaho Power's surveyor who will advise of any necessary revisions.
5. **Legal Descriptions**. Written legal descriptions, stamped and signed by a surveyor licensed in the state of Idaho, are required for the Interconnection Facility easement, access easement, and distribution/transmission line easements. The written legal descriptions will be reviewed by Idaho Power's surveyor who will advise of any necessary revisions.

6. **Phase I Study**. Developer shall provide Idaho Power with a Phase I environmental site assessment study for the Interconnection Facility, access and power line easement lands, which (1) is prepared by an independent environmental site assessment company, in Idaho Power's name, (2) recognizes that Idaho Power holds an interest in the easement areas and is a User of the Phase I report, and (3) provides appropriate environmental warranties to Idaho Power for the lands over which the Interconnection Facility, access and power line easements will be located. The Phase I study will be reviewed by Idaho Power and Idaho Power will advise if a Phase II environmental site assessment or other actions are required based on the results of the Phase I study.
7. **Public Lands Permits/Authorizations (if needed)**. Should any public lands, rights-of-way, etc. be affected by Idaho Power's use of or access to the interconnection facilities, Developer shall be responsible to secure any necessary agency authorizations or permits in Idaho Power's name, at Developer's sole cost and expense. Developer shall be responsible to ensure all conditions of approval are satisfied, fees are paid, etc. for the agency permits.
8. **Land Use Permits/Authorizations**. Developer shall be responsible to secure any necessary land use entitlements or authorizations from the local jurisdiction, local agencies, state of Idaho, or Federal or other agencies for Idaho Power's construction, operation and maintenance of the interconnection facilities (example: Conditional Use Permit from city or county). Any such authorizations shall be secured in Idaho Power's name and for the benefit of Idaho Power. Idaho Power will require that the Developer satisfy all conditions of approval and requirements for any such entitlement or authorization.
9. **Costs**. Any costs pertaining to the above items shall be at the Developer's sole cost and expense.
10. **Miscellaneous Documents**. Other Miscellaneous Documents as necessary for the specific project, and which may include Memorandums of Understanding or Agreement, etc.