Generator Interconnection Facility Study Report

for the

[redacted]

for

[redacted]

in

Elmore County, Idaho

Rev. 2
February 7, 2023

FACILITY STUDY REPORT (FSR)

[redacted]

Project GI #605

Rev. 2 February 7, 2023

1. General Facility Description

[redacted] ("Interconnection Customer") has stated that the proposed project will consist of a 240 MWac solar photovoltaic plant with an AC-coupled, battery energy storage system (BESS) in Elmore County, Idaho and connect to the 230 kV bus at Idaho Power Company (IPC)'s [redacted] Station. The total project output as studied is 240 MW.

Contact Information for Interconnection Customer is as follows:

[redacted]

A Standard Large Generator Interconnection Agreement (the "LGIA") under IPC's Open Access Transmission Tariff (OATT) between Interconnection Customer and IPC (Transmission Provider) for the 240 MW [redacted] Project, specifically Generator Interconnection Project #605 ("Project"), will be prepared for this project. The LGIA will be a definitive agreement that contains terms and conditions that supersedes this FSR.

Project Queue and Affected Systems:

If an earlier queue project that is responsible for providing additional transmission capacity should drop out of the queue, a later queued project that may have been relying on at least a portion of any "surplus" capacity may then be faced with additional project costs for transmission capacity additions of their own. As of the date of this report, there are projects in the queue (GI #530, GI #551, GI #557, GI #567, GI #578, GI #588, GI #590, and GI #604) ahead of the 240 MW [redacted] Project for which costs related to transmission capacity upgrades or additions could be passed on to the 240 MW [redacted] Project should changes be made to their queue position or generation output.

The recommended upgrades for GI #530, GI #551, GI #557, GI #567, GI #578, GI #588, GI #590, and GI #604 were assumed to be completed prior to the interconnection of the Project. For this and other reasons, the cost estimates included in this FSR are estimates only, are based on currently known or assumed facts that may not be accurate or materialize, and are subject to change.

The identified contingent facility upgrades for GI #530 (also identified in GI #567, GI #588 and GI #604), GI #557 and IPC transmission projects are required to be completed prior to the interconnection of the Project. Details on the contingent facilities are in Appendix B.

Note construction of the contingent facility upgrades identified for GI #530/GI #567/GI #588 and GI #604 has been advanced for senior-queued project #567. Due to this advancement, the contingent facility upgrades are expected to be completed in March 2025 and are not available to be further advanced as of the date of this report.

1.1 Interconnection Point

The Interconnection Facilities are located in IPC's Capital region in Township [redacted], Range [redacted] and Section [redacted]. The Point of Interconnection ("POI") for the Project will be on the node on the 230kV bus connection between switch [redacted] and switch [redacted] at IPC's [redacted] substation. A drawing identifying the POI is attached as Exhibit 1.

1.2 Point of Change of Ownership

The Point of Change of Ownership for the Project will be on the Interconnection Customer's side of disconnect switch [redacted]. A drawing identifying the Point of Change of Ownership is attached as Exhibit 1.

1.3 Interconnection Customer's Facilities

The Interconnection Customer's Facilities are located 8.8 miles away from IPC's Interconnection Facilities. The Interconnection Customer will install solar arrays, batteries, inverters, disconnect switches, distribution collector system, transformers (including a main step-up transformer), controllers, appropriate grounding measures, and associated auxiliary equipment. The main step-up transformer is a 165/215/264 MVA, 230kV/34.5kV delta/wye-grounded, 3-phase and should provide an adequate ground source for transmission line protection. Interconnection Customer will build facilities to the Point of Change of Ownership.

The Interconnection Customer's system will be constructed as follows:

1. The photovoltaic inverter system will comprise of 82 [redacted] power inverters each with and apparent power rating of 3.15 MVA.
2. The battery energy storage system will comprise of 41 [redacted] power inverters each with and apparent power rating of 3.15 MVA.
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.

The Project is a combined solar and BESS generation project. It has been assumed the BESS will be charged via the solar output. The Interconnection Customer will need to demonstrate the operating procedures and control measures which prevents the BESS from being charged via IPC's transmission system. However, if the intent is also to be able to charge the BESS via IPC's transmission system, the Interconnection Customer will need to make an ESS Load Request.

1.4 Other Facilities Provided by Interconnection Customer

1.4.1 Telecommunications

The Interconnection Customer is not responsible for any third party communication circuits for the IPC Interconnection Facilities. Any additional telecommunication requirements will be the sole responsibility of the Interconnection Customer.

1.4.2 Ground Fault Equipment

The Interconnection Customer will install transformer configurations that will provide a ground source to the transmission system.

1.4.3 Generator Output Limit Control

The Interconnection Customer 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 Station and the Project.

1.4.4 Local Service

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

1.4.5 Property

There are no property transaction requirements related to the IPC's interconnection facilities or network upgrades identified in this study.

The Interconnection Customer may be required to obtain transmission easements and/or transmission line crossing agreements from IPC depending on the designed path of the Interconnection Customer's 230 kV generator tie line.

1.4.6 Site Work

No site work is required beyond that identified for network upgrades on property already owned by IPC.

1.4.7 Monitoring Information

If the Interconnection Customer requires the ability to monitor information related to the IPC breaker/relay (i.e. Mirrored Bits) in the interconnection station, they are required to supply their own communications circuit. The fiber communication circuit used for GOLC is acceptable.

1.4.8 Meteorological Data

In order to integrate the solar energy into the IPC system and operate IPC's solar forecasting tool, the Interconnection Customer 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 Interconnection Customer'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 [redacted]

Wind: R.M Young Wind Monitor [redacted]
Pryanometer: Apogee Instruments [redacted]

1.4.9 Generator Technical Information & Drawings

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

1.5 IPC's Interconnection Facilities

At the [redacted] 230kV switching station IPC will install one [redacted] revenue meter, one 230 kV dead-end structure, one 230kV air break switch, three CTs, required foundations and fiber communication equipment to allow the Interconnection Customer to interconnect the project. IPC will install facilities up to the Point of Change of Ownership.

IPC will install equipment to collect and transmit Phasor Measurement Unit (PMU) data to IPC. The data can be made available to the Interconnection Customer on request.

The minimum acceptable PMU message rate is 30 messages per second. The minimum set of PMU measurement channels recorded at the POI is shown below. Additional or substitute channels may be required on a per case basis depending on the interconnection configuration and facility design details.

- Frequency
- Frequency Delta (dF/dt)
- Positive Sequence Voltage Magnitude
- Positive Sequence Voltage Angle
- Positive Sequence Current Magnitude
- Positive Sequence Current Angle

2. Estimated Milestones

These milestones will begin, and the construction schedule referenced below will only be valid, upon receipt of funding from Interconnection Customer 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 Interconnection Customer. Additionally, failure by Interconnection Customer 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 Interconnection Customer is unable to meet dates as outlined below, Interconnection Customer may request an extension of the Operation Date of up to three (3) years. Interconnection Customer's request will be evaluated by IPC to ensure Interconnection Customer'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 LGIA in light of subsequent developments and conditions, are as follows:

Estimated Date	Responsible Party	Estimated Milestones
[DATE]	*Interconnection Customer*	*IPC receives Notice to Proceed for design, procurement <u>and</u> construction.* *Construction funding received or arrangements acceptable to IPC are made with IPC's Credit Department*
18 months after construction funds received	*IPC*	*IPC Engineering and Design Complete*
September 2024	*IPC*	*Contingent facilities from GI #557 (Appendix B)*
December 2024	*IPC*	*Contingent facilities for IPC transmission upgrades completed (Appendix B)*
24 months after construction funds received	*IPC*	*IPC Long Lead Material Procured/Received*
6 months prior to IPC Commissioning	*IPC*	*New generation must be modeled and submitted to the Western Energy Imbalance Market a minimum of 6 months prior to coming online, failure to submit by given lead time will results in project delay.*
March 2025	*IPC*	*Contingent facilities from GI #530 / GI #567 / GI #588 / GI #604 (Appendix B1)*
36 months after construction funds received	*IPC*	*IPC Construction Complete*
38 months after construction funds received	*IPC*	*IPC Commissioning Complete*
TBD	*IPC*	*Contingent facility RattleCat from GI #530 (Appendix B2)*
5 days after switching request made to IPC Dispatch	*Interconnection Customer*	*Switch at the Point of Interconnection can be closed*
TBD	*IPC*	*Notification from IPC's Energy Contracting Coordinator confirming First Energy of Non-Firm Output*
TBD	*Interconnection Customer*	*Interconnection Customer testing begins*
TBD	*IPC*	*Notification from IPC's Energy Contracting Coordinator confirming Operation Date (pending all requirements are met) of Firm Network Resource Output*

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 Interconnection Customer, failure of IPC's vendors to timely perform services or deliver goods, and delays in payment from Interconnection Customer, 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 519-2014 *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.

The 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 sections of the power system without tripping due to low voltage. The interconnection projects must meet or exceed the Low Voltage Ride-Through requirements as set forth in NERC Standard PRC-024.

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 Interconnection Customer when such curtailments are caused by a need to comply with applicable Frequency Responsive reliability standards.

Momentary Cessation Requirements: Momentary cessation should not be used within the voltage and frequency ride-through curves specified in PRC-024. Use of momentary cessation is not considered "ride through" within the "No Trip" zone curves of PRC-024. The use of momentary cessation should be eliminated to the extent possible consistent with NERC's *Reliability Guideline for BPS-Connected Inverter-Based Resource Performance*

Interconnection Customer will be able to modify power plant facilities on the Interconnection Customer side of the Point of Interconnection with no impact upon the operation of the transmission or distribution system whenever the generation facilities are electrically isolated from the system via the disconnect switch 203X and a terminal clearance is issued by IPC's Grid Operator.

4. Reactive Power

It is the Project's responsibility to provide reactive power capability to have a power factor operating range of at least 0.95 leading (absorbing) to at least 0.95 lagging (supplying) at the high side of the generator substation over the range of real power output (up to maximum output of the project) and for all modes of operations

The Project must have equipment capable of receiving an analog setpoint, via DNP 3.0, from IPC for Voltage Control. IPC will issue an operating voltage schedule for the Project at the time the LGIA is executed. For more detail see Appendix A.

5. Upgrades

5.1 Upgrades to the Distribution System

There are no required distribution upgrades.

5.2 Network Upgrades to Substations

[redacted] Substation

[redacted] substation will be converted from a ring bus configuration to a breaker and a half configuration in order to allow for a new 230 kV line terminal to be installed and the required relocation of the existing GI #551 230 kV line terminal. The reconfiguration will require a 0.4 acre expansion to the substation. 0.4 acre property purchase, fencing, grading and yard development are included as part of the substation expansion.

Install dual [redacted] relay packages and add a MPLS shelf in the existing control building. Install [redacted] protection packages with dual lockouots for both 230 kV Bus #1 and #2.

Install four 230 kV power circuit breakers on precast foundations, six 230 kV air-break switches on support structures with drilled pier foundations and three sets of CCVTs on support structures with drilled pier foundations. A total of 7 new support structures with associated foundations will be installed to support the new 230 kV bus work. 250 feet of surface trench is required to house the new control and communication wiring.

[redacted] Substation

Replace two 500/230kV 1000 MVA power transformers with 1100 MVA power transformers at [redacted] station.

[redacted] Substation

Upgrade [redacted] Series Capacitor from 850 MVA to 950 MVA.

5.3 Network Upgrades to the Transmission System

Rebuild two 230 kV existing structures outside of [redacted] station to accommodate the re-termination of the GI #551 tie line and the relocation of the existing MAWP-JTSC 230 kV line. New structures will be engineered steel 3-pole dead ends.

Rebuild the [redacted] 230 kV line between [redacted] Substation and the interconnection station for GI #567 / GI #588 (approximately 22.4 miles) with two conductor bundled 715.5 ACSR. One 96 count optical ground wire (OPGW) and one 3/8-inch shield wire are required to be installed in the rebuilt section of line. Rebuild will require the installation of 11 3-pole dead ends and 132 H-frame tangent direct buried structures.

6. Estimated Costs

The following good faith estimates are provided in 2022 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. Interconnection Customer 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 LGIA executed by IPC and Interconnection Customer.

The estimated cost below is required to be paid in full by the Interconnection Customer, or other arrangements acceptable to IPC are made with IPC's Credit Department, prior to IPC commencing construction on the project.

Estimated Cost:

Description	Ownership	Cost Estimate
IPC Interconnection Facilities:		
Facilities between the Point of Change of Ownership and Point of Interconnection as described in Section 1.5	IPC	$571,100
Contingency 10%		$57,110
Overheads 8.25%		$51,827
TOTAL		**$680,037**
Network Upgrades to IPC Substations:		
New expansion at [redacted] Switching Station, replace power transformers at [redacted], and upgrade [redacted] capacitor as described in Section 5.2	IPC	$27,917,900
Contingency 10%		$2,791,790
Overheads 8.25%		$2,533,549
TOTAL		**$33,243,239**
Network Upgrades to the Transmission System:		
Transmission line pole relocations and rebuild as described in Section 5.3	IPC	$24,672,099
Contingency 10%		$2,467,210
Overheads 8.25%		$2,238,993
TOTAL		**$29,378,302**
GRAND TOTAL	**$63,301,579**	

Note Regarding Transmission Service:

This FSR is a study of a request for Network Resource Interconnection Service. This FSR identifies the facilities necessary to provide such service. Network Resource Interconnection Service in and of itself does not convey any right to transmission service or to deliver electricity to any specific customer or Point of Delivery.

Note Regarding LGIA:

This 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 LGIA is executed by IPC and Interconnection Customer, 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 IPC’s energy management system (“EMS”).

A.1.2 The GOLC signals will consist of four points shared between the IPC EMS (via the IPC RTU) and the Interconnection Customer’s Generator Controller (“SGC”). The IPC RTU will be the master and the SGC will be the slave.

A.1.2.1 GOLC Setpoint: An analog output that contains the MW value the Interconnection Customer 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 SGC upon the SGC'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 SGC 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 Interconnection Customer 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 SGC upon the SGC'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 Voltage Control

A.2.1 IPC requires Transmission-Interconnected Power Producers to accept voltage control signals from IPC’s EMS when they are connected to IPC’s transmission system.

A.2.2 The voltage control will consist of one setpoint and one feedback point shared between the IPC EMS and the SGC.

A.2.3 The setpoint will contain the desired target voltage for plant operation. This setpoint will have a valid control range between 0.95 and 1.05 per unit (“p.u.”) of nominal system voltage.

A.2.4 The control will always be active, there is no digital supervisory point like the Curtail On/Off control above.

A.2.4.1 When a setpoint change is issued an Analog Input feedback point must be updated (to reflect the voltage control setpoint value) by the SGC upon the SGC's receipt of the voltage control setpoint change, with no intentional delay.

A.2.4.2 When a setpoint change is received by the SGC, the voltage control system should react with no intentional delay.

A.2.4.3 The voltage control system should operate at the voltage indicated by the setpoint with an accuracy of +/- 0.5% of the nominal system voltage.

A.2.5 The Interconnection Customer should supervise this control by setting up "reasonability limits", i.e. configure a reasonable range of values for this control to be valid. As an example, they will accept anything in the valid control range (between 0.95 and 1.05 p.u.) but reject values outside this range. If they were fed an erroneous value outside the valid range, their control system would default to the last known, good value.

A.3 Generation Interconnection Data Points Requirements

Digital Inputs to IPC (DNP Obj. 01, Var. 2)			
Index	Description	State (0/1)	Comments:
0	GOLC Off/On (Control Feedback)	Off/On	Feedback provided by Interconnection Customer
1	FREQUENCY RESPONSE OFF/ON (Control Feedback)	Off/On	Feedback provided by Interconnection Customer
2	52A Interconnection Customer Main Breaker (if present)	Open/Closed	Sourced at substation
3	52A Interconnection Customer Capacitor Breaker (if present)	Open/Closed	Sourced at substation

Digital Outputs to Interconnection Customer(DNP Obj. 12, Var. 1)		
Index	Description	Comments:
0	GOLC Off/On	Control issued by IPC
1	Frequency Response Off/On	Control issued by IPC

Analog Inputs to IPC (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 Interconnection Customer
1	Voltage Control Setpoint Value Rec'd (Feedback)	32767	-32768	TBD	TBD	kV	Provided by Interconnection Customer
2	Maximum Park Generating Capacity	32767	-32768	TBD	TBD	MW	Provided by Interconnection Customer
3	Ambient Temperature	32767	-32768	327.67	-327.68	DEG C	Provided by Interconnection Customer
4	Wind Direction	32767	-32768	327.67	-327.68	Deg from North	Provided by Interconnection Customer
5	Wind Speed	32767	-32768	327.67	-327.68	M/S	Provided by Interconnection Customer
6	Relative Humidity	32767	-32768	TBD	TBD	%	Provided by Interconnection Customer

7	Global Horizontal Irradiance	32767	- 32768	TBD	TBD	W/M^2	Provided by Interconnection Customer
8	Plane of Array Irradiance	32767	- 32768	TBD	TBD	W/M^2	Provided by Interconnection Customer
9	SPARE						
10	SPARE						
11	SPARE						
12	SPARE						
13	SPARE						
14	SPARE						
15	SPARE						
16	SPARE						
17	SPARE						

Analog Outputs to Interconnection Customer(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	Voltage Control Setpoint	32767	-32768	TBD	TBD	kV	Control issued by IPC
2	SPARE						
3	SPARE						
4	SPARE						
5	SPARE						
6	SPARE						
7	SPARE						
8	SPARE						
9	SPARE						

Appendix B

The Project is contingent upon upgrades associated with the senior-queued projects #530 (also identified in #567, #588, and #604) and #557. The below contingent facility upgrades are identified in the System Impact Study for [redacted] Solar #605, dated January 7, 2022.

Table B1
GI #530 (also identified in GI #567, GI #588, and GI #604) network transmission upgrades identified as contingent facility upgrades for GI #605.

Network Resource Transmission Upgrades	Estimated Cost
[redacted] 230kV Line Loop in-and-out of [redacted] Station Build 1.25 miles 230kV Double Circuit Line with 1272 MCM ACSR "Bittern" Conductor	$1,485,000
[redacted] 230kV Station Add two 230kV Line Terminals	$1,935,000
Subtotal	**$3,420,000**
Contingencies (~20%)	$684,000
Subtotal	**$4,104,000**
Overheads (~8.25%)	$338,580
#530 Contingent Facilities – Total Estimated Cost	**$4,442,580**

Note: The [redacted] 230 kV line rebuild is removed from the GI #530 contingent facilities list as that work is now being conducted by IPC based on other project drivers. The line rebuild remains a contingent facility for [redacted] #605 and is listed below as an IPC contingent facility.

Table B2
GI #530 network transmission upgrades identified for [redacted] station as contingent facility upgrades for GI #605. *Note cost is based on 2019 dollars.*

Network Resource Transmission Upgrades	Estimated Cost
New [redacted] Substation including transformers, breakers, switches, protection system, and control building	$57,363,000
Install a 230kV transmission line terminal at [redacted] Substation for the new [redacted] 230kV line	$2,129,600
Replace the existing Series Capacitor at [redacted] Substation to a new size and remove an existing 500kV reactor at [redacted] Substation	$8,591,000
Install two new series capacitors at [redacted] Substation on the [redacted] 500kV Transmission Line and on the [redacted] 500kV Transmission Line, install a 500kV reactor (relocated from [redacted] Substation) at [redacted] Substation	$16,843,200
Install [redacted] 500kV Remedial Action Scheme with redundant communication to [redacted] and [redacted] 500kV Substations	$1,210,000
Install two 0.75-mile 500kV transmission lines to interconnect the [redacted] 500kV Transmission Line	$4,803,700
Install a 0.5-mile 230kV transmission line to [redacted]e Substation	$804,650
Relocate 0.25 miles of 230kV transmission line from [redacted] adjacent to [redacted] Substation	$816,750
Install a new microwave site near [redacted] and [redacted], with a control building, tower, microwave radio, and backup generator	$1,815,000
Install a new microwave reflector on [redacted]	$980,100
Install a tower and microwave radio at [redacted] Substation	$393,250
Install a tower and microwave radio at [redacted]	$393,250

Install a new microwave site on [redacted], with a control building, tower, microwave radio, and backup generator	$1,815,000
Install a new microwave site near [redacted] Substation, with a control building, tower, microwave radio, and backup generator	$1,815,000
Remove an existing microwave radio at [redacted] and relocate to [redacted] Substation. Add microwave antenna at [redacted] Substation. Adjust microwave dish at [redacted] Microwave Repeater	$786,500
Contingencies (~20%)	$20,112,000
Subtotal	**$120,672,000**
Overheads (~8.25%)	$9,955,440
#530 [redacted] Contingent Facilities – Total Estimated Cost	**$130,627,440**

Table B3

GI #557 network transmission upgrades identified as contingent facility upgrades for GI #605.

Network Resource Transmission Upgrades	Estimated Cost
[redacted] **138kV Rebuild** Includes air break switch at [redacted]	$665,000
Contingencies (~20%)	$133,000
Subtotal	**$798,000**
Overheads (~8.25%)	$65,835
#557 Contingent Facilities – Total Estimated Cost	**$863,835**

Table B4

Idaho Power initiated transmission upgrades required by GI #605.

IPC Project Contingent Facilities	Estimated Cost
[redacted] **230kV Transmission Line Rebuild** Rebuild 35.6-mile 230kV line with 1590 MCM ACSR "Lapwing" Conductor (previously associated with GI #530)	$36,868,700
IPC Contingent Facilities – Total Estimated Cost	**$36,868,700**