



Generator Interconnection Facility Study Report

for the

[REDACTED] Project

for

[REDACTED]
in

Canyon County, Idaho

March 26, 2010

Final FACILITY STUDY REPORT (FSR)

[REDACTED] Project
Project #296

1. General Facility Description

The proposed project will consist of adding additional facilities to Idaho Power Company's existing [REDACTED] 12.5 kV distribution feeder in Canyon County to serve your new [REDACTED] project connection. The total project output is 450 kW. This will include adding a phase to an existing 2 phase distribution line, adding a new junction pole, and adding 4 poles for the interconnection facilities. The 12.5 kV Protection Package facilities include a protection package and recloser controls, local service transformer, disconnect switches, and an underground riser and power cable to the high side of the project's 500 kVA transformer.

Interconnection Customer:

[REDACTED]

A Standard Generator Interconnection Agreement under Idaho Power Company's Open Access Transmission Tariff (OATT) or Schedule 72 between Interconnection Customer and Idaho Power Company – Delivery (Transmission Owner) for the [REDACTED] Project, specifically Generator Interconnection Project # 296, will be prepared for this project. Final drawings will be produced in the timeline shown below in MILESTONES.

2. Interconnection Point

The Interconnection Point for the [REDACTED] Project will be beyond the F-304 fused disconnects at the high side of the project's 500 kVA transformer. The project's location is near the [REDACTED] intersection, in the [REDACTED] of Section [REDACTED], Canyon County, Idaho. A drawing identifying the Point of Interconnection is attached.

3. Point of Change of Ownership

The Point of Change of Ownership for the [REDACTED] Project will also be beyond the F-304 fused disconnects at the high side of the project's 500 kVA transformer.

4. Interconnection Details

In general, interconnection equipment includes, but is not limited to, transformation, switching/disconnection, metering, system protection and control, and distribution network upgrades. All interconnection equipment electrically located on the generator side of the interconnection point shall be owned and maintained by the Generator. All interconnection equipment electrically located on the utility side of the interconnection point shall be owned, operated, and maintained by Idaho Power.

4.1 Project Team

An Idaho Power Company project team was assembled to investigate the proposed project, and develop cost estimates and a project schedule to construct Idaho Power facilities required for the interconnection. The project team consisted of the following employees:

Project Leader	Control Engineer
Planning Engineer	Station Control Designer
System Protection Engineer	Metering Tech
Distribution Designer	Area System Protection & Control Leader

4.2 Customer's Interconnection Facilities

The Interconnection Customer will have cost and installation responsibility for the following interconnection facilities:

- The 450 kW synchronous generator, breaker, 500 kVA 12.5 kV/480 Volt padmounted transformer, low-side disconnect switches, all wiring between the generators and the padmounted transformers, appropriate grounding measures, and associated auxiliary equipment. Interconnection customer will build facilities to the Point of Change of Ownership for the generator facility.

A protected POTS dial-up circuit for the revenue meter at the interconnection point. If required by the telephone provider, an SNC protection box will need to be installed ahead of this connection point. The communication circuit will need to be installed and operational prior to generating into the IPC system.

- Ground fault limiting equipment that will limit the zero sequence fault current to 20 amps or less on the [REDACTED] Project's side of the interconnection point.
- Right of way/Easement for placing interconnection facilities and acceptance of interconnection facilities location prior to IPC construction beginning. IPC will require approximately 3 months to complete the interconnection facilities from the acceptance and receipt of construction funds.
- Generator has agreed to supply Idaho Power a "breaker status" indication at the interconnection package. A "system available" signal will be provided to the generator from the interconnection package. IPC will install the conduit and cable from the interconnection package to the NE corner of the generator building. Generator will be required to connect these cables and supply and receive the above mentioned status points.

Idaho Power will install the underground power cables to the high side of the 500 kVA transformer. See attached single line drawing number D62183, Sheet 1, dated 11/24/09.

4.3 Other Facilities Provided by Interconnection Customer

4.3.1 Telecommunications

Interconnection customer will provide a communication circuit between the interconnection site and a location specified by Idaho Power. This circuit will be a POTS dial-up circuit to the revenue meter located at the interconnection facilities. The Interconnection customer is responsible for supplying and coordinating the installation of the phone line and paying the monthly service charge. The communication circuit will need to be installed and operational prior to generating into the Idaho Power system.

4.3.2 Ground Fault Equipment

The Interconnection Customer will install transformer configurations that will limit the contribution of ground fault current to 20 amps or less.

4.3.3 Property, Site Work and Station Building

The Interconnection Customer will provide any land clearing, site leveling, and acquire easement for the interconnection facilities.

4.4 Idaho Power Company's Interconnection Facilities

Idaho Power will install one 5 inch conduit from the X-304 riser pole to the high side of the customer's 500 kVA 12.5 kV/480 Volt padmounted transformer. (Customer to install a 5 inch PVC 90 degree 48 inch radius bend for this conduit to be connected to.) Idaho Power will install a standard generation interconnection package from a tap off of the existing distribution feeder, just south of the generation site. Idaho Power will install an interconnection package and extend the distribution feeder to this project. A 2 inch conduit will also be added for transferring any indications between the generator and the control package.

The new interconnection package will include four distribution poles to mount a local service transformer, solid blade disconnects, metering package, recloser, control cabinet, fused disconnects, and pole riser necessary for the package. One existing distribution pole will be replaced to accommodate the extension of the 3 phase distribution circuit, along with a new junction pole in the existing distribution line. The interconnection will be controlled by a SEL-547 line protection relay. The relay will be located in a pole mounted enclosure and will also contain a power supply, DC converter, control switch and indication lights. A telephone line will be required at the interconnection location (POTS line).

Idaho Power will supply the generator a "system available" signal and the generator has agreed to supply a breaker status signal to the interconnection package.

4.5 Scope of Upgrades

The existing [REDACTED] distribution circuit to the south of the generation interconnection site is currently a 2 phase line. An additional phase will be added from [REDACTED]. A new 3 phase tap will then be added to the interconnection location (north).

4.6 Scope of Transmission Network Upgrades (If Required)

None required

4.7 Operational Limitations

The interconnection relay will consist of a SEL-547 relay. The relay will monitor for abnormal system conditions such as under/over voltage and under/over frequency. In the event of an abnormal system condition, the interconnection customer will be removed from service. Following a trip of the interconnect, the recloser will auto close after a time delay of 5 minutes if the following conditions are met: the system is at normal voltage and frequency, dead voltage is detected on the customer side, and the customer breaker status (recommended) is detected in the open position. The interconnect relay will lockout the recloser if it detects an abnormal system condition following an auto close attempt. This locks out the recloser if it is closed into a fault on the customer side of the interconnection. The lockout will need to be reset manually by Idaho Power personnel.

Interconnection Customer will be able to modify power plant facilities on the generator side of the high side of the interconnection transformer with no impact upon the operation of the transmission system whenever the generation facilities are electrically isolated from the transmission system via the F-304 fused disconnect switches.

The project must be controlled to operate at unity power factor or meet the voltage schedule provided by Idaho Power. Voltage flicker at startup and during operation will be limited to less than 5% as measured at the Interconnection Point.

5. Budget

The following good faith estimates are provided in 2010 dollars:

Estimated Cost & Ownership:

Description	Ownership	Cost Estimate
Generation Facilities:		
Provided by the customer	Customer	\$N/A
TOTAL		\$
Interconnection Facilities:		
Local service transformer, disconnect switches, metering package, Recloser, control cabinet, potential transformer, fused disconnects.	IPC	\$83,400
TOTAL		\$83,400
Upgrades to Distribution:		
Add a phase to the existing 2 phase line, add a new junction pole	IPC	\$12,100
TOTAL		\$12,100
Transmission Network Upgrades (if required):		
	IPC	\$0
TOTAL		\$0
GRAND TOTAL		\$95,500

Milestones:

Date	Milestones
4/10/10	<i>Design Completion</i>
2/22/10	<i>Start line design</i>
2/22/10	<i>Order long lead items</i>
5/21/10	<i>Construction Completion</i>
6/1/10/10	<i>Commissioning Completion</i>
6/1/10	<i>Commercial Operation</i>

Construction Budget Timeline:

Period	Amount
1/8/2010-1/31/2010	\$3000
2/1/2010-7/1/2010	\$92,500
	\$
	\$
GRAND TOTAL	\$95,500