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		Revision Number: 2 Revision Date: March 16, 2009
Contact: ISO Director, Operations		Approved by: M/LCC Heads
		Review Due Date: March 16, 2011

Attachment A- New Black Start Generator (BSG) Capability, Assessment and Selection check list

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Attachment A - New Black Start Generator (BSG) Capability, Assessment and Selection Checklist

(Reference NERC Standard EOP 005 - System Restoration)

Unit ID: _____ UNIT NAME: _____ DATE: _____


1 Black Start Generator (BSG) Facility Data - Unit Ratings
(@ ambient temperature 50 degrees F)

Gross Unit Rating (MW)	MW	
Net Unit Rating (MW)	MW	
Station Service (MW)	MW	
Minimum Low Operating Limit	MW	
Emergency Low Operating Limit	MW	
Ramp Rate per minute	MW	
Gross Lagging (MVAR)	MVAR	

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Gross Leading (MVAR)	MVAR	_____
Station Service (MVAR)	MVAR	_____
Start Up Time (Cold Conditions)	Hours	_____
Start Up Time (Hot Conditions)	Hours	_____
Minimum Excitation Limit Trip Setting	DC Current	_____
Loss of Field Limit Trip Setting	DC Current	_____


2 BSG Start Capable Means

What is the means by which this stand-alone generating unit is Black Start Capable:

Check

Air Compressors	_____
Air Tanks	_____
Batteries/Chargers	_____
DC Motors	_____
DC Controllers	_____
DC/AC Inverters	_____
Hydro	_____
Pony Motor - Hydro Pump Storage	_____
Wind	_____
Diesel	_____
Jet	_____
Other	_____

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3 How Does the Designated Entity (DE) Dispatch the BSG On-Line in a System Emergency

What key operating dispatch aid is utilized by the DE to order the BSG online :

Telephone - Public Switch Network	Yes/No	_____
Telephone - Direct Ring Down Network	Yes/No	_____
SCADA	Yes/No	_____
Manual Start	Yes/No	_____
Radio	Yes/No	_____


4 BSG Capability

a	What is your minimum station service requirement?	MW	_____
b	How long can you stay at your minimum MW loading?	Hours	_____
c	Can you provide your own MW loading?	Yes/No	_____

5 Generator Step-Up Transformers (GSU) Data and Rating

Low Side Voltage Rating (LV) - Generator Side	kV	_____
High Side or System Voltage Rating (HV)	kV	_____
Tertiary Voltage (TV)	kV	_____
kVA Self cooled / Maximum Nameplate Power Rating	kVA	_____
Winding Connections (Low Volt/ High Volt / Tertiary Volt)	Delta/Wye	_____
Power (Single Phase Transformer Unit)	Yes/No	_____

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Power (Three-Phase Transformer Unit) Yes/No _____
 Transformer Impedance: kVA Base _____
 Transformer Fuse Data: Type _____ Size _____ % _____ Speed _____

Location and or source of system ground/neutral _____
 Over Voltage and or High Frequency trip setting _____

6 GSU Interconnecting Circuit Breaker Data and Rating


Type of Breaker Type _____
 Load Rating Amps _____
 Interrupting Rating Amps _____
 Trip Speed Cycles _____
 Are there any problems with back energizing the GSU? Yes/No _____
 Are you willing to test back energizing the GSU and generator lead? Yes/No _____
 Can close GSU line side breaker to a live-dead transmission bus? Yes/No _____
 Can close GSU line side breaker to a dead-live transmission bus? Yes/No _____

7 Voice Communication Requirements

Agree

Immediately following a system wide black-out the LCC or ISO system operator shall contact the BSG to determine unit availability or status.

a Once notified by the ISO or LCC the BSG will be on-line and providing startup cranking power within 90 minutes. Yes/No _____

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b If the BSG has not been contacted by the system operator within 30 minutes following a system wide power failure then the BSG agrees to attempt contacting its LCC or ISO immediately. Yes/No _____

c BSG are required to install, maintain, operate, test and fund a voice communications system that is independent of the public switched telephone network for the purposes of communicating with the LCC System Operator during a power system restoration event. Yes/No _____

d BSG shall have an emergency back-up radio communication system to its Local Control Center (LCC). Yes/No _____

8 Communication Data/Metering equipment requirements Agree


a The following BSG instantaneous metering data shall be telemetered to the ISO and LCC by RTU:

a Frequency Yes/No _____

b Voltage Yes/No _____

c MW Yes/No _____

d MVAR Yes/No _____

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9 Maintain 60 HZ

Agree

a The BSG unit is capable of maintaining 60 Hz under varying load.
 This may be demonstrated by picking up isolated block of test load.

Yes/No _____

b Provide BSG governor droop.

% _____

10 Maintain Voltage

Agree

By actual testing or simulation the BSG unit is capable of maintaining automatic or manual voltage control under the following conditions:

This may be demonstrated by picking up an isolated load.

Yes/No _____

By producing both leading and lagging VARs by varying the voltage setting.

Yes/No _____

By varying the voltage setting while the unit is synchronized to the system.

Yes/No _____


By appropriate dynamic offline testing of the voltage controls.

Yes/No _____

11 VAR absorption capability has been demonstrated to adequately control reactive power during black start restoration test conditions:

Yes/No _____

Yes/No _____

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12 BSG Fuel Inventory Capability

a Primary Fuel:

	<i>Check</i>		<i>Check</i>
<i>Hydro (Run of the River)</i>	_____	<i>Gas (Propane)</i>	_____
<i>Hydro (Pump Storage)</i>	_____	<i>Diesel</i>	_____
<i>Oil</i>	_____	<i>Kerosene</i>	_____
<i>Light Oil</i>	_____	<i>Wind</i>	_____
<i>Gas (Natural)</i>	_____	<i>Other</i>	_____

b BSG units are required to maintain an adequate on-site fuel supply and inventory plan:

At maximum storage capacity, how many MW-Hours of on-site primary fuel storage do you have for one unit operation? *MWh* _____


How long can you operate one unit at maximum load? *Hours* _____

How long can you operate one unit at minimum load? *Hours* _____

Are there any specific air permitting concerns for operating at your secondary fuel for a long duration? *Yes/No* _____

c Secondary Fuel:

Do you have back-up fuel capability? *Yes/No* _____

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Are there any specific air permitting concerns for operating at your secondary fuel for a long duration? Yes/No _____

Back-up fuel type? Fuel Type _____

Fuel supply shortages may occur, what is your swap over time for changing fuels? Min/Hrs _____

d Gas fired BSG should have in place special arrangements with the local gas provider for the following emergency support: **Agree**

Electric power supply feed to local gas gate connection and valves? Yes/No _____

Sustained gas compressor supply for multiple hours during the restoration process? Yes/No _____


e Hydro BSG Station Operation:

MWh of capability with a full pond? Summer MWh _____

Winter MWh _____

13 Training for BSG and System operators **Agree**

a During the BSG annual test period, generator and system operators will coordinate operations, including the review and update of its restoration plan at least annually. Yes/No _____

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b All deficiencies found during the actual / real-time or simulated restoration black start testing shall be corrected and the plan updated. Yes/No _____

14 BSG specific performance standards Agree

a Each BSG owner must maintain procedures for the startup of black start generation station. Yes/No _____

b This procedure shall remain in effect for the duration of the commitment. Yes/No _____

c Each BSG shall execute an unaltered agreement "Signature Page" for Schedule 16 of NEPOOL OATT with NEPOOL/ISO. Yes/No _____

15 Annual BSG performance testing Agree


Right to Observe Testing - BSG operator shall notify the ISO and LCC in advance of its annual black start performance. Yes/No _____

16 Provide ISO / LCC with the following restoration documents: Agree

a Copy of the BSG start up operating instructions. Yes/No _____

b Copy of BSG station one-line diagram from generator to transformer high-side breaker. Yes/No _____

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NOTES:

Testing, Inspection and Verification

The ISO and LCC has the right, at its own expense, to observe such testing.

SRWG Assessment and Training requirements

Both the ISO and the LCC will maintain a copy of the BSG start-up procedure. This procedure shall be reviewed and updated annually by owner, ISO and LCC. The BSG start up instruction and cranking path procedures shall be incorporated into the ISO New England SRWG system operator training.


Company Name: _____

Company Address: _____

Company Representative: Name: _____

Title: _____

Date: _____

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Attachment A Revision History

Rev. No.	Date	Reason
Rev 0	05/25/07	Original Checklist
Rev 1	09/20/07	Revisions requested by SRWG
Rev 2	03/16/09	Biennial Review by Procedure Owner; Changed header, from Manager to Director; Changed header Review Due Date: from a fixed calendar date to 24 months from the Revision Date;;