



A Research Observatory for a Sustainable Future



## Newberry Geothermal Energy

Establishment of the Frontier Observatory for Research in Geothermal Energy (FORGE) at Newberry Volcano, Oregon



## Appendix F

### Data Dissemination and Intellectual Property Management Plan

April 27, 2016



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## Acronyms and Abbreviations

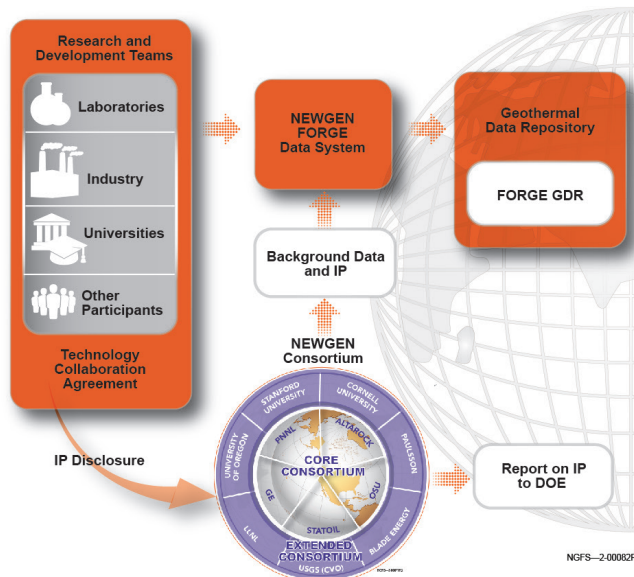
ARM	Atmospheric Radiation Measurement
BIP	background/preexisting intellectual property
DOE	U.S. Department of Energy
EGS	enhanced geothermal system(s)
EMSL	(William R. Wiley) Environmental Molecular Sciences Laboratory
EUS	EMSL User Services
FIP	foreground intellectual property
FORGE	Frontier Observatory for Research in Geothermal Energy
GDR	Geothermal Data Repository
GE	General Electric
GTO	(DOE's) Geothermal Technologies Office
IP	intellectual property
IoT	internet of things
IPMP	Intellectual Property Management Plan
NEWGEN	Newberry Geothermal Energy
NGDS	National Geothermal Data System
O&M	operations and maintenance
PNNL	Pacific Northwest National Laboratory
R&D	research and development
TBD	to be determined
USGIN	U.S. Geoscience Information Network

## Appendix F

### Data Dissemination and Intellectual Property Management Plan

#### F.1 Summary

Newberry Geothermal Energy (NEWGEN) proposes an integrated data dissemination and intellectual property plan to support the establishment and management of a dedicated enhanced geothermal systems (EGS) field laboratory at the Newberry Volcano Frontier Observatory for Research in Geothermal Energy (FORGE). Under this plan, NEWGEN will promote rapid dissemination of technical data to the geothermal community using the Geothermal Data Repository (GDR). Intellectual property (IP) will be managed by implementing protocols for identifying, assigning, and managing IP that is developed during sustained site characterization efforts, operational and technical support of research and development (R&D) proposals, as well as IP generated during execution of R&D activities (Figure F.1).



**Figure F.1.** NEWGEN FORGE integrated data dissemination and intellectual property model.

NEWGEN FORGE data dissemination efforts will be executed by a technical team that has extensive experience with operating U.S. Department of Energy (DOE) user facilities, including the Atmospheric Radiation Measurement (ARM) Climate Research Facility and the William R. Wiley Environmental Molecular Sciences Laboratory (EMSL). This experience will allow the FORGE Data Management team to leverage existing strategies, processes, procedures, methods, and implementing mechanisms needed to ensure effective management and dissemination of NEWGEN FORGE data. Our team also brings experience with the National Science Foundation's EarthScope magnetotelluric program, which is a part of the Incorporated Research Institutions for Seismology Data Management Center; and experience with the General Electric (GE) Field Vantage™ solution to streamline real-time data and information sharing.

#### F.2 Data Dissemination and Intellectual Property Goals

The goals of the NEWGEN FORGE data dissemination and IP plan are to promote the rapid dissemination of technical data to the geothermal community and establish protocols for protecting IP and related data. NEWGEN will accomplish these goals by doing the following:

1. Deploy a state-of-the-art Data System.
2. Transfer all related technical project data assets to the GDR, leveraging existing capabilities that have been developed for the EMSL and ARM Climate Research Facility.
3. Implement protocols for addressing IP issues and protecting IP until publication.
4. Establish a Technology Collaboration Agreement for NEWGEN FORGE R&D Projects.

### F.3 Data Management System to Enable Near Real-Time Data Dissemination

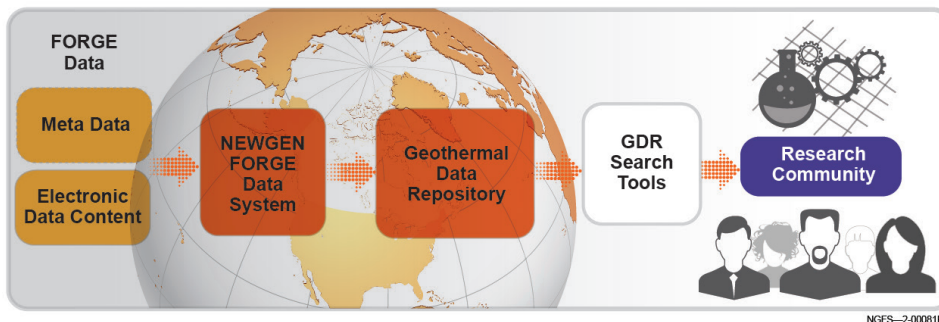
NEWGEN has developed an approach to the management of data dissemination and IP that leverages the proven capabilities and infrastructure of the NEWGEN Consortium. David Millard from Pacific Northwest National

Laboratory (PNNL) is currently designated to serve as Core Capability Lead of the NEWGEN FORGE Data Management (see the Project Management Plan [PMP] Section 1.4.6). The approach will provide near real-time data access to the geothermal community and ensure IP requirements are met (Figure F.2). The model leverages successful data and IP management processes implemented in several large research facilities at PNNL. These facilities include the EMSL, an Office of Science user facility managed for the Office of Biological and Environmental Research at PNNL; the ARM facility; and others. As a consequence, the proposed approach will use existing tools and processes, all of which exist as part of a capability previously developed at PNNL. This approach reduces risk and time to implementation.

The NEWGEN FORGE data management and dissemination approach (Figure F.3) implements strategies provided in the DOE Geothermal Technologies Office (GTO) Guidelines for Provision and Interchange of Geothermal Data Assets (GTO 2014) and applies existing capabilities to streamline the generation and transfer of data assets to the GDR. By automating the association of electronic data content with metadata previously acquired during project planning and resource management we can greatly reduce the manual effort needed to transfer data assets to the GDR.

The field GE Field Vantage™ solution will be evaluated to provide a means for streamlining real-time data and information sharing. GE Field Vantage™ is a platform of internet of things (IoT) that provides access to real-time monitoring data and information. This will allow NEWGEN and R&D performers to monitor performance of the geothermal field during experiments and optimize operations based on real-time data streaming on pressures, temperatures, flow rates and other critical production characteristics. During Phase 2A, the infrastructure needed to do this using cellular and satellite communications to transmit field data to the NEWGEN FORGE Data System will be evaluated.

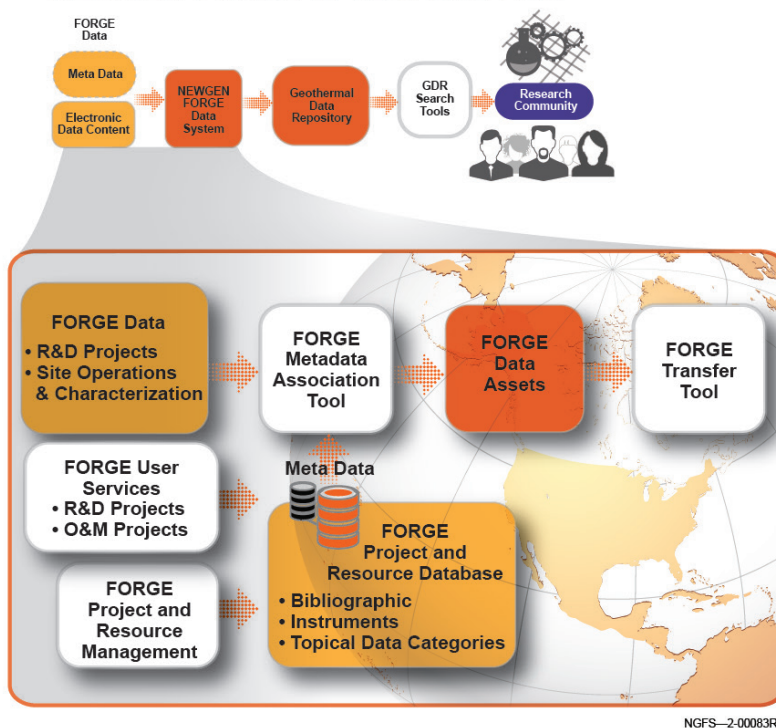
NEWGEN FORGE to GDR Data Flow



**Figure F.2.** NEWGEN FORGE capabilities help streamline the generation and transfer of data assets to the GDR.



## NEWGEN FORGE to GDR Data Flow



**Figure F.3.** The NEWGEN FORGE Data Management and Dissemination Architecture supports data acquisition, quality control, and packaging for dissemination to the geothermal community and archiving in GDR.

### F.3.1 NEWGEN FORGE Data

Data generated by the NEWGEN FORGE activities will be efficiently captured and disseminated on a continuing basis. These data include site monitoring, characterization, and operational support of the facility. R&D projects also generate data that require dissemination. To facilitate this process, data management staff will be engaged and data dissemination requirements will be included during planning and initiation of each R&D project. The following questions will be posed to facilitate generation of high-quality data and associated metadata:

- What externally sourced data are inputs for this project?
- What data will be generated as a result of the project (raw or derived)?
- Who is likely to use and/or benefit from the data?
- How are the data likely to be used?
- What categories of geothermal-relevant data will be produced (raw or derived)?
- Which NEWGEN FORGE core capabilities will be used?

This leads to identification of relevant National Geothermal Data System (NGDS) content models, technical formats, applicable standards, expected metadata attributes, and data dissemination expectations specific to each R&D project.

### F.3.2 NEWGEN FORGE Data Metadata Association Tool

The NEWGEN FORGE Metadata Association Tool links electronic data content with appropriate metadata needed to provide contextual information required for analysis and interpretation, as well as

enable search and discovery once data assets are in the GDR. Metadata originates from the R&D project team as well as from other FORGE activities. The Metadata Association Tool will have access to the proposal and instrument database, allowing it to automatically pull bibliographic, technical activity, and instrument-specific information that will be converted to the metadata format so that it can be associated with specific files containing electronic data content. This greatly reduces the interaction and overhead costs of individual researchers to provide metadata. Merging these different information streams into meaningful data assets is achieved by linking project and instruments with relevant NGDS content models. This facilitates dissemination of data assets through the NEWGEN FORGE Data System. As the NEWGEN FORGE project matures, the Metadata Association Tool will be updated to identify key metadata for each NGDS content model and for new content models that emerge. This will enable the NEWGEN FORGE Data Management team to develop a metadata verification tool to better assist in quality control of created data assets prior to transfer to the GDR.

### F.3.3 NEWGEN FORGE Transfer Tool

All data assets generated at the NEWGEN FORGE site will be transferred to the GDR. Because data assets have already been generated the transfer tool can streamline the manual submission process. Initially this will involve the ability to provide data to the GDR using existing data transfer formats. As we progress through Phase 2, the NEWGEN FORGE Data Management team will work with the GDR team to identify application programmer interfaces that can be used to directly submit previously verified data assets. Removing the manual submission steps will help reduce delays in the submission process. By performing pre-verification processes, the curation effort associated with well-structured, well-defined topical data content will be greatly reduced.

### F.3.4 Leveraging Existing Capabilities and Tools

PNNL has previous experience on EMSL, ARM, and other projects in the automated acquisition, quality control, packaging, dissemination, and archiving of scientific data assets. Existing PNNL-developed tools and experience will be leveraged in the implementation of FORGE data management and dissemination. Using Figure F.2 (above) as a reference, the main operational components of this architecture include NEWGEN FORGE Operations and Maintenance (O&M)/R&D Project Data, Proposal Management, Resource Management, the NEWGEN FORGE Data System, and the Data Asset Association Tool used to populate the GDR. Table F.1 identifies operational examples of each capability currently hosted at PNNL for the DOE.

**Table F.1.** Capabilities currently hosted at PNNL for DOE.

CAPABILITY	EXAMPLE
Proposal Management	<p><b>EMSL User Services (EUS):</b>            Provides web-based interfaces to manage EMSL projects and proposals. Proposals include project oversight, bibliographic information, abstracts, and other programmatic information.</p> <p>Identifies the instruments that will be involved in the project.</p> <p>Identifies which EMSL users are authorized to operate instruments.</p> <p>Manages IP and exclusivity issues.</p> <p><a href="https://eusi.emsl.pnl.gov/Portal/">https://eusi.emsl.pnl.gov/Portal/</a>  <a href="https://www.emsl.pnl.gov/emslweb/">https://www.emsl.pnl.gov/emslweb/</a></p> <p><b>ARM – Propose a Campaign</b>  <a href="http://www.arm.gov/campaigns">http://www.arm.gov/campaigns</a></p>

**Table F.1. (contd)**

CAPABILITY	EXAMPLE
Resource Management Tools	<p><b>EMSL Resource Services:</b> Provides web-based interface to schedule EMSL instruments. Helps associate instruments with projects. Provides overarching information about EMSL Instruments.</p> <p><b>ARM Sites and Instruments:</b> <a href="http://www.arm.gov/sites">http://www.arm.gov/sites</a> <a href="http://www.arm.gov/instruments">http://www.arm.gov/instruments</a></p>
Electronic Data Content/ Metadata Association Tools	<p><b>EMSL Instrument Uploader:</b> Web-based tool “linked” to a specific EMSL Instrument. EMSL User and Resource databases are queried by User/Instrument/Proposal to automatically provide key programmatic, bibliographic, and instrument related information. Abstract data are parsed to pull key words and scientific terms to provide additional metadata. The Uploader transfers the electronic data content to High Performance Storage System and transforms supporting information into the metadata database.</p> <p><b>ARM Measurements:</b> The ARM Climate Research Facility gathers a wide variety of measurements from many different sources. Each day, the Data Archive stores and distributes large quantities of data collected from these sources.</p> <p><a href="http://www.arm.gov/measurements">http://www.arm.gov/measurements</a></p>

### F.3.5 Nature and Frequency for Uploading Technical Project Data

All related technical project data (Table F.2 through Table F.4) will be uploaded to the NEWGEN FORGE data system.

**Table F.2. Tier 3 Technical Project Data**

Tier 3 – Identified in Appendix F of GTO’s Guidelines for Provision and Interchange of Geothermal Data Assets (2014) and U.S. Geoscience Information Network (USGIN) Geoscience Content models	
NEWGEN FORGE O&M Projects that support monitoring, characterization, and operational support of the site are most likely to generate Tier 3 data.	
POTENTIAL DATA SOURCES	ANTICIPATED TRANSFER FREQUENCY
Active fault/quaternary fault	Update with geological model
Aqueous chemistry	Yearly
Borehole lithology intercepts	Upon borehole completion
Borehole lithology interval features	Upon borehole completion
Borehole temperature observation	Approaching real time
Drill stem test observations	Upon test completion
Fluid flux injection and disposal	Upon completion of injection test
Geologic contact feature	Update with geological model
Geologic reservoir	Update with geological model



**Table F.2. (contd)**

POTENTIAL DATA SOURCES	ANTICIPATED TRANSFER FREQUENCY
Geologic units	Update with geological model
Physical sample	Upon core recovery
Rock chemistry	Upon core recovery and analysis
Seismic event hypocenter	Approaching real time
Thermal conductivity	Upon core recovery and measurement
Volcanic vents	Update with conceptual model
Well fluid production	Upon completion of field test
Well header observation	Upon completion of field test
Well log observation	Upon completion of well log
Well tests results	Upon completion of well test
Daily drilling report	Upon well completion
Geophysical survey results (gravity, magnetotellurics, electrical resistivity tomography, deformations, etc.)	Upon completion of survey
Hydraulic property observation	Upon completion of field test
Well completion information	Upon well completion
Monitoring data (temperature, pressure, deformations, resistivity, etc.)	Approaching real time

**Table F.3. Tier 2 Technical Project Data**

**Tier 2** – Structured data, but not standardized. Data in this tier are amenable to machine processing but need to be transformed by a data consumer to integrate with other data sets.

R&D Projects will likely identify new sets of structured data not covered by an existing USGIN content model

POTENTIAL DATA SOURCES	ANTICIPATED TRANSFER FREQUENCY
These will be identified during the R&D planning process	TBD

**Table F.4. Tier 1 Technical Project Data**

**Tier 1** – Unstructured data assets or files containing information in formats useful to consumers but not designed for automated transfer to GDR.

R&D Projects will likely identify new sets of structured data not covered by an existing USGIN content model

POTENTIAL DATA SOURCES	ANTICIPATED TRANSFER FREQUENCY
These will be identified during the R&D planning process	TBD

## **F.4 NEWGEN FORGE Intellectual Property Protocols and Protection of Sensitive Data**

The FORGE IP plan includes methods for identifying, assigning, and managing IP that is developed during the sustained site characterization efforts, operational and technical support of R&D proposals, as well as the IP generated during the execution of R&D activities. Managing licensing and IP opportunities is a responsibility of the Commercialization Directorate (see PMP Section 1.4.5) where Jennifer Hodas provides extensive experience (see PMP Appendix A) in IP management planning and execution and will support NEWGEN FORGE IP efforts. Patentable inventions and copyrightable software are expected to result from these activities. Inventions would be relevant to the creation of a geothermal reservoir and measurement or characterization of such reservoirs or the processes involved in generating the reservoir. Copyrightable software could include data processing or integration tools related to data acquired from FORGE measurements, geological model improvements, and EGS simulation, optimization, or prediction tools.

FORGE will have three types of participants: Core Consortium, Extended Consortium, and R&D Project Participants. Differences between the roles of each of these participant types are described below. However, the intent of NEWGEN FORGE IP management is that each current participant type will have access to needed preexisting IP and IP newly developed at FORGE for effective use of the NEWGEN FORGE site. The templates and processes proposed herein have been successfully used for other consortia managed by PNNL, and have been adapted to the NEWGEN mission and technological focus. PNNL will lead these IP management efforts.

For clarity, IP includes both patents and software. Patents means issued patents and pending patent applications, including all divisionals, continuations (not including continuations-in-part), reissues, substitutes, and extensions thereof, together with all foreign counterparts. Software means both object and source code formats provided electronically or on magnetic media, including documentation.

### **F.4.1 Core Consortium Members**

To encompass the management of IP, the NEWGEN Technology Consortium Agreement and Intellectual Property Management Plan (IPMP) (see PMP, Appendix D) will provide an overall structure for the handling of IP (both preexisting and foreground), IP stewardship, and level of access to IP developed by other parties through their respective use of NEWGEN facilities and capabilities.

Each Core Consortium member provides unique technical expertise, IP, and networks, all of which will be critical for the research, development, and ultimate deployment of technologies at the NEWGEN FORGE site. Through the Consortium Agreement and IPMP, we are able to provide standard terms and conditions that are amenable to all parties, including research institutions (PNNL), universities (Oregon State University), and industry (GE, AltaRock, Statoil).

Each Core Consortium member will have relevant background/preexisting IP (BIP) to contribute to NEWGEN. BIP will be disclosed prior to participation, but can be amended to accommodate patent prosecution or changing needs at NEWGEN via amendment to the Consortium Agreement and IPMP. Access to this BIP will be accomplished via a nonexclusive, royalty-free license to NEWGEN for the duration of the party's participation as a Core Consortium member. This will not preclude any Core Consortium member from licensing the BIP to another entity on a commercial, royalty-bearing basis, even under an exclusive license that would be subject to the nonexclusive license to NEWGEN. The BIP will still be owned by the Core Consortium member (and any other relevant parties, as applicable). The list of BIPs will be shared with Extended Consortium members and R&D Project Participants to provide transparency on IP, but also serve as a potential mechanism for technology transfer into the commercial sector.

Foreground IP (FIP) will be governed by the IPMP encompassing two types of IP: 1) FIP developed at NEWGEN by a Core Consortium member, and 2) FIP developed outside of NEWGEN by a Core Consortium member. For the former (FIP developed at NEWGEN), the FIP will be disclosed to NEWGEN immediately via a standard disclosure template (developed by PNNL). This ensures that proper and compliant reporting is made to the DOE, and will also initiate a conversation regarding the stewardship or licensing of the FIP. This FIP will be provided to NEWGEN under a nonexclusive, royalty-free license for the duration of the Core Consortium member's participation. For any FIP developed outside of NEWGEN, but relevant to the NEWGEN mission, the disclosure of the FIP will be at the discretion of the respective Core Consortium member. If it is to be shared with NEWGEN, outside FIP should be disclosed in a timely manner and be made accessible via a nonexclusive, royalty-free license. In both cases, the ownership of the FIP will be determined by inventorship and the responsibility of the inventing party, if the inventing party is either a U.S.-based research institution or university. However, industrial Core Consortium members can request ownership of NEWGEN-developed FIP from the DOE; this distinction is due to their exclusion from the Bayh-Dole Act of 1980.

Core Consortium members will also have research use access to any FIP developed at NEWGEN by the Extended Consortium members and R&D Project Participants. If any Core Consortium member wishes to have commercial-use access to this FIP, this will be negotiated on a case-by-case basis outside of NEWGEN directly between the relevant parties.

#### **F.4.2 Extended Consortium Members**

The process of sharing of IP by Extended Consortium members will be managed through individual subcontracts. The intent of these agreements will largely be the same as that described for the Core Consortium members in Section F.4.1. One difference is the Core Consortium BIP will be more broadly disclosed than for an Extended Consortium participant. This is due to the difference in the nature of the collaboration. The intent of the Extended Consortium participant is to engage and contribute to a specific targeted science or technology. The Extended Consortium participant is expected to disclose and make available to other NEWGEN FORGE participants only the BIP relevant to this more narrowly defined science and technology area. This BIP will be disclosed prior to participation, but can be amended through subcontract modification. As described in Section F.4.1, access to this BIP will be accomplished via a nonexclusive, royalty-free license to NEWGEN for the duration of the party's participation as an Extended Consortium member. This will not preclude any Extended Consortium member from licensing the BIP to another entity on a commercial, royalty-bearing basis, even under an exclusive license that would be subject to the nonexclusive license to NEWGEN. The BIP will still be owned by the Extended Consortium member (and any other relevant parties, as applicable). As for Core Consortium members, the list of BIPs will be shared with other current NEWGEN FORGE participants.

Also as described in Section 4.1, FIP developed at FORGE by the Extended Consortium member will be disclosed to NEWGEN and will be provided to NEWGEN under a nonexclusive, royalty-free license for the duration of the Extended Consortium member's participation. For FIP developed outside of NEWGEN, the disclosure of the FIP will be at the discretion of the respective Extended Consortium member. See Section F.4.1 for FIP details. Commercial-use access to IP will be negotiated on a case-by-case basis outside of NEWGEN directly between the relevant parties.

#### **F.4.3 R&D Project Participants**

The IP rights and responsibilities of R&D Project Participants are determined by United States patent law. FIP matters will be of primary consideration by potential R&D Project Participants. R&D Project Participants will be required to disclose any new FIP developed at FORGE to NEWGEN immediately. Any FIP invented at NEWGEN will be owned and managed by the inventing R&D Project Participants,

but will be licensed to NEWGEN via a nonexclusive, royalty-free license for research use purposes onsite. If the inventing R&D Project Participant is foreign, then the ownership and stewardship of FIP will be dictated by the DOE and the FIP can be licensed back to the foreign R&D Project Participant inventing party.

## **F.5 Technology Collaboration Agreement**

All protocols for IP management and data dissemination will be provided to the R&D Project Participants in the form of a Technology Collaboration Agreement by the R&D teams selected for funding from the NEWGEN competitive process. The Technology Collaboration Agreement for R&D Project Participants encompasses the disposition of data produced at NEWGEN, the degree of access to IP contributed by the Core and Extended Consortium members, and the handling and protection of IP that is conceived and/or reduced to practice due to the a NEWGEN R&D technology project. Any IP developed during a NEWGEN R&D technology project will be disclosed to the NEWGEN Executive Board and the NEWGEN FORGE site will receive a nonexclusive, paid-up, royalty-free license for research use.

The draft NEWGEN FORGE Technology Collaboration Agreement is found at the end of this Appendix (Attachment A).

## **F.6 Reference**

GTO (U.S. Department of Energy Geothermal Technologies Office). 2014. Guidelines for Provision and Interchange of Geothermal Data Assets Supporting Advancement of Geothermal by Populating the National Geothermal Data System. Dated July 3, 2014, Version 2.0, retrieved 22 February 2016 from U.S. Department of Energy: <http://energy.gov/eere/geothermal/downloads/guidelines-provision-and-interchange-geothermal-data-assets>.

## Attachment A – Technology Collaboration Agreement

### NEWGEN FORGE TECHNOLOGY COLLABORATION AGREEMENT

This Technology Collaboration Agreement for work to be performed at the Frontier Observatory for Research in Geothermal Energy (FORGE) observatory at the site on the flank of the Newberry Volcano, near Bend, Oregon, under Award No. \_\_\_\_\_ (“the Award”) from the United States Department of Energy, (the Department) is between Party A (A), located in City A, State A, and Party B (B) located in City B, State B, each of which may be referred to as a party or collectively as the Parties.

This Agreement shall be effective the date affixed hereto by the party last signing this Agreement (the “Effective Date”).

#### **I. BACKGROUND**

The FORGE observatory is a U.S. Government-funded research facility operated under the auspices of the United States Department of Energy’s Office of Geothermal Energy to develop, through the performance of basic and applied research, rigorous and reproducible methodologies to facilitate the development of cost-competitive enhanced geothermal systems (EGS) within the United States. FORGE is operated by a facility operator, Battelle Memorial Institute, under its contract to operate the Pacific Northwest National Laboratory under contract no. DE-AC05-76RL01830.

The Parties have agreed and contemplate performing experiments at FORGE that are aligned with the mission of FORGE and will enhance the development of cost-competitive EGS. Specifically the parties, working under funding provided by SOURCE under contract/grant no. \_\_\_\_\_ propose a collaborative research project wherein Party A and Party B will explore \_\_\_\_\_ by \_\_\_\_\_ . The aims of the contemplated research is to \_\_\_\_\_ .

Access to the FORGE facility will be provided under the terms and conditions of the FORGE access agreement, which will separately signed by each of the parties.

#### **II. ROLES AND RESPONSIBILITIES OF THE PARTIES**

In performing the joint works contemplated above the parties agree as follows:

PARTY A will undertake the following responsibilities and perform the following activities in accordance with the Schedule and Work Plan set forth below.

PARTY B will undertake the following responsibilities and perform the following activities in accordance with the Schedule and Work Plan set forth below.

##### **b. Schedule and Work Plan**

Phase I  
Description  
Start Date  
Activities  
Target Termination Date  
List of Contingencies  
Role of A in Phase I

Role of B in Phase I

Phase II

Description

Start Date

Activities

Target Termination Date

List of Contingencies

Role of A in Phase I

Role of B in Phase I

Phase III

Description

Start Date

Activities

Target Termination Date

List of Contingencies

Role of A in Phase I

Role of B in Phase I

### **c. Points of Contact**

#### **Party A**

Name

Address

Phone

e-mail

#### **Party B**

Name

Address

Phone

e-mail

## **III. COSTS AND EXPENSES**

In performing the work described above:

- Party A will provide X in funding through its contract/grant no. and Y in in-kind activities.
- Party B will provide X in funding through its contract/grant no. and Y in in-kind activities.
- Party A will be responsible for all costs and expenses related to...
- Party B will be responsible for all costs and expenses related to...

All other costs and expenses incurred in the project will be equally apportioned by the parties unless otherwise agreed in a separate written document.

## **IV. Term and Termination**

This agreement will be effective as of the date of the last signature and will extend until the termination of the projects outlined above or the cessation of activities at FORGE. Either party may terminate this agreement at any time by providing written notice at least 30 days prior to the date of termination.



Upon termination, unless otherwise mutually agreed to in writing, the parties will timely reconcile any outstanding costs and property issues.

If either party shall be in default of any obligation under this agreement, the other party may terminate this Agreement by giving Notice of Termination by personal delivery, telefax, electronic mail transmission, or by United States mail, express mail, or courier service, with postage or fees prepaid, to the party at fault, specifying the basis for termination. Notice by personal delivery or electronic mail is deemed to have been given when delivered or transmitted. Notice sent by U.S. mail, express mail or courier service is deemed to have been given when mailed. If within thirty (30) days after the receipt of such Notice of Termination, the party in default shall remedy the condition forming the basis for termination, such Notice of Termination shall cease to be operative, and this Agreement shall continue in full force. If Notice of Termination is given for the third time then this grace period shall not be available unless permitted in such third Notice of Termination, and this Agreement shall be finally terminated.

Nothing herein shall be interpreted as a restriction on limitation of any party's right to pursue any legal and equitable remedies.

Termination of this Agreement shall not extinguish any rights or obligations accrued hereunder at the time of termination; and obligations undertaken independent of this agreement shall survive termination to the extent necessary to permit their complete fulfillment or discharge.

## **V. INTELLECTUAL PROPERTY**

### **Intellectual Property – Subject Inventions**

Ownership of any intellectual property (IP) created under the project will be determined by the terms of the applicable funding agreement and the provisions of United States patent law. Unless separately provided in writing, no rights to either parties preexisting IP are granted by this agreement.

Parties who retain title to Project Intellectual Property may grant exclusive and nonexclusive licenses for use of technologies arising out of the Project Intellectual Property. In the case of joint ownership, the parties may decide between themselves the appropriate apportionment of licensing expenses, and any benefits from licensing (i.e., royalties and equity). Unless otherwise agreed upon, expenses and benefits shall be distributed equally between joint owners. Any license that an Owner may grant shall be subject to a reservation of appropriate rights to the Federal Government under the provisions of 35 U.S.C. § 201 et seq, which include march-in rights and U.S. Competitiveness.

Any licensing of Project Intellectual Property shall be conducted pursuant to and in accordance with the terms of the Award under which the Project Intellectual Property was developed. Licensing of Project Intellectual Property shall not inhibit performance of Award Work.

To facilitate the sharing of information and the appropriate use and protection of Project Intellectual Property the parties agree to comply with the applicable data management plans required by the NEWGEN Consortium. Specifically, the parties agree, to the extent they are permitted to do so under their operable funding agreements:

- To disclose to the IP lead any inventions or data that arise under the award in a manner agreed upon by the parties.
- To execute any necessary paperwork to document the automatic grant of nonexclusive royalty-free rights in said project IP for research purposes only to all users of the Newberry facility solely for purposes of conducting research at the Newberry facility.

- Each individual R&D Project Participant will as a part of their access agreement to the Newberry facility agree to disclose to the IP lead any inventions or data that arises under the award in a standard format, and provide a nonexclusive, royalty-free license to the Newberry facility for research use purposes only.

A list of the background IP of each of the parties is attached to this agreement as Appendix E.

## **VI. INTELLECTUAL PROPERTY – DATA RIGHTS**

The following definitions shall be used.

"Generated Information" means information produced in the performance of this Agreement.

"Proprietary Information" means information which is developed at private expense, is marked as Proprietary Information, and embodies (1) trade secrets or (2) commercial or financial information which is privileged or confidential under the Freedom of Information Act (5 U.S.C. 552 (b)(4)).

"Unlimited Rights" means the right to use, disclose, reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, in any manner and for any purpose, and to have or permit others to do so."

For work performed at the FORGE facility the parties agree to furnish to the FORGE facility operator or leave at the facility that information, if any, which is (1) essential to the performance of work by the FORGE facility personnel or (2) necessary for the health and safety of such personnel in the performance of the work. Any information furnished to the FORGE facility operator shall be deemed to have been delivered with Unlimited Rights unless marked as Proprietary Information. The parties agree that they have the sole responsibility for appropriately identifying and marking all documents containing Proprietary Information.

The Parties agree that the parties and the US Government shall have Unlimited Rights in all Generated Information, except for information which is disclosed in a Subject Invention disclosure being considered for patent protection.

The Government and FORGE facility operator agree not to disclose properly marked Proprietary Information to anyone other than the party without written approval of the party, except to Government employees who are subject to the statutory provisions against disclosure of confidential information set forth in the Trade Secrets Act (18 U.S.C. 1905).

The Parties are solely responsible for the removal of all of their Proprietary Information from the facility by or before termination of this Agreement. The Government and FORGE facility operator shall have Unlimited Rights in any information which is not removed from the facility by termination of this Agreement. The Government and Facility Contractor shall have Unlimited Rights in any Proprietary Information which is incorporated into the facility or equipment under this Agreement to such extent that the facility or equipment is not restored to the condition existing prior to such incorporation.

The Government shall have Unlimited Rights in all Generated Information produced or information provided by the Parties under this Agreement, except for information which is disclosed in a Subject Invention disclosure being considered for patent protection, or which is marked as being Proprietary Information.

Consistent with the terms of the applicable funding agreements the Parties may assert copyright in any of their Generated Information. Subject to the other provisions of this Article, and to the extent that copyright is asserted, the Government reserves for itself a royalty-free, worldwide, irrevocable, nonexclusive license for governmental purposes to publish, disclose, distribute, translate, duplicate, exhibit, prepare derivative works, and perform any such copyrighted works.

## **VII. DISCLAIMER**

THE GOVERNMENT AND THE FORGE FACILITY OPERATOR MAKE NO EXPRESS OR IMPLIED WARRANTY AS TO THE CONDITIONS OF THE RESEARCH OR ANY INTELLECTUAL PROPERTY, GENERATED INFORMATION, OR PRODUCT MADE OR DEVELOPED UNDER THIS AGREEMENT, OR THE OWNERSHIP, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE OF THE RESEARCH OR RESULTING PRODUCT; THAT THE GOODS, SERVICES, MATERIALS, PRODUCTS, PROCESSES, INFORMATION, OR DATA TO BE FURNISHED HEREUNDER WILL ACCOMPLISH INTENDED RESULTS OR ARE SAFE FOR ANY PURPOSE INCLUDING THE INTENDED PURPOSE; OR THAT ANY OF THE ABOVE WILL NOT INTERFERE WITH PRIVATELY OWNED RIGHTS OF OTHERS. NEITHER THE Government NOR THE FORGE FACILITY OPERATOR SHALL BE LIABLE FOR SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES ATTRIBUTED TO SUCH RESEARCH OR RESULTING PRODUCT, INTELLECTUAL PROPERTY, GENERATED INFORMATION, OR PRODUCT MADE OR DELIVERED UNDER THIS WORK FOR OTHERS AGREEMENT.

## **VIII. GENERAL INDEMNITY**

The Parties agree to indemnify and hold harmless the Government, the Department, the FORGE facility operator, and persons acting on their behalf from all liability, including costs and expenses incurred, to any person, including the Parties, for injury to or death of persons or other living things or injury to or destruction of property arising out of the performance of the Agreement by the Government, the Department, the FORGE facility operator, or persons acting on their behalf, or arising out of the use of the services performed, materials supplied, or information given hereunder by any person including the Sponsor, and not directly resulting from the fault or negligence of the Government, the Department, the FORGE facility operator, or persons acting on their behalf.

## **IX. PRODUCT LIABILITY INDEMNITY**

Except for any liability resulting from any negligent acts or omissions of the Government or the Contractor, the Parties agree to indemnify the Government and the Contractor for all damages, costs, and expenses, including attorney's fees, arising from personal injury or property damage occurring as a result of the making, using, or selling of a product, process, or service by or on behalf of the Parties, their assignees, or licensees, which was derived from the work performed under this Agreement. In respect to this Article, neither the Government nor the FORGE facility operator shall be considered assignees or licensees of the Parties, as a result of reserved Government and Contractor rights. The indemnity set forth in this paragraph shall apply only if the Parties shall have been informed as soon and as completely as practical by the FORGE facility operator and/or the Government of the action alleging such claim and shall have been given an opportunity, to the maximum extent afforded by applicable laws, rules, or regulations, to participate in and control its defense, and the FORGE facility operator and/or Government shall have provided all reasonably available information and reasonable assistance requested by the Sponsor. No settlement for which the Parties would be responsible shall be made without the Sponsor's consent, unless required by final decree of a court of competent jurisdiction.

## **X. INTELLECTUAL PROPERTY INDEMNITY – LIMITED**

The Parties shall indemnify the Government and the Contractor and their officers, agents, and employees against liability, including costs, for infringement of any United States patent, copyright, or other IP arising out of any acts required or directed by the Sponsor to be performed under this Agreement to the extent such acts are not already performed at the facility. Such indemnity shall not apply to a claimed infringement that is settled without the consent of the Sponsor unless required by a court of competent jurisdiction.

## **XI. NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT**

The Parties shall report to the Department and the FORGE facility operator Contractor, promptly and in reasonable written detail, each claim of patent or copyright infringement based on the performance of this Agreement of which the Party has knowledge. The Party shall furnish to the Department and the FORGE facility operator, when requested by the Department or the FORGE facility operator, all evidence and information in the possession of the Sponsor pertaining to such claim.

## **XII. ENVIRONMENT, SAFETY, HEALTH, AND SECURITY**

Work conducted and information stored or provided by the Parties in connection with the work of FORGE may be subject to applicable United States or state environment, safety, health, and security (to include cyber-security) laws and regulations, if any. The Parties agree to comply with such laws and regulations in performing their obligations under this Agreement and to obtain any Government approvals which are necessary for the Parties to perform hereunder.

## **XIV. COMMUNICATIONS**

The Parties understand that in addition to high-quality research, if FORGE's work is to have the maximum impact, the Parties need to be coordinated in communicating FORGE's accomplishments. Accordingly, under the coordination of the communications and Government affairs departments of those Parties that choose to participate, the FORGE operating contractor may implement a cooperative communications strategy that will be separately negotiated among and agreed to by the Parties. For example, the Parties may agree to communicate FORGE's successes and stories of collaboration, etc., through media outlets at their disposal, e.g., alumni and industry magazines, local newspapers, websites, blogs, social media outlets, television, virtual press conferences, and auto shows.

## **XV. NOTICES**

Any notices, consents, and reports required or permitted under this Agreement by one Party to any other Party shall be in writing and shall be delivered personally, by confirmed facsimile, by overnight courier or by registered United States mail, return receipt requested. All postage and other delivery charges shall be prepaid by the Party sending the notice, consent, or report. Notice shall be effective upon receipt by the Party being served. All notices, consents and reports shall be addressed to as follows:

Party A  
Name  
Address  
Phone  
e-mail

Party B  
Name  
Address  
Phone  
e-mail

## **XVI. COUNTERPARTS**

This agreement may be signed in one or more counterparts, each of which shall be deemed an original, and all of which taken together shall be deemed one and the same instrument. Facsimile signatures shall constitute original signatures.

## **XVII. FORCE MAJEURE**

No Party shall be liable for delays in performance of or failure to perform any of its obligations hereunder occasioned by any cause beyond its reasonable control, including but not limited to war, civil disturbance, acts of terrorism, labor difficulties, fire, flood, earthquake, defaults or delays of common carriers or suppliers, or governmental laws, acts, or occurrences.

## **XVIII. INDEPENDENT ENTITIES**

The Parties are independent contractors to each other with respect to each and every aspect of this Agreement. Nothing herein shall be deemed to establish a partnership, joint venture, franchise or any other form of relationship. Neither FORGE nor any Party shall incur any obligations for or in the name of any other Party, nor have the authority to bind, commit or obligate any other Party or FORGE.

## **XIX. SEVERABILITY**

If any provision of this Agreement is determined to be illegal, invalid, or otherwise unenforceable, then to the extent necessary to make such provision and/or this Agreement legal or otherwise enforceable, such provision shall be limited, construed, or deleted from this Agreement and the remaining provisions shall survive and remain in full force and effect.

## **XX. AMENDMENT AND WAIVER**

Except as otherwise expressly provided herein, any provision of this Agreement may be amended or modified and the observance of any provision of this Agreement may be waived (either generally or any particular instance and either retroactively or prospectively) only in the form of a writing signed by all Parties. The failure of any Party to enforce its rights under this Agreement at any time for any period shall not be construed as a waiver or other impairment of such rights or any other provision herein.

## **XXI. ASSIGNMENT**

This Agreement shall be binding upon the Parties and their respective successors. Except as to a successor operator of a DOE Laboratory, no Party may assign or delegate any of its rights or obligations under this Agreement without the prior written consent of the other Party. Notwithstanding the foregoing, each Party may assign this Agreement in connection with a sale or acquisition of all or substantially all of its business or assets related to the performance of this Agreement, whether by merger, sale of assets, sale of stock, operation of law or otherwise. Any assignment or delegation in violation of this Article (Assignment) shall be null and void. Subject to the foregoing restrictions, this Agreement will inure to the benefit of the successors and permitted assigns of the Parties.

**XXII. NO RESTRICTION ON SIMILAR OR OVERLAPPING WORK**

Nothing in this Agreement prohibits or prevents an individual Party from performing or entering into any agreement to perform energy storage work, including work that is similar or that overlaps in whole or in part the work such individual Party may undertake under this Agreement, provided such work does not violate the terms of this Agreement.

**XXIII. USE OF PARTY'S NAME**

No right, express or implied, is granted by this Agreement to any Party to use in any manner the name of any other Party or any other trade name or trademark of any other Party in connection with the performance of this Agreement without the such other Party’s prior written consent.

**XXIV. FURTHER ASSURANCES**

Each Party hereto represents that it has the authority to enter into this agreement and further agrees to execute, acknowledge, and deliver such further instruments, and to do all such other acts as may be necessary or appropriate in order to carry out the purposes and intent of this Agreement.

**XXV. ENTIRE AGREEMENT**

This Agreement and the exhibits hereto, which are incorporated herein by reference, are the complete agreement of the Parties relating to the subject matter hereof. This Agreement supersedes and governs any other prior or collateral agreements with respect to the subject matter hereof. All Parties participated in the drafting of this Agreement, and the interpretation of this Agreement shall not be affected by the drafting process or roles.

**XXVI. DISPUTE RESOLUTION**

Any dispute between Participants relating to the management of Project Intellectual Property, as provided for in this Agreement, or to the interpretation of this Agreement, may be referred to the Participants’ respective officers. Through the designated officers, Participants agree to first attempt informal resolution of disputes, within a reasonable period of time and in a fair and equitable manner, taking into consideration the objectives of the Award and any laws, statutes, rules, regulations or guidelines to which the involved Participants are subject.

IN WITNESS THEREOF, the Parties hereto have executed or approved this Agreement on the dates below their signatures.

Signature: _____	Signature: _____
Name: _____	Name: _____
Title: _____	Title: _____
Date: _____	Date: _____





## Appendices

- A. Detailed Project Plan
- B. Applicable Government Contract Flow Down
- C. Data Classification Scheme
- D. Site Access Provisions
- E. IP Data Listings