

Oil and Gas



Call for Produced Water Value Extraction

CONTEXT

Produced water from Shale Gas operations can be reused for fracking of subsequent wells, with any excess being shared with other operators that find themselves in a shortfall, or injected into nearby deep disposal wells. While these methods are costs to the operator, the opportunity here is that the produced water contains many metals and minerals of significant potential value if extracted!



WHAT WE ARE LOOKING FOR

We seek safe, effective, affordable, and sustainable technologies and businesses that can extract valuable elements (K, Li, Ba, Sr, Mg) contained in the produced water to generate revenue for both the vendor and Shell. The approximate volume and concentration of key elements of two different produced water streams is outlined in the following table and is likely representative of other Shale Gas operations in the Fort St. John area of British Columbia, Canada.

	Produced Water Stream 1	Produced Water Stream 2
Volume Range	900 – 1200 m ³ /d	50 – 75 m ³ /d
Component Concentrations	(mg/L)	(mg/L)
Total Dissolved Solids	250000	310000
Total Dissolved Chloride	150000	190000
pH	5.99	5.79
Calcium	16650	32000
Magnesium	1400	3400
Potassium	2800	5200
Sodium	74600	56000
Strontium	2000	4800
Barium	900	1600
Lithium	80	120
Iron	40	<30

** Note that the produced water does contain naturally occurring radioactive material (NORM) in varying concentration, considered quite manageable with proper handling. Further information can be provided as required.

IN SCOPE

- Value extraction facilities which could preferably be located near the source of produced water to limit transportation logistics. Clarify if either stream 1 or 2 is a strong preference for extraction.
- A robust business premise regarding long term market demand and price stability as well as a clear understanding of the common chemical form that the element is typically transported and sold as (i.e. Li_2CO_3 vs pure Li) including purity requirements for optimal marketability.
- Cost and revenue sharing that is mutually beneficial to the successful technology/business and to Shell.

OUT OF SCOPE

- Traditional water disposal or treatment, as these do not tap into the value of the produced water.

HOW TO SUBMIT YOUR PROPOSAL

- Visit the [GameChanger submission form](#).
- In the “One-line description (max 100 characters)” field, label your proposal as “Call for Produced Water Value Extraction”.
- Submit your proposal by: March 31st, 2018

For questions contact GameChanger-Challenge@shell.com

WE APPLY THE FOLLOWING CRITERIA FOR CONSIDERATION:

1. Novel – Is the idea fundamentally different and unproven?
2. Valuable – Could the idea create substantial new value if it works?
3. Doable – Is there a plan to prove the concept quickly and affordably?
4. Relevant – Is the idea relevant to the future of energy?

Any information submitted as part of the process must contain only NON-CONFIDENTIAL data and information at this stage. The funding opportunity will be in the range USD 150,000 – 300,000 to progress a “proof of concept” in a phased approach over a period of no more than 12 months. Further development may be supported and or facilitated by Shell depending on the overall outcome of the initial award.