

GEOTHERMAL ENERGY

Activity types in Utah

1

HEATING-COOLING EXCHANGE

- *Can be Open Loop or Closed Loop*
- *Also known as ground-source heat pump and geothermal heat pump*

2

DIRECT USE

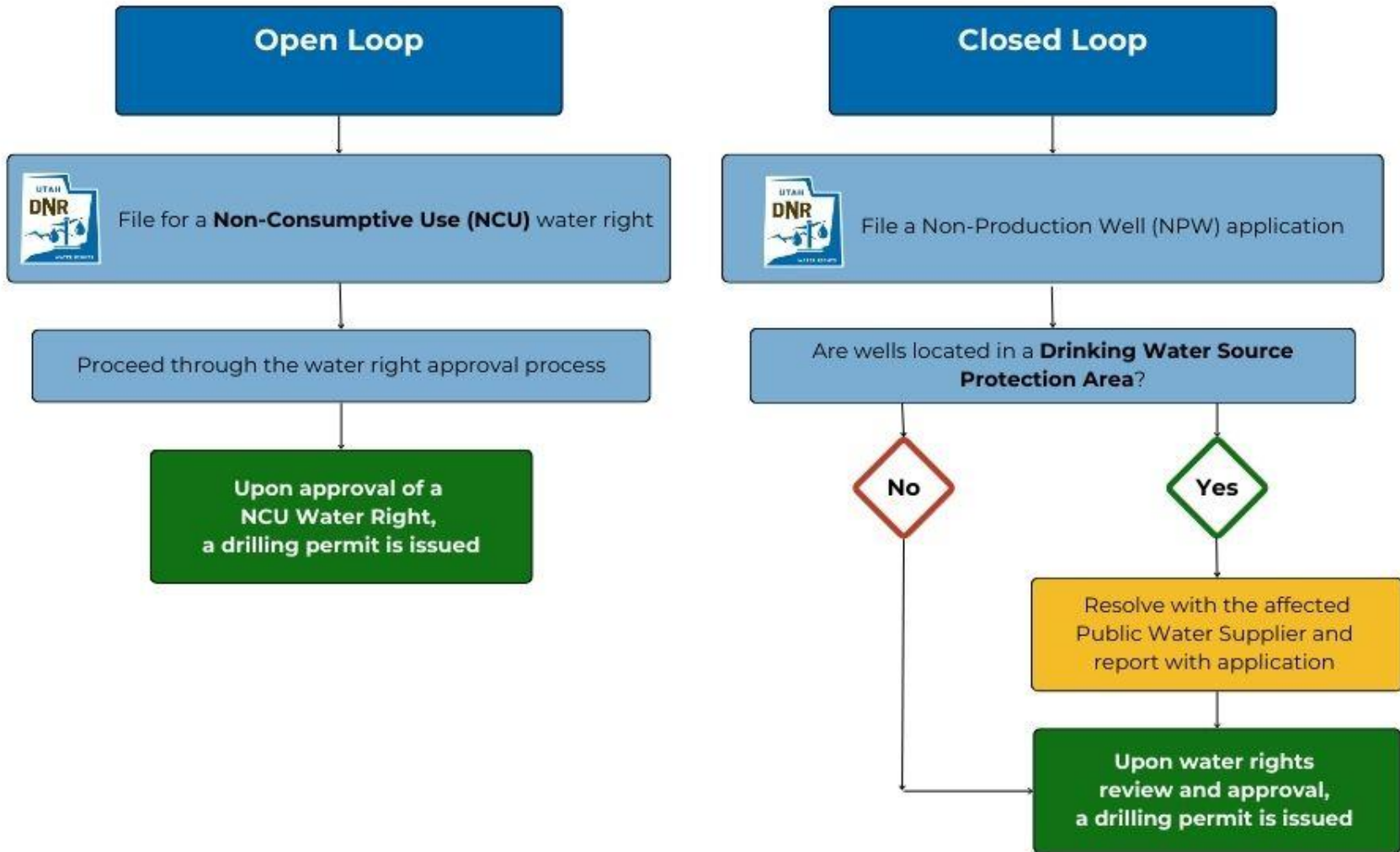
3

POWER PRODUCTION

- *Traditional Geothermal*
- *Enhanced Geothermal Systems (EGS)*
- *Advanced Geothermal Systems (AGS)*

1

Approval process for geothermal using HEATING-COOLING EXCHANGE SYSTEMS

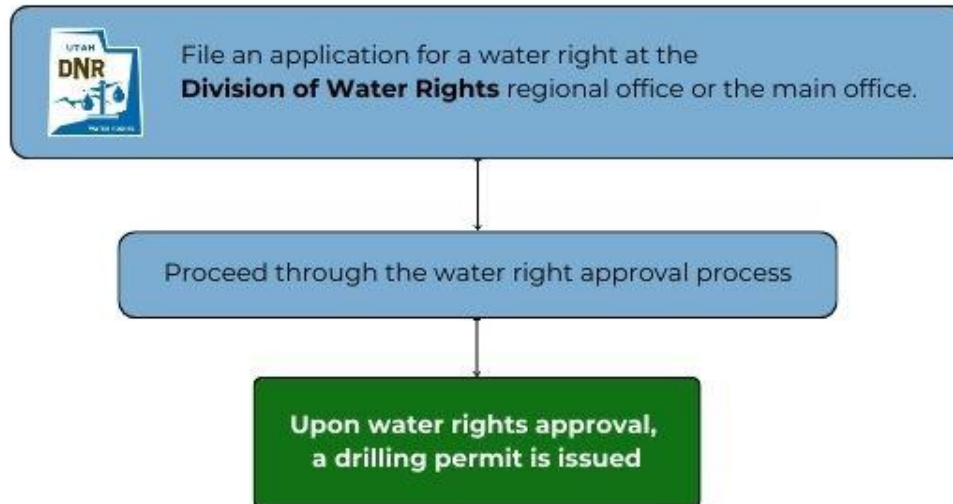


2

Approval process for


DIRECT USE GEOTHERMAL

Low to Hot Water <248° F for building heating, green housing, recreation, aquaculture, etc.




3

Approval process for GEOTHERMAL POWER PRODUCTION



Traditional Geothermal (Hydrothermal)

- File an application for a geothermal water right at the **Division of Water Rights** regional office or the main office.
- Submit a Plan of Operations (PO)** to Water Rights Geothermal Program. The PO should include documentation of correlative rights, bonding, driller licensure, and other items required by rule R655-1.




Enhanced Geothermal Systems (EGS)

Submit a **Plan of Operations (PO)** to the **Division of Water Rights** geothermal program.

The **EGS PO** should include:

- Details about drilling, construction and well testing
- Documentation of correlative rights, water rights, bonding, driller licensure, and items required by rule
- Information about the water source for drilling, stimulation and operation
- A directional drilling plan
- A stimulation plan



Advanced Geothermal Systems (AGS)

Submit a **Plan of Operations (PO)** to the **Division of Water Rights** geothermal program.

The **AGS PO** should include:

- Details about drilling, construction and well testing
- Documentation of correlative rights, water rights, bonding, driller licensure, and items required by rule.
- Information about the water source for drilling.
- Details about the directional drilling plan and the nature of working fluid that will be used.

The water right application and PO should take into account both production wells and injection wells



Does your project include injection wells?



PO must be reviewed by the geothermal program and the regional engineer. This takes 2-4 weeks.



Submit additional information to the **Division of Water Rights** for injection wells to be evaluated for a temporary or permanent geothermal injection well permit.



Submit a Class V UIC Inventory Form to the **Utah Division of Water Quality**

water right approval

PO approval (with conditions)

Proceed with the project

Finalize geothermal injection well permit (if applicable)

Operation, maintenance, reporting

Approval process for

GEOHERMAL POWER GENERATION: EXPLORATION & INVESTIGATION ACTIVITIES

