

Gaining Steam: A Regulatory and Policy Framework for Geothermal Energy Development in Alberta



Environmental
Law Centre

ELC Webinar Presentation on December 15, 2020

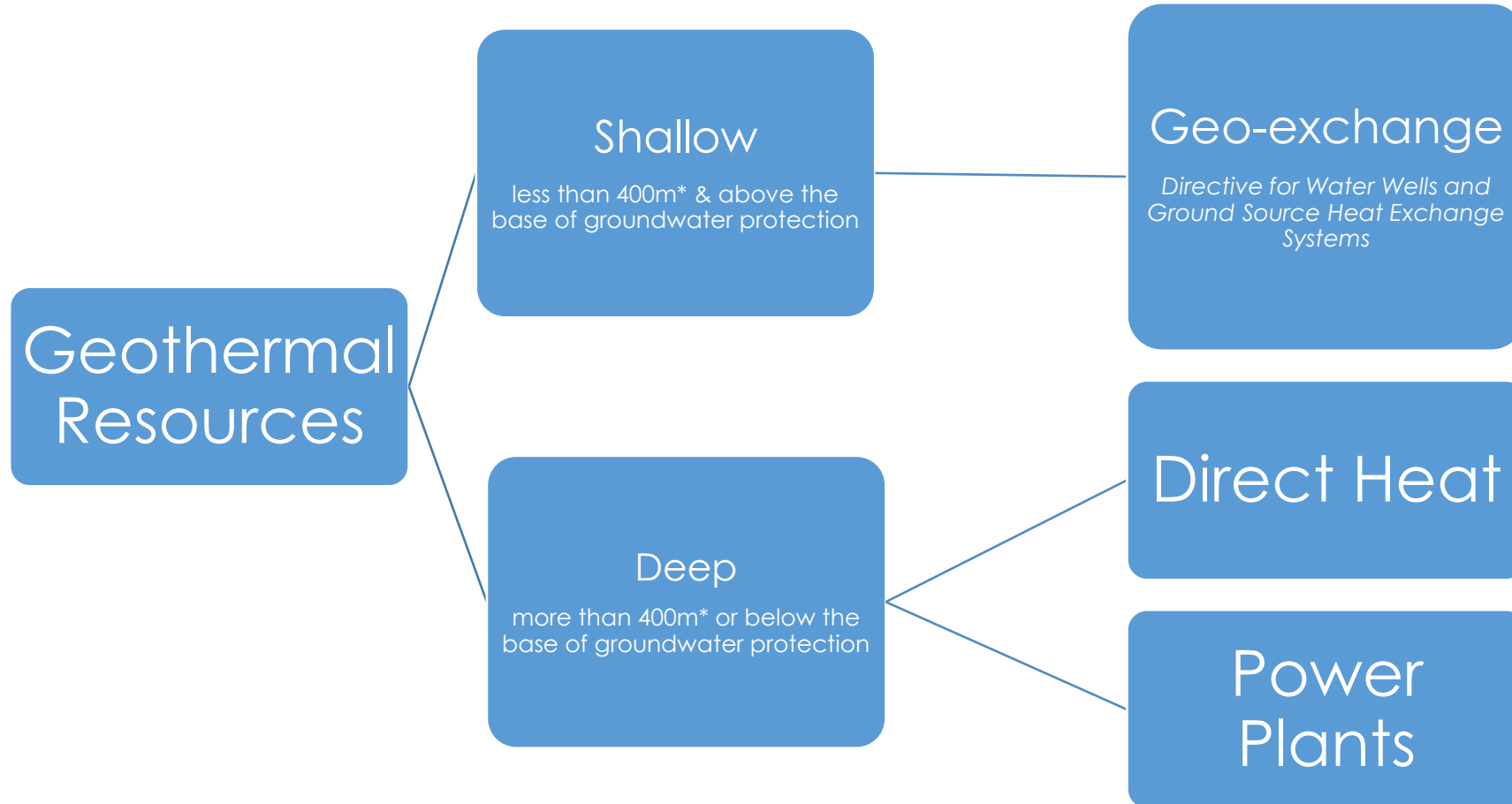
About the Environmental Law Centre

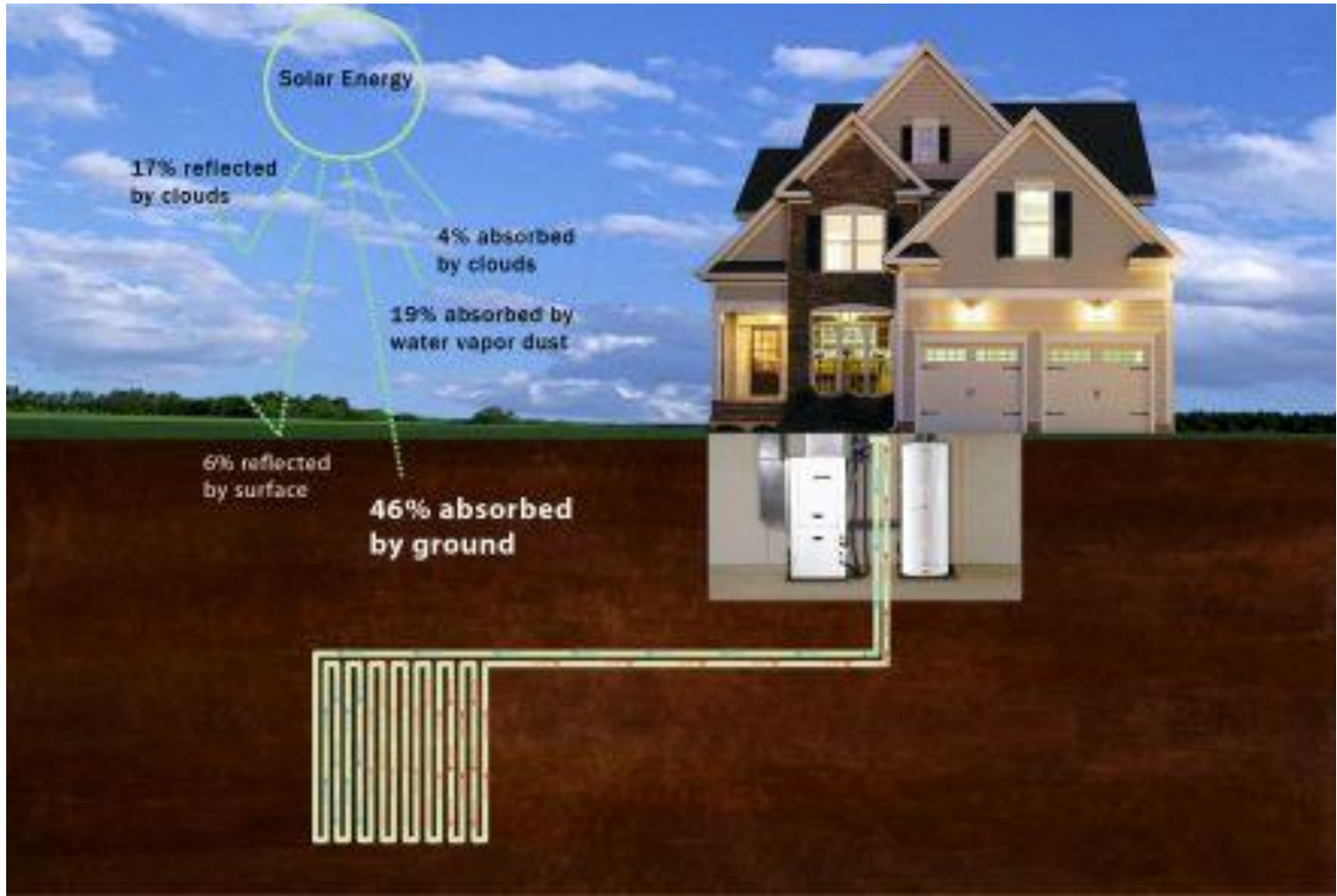
- The Environmental Law Centre (ELC) has been seeking strong and effective environmental laws since it was founded in 1982.
- The ELC is dedicated to providing credible, comprehensive and objective legal information regarding natural resources, energy and environmental law, policy and regulation in the Province of Alberta.
- The ELC's mission is to educate and champion for strong laws and rights so all Albertans can enjoy clean water, clean air and a healthy environment.
- Our vision is a society where laws secure an environment that sustains current and future generations.

Presentation Outline

- Introduction to geothermal resources
- Current regulatory landscape and the missing pieces
- *Bill 36: The Geothermal Resource Development Act*
- Policy recommendations

Introduction to Geothermal Resources

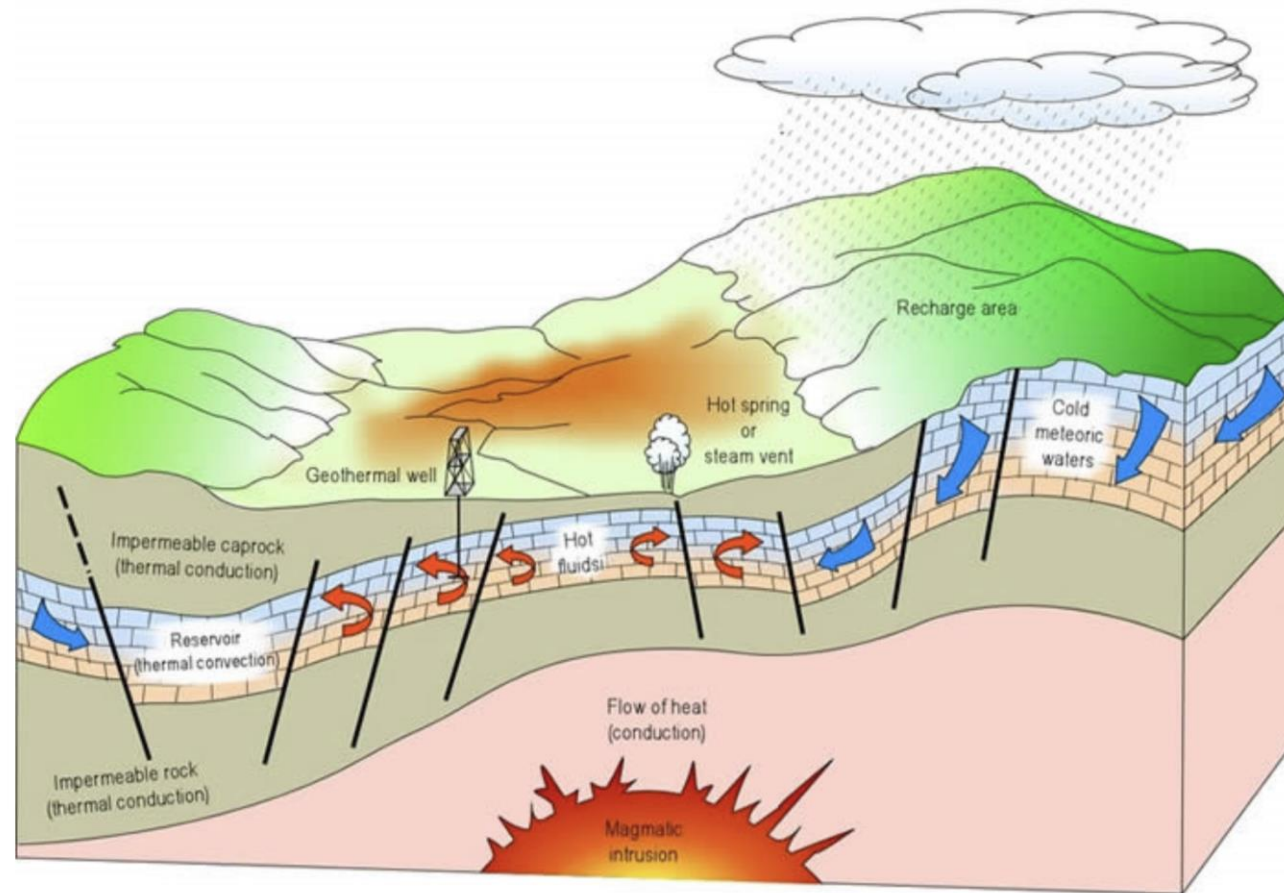




Geo-exchange/ Shallow geothermal

source: pembina.org

Deep Geothermal



Source: Jack Kiruja, Direct Utilization of Geothermal Energy, Presented at Short Course VI on Exploration for Geothermal Resources, organized by UNU-GTP, GDC and KenGen, at Lake Bogoria and Lake Naivasha, Kenya, Oct. 27 – Nov. 18, 2011.

Current State of Regulation: Laws of General Application

- *Water Act, R.S.A., ch. W-3*
 - approvals and licences
- *Municipal Government Act, R.S.A. 2000, ch. M-26*
 - Bylaws: water, environment, planning and development
- *Environmental Protection and Enhancement Act, R.S.A. 2000, ch. E-12*
 - substance releases

Current State of Regulation: Deep Geothermal

- some regulation re: power plants (not necessarily specific to geothermal)
- Power plants bigger than 1MW need approval
- Power plants bigger than 100 MW need environmental assessment
- Renewable power plants must meet conservation and reclamation requirements
- Legislation overseen by Alberta Utilities Commission addresses power plants

Current State of Regulation: Shallow Geothermal

- Directive for Water Wells and Ground Source Heat Exchange Systems
 - minimum requirements for open-loop ground source heat exchange wells and for vertical closed-loop ground source heat exchange wells completed at depths above the base of groundwater protection
 - does not apply to horizontal closed-loop or submerged closed loop ground source heat exchanged systems.

Missing Pieces

- No legal definition of geothermal resources
- Lack of clarity as to ownership of geothermal resources
- No licensing system for exploration and development of geothermal resources
- Aside from those mentioned, no comprehensive provisions for environmental regulatory matters such as environmental assessment, and abandonment, reclamation and remediation
- Interface between geothermal and oil & gas (subsurface conflicts, liability)

Overview of Bill 36

- **Geothermal resources** defined as “the natural heat from the earth that is below the base of groundwater protection”
- Regulatory scheme is modelled on *Oil and Gas Conservation Act*, R.S.A. 2000, ch. O-6 (OGCA)
- Regulatory oversight by the AER
- Primary function of Bill 36 is to provide a licensing regime

Overview of Bill 36 (continued)

- reworking wells or facilities
 - Only by licensee, as directed by AER, or if obtain a licence
 - If obtain a licence to rework, liability transfers to new licensee (except for outstanding debts to AER or orphan fund for suspension and abandonment costs)
- enforcement powers
- extensive, discretionary rule-making powers granted to AER
- regulatory powers granted to Cabinet
- Numerous consequential amendments
 - EPEA, OGCA, M+M Act, Pipeline Act, REDA

Does Bill 36 provide the missing pieces?

- No legal definition of geothermal resources
- Lack of clarity as to ownership of geothermal resources
- No licensing system for exploration and development of geothermal resources
- Aside from those mentioned, no comprehensive provisions for environmental regulatory matters such as environmental assessment, and abandonment, reclamation and remediation
- Interface between geothermal and oil & gas (subsurface conflicts, liability)

No legal definition of geothermal resources

- Bill 36: defines geothermal resources as “natural heat from the earth that is below the base of groundwater protection”
- Comparison to our recommendations:
 - we recommended a broad definition and also a definition of geothermal energy
 - Bill 36 definition is fairly broad (not limited to a temperature, use or technology) but it is limited to deep resources
 - Bill 36 clarifies that only the heat (not, for example, the geothermal waters that may contain the heat along with dissolved minerals)

No legal definition of geothermal resources

- Our proposed definitions:

Geothermal Resource means the natural heat of the earth, in whatever form, from which energy can be derived or extracted from such natural heat and all mineral in solution or other products obtained from naturally heated fluids, brines, associated gases, and steam, in whatever forms, found below the surface of the earth, but does not include oil, hydrocarbon gas, or other hydrocarbon substances.

Geothermal Energy means energy stored in the form of heat beneath the surface of the earth.

Lack of clarity re: ownership

- Bill 36: “the owner of the mineral title in any land in Alberta has the right to explore for, develop, recover and manage the geothermal resources associated with those minerals and with any subsurface reservoirs under the land”
- Comparison with our recommendations:
 - we recommend crown ownership (clearly retroactive)
 - Bill 36 gives to mineral title owners
 - see commentary provided by [Nigel Bankes](#) on Ablawg
 - obtaining tenure should be subject to environmental screening

No licensing system

- Bill 36 provides a licensing system modelled on OGCA
- Comparison with our recommendations:
 - Shallow Resources
 - likely can be addressed via EPEA, Water Act and MGA
 - consider provincial level guidelines, standards or codes of practice for ALL geo-exchange
 - dense developments may need environmental assessment
 - Deep Resources
 - comprehensive licensing regime
 - concern that model is OGCA

No comprehensive environmental provisions

- Bill 36:
 - EPEA's Schedule of Activities includes activities around "natural heat from the earth for the purposes of heating"
 - EPEA's definition of well includes geothermal wells
- Comparison with our recommendations:
 - some improvement with Bill 36 but still missing pieces
 - regulation for all forms of geo-exchange applications
 - clarify environmental assessment requirements for geothermal power plants
 - much of deep resources environmental regulation left to discretion of AER

Geothermal – Oil and Gas Interface

- Bill 36: subsurface conflicts with other energy resources can be addressed by AER
- Comparison with our recommendations:
 - Need similar authority to address other subsurface conflicts (water, minerals dissolved in geothermal waters)
 - Prior to extensive disposition of geothermal rights, GOA should articulate approach to subsurface conflicts

Geothermal – Oil and Gas Interface

- Bill 36: several provisions on liability
 - abandonment does not relieve licensee or WIP from responsibility for control or further abandonment, or associated costs
 - if a new licensee is reworking a well or facility, then liability transfers except for outstanding debts to AER or OWA for suspension/abandonment costs
 - costs of suspension, abandonment, remediation and reclamation in accordance with proportionate share of each WIP
- Comparison with our recommendations:
 - pre-transfer inspection and assessment process -> provide a snapshot of the condition of the well-site, surface and subsurface
 - applies to wells regardless of life stage (pre-abandonment, abandoned, reclaimed or remediated)

Policy Recommendations

- the authority to impose royalties on the use of deep geothermal resources
- develop government financial support programs such as:
 - Cost-share and public insurance
 - Early-stage fiscal incentives
- consider market incentives, such as feed-in-tariffs and renewable portfolio standards
- take steps to increase access to exploration data

Questions?

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