



The Australian Code for Geothermal Reserves and Resources Reporting:

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Background and Status

- > In Australia the AGEG and AGEA have taken a lead role in defining a Code for reporting of geothermal Resources and Reserves
- > The first edition of the Code has been launched
- > Definition is at two levels
 - o **Guidelines** for methodology: a comprehensive outline of *preferred* methodology and default parameters, not mandatory, set out in **Lexicon**
 - o **Reporting requirements (the Code)**: much shorter document, has minimum *mandatory* requirements

Objectives

- > This is aimed at commercial companies reporting to stock markets
- > However, the methodology and principles are similar regardless of the purpose so it has applicability to policy discussions also
- > I would argue that economic considerations are key to ALL assessments
- > If it isn't potentially economic it isn't a resource.

Scope

- > Includes “Conventional” and EGS projects
- > Both high and low temperatures
- > Existing projects as well as green-fields
 - o Need to allow for energy already extracted
- > Focus on electricity generation, but methodology readily adaptable to other situations

Special Features of Geothermal

- > Potential for recharge on a human time scale in some resources
 - o Fluids can be mobile across concession boundaries
- > Energy prices are site specific
- > Technology is rapidly changing



Two Dimensional Categorisation ("McKelvey diagram")

> "Geological" Knowledge and Confidence

- o The resource characteristics
- o How reliably they are defined
- o Typically : "Proven – Probable – Possible"

> Commercial Extractability

- o What can be commercially extracted - now
- o What may be extracted under more favourable conditions
- o Typically:
 - Reserve = commercial
 - Resource = as yet sub-commercial, but reasonable prospects for eventual extraction

Lexicon: Guidelines for Possible Methodologies

- > Favoured methodologies for resource and reserves
 - o Stored heat calculations – preferably probabilistic
 - o Numerical simulation models

- > Not accepted except for very preliminary resource estimates
 - o Surface heat flow
 - o Aggregation of well outputs

- > Possible but not favoured methods
 - o Areal method
 - o Lumped parameter models
 - o Decline curve analysis

Other Methodology Considerations

- > Accommodating recharge
- > Non-energy constraints
 - o Environmental
 - o Regulatory
 - o Access
 - o Chemistry
- > Recovery factors
- > Efficiency of energy conversion / utilisation
- > Project lifetime/ sustainability

Conclusions

- > The Australian Code is a good step towards a formal definition of geothermal Reserves and Resources
- > It is uniquely suitable for reporting on both “conventional” and “unconventional” geothermal projects
- > Hopefully it will serve as a basis for international standardisation
- > The Code, Lexicon and example reports can be downloaded from:

http://www.pir.sa.gov.au/geothermal/ageg/geothermal_reporting_code