

MODELING PERFORMANCE AND ECONOMICS OF POWER GENERATION BY ENERGY RECOVERED FROM COPRODUCED GEOTHERMAL FLUIDS

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Agenda

Ø **Goals**

Ø **Key Variables -- “Dials”**

Ø **Model Organization**

Ø **Case Studies**

J **Temperature**

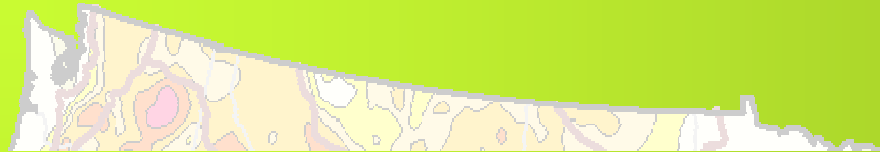
J **Flow**

J **Configuration**

Ø **Bases, Expansion**

Ø **Conclusions**





Functions

- Ø Parametric
- Ø Performance
- Ø Economics
- Ø Configuration
- Ø COS

Parameters

- Ø Temperature
- Ø Flowrates
- Ø System Capacities
- Ø Capital Costs
- Ø Financing Terms
 - J Tax Credits

Pro Organiz

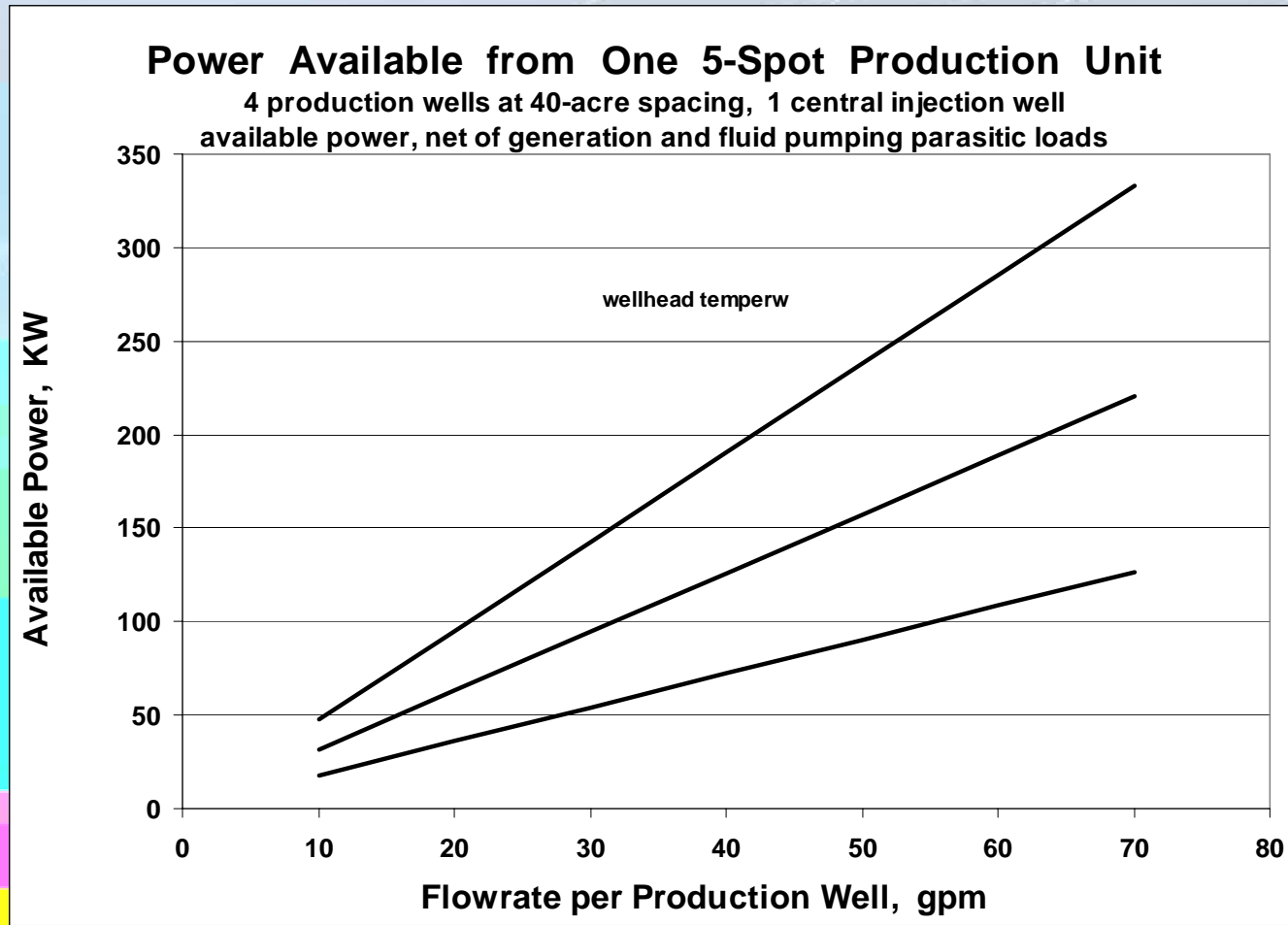
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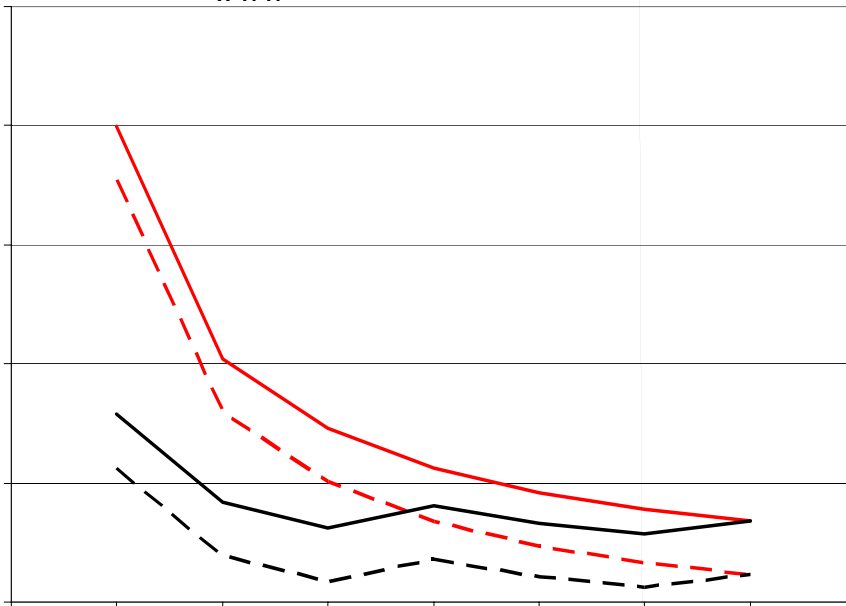
Temperature Effects



200 KW Generation Units -- Co-Production Cost of Power Versus Flowrates at Variable Wellhead Temperatures

5-Spot Layout, 40 Wells (total) at 40-Acre Production Well Spacing

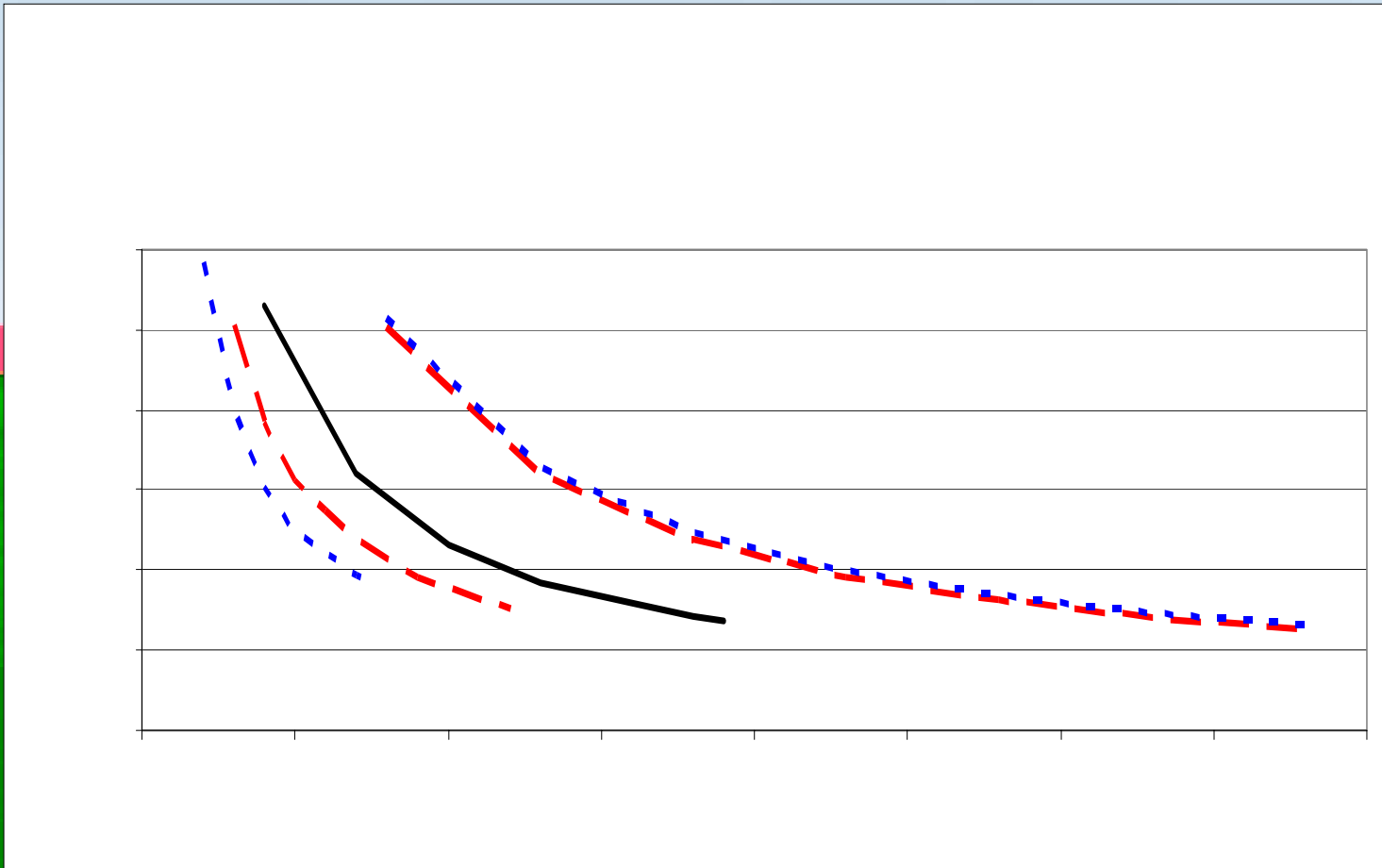
W Ti Ti



Wellfield Configuration



Wellfield Configuration



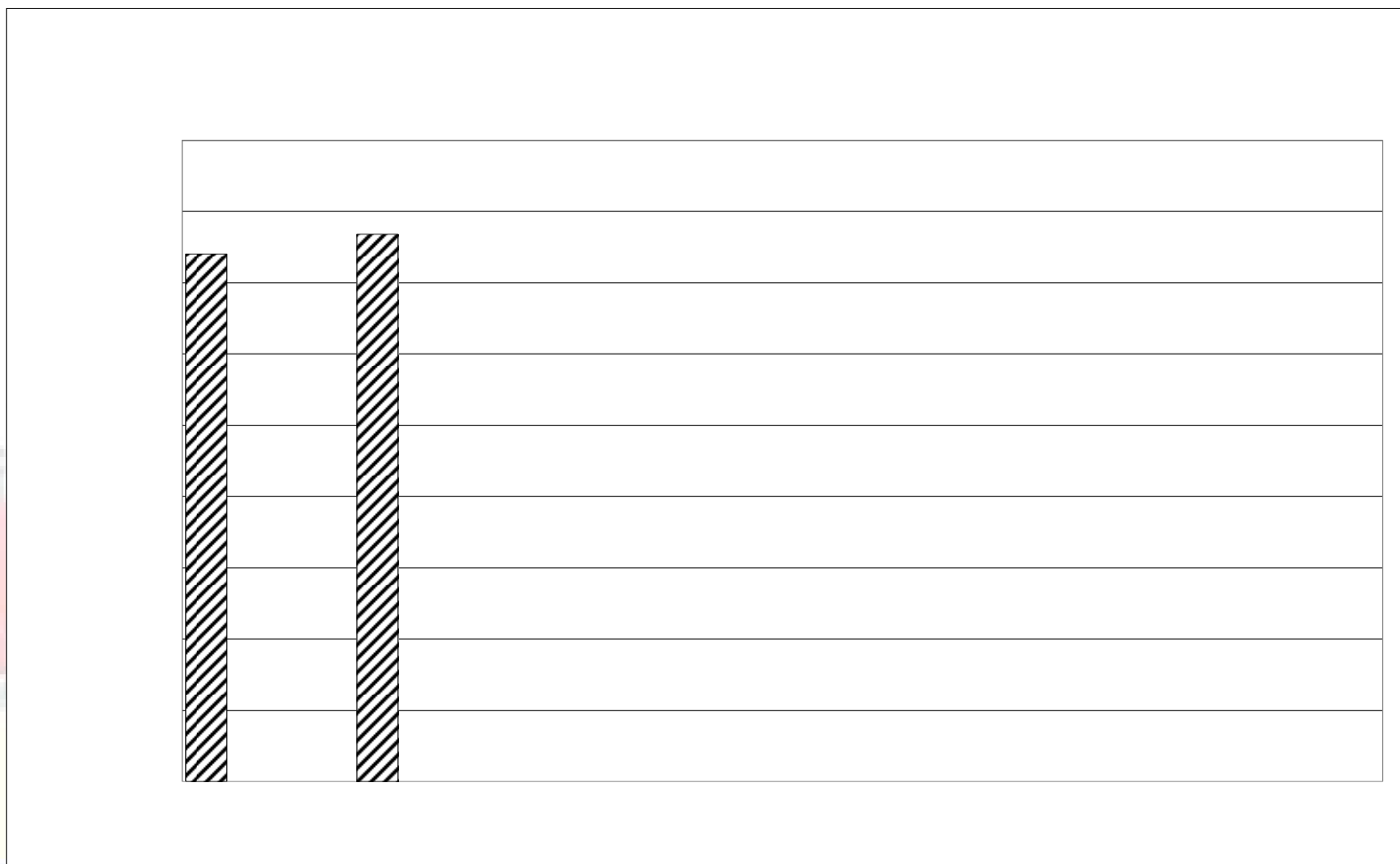


Figure 9
Comparison of Configuration and Generation Capacity Effects



Input Variables

Flow

Bases

Ø Engineering

£ Perry

£ McCabe and Smith

£ Smith and VanNess

Ø Costs

£ Means

£ Contact

Ø “Open Architecture”

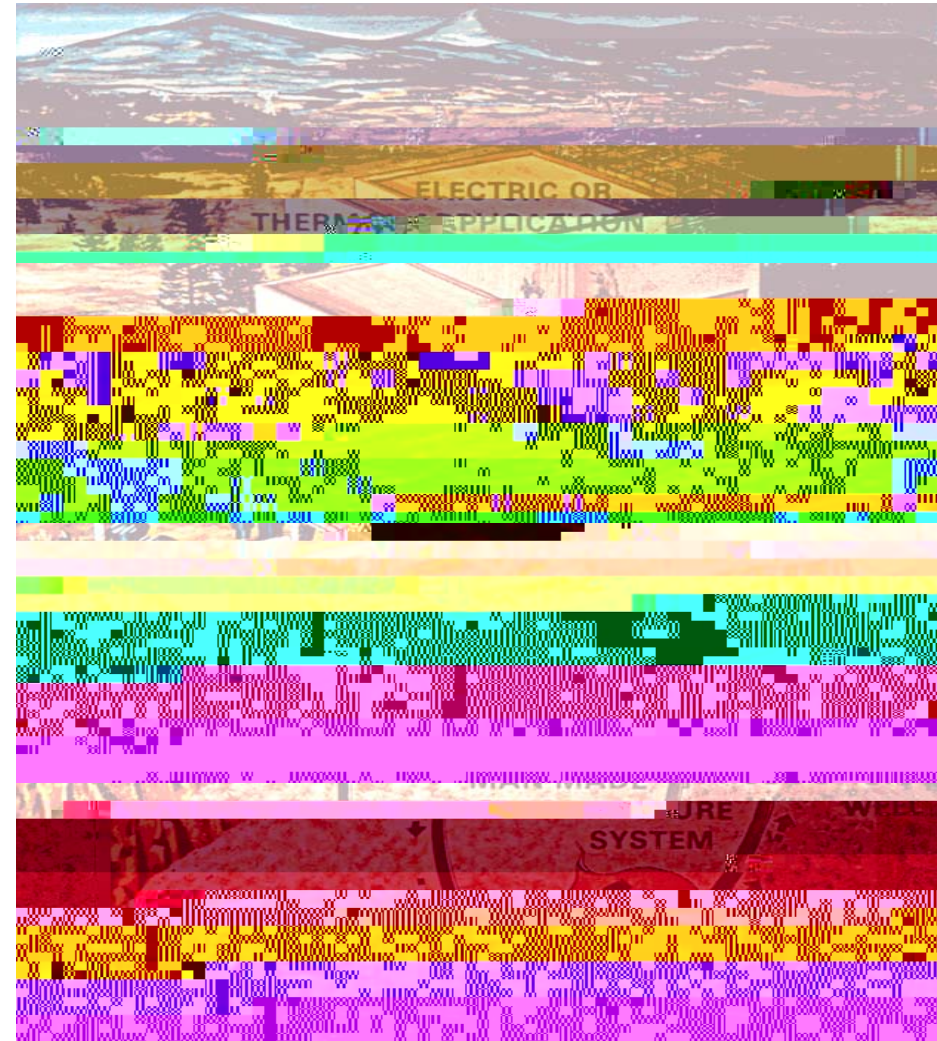
£ parametric “spread”

£ cut ‘n paste new features

š well losses

š conversion system

š user-defined configurations



Conclusions

- ∅ **Model covers a profile of project variables:**
 - ∫ **physical (process engineering),**
 - ∫ **configurational,**
 - ∫ **E&C,**

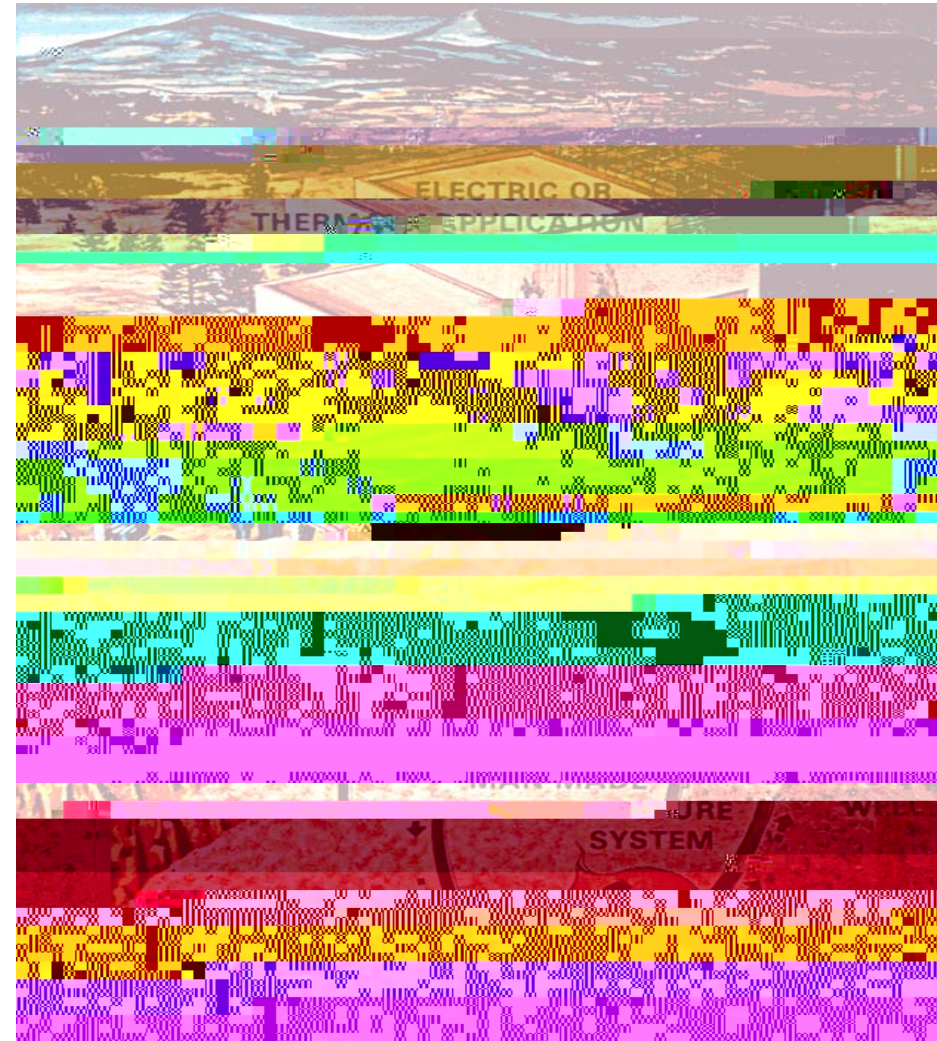
who makes it happen?



BACKUPS

Ø ALTERNATE AMBIENT TEMPERATURE

Ø POWER VERSUS RESOURCE TEMPERATURE



Temperature Effects

