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

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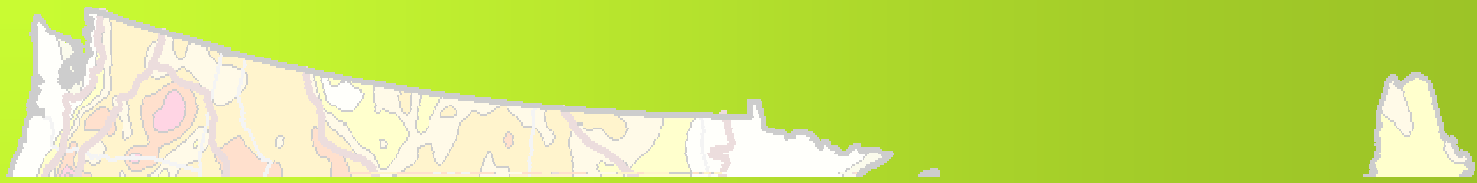
# Agenda

- ü **Goals**
- ü **Key Variables -- “Dials”**
- ü **Model Organization**
- ü **Case Studies**
  - V **Temperature**
  - V **Flow**
  - V **Configuration**
- ü **Bases, Expansion**
- ü **Conclusions**



# Goals

## Functions

- ü Parametric
- ü Performance
- ü Economics
- ü Configuration
- ü COS

## Parameters

- ü Temperature
- ü Flowrates
- ü System Capacities
- ü Capital Costs
- ü Financing Terms
  - V Tax Credits

# Progr
# Organizat

CaseData (2)

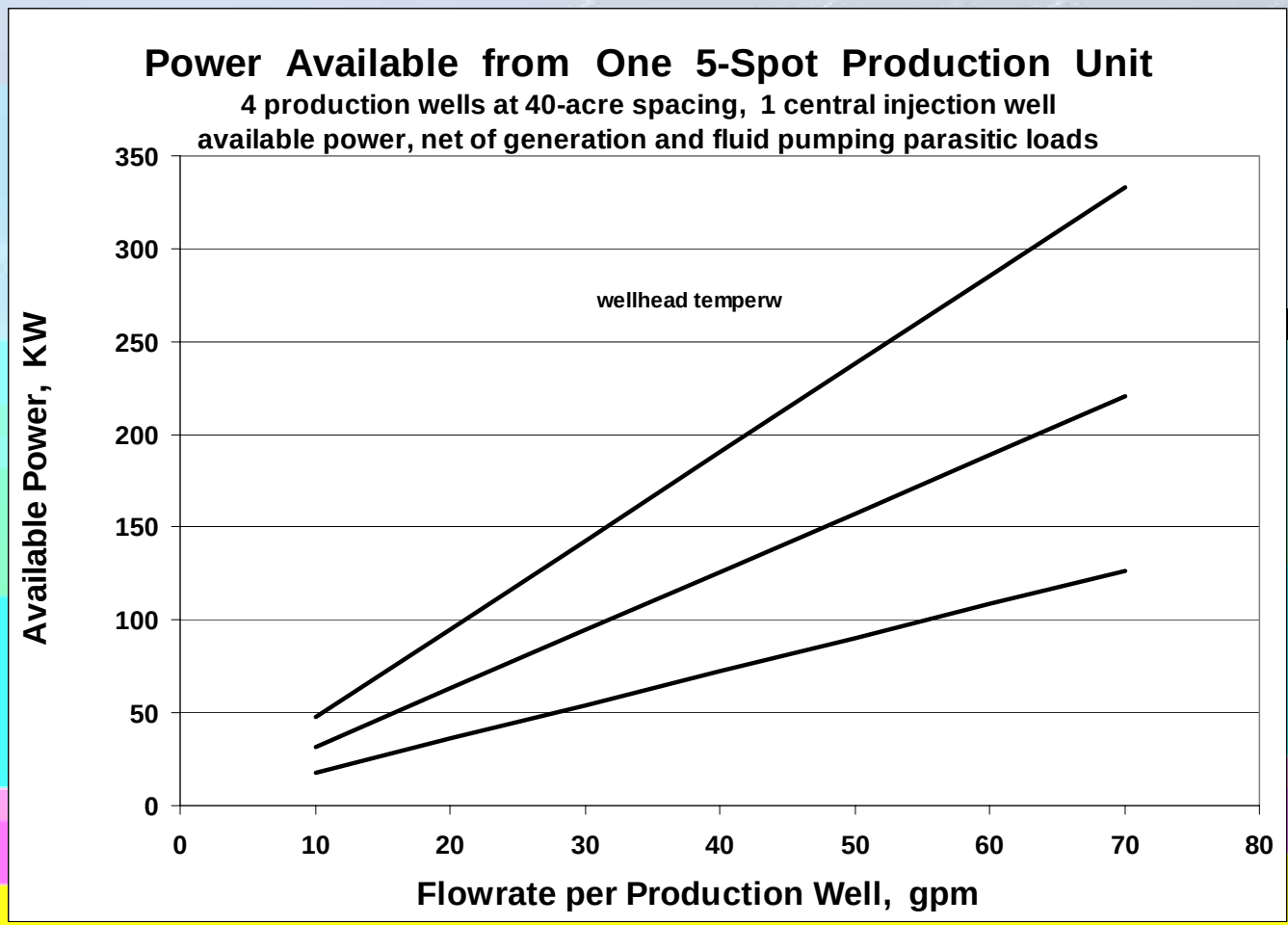
ANALYSIS SUMMARY
Recapitulates input data and r

INPUT AND PRE-PROCESS
User enters data on resource and surf
conditions, we

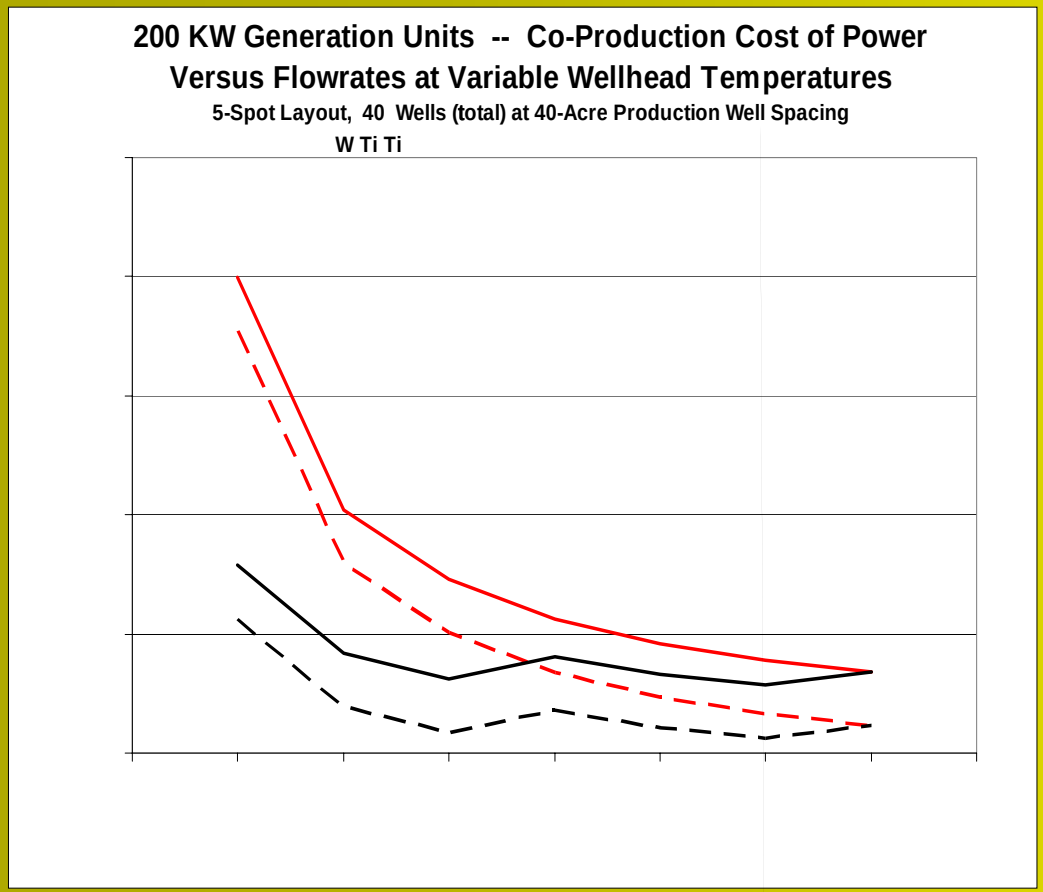
Information exchan

Computation Excha

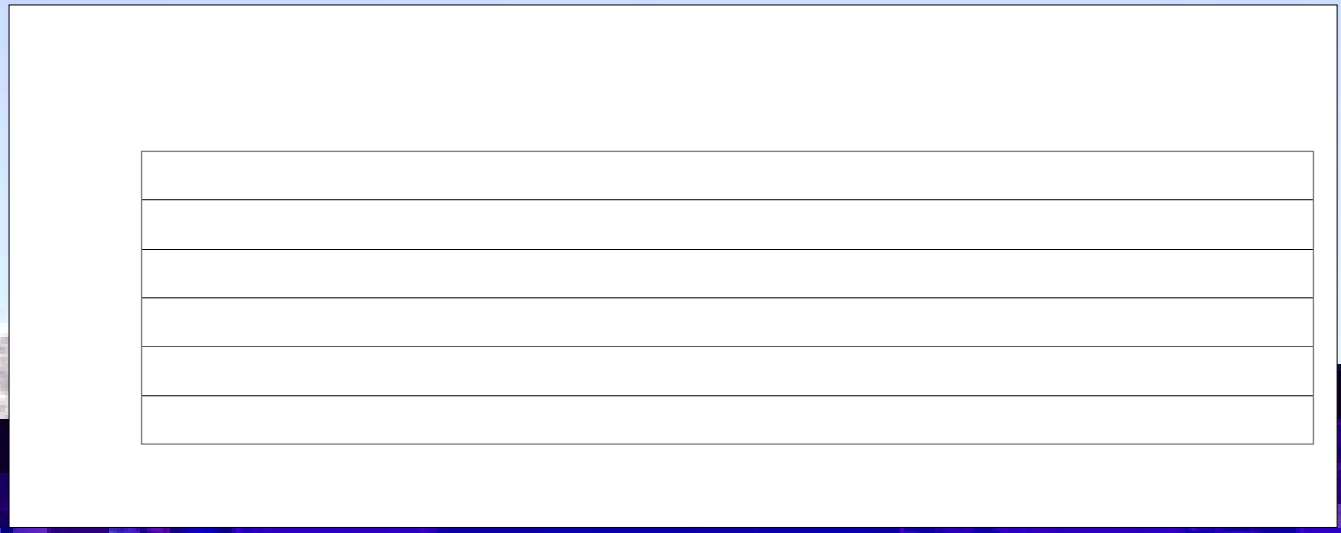
# Temperature Effects



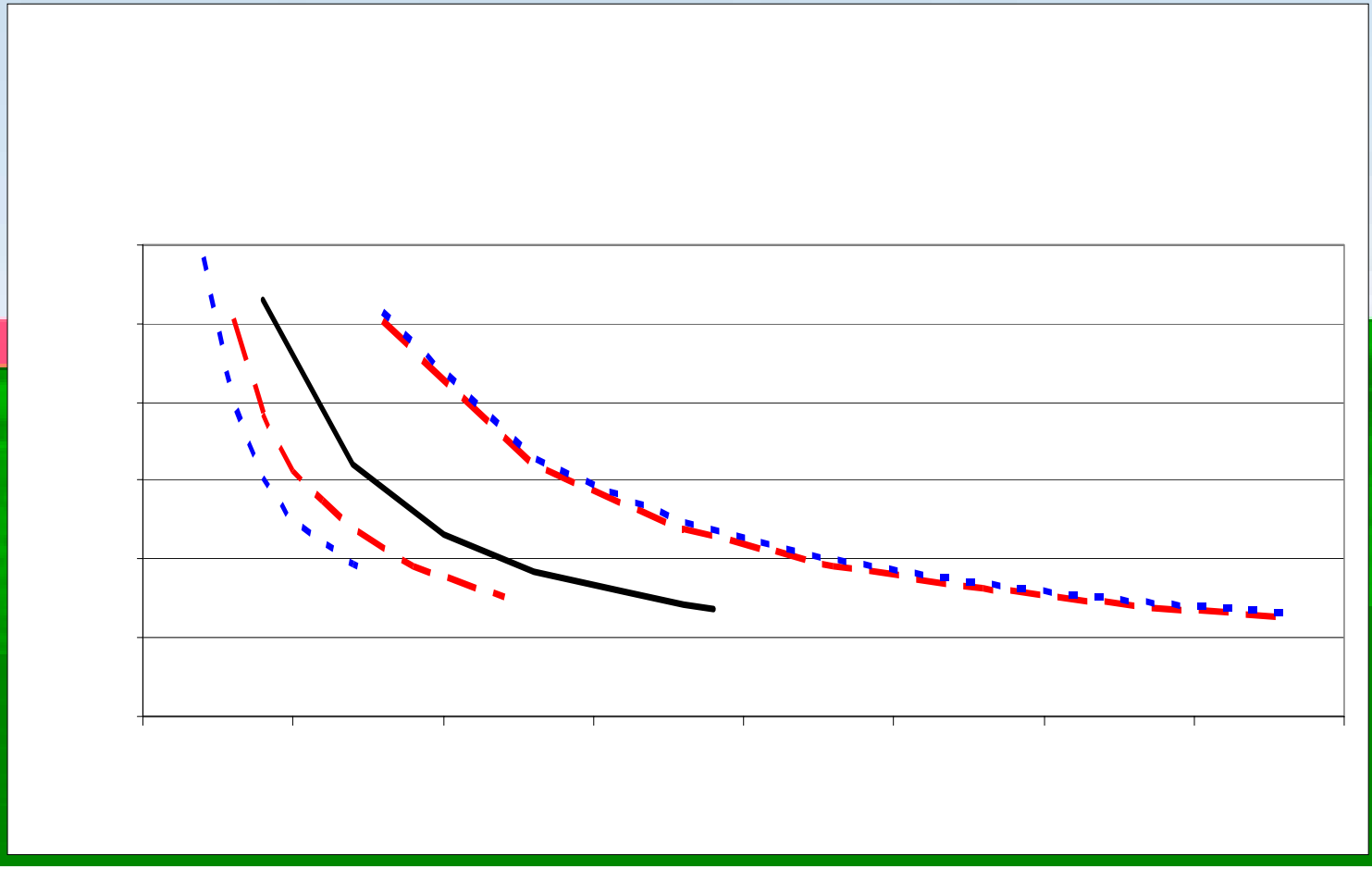
# COS


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

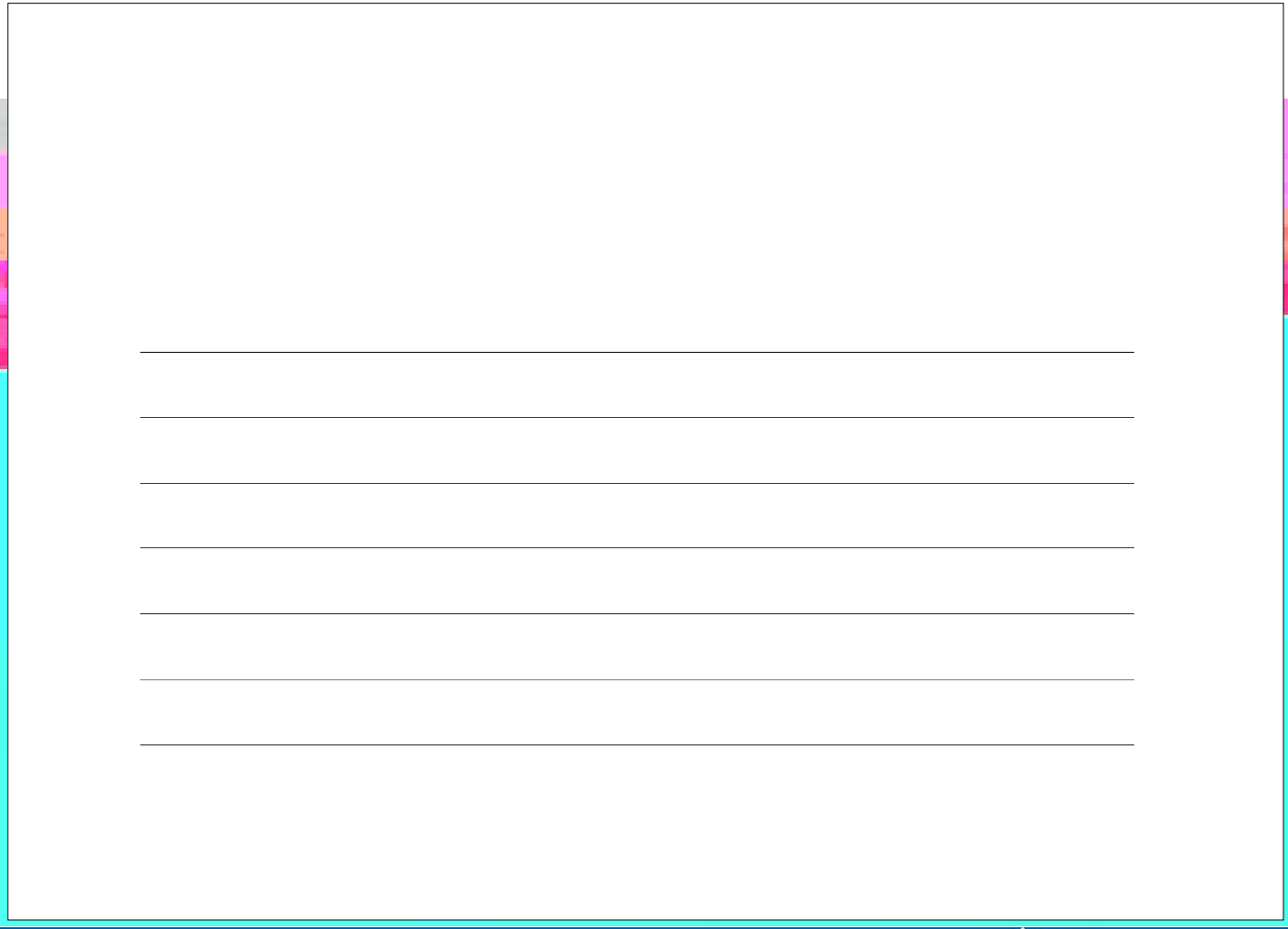
# Wellfield Configuration



# Wellfield Configuration



## Figure 9
## Comparison of Configuration and Generation Capacity Effects



# Input Variables

**Flow**

# Bases

- **Engineering**
  - **Perry**
  - **McCabe and Smith**
  - **Smith and VanNess**
- **Costs**
  - **Means**
  - **Contact**
- **“Open Architecture”**
  - **parametric “spread”**
  - **cut ‘n paste new features**
    - **well losses**
    - **conversion system**
    - **user-defined configurations**

# Conclusions

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

# who makes it happen?

# BACKUPS

- **ALTERNATE AMBIENT TEMPERATURE**
- **POWER VERSUS RESOURCE TEMPERATURE**

# Temperature Effects