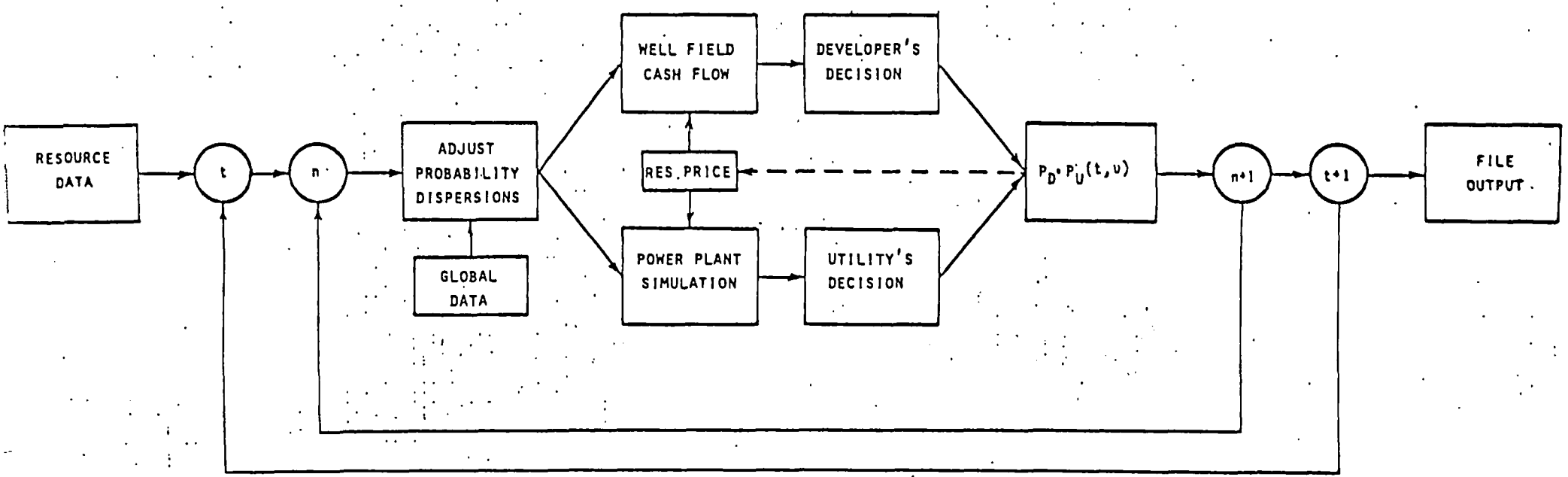
WRIGHT
12 Aug 80

HYDROTHERMAL ELECTRIC POWER MARKET ESTIMATES

- CONFIRMED AND PROJECTED RESOURCES
- MEGAWATTS ON-LINE OVER TWENTY YEARS
- U.S. DOE PROGRAM IMPACTS

GLD1851

HYDROTHERMAL ELECTRIC POWER MARKET ESTIMATOR



INDUSTRY PARTICIPANTS

ELECTRIC UTILITIES

ARIZONA PUBLIC SERVICE
BOUNTIFUL POWER AUTHORITY
BURBANK PUBLIC SERVICE DEPARTMENT
CALIFORNIA WATER RESOURCES CONTROL BOARD
LOS ANGELES DEPARTMENT OF WATER AND POWER
NEVADA POWER COMPANY
NEW MEXICO, PUBLIC SERVICE OF
NORTHERN CALIFORNIA POWER AGENCY
PACIFIC GAS AND ELECTRIC COMPANY
PACIFIC POWER AND LIGHT
PHILADELPHIA ELECTRIC COMPANY
PORTLAND GENERAL ELECTRIC
PROVO CITY UTILITIES
SACRAMENTO MUNICIPAL UTILITY DISTRICT
SAN DIEGO GAS AND ELECTRIC COMPANY
SIERRA PACIFIC POWER COMPANY
SOUTHERN CALIFORNIA EDISON
UTAH POWER AND LIGHT COMPANY

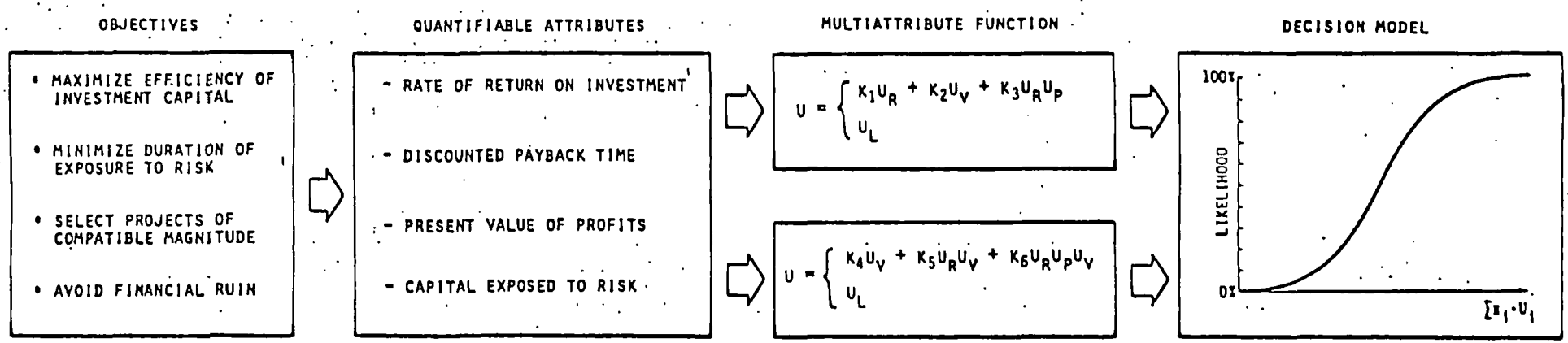
RESOURCE DEVELOPERS

AMAX
AMINOIL USA
AMOCO PRODUCTION COMPANY
CHEVRON RESOURCES COMPANY
GEOTHERMAL KINETICS INC
GETTY OIL COMPANY
GULF OIL COMPANY
INTERCONTINENTAL ENERGY COMPANY
MAGMA POWER COMPANY
MCCULLOCH OIL COMPANY
OBRIEN RESOURCES COMPANY
OCCIDENTAL PETROLEUM COMPANY
PACIFIC ENERGY COMPANY
PHILLIPS PETROLEUM COMPANY
REPUBLIC GEOTHERMAL INC
SHELL OIL COMPANY
TEXAS OIL AND GAS COMPANY
THERMAL POWER COMPANY
THERMOGENICS (HUGHES)
UNION OIL COMPANY OF CALIFORNIA

CONSULTANTS/INSTITUTIONS

ARTHUR ANDERSEN AND COMPANY
BANK OF AMERICA
BANK OF MONTREAL
CASCADIA EXPLORATION COMPANY
EG&G IDAHO, INC
LOEB RHOADES HORNBLOWER
PENNSYLVANIA PUBLIC UTILITY COMMISSION
STANDARD AND POOR'S CORPORATION
STANFORD UNIVERSITY (DR. S. SUNYAL)
UURI/ESL
UTAH DIVISION OF WATER RIGHTS
WESTERN SYSTEM COORDINATING COUNCIL

RESOURCE DEVELOPERS



ELECTRIC UTILITIES

OBJECTIVES

- MINIMIZE BURDEN ON RATE-PAYERS
- GENERATE RELIABLE BASELOAD POWER
- MAINTAIN DESIRABLE MARGIN OF RESERVE
- PROTECT ACCESS TO CAPITAL MARKET

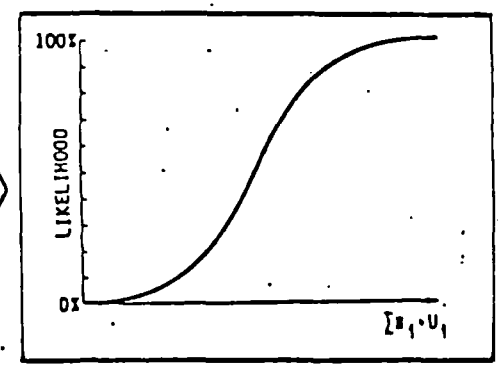
QUANTIFIABLE ATTRIBUTES

- GENERATION + TRANSMISSION COST VERSUS BEST ALTERNATIVE
- LIFETIME PLANT AVAILABILITY
- PROJECT SIZE IN MEGAWATTS
- IMPACT UPON "TIMES INTEREST EARNED RATIO"

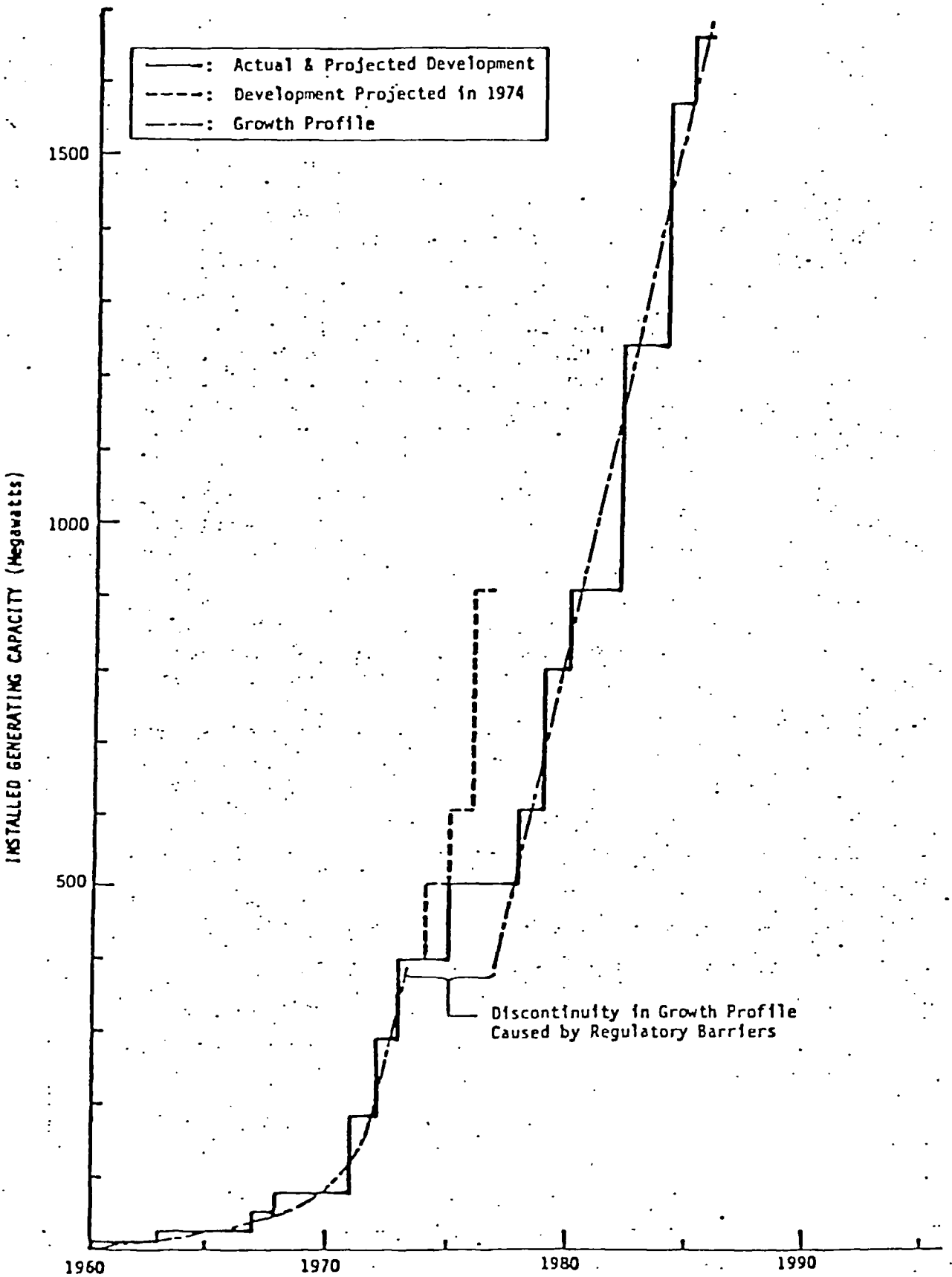
MULTIATTRIBUTE FUNCTION

$$U = K_7U_CU_A + K_8U_CU_M + K_9U_CU_T$$

DECISION MODEL

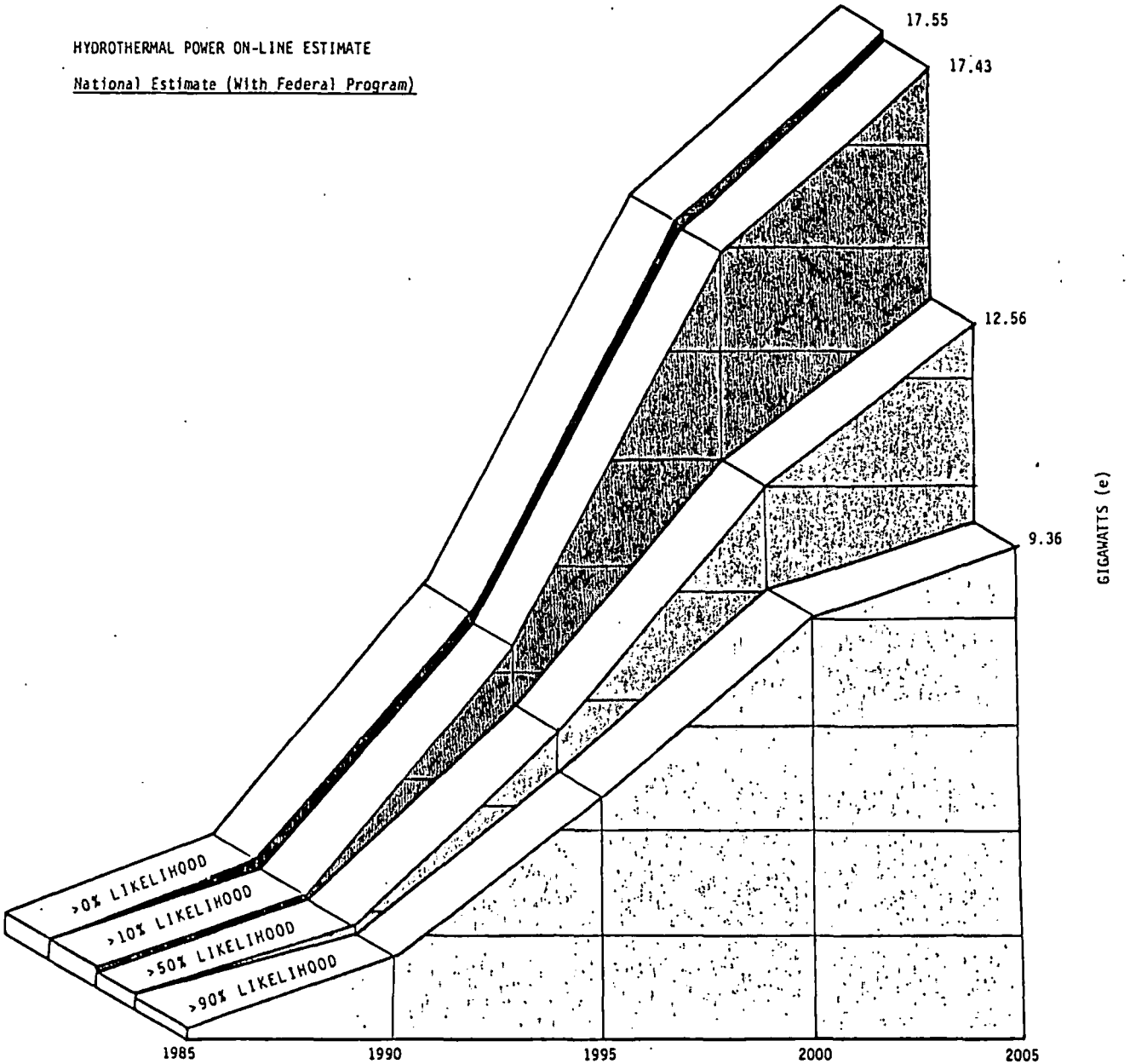


PROFILE OF DEVELOPMENT AT THE GEYSERS



HYDROTHERMAL POWER ON-LINE ESTIMATE

National Estimate (With Federal Program)



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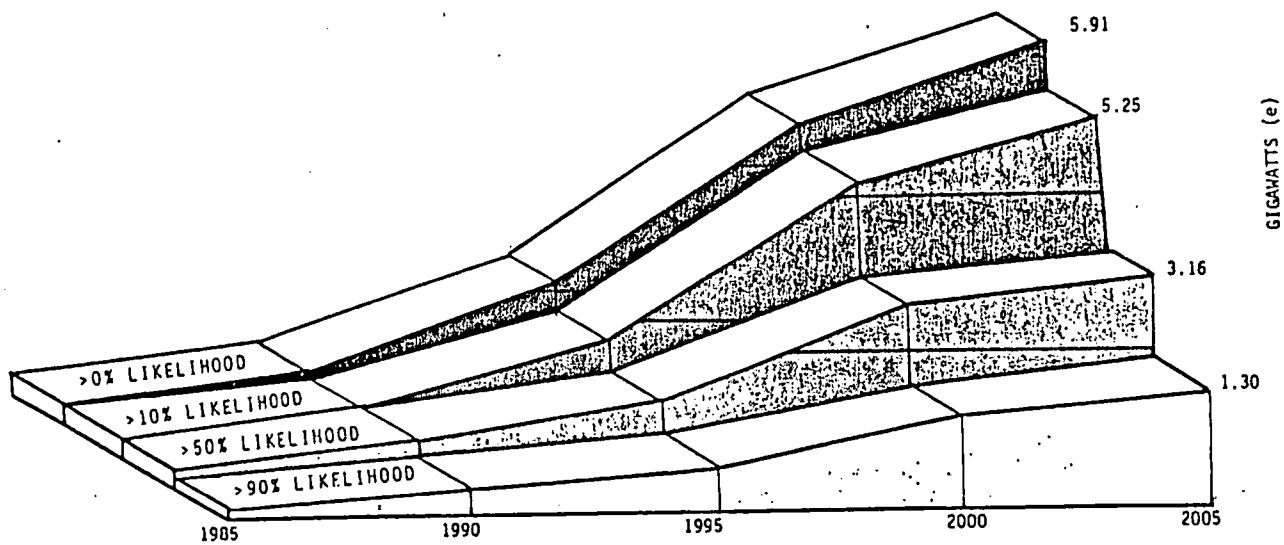
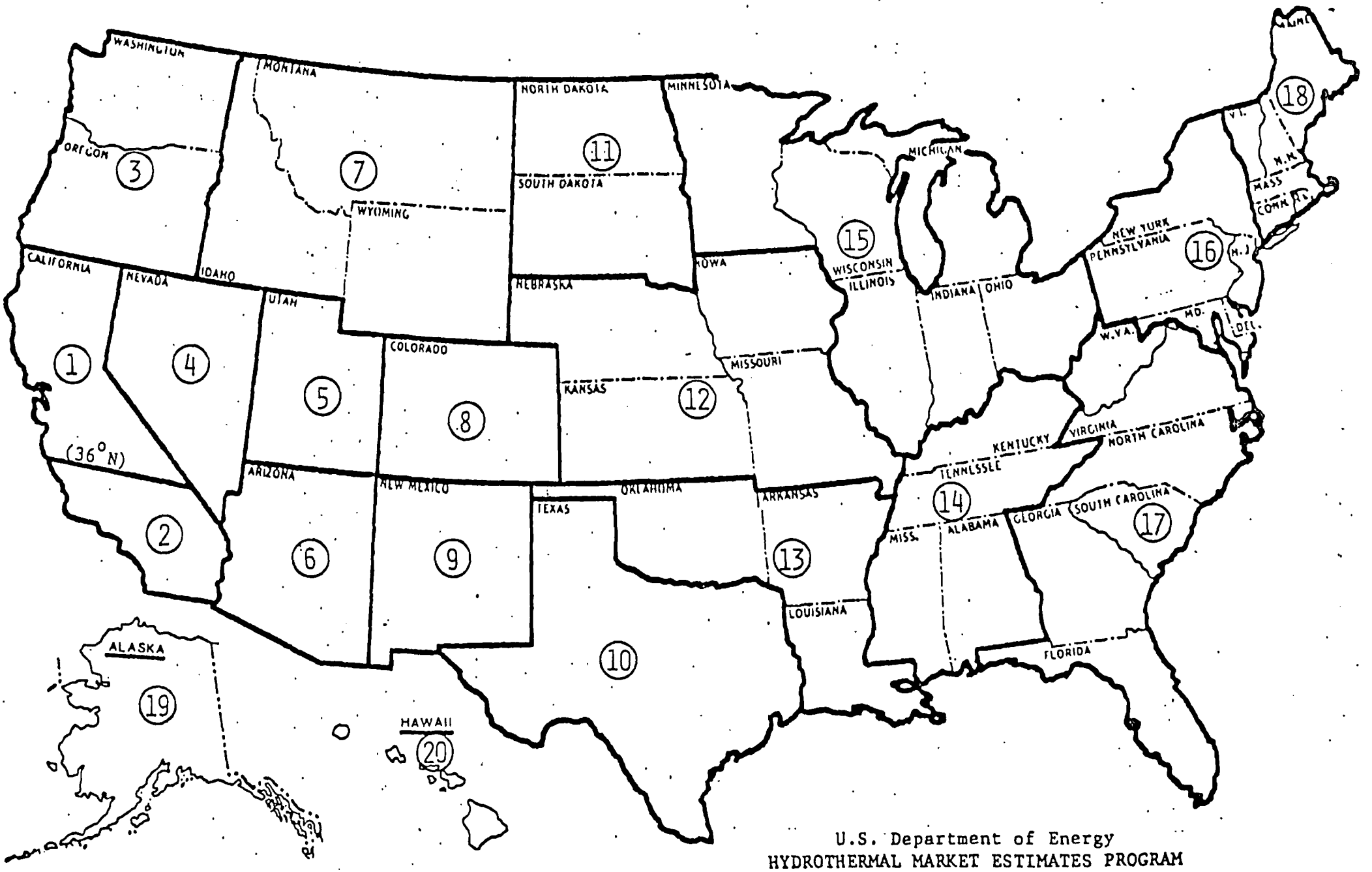
National Estimate (Without Federal Program)

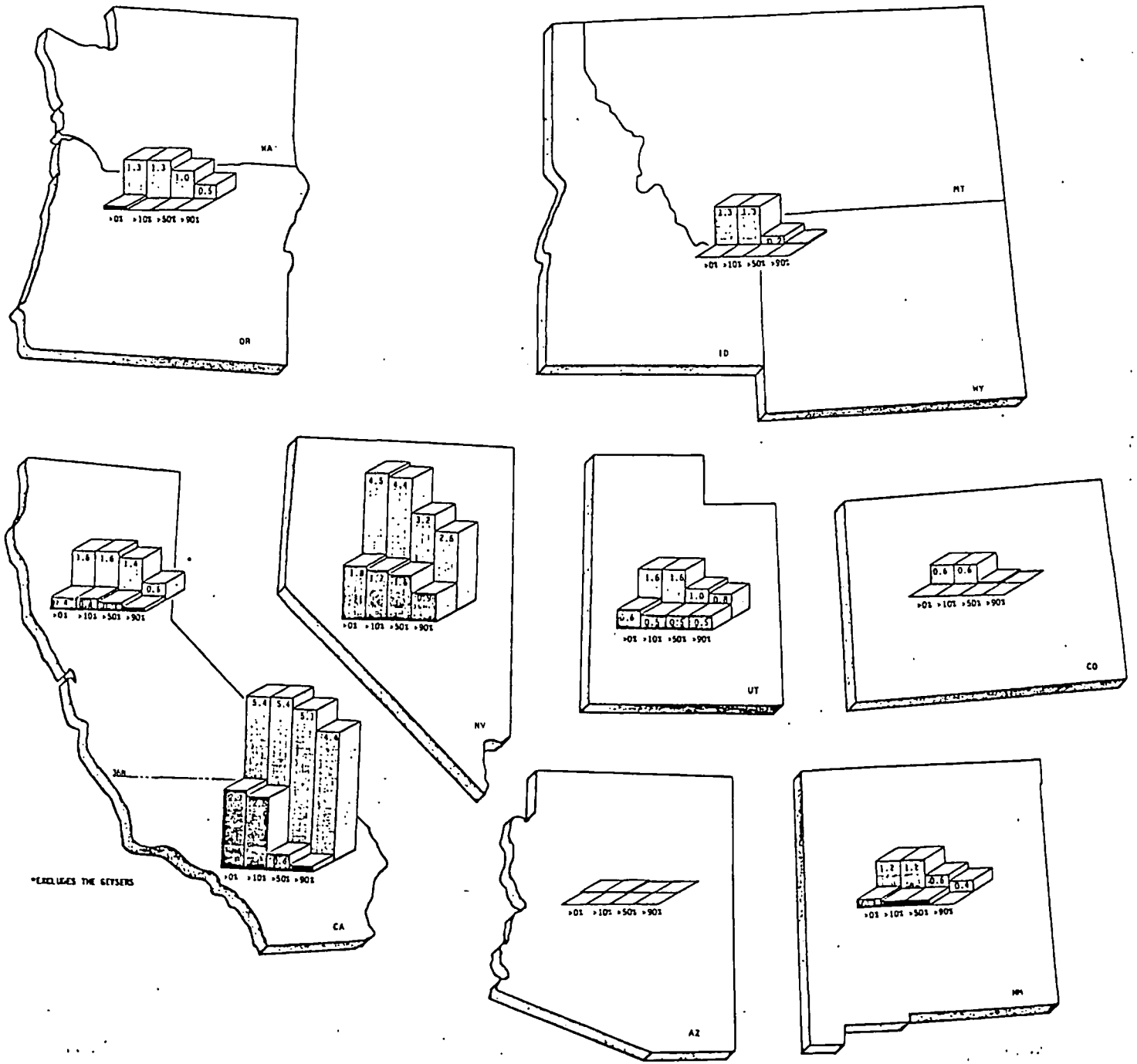




U.S. Department of Energy
HYDROTHERMAL MARKET ESTIMATES PROGRAM

Map of Regional Boundaries

HYDROTHERMAL POWER FORECAST (GIGAWATTS BY 2005)



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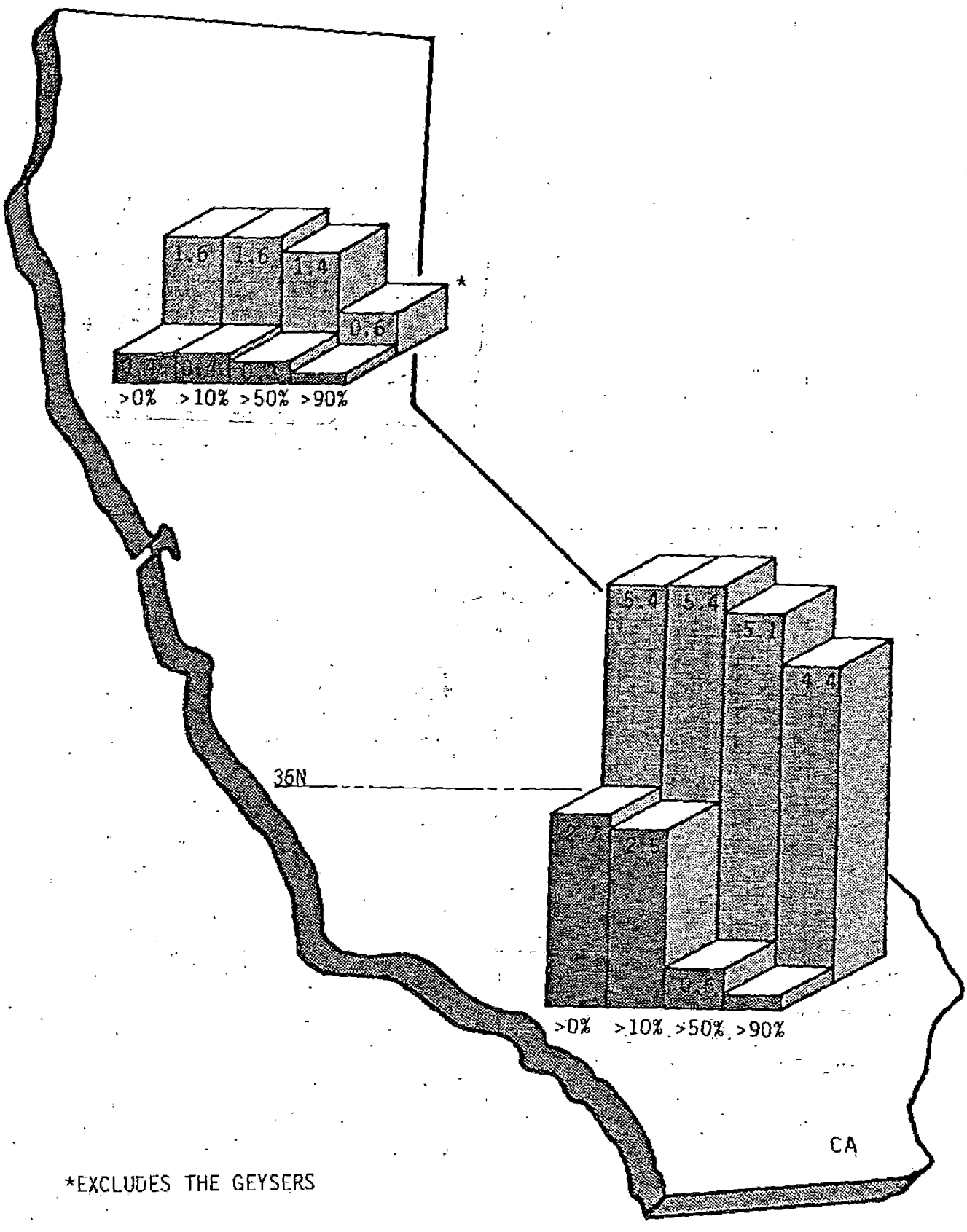
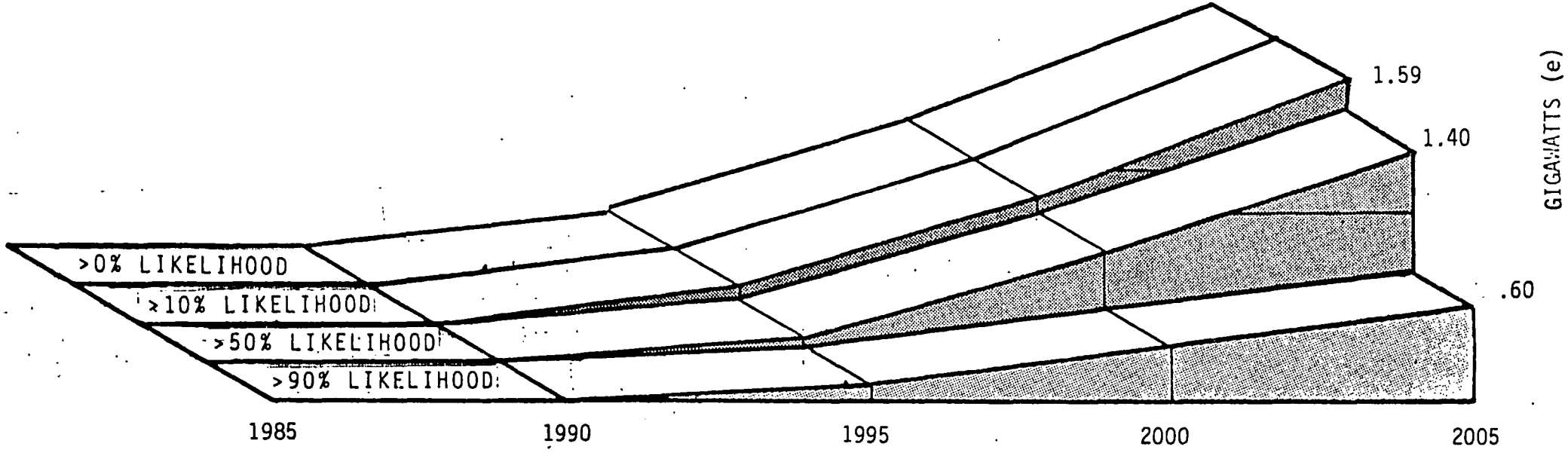


*EXCLUDES THE GEYSERS

HYDROTHERMAL POWER ON-LINE ESTIMATE

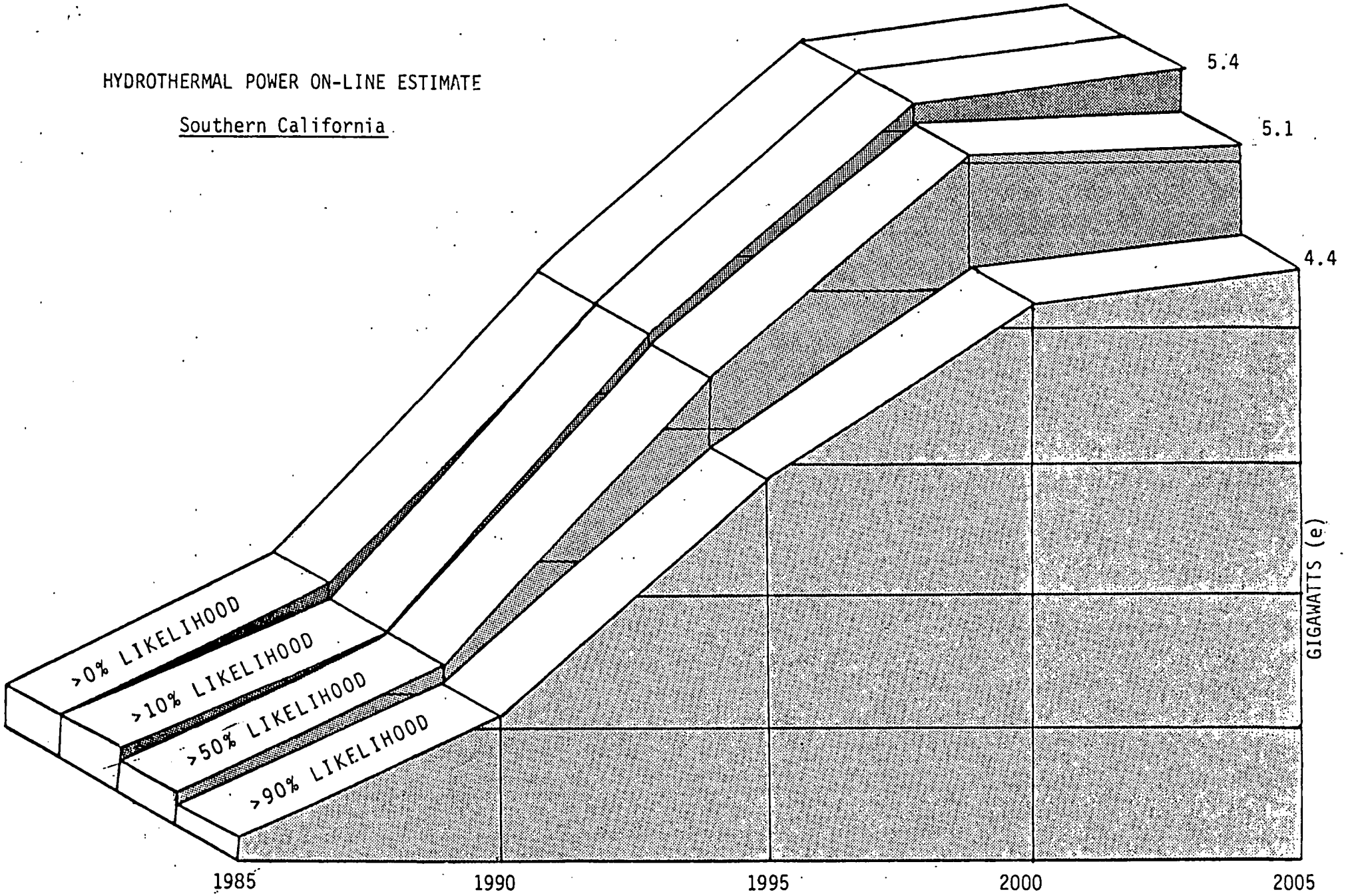
Northern California *



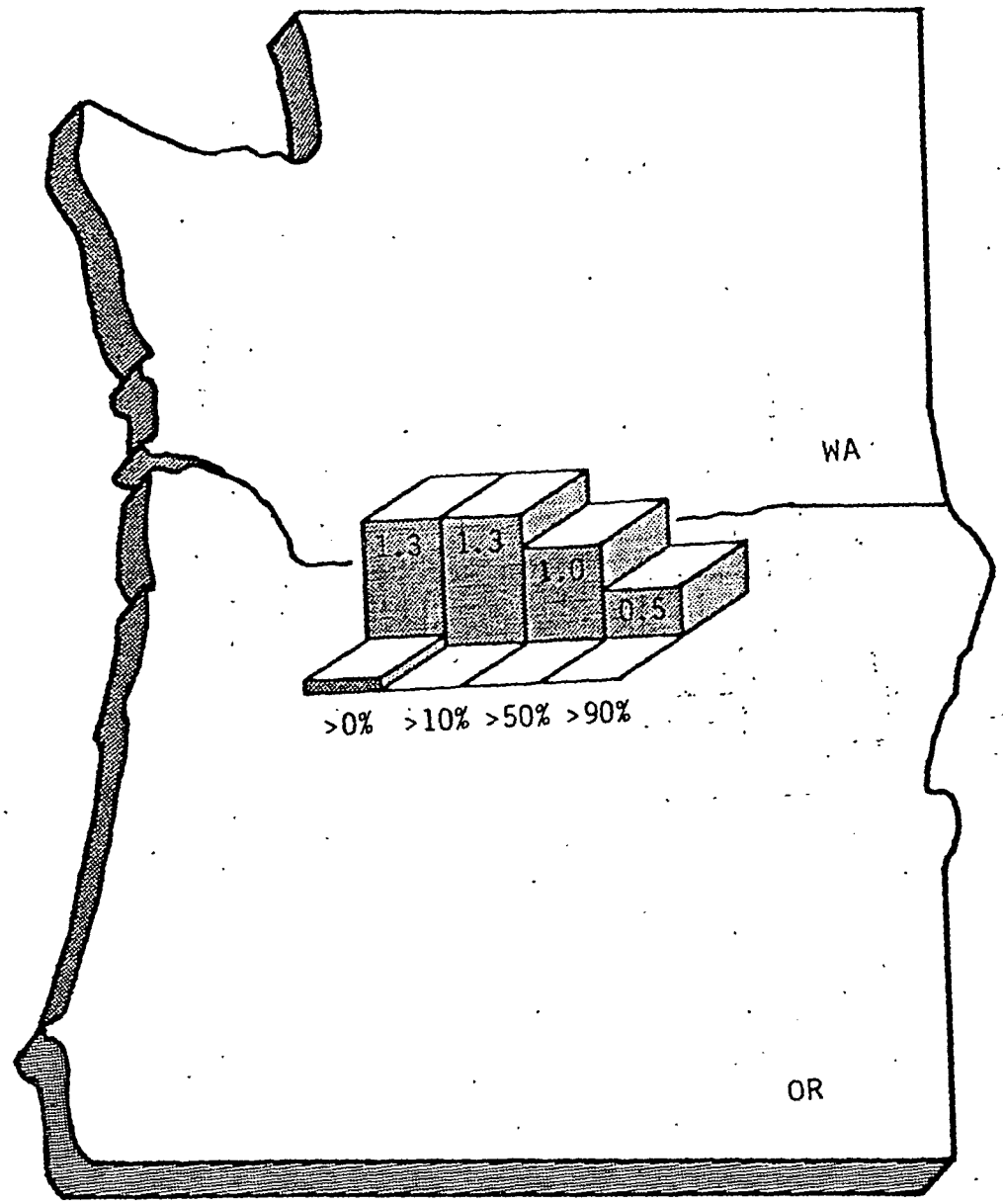
*EXCLUDES GEYSERS: 1985 (1.6GW)

HYDROTHERMAL POWER ON-LINE ESTIMATE

Southern California

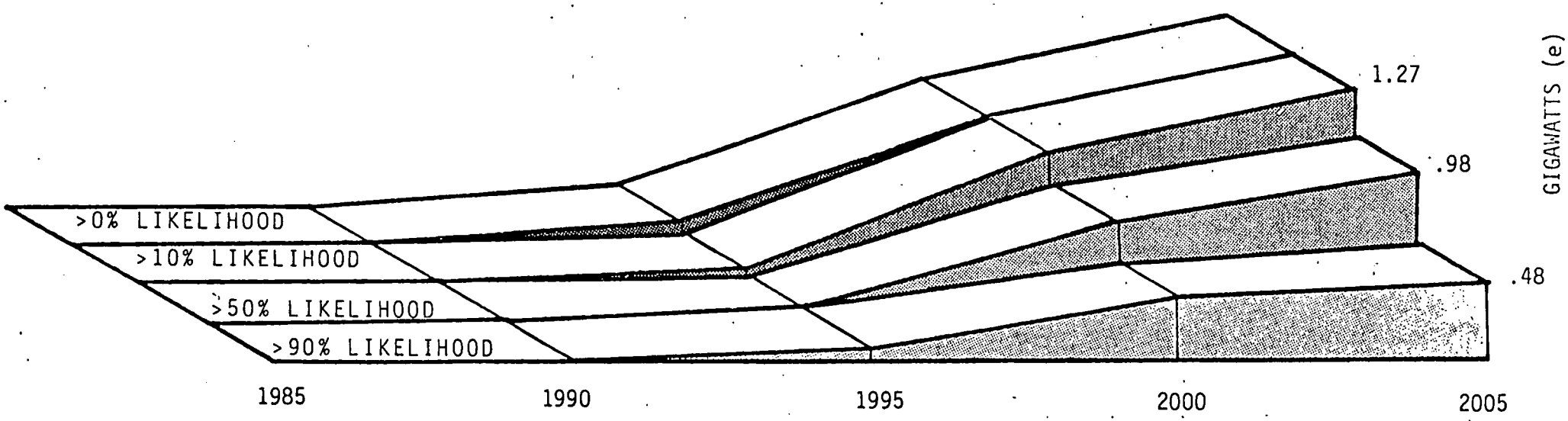


HYDROTHERMAL POWER FORECAST (GIGAWATTS BY 2005)



HYDROTHERMAL POWER ON-LINE ESTIMATE

Washington and Oregon



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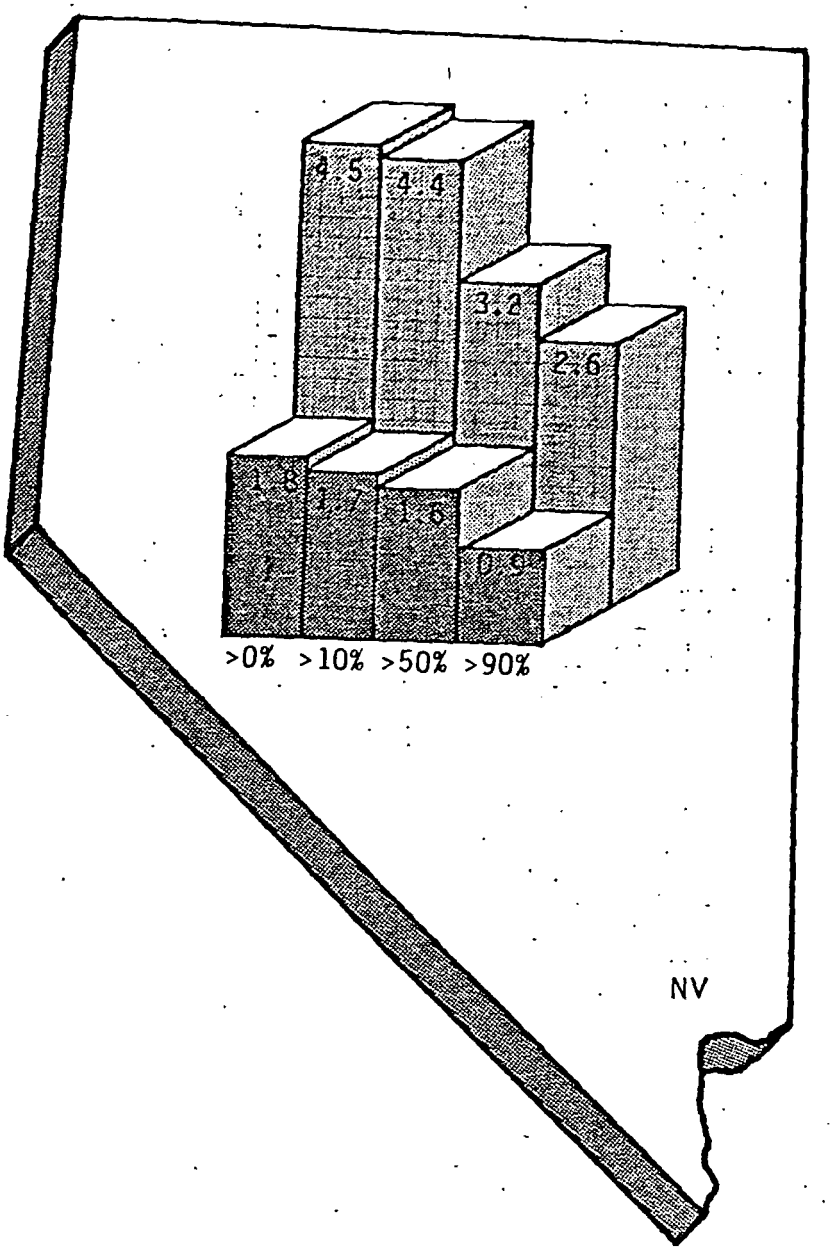
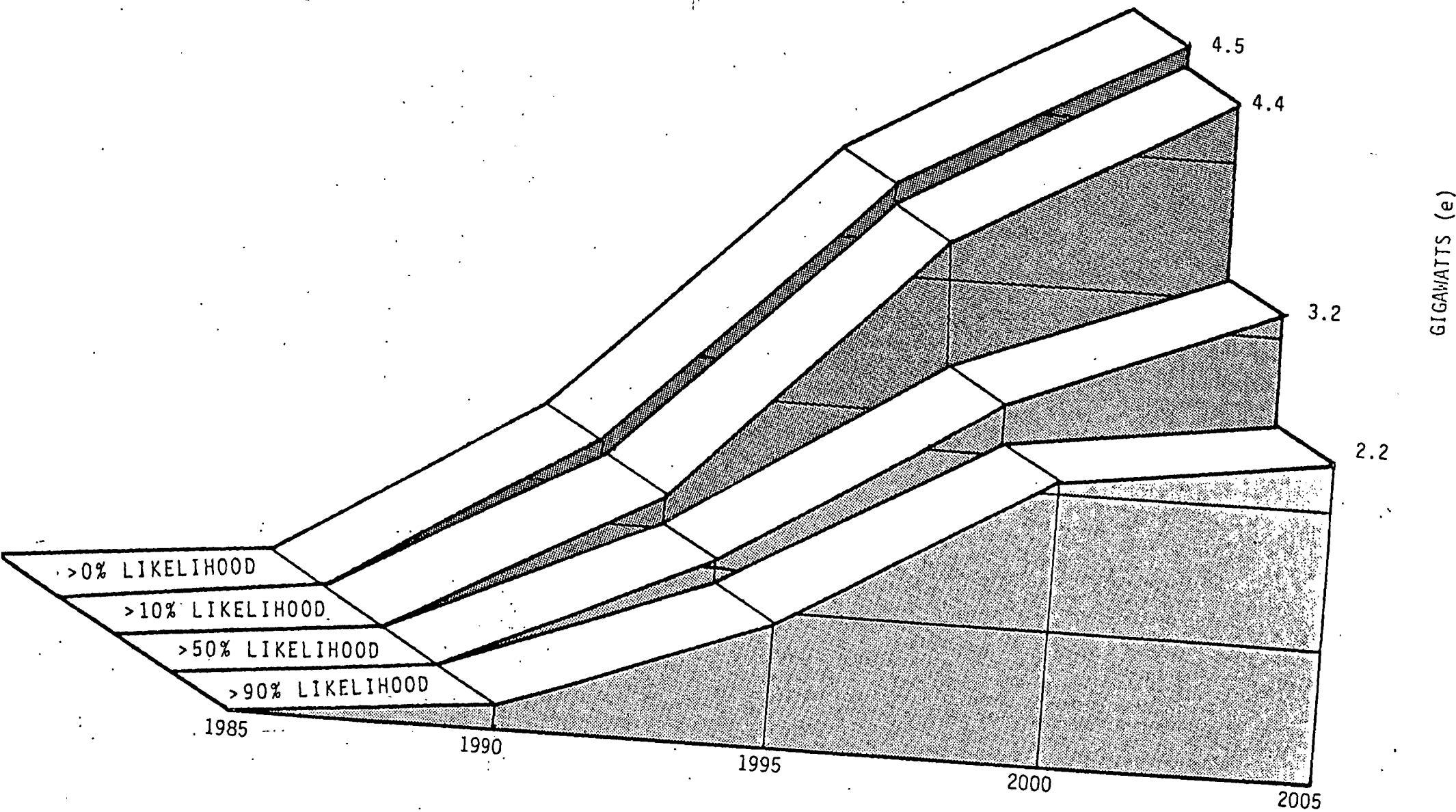


HYDROTHERMAL POWER ON-LINE ESTIMATE

Nevada



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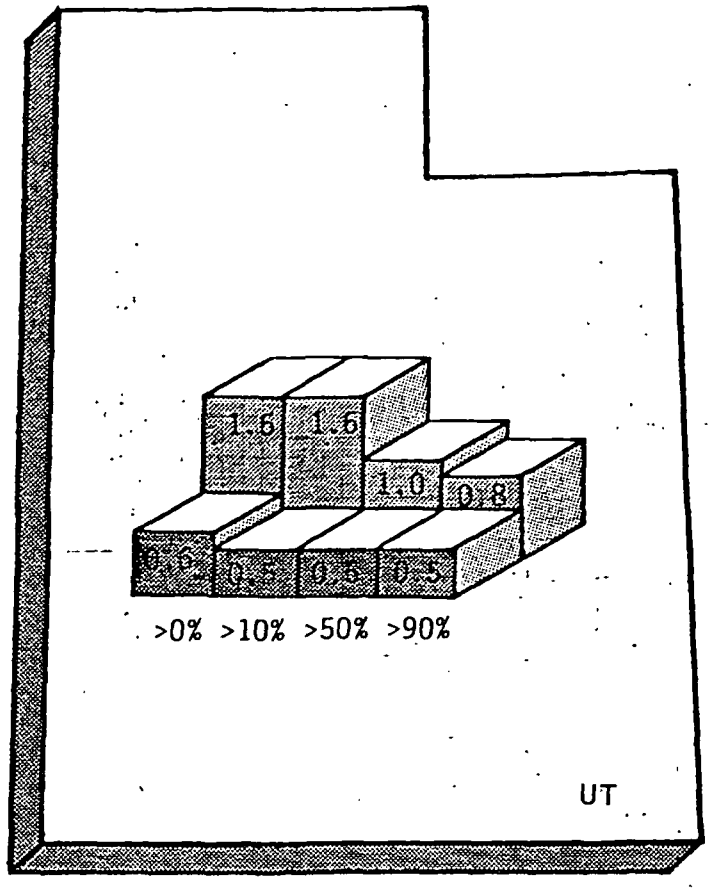
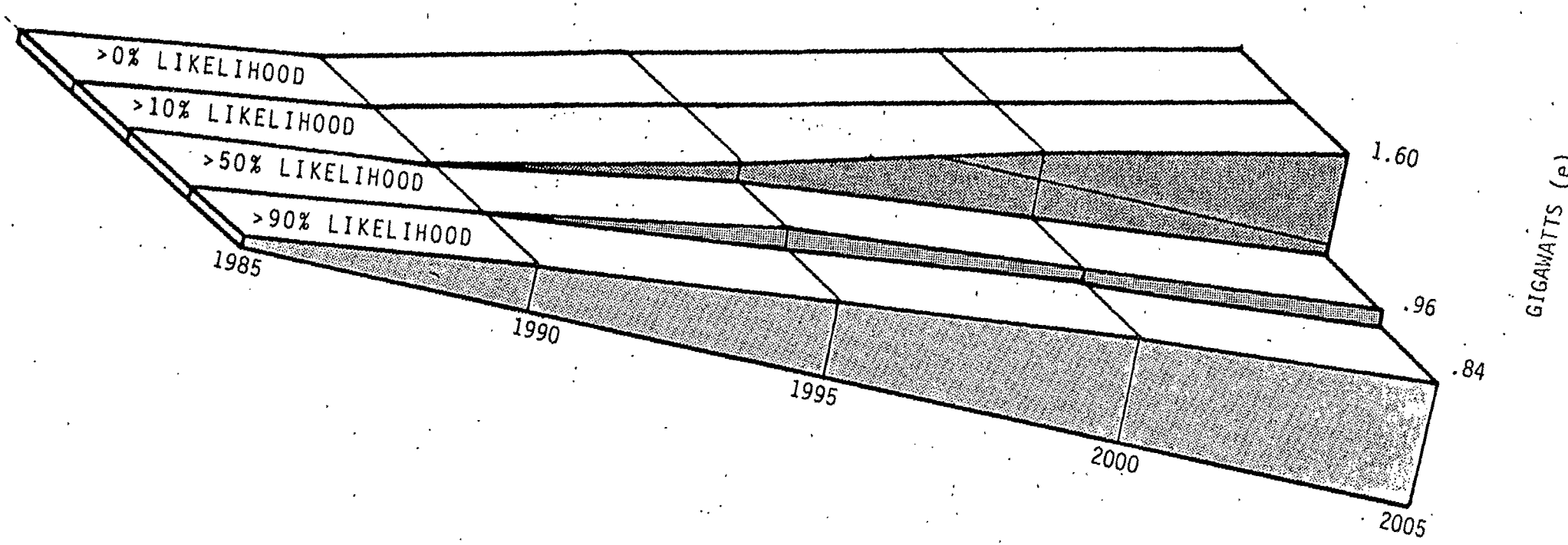


Utah

ESTIMATE



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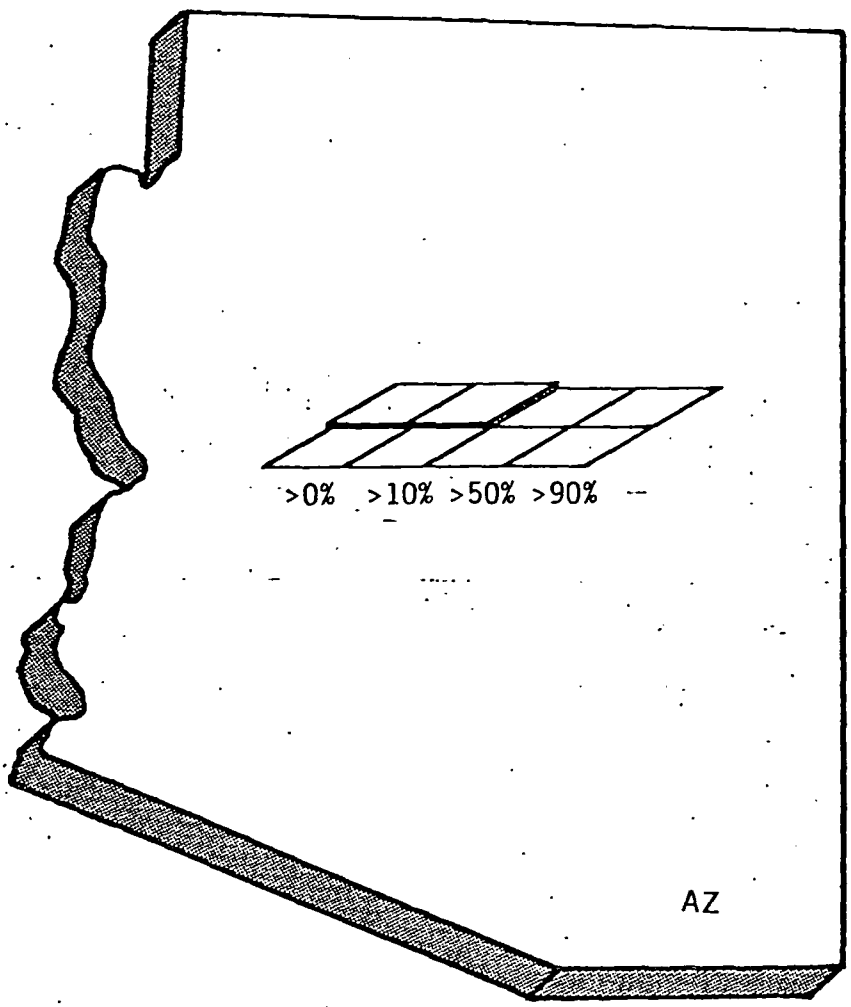
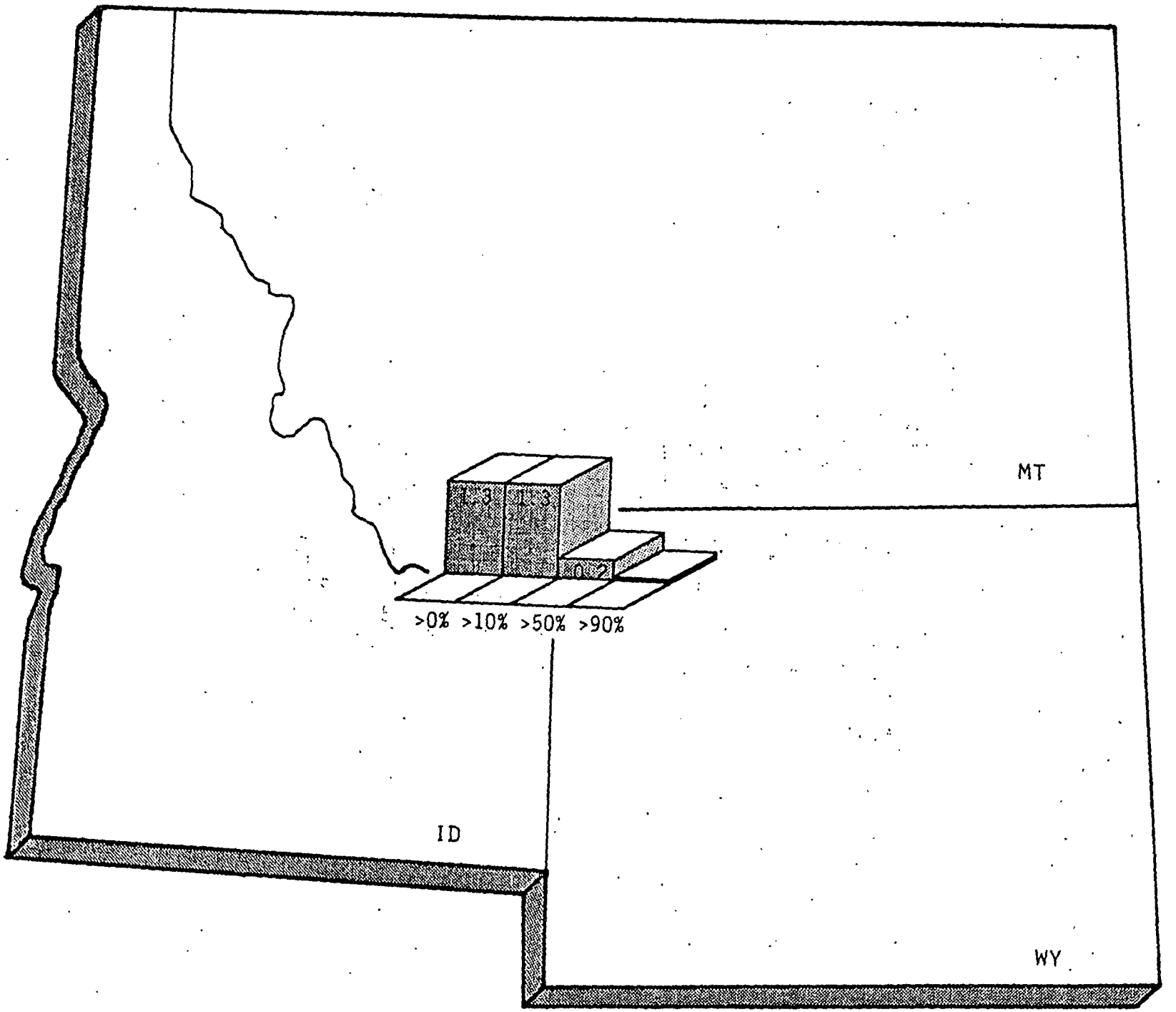


HYDROTHERMAL POWER ON-LINE ESTIMATE

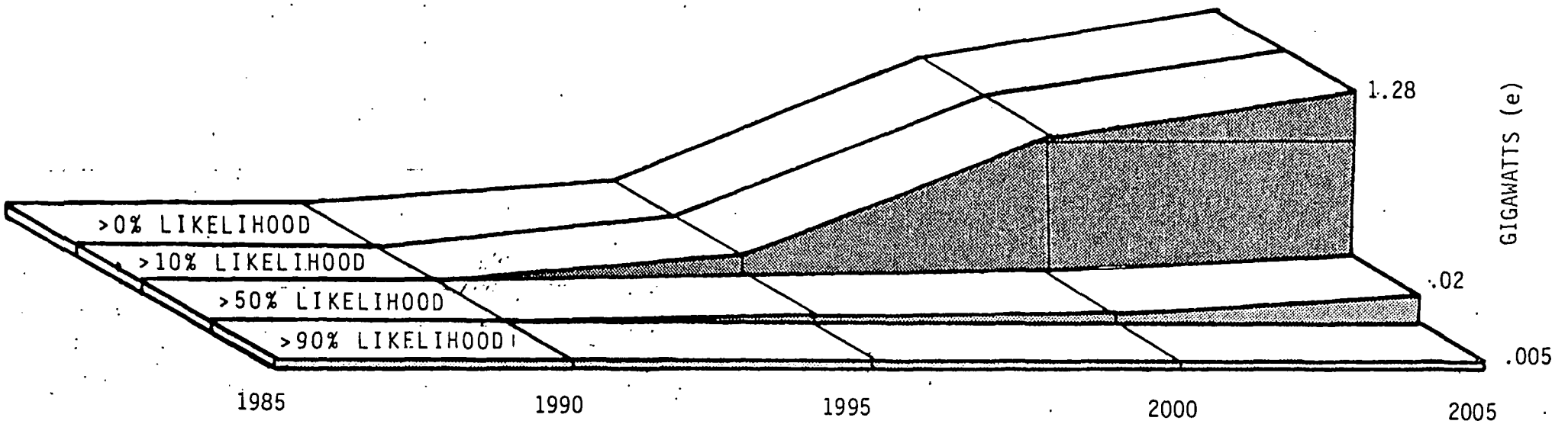
Arizona

(64% LIKELIHOOD OF 20 MW IN 2005)


1.3
1.3
0.2
>0%
>10%
>50%
>90%
MT
ID
WY

HYDROTHERMAL POWER ON-LINE ESTIMATE

Idaho, Montana, and Wyoming



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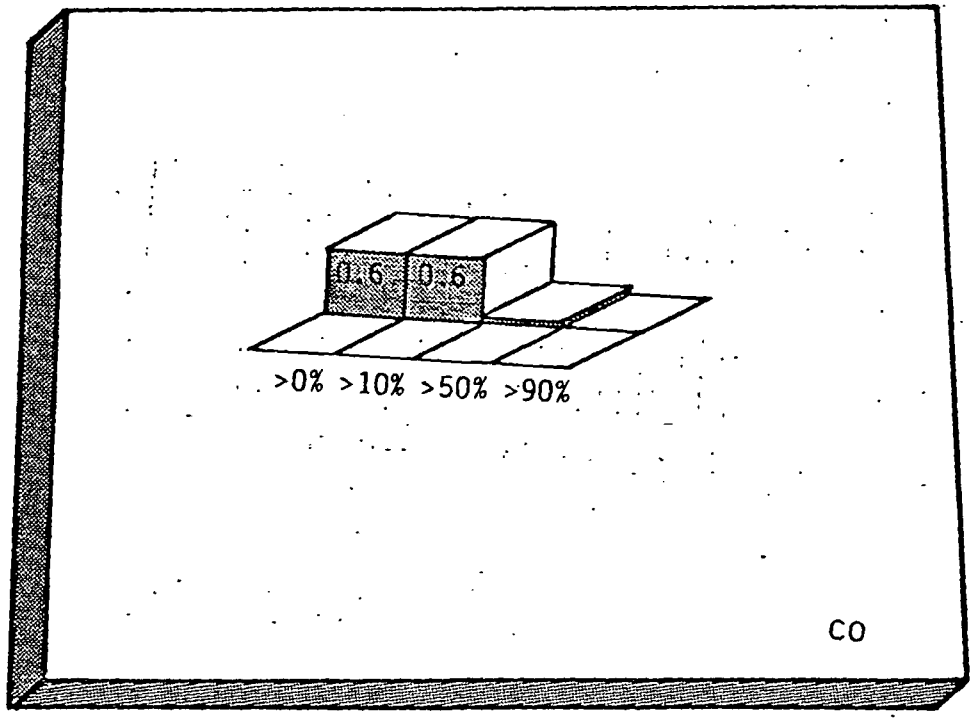
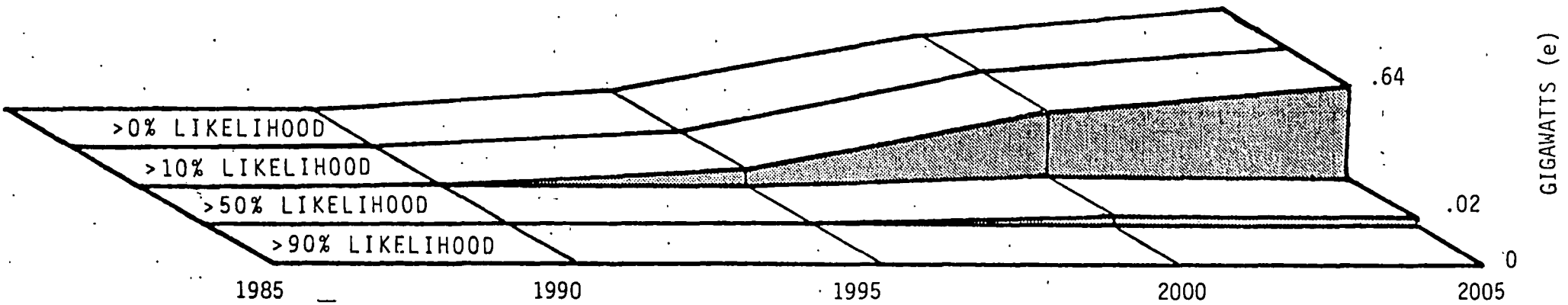


HYDROTHERMAL POWER ON-LINE ESTIMATE

Colorado



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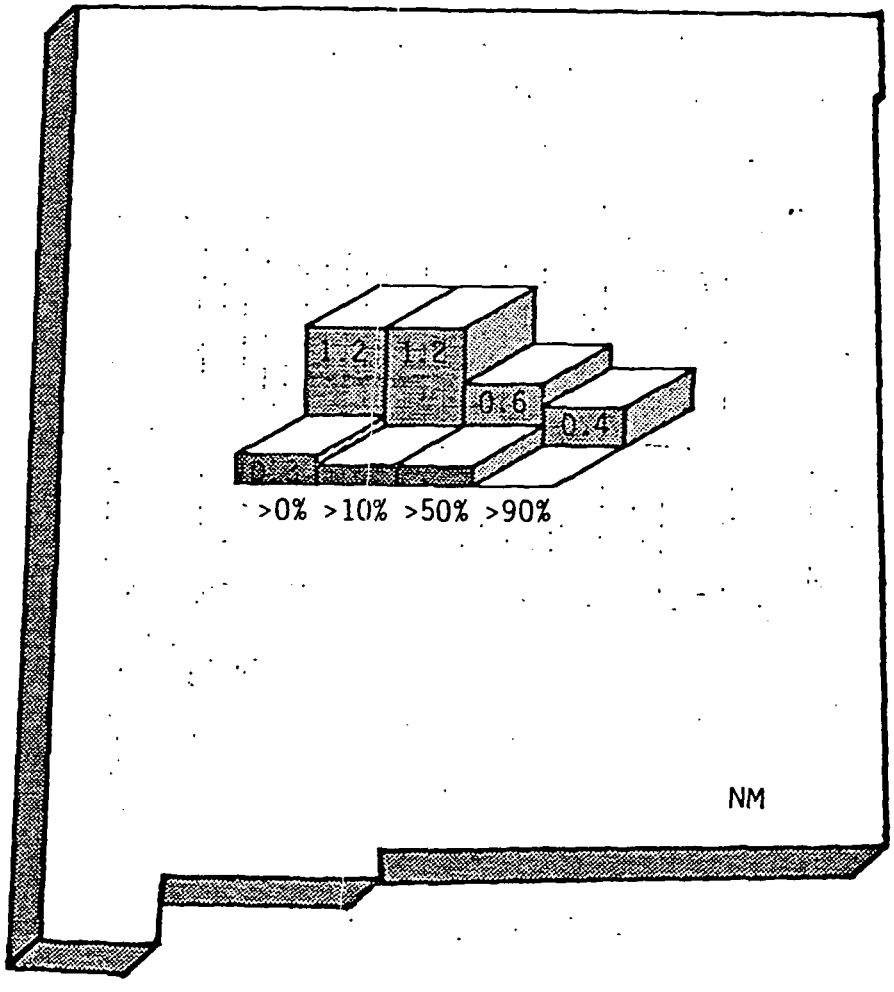
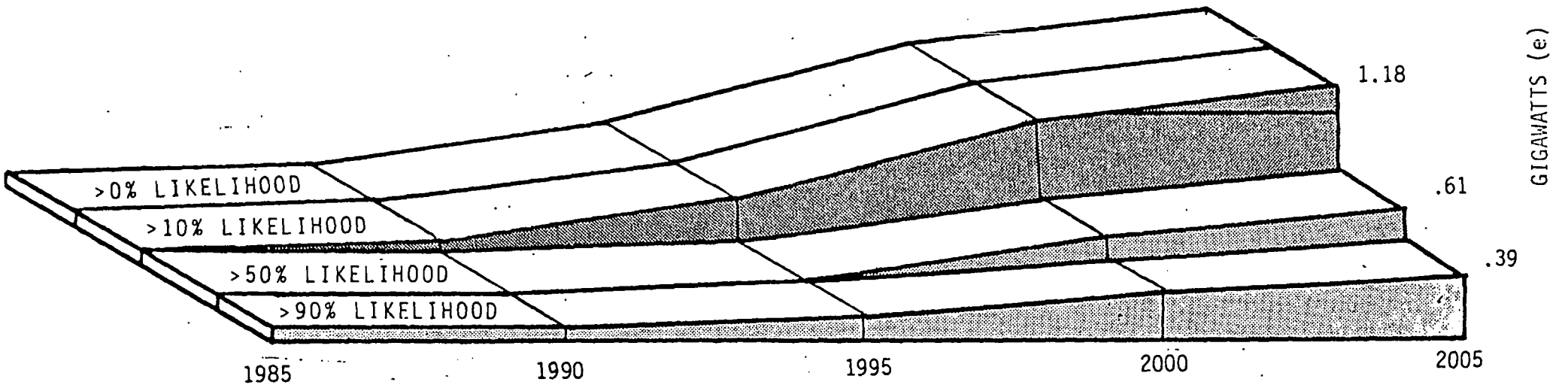
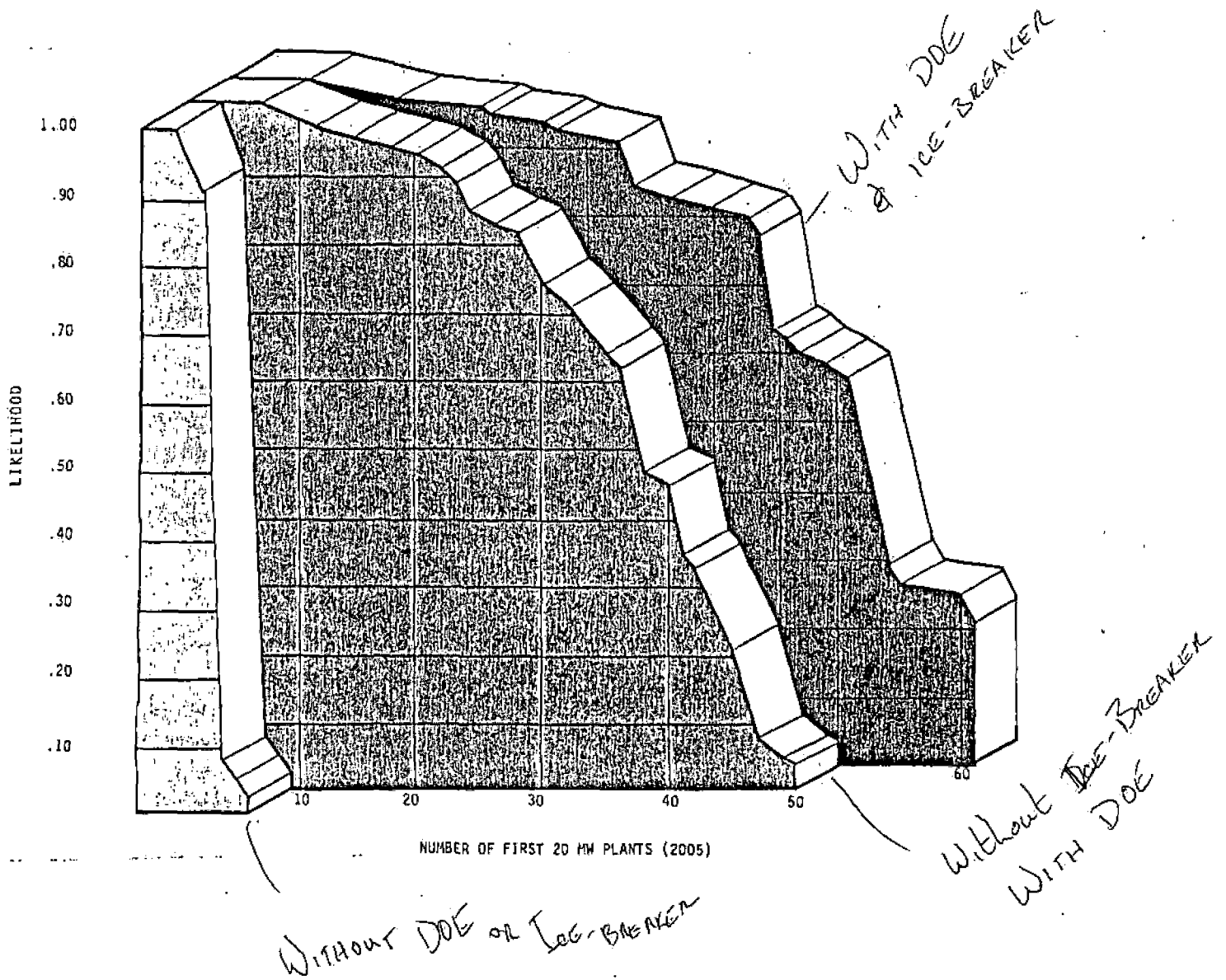


HYDROTHERMAL POWER ON-LINE ESTIMATE

New Mexico




LIKELIHOOD
1.00
.90
.80
.70
.60
.50
.40
.30
.20
.10
10
20
30
40
50
60
NUMBER OF FIRST 20 MW PLANTS (2005)
WITH DOE & ICE-BREAKER
WITHOUT ICE-BREAKER WITH DOE
WITHOUT DOE OR ICE-BREAKER