ELECTRICITY RELIABILITY IN REGULATED AND COMPETITIVE MARKETS
AN INDUSTRIAL PERSPECTIVE

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On
Reliability, Capacity Requirements and the Obligation to Serve in A Competitive Market

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ELECTRICITY IS A MANUFACTURED PRODUCT WITH ALTERNATIVE USES

FUEL

POWER

FEEDSTOCK
FROM RAW MATERIAL TO FINISHED PRODUCT.

REDUCTION PROCESS

CRYOLITE BATH

ALUMINA FROM AUSTRALIA

REDUCTION CELLS (POTS)

CHEMICAL REACTION SEPARATES OXYGEN FROM ALUMINUM

ALUMINUM IS SIPHONED

FISS

SOWS

HOT METAL

FABRICATION PROCESS

HOT METAL

INGOT CASTING

MELTING FURNACE

SCRAP

PLATE

TO CUSTOMERS

132" MILL

112" MILL

80" CONTINUOUS MILL

FINISHING & INSPECTION

COLD MILL

TO CUSTOMERS

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PURCHASERS OF ELECTRICITY USE A VARIETY OF TRADITIONAL MARKET CONCEPTS IN THEIR PURCHASE DECISIONS

INTENDED USE

PRODUCT CHARACTERISTICS (AC/DC, VOLTAGE, AMPERAGE, etc.)

PRODUCT QUALITY

IN PLANT PROCESSING OPPORTUNITIES AND/OR REQUIREMENTS

PRICE

DELIVERABILITY

ON SIGHT STOCKPILING

ALTERNATIVE PRODUCTS

ALTERNATIVE SUPPLIERS
PRODUCT AND SUPPLIER RELIABILITY FACTORS FOR ELECTRICITY INCLUDE

SPECIFIED PRODUCT CHARACTERISTICS

"WITHIN SPEC" PRODUCT QUALITY

CONTRACTED VOLUME DELIVERY

ON TIME DELIVERY

PRICE PERFORMANCE
POTENTIAL RELIABILITY PROBLEM AREAS

GENERATION

FUEL OR POWER SUPPLY

EQUIPMENT

TRANSMISSION SYSTEM

DISTRIBUTION SYSTEM

USER PROBLEMS

DEMAND CHARACTERISTICS

EQUIPMENT MALFUNCTIONS
KAISER EXPERIENCES WITH MAJOR RELIABILITY PROBLEMS

GENERATION

DROUGHT IN AFRICA (HYDROPOWER)
LOW SNOW FALL IN US - NW (HYDROPOWER)
FISH FLUSH AND SPILLS IN US - NW
VOLCANO ERUPTION IN US - NW
FUEL SUPPLY/EQUIPMENT INTERRUPTIONS IN US - MW AND LA
GAS PRICE SPIKES IN US - LA

TRANSMISSION / DISTRIBUTION

EARTHQUAKE IN US - CA
HURRICANE/FLOODING IN US - LA AND CARIBBEAN
TRANSFORMER DAMAGE IN US - MW

USER PROBLEMS

COLD WEATHER DEMAND IN US - MW AND SE
RESIDENTIAL RELIABILITY ALTERNATIVES

POWER INTERRUPTION - BATTERY POWERED LIGHTS
BATTERY BACK-UPS FOR CLOCKS
COMPUTER SOFTWARE AUTOMATIC BACK-UP FEATURES
SURGE PROTECTORS
UNINTERRUPTIBLE POWER SOURCE (UPS) FOR COMPUTER
ALSO UTILIZED:
   FIREPLACE
   CANDLES
   HURRICANE LAMPS
   BATTERY POWERED RADIOS AND TV'S
INDUSTRIAL USER MANAGEMENT OPTIONS
RELIABILITY IN GENERATION

REGULATION OF UTILITY SUPPLIER WITH MONOPOLY POWER

SELF GENERATION

SELECTION OF GENERATOR(S) IN COMPETITIVE MARKET

CONTRACTUAL PROVISIONS WITH COMPETITIVE GENERATOR(S)

MANAGEMENT OF INDUSTRIAL OPERATIONS FOR OPTIMIZATION OF RELIABILITY/COST TRADE-OFFS

PRODUCTION SCHEDULE ALTERATIONS

ALTERNATIVE POWER USE

PRODUCTION EQUIPMENT CHANGES

PROCESS CHANGES
KAISER GENERATOR SELECTIONS

TRADITIONAL UTILITY

INVESTOR OWNED UTILITIES

FEDERAL POWER MARKETING ADMINISTRATIONS - BPA

PUBLIC POWER ENTITIES

SELF GENERATION

COGENERATION WITH GAS FUELED STEAM BOILER

GAS FUELED STEAM TURBINES

NORDBERG RADIAL GAS ENGINES

OTHER

COST BASED - GENERATING FACILITY SPECIFIC CONTRACT WITH IOU

COMPANY CONSTRUCTED HYDRO FACILITY RUN BY GOVERNMENT POWER AUTHORITY - VRA

COMPETITION BASED FOREIGN ELECTRICITY SYSTEMS

OFF-SYSTEM PURCHASES WITH BPA WHEELING PENDING
KEY QUESTIONS IN RELIABILITY

WHAT RISKS DOES COMPETITION IN GENERATION IMPOSE?

WHAT RISKS DOES RETAIL WHEELING IMPOSE?

HOW IMPORTANT ARE THESE RISKS RELATIVE TO EXISTING RELIABILITY FACTORS?

WHAT ARE THE IMPACTS OF NEW TECHNOLOGICAL DEVELOPMENTS?

WHAT ARE THE ADVANTAGES OF ALLOWING MARKET FACTORS TO OPERATE IN THE INDUSTRIAL SECTORS ON RELIABILITY?

HOW DO THE RISKS OF COMPETITION IN GENERATION AND RETAIL WHEELING RANK RELATIVE TO THE RELIABILITY RISKS OF NEW MARKETS FOR ELECTRICITY USE?

ELECTRICITY CONSUMING PRODUCTS IN THE HOME

ELECTRIC VEHICLES