



THE ANALYTIC TRANSFORMATION OF THE ENERGY VALUE CHAIN

The Energy industry is amidst a rapid digital transformation, using increased data and advanced technologies to set goals on decarbonization, decentralization, and digitalization, but the most effective opportunities are not always clear.

In the accompanying graphic, Elder Research showcases machine learning and AI use cases along the energy value chain that can be impactful to an organization's bottom line.



GENERATION

• ASSET PREDICTIVE MAINTENANCE

A 2018 McKinsey study estimates that only 5% of maintenance activities in the power industry are influenced by analytics.¹

Elder Research Use Case:
**HYDROPOWER CLIENT
RECOVERED \$22M IN ONE
POWER GENERATOR ALONE**

• WIND & SOLAR ENERGY GENERATION FORECASTING

A study by the California Energy Commission showed that a 25% improvement in wind power forecasting could result in annual cost savings of \$63 million.²

TRANSMISSION

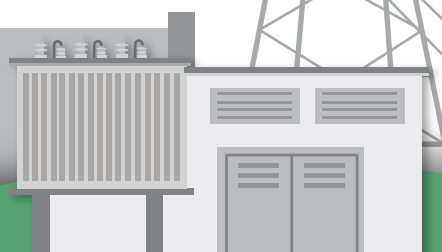
• TRANSFORMER HEALTH MANAGEMENT

A major U.S. power provider avoided \$31.5M in repair costs over 3 years through remote monitoring of transformers.³

• TRANSMISSION LINE OUTAGE DETECTION & PREVENTION

Outages have an estimated \$150B annual economic cost in the U.S.⁴

Elder Research Use Case:
**PREDICTIVE MAINTENANCE
MODEL REDUCED DELAYS IN
ENERGY PRODUCTION BY 20%**





DISTRIBUTION

- **THEFT & FRAUD DETECTION**
Utility companies lose \$96B/year in non-technical losses. ⁵
- **VARIABLE ENERGY SUPPLY & DEMAND**
- **RISK-ADJUSTED PRICING STRATEGY**

Elder Research Use Case:
**SAVED CLIENT +\$11M IN RECOVERIES
& RESTITUTIONS WITHIN 1 YEAR
THROUGH OUR FRAUD MODEL**

CONSUMER SERVICES

- **CUSTOMER CHURN**
Average customer churn for the retail energy market is 35%. ⁶

Elder Research Use Case:
**CLIENT ACHIEVED 500% ROI WITHIN 2
YEARS THROUGH OUR CHURN MODEL**

- **CONSUMER LOAD FLEXIBILITY**
- **DATA-DRIVEN CUSTOMER SEGMENTATION
FOR SALES & MARKETING**



THREE KEYS TO SUCCESS

1
EACH UTILITY NEEDS A
TAILORED SOLUTION

2
ALIGN ANALYTIC &
INDUSTRY EXPERTISE

3
COMPREHENSIVE
IDEATION TO
IMPLEMENTATION
APPROACH

ABOUT ELDER RESEARCH

FOUNDED IN
1995

75%
OF STAFF HOLD GRADUATE DEGREES
IN TECHNICAL DISCIPLINES

AI & ML PROJECTS IN
THE LAST 3 YEARS TOTAL

250

100
DATA SCIENTISTS/ENGINEERS

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1. <https://mck.co/2MzK1JA> • 2. <https://bit.ly/3otdx28> • 3. <https://bit.ly/3prsx1W> • 4. <https://bit.ly/3r9V5h9> • 5. <https://bit.ly/3t2GK7W> • 6. <https://bit.ly/2YjKy6r>