CASE STUDY

Energy Mapping & Optimisation Tool

Energy, Mining and Resources.

Our client required a tool to model their future energy supply/demand balance and cost of electricity for a proposed network that would deliver demand points with in-house and third-party generation.

Client

Our client is an integrated resources company recognised for their culture, innovation and industry-leading development of world class infrastructure and mining assets.

Purpose

Our client required a tool to model their future energy supply/demand balance and cost of electricity for a proposed network that would deliver demand points with in-house and third-party generation. The energy generation sources include gas, diesel and renewable capacity solutions.

The key requirements of the model included:

- An optimisation module using a looping calculation logic to rank the supply points by cost to service the network demand, including any contractual and operating constraints.

- The ability to test different scenarios such as network connection dates, feedstock costs, demand profiles and supply points to ensure that mining operations can be reliably supplied at lowest cost with confidence.

- A network pricing tool to model pricing and revenue for excess network supply available to third party users.

- Multiple output dashboards including supply/demand allocation and cost charts for a 30-year forecast period, physical energy mapping from supply to demand points, and a series of electricity supply cost curves.

Approach

Forecast worked closely with the client to understand the nuances of their electricity generation, procurement, and transmission process and was able to utilise supply optimisation techniques from previous projects. Building a free-flowing and transparent logic to model a complex optimisation problem required an intelligent solution and this was the biggest challenge of the project. This was achieved by extensive collaboration between the Forecast team and client team members to ensure the approach was thorough, accurate and robust.

Outcome

Forecast was able to build a comprehensive yet transparent tool along with a series of insightful outputs to map the cost of electricity generation, procurement and transmission. The model also allowed the company to critically analyse the viability of potential future renewable energy solutions while ensuring the reliable operation of its mining and infrastructure assets.

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