

# Thermal Performance Analysis Helps Utility Gain an Estimated \$3M in Additional Revenue

## Overview

Nevada Energy's Reid Gardner Unit 4, a coal-fueled power station, was losing nearly \$500,000 per peak month despite generating with valves wide open.

GSE TrueNorth aided in identifying and isolating the problems by evaluating both data and equipment in a systematic way. GSE TrueNorth gave Reid Gardner a clear justification for extending a regular turbine outage to include inspection and repair.

**Customer:** Nevada Energy  
**Plant Type:** Coal-fired  
**Solution:** Thermal Performance Analysis



## Challenge

In 2011-12, Reid Gardner's 257MWe Unit 4 was generating 24.7MWe less than rated capacity. With summer peak demand approaching, the utility needed to recover this lost generation.

Plant personnel suspected that the cause of the lost MWe originated in the turbine. Since an unidentified turbine problem would only get worse and result in further losses, they sought to justify a costly extension of the outage to include turbine inspection. However, plant personnel needed to be highly confident that the turbine was indeed the cause of the reduced generation.

## Solution

GSE TrueNorth was contracted to investigate the lost capacity and identify the contributing factors. GSE TrueNorth analyzed Nevada Energy Reid Gardner's higher load plant data from 2008-2011.

First, the data was analyzed in its entirety to get an overview of all the data and trends. The three years of data were trended and performance results were calculated.

Secondly, two specific periods of data were analyzed which provided a performance test type result in an attempt to quantify the capacity losses from the 2008 outage to 2011.

GSE TrueNorth identified three areas which were causing the reduced generation: deposits on the High Pressure turbine components, packing leakage and degradation of the Intermediate Pressure turbine.

Based on the findings of GSE TrueNorth, the plant opened up the turbines for inspection and the three issues were confirmed. Extensive maintenance was performed on the turbine blade path to clean or replace components in addition to replacement of HP & IP dummy packing.

## Results

Implementing the recommendations of GSE TrueNorth, Reid Gardner Unit 4 was able to justify the maintenance outage and identify degraded components in the turbines.

Reid Gardner expects generation to return to normal values and looks forward to over \$3 million in additional revenue over the next year.

Analyzing and understanding the degradation of a steam turbine is critical to a plant's performance. GSE TrueNorth has the knowledge and experience to quickly identify a problem and the solutions to gain generation and revenue.

GSE TrueNorth is committed to providing the best tools and experience available with the goal of improving a plant's bottom line.

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