

Efficiency Analysis

7.1 Introduction

The Modesto Irrigation District (MID) Electric Generation Station (MEGS) Project (Project) will utilize two GE LM6000 SPRINT combustion turbine generators operated in simple cycle. The LM6000 engine is an aero-derivative combustion turbine achieving a high fuel efficiency of approximately 40 percent. The maximum thermal efficiency that can be expected from the MEGS Project is approximately 38 percent after accounting for plant parasitic load. This level of efficiency is achieved when the combustion turbine is operating at full load with inlet air chilling. Other types of plant operations, particularly those at less than full combustion turbine output, will result in slightly lower efficiencies. The plant will be expected to normally operate at full load when called upon to operate by MID dispatch. However, the plant will also be designed for flexible load following and cyclic duty capabilities. The combustion turbine will use variable inlet guide vanes that will allow the engine to maintain high fuel efficiency at reduced loads. This includes the ability to operate within the load range of approximately 10 percent to full-load (10 MW to 95 MW, plant net).