

# CASE STUDY: Energy Services Revitalizes Pasadena Power Plant for Emergency Power and Transition Toward Decarbonization



RESTORATION OF PEAKING UNIT AT GLENARM POWER PLANT BOOSTED FLEXIBILITY AND RELIABILITY, WHILE REDUCING EMISSIONS.

Energy Services LLC, a subsidiary of Mitsubishi Power Americas, Inc., restored one of the four simple-cycle gas turbine units at the City of Pasadena's Glenarm Power Plant to commercial operation. Reviving Unit GT2, out of service since October 2012, added 18 megawatts of fast-starting, on-demand electricity that provides critical, reliable power during the summer peak season. Energy Services commissioned GT2 on July 1, 2021, and is committed to further increasing GT2 output.

An Engineering, Procurement, and Construction (EPC) firm specializing in the turnkey installation of aero-derivative gas turbine power plants, Energy Services was responsible for the design, engineering, procurement, installation, testing, and commissioning for this project. The scope of work included supply and installation of a refurbished power turbine, repair and installation of the gas generator, refurbishment of the electric generator, upgrade of the existing emissions control system, replacement of the existing GT1 and GT2 control systems, as well as other improvements, the achievement of which was no small feat during the pandemic. This project resulted in improved reliability and emissions performance, furthering the City's ability to contribute to CAISO's Resource Adequacy requirements.

As the City of Pasadena evaluated options to ensure its ability to meet demand during peak, the decision to restore and upgrade GT1 and GT2 was not only the least costly, but also the fastest to implement. Retrofitting existing and purchasing used/refurbished equipment was a quicker solution than enduring long lead times for new equipment. With the typical peak strain on the regional power grid looming, swift implementation was a decisive factor.

The City also faces the challenge of ensuring a path to zero carbon in 2045 per CA SB-100, while delivering affordable, reliable power along the way. Energy Services rebuilt GT1 and GT2 with a more flexible control system that allows the power plant to ramp up and down more rapidly when renewable power fluctuates and provides much-needed emergency power when natural disasters, such as wildfires, compromise the system. This allows Pasadena to add renewable power sources to its energy mix, improving its generation portfolio without sacrificing grid stability.



Energy Services Vice President and General Manager Jim Amarel commented, "The path to carbon-free energy can sometimes be like walking a tightrope. Peaking gas turbines are the safety harness of 'firm capacity,' as we call it, enabling our customers to go faster down the renewable path while upholding their responsibility to provide reliable power. This project is an outstanding example of how we can help leverage existing resources to accelerate the timetable for renewable power implementation."

Bringing GT2 back to operation provided another stable source of backup power and valuable CAISO Resource Adequacy capacity. When electrical demand exceeds the supply of renewable power, the natural gas-fired units at the Glenarm Power Plant can meet up to half of the entire

electricity requirements for the city of 142,000 residents. The power plant helps to integrate renewable energy into the electric grid by providing fast-start backup power when it is needed most. The facility is an essential component of the City of Pasadena's consistent supply of electricity while ensuring progress toward meeting its sustainability goals. It also lessens Pasadena's reliance on costly outside sources for energy and feeds the regional grid to support increased statewide demand.

Amarel continued, "This project also demonstrates the advantages of restoring older gas turbine units. Don't count them out. Restoration projects often have the fastest return on investment, are relatively quick to implement, and often improve emissions and efficiency. They bridge the energy gap of today's grid challenges, providing a flexible solution on the path to a renewable future."

