

# Pretreatment for Reverse Osmosis

## Ultrafiltration Membrane System



CASE STUDY

**Location:** Lebec, California  
**Owner:** Pastoria Energy  
**Contractor:** Calpine Operating Services

### New Power Plant

Calpine Corporation, an industry leader in U.S. power generation, constructed a new four-turbine power plant in south-central California. This steam-turbine generating plant has large water needs, including high-purity boiler feed water and cooling tower water. A key part of their complex and efficient water treatment flow scheme is their reverse osmosis (R.O.) system.

### Substantial Problem

Approximately six months after final commissioning of the plant, WesTech received an urgent call from the engineers at Calpine. It became apparent that the existing granular media filters on the project, upstream of the R.O. system, were not treating the water sufficiently. Suspended solids feeding the R.O. membrane were high in iron species and would spike with turbidities up to 30 NTU. R.O. membrane fouling occurred in less than a day. After fouling two sets

of R.O. membranes, it was realized that a WesTech membrane treatment system was needed fast.

### Simple Solution

In less than four days, WesTech responded by delivering a fully automated ultrafiltration membrane system. This ultrafilter system utilizes 18 membrane modules as the heart of the filtration unit.

Within seven days, the system began producing treated water. The filtered

water quality was consistently very low in turbidity and less than 2 SDI (Silt Density Index). As a result, the R.O. membrane's performance has improved significantly and has operated since July, 2005, with very few problems.

During its extended services, the ultrafiltration membrane system has required chemical cleaning only once every three months, despite widely varying feed turbidities.

